ISTITUTO SPERIMENTALE PER
LA MECCANIZZAZIONE AGRICOLA

SEZIONE DI TREVIGLIO

O.E.C.D. no. **1424** Restricted Code

Report on test in accordance with the O.E.C.D. Restricted Standard Code for the Official Testing of Agricultural Tractor Performance



Agricultural Tractor: **LAMBORGHINI 775 F PLUS VDT "4WD"**

Submitted for test by: S+L+H S.p.A.
V.le Cassani 15
24047 Treviglio (BG) (Italy)

Date of O.E.C.D. approval: 28 January 1993
Period of test: October - November 1992

ISMA - SOP Treviglio - Via Milano 43 - TREVIGLIO (BG) - ITALY

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- Measurement of noise in the protective structure page 26

All stated dimensions and tests refer to tyre size 9.5R20 (8 ply) at front and 14.9R28 (128A8) at rear, as well as to track widths 1200 mm at front and 1380 mm at rear.

- Tractor manufacturer

. Name: S+L+H S.p.A.;
. Address: V. 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: I.S.M.A. - Via Milano 43 - Treviglio (BG) - ITALY

I - SPECIFICATION OF TRACTOR

TRACTOR

- Make: LAMBORGHINI;
- Model: 775 F PLUS VDT "4WD";
- Type: Wheeled tractor, unit construction, all wheels drive tractor;
- Number of driving wheels: 4;
- Serial number: 1341;
- First serial number: 1001.

ENGINE

- Make: S+L+H;
- Model: 1000.3 WT;
- Type: water cooled 4-stroke diesel engine, direct injection, turbo charged;
- Serial number: 1424.

Cylinders

- Number/disposition: 3, vertical, in-line;
- Bore/stroke: 105 x 115.5 mm;
- Capacity: 3000 cm^3;
- Compression ratio: 16/1;
- Arrangement of valves: overhead;
- Cylinder liners: wet liners.

Supercharging

- Make: GARRET;
- Model: TA 25;
- Type: Turbocharger;
- Supercharging pressure: 91 kPa.

Fuel system

- Fuel feed system: AC corone fuel feed pump;
- Make, model and type of fuel filter: FIAMM FNA 166/20;
- Capacity of fuel tank: 48 dm^3;
- Make, model and type of injection pump: BOSCH PFR 1K 90A 517, immersed pump, one per cylinder, without serial number, in line injection pump;
- Manufacturer's production setting of injection pump:
.flow rate: 72 +/-2 mm^3 /stroke at rated speed and full load corresponding 15.23 dm^3/h;
.timing: 16 +/- 0.5° before TDC;
- Make, model and type of injectors: BOSCH DLLA 150 S 1158 multihole injecton nozzles;
- Injection pressure: 18 +/- 1 MPa.

Governor

- Make: S+L+H;
- Model: 007.0992.4;
- Type: electronic;
- Governor range of engine speed: from 650 to 2535 rev/min.;
- Rated engine speed: 2350 rev/min.

Air cleaner

- Main filter
. make: DONALDSON;
. model: FKG 08-0524;
. type: dry paper element filter;
. 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 48 03;
- Oil specifications: see page 16-17.

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: 400 mm;
- Type of temperature control: electrical indicator.

Starting system

- Make: BOSCH;
- Mode: JF 12 V;
- Type: electromagnetic engagement;
- Starter motor power rating: 3,5 kW;
- Safety device: preventig engine start in gear;
- Starting system for low temperatures: none.

Electrical equipment

- Voltage: 12 V;
- Generator:
 .make: MAGNETI MARELLI ;
 .model: AA 125 R 14V 65A;
 .type: alternator:
 .power: 14 V, 65 A;
- Battery: 1 lead acid;
 .capacity: 100 Ah at 20 hours rating.

Exhaust system

- Make: S+L+H;
- Model: 7.1695.2 - DGM SA 1857;
- Type: one reflection absorption chamber;
- Location: on the left hand side of engine, under the bonnet cowling, horizontal position;
- Height of outlet above ground: 510 mm.

TRANSMISSION

Clutch: utilized only for travelling of tractor

- Make: own make;
- Model: 570.23;
- Type: single disk dry clutch;
- Number of plates: 1;
- Plates diameter: 280 mm;
- Control system: mechanical operated by pedal.

Gear box

- Make: own make;
- Model: 566.22.3;
- Type: mechanical synchromesh speed change gear;
- Arrangement: four speeds forward, with four ranges of speeds, one electro-hydraulically shifted reduction gear (hi/lo) and one reverse group;
number of speeds: 32 forward and 32 reverse;

- Available options: four speeds forward, with three ranges of speeds, and one reverse group;
number of speeds: 12 forward and 12 reverse;
or:
four speeds forward, with four ranges of speeds, and one reverse group;
- number of speeds : 16 forward and 16 reverse
or:
four speeds forward, with three ranges of speeds, one electro-hydraulically shifted reduction gear (hi/lo) and one reverse group;
- number of speeds: 24 forward and 24 reverse;

Rear axle and final drives

- Make: own make;
- Model: 570.44;
- Type: bevel gear differential and epicyclic final drive;

Differential lock

- Make: own make;
- Model: 570.35;
- Type: electrohydraulic;
- Control system: engaging or disengaging by push button.

Front axle and final drives

- Make: own make;
- Model: 570.43;
- Type: original S+L+H system with central shaft, bevel gear drive, differential and epicyclic final drives;

Differential lock

- Make: own make;
- Model: 570.68;
- Type: electrohydraulic;
- Control system: in common with rear differential lock system.

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 2350 rev/min (*) km/h	
	FORWARD	REVERSE	FORWARD	REVERSE
1 R Low	1674.8	1712.4	0.34	0.33
1 R High	1395.7	1427.0	0.41	0.40
2 R Low	1085.6	1109.0	0.52	0.51
2 R High	904.7	924.9	0.63	0.61
3 R Low	718.4	734.5	0.79	0.77
3 R High	598.6	612.1	0.95	0.93
1 S Low	558.3	570.8	1.02	0.99
4 R Low	476.6	487.2	1.19	1.16
1 S High	465.2	475.7	1.22	1.19
4 R High	397.1	406.0	1.43	1.40
2 S Low	361.9	370.0	1.57	1.53
2 S High	301.6	308.3	1.88	1.84
3 S Low	239.5	244.8	2.37	2.32
3 S High	199.5	204.0	2.84	2.78
1 N Low	186.1	190.3	3.05	2.98
4 S Low	158.9	162.4	3.57	3.49
1 N High	155.1	158.6	3.66	3.57
4 S High	132.4	135.3	4.28	4.19
2 N Low	120.6	123.3	4.70	4.60
2 N High	100.5	102.8	5.64	5.51
3 N Low	79.0	81.6	7.18	6.95
3 N High	66.5	68.0	8.52	8.34
1 F Low	62.0	63.4	9.14	8.94
4 N Low	53.0	54.1	10.70	10.48
1 F High	51.7	52.9	10.97	10.72
4 N High	44.1	45.1	12.86	12.57
2 F Low	40.2	41.1	14.10	13.79
2 F High	33.5	34.3	16.92	16.53
3 F Low	26.6	27.2	21.31	20.84
3 F High	22.2	22.7	25.54	24.97
4 F Low	17.7	18.0	32.03	31.50
4 F High	14.7	15.0	38.57	37.79

R = reduction; S = slow; N = normal; F = fast.
(*) Calculated with a tyre dynamic radius index of 640 mm. (ISO 4251/1 -1984)- Number of rev. of front wheels for one rev. of rear wheels: 1.4794.

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 disc dry clutch independent of travel clutch; ISO Standard 500-1979.
- Number of shafts: 1;
- Method of changing power take-off shaft ends: none:
- Method of changing speed: by hand lever.

1) 540 rev/min
- Dimension ISO Standard 500-1979 type 1 (35 mm - 6 splines);
- PTO speed at rated engine speed: 616 rev/min;
- Engine speed at standard power take-off speed: 2059 rev/min;
- Ratio of rotation speeds (engine speed/pto speed): 3.8125;
- Power restriction and maximum torque: power and torque of the engine.

2) 750 rev/min
- Dimension ISO Standard 500-1979 type 2 (35 mm - 6 splines);
- PTO speed at rated engine speed: 740 rev/min;
- Engine speed at standard power take-off speed: 2382 rev/min;
- Ratio of rotation speeds (engine speed/pto speed): 3.1764.
- Power restriction and maximum torque: power and torque of the engine

- Height above ground:	640	mm
- Distance from the median plane of the tractor:	0	mm
- Distance behind rear axle:	395	mm
- Direction of rotation (viewed facing driving end):	clockwise	

Power take-off proportional to ground speed

- Speed of shaft: 540 rev/min;
- Travelling distance for one revolution of power take-off shaft: 0.42 m;
- Number of power take-off shaft revolutions for one revolution of rear driving wheels: 9.41;
- Direction of rotation with forward gear engaged (viewed facing driving end): clockwise.

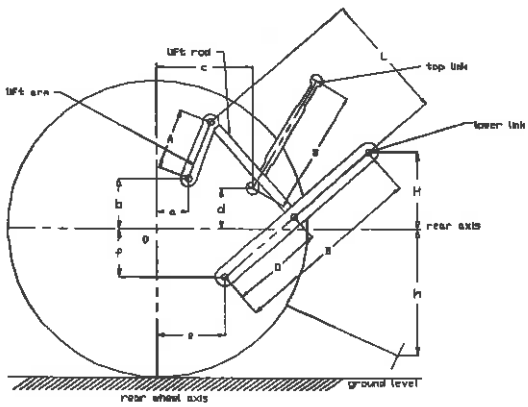
POWER LIFT

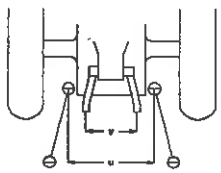
- Make: MITA;
- Model: 570.39;
- Type: load sensing;
- Type of hydraulic system: open centre system;
- Type and number of cylinders: 1 internal single acting;
  Type of lock for transport: mechanical, with screwed tie rods that lock the lower links;
- Relief valve pressure setting: 18.0 +/- 0.5 MPa;
- Opening pressure of anti-shock valve: 21.0 MPa;
- Lift pump type: hydraulic rotary pump, driven by engine shaft,
- pump make: BOSCH A 510 241 101;
- Transmission between pump and engine: mechanical;
- Type and number of filters: 1, repeceable paper cartridge;
- Oil capacity: 28 dm^3;
- Site of oil reservoir: gear box;
- Position, type and No. of additional oil plugs: 4 ways distributor at rear of tractor;
- Maximum volume of oil available to external cylinders: 10 dm^3;

- Recommended oil: see page 16-17.

Three-point linkage

- Category: 2 in conformity with ISO 730/1 - 1990;
- Category adapter: none .





POWER LIFT

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

		Dimension or range (mm)	Settings used in test (mm)
Length of lift arms	(A)	280	280
Length of lower links	(B)	809	809
Distance of lift arm :horizontally	(a)	216	216
pivot point from rear :vertically	(b)	332	332
wheel axis (behind)			
Horizontal distance between the 2 lower link points	(u)	400	400
Horizontal distance between the 2 lift arm end points	(v)	500	500
Length of upper link	(S)	from 420 to 640	468
Distance of upper link :horizontally	(c)	450-431-450	431
pivot point from rear :vertically	(d)	285-317-355	317
wheel axis			
Distance of lower link :horizontally	(e)	183	183
pivot point from rear :vertically	(f)	154	154
wheel axis			
Distance of lower link pivot point to lift rod pivot points on lower links	(D)	360-410	410
Length of lift rods	(L)	from 480 to 570	535
Height of lower hitch points relative to the rear wheel axis			
- in Low position	(h)	from 322 to 513	440
- in High position	(H)	from 172 to 330	235
Height above ground of lower hitch points when locked in transport position (*)			875

(*) *Assuming the dynamic radius index = 640 mm (ISO 4251/1- 1984)*

SWINGING DRAWBAR

Optional, not fitted on tractor tested;
- Type: 9.56631.35.0;
- Height above ground (tyre size: 14.9R28): max 450 mm
  min 350 mm;
- Type of adjustment: reversible;
- Distance of hitch point from rear wheel axis;
  .horizontally: 795 mm;
- Distance of hitch point from power take-off shaft end;
  .vertically: 290 - 190 mm below;
  .horizontally: 406 mm behind;
- Lateral adjustment (centre of clevis);
  .right hand: 170 mm;
  .left hand: 170 mm;
- Distance of pivot point from rear wheel axis;
  .horizontally: 166 mm behind;
- Diameter of drawbar pin hole: 28 mm;
- Maximum vertical permissible load: not specified.

HOLED DRAWBAR

- Number of holes: 9;
- Distance between holes: 55 mm;
- Hole diameter: 22 mm;
- Thickness/width of the drawbar:30-80 mm;
- Height above ground,(tyre size: 14.9R28) min 230 mm;
  max 830 mm;
- Horizontal distance behind power take-off shaft end: 560 mm;
- Diameter of the pinhole: 28 mm.

TRAILER HITCH

- Type: CRAMER KU 8140/876LS;
- Hole diameter: 32 mm;
- Height above ground: 410 min. 795 max. mm;
- Distance of hitch point from rear wheel axis,
  .horizontally: 590 mm;
- Distance of hitch point from power take-off shaft end;
  .vertically : 200 mm below, 190 mm above;
  .horizontally : 195 mm;
- Maximum vertical permissible load: 14.7 kN.

STEERING

- Specification: hydrostatic steering with BOSCH hydraulic gear pump, one double acting ram acting directly on front axle.
- Make: DANFOSS;
- Model: ORBITROL OSPC 80 LS DYN;
- Type: hydrostatic;
- Working pressure: 9 MPa;
- Recommended oil: see page 16-17.

BRAKES

Service brake

- Make: S + L + H;
- Model: 570.54;
- Type: oil bath disc, total 4 discs, 2 at front (1 for wheel) and 2 at rear (1 for wheel), all mounted before the final drive. front disc dia = 178 mm , rear disc dia = 224 mm, 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, 1 oil bath disc mounted on the pinion shaft in the gear box, FRENDO HDT 303 lining material;
- Method of operation: mechanical by hand lever.

Steering brake : divided pedal of service brake, for normal use locked together.

STEERING WHEELS

- Number: 2 ;
- Location : at front ;
- Track widths: 1210 min. - 1430 max. mm;
- Adjustment: changing the position of the rims in respect to the disc.

DRIVING WHEELS

- Number: 4 ;
- Location : two at front and two at rear;
- Track widths: 1110 min. - 1400 max. mm;
- Adjustment: changing the position of the rims in respect to the disc.

WHEELBASE: 2082 mm.

PROTECTIVE STRUCTURE

Specifications

- OECD approval number: NT/ROPS/R/D 014/11;
- date of approval: 17.12.1991;
- location and country of test of protective structure: I.I.A.
  Università degli studi di Milano - ITALY;
- the reference mass and wheelbase used for calculating impact
  energies and crushing forces were: 2600 kg 2082 mm;
- Make: S+L+H;
- Model: C 34;
- Type: cab, not tiltable;
- Manufacturer's name: S+L+H S.p.A.
  . address: V.le F. Cassani 15 - 24047 Treviglio (BG) - ITALY;
- Protective device: cab.

Materials used in the construction and dimensions

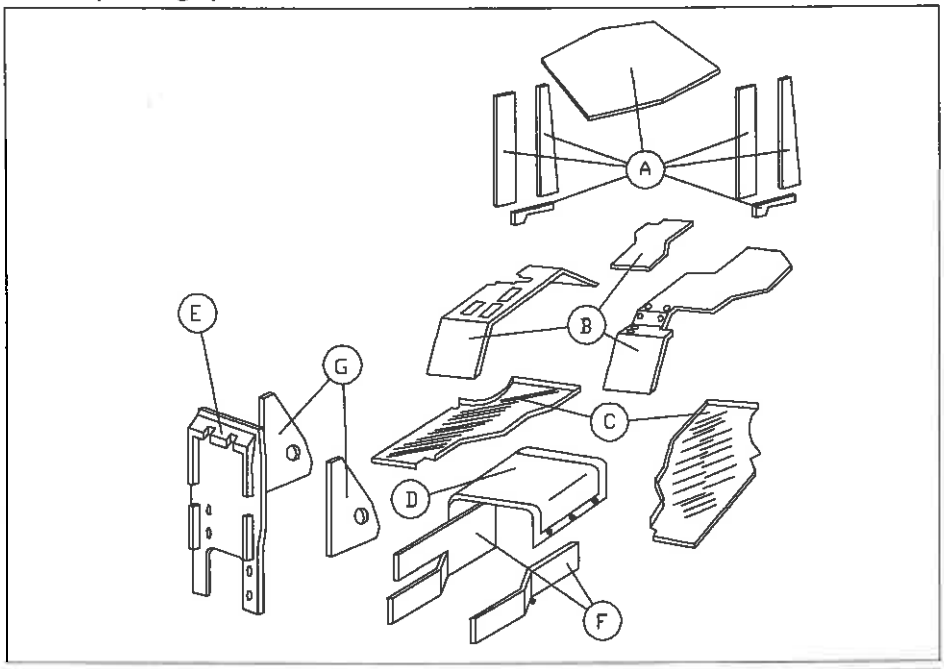
- Interior padding: see the next page;
- Glass: security glass, tickness 5 and 6 mm;
  doors: 43 R - 002943;
  windscreen: 43 R - 002943;
  windows: 43 R - 002943;
- Windscreen wipers: OSLV, parallelogram type;
- Direction indicators: COBO E3;
- Heaters and ventilators: BORLETTI;
- Draught proofing: rubber GMTA 20 - 70 P, SP 550 and PEC 75.

DRIVER'S SEAT

- Make: KAB;
- Model: P1 XH2;
- 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.

Interior padding specification



A) Polyurethan foam + texil fiber, thickness 40 mm.

B) PVC, thickness 3 mm.

C) PVC, thickness 3 mm + polyurethan foam + polytene sheet, total thickness 20 mm, density 50 kg/m^3.

D) Polyurethan PSP, thickness 2.5 mm, density 500 kg/m^3 + polyurethan thickness 10 mm.

E) Polyurethan thickness 25 mm, density 500 kg/m^3.

F) Septum (bitumen), thickness 3 mm + melammine, thickness 7 mm + aluminium sheet.

G) Acousticell BS, thickness 25 mm.

LIGHTING

Lighting system in accordance with E.E.C. 78/933

	Height above ground of centre with tyre (1) (mm)	Size (mm)	Distance from out side edge of tractor to centre at 1380 mm trak width mm
Headligths	1040	180 x 85	580
Front park. lights	1130	110 x 35	255
Front finger post	1385	110 x 35	255
Rear park. lights	1355	50 x 60	205
Rear finger post	1355	50 x 60	155
Brake lights	1355	50 x 60	255
Reflectors	890	dia 80	185

(1) *Tyre size: 9.5R20 front - 14.9R28 rear.*

TEST CONDITIONS

Overall dimensions with tyres 9.5R20 at front and 14.9R28 at rear

Length	Width		Height at top of protective structure
	min	max	
mm	mm	mm	mm
3640	1530	1820	2260

. Ground clearance: 320 mm;
. Clearance-limiting part: front axle.

Tractor mass (with tanks full, with cab, water in tyres none)

	Units	Front	Rear	Total
Without driver	kg	995	1540	2535
With driver	kg	1015	1595	2610

Tyres and track width specifications:

- Tyres		front	rear
. dimensions		9.5R20	14.9R28
. ply rating		8	128A8
. type		radial	radial
. maximum load (tyre manufacturer's)	daN	765	1520
. maximum load (tractor manufact.)	daN	735	1274
. inflation pressure (tyre manufact.)	kPa	280	160
. dynamic radius index	mm	445	640
- Chosen track width	mm	1200	1380
- Tyres on request		250/80-18 250/80-16	380/70-28 380/70-24

Oils, and lubrication:

- Capacity and change interval

	capacity dm^3	oil change h	filter change h
Engine	6.7	150	300
Gear box	28	2400	2400 (*)
Front axle	6	1200	-
Final drives (front)	3	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: 0.838 g/cm^3.

Engine oil

- Type: AKROS TURBO 15 W/40;
- Viscosity: 12.50 cSt;
- Classification: API CE MIL-L-2104 E.

Transmission oil

	front axle and final drive	rear axle, final drive and gear box
-Type	AKROS MULTI	AKROS MULTI
-Viscosity	11.50 cSt	11.50 cSt
-Viscosity index	95	95
-Classification	API GL 4	API GL 4

Hydraulic fluid

- Type: AKROS MULTI;
- Viscosity: 11.50 cSt;
- Classification: API GL 4.

Steering oil

- Type: AKROS MULTI;
- Viscosity: 11.50 cSt;
- Classification: API GL 4.

Grease

- Type: GREASE 30;
- Number of lubrication points: 9.

II - TEST RESULTS

COMPULSORY TESTS RESULTS

1) MAIN POWER TAKE-OFF PERFORMANCE

- Date and location of test: 29.10.1992 - I.S.M.A TREVIGLIO (BG) ITALY

- Type of dynamometer: ZÖLLNER B 500

Power	Speed		Fuel consumption			Specific Energy
	Engine	P.T.O.	Hourly		Specific	
kW	rev/min	rev/min	l/h	kg/h	g/kWh	kWh/l
1.1 MAXIMUM POWER - 2 HOUR TEST						
52.8	2349	616	15.23	12.76	242	3.47
1.2 POWER AT RATED ENGINE SPEED						
52.8	2349	616	15.23	12.76	242	3.47
1.3 STANDARD POWER TAKE-OFF SPEED (540 +/- 10 rev/min)						
50.1	2059	540	13.77	11.54	230	3.64
1.4 PART LOADS						
1.4.1 The torque corresponding to maximum power at rated engine speed						
52.8	2349	616	15.23	12.76	242	3.47
1.4.2 85% of torque obtained in 1.4.1						
46.4	2429	637	13.22	11.08	239	3.51
1.4.3 75% of torque defined in 1.4.2						
35.4	2467	647	11.00	9.22	261	3.21
1.4.4 50% of torque defined in 1.4.2						
23.8	2497	655	8.57	7.18	301	2.78
1.4.5 25% of torque defined in 1.4.2						
12.0	2512	659	6.03	5.05	420	1.99
1.4.6 unloaded						
0	2535	665	3.97	3.33	-	-

Power	Speed		Fuel consumption			Specific Energy
	Engine	P.T.O.	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						
50.1	2059	540	13.77	11.54	230	3.64
1.5.2 85% of torque obtained in 1.5.1						
44.3	2146	563	12.61	10.57	239	3.51
1.5.3 75% of torque defined in 1.5.2						
33.9	2188	574	10.31	8.64	255	3.29
1.5.4. 50% of torque defined in 1.5.2						
22.9	2215	581	7.74	6.49	284	2.96
1.5.5 25% of torque defined in 1.5.2						
11.5	2234	586	5.38	4.51	392	2.14
1.5.6 unloaded						
0	2246	589	3.44	2.88	-	-

- No load maximum engine speed: 2535 rev/min
- Torque (1) at maximum power at rated engine speed: 21.46 daNm
- Maximum torque (1) (engine speed: 1594 rev/min) 24.81 daNm

- Mean atmospheric conditions:

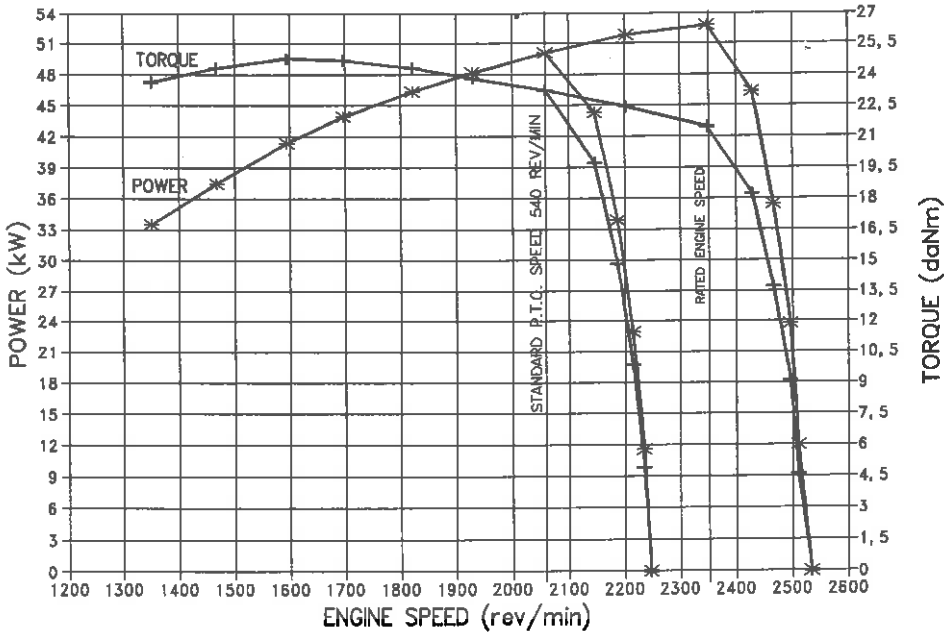
Temperature	20 °C
Pressure	98.7 kPa
Relat. humidity	76 %

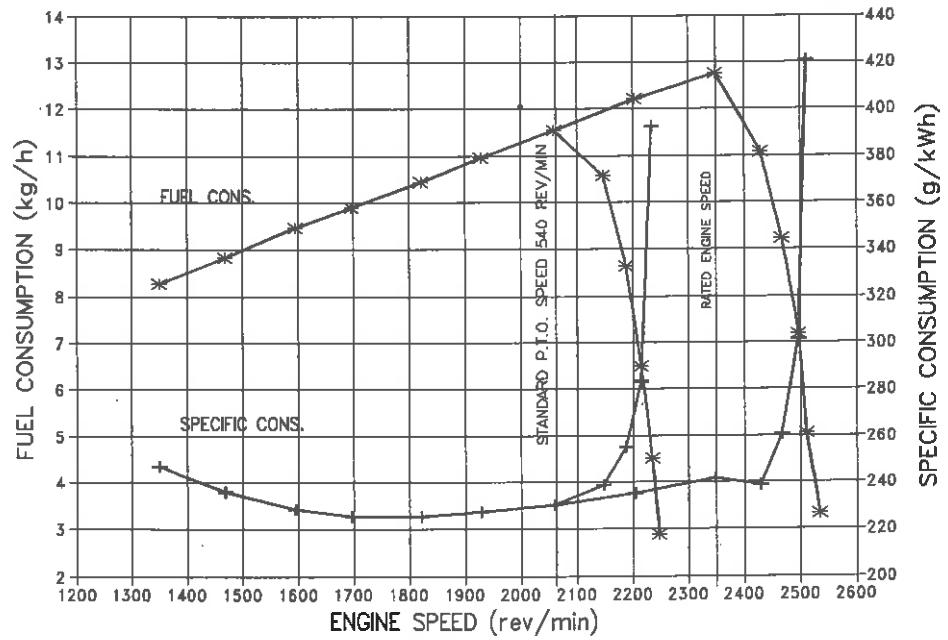
- Maximum temperatures:

Coolant	--- °C
Engine oil	110 °C
Fuel	41 °C
Engine air intake	19 °C

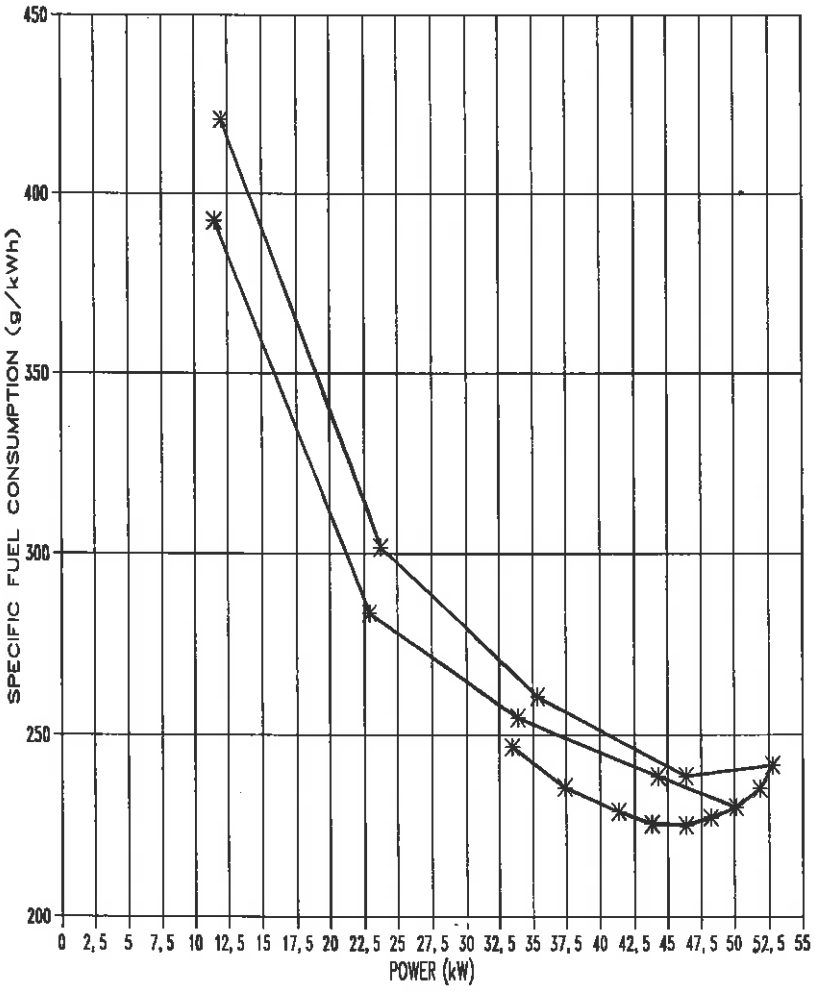
(1) *The torque is the equivalent crankshaft torque.*

P.T.O. Test


TORQUE
POWER
STANDARD P.T.O. SPEED 540 REV/MIN
RATED ENGINE SPEED
POWER (kW)
TORQUE (daNm)
ENGINE SPEED (rev/min)


FUEL CONS.
SPECIFIC CONS.
STANDARD P.T.O. SPEED 540 REV/MIN
RATED ENGINE SPEED
FUEL CONSUMPTION (kg/h)
SPECIFIC CONSUMPTION (g/kWh)
ENGINE SPEED (rev/min)

P.T.O. Test


SPECIFIC FUEL CONSUMPTION (g/kWh)
450
400
350
300
250
200
0 2,5 5 7,5 10 12,5 15 17,5 20 22,5 25 27,5 30 32,5 35 37,5 40 42,5 45 47,5 50 52,5 55
POWER (kW)

2) HYDRAULIC POWER AND LIFTING FORCE

- Date and location of tests: 02.11.92 - ISMA Treviglio (BG)

2.1) HYDRAULIC POWER TEST

Sustained pressure with relief valve open: 18.0 MPa;
Pump delivery rate at minimum pressure: 56.0 l/min;

	hydraulic power kW	flow rate l/min	pressure MPa	oil temp. °C
At 90% of the actual relief valve setting	8.59	31.8	16.2	65
Maximum	11.13	47.7	14.0	64

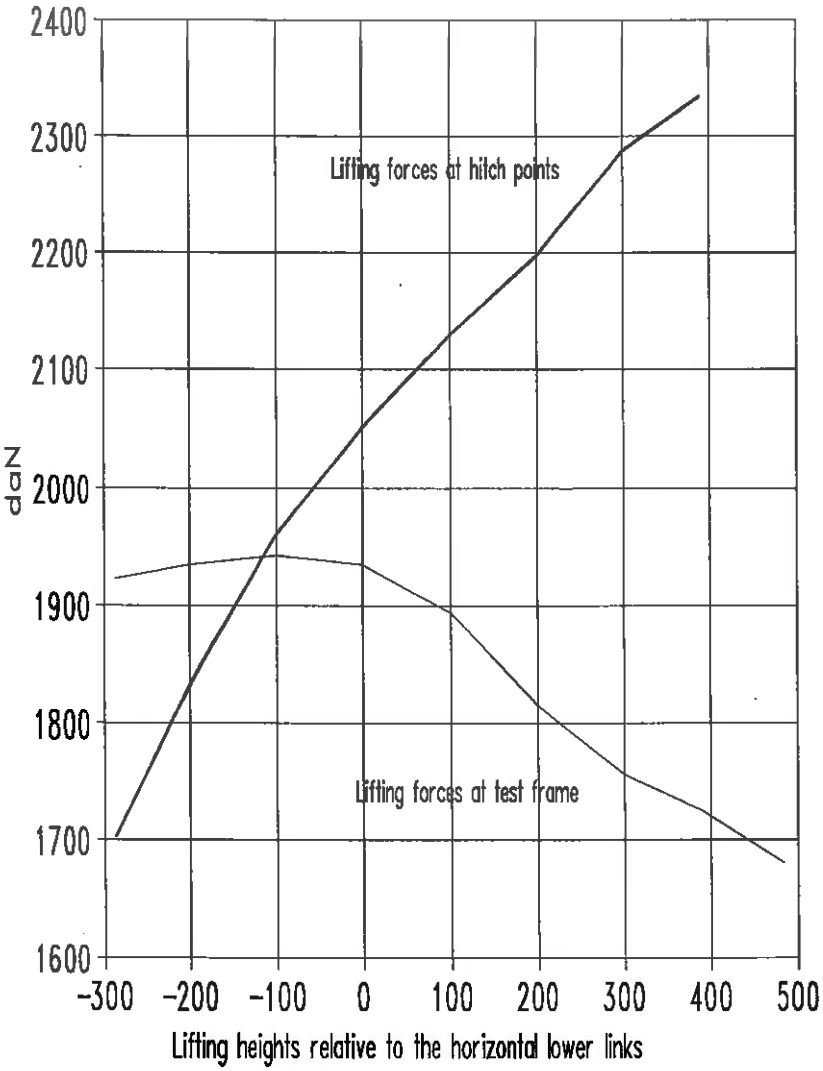
Tapping point used for test : at rear of tractor;
Hydraulic fluid: see page 17.

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	mm	675	770
Maximum corrected force exerted through full range	daN	1703	1680
Corresponding pressure of hydraulic fluid	MPa	18.0	18.0
Moment about rear axle	daNm	1689	2691
Maximum tilt angle of mast over range of lift	degrees	--	9

Lifting heights relative to the horizontal lower links mm	-286	-200	-100	0	+100	+200	+300	+389	+400	+484
Lifting forces at hitch points daN	1703	1833	1961	2051	2129	2197	2288	2335	----	----
Lifting forces at test frame daN	1923	1934	1942	1935	1893	1814	1755	----	1720	1680

Performance of power lift:



3) DRAWBAR PERFORMANCE (unballasted tractor)

- Date of test: 15.09.92;
- Type of track: concrete;
- Type and size of tyres: front: 9.5R20 - 8 ply, rear: 14.9R28 - 128A8;
- Height of drawbar above ground: 435 mm;
- Tyre inflation pressure: .front: 280 kPa, rear: 160 kPa.

3.1) MAXIMUM POWER IN TESTED GEARS

Gear and range	Power kW	Draw. pull daN	Speed km/h	Eng. speed rev/min	Slip of wheel %	Specific ener. kWh/l	Specific cons. g/kWh	Temperatures fuel °C	Temperatures cool. °C	Temperatures eng. °C	Atm. conditions temp. °C	Atm. conditions hum. %	Atm. conditions press. kPa
1R L	1.9	1679	0.30	2528	15	0.29	2857	35	--	95	16	65	99.6
1R H	1.8	1741	0.37	2526	15	0.37	2291	35	--	95	16	65	99.5
2R L	2.3	1746	0.47	2526	15	0.46	1820	35	--	96	16	65	99.6
2R H	2.7	1749	0.56	2522	15	0.54	1544	34	--	96	15	64	99.5
3R L	3.5	1762	0.71	2519	15	0.66	1268	35	--	97	16	64	99.6
3R H	4.2	1784	0.85	2517	15	0.77	1093	34	--	96	16	64	99.9
1S L	4.5	1765	0.91	2517	15	0.81	1040	34	--	96	16	64	99.8
4R L	5.1	1727	1.06	2515	15	0.89	945	34	--	97	16	64	99.8
1S H	5.5	1814	1.09	2514	15	0.95	885	34	--	97	17	63	99.7
4R H	6.2	1746	1.27	2511	15	0.99	846	32	--	97	16	63	99.6
2S L	6.7	1740	1.39	2510	15	1.07	781	33	--	98	17	63	99.6
2S H	8.2	1764	1.67	2509	15	1.22	687	32	--	98	16	63	99.6
3S L	10.6	1819	2.09	2505	15	1.45	579	32	--	98	16	63	99.8
3S H	13.0	1873	2.50	2497	15	1.60	523	32	--	99	16	64	99.8
1N L	13.6	1828	2.68	2496	15	1.63	515	31	--	99	16	63	99.8
4S L	16.1	1851	3.13	2492	15	1.81	464	32	--	100	17	63	99.7
1N H	16.5	1858	3.20	2490	15	1.79	469	32	--	100	17	63	99.7
4S H	18.3	1759	3.74	2482	15	1.86	452	32	--	100	16	64	99.7
2N L	21.2	1862	4.09	2476	15	2.03	413	31	--	101	16	64	99.8
2N H	24.8	1837	4.86	2453	15	2.23	375	31	--	101	16	63	99.8
3N L	31.0	1816	6.14	2439	15	2.46	340	31	--	102	16	62	99.8
3N H	35.9	1815	7.13	2383	15	2.51	334	32	--	102	16	63	99.7
1F L	37.4	1745	7.71	2350	13	2.43	345	32	--	103	16	63	99.7
4N L	38.2	1438	9.56	2353	8	2.50	335	31	--	103	16	63	99.7
1F H	37.7	1346	10.09	2350	5	2.45	342	31	--	105	16	63	99.7

R = Reduction, S = Slow, N = Normal, F = Fast.
L = Low, H = High.

3.2) TRANSMISSION AND FUEL CONSUMPTION CHARACTERISTICS

Gear and range	Power kW	Draw. pull daN	Speed km/h	Eng. speed rev/min	Slip of wheel %	Specific ener. kWh/l	Specific cons. g/kWh	Temperatures fuel °C	Temperatures cool. °C	Temperatures eng. °C	Atm. conditions temp. °C	Atm. conditions hum. %	Atm. conditions press. kPa
3.2.1) Selected gear, at maximum power at rated speed													
4N L	38.2	1438	9.56	2353	8	2.50	335	31	--	103	16	63	99.7
3.2.1.1) 75% of pull at maximum power at rated speed													
4N L	30.5	1079	10.17	2435	5	2.36	354	28	--	100	16	63	99.8
3.2.1.2) 50% of pull at maximum power at rated speed													
4N L	21.2	732	10.42	2468	4	1.91	439	30	--	100	17	64	99.7
3.2.1.3) next higher gear at reduced engine speed; same pull and travelling speed as in 3.2.1.1													
1F H	30.0	1075	10.05	2348	5	2.39	350	30	--	99	16	64	99.7
3.2.1.4) next higher gear at reduced engine speed; same pull and travelling speed as in 3.2.1.2													
1F H	21.3	730	10.51	2405	3	2.01	418	30	--	100	16	63	99.8

Gear and range	Power kW	Draw. pull daN	Speed km/h	Eng. speed rev/min	Slip of wheel %	Specific ener. kWh/l	Specific cons. g/kWh	Temperatures fuel °C	Temperatures cool. °C	Temperatures eng. °C	Atm. conditions temp. °C	Atm. conditions hum. %	Atm. conditions press. kPa
3.2.2) Selected gear nearest to 7.5 km/h at rated speed													
3N L	31.0	1816	6.14	2439	15	2.46	340	31	--	102	16	62	99.8
3.2.2.1) 75% of pull at maximum power at rated speed													
3N L	25.6	1361	6.78	2468	7	2.39	351	32	--	101	15	65	99.6
3.2.2.2) 50% of pull at maximum power at rated speed													
3N L	17.8	909	7.06	2490	4	1.92	435	31	--	100	15	65	99.7
3.2.2.3) next higher gear at reduced engine speed; same pull and travelling speed as in 3.2.2.1													
3N H	25.5	1356	6.76	2070	7	2.42	346	30	--	100	15	65	99.8
3.2.2.4) next higher gear at reduced engine speed; same pull and travelling speed as in 3.2.2.2													
3N H	17.9	916	7.05	2095	4	2.15	390	30	--	100	15	65	99.8

R = Reduction, S = Slow, N = Normal, F = Fast.
L = Low, H = High.

APPENDIX

MEASUREMENT OF NOISE IN THE PROTECTIVE STRUCTURE

Results of OECD test no. NT/ROPS/R/D/ 014/11/NM 0991 (*)
Date of test: 29.06.1992
Location: ISMA - SOP TREVIGLIO (BG) - Via Milano 43 - ITALY
Type of sound level meter
. make: BRÜEL & KJÆR;
. model: 2231;
. type: impulse precision sound level meter;
Type of track: concrete.

TABLE FOR NOISE LEVELS AT DRIVER'S EAR POSITION - O.E.C.D. code V

gear	brake-load kN	trav.speed km/h	sound level dB(A) a	b	driving wheels
Unloaded test in the gear giving the speed nearest to 7.5 km/h					
3 N	0	9.1	82.3	90.5	4
Unloaded test in the gear giving the maximum speed					
4 F	0	42.2	83.8	92.2	4
Loaded test with nominal travelling speed nearest to 7.5 km/h					
3 N	17.6	8.7	83.5	94.5	4
Loaded test by which the tractor develops maximum sound in the gears in which the sound level is at least 1 dB(A) over the mentioned maximum					
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a - *all openings closed;*
b - *doors and rear windows open .*
(*) *tractor fitted with 12 forward + 12 reverse speed gear box.*

REPAIRS AND REMARKS: none.

TEST CARRIED OUT BY
(P.a. Giovanni LAMORATTA)

THE DIRECTOR OF TESTING STATION
(Prof. Giuseppe COLZANI)

HEAD OF ISMA - ROMA
(Ing. Giovanni SANTORO)

Text and graphics processed by: P.a. Gianluigi ROZZONI