ISTITUTO SPERIMENTALE PER
LA MECCANIZZAZIONE AGRICOLA
SEZIONE DI TREVIGLIO

O.E.C.D. No.**1338** Full Code

Test in accordance with the O.E.C.D. Full Code for the official testing of agricultural tractors.



Test report of: **LAMBORGHINI 135 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: 06.12.1991
Period of test: October 1991

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

O.E.C.D. No.**1338** Full Code

Test in accordance with the O.E.C.D. Full Code for the official testing of agricultural tractors.



Test report of: **LAMBORGHINI 135 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: 06.12.1991
Period of test: October 1991

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

TABLE OF CONTENTS

- Specification of tractor ..... page 3
- Power take-off performance ..... page 24
- Power lift and hydraulic power test ..... page 28
- Drawbar performance ..... page 31
- Turning area and turning circle ..... page 33
- Location of centre of gravity ..... page 38
- Braking performance ..... page 34
- Measurement of external noise level ..... page 35

APPENDIX

- Measurement of noise in the protective structure page 35

All stated dimensions and tests refer to tyre size 16.9R30 (6 ply) at front and 20.8R38 (8 ply) at rear, as well as to track widths 1720 mm at front and 1840 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: 135 VDT "4WD";
- Type: Wheeled tractor, unit construction, all wheels drive tractor;
- Number of driving wheels: 4;
- Serial number: 1152;
- First serial number: 1001.

ENGINE

- Make: S+L+H;
- Model: 1000.6 WT;
- Type: water cooled 4-stroke diesel engine, direct injection, turbo charged;
- Serial number: 1211.

Cylinders

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

Supercharging

- Make: SCHWITZER;
- Model: S2B
- Type: Turbocharger;
- Supercharging: 93 kPa.

Fuel system

- Fuel feed system: AC corone fuel feed pump;
- Make, model and type of fuel filter: FIAMM FNA 225/00;
- Capacity of fuel tank: 210 dm^3;
- Make, model and type of injection pump: BOSCH PFR 1K 90A 503, immersed pump, one per cylinder, without serial number, in line injection pump;
- Manufacturer's production setting of injection pump:
  .flow rate: 60 +/-2 mm^3 /stroke at rated speed and full load corresponding 27.23 dm^3/h;
  .timing: 16 +/- 0.5 before TDC;
- Make, model and type of injectors: BOSCH DLLA 150 S 925 multihole injecton nozzles;
- Injection pressure: 18 +/- 1 MPa.

Governor

- Make: S+L+H;
- Model: 527.16;
- Type: electronic;
- Governor range of engine speed: from 650 to 2709 rev/min.;
- Rated engine speed: 2500 rev/min.

Air cleaner

- Main filter
  . make: DONALDSON;
  . model: FLG 10-0220;
  . type: dry paper element filter;
  . location: front of engine ;
- Maintenance indicator: with the warning lamp on the dashboard.

Lubrication system

- Type of feed pump: forced feed from gear pump;
- Total oil capacity including filter: 15.0 dm^3;
- Oil change period: 150 hrs;
- Type of filter: FIAMM FT 48 03 IN;
- Number: 2;
- Filter change period: 300 hrs;
- Oil specifications: see page 20.

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: 500 mm;
- Coolant capacity: 18 dm^3
- Type of temperature control: electrical indicator.

Starting system

- Make: BOSCH;
- Model: JF 12 V;
- Type: electromagnetic engagement;
- Starter motor power rating: 3.0 kW;
- Safety device: preventig engine start in gear;
- Starting system for low temperatures: none.

Electrical equipment

- Voltage: 12 V;
- Generator:
  .make: BOSCH ;
  .model: K1 14 V 65 A;
  .type: alternator:
  .power: 780 W;
- Battery: 1 lead acid;
  .capacity: 143 Ah at 20 hours rating.

Exhaust system

- Make: S+L+H;
- Model: 83683.3;
- Type: one reflection absorption chamber;
- Location: on the left hand side of engine, under the bonnet cowling, with vertical exhaust;
- Height of outlet above ground: 2905 mm.

TRANSMISSION

Clutch: utilized only for travelling of tractor

- Make: own make;
- Model: 527.23;
- Type: single disk dry clutch;
- Number of plates: 1;
- Plates diameter: 330 mm;
- Control system: hydraulically operated by pedal.

Gear box

- Make: own make;
- Model: 527.22;
- Type: mechanical synchromesh speed change gear with electro hydraulic shifted reduction gear (hi/lo);
- Arrangement: six speeds forward, with four ranges of speeds, one reduction gear (hi/lo)and one reverse group;
- Number of speeds : 48 forward and 48 reverse;

- Available options: six speeds forward,with three ranges of speeds, one electro-hydraulically shifted reduction gear (hi/lo) and one reverse group;
  number of speeds: 36 forward and 36 reverse;
  or:
  six speeds forward,with four ranges of speeds, and one reverse group;
  number of speeds: 24 forward and 24 reverse.

Rear axle and final drives

- Make: own make;
- Model: 527.44;
- Type: bevel gear differential and epicyclic final drive;

Differential lock

- Make: own make;
- Model: 527.35;
- Type: electrohydraulic;
- Control system: by push button.

Differential lock (optional, fitted on test tractor)

- Make: own make;
- Model: SBA original SAME system;
- Type: electrohydraulic;
- Control system: engaged by push button, 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: S + L + H system with central shaft, bevel gear drive, differential and epicyclic final drives;

Differential lock

- Make: own make;
- Model: 527.46;
- Type: electrohydraulic;
- Control system: by push button.

Differential lock (optional, fitted on test tractor)

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

Transmission lubrication

- Gear box, rear axle, final drives, power lift and hydraulic system (in common).
  . total capacity including filter: 97 dm^3;
  . change period: 1200 hrs;
  . filter change period: 2400 hrs or when the filter clogging warning lamp is lighted;
- Front axle and final drives
  . total capacity: 18 dm^3;
  . change period: 1200 hrs;

- Recommended oil: see page 23.

Total ratios and speeds **FORWARD**

Gear Group	Number of engine revolutions for one revolution of the driving wheels	Nominal travelling speed at rated engine speed of 2500 rev/min (*) km/h
1 R lo	4127.3	0.195
1 R hi	3537.6	0.228
2 R lo	3200.8	0.252
2 R hi	2743.5	0.294
3 R lo	2462.2	0.327
3 R hi	2110.4	0.382
4 R lo	1920.5	0.420
4 R hi	1646.1	0.490
5 R lo	1459.2	0.552
1 S lo	1375.8	0.586
5 R hi	1250.7	0.644
1 S hi	1179.2	0.683
6 R lo	1137.1	0.709
2 S lo	1066.9	0.755
6 R hi	974.6	0.827
2 S hi	914.5	0.881
3 S lo	820.7	0.982
3 S hi	703.5	1.145
4 S lo	640.2	1.259
4 S hi	548.7	1.469
5 S lo	486.4	1.657
5 S hi	416.9	1.983
1 N lo	397.4	2.027
6 S lo	379.0	2.126
1 N hi	340.7	2.365
6 S hi	324.9	2.480
2 N lo	308.2	2.614
2 N hi	264.2	3.050
3 N lo	237.1	3.399
3 N hi	203.2	3.965
4 N lo	184.9	4.357
4 N hi	158.5	5.084
5 N lo	140.6	5.734
5 N hi	120.4	6.690
6 N lo	109.5	7.359
6 N hi	93.9	8.586
1 F lo	86.5	9.314
1 F hi	74.2	10.866
2 F lo	67.1	12.016
2 F hi	57.5	14.012
3 F lo	51.6	15.612
3 F hi	44.2	18.215
4 F lo	40.3	20.016
4 F hi	34.5	23.353
5 F lo	30.6	26.343
5 F hi	26.2	30.734
6 F lo	23.8	33.807
6 F hi	20.4	39.442

(*) Calculated with a tyre dynamic radius index of 855 mm. (ISO 4251/1 -1984)-
Number of rev. of front wheels for one rev. of rear wheels: 1.2571.

Total ratios and speeds **REVERSE**

Gear	Group		Number of engine revolutions for one revolution of the driving wheels	Nominal travelling speed at rated engine speed of 2500 rev/min (*) km/h
1	R	lo	3906.7	0.206
1	R	hi	3348.5	0.241
2	R	lo	3029.7	0.266
2	R	hi	2596.9	0.310
3	R	lo	2330.6	0.346
3	R	hi	1997.6	0.403
4	R	lo	1817.7	0.443
4	R	hi	1558.1	0.517
5	R	lo	1381.3	0.583
1	S	lo	1302.2	0.619
5	R	hi	1183.9	0.681
1	S	hi	1116.2	0.722
6	R	lo	1076.3	0.749
2	S	lo	1009.9	0.798
6	R	hi	922.5	0.873
2	S	hi	865.6	0.931
3	S	lo	776.9	1.037
3	S	hi	665.9	1.210
4	S	lo	605.9	1.330
4	S	hi	519.4	1.552
5	S	lo	460.4	1.750
5	S	hi	394.6	2.042
1	N	lo	376.2	2.142
6	S	lo	358.8	2.246
1	N	hi	322.5	2.499
6	S	hi	307.5	2.620
2	N	lo	291.8	2.762
2	N	hi	250.1	3.222
3	N	lo	224.4	3.590
3	N	hi	192.4	4.189
4	N	lo	175.1	4.603
4	N	hi	150.0	5.371
5	N	lo	133.0	6.058
5	N	hi	114.0	7.068
6	N	lo	103.6	7.775
6	N	hi	88.8	9.071
1	F	lo	81.9	9.840
1	F	hi	70.2	11.480
2	F	lo	63.5	12.688
2	F	hi	54.4	14.803
3	F	lo	48.9	16.494
3	F	hi	41.9	19.243
4	F	lo	38.1	21.146
4	F	hi	32.7	24.672
5	F	lo	29.0	27.830
5	F	hi	24.8	32.470
6	F	lo	22.6	35.715
6	F	hi	19.3	41.669

(*) Calculated with a tyre dynamic radius index of 855 mm. (ISO 4251/1 -1984)- Number of rev. of front wheels for one rev. of rear wheels: 1.2571.

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 push button. Driven by multiplate wet clutch independent of travel clutch; ISO Standard 500-1979.
- Number of shafts: 1;
- Method of changing power take-off shaft ends and speeds: it is possible, through 6 screws, to mount one PTO shaft end at 6 or 21 splines. Speed selection by external hand lever combined with a lever at the left hand side of the seat.

1) 540 rev/min
- Dimension ISO Standard 500-1979 type 1 (35 mm - 6 splines);
- PTO speed at rated engine speed: 605 rev/min;
- Engine speed at standard power take-off speed: 2229 rev/min;
- Ratio of rotation speeds (engine speed/pto speed): 4.1278;
- Power restriction and maximum torque: 143 kw, 252.4 daNm.

2) 1000 rev/min
- Dimension ISO Standard 500-1979 type 2 (35 mm - 21 splines);
- PTO speed at rated engine speed: 1033 rev/min;
- Engine speed at standard power take-off speed: 2421 rev/min;
- Ratio of rotation speeds (engine speed/pto speed): 2.4211.
- Power restriction and maximum torque: 143 kw, 136.3 daNm.

3) 775 rev/min (optional fitted on test tractor)
- Dimension ISO Standard 500-1979 type 2 (35 mm - 21 splines);
- PTO speed at rated engine speed: 784 rev/min;
- Engine speed at standard power take-off speed: 2470 rev/min;
- Ratio of rotation speeds (engine speed/pto speed): 3.188.
- Power restriction and maximum torque: 143 kw, 176.2 daNm.

4) 1300 rev/min (optional fitted on test tractor)
- Dimension ISO Standard 500-1979 type 2 (35 mm - 21 splines);
- PTO speed at rated engine speed: 1337 rev/min;
- Engine speed at standard power take-off speed: 2431 rev/min;
- Ratio of rotation speeds (engine speed/pto speed): 1.869.
- Power restriction and maximum torque: 143 kw, 105.0 daNm.

Secondary Power take-off

- Type: independent, at front of tractor, in tractor's median plane, engaged or disengaged by push button, Driven by multiplate wet clutch independent of travel clutch; ISO Standard 500-1979;
- Number of shafts: 1;
- Dimension: ISO Standard 500-1979 type 2 (35 mm - 21 splines);
- Method of changing power take-off shaft ends and speed: none;
- Ratio of rotation speeds (engine speed/pto speed): 2.400.

	P.T.O rear	front	
- Height above ground	850	825	mm
- Distance from the median plane of the tractor	0	0	mm
- Distance behind rear axle or forward from frontaxle	475	690	mm
- Direction of rotation (viewed facing driving end)	clockwise	anticlockwise	

Power take-off proportional to ground speed
(independent,not adjustable to 540-1000 rev/min)

- location at rear of tractor, in tractor's median plane, engaged or disengaged by hand level at the left hand side of the seat.
- Number of shafts: 1;
- Travelling distance for one revolution of power take-off shaft: 214 mm;
- Number of power take-off shaft revolutions for one revolution of rear driving wheels: 25.00;
- Direction of rotation with forward gear engaged (viewed facing driving end): clockwise.

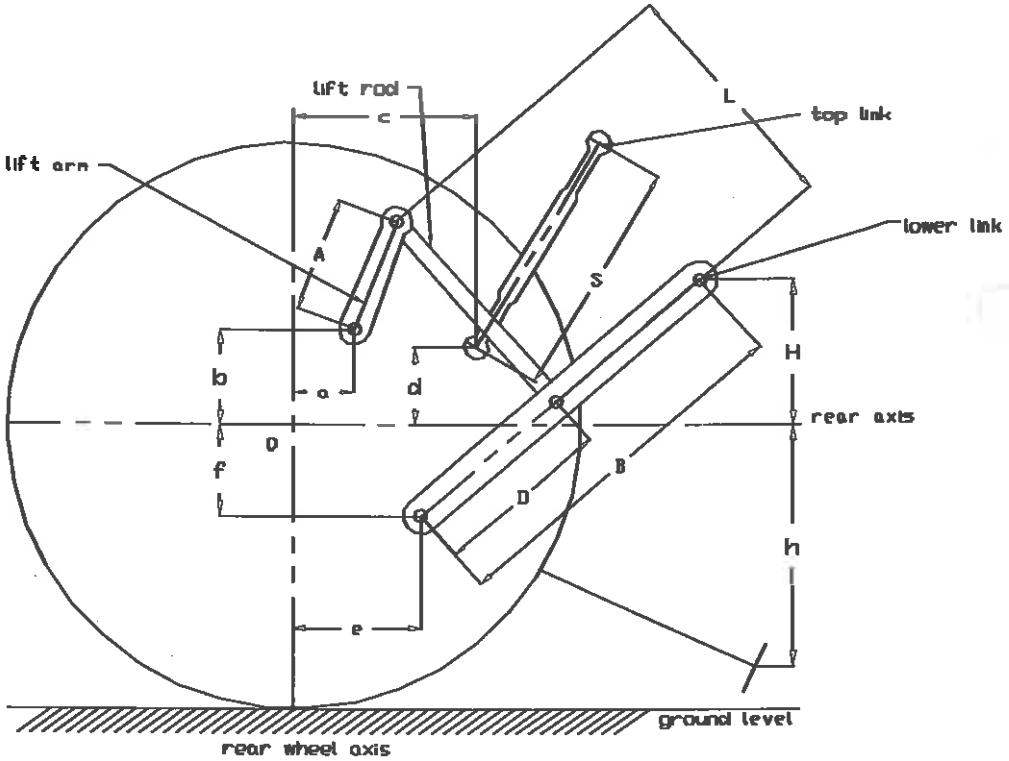
REAR POWER LIFT

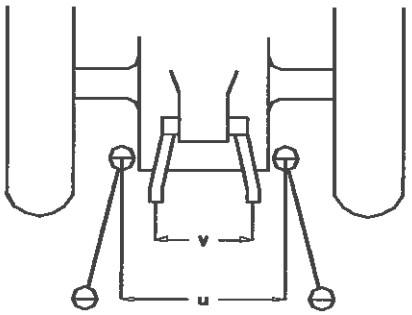
- Make: S+L+H;
- Model: 527.59-electronic control;
- Type: load sensing;
- Type of hydraulic system: open centre system;
- Type and number of cylinders: 1 internal single acting, and 2 external single acting;
- Type of lock for transport: mechanical, with screwed tie rods that lock the lower links;
- 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 HY/ZFS 11/22.5 R206V;
- Trasmission between pump and engine: mechanical;
- Type and number of filters: 1, repeceable paper cartridge;
- Change interval: 2400 hrs or when the filter clogging warning lamp is lighted;
- Oil capacity: 97 dm^3;
- Site of oil reservoir: gear box;
- Position, type and No. of additional oil plugs: 6 ways distributor at rear of tractor;
- Maximum volume of oil available to external cylinders: 15 dm^3;

- Recommended oil: see page 23.

Three-point linkage

- Category: 2 in conformity with ISO 730/1 - 1977;
- Category adapter: none .


lift rod
c
L
top link
lift arm
lower link
A
S
H
b
a
d
rear axis
D
f
B
D
h
e
ground level
rear wheel axis


v
u

REAR 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) 840	840
Distance of lift arm :horizontally	(a) 135	135
pivot point from rear :vertically	(b) 402	402
wheel axis (behind)		
Horizontal distance between the 2 lower link points	(u) 550	550
Horizontal distance between the 2 lift arm end points	(v) 580	580
Length of upper link	(S) from 500 to 770	729
Distance of upper link :horizontally	(c) 335	335
pivot point from rear :vertically	(d) 217-282-347	282
wheel axis		
Distance of lower link :horizontally	(e) 220	220
pivot point from rear :vertically	(f) 230	230
wheel axis		
Distance of lower link pivot point to lift rod pivot points on lower links	(D) 430-470	430
Length of lift rods	(L) from 730 to 870	825
Height of lower hitch points relative to the rear wheel axis		
- in Low position	(h) from 429 to 747	655
- in High position	(H) from 4 to 247	75
- Height above ground of lower hitch points when locked in transport position (*)		930

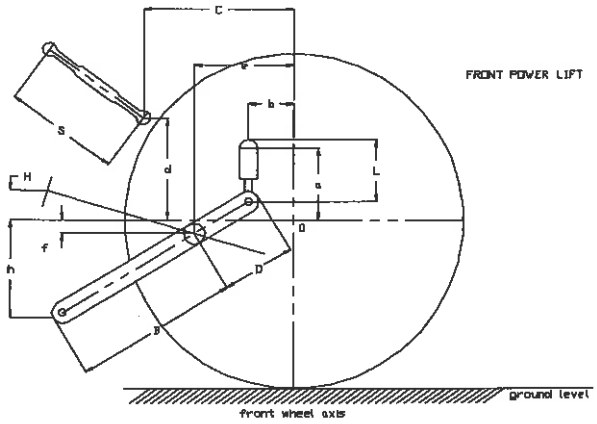
(*) *Assuming the dynamic radius index = 855 mm (ISO 4251/1- 1984)*

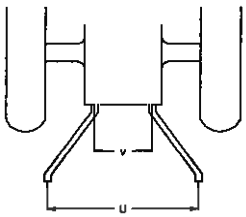
FRONT POWER LIFT

- Make: S+L+H;
- Model: ORIGINAL SAME SYSTEM 526-59 FRONT;
- Type and number of cylinders: 2 at single acting;
- Type of lock for transport: none;
- 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;
- Trasmission between pump and engine: mechanical;
- Type and number of filters: 1, repeceable paper cartridge;
- Change interval: 2400 hrs or when the filter clogging warning lamp is lighted;
- Oil capacity: 97 dm^3;

Three-point linkage

- Category: 2 in conformity with ISO 730/1 - 1977;
- Category adapter: none .





FRONT POWER LIFT

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

	Dimension or range (mm)	Settings used in test (mm)
Length of lower links	(B) 920	920
Distance of cylinders :horizontally pivot point from front :vertically wheel axis (behind)	(a) 328 (b) 320	328 320
Horizontal distance between the 2 lower link points	(u) 870	870
Horizontal distance between the 2 lift arm end points	(v) 360	360
Length of upper link	(S) from 510 to 690	599
Distance of upper link :horizontally pivot point from front :vertically wheel axis	(c) 625-640 (d) 360-420	640 420
Distance of lower link :horizontally pivot point from rear :vertically wheel axis	(e) 470 (f) 60	470 60
Distance of lower link pivot point to cylinders pivot points on lower links	(D) 180	180
Length of cylinders - in Low position - in High position	(L) 329 (L) 503	329 503
Height of lower hitch points relative to the rear wheel axis - in Low position - in High position - Height above ground of lower hitch points (*)	(h) (H)	440 225 920

(*) *Assuming the dynamic radius index = 695 mm (ISO 4251/1- 1984)*

SWINGING DRAWBAR

Optional, not fitted on tractor tested;
- Type: 97313;
- Height above ground (tyre size: 20.8R38): max 565 mm
  min 490 mm;
- Type of adjustment: reversible;
- Distance of hitch point from rear wheel axis;
  .horizontally: 815 mm;
- Distance of hitch point from power take-off shaft end;
  .vertically: 290 - 365 mm below;
  .horizontally: 485 mm behind;
- Lateral adjustment (centre of clevis);
  .right hand: 270 mm;
  .left hand: 270 mm;
- Distance of pivot point from rear wheel axis;
  .horizontally: 485 mm forward;
- Diameter of drawbar pin hole: 33 mm;
- Maximum vertical permissible load: not specified.

HOLED DRAWBAR

- Number of holes: 7;
- Distance between holes: 100 mm;
- Hole diameter: 28.5 mm;
- Thickness/width of the drawbar:30-80 mm;
- Height above ground,(tyre size: 20.8R38) min 300 mm;
  max 1050 mm;
- Horizontal distance behind power take-off shaft end: 590 mm;
- Diameter of the pinhole: 28 mm.

TRAILER HITCH

- Type: SAME DGM-GA 1189/C;
- Hole diameter: 28 mm;
- Height above ground: 525 min. 790 max. mm;
- Distance of hitch point from rear wheel axis,
  horizontally: 560 mm;
- Distance of hitch point from power take-off shaft end;
  .vertically : 175 mm below, 20 mm above;
  .horizontally : 110 mm;
- Maximum vertical permissible load: 14.7 kN.

STEERING

- Specification: hydrostatic steering with BOSCH hydraulic gear pump HY/ZFS 11/11 L201, two double acting rams acting directly on front axle.
- Make: DANFOSS;
- Model: ORBITROL OSPC 160 OR;
- Type: hydrostatic;
- Working pressure: 15 MPa;
- Oil capacity: 97 dm^3;
- Oil change period: 1200 hrs;
- Filter change period: 2400 hrs or when the warning lamp is lighted;
- Recommended oil: see page 20.

BRAKES

Service brake

- Make: S+L+H;
- Model: 524.54;
- Type: oil bath disc, total 6 discs, 4 at front (2 for wheel) and 2 at rear (1 for wheel), all mounted before the final drive. front disc dia = 224 mm , rear disc dia = 280 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, 4 oil bath disc mounted on the pinion shaft in the gear box, ISOBOND SINTERIX 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: 1800 min. - 2060 max. mm;
- Adjustment: changing the position of the rims in respect to the disc.

DRIVING WHEELS

- Number: 4 ;
- Location: 2 at front and 2 at rear;
- Rear track widths: 1750 min. 2250 max. mm;
- Adjustment: changing the position of the rims in respect to the disc.

WHEELBASE: 2750 mm.

PROTECTIVE STRUCTURE

Specifications

- OECD approval number: CSD 1261/6;
- date of approval: 21.02.1990;
- 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: 5250 kg 2750 mm;
- Make: S+L+H;
- Model: C 32;
- 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.

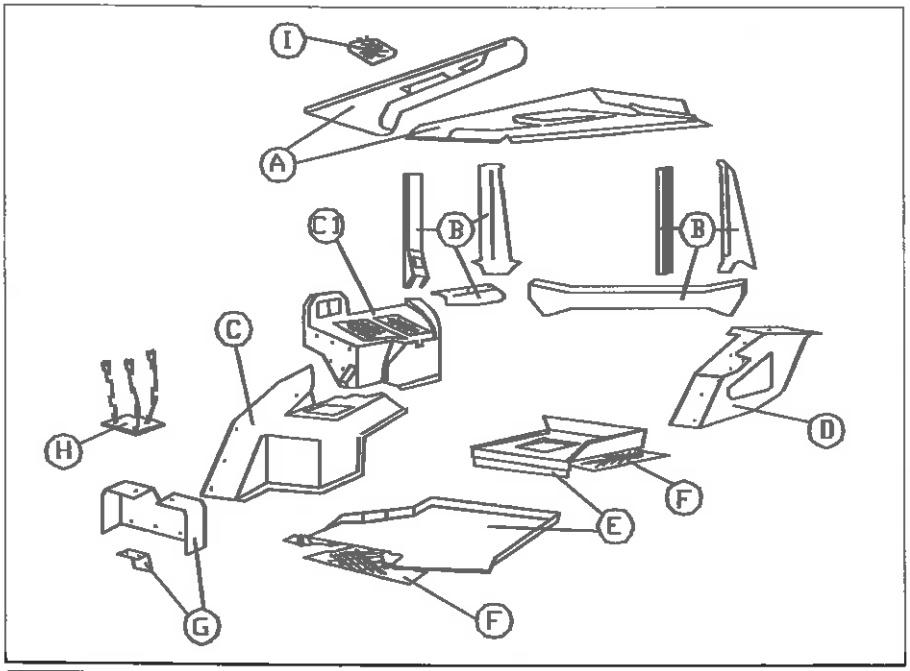
Materials used in the construction and dimensions

- Interior padding: see the next table;
- Glass: security glass, tickness 5 and 6 mm;
  doors: 43 R - 000589;
  windscreen: 43 R - 000589;
  windows: 43 R - 000589;
- 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: U Series 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.



A) Porous 50-60 g/m ., Thickness 1520 mm. + Tassel AD 1200-1400 g/m ., thickness 6 mm. + textil fiber + T.N.T.

B) Pur low density (250-300 kg/m .) coated with expanded laminated PVC

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

C1) Polypropylene thickness 3mm - internal covered with polyurethan foam thickness 30 mm.

D) Tassel AD 1400-1600 g/m + PVC thickness 12 + 22

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

F) Bitumen, thickness 5 mm. + polyrethan foam thickness 20 mm. + thermoplastic film

G) Rubber + Tassel AB x AD 800-1000 g/m . + Tassel AB x BD 1400 g/m . - thickness 23 mm

H) Polyrethan foam thickness 30 mm + bitumen shet

I) Polyrethan foam thickness 30 mm.

LIGHTING

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

	Height above ground of centre with tyre (*) (mm)	Size (mm)	Distance from out side edge of tractor to centre at 1840 mm trak width mm
Headligths	1340	170*110	1020
Front park. lights	1840	110*35	350
Front finger post	1875	110*35	350
Rear park. lights	1865	115*70	390
Rear finger post	1840	75*105	290
Stop	1840	75*105	485
Reflectors	1815	110*35	390

(*) Tyre size: 16.9R30 front - 20.8R38 rear.

TEST CONDITIONS

Overall dimensions with tyres 16.9R30 front and 20.8R38 rear

	Length (mm)	Width (mm) min	Width (mm) max	Height (mm) at top of exaust sil.	Height (mm) at top of protec. struc.
Without ballast	5140	2250	2500	2905	2890
With ballast	5255	2250	2500	2905	2890

. Ground clearance (unballasted tractor): 520 mm;
. Clearance-limiting part: front axle.

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

	Units	Front	Rear	Total
Without driver				
Without ballast	kg	2510	2930	5440
With ballast	kg	3090	3050	6140
With driver				
Without ballast	kg	2530	2985	5515
With ballast	kg	3110	3105	6215

Ballast

	no. of weights	total weight (kg)	water (kg)
front	1	400	-
rear	3 + 3	300	-
additional	-	-	-

Tyres and track width specifications

		front	rear
- Tyres			
. dimensions		16.9R30	20.8R38
. ply rating		6	8
. type		radial	radial
. maximum load (tyre manufacturer's)	daN	1491	2425
. maximum load (tractor manufact.)	daN	1446	2400
. inflation pressure (tyre manufact.)	kPa	130	130
. dynamic radius index	mm	695	855
- Chosen track width	mm	1720	1840
- Tyres on request		18.9/30	18.4/38
		420.70/20	480.70/38

Oils, lubrication and fuel - Capacity and change interval

	capacity dm³	oil change h	filter change h
Engine	15	150	300
Gear box	75	1200	2400 (*)
Front axle	13	1200	-
Final drives (front)	5	1200	-
Rear axle and final drives	In common with gear box		
Hydraulic system	"	"	
Other (steering, etc.)	"	"	

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

Fuel and lubricants reccomended and used in tests all in accordance with API NORM.

Fuel
- Type: AGIP DIESEL, DIN 51601
  (in accordance with the national standard)
- Specific gravity at 15 C: 0.834 g/cm.

Engine oil
- Type: AGIP DIESEL SIGMA S SAE 30;
- Viscosity: 12.50 cSt;
- Classification: API SE - CD.

Transmission oil

	front axle and final drive	rear axle, final drive and gear box
-Type	AGIP ROTRA THT	AGIP ROTRA THT
-Viscosity	11.50 cSt	11.50 cSt
-Viscosity Index	95	95
-Classification	API GL 4	API GL 4

Hydraulic fluid
- Type: AGIP ROTRA THT;
- Viscosity: 11.50 cSt;
- Classification: API GL 4.

Steering oil
- Type: AGIP ROTRA THT;
- Viscosity: 11.50 cSt;
- Classification: API GL 4.

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

II - TEST RESULTS

COMPULSORY TESTS RESULTS

(1) MAIN POWER TAKE-OFF PERFORMANCE

- Date and location of test: 15.10.1991 - I.S.M.A TREVIGLIO (BG) ITALY
- Type of dynamometer: ZÖELLNER 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
MAXIMUM POWER - 2 HOUR TEST						
93.5	2501	1033	27.23	22.71	243	3.43
POWER AT RATED ENGINE SPEED						
93.5	2501	1033	27.23	22.71	243	3.43
STANDARD POWER TAKE-OFF SPEED (1000 +/- 25 rev/min)						
92.5	2424	1001	26.55	22.14	239	3.49
PART LOADS						
i) The torque corresponding to maximum power at rated engine speed						
93.5	2501	1033	27.23	22.71	243	3.43
ii) 85% of torque obtained in i)						
82.0	2574	1063	25.28	21.08	257	3.24
iii) 75% of torque defined in ii)						
62.8	2623	1084	20.95	17.47	278	3.00
iv) 50% of torque defined in ii)						
42.4	2659	1098	16.64	13.88	328	2.54
v) 25% of torque defined in ii)						
21.4	2685	1109	12.46	10.39	486	1.72
vi) unloaded						
0	2709	1119	8.26	6.89	-	-

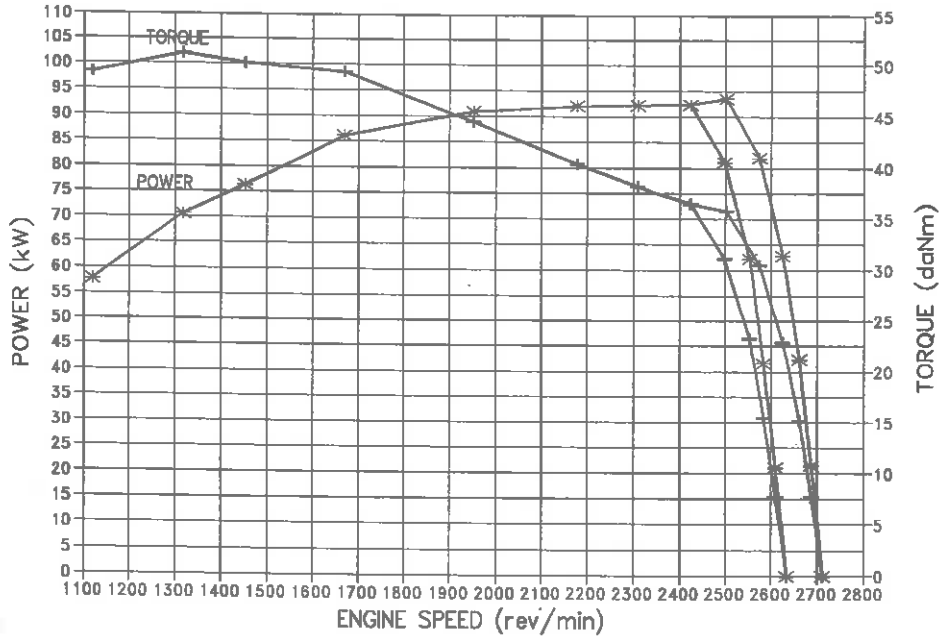
PART LOADS AT STANDARD POWER TAKE-OFF SPEED (1000 rev/min)

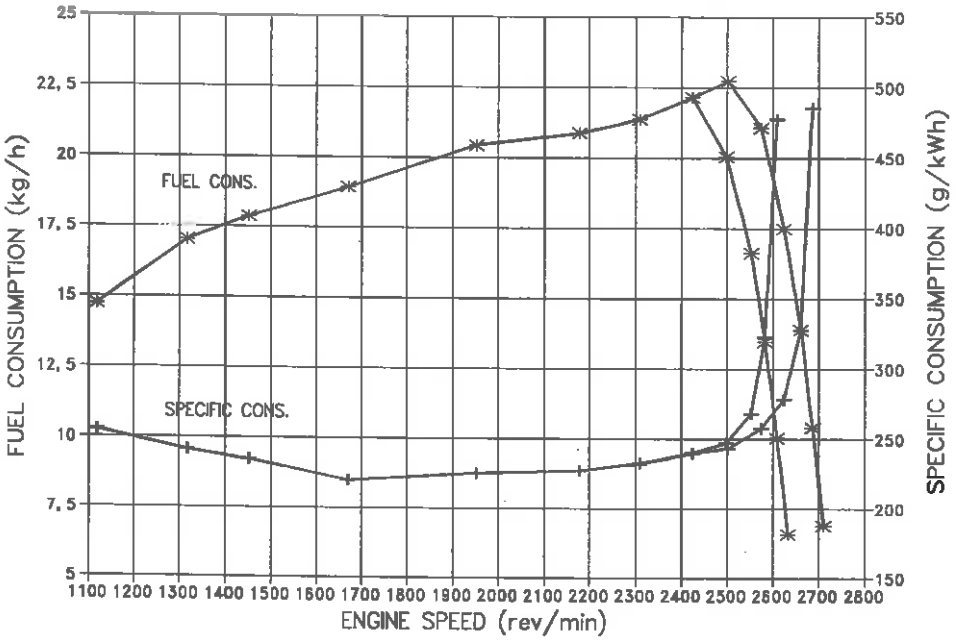
Power	Speed		Fuel consumption			Specific Energy
	Engine	P.T.O.	Hourly		Specific	
kW	rev/min	rev/min	l/h	kg/h	g/kWh	kWh/l
i) The torque corresponding to maximum power available						
92.5	2424	1001	26.55	22.14	239	3.49
ii) 85% of torque obtained at maximum power						
81.1	2498	1032	24.00	20.02	247	3.38
iii) 75% of torque defined in ii)						
62.1	2551	1054	19.93	16.62	268	3.11
iv) 50% of torque defined in ii)						
41.8	2582	1066	16.15	13.47	322	2.59
v) 25% of torque defined in ii)						
21.0	2607	1077	12.02	10.03	477	1.75
iv) unloaded						
0	2632	1087	7.89	6.58	-	-

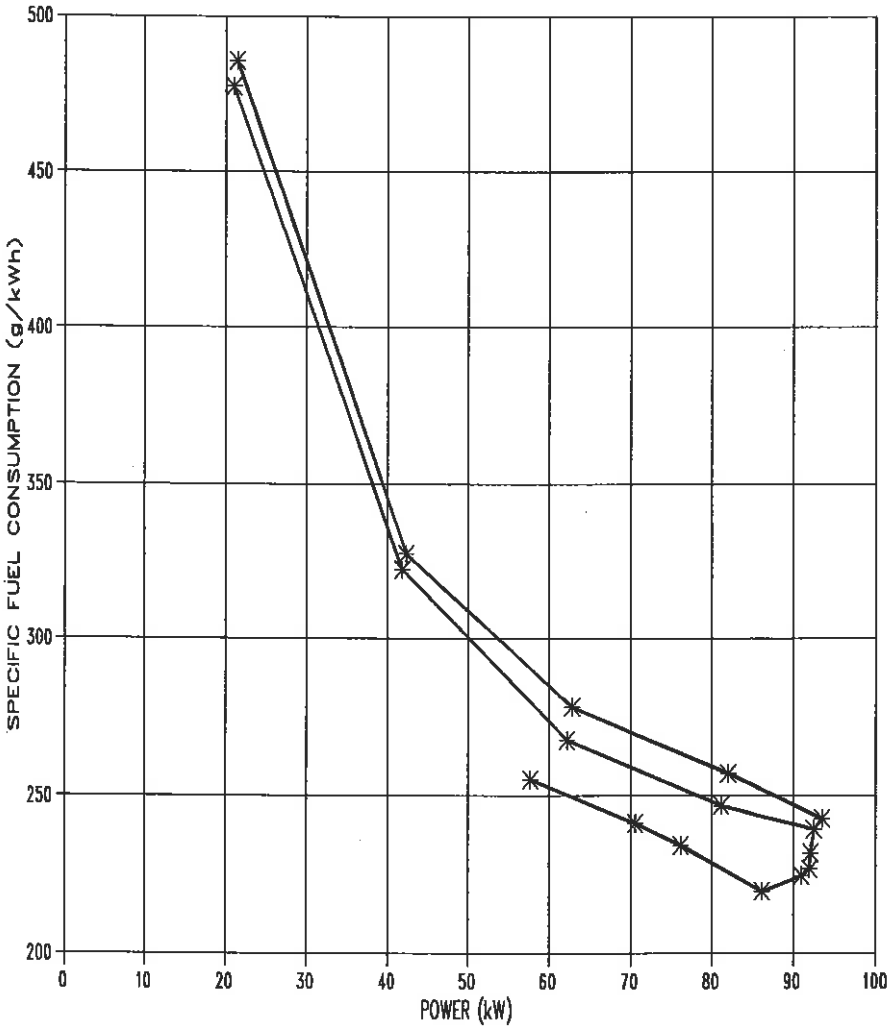
STANDARD SPECIFIC FUEL CONSUMPTION: 257/328/247/322 g/kWh

- No load maximum engine speed: 2709 rev/min
- Torque (1) at maximum power at rated engine speed: 35.74 daNm
- Maximum torque (1) (engine speed: 1319 rev/min) 51.05 daNm
- Mean atmospheric conditions:
  - Temperature ..... 22 °C
  - Pressure ..... 99.0 kPa
  - Relat. humidity ..... 60 %
- Maximum temperatures:
  - Coolant ..... 85 °C
  - Engine oil ..... 113 °C
  - Fuel ..... 30 °C
  - Engine air intake ..... 25 °C

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


TORQUE
POWER
POWER (kW)
TORQUE (daNm)
ENGINE SPEED (rev/min)


FUEL CONS.
SPECIFIC CONS.
FUEL CONSUMPTION (kg/h)
SPECIFIC CONSUMPTION (g/kWh)
ENGINE SPEED (rev/min)


SPECIFIC FUEL CONSUMPTION (g/kWh)
500
450
400
350
300
250
200
0
10
20
30
40
50
60
70
80
90
100
POWER (kW)

2) POWER LIFT AND HYDRAULIC POWER TEST

- Date and location of tests: 16.10.91 - ISMA Treviglio (BG)

2.1 REAR POWER LIFT

		at hitch point	on the frame
Height of lower hitch point above ground in down position	mm	200	200
vertical movement	mm	730	772
Maximum corrected force exerted through full range	daN	4022	4414
Corresponding pressure of hydraulic fluid	MPa	18.5	18.5
Moment about rear axle	daNm	4263	7371
Maximum tilt angle of mast over range of lift	degrees	–	3

Lifting heights relative to the horizontal lower links											
mm	-425	-400	-300	-200	-100	0	100	200	300	305	347
Lifting forces at hitch points											
daN	4022	4100	4230	4434	4787	5062	5297	5582	5778	5783	–
Lifting forces at test frame											
daN	4414	4506	4615	4876	5101	5258	5412	5573	5537	–	5356

2.2 FRONT POWER LIFT

		at hitch point	on the frame
Height of lower hitch point above ground in down position	mm	255	255
vertical movement	mm	665	665
Maximum corrected force exerted through full range	daN	1520	1207
Corresponding pressure of hydraulic fluid	MPa	18.5	18.5
Moment about front axle	daNm	1839	2197
Maximum tilt angle of mast over range of lift	degress	-	0

Lifting heights relative to the horizontal lower links mm	-380	-300	-200	-100	0	100	200	285
Lifting forces at hitch points daN	2285	2079	1932	1824	1736	1653	1565	1520
Lifting forces at test frame daN	2345	2021	1807	1648	1504	1362	1255	1207

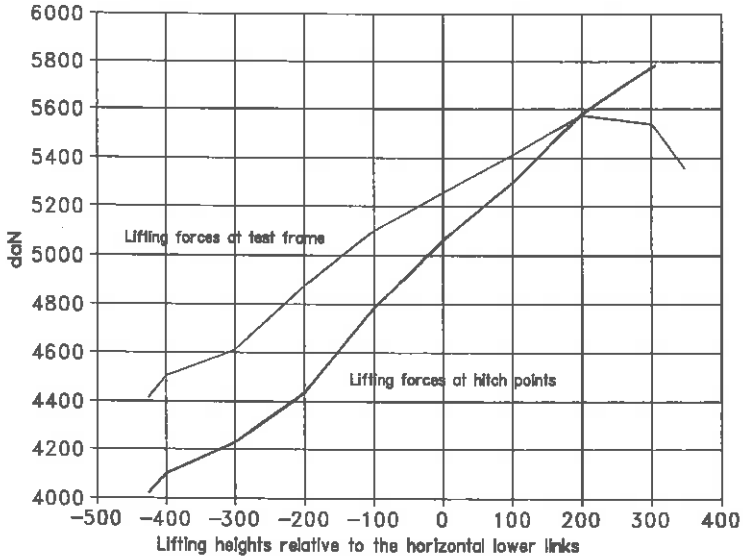
2.3) HYDRAULIC POWER TEST

Sustained pressure with relief valve open: 18.8 MPa;
Pump delivery rate at min pressure: 61.0 l/min;

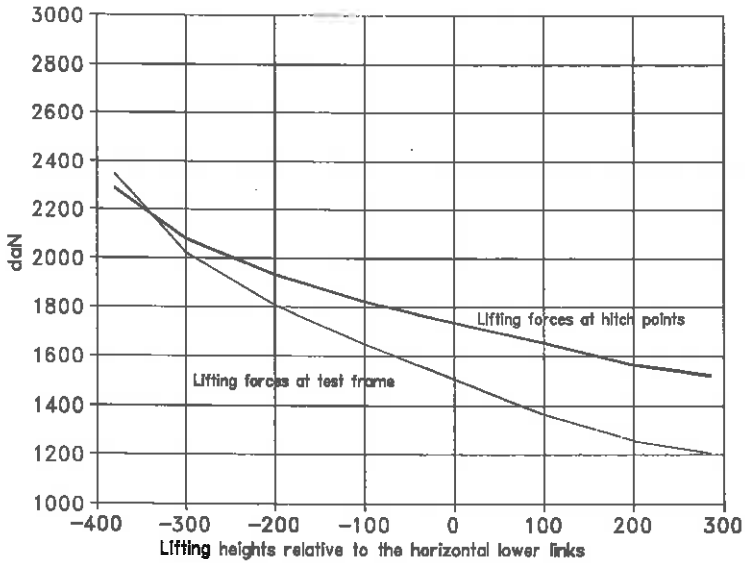
Hydraulic power	flow rate kW	l/min	pressure MPa	oil temp. °C
At 90% of the actual relief valve setting	13.55	50.8	16.0	63
Maximum	15.42	50.0	18.5	66

Tapping point used for test : at rear of tractor;
Hydraulic fluid: see page 23.

Performance of rear power lift:



Performance of front power lift:



3) DRAWBAR PERFORMANCE

- Date of test: 17 to 24.10.1991
- Type of track: concrete
- Type and size of tyres front: 16.9R30 - 6 ply; rear : 20.8R38 - 8 ply

Height of drawbar above ground: 675 mm (unballasted) - 670 mm (ballasted)
Tyre inflation pressure: unballasted .front: 130 kPa .rear: 130 kPa
ballasted .front: 130 kPa .rear: 130 kPa

3.1) MAXIMUM POWER IN TESTED GEARS (unballasted tractor)

Gear	Power	Draw. pull	Speed	Eng. speed	Slip of wheel	Specific ener. cons.		Temperatures fuel	oil	eng.	Atm. temp.	hum.	cond. press.
	kW	daN	km/h	rev/min	%	kWh/l	g/kWh	°C	°C	°C	°C	%	kPa
1R lo	1.75	3501	0.18	2688	15	0.152	5846	38	79	99	16	75	100.?
1R hi	2.40	4121	0.21	2687	15	0.209	4000	38	79	99	16	75	100.5
2R lo	2.65	4148	0.23	2687	15	0.229	3642	38	79	100	16	74	100.4
2R hi	3.16	4217	0.27	2687	15	0.273	3054	39	78	100	15	75	100.3
3R lo	3.53	4236	0.30	2686	15	0.291	2861	39	78	100	16	75	100.4
3R hi	4.15	4271	0.35	2676	15	0.341	2446	39	81	101	16	75	100.3
4R lo	4.54	4306	0.38	2685	15	0.369	2258	38	81	100	16	75	100.4
4R hi	5.39	4315	0.45	2683	15	0.428	1948	38	80	99	15	75	100.3
5R lo	5.01	4330	0.50	2679	15	0.456	1830	39	81	100	16	76	100.3
1S lo	6.42	4364	0.53	2674	15	0.446	1869	39	81	101	15	76	100.3
5R hi	6.90	4286	0.58	2676	15	0.488	1710	37	82	102	16	76	100.4
1S hi	7.43	4318	0.62	2675	15	0.512	1629	38	83	102	16	76	100.4
6R lo	7.54	4244	0.64	2675	15	0.515	1618	38	80	102	16	77	100.3
2S lo	8.17	4327	0.68	2671	15	0.549	1518	37	81	101	17	76	100.2
6R hi	9.18	4409	0.75	2672	15	0.620	1345	37	81	101	17	77	100.2
2S hi	9.44	4249	0.80	2670	15	0.630	1324	37	82	102	17	77	100.3
3S lo	10.47	4235	0.89	2669	15	0.693	1203	35	82	102	17	77	100.3
3S hi	12.26	4286	1.03	2667	15	0.799	1044	35	81	103	17	77	100.2
4S lo	13.42	4276	1.13	2663	15	0.848	984	36	80	103	18	77	100.3
4S hi	15.66	4271	1.32	2661	15	0.978	852	36	81	103	18	77	100.4
5S lo	18.25	4411	1.49	2658	15	1.079	773	37	82	104	18	78	100.4
5S hi	20.13	4167	1.74	2657	15	1.185	704	36	84	103	18	78	100.3
1N lo	21.07	4169	1.82	2652	15	1.233	676	36	83	103	18	78	100.3
6S lo	22.06	4159	1.91	2653	15	1.278	653	36	82	104	17	78	100.4
1N hi	24.02	4081	2.12	2652	15	1.388	601	36	81	103	18	78	100.4
6S hi	25.78	4182	2.22	2647	15	1.473	566	34	81	103	18	79	100.4
2N lo	26.99	4153	2.34	2643	15	1.452	574	34	82	104	18	79	100.3
2N hi	31.02	4107	2.72	2634	15	1.587	525	35	82	103	19	79	100.3
3N lo	34.17	4087	3.01	2624	15	1.638	509	35	81	104	19	79	100.2
3N hi	38.57	3969	3.50	2616	15	1.797	464	35	81	105	19	79	100.2
4N lo	43.62	4101	3.83	2603	15	1.935	431	34	80	104	18	78	100.2
4N hi	50.14	4057	4.42	2590	15	2.101	397	34	80	104	18	79	100.2
5N lo	55.23	3938	5.05	2579	14	2.236	373	35	79	105	19	79	100.3
5N hi	65.64	4033	5.86	2533	13	2.455	340	35	80	105	19	79	100.4
6N lo	66.76	3687	6.52	2506	11	2.421	345	34	80	105	19	80	100.3
6N hi	69.00	3202	7.76	2501	9	2.491	335	34	81	104	19	80	100.4
1F lo	72.29	3052	8.53	2506	8	2.621	318	35	81	105	19	80	100.4
1F hi	73.38	2640	10.01	2498	7	2.644	315	34	80	106	19	80	100.3
2F lo	69.58	2233	11.22	2506	6	2.523	331	34	80	105	19	80	100.4

Gear	Power	Draw. pull	Speed	Eng. speed	Slip of wheel	Specific ener.cons.		Temperatures fuel cool. eng			Atm. cond temp.	hum.	pres.
	kW	daN	km/h	rev/min	%	kWh/l	g/kWh	°C	°C	°C	°C	%	kPa

3.2) MAXIMUM POWER IN TESTED GEARS (ballasted tractor)

1R lo	2.01	4026	0.18	2683	15	0.162	5149	39	80	100	18	83	99.3
1R hi	2.41	4126	0.21	2683	15	0.194	4303	38	80	100	18	83	99.3
2R lo	2.81	4393	0.23	2682	15	0.225	3708	38	79	101	18	83	99.3
2R hi	3.56	4742	0.27	2681	15	0.274	3048	38	80	101	18	83	99.3
3R lo	3.82	4587	0.30	2682	15	0.305	2736	37	81	100	19	83	99.4
3R hi	4.30	4428	0.35	2681	15	0.329	2535	37	81	100	19	83	99.3
4R lo	4.75	4499	0.38	2678	15	0.354	2358	36	80	101	19	83	99.2
4R hi	5.61	4590	0.44	2674	15	0.397	2103	37	81	101	18	84	99.2
5R lo	7.19	5178	0.50	2672	15	0.492	1697	37	83	102	19	84	99.3
1S lo	7.61	5172	0.53	2670	15	0.508	1643	37	83	103	19	83	99.3
5R hi	8.37	5198	0.58	2670	15	0.558	1496	36	82	102	19	83	99.2
1S hi	8.83	5129	0.62	2671	15	0.599	1393	37	82	102	19	83	99.2
6R lo	9.27	5217	0.64	2669	15	0.614	1359	36	82	103	19	84	99.2
2S lo	9.67	5123	0.68	2669	15	0.639	1305	36	81	103	18	83	99.2
6R hi	10.54	5129	0.74	2667	15	0.687	1214	36	82	103	18	83	99.3
2S hi	11.09	5054	0.79	2667	15	0.720	1159	37	83	103	18	83	99.3
3S lo	11.98	4903	0.88	2667	15	0.779	1071	36	83	104	17	83	99.3
3S hi	14.59	5099	1.03	2665	15	0.932	894	35	83	104	18	82	99.4
4S lo	16.29	5190	1.13	2661	15	1.037	804	35	84	104	18	82	99.4
4S hi	18.41	5061	1.31	2659	15	1.117	747	35	82	104	17	81	99.3
5S lo	20.74	5047	1.48	2653	15	1.193	699	34	82	105	17	81	99.2
5S hi	24.32	5092	1.72	2651	15	1.384	602	34	82	105	17	82	99.2
1N lo	25.83	5168	1.80	2645	15	1.408	592	34	83	106	18	83	99.2
6S lo	25.80	4915	1.89	2646	15	1.411	591	34	82	105	17	83	99.4
1N hi	29.31	5050	2.09	2637	15	1.509	553	34	83	106	18	83	99.5
6S hi	30.54	4998	2.20	2637	15	1.570	531	35	83	106	17	83	99.5
2N lo	32.30	5036	2.31	2634	15	1.648	506	35	83	106	17	83	99.6
2N hi	36.63	4903	2.69	2624	15	1.766	472	34	82	106	17	83	99.5
3N lo	41.45	4992	2.99	2621	15	1.964	425	34	83	106	17	84	99.6
3N hi	48.45	5057	3.45	2594	15	2.062	405	33	82	106	17	84	99.5
4N lo	52.71	5021	3.78	2585	15	2.166	385	33	81	106	17	84	99.4
4N hi	60.84	5013	4.37	2563	15	2.349	355	34	82	107	16	83	99.4
5N lo	67.25	5014	4.83	2513	15	2.460	339	35	81	107	16	83	99.5
5N hi	70.59	4323	5.88	2498	11	2.560	326	36	82	107	17	83	99.4
6N lo	72.17	3931	6.61	2501	9	2.617	319	36	81	108	17	83	99.3
6N hi	73.34	3377	7.82	2513	8	2.683	311	36	82	107	17	82	99.3
1F lo	72.00	3018	8.59	2516	7	2.672	312	36	81	107	17	83	99.3

Gear	Power	Draw. pull	Speed	Eng. speed	Slip of wheel	Specific ener.cons.		Temperatures fuel	cool.arg.		Atm. cond temp.	hum.	pres.
	kW	daN	km/h	rev/min	%	kWh/l	g/kWh	°C	°C	°C	°C	%	kPa
3.3.1) FIVE HOUR TEST at 75% of pull at maximum power													
6N lo	56.85	2942	6.96	2572	7	2.233	373	37	88	106	16	81	99.8
3.3.2) FIVE HOUR TEST at pull corresponding to 15% wheelslip with additional ballast 300 kg.													
5N lo	71.25	5016	5.12	2550	(*)	(*)	(*)	38	88	106	15	78	100.2

Oil consumption during ten hours duration of tests 3.3.1 and 3.3.2: 70 g/h .
(*) *Having the test been carried out with additional ballast, these figures are irrelevant.*

4) TURNING AREA AND TURNING CIRCLE

Wheel equipment front: 19.9R30 - 6 ply;
rear: 20.8R38 - 8 ply.

Track width front: 1720 mm;
rear : 1840 mm.

	With brakes on four wheels		Without brakes	
	right hand (m)	left hand (m)	right hand (m)	left hand (m)
radius of turning area	5.42	5.48	5.90	5.97
radius of turning circle	5.16	5.22	5.70	5.77

5) LOCATION OF CENTRE OF GRAVITY

Height above ground ..... 1021 mm
Distance forward from rear wheel axis .... 1262 mm
Distance from tractor's median plane ..... 0 mm

6) BRAKING PERFORMANCE

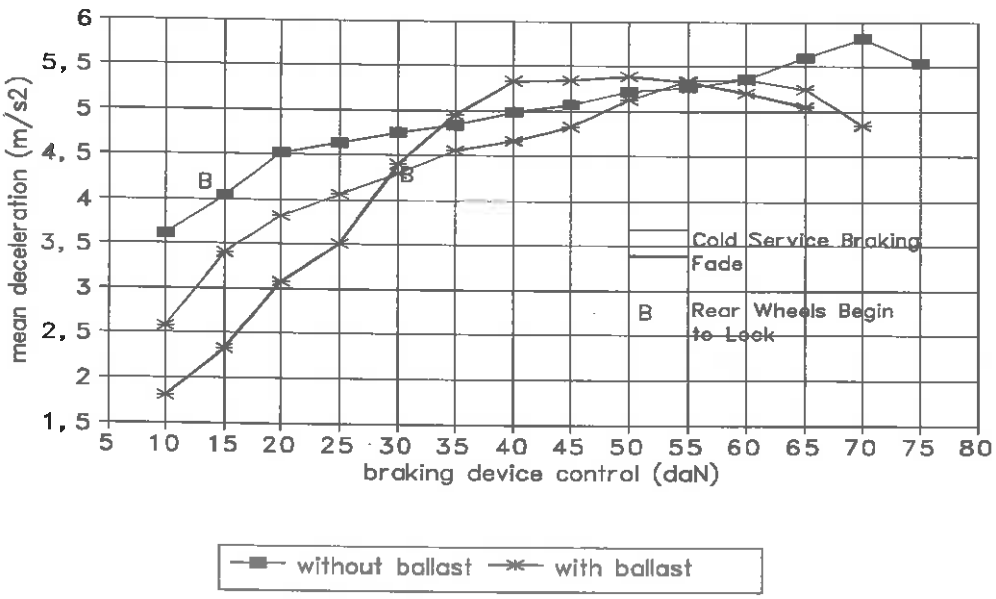
Date of test: 30.11.1990;
Type of track: asphalt;
Type of decelerometer: PEISELER.

Tractor masses during test (*)

	front axle (kg)	rear axle (kg)	total (kg)
without ballast	2530	2955	5525
with ballast	2820	5395	8215

(*) *Tractor carrying a driver and the decelerometer (85 kg)*

6.1) SERVICE BRAKES (all wheels braked)



Speed before application of brakes (unballasted tractor): 42.5 km/h.
Speed before application of brakes (ballasted tractor): 42.5 km/h.
The tractor brakes were heated by towing of the tractor for 1 km.
Maximum deviation of tractor from its original course: no significant deviation.
Abnormal vibration: none .