ISTITUTO SPERIMENTALE PER
LA MECCANIZZAZIONE AGRICOLA
SEZIONE DI TREVIGLIO

Antonio CARRARO 22-5531
TEST no. 044.

O.E.C.D. no. 1228

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



Report test of: Antonio CARRARO 22*5531

Commercial denomination : Tigrone 5500 Tritrac "4WD"

Submitted for test by: Antonio CARRARO S.p.A.
Via Caltana 24
Campodarsego (PD) Italy

Date of O.E.C.D. approval: 05.01.1990
Period of test: July-August 1989

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

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All stated dimensions and tests referred to tyre size 7.50/16 (4 ply) at front and 7.50/16 (4 ply) at rear, as well as to track widths 1015 mm at front and 1040 mm at rear.

- Tractor manufacturer
. Name: Antonio CARRARO S.p.A.;
. Address: Via Caltana, 24 Campodarsego (PD) - ITALY;
- Location of tractor assembly: Capodarsego (PD) - ITALY;
- Submitted for test by: the manufacturer;
- Selected by: the manufacturer with the agreement of ISMA;
- Place of running in: Campodarsego (PD) - ITALY;
- Duration of running: 50 hours.
- Location of test: I.S.M.A. Via Milano, 43 - Treviglio (BG) ITALY

I - SPECIFICATION OF TRACTOR

TRACTOR

- Make: Antonio CARRARO ;
- Model: 22-5531;
- Commercial denomination: TIGRONE 5500 TRITRAC;
- Type: Wheeled tractor, unit construction, all wheels drive tractor;
- Number of driving wheels: 4;
- Serial number: 01347;
- First serial number: 00001 .

ENGINE

- Make: VM Motori ;
- Model: 88 A/1 ;
- Type: watercooled 4 stroke diesel engine indirect injection;
- Serial number: 07071 .

Cylinders

- Number/disposition: 3, vertical in line ;
- Bore/stroke: 94*100 mm;
- Capacity: 2082 cm^3;
- Compression ratio: 21.5 / 1
- Arrangement of valves: overhead ;
- Cylinder liners: wet liners .

Supercharging none.

Fuel system

- Fuel feed system: AC membrane pump ;
- Make, model and type of fuel filter: FIAMM Fna 151/00 ;
- Capacity of fuel tank: 21 dm^3;
- Make, model and type of injection pump: BOSCH PFR 1K 90A 472, immersed pump, one per cylinder, without serial number, in line injection pump;

- Manufacturer's production setting of injection pump:
  .flow rate:47 +/-2 mm^3/stroke at rated speed and full load corresponding to 12.76 dm^3/h;
  .timing: 11° before TDC;
- Make, model and type of injectors: BOSCH KBE 58 S 4/4 ;
- Injectors pressure: 14 +/- 1 MPa.

Governor

- Make: VM Motori ;
- Model: 1 198 0030 A ;
- Type: mechanical variable speed ;
- Governor range of engine speed: from 950 to 3204 rev/min. ;
- Rated engine speed: 3000 rev/min.

Air cleaner

- Main filter
  . make: Antonio CARRARO ;
  . model: 2 4504 004 ;
  . type: dry paper element filter ;
  . location: rear of engine ;
- Maintenance indicator: acoustic and lighting warning .

Lubrication system

- Type of feed pump: forced feed from gear pump ;
- Total oil capacity including filter: 5.8 dm^3;
- Oil change period: 150 hrs;
- Type of filter: FIAMM FT 4670-IN ;
- Number: 1 ;
- Filter change period: 300 hrs;
- Oil specifications: see page 19.

Cooling system

- Type and detail: water cooling with impeller pump, overpressure valve set to 75 kPa ;
- Specification of fan: propeller fan driven by engine shaft;
- Number of fan blades: 6 ;
- Fan diameter: 360 mm;
- Coolant capacity:5.6 dm^3;
- Type of temperature control: thermostat.

Starting system

- Make: BOSCH ;
- Model: JF 12 V ;
- Type: electromagnetic engagement ;
- Starter motor power rating: 2.4 kW ;
- Safety device: preventig engine start on the clutch pedal ;
- Starting system for low temperatures: glow plugs .

Electrical equipement

- Voltage: 12 V;
- Generator:
  . make: BOSCH ;
  . model: G1 14V 33A 27;
  . type: alternator :
  .power: 460 W;
- Battery: 1 lead acid;
  .capacity: 100 Ah at 20 hours.

Exhaust system

- Make: Antonio CARRARO ;
- Model: 3 4605 016 ;
- Type: reflection absorption ;
- Location: on the right of engine, vertical position;
- Height of outlet above ground: 1260 mm.

TRANSMISSION

Clutch: utilized only for travelling of tractor

- Make: VALEO ;
- Model: DBR 215 ;
- Type: single disk dry clutch ;
- Number of plates: 1 ;
- Plates diameter: 215 mm ;
- Control system: mechanical operated by pedal .

Gear box

- Make: Antonio CARRARO ;
- Model: 1 0401 027 ;
- Type: mechanical syncromesh speed change gear ;
- Arrangenent: four speeds forward, with three ranges of speed and one reverse group ;
- Number of speeds : 12 forward and 12 reverse;
- Available options: none .

Rear axle and final drives

- Make: Antonio CARRARO ;
- Model: 1 0605 006 ;
- Type: rigid with bevel gear and differential ;

Differential lock

- Make: own make ;
- Model: 1 0905 010 ;
- Type: mechanical ;
- Control system: engaged or disengaged by hand lever .

Front axle and final drives

- Make: own make ;
- Model: 1 0601 002 ;
- Type: steering wheels with bevel gear and differential ;

Differential lock

- Make: own make ;
- Model: 1 0905 003
- Type: mechanical ;
- Control system: mechanical with pedal .

Transmission lubrication

- Gear box and rear axle (in common)
  . total capacity : 22 dm^3;
  . change period: 300 hrs;

- Front axle and hydraulic system (in common)
  . total capacity including filter : 13 dm^3;
  . change period: 300 hrs;
  . filter change period : 600 hrs;
- Recommended oil: see page 19.

Total rations and speeds

Gear	Group	Number of engine revolutions for one revolution of the driving wheels	Nominal travelling speed at a rated engine speed of 3000 rev/min (*) (km/h)
	FORWARD		
1	S	901.139	0.47
2	S	468.895	0.90
3	S	312.007	1.36
4	S	173.705	2.44
1	N	264.269	1.60
2	N	137.509	3.08
3	N	91.499	4.63
4	N	50.941	8.32
1	F	77.500	5.47
2	F	40.326	10.52
3	F	26.833	15.80
4	F	14.939	28.39
	REVERSE		
1	S	1081.366	0.39
2	S	562.674	0.75
3	S	374.408	1.13
4	S	208.446	2.03
1	N	317.123	1.34
2	N	165.011	2.57
3	N	109.799	3.86
4	N	61.129	6.94
1	F	93.000	4.56
2	F	48.391	8.76
3	F	32.200	13.17
4	F	17.927	23.66

(*) Calculated with a tyre dynamic radius index of 375 mm.
(ISO 4251/1 - 1984) (CUNA norm NC053 - 05)
- Number of revolutions of front wheels for one revolution of rear wheels: 1 .

POWER TAKE-OFF

Power take-off proportional to engine speed (see the next table)

- Type: independent, at rear of tractor, in tractor's median plane, engaged or disengaged by hand lever . Driven by multiplate wet clutch independet of travel clutch; ISO Standard 500-1979 .
- Number of shafts: 2 ;
- Method of changing of speed (only for lower p.t.o.) and power take-off shaft ends : speed selection by hand lever ; no changing p.t.o. shaft ends.
- Location : at rear of tractor;

	P.T.O. lower	P.T.O. upper
- Height above ground (with tyre size 7.50/16) ..	375 mm	535 mm
- Distance from the median plane of the tractor ..	0 mm	0 mm
- Distance behind rear axle.....	327 mm	327 mm
- Direction of rotation (viewed facing driving end):	clockwise	anti-cl.

1) 540 rev/min

- Dimension: ISO Standard 500-1979 type 1 (35 mm - 6 splines);
- PTO speed at rated engine speed .....: 612 rev/min;
- Engine speed at standard power take-off speed: 2646 rev/min;
- Ratio of rotation speeds (engine speed/pto speed): 4.900
- Maximum power and torque trasmissible: 60 kW and 105.95 daNm.

2) 1000 rev/min

- Dimension: ISO Standard 500-1979 type 2 (35mm - 21 splines);
- PTO speed at rated engine speed .....: 1286 rev/min;
- Engine speed at standard power take-off speed: 2333 rev/min;
- Ratio of rotation speeds (engine speed/pto speed): 2.333
- Maximum power and torque trasmissible: 60 kW and 57.29 daNm.

Power take-off proportional to ground speed (see the next table)

- 540 rev./min.
- Travelling distance for one revolution of power take-off shaft: 659 mm
- Number of power take-off shaft revolutions for one revolution of rear driving wheels: 3.571
- Direction of rotation with forward gear engaged (viewed facing driving end): clockwise.

Table of P.T.O. proportional to engine speed

P.T.O.	engine speed rev/min	pto speed rev/min	direction of rotation	engine speed rev/min	pto speed rev/min	direction of rotation
* upper	2646	2646	anti-clock	2333	2333	anti-clock
* lower	2646	540	clockwise	2333	1000	clockwise

Table of P.T.O. proportional to ground speed

P.T.O.	p.t.o. speed rev/min	wheels rev/min	direction of rotation with forward gear	p.t.o. speed rev/min	wheels rev/min	direction of rotation with forward gear
* upper	2646	151	anti-clock.	2333	133	anti-clock.
* lower	540	151	clockwise	1000	133	clockwise

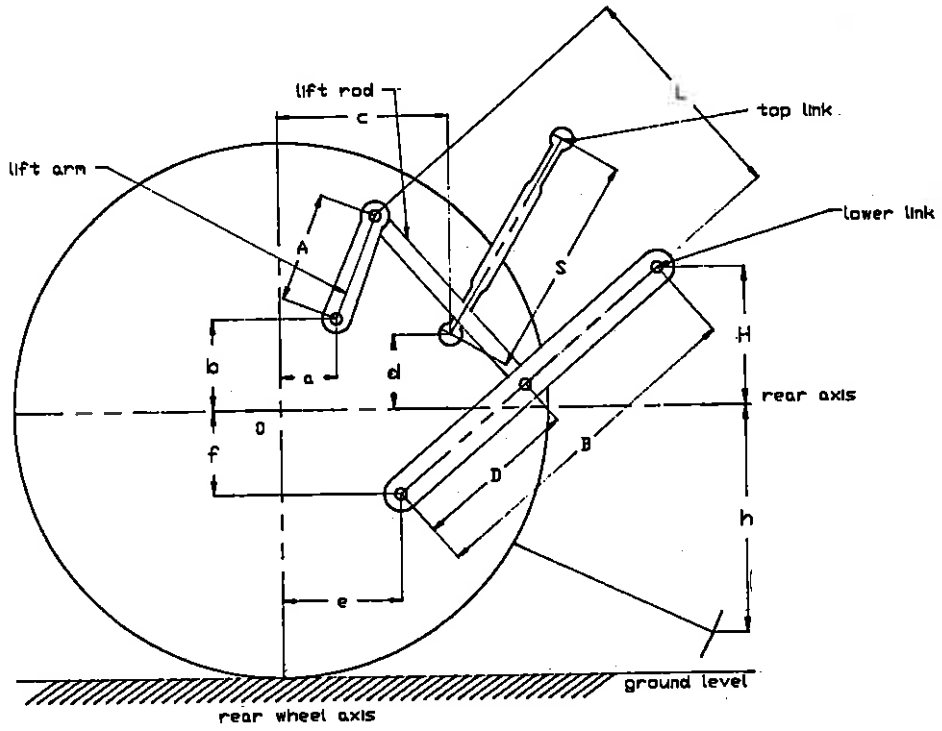
* : the two p.t.o. are permantly engaged to each other.

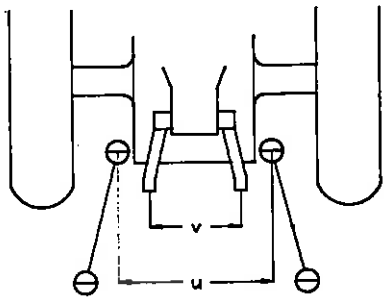
POWER LIFT

- Make: MITA
- Model: C. R. 80 ;
- Type: load sensing ;
- Type of hydraulic system: closed centre system ;
- Type and number of cylinders: 2 external hydraulic jack at simple effect ;
- Type of lock for transport: mechanical, with screwed tie rods that lock the lower links ;
- Rilief valve pressure setting: 14 +/- 0.5 MPa;
- Opening pressure of anti-shock valve: 18.0 MPa;
- Lift pump type: hydraulic rotary pump, driven by engine shaft, pump make LAMBORGHINI HLPS / L211C ;
- Trasmission between pump and engine: mechanical ;
- Type and number of filters: 1, repaceable paper cartridge ;
- Changing: when the filter clogging warning lamp is lighted ;
- Oil capacity: 13 dm^3 in common whit front axle and hydraulic system
- Site of oil reservoir : front axle ;
- Position, type and No. of additional oil plugs: 3 ways distributor at rear of tractor ;
- Maximum volume of oil available to external cylinders: 4 dm^3;
- Recommended oil: see page 19.

Three-point linkage

- Category: 1 N 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
h
e
ground level
rear wheel axis


v
u

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

		Dimension or range (mm)	Settings used in test (mm)
Length of lifth arms	(A)	250	250
Length of lower links	(B)	600	600
Distance of lift arm :horizontally	(a)	195	195
Pivot point from rear :vertically	(b)	367	367
wheel axis (behind)			
Horizontal distance between the 2 lower link points	(u)	305	305
Horizontal distance between the 2 lift arm and points	(v)	470	470
Length of upper link	(S)	from 335 to 510	360
Distance of upper link :horizontally	(c)	335	335
pivot point from rear :vertically	(d)	285	285
wheel axis			
Distance of lower link :horizontally	(e)	110	110
pivot point from rear :vertically	(f)	100	100
wheel axis			
Distance of lower link pivot point to lift rod pivot points on lower links	(D)	420	420
Length of lift rods	(L)	from 438 to 555	450
Height of lower hitch points relative to the rear wheel axis			
- in Low position	(h)	from 190 to 360	220
- in High position	(H)	from 110 to 280	250
Height above ground of lower hitch points when locked in transport position (*)			620

(*) Assuming the dynamic radius index = 375 mm (ISO 4251/1 - 1984) (CUNA norm NC 053 -05)

SWINGING DRAWBAR : none .

HOLED DRAWBAR

- Number of holes: 7 ;
- Distance between holes: 70 mm;
- Hole diameter: 20.5 mm;
- Thickness/width of the drawbar:20-60 mm;
- Height above ground, minimum 200 mm;
  maximum 600 mm;
- Horizontal distance behind power take-off shaft end: 385 mm;
- Diameter of the pinhole: 20 mm.

TRAILER HITCH

- Type: Antonio CARRARO DGM GA 980 B 6t V0,5;
- Hole diameter: 20.5 mm
- Height above ground: 225 min. - 555 max. mm ;
- Distance of hitch point from rear wheel axis, horizontally: 510 mm ;
- Distance of hitch point from power take-off shaft end
  . vertically :below 155 mm, above 175 mm;
  . orizontally : 180 mm;
- Maximum vertical permissible load: 5.0 kN.

STEERING

- Specification: hydrostatic steering with unit with 2 simple effect jacks acting on front axle ;
- Make: DANFOSS ;
- Model: OSPC 100 LS ;
- Type: "load sensing" ;
- Working pressure: 6.5 - 7 MPa;
- Oil capacity: 13 dm^3 in common whit front axle and hydraulic system ;
- Oil change period: 300 hrs;
- Filter change period: 600 hrs;
- Recommended oil: see page 19.

BRAKES

Service brake

- Make: Antonio CARRARO ;
- Model: 1 0910 017 ;
- Type: drum brakes with brake shoes 252 * 50 mm acting on rear wheels and simultaneously, through the permanent integral trasmission, also on front wheels ;
- Method of operation: mechanical acting with 2 pedals ;
- Trailer braking take-off: none .

Parking brake

- Type: mechanical acting on the service brake ;
- Method of operation: mechanically by hand lever .

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

STEERING WHEELS

- Number: 2 ;
- Location : at front ;
- Track widths: 1015 min. - 1160 max. mm;
- Regulation: changing the position of the rims in rispect to the disc.

DRIVING WHEELS

- Number: 4 ;
- Location: 2 at front and 2 at rear;
- Track widths: 970 min. 1160 max. mm;
- Regulation: changing the position of the rims in respect to the disc.

WHEELBASE: 1275 mm.

ROLL - BAR

Specifications

- EEC approval number: e2 SV2 001 ;
- Make: Antonio CARRARO ;
- Model: T. S. 09 ;
- Type: roll-bar ;
- Manufacturer's name: Antonio CARRARO S.p.A.
  . address: Via Caltana, 24 - Campodarsego (PD) ;
- Protective device: roll-bar tiltable.

Materials used in the construction and dimensions

See EEC Test Report on Roll-Bar.

DRIVER'S SEAT

- Make: BOSTROM ;
- Model: Mini Baltic XH2 ;
- Type: upholstered seat with back rest ;
- Type of suspension: adjustable spring ;
- Type of damping: shock absorber ;
- Range of adjustment, longitudinal 150 mm;
  vertical ... 70 mm.

PASSENGER'S SEAT : none.

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 trac tor to centre at 1040 mm track width (mm)
Headligths	555	145*90	540
Front park. lights	850	75*60	270
Front finger post	850	75*60	190
Rear park. lights	850	55*60	285
Rear finger post	850	55*60	185
Stop	850	55*60	285
Reflectors	850	45*50	235

(*) Tyre size: 7:50/16 front - 7.50/16 rear.

TEST CONDITIONS

Overall dimensions with tyres 7.50/16 front and 7.50/16 rear

	Length (mm)	Width (mm) min	Width (mm) max	Height (mm) exaust sil.	Height (mm) at top of Roll-bar
Without ballast	3090	1180	1370	1260	2040

. Ground clearance (unballasted tractor): 250 mm;
. Clearance-limiting part: front axle.

Tractor mass (with tanks full, with roll-bar, water in tyres none)

	Units	Front	Rear	Total
Without driver				
Without ballast	kg	895	520	1415
With ballast	kg	895	586	1481
With driver				
Without ballast	kg	910	580	1490
With ballast	kg	910	646	1556

Ballast

	no. of weights	total weight (kg)	water (kg)
front	-	-	-
rear	1 + 1	66	-
additional	-	-	-

Tyres and track width specifications

	front	rear
- Tyres		
. dimensions	7.50/16	7.50/16
. ply rating	4	4
. type	radial	radial
. maximum load (tyre manufacturer's) daN	481	481
. maximum load (tractor manufact.) daN	481	481
. inflation pressure (tyre manufact.)kPa	120	120
. dynamic radius index .....mm	375	375
- Chosen track width .....mm	1015	1040
- Tyres on request	8.25 - 16 4 pr	
	7.50 - 18 6 pr	
	250/80 - 18 4 pr	

Oils, lubrication and fuel
Capacity and change interval

	capacity dm³	oil change h	filter change h
Engine	5.8	150	300
Gear box	22	300	-
Front axle and final drives ...	13	300	600
Rear axle and final drives	in common with gear box		
Hydraulic system	in common with front axle		
Other (steering, etc.)	''	''	

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: 0.840 g/cm³

Engine oil
- Type: ESSO UNIFARM, SAE 15 W 40 ;
- Viscosity: 14.55 cSt;
- Classification: API CD - SF .

Transmission oil

	front axle and final drive	rear axle, final drive and gear box
-Type	ESSO UNIFARM SAE 15 W 40	ESSO TORQUE FLUID 56
-Viscosity	14.55 cSt	9.0 cSt
-Viscosity index	145	142
-Classification	API CD-SF	API GL 4

Hydraulic fluid
- Type: ESSO UNIFARM SAE 15 W 40;
- Viscosity: 14.55 cSt;
- Classification: API CD-SF.

Steering oil
- Type: ESSO UNIFARM SAE 15 W 40;
- Viscosity: 14.55 cSt;
- Classification: API CD-SF.

Grease
- Type: ESSO GP GREASE ;
- Number of lubrication points: 14 .

II - TEST RESULTS

A. COMPULSORY TESTS RESULTS

(1) MAIN POWER TAKE-OFF PERFORMANCE

- Date and location of test: 21.07.1989 - I.S.M.A. TREVIGLIO (BG) ITALY
- Type of dynamometer: ZOELLNER 350 AC

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						
27.8	3000	612	12.76	10.72	385	2.18
POWER AT RATED ENGINE SPEED						
27.8	3000	612	12.76	10.72	385	2.18
STANDARD POWER TAKE-OFF SPEED (540 +/- 10 rev/min)						
27.5	2675	546	11.67	9.80	357	2.35
PART LOADS						
i) The torque corresponding to maximum power at rated engine speed						
27.8	3000	612	12.76	10.72	385	2.18
ii) 85% of torque obtained in i)						
24.5	3123	637	10.40	8.73	356	2.36
iii) 75% of torque defined in ii)						
18.6	3145	642	8.47	7.11	383	2.19
iv) 50% of torque defined in ii)						
12.5	3165	646	7.07	5.94	476	1.77
v) 25% of torque defined in ii)						
6.2	3187	650	5.34	4.49	720	1.17
vi) unloaded						
0	3204	654	3.97	3.34	-	-

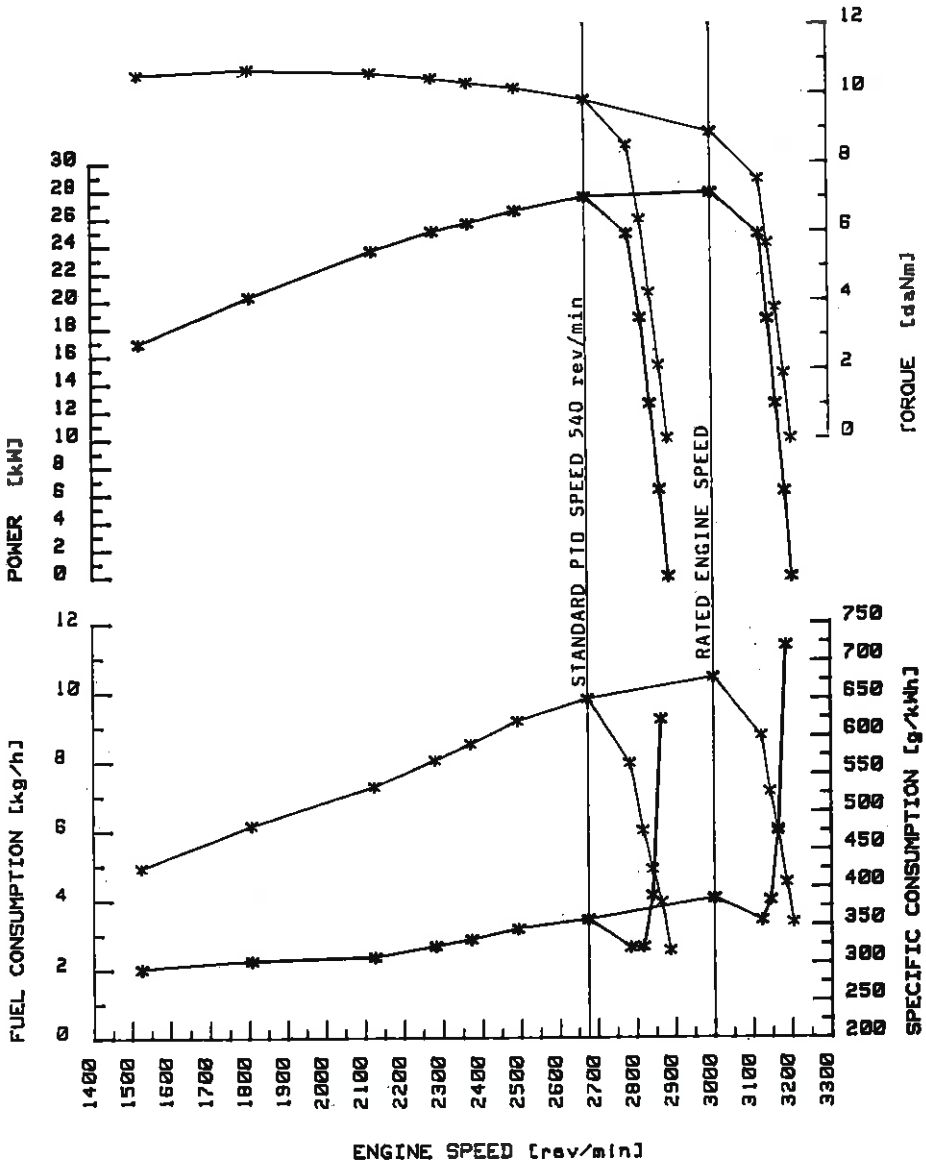
PART LOADS AT STANDARD POWER TAKE-OFF SPEED (540 rev/min)

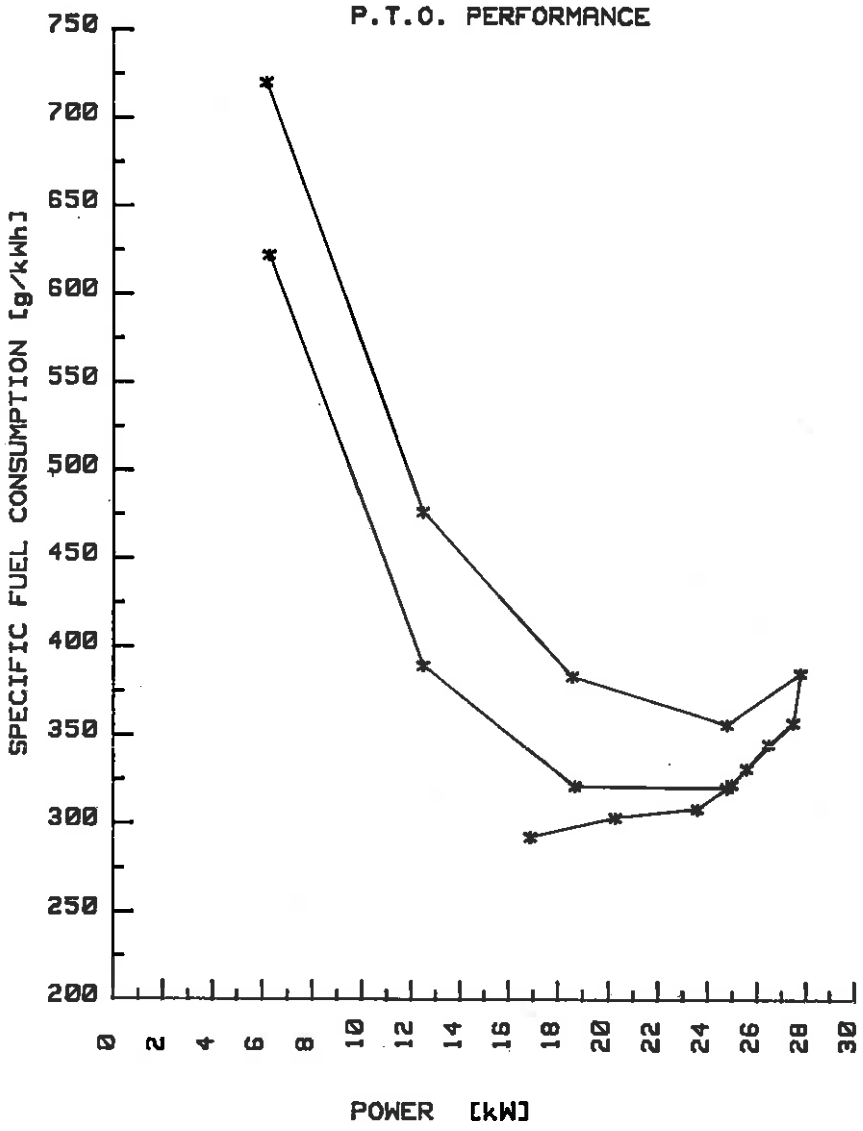
Power	Speed		Fuel consumption			Specific
	Engine	P.T.O.	Hourly		Specific	Energy
kW	rev/min	rev/min	l/h	k/h	g/kWh	kWh/l
i) The torque corresponding to maximum power available						
27.5	2675	546	11.67	9.80	357	2.35
ii) 85% of torque obtained at maximum power						
24.8	2784	568	9.45	7.94	320	2.62
iii) 75% of torque defined in ii)						
18.7	2817	575	7.13	5.99	321	2.62
iv) 50% of torque defined in ii)						
12.5	2841	580	5.79	4.87	389	2.16
v) 25% of torque defined in ii)						
6.3	2865	585	4.67	3.92	622	1.35
iv) unloaded						
0	2887	589	3.01	2.53	-	-

STANDARD SPECIFIC FUEL CONSUMPTION: 356/476/320/389 g/kWh

- No load maximum engine speed: 3204 rev/min
- Torque (1) at maximum power: 8.86 daNm
- Maximum torque (1) (engine speed: 1808 rev/min) 10.72 daNm
- Mean atmospheric conditions: Temperature ..... 25 C°
  Pressure ..... 99.1 kPa
  Relat. humidity ... 70 %
- Maximum temperatures: Coolant ..... 93 C°
  Engine oil ..... 119 C°
  Fuel ..... 36 C°
  Engine air intake ..... 40 C°

(1) The torque is the equivalent crankshaft torque.


POWER [kW]
TORQUE [daNm]
FUEL CONSUMPTION [kg/h]
SPECIFIC CONSUMPTION [g/kWh]
STANDARD PTO SPEED 540 rev/min
RATED ENGINE SPEED
ENGINE SPEED [rev/min]


P.T.O. PERFORMANCE
SPECIFIC FUEL CONSUMPTION [g/kWh]
750
700
650
600
550
500
450
400
350
300
250
200
0
2
4
6
8
10
12
14
16
18
20
22
24
26
28
30
POWER [kW]

2) POWER LIFT AND HYDRAULIC POWER TEST

- Date and location of tests: 26.07.89 - ISMA Treviglio (BG)

2.1 POWER LIFT

		at hitch point	on the frame
Height of lower hitch point above ground in down position	mm	125	125
vertical movement	mm	470	770
Maximum corrected force exerted trough full range	daN	1550	825
Corresponding pressure of hydraulic fluid	MPa	13.5	13.5
Moment about rear axle	daNm	1100	1089
Maximum tilt angle of mast over range of lift	degress	--	30

Lifting heights relative to the horizontal lower links										
mm	-120	-100	0	100	200	300	350	400	500	600	650
Lifting forces at hitch points											
daN	1550	1580	1585	1600	1615	1595	1566	--	--	--	--
Lifting forces at test frame											
daN	1198	1208	1280	1270	1258	1250	--	1180	998	890	825

2.2) HYDRAULIC POWER TEST

Sustained pressure with relief valve open: 12.5 MPa;
Pump delivery rate at min pressure: 30 l/min;

Hydraulic power	kW	flow rate l/min	pressure MPa	oil temp. °C
At 90% of the actual relief valve setting	4.93	26.9	11.0	63
Maximum	4.93	26.9	11.0	63
opening pressure of the relief valve: 12.0 MPa				

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

3) DRAWBAR PERFORMANCE

- Date of test: 24 to 28.07.1989
- Type of track: concrete
- Type and size of tyres front: 7.50/16 - 4 ply
  rear : 7.50/16 - 4 ply

Height of drawbar above ground: 300 mm (unballasted) - 290 mm (ballasted)

Tyre inflation pressure: unballasted .front: 120 kPa .rear: 120 kPa
ballasted .front: 120 kPa .rear: 130 kPa

3.1) MAXIMUM POWER IN TESTED GEARS (unballasted tractor)

Gear	Power	Draw. pull	Speed	Eng. speed	Slip of whell	Specific ener.cons.	fuel	Temperatures cool.	eng.	temp.	Atm. cond. hum.	pres
	kW	daN	km/h	rev/min	%	kWh/l	g/kWh	°C	°C	°C	%	kPa
1S	0.6	546	0.4	3192	15	0.140	6334	34	93	115	27	65	97.4
2S	2.2	1018	0.8	3181	15	0.440	1909	34	93	115	27	65	97.4
3S	3.5	1058	1.2	3175	15	0.637	1314	34	94	115	27	65	97.4
1N	4.2	1075	1.4	3171	15	0.764	1095	35	96	116	27	65	97.4
4S	6.6	1077	2.2	3158	15	1.000	834	35	94	114	27	65	97.4
2N	8.0	1074	2.7	3151	15	1.159	725	35	96	116	27	65	97.4
3N	12.1	1066	4.1	3138	15	1.391	603	35	95	116	27	65	97.4
1F	14.2	1062	4.8	3126	15	1.543	545	35	95	116	27	65	97.4
4N	20.0	960	7.5	3001	10	1.626	515	35	96	117	27	65	97.4
2F	21.2	780	9.8	3002	6	1.656	509	36	96	117	27	65	97.4
3F	16.9	396	15.4	3025	2	1.408	598	36	96	117	27	65	97.4

Gear	Power	Draw. pull	Speed	Eng. speed	Slip of wheel	Specific ener.cons.	fuel	Temperatures cool.eng.		Atm. cond temp.	hum.	pres
	kW	daN	km/h	rev/min	%	kWh/l	g/kWh	°C	°C	°C	%	KPa
1S	1.1	950	0.4	3180	15	0.234	3637	33	91	110	24	72	96.8
2S	2.4	1103	0.8	3171	15	0.470	1792	33	92	111	24	72	96.8
3S	3.4	1070	1.2	3164	15	0.620	1382	33	93	114	24	72	96.8
1N	4.4	1157	1.4	3163	15	0.760	1114	33	93	116	24	72	96.8
4S	6.7	1150	2.1	3147	15	0.985	851	34	95	119	24	72	96.8
2N	9.1	1214	2.7	3136	15	1.246	681	34	95	119	24	72	96.8
3N	12.8	1152	4.0	3114	15	1.376	609	34	94	119	24	72	96.8
1F	15.4	1183	4.7	3094	15	1.525	552	34	93	119	25	72	96.8
4N	18.5	878	7.6	3043	8	1.542	546	35	94	119	25	72	96.8
2F	20.0	752	9.6	2988	6	1.538	545	35	95	120	25	72	96.8
3F	17.6	422	15.0	2993	2	1.408	596	35	95	120	25	72	96.8

3.2) MAXIMUM POWER IN TESTED GEARS (ballasted tractor)

3.3.1) FIVE HOUR TEST at 75% of pull at maximum power

2F	14.5	539	9.7	3095	5	1.38	606	35	93	119	24	68	96.3

3.3.2) FIVE HOUR TEST at pull corresponding to 15% wheelslip with additional ballast 66.0 kg.

1F	14.4	1108	4.7	3092	(*)	(*)	(*)	32	96	118	24	72	98.3

Oil consumption during ten hours duration of tests 3.3.1 and 3.3.2: 63 g/h.

(*) Having the test been carried out with additional ballast, these figures are irrelevant.

4) TURNING AREA AND TURNING CIRCLE

Wheel equipment front: 7.50/16 - 4 ply;
rear : 7.50/16 - 4 ply.

Track width front: 1015 mm;
rear : 1040 mm.

	With brakes (*) right hand (m)	With brakes (*) left hand (m)	Without brakes right (m)	Without brakes left (m)
radius of turning area	1.90	1.88	2.92	2.91
radius of turning circle	1.80	1.78	2.83	2.82

(*) Brakes acting on rear wheels and simultaneously, through the integral trasmission, also on front wheels.

5) LOCATION OF CENTRE OF GRAVITY

Height above ground .....440 mm
Distance forward from rear wheel axis .....806 mm
Distance from tractor's median plane ..... 0 mm

6) BRAKING PERFORMANCE

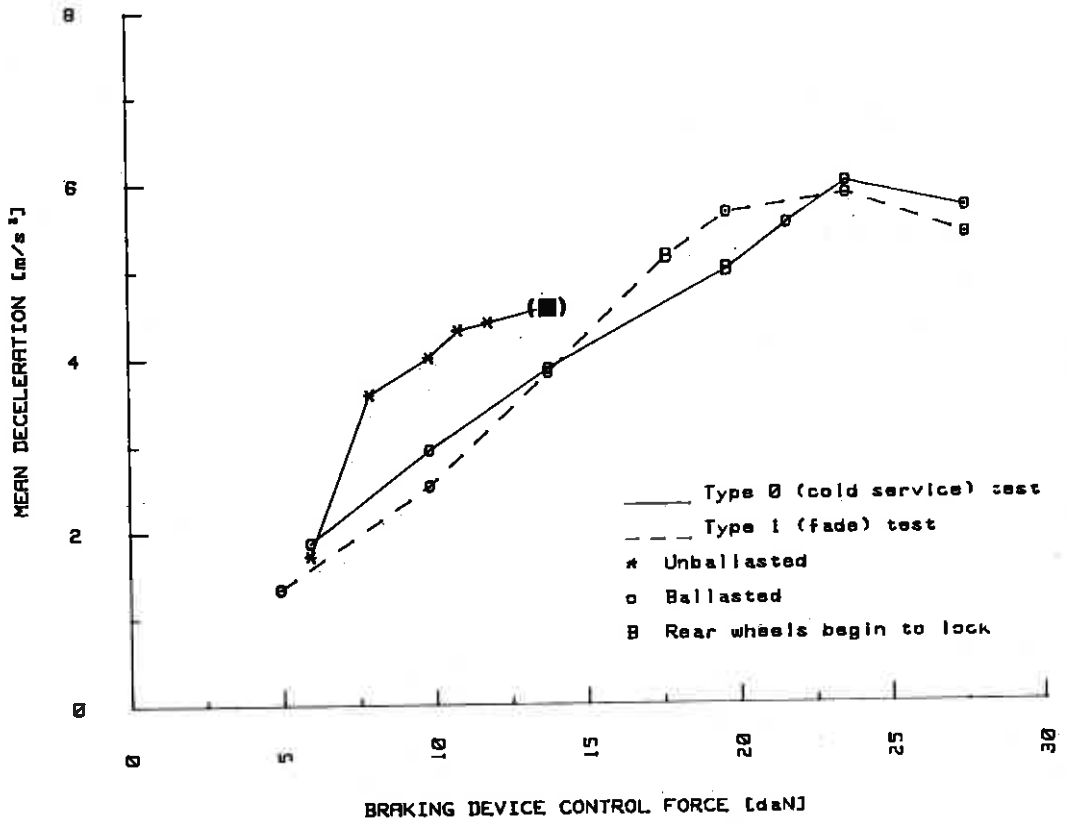
Date of test: 03.08.1989 ;
Type of track: asphalt;
Type of decelerometer: PEISELER.

Tractor masses during test (*)

	front axle (kg)	rear axle (kg)	total (kg)
without ballast	920	580	1500
with max ballast	710	1050	1760

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

6.1) SERVICE BRAKES (rear wheels braked - four heels drive)



Speed before application of brakes (umballasted tractor): 30.4 km/h.
Speed before application of brakes (ballasted tractor): 30.5 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 .
- Remark: (*) this is the maximum load on brakes pedal with unballasted tractor; with a greater load a lifting of the rear axle takes place.

6.2) PARKING BRAKE

	ballasted tractor on 18% slope		unballasted tractor with trailer of 1500 kg on 12% slope	
	up	down	up	down
pull on handbrake daN	7.8	7.8	11.2	12.2

7) MEASUREMENT OF EXTERNAL NOISE LEVEL

Date of test: 03.08.1989
Type of sound level meter
. make: BRÜEL & KJAER;
. model: 2231;
. type: impulse precision sound level meter;
Type of track: concrete.
Safety frame : Antonio CARRARO T.S. 09.

Result of test

No. gear used: 4 F;
Travelling speed: 22.50 km/h
Sound level: 84.5 dB(A).

REPAIRS AND REMARKS: none.

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

THE DIRECTOR OF TESTING STATION
(Prof. Giuseppe COLZANI)

HEAD OF ISMA - ROMA
(Prof. Alfio CAMMILLI)

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