ISTITUTO SPERIMENTALE PER
LA MECCANIZZAZIONE AGRICOLA
SEZIONE DI TREVIGLIO

Antonio CARRARO 22-5735
Test n.045.

O.E.C.D. no. 1227

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



Report test of: Antonio CARRARO 22-5735 ;

Commercial denomination: Tigrone 7700 Tritrac 4x4 "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 9.5/20 (4 ply) at front and 9.5/20 (4 ply) at rear, as well as to track widths 1190 mm at front and 1190 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: 22-5735;
- Commercial denomination: TIGRONE 7700 TRITRAC 4x4;
- Type: Wheeled tractor, unit construction, all wheels drive tractor;
- Number of driving wheels: 4;
- Serial number: 01346;
- First serial number: 00001 .

ENGINE

- Make: VM Motori ;
- Model: 89 A/1 ;
- Type: watercooled 4 stroke diesel engine indirect injection, turbo charged ;
- Serial number: 07455 .

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

- Make: KKK ;
- Model: K 14 2006 B ;
- Type: turbocharger ;
- Supercharging pressure: 85 kPa .

Fuel system

- Fuel feed system: AC membrane pump ;
- Make, model and type of fuel filter: FIAMM Fna 151/00 ;
- Capacity of fuel tank: 45 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:57 +/-2 mm^3/stroke at rated speed and full load corresponding to 15.42 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 3210 rev/min. ;
- Rated engine speed: 3000 rev/min.

Air cleaner

- Main filter
  . make: Antonio CARRARO ;
  . model: 2 4504 001 ;
  . 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:6.0 dm^3;
- Type of temperature control: thermostat.

Starting system

- Make: BOSCH ;
- Model: JF 12 V ;
- Type: electromegnetic 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 017 ;
- Type: reflection absorption ;
- Location: on the right of engine, vertical position;
- Height of outlet above ground: 1320 mm.

TRANSMISSION

Clutch: utilized only for travelling of tractor

- Make: VALEO ;
- Model: DBR 250 ;
- Type: single disk dry clutch ;
- Number of plates: 1 ;
- Plates diameter: 250 mm ;
- Control system: mechanical operated by pedal .

Gear box

- Make: Antonio CARRARO ;
- Model: 1 0401 023 ;
- 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 003 ;
- Type: rigid with bevel gear and differential ;

Differential lock

- Make: own make ;
- Model: 1 0905 014 ;
- Type: mechanical ;
- Control system: engaged or disengaged by hand lever ;

Front axle and final drives

- Make: own make ;
- Model: 1 0601 001 ;
- Type: steering wheels with bevel gear and differential ;

Differential lock

- Make: own make ;
- Model: 1 0905 008 ;
- Type: mechanical ;
- Control system: mechanical with pedal .

Transmission lubrication

- Gear box and rear axle, (in common)
  . total capacity : 19 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	1132.009	0.44
2	S	589.025	0.85
3	S	391.943	1.28
4	S	218.208	2.31
1	N	331.974	1.52
2	N	172.738	2.91
3	N	114.941	4.38
4	N	63.992	7.86
1	F	97.355	5.17
2	F	50.657	9.93
3	F	33.708	14.93
4	F	18.766	26.82
	REVERSE		
1	S	1358.411	0.37
2	S	706.830	0.71
3	S	470.331	1.07
4	S	261.849	1.92
1	N	398.369	1.26
2	N	207.286	2.43
3	N	137.930	3.65
4	N	76.790	6.55
1	F	116.826	4.31
2	F	60.789	8.28
3	F	40.499	12.44
4	F	22.519	22.35

(*) Calculated with a tyre dynamic radius index of 445 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 indepentdet 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 9.5/20).....	445 mm	605 mm
- Distance from the median plane of the tractor ..	0 mm	0 mm
- Distance behind rear axle.....	217 mm	217 mm
- Direction of rotation (viewed facing driving end):	clockwise	anticlk.

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: 620 mm
- Number of power take-off shaft revolutions for one revolution of rear driving wheels: 4.486 ;
- 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	120	anti-clock.	2333	106	anti-clock.
* lower	540	120	clockwise	1000	106	clockwise

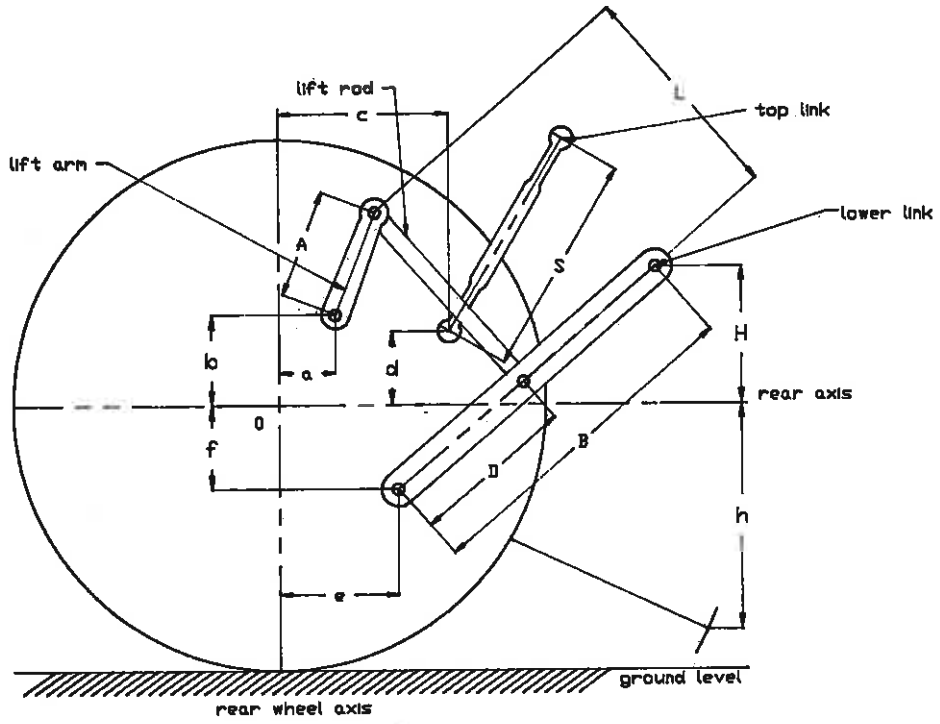
* : the two p.t.o. are permantly engaged to each other.

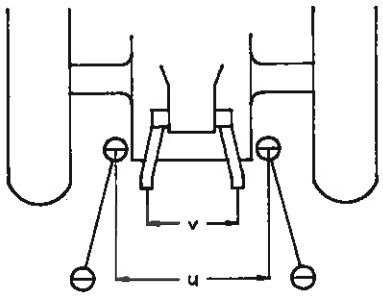
POWER LIFT

- 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 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
0
f
B
D
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)	700	700
Distance of lift arm :horizontally	(a)	85	85
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 420 to 620	465
Distance of upper link :horizontally	(c)	225	225
pivot point from rear :vertically	(d)	285	285
wheel axis			
Distance of lower link :horizontally	(e)	0	0
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)	433	433
Length of lift rods	(L)	from 438 to 550	470
Height of lower hitch points relative to the rear wheel axis			
- in Low position	(h)	from 250 to 470	330
- in High position	(H)	from 40 to 260	180
Height above ground of lower hitch points when locked in transport position (*)			510

(*) Assuming the dynamic radius index = 445 mm (ISO 4251/1 - 1984)
(CUNA norm NC 053 -05)

SWINGING DRAWBAR : none .

HOLED DRAWBAR

- Number of holes: 6 ;
- Distance between holes: 90 mm;
- Hole diameter: 22.5 mm;
- Thickness/width of the drawbar: 25-60 mm;
- Height above ground, minimum 35 mm;
  maximum 800 mm;
- Horizontal distance behind power take-off shaft end: 485 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: 290 mm min. - 620 mm max. ;
- Distance of hitch point from rear wheel axis, horizontally: 400 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 019 ;
- Type: drum brakes with brake shoes 325 * 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: 1100 min. - 1410 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: 1060 min. - 1405 max. mm;
- Regulation: changing the position of the rims in respect to the disc .

WHEELBASE: 1945 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 1190 mm track width (mm)
Headligths	620	145*90	565
Front park. lights	950	75*60	295
Front finger post	950	75*60	215
Rear park. lights	950	55*60	310
Rear finger post	950	55*60	210
Stop	950	55*60	310
Reflectors	950	45*50	260

(*) Tyre size: 9.5/20 front - 9.5/20 rear.

TEST CONDITIONS

Overall dimensions with tyres 9.5/20 front and 9.5/20 rear

	Length (mm)	Width (mm) min	Width (mm) max	Height (mm) exaust sil.	Height (mm) at top of roll-bar
Without ballast	3175	1335	1645	1320	2115

. Ground clearance (unballasted tractor): 315 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	965	625	1590
With ballast	kg	965	691	1656
With driver				
Without ballast	kg	980	685	1665
With ballast	kg	980	751	1731

Ballast

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

Tyres and track width specifications

	front	rear
- Tyres		
. dimensions	9.5/20	9.5/20
. ply rating	4	4
. type	radial	radial
. maximum load (tyre manufacturer's) daN	637	637
. maximum load (tractor manufact.) daN	637	637
. inflation pressure (tyre manufact.)kPa	140	140
. dynamic radius index .....mm	445	445
- Chosen track width .....mm	1190	1190
- Tyres on request	11.5/80 - 15.3 6 pr	
	11.2R20 111 A8	
	12.4R20 116 A8	
	31*15.50 - 15 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	19	300	-
Front axle and final drives ...	13	300	600
Final drives.....	2	500	-
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	Rear axle and gear box	Final drives
-Type	ESSO UNIFARM SAE 15 W 40	ESSO TORQUE FLUID 56	ESSO GEAR OIL GX 85 W 140
-Viscosity	14.55 cSt	9.0 cSt	26.56 cSt
-Visc.Ind.	145	142	102
-Class.	API CD - SF	API GL - 4	API GL - 5

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: 19.07.1989 - 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						
40.6	2997	612	15.42	12.95	320	2.63
POWER AT RATED ENGINE SPEED						
40.6	2997	612	15.42	12.95	320	2.63
STANDARD POWER TAKE-OFF SPEED (540 +/- 10 rev/min)						
38.1	2655	542	13.28	11.16	293	2.87
PART LOADS						
i) The torque corresponding to maximum power at rated engine speed						
40.6	2997	612	15.42	12.95	320	2.63
ii) 85% of torque obtained in i)						
35.3	3114	635	13.18	11.07	313	2.68
iii) 75% of torque defined in ii)						
27.1	3138	640	11.11	9.33	344	2.44
iv) 50% of torque defined in ii)						
17.9	3158	644	8.77	7.37	412	2.04
v) 25% of torque defined in ii)						
9.9	3175	648	6.69	5.62	568	1.48
vi) unloaded						
0	3210	655	4.51	3.79	-	-

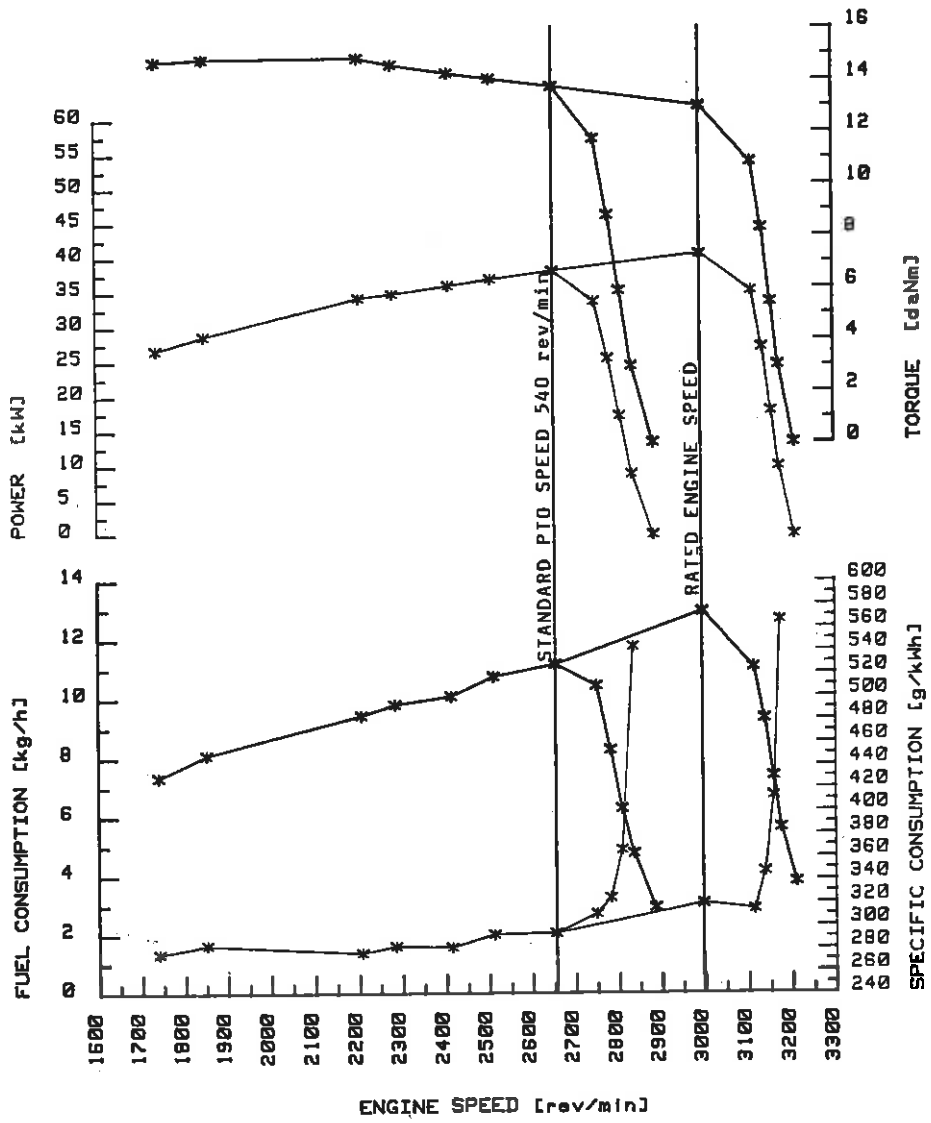
PART LOADS AT STANDARD POWER TAKE-OFF SPEED (540 rev/min)

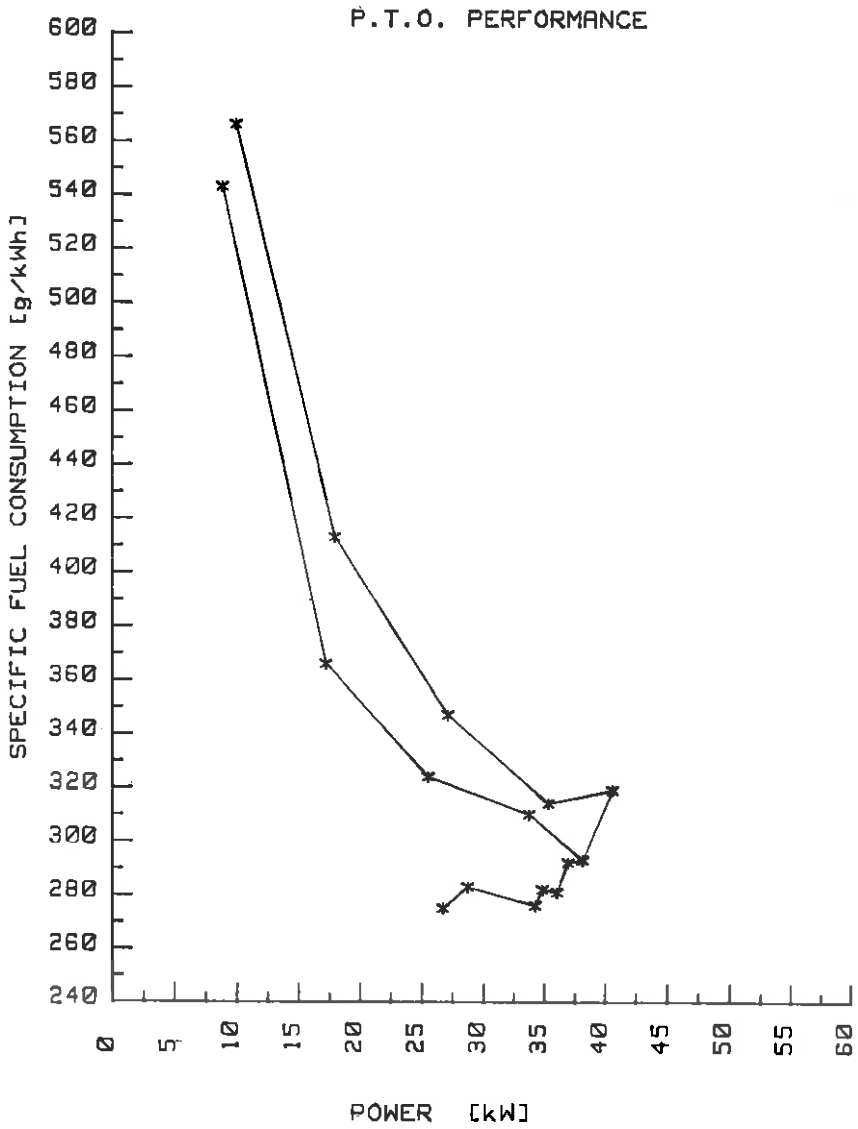
Power	Speed		Fuel consumption			Specific
	Engine	P.T.O.	Hourly		Specific	Energy
kW	rev/min	rev/min	l/h	k/h	g/kWh	kWh/l
i) The torque corresponding to maximum power available						
38.1	2655	542	13.28	11.16	293	2.87
ii) 85% of torque obtained at maximum power						
33.7	2749	561	12.43	10.44	310	2.71
iii) 75% of torque defined in ii)						
25.5	2781	568	9.84	8.27	324	2.59
iv) 50% of torque defined in ii)						
17.2	2808	573	7.48	6.28	365	2.30
v) 25% of torque defined in ii)						
8.8	2836	579	5.66	4.76	543	1.55
iv) unloaded						
0	2886	589	3.49	2.93	-	-

STANDARD SPECIFIC FUEL CONSUMPTION: 313/412/310/365 g/kWh

- No load maximum engine speed: 3210 rev/min
- Torque (1) at maximum power:12.96 daNm
- Maximum torque (1) (engine speed: 2207 rev/min) 14.82 daNm
- Mean atmospheric conditions: Temperature ..... 26 C°
  Pressure ..... 99.0 kPa
  Relat. humidity ... 62 %
- Maximum temperatures: Coolant ..... 97 C°
  Engine oil ..... 130 C°
  Fuel ..... 35 C°
  Engine air intake ..... 31 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]
600
580
560
540
520
500
480
460
440
420
400
380
360
340
320
300
280
260
240
0
5
10
15
20
25
30
35
40
45
50
55
60
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	115	115
vertical movement	mm	510	660
Maximum corrected force exerted trough full range	daN	1315	873
Corresponding pressure of hydraulic fluid	MPa	13.5	13.5
Moment about rear axle	daNm	920	1143
Maximum tilt angle of mast over range of lift	degress	--	14

Lifting heights relative to the horizontal lower links										
mm	-230	-200	-100	0	100	200	280	300	400	430
Lifting forces at hitch points daN	1315	1325	1358	1427	1462	1470	1348	--	--	--
Lifting forces at test frame daN	1242	1226	1190	1128	1020	961	--	902	887	873

2.2) HYDRAULIC POWER TEST

Sustained pressure with relief valve open: 12.5 MPa;
Pump delivery rate at min pressure: 31 l/min;

Hydraulic power	kW	flow rate l/min	pressure MPa	oil temp. °C
At 90% of the actual relief valve setting	4.88	26.0	11.5	60
Maximum	4.88	26.0	11.5	60

. 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: 24.07 to 02.08.1989
- Type of track: concrete
- Type and size of tyres front: 9.5/20 - 4 ply
  rear : 9.5/20 - 4 ply

Height of drawbar above ground: 355 mm (unballasted) -345 mm (ballasted)

Tyre inflation pressure: unballasted .front: 140 kPa .rear: 140 kPa
ballasted .front: 140 kPa .rear: 150 kPa

3.1) MAXIMUM POWER IN TESTED GEARS (unballasted tractor)

Gear	Power	Draw. pull	Speed	Eng. speed	Slip of whell	Specific ener.cons.	Specific fuel cons.	Temperatures cool.	Temperatures eng.	Temperatures temp.	Temperatures hum.	Atm. cond. pres
	kW	daN	km/h	rev/min	%	kWh/l	g/kWh	°C	°C	°C	%	kPa
1S	1.4	1335	0.4	3194	15	0.268	3286	32	90	111	27	63	97.4
2S	2.9	1292	0.8	3188	15	0.500	1690	32	92	112	27	62	97.3
3S	4.1	1361	1.1	3180	15	0.641	1293	33	94	114	28	60	97.3
1N	5.0	1376	1.3	3172	15	0.769	1100	35	95	114	27	60	97.4
4S	7.1	1342	1.9	3165	15	0.922	915	35	94	114	28	59	97.3
2N	9.5	1367	2.5	3152	15	1.172	716	35	96	116	29	56	97.3
3N	14.6	1348	3.9	3141	15	1.475	568	35	95	117	28	56	97.4
1F	17.2	1377	4.5	3131	15	1.522	552	35	95	117	28	56	97.4
4N	25.6	1337	6.9	3107	15	1.869	450	36	95	119	28	54	97.3
2F	31.2	1264	8.9	3001	9	1.938	433	36	96	118	28	53	97.2
3F	28.7	729	14.2	3001	4	1.805	467	36	96	119	28	53	97.2

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	°C	%	KPa
1S	1.6	1403	0.4	3200	15	0.286	2937	33	91	111	24	65	97.1
2S	3.4	1541	0.8	3187	15	0.548	1529	32	91	112	23	65	97.1
3S	4.3	1410	1.1	3179	15	0.642	1302	33	92	114	24	65	97.0
1N	5.6	1544	1.3	3171	15	0.800	1053	34	93	117	24	65	97.1
4S	8.3	1494	2.0	3160	15	1.025	819	34	95	120	25	63	96.9
2N	10.4	1503	2.5	3151	15	1.209	692	33	94	119	24	63	96.8
3N	15.7	1485	3.8	3137	15	1.539	548	34	94	120	24	64	96.9
1F	18.1	1451	4.5	3124	15	1.631	514	34	93	120	25	63	97.0
4N	26.5	1406	6.8	3095	15	1.906	441	35	94	120	25	62	96.8
2F	32.9	1318	9.0	3002	8	2.082	404	35	95	120	26	62	96.9
3F	30.9	778	14.3	3030	4	1.919	437	35	95	120	26	62	96.9

3.2) MAXIMUM POWER IN TESTED GEARS (ballasted tractor)

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

2F	24.70	975	9.3	3099	6	1.880	445	32	91	113	22	60	95.8

3.3.2) FIVE HOUR TEST at pull corresponding to 15% wheelslip
with additional ballast 66 kg.

4N	26.0	1360	6.9	3100	(*)	(*)	(*)	33	98	118	25	61	98.3

Oil consumption during ten hours duration of tests 3.3.1 and 3.3.2: 67 g/h.

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

4) TURNING AREA AND TURNING CIRCLE

Wheel equipment front: 9.5/20 - 4 ply;
rear : 9.5/20 - 4 ply.

Track width front: 1190 mm;
rear : 1190 mm.

	With brakes (*) right hand (m)	With brakes (*) left hand (m)	Without brakes right (m)	Without brakes left (m)
radius of turning area	2.35	2.35	3.79	3.70
radius of turning circle	2.27	2.26	3.69	3.60

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

5) LOCATION OF CENTRE OF GRAVITY

Height above ground ..... 515 mm
Distance forward from rear wheel axis .... 1180 mm
Distance from tractor's median plane ..... 0 mm

6) BRAKING PERFORMANCE

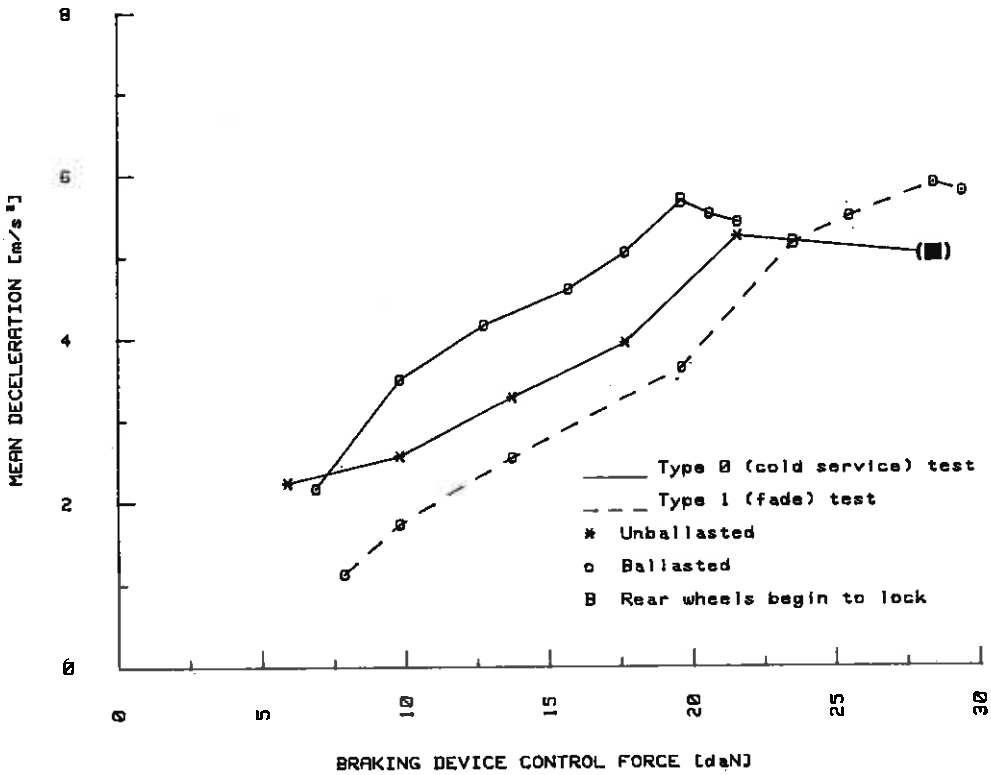
Date of test: 03.08.1989 ;
Type of track: asphalt;
Type of decelerometer: PEISELER.

Tractor masses during test (*)

	front axle (kg)	rear axle (kg)	total (kg)
without ballast	980	695	1675
with max ballast	775	1350	2125

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

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



Speed before application of brakes (unballasted tractor): 28.8 km/h.
Speed before application of brakes (ballasted tractor): 29.1 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	10.0	10.0	11.0	12.9

7) MEASUREMENT OF EXTERNAL NOISE LEVEL

Date of test: 26.07.1989
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: 21.80 km/h
Sound level: 83.0 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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