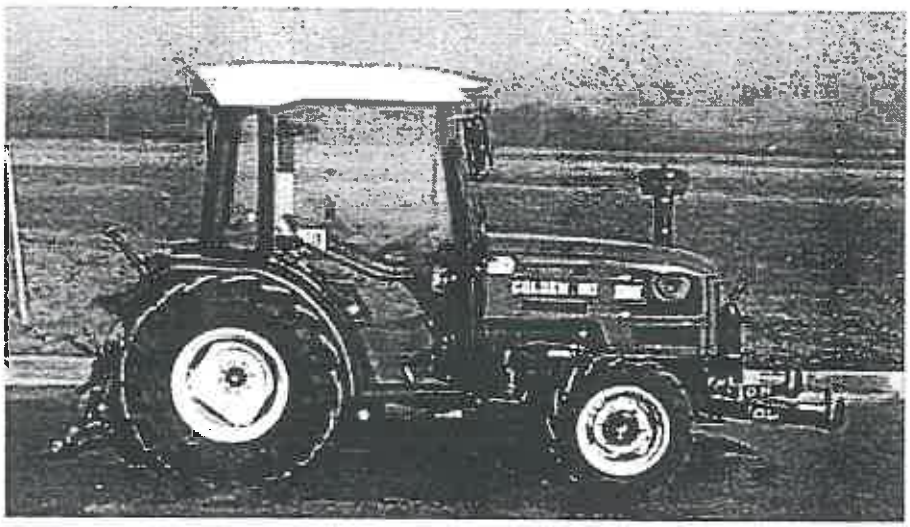
Consiglio Nazionale delle Ricerche
ISTITUTO PER LA MECCANIZZAZIONE AGRICOLA
Strada delle Cacce, 73 - 10135 TORINO (Italy)

OECD Approval No.: 1/1813
Date of approval: 25th March 1999
Report No. 2522/T/1998

TEST IN ACCORDANCE WITH THE OECD FULL CODE FOR THE OFFICIAL TESTING OF AGRICULTURAL TRACTORS

TRACTOR:

Make:	**SAME**
Type:	**GOLDEN 60 COMPATTO**
Model	**S 10 N 603 AVT** **4 WD – 40 km/h Version** **30 Forward and 15 Reverse Speed**



Manufactured by:	SAME DEUTZ-FAHR GROUP S.p.A. V.le F. Cassani, 15 24047 TREVIGLIO (BG) (Italy)
Date and location of the tests:	September-November 1998 TORINO (Italy)

This report has been approved by the O.E.C.D. Co-ordinating Centre (CEMAGREF, France) as being in accordance with the O.E.C.D. Tractor Test Code.

PRELIMINARY REMARKS

This bulletin is based on engineering tests in accordance with O.E.C.D. Full Code (Code I).
It does not contain an evaluation of performance of the tractor on practical farm work.

The SAME GOLDEN 60 COMPATTO 4WD tractor are manufactured in following variants:

1. with 30 forward and 15 reverse speeds: 5 speeds, 3 ranges of speed (slow, mean and fast) and 1 reduction group (low and normal) and 1 reverse group;

2. with 45 forward and 45 reverse speeds; 5 speeds, 3 ranges of speed (slow, mean and fast) and 1 reduction group (low, normal and high) and 1 reverse group;

3. with 20 forward and 10 reverse speed: 5 speeds, 2 ranges of speed (slow and fast) and 1 reduction gear (low and normal) and 1 reverse group.

Tests have been carried out on tractor with the first variant.

In this report all performance characteristics are given corresponding to the International System of Units.

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0 FOREWORDS

Tractor manufacturer's name and address	SAME DEUTZ-FAHR GROUP S.p.A. Viale Cassani, 15 Treviglio (BG) Italy
Location of tractor assembly	TREVIGLIO (BG) - ITALY
Submitted for test by:	The Manufacturer
Selected for test by:	Manufacturer with the agreement of IMA
Place of running-in:	TREVIGLIO (BG) - ITALY
Duration of running-in:	Appr. 50 hours
Location of tests :	IMA - Torino - Italy

1 SPECIFICATIONS OF TRACTOR

1.1 IDENTIFICATION

Make:	SAME
Model:	S10N603AVT
Trade name:	GOLDEN 60 COMPATTO
Type:	wheeled tractor, unit construction, all wheels drive tractors
Number of driving wheels:	4
Serial N°:	1074
1st serial N°:	1001

1.2 ENGINE

Make:	SAME DEUTZ-FAHR GROUP S.p.A.
Model:	1000.3 A5
Type:	air cooled, 4 stroke Diesel engine, direct injection
Serial N°:	E24255

1.2.1 Cylinders

Number and disposition:	3, vertical in-line
Bore x stroke:	105 x 115.5 mm
Capacity:	3000 cm^3
Compression ratio:	17:1
Arrangement of valves:	overhead
Cylinder liners:	whitout liners

1.2.2 Supercharging

None

1.2.3 Fuel system

Fuel feed system:	AC CORONA fuel feed pump
Make, model and type of fuelfilter(s):	100
Capacity of fuel tank:	58 dm^3
Make/Model/Type of injection pump:	BOSCH PFR 1K 90A 543, immersed pump, one for cylinder, in line injection pump
Serial N°:	none

Manufacturer's production setting of injection pump:	
-flow rate:	59.5±2 mm^3/stroke at rated speed and full load corresponding 12.60 dm^3/h
-timing:	16.0° before TDC
Make/Model/Type of injectors:	BOSCH DLLA 150S 1323 multihole injection nozzles
Injection pressure:	18±1 MPa
Make/Model/Type of carburettor:	none

1.2.4 Governor

Make:	SAME DEUTZ-FAHR GROUP S.p.A
Model:	007.0992.4
Type:	electronic
Governed range of engine speed:	650-2542 rev/min
Rated engine speed:	2350 rev/min

1.2.5 Air cleaner

Pre-cleaner	
- Make:	DONALDSON
- Model:	CYCLONE
- Type:	PB01-6330
- Location of air intake:	in front of the engine above the bonnet
Main filter	
- Make:	DONALDSON
- Model:	FLG 08-0524
- Type:	dry paper element filter with replaceable cartridge elements
Location of air intake:	front of engine, above bonnet.
Maintenance indicator:	with the warning lamp on the dashboard, 1 year max

1.2.6 Lubrication system

Type of feed pump:	forced feed from gear pump
Type of filter(s):	FIAMM FT 4803
Number of filters:	1

1.2.7 Cooling System

Type of coolant:	air cooling with axial blower
Specification of fan:	propeller fan driven by engine shaft
Number of fan blades:	13
Fan diameter:	250 mm
Coolant capacity:	none
Type of temperature control:	none

1.2.8 Starting system

Make:	ISKRA
Model:	12V
Type:	11.130.521
Starter motor power rating:	2.7 kW
Cold starting aid:	none
Safety device:	preventing engine start in gear

1.2.9 Electrical system

Voltage:	14 V

Generator
- Make: MAGNETI MARELLI
- Model: Alternator
- Type: 63320037
- Power: 65A

Battery: 1 lead acid type
Rating: 100 Ah at 20 hours rating

1.2.10 Exhaust system

Make: SAME DEUTZ-FAHR GROUP S.p.A
Model: DGM SA 3522, n° 7.7013.2
Type: one reflection absorption chamber
Location: on the left hand side of engine, under the bonnet cowling, with the horizontal exhaust pipe under the tractor footplate
Height of outlet above ground: 320 mm

1.3 TRANSMISSION

1.3.1 Clutch (utilized only for travelling of tractor)

Make: SAME DEUTZ-FAHR GROUP S.p.A
Model: 702.23
Type: independent single disk dry clutch
Number of plates: 1
Diameter of plates: 280 mm
Method of operation: Hydraulically operated by pedal

1.3.2 Gearbox

Make: SAME DEUTZ-FAHR GROUP S.p.A
Model: 702.31
Type: mechanical syncromesh speed change gear

	Forward	Reverse
Number of gears	5	5
Number of ranges	3 (slow, mean and fast)	3 (slow, mean and fast)
Number of groups	2 (low and high)	1(normal)
Total of arrangements	30	15

Available options

	Forward	Reverse
Number of gears	5	5
Number of ranges	3 (slow, mean and fast)	3 (slow, mean and fast)
Number of groups	3 (low, normal and high)	3 (low, normal and high)
Total of arrangements	45	45

	Forward	Reverse
Number of gears	5	5
Number of ranges	2 (slow and fast)	2 (slow and fast)
Number of groups	2 (low and high)	1 (normal)
Total of arrangements	20	10

1.3.3 Rear axle and final drives

Make: SAME DEUTZ-FAHR GROUP S.p.A
Model: 702.44
Type: bevel gear differential and epyciclic final drive
Rear differential lock

- Make:	SAME DEUTZ-FAHR GROUP S.p.A
- Model:	702.47
- Type:	
- Method of engagement/ disengagement:	electrohydraulic by push button

1.3.4 Front axle and final drives

Make:	SAME DEUTZ-FAHR GROUP S.p.A
Model:	702.43
Type:	original SAME DEUTZ-FAHR GROUP S.p.A system, with central shaft, bevel gear drive, differential and epyciclic final drives
Front differential lock	
- Make:	SAME DEUTZ-FAHR GROUP S.p.A
- Model:	702.46
- Type:	
- Method of engagement/ disengagement:	Electrohydraulic by push button

1.3.5 Total ratios and travelling speeds[1]

SAME S10N603AVT with 20 forward speed and 10 reverse speed

Gear no. and range	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			
1 Slow	Low	386.00	1.17
1 Slow	High	321.43	1.41
2 Slow	Low	270.23	1.67
2 Slow	High	225.00	2.01
3 Slow	Low	188.59	2.40
3 Slow	High	157.02	2.88
4 Slow	Low	134.92	3.35
4 Slow	High	112.36	4.02
5 Slow	Low	88.78	5.09
5 Slow	High	73.93	6.11
1 Fast	Low	70.16	6.44
1 Fast	High	58.41	7.74
2 Fast	Low	49.11	9.20
2 Fast	High	40.87	11.06
3 Fast	Low	34.23	13.20
3 Fast	High	28.54	15.83
4 Fast	Low	24.56	18.40
4 Fast	High	20.9	22.16
5 Fast	Low	16.13	28.01
5 Fast	High	13.44	33.63

Gear no. and range	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)
REVERSE			
1 Slow	Normal	338.78	1.33
2 Slow	Normal	237.13	1.91
3 Slow	Normal	165.55	2.73
4 Slow	Normal	118.43	3.82
5 Slow	Normal	77.94	5.80
1 Fast	Normal	61.54	7.34
2 Fast	Normal	43.14	10.47
3 Fast	Normal	30.06	15.03
4 Fast	Normal	21.52	20.99
5 Fast	Normal	14.13	31.98

Number of revolutions of front wheels for one revolution of rear wheels:1.4998

[1] Calculated with a tyre dynamic radius index 510 mm (ISO 4251/1-1992)

SAME S10N603AVT with 30 forward speed and 15 reverse speed (Tested)

Gear no. and range	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	
1 Slow	Low	2437.72	0.19
1 Slow	High	2030.01	0.22
2 Slow	Low	1706.50	0.26
2 Slow	High	1421.20	0.32
3 Slow	Low	1190.98	0.38
3 Slow	High	991.87	0.46
4 Slow	Low	852.30	0.53
4 Slow	High	709.79	0.64
5 Slow	Low	560.73	0.81
5 Slow	High	466.96	0.97
1 Mean	Low	386.00	1.17
1 Mean	High	321.43	1.41
2 Mean	Low	270.23	1.67
2 Mean	High	225.00	2.01
3 Mean	Low	188.59	2.40
3 Mean	High	157.02	2.88
4 Mean	Low	134.92	3.35
4 Mean	High	112.36	4.02
5 Mean	Low	88.78	5.09
5 Mean	High	73.93	6.11
1 Fast	Low	70.16	6.44
1 Fast	High	58.41	7.74
2 Fast	Low	49.11	9.20
2 Fast	High	40.87	11.06
3 Fast	Low	34.23	13.20
3 Fast	High	28.54	15.83
4 Fast	Low	24.56	18.40
4 Fast	High	20.39	22.16
5 Fast	Low	16.13	28.01
5 Fast	High	13.44	33.63

Gear no. and	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)
		REVERSE	
1 Slow	Normal	2139.62	0.21
2 Slow	Normal	1497.81	0.30
3 Slow	Normal	1045.35	0.43
4 Slow	Normal	748.10	0.60
5 Slow	Normal	492.10	0.92
1 Mean	Normal	338.78	1.33
2 Mean	Normal	237.13	1.91
3 Mean	Normal	165.55	2.73
4 Mean	Normal	118.43	3.82
5 Mean	Normal	77.94	5.80
1 Fast	Normal	61.54	7.34
2 Fast	Normal	43.14	10.47
3 Fast	Normal	30.06	15.03
4 Fast	Normal	21.52	20.99
5 Fast	Normal	14.13	31.98

Number of revolutions of front wheels for one revolution of rear wheels:1.4998

SAME S10N603AVT with 45 forward speed and 45 reverse speed

Gear no. and range	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			
1 Slow	Low	2952.67	0.15
1 Slow	Normal	2460.57	0.18
2 Slow	Low	2067.08	0.22
1 Slow	High	2004.41	0.23
2 Slow	Normal	1722.62	0.26
3 Slow	Low	1442.63	0.31
2 Slow	High	1421.20	0.32
3 Slow	Normal	1202.17	0.38
4 Slow	Low	1032.36	0.44
3 Slow	High	991.87	0.46
4 Slow	Normal	860.27	0.53
4 Slow	High	709.79	0.64
5 Slow	Low	679.20	0.67
5 Slow	Normal	566.00	0.80
1 Mean	Low	467.54	0.97
5 Slow	High	466.96	0.97
1 Mean	Normal	389.60	1.16
2 Mean	Low	327.30	1.38
1 Mean	High	321.43	1.41
2 Mean	Normal	272.79	1.66
3 Mean	Low	228.41	1.98
2 Mean	High	225.00	2.01
3 Mean	Normal	190.39	2.37
4 Mean	Low	163.46	2.76
3 Mean	High	157.02	2.88
4 Mean	Normal	136.25	3.32
4 Mean	High	112.36	4.02
5 Mean	Low	107.54	4.20
5 Mean	Normal	89.62	5.04
1 Fast	Low	84.96	5.32
5 Mean	High	73.94	6.11
1 Fast	Normal	70.83	6.38
2 Fast	Low	59.45	7.60
1 Fast	High	58.41	7.74
2 Fast	Normal	49.59	9.11
3 Fast	Low	41.53	10.88
2 Fast	High	40.87	11.06
3 Fast	Normal	34.61	13.06
4 Fast	Low	29.68	15.22
3 Fast	High	28.54	15.83
4 Fast	Normal	24.75	18.26
4 Fast	High	20.39	22.16
5 Fast	Low	19.54	23.12
5 Fast	Normal	16.28	27.75
5 Fast	High	13.44	33.63

Gear no. and range	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)
REVERSE			
1 Slow	Low	3112.01	0.15
1 Slow	Normal	2593.36	0.17
2 Slow	Low	2178.64	0.21
1 Slow	High	2112.58	0.21
2 Slow	Normal	1815.58	0.25
3 Slow	Low	1520.48	0.30
2 Slow	High	1497.90	0.30
3 Slow	Normal	1267.05	0.36
4 Slow	Low	1088.07	0.42
3 Slow	High	1045.40	0.43
4 Slow	Normal	906.69	0.50
4 Slow	High	748.10	0.60
5 Slow	Low	715.85	0.63
5 Slow	Normal	596.55	0.76
1 Mean	Low	492.77	0.92
5 Slow	High	492.16	0.92
1 Mean	Normal	410.62	1.10
2 Mean	Low	344.97	1.31
1 Mean	High	338.77	1.33
2 Mean	Normal	287.51	1.57
3 Mean	Low	240.74	1.88
2 Mean	High	237.14	1.91
3 Mean	Normal	200.67	2.25
4 Mean	Low	172.28	2.62
3 Mean	High	165.49	2.73
4 Mean	Normal	143.60	3.15
4 Mean	High	118.42	3.82
5 Mean	Low	113.34	3.99
5 Mean	Normal	94.46	4.78
1 Fast	Low	89.54	5.05
5 Mean	High	77.93	5.80
1 Fast	Normal	74.65	6.05
2 Fast	Low	62.66	7.21
1 Fast	High	61.56	7.34
2 Fast	Normal	52.26	8.64
3 Fast	Low	43.77	10.32
2 Fast	High	43.07	10.49
3 Fast	Normal	36.48	12.39
4 Fast	Low	31.28	14.45
3 Fast	High	30.08	15.02
4 Fast	Normal	26.08	17.32
4 Fast	High	21.49	21.03
5 Fast	Low	20.60	21.94
5 Fast	Normal	17.16	26.33
5 Fast	High	14.16	31.91

Number of revolutions of front wheels for one revolution of rear wheels:1.4998

1.4 POWER TAKE OFF

1.4.1 Main power take-off

Type:	Independent
Method of engagement:	Engaged or disengaged by push button, driven by multiplate wet clutch independent of travel clutch; ISO Standard 500-1991
Number of shafts:	1
Method of changing power take-off shaft ends:	Not changeable
Method of changing speed:	Pushing a button combined with a lever at the left hand side of the seat

1.4.1.1 Power take-off proportional to engine speed

540 rev/min

Location:	at rear of tractor
Diameter of power take-off shaft end:	35 mm
Number of splines:	6, in conformity with ISO 500-1991 Type 1
Height above ground	500 mm
Distance from the median plane of the tractor:	tractor's median plane
Distance behind rear-wheel axis:	440 mm
PTO speed at rated engine speed (2350 rev/min):	611 rev/min
Engine speed at standard power take-off speed:	2077 rev/min
Ratio of rotation speeds (engine speed/p.t.o. speed):	3.8462
Power restriction and maximum torque trasmissible:	power and torque of the engine
Direction of rotation (viewed from behind tractor):	clockwise

750 rev/min

Location:	at rear of tractor
Diameter of power take-off shaft end:	35 mm
Number of splines:	6, in conformity with ISO 500/1991 Type 1
Height above ground:	500 mm
Distance from the median plane of the tractor:	in tractor's median plane
Distance behind rear-wheel axis:	440 mm
PTO speed at rated engine speed (2350 rev/min):	752 rev/min
Engine speed at standard power take-off speed:	2344 rev/min
Ratio of rotation speeds (engine speed/p.t.o. speed):	3.125
Power restriction and maximum torque trasmissible:	power and torque of the engine
Direction of rotation (viewed from behind tractor):	clockwise

1000 rev/min

Not fitted

1.4.1.2 Power take-off proportional to ground speed

Power take-off proportional to ground speed (separated syncromesh shaft, not adjustable to 540-1000 rev/min) not fitted on tested tractor.

1.4.2 Optional power take-off

Type:	Independent
Method of engagement:	Engaged or disengaged by push button, driven by multiplate wet clutch independent of travel clutch; ISO Standard 500-1991 Type 1
Number of shafts:	1
Method of changing power take-off shaft ends:	Not changeable
Method of changing speed:	None

1.4.2.1 Power take-off proportional to engine speed

1000 rev/min

Location:	at front of tractor
Diameter of power take-off shaft end:	35 mm
Number of splines:	6, in conformity with ISO 500-1991 Type 1
Height above ground:	520 mm
Distance from the median plane of the tractor:	in tractor's median plane
Distance forward from front axle:	630 mm
PTO speed at rated engine speed (2350 rev/min):	979 rev/min
Engine speed at standard power take-off speed:	2400 rev/min
Ratio of rotation speeds (engine speed/p.t.o. speed):	2.4
Power restriction and maximum torque:	power and torque of the engine
Direction of rotation (viewed facing driving end):	anticlockwise

1.4.2.2 Power take-off proportional to ground speed

Power take-off proportional to ground speed (separated syncromesh shaft, not adjustable to 540-1000 rev/min) not fitted on tested tractor.

1.5 POWER LIFT

1.5.1 Rear power lift

Make:	SAME DEUTZ-FAHR GROUP S.p.A
Model:	702.39
Type:	Load sensing
Type of hydraulic system:	open centre system
Type and number of cylinders:	1, single acting, internal
Type of linkage lock for transport:	mechanical, with screwed tie rods that lock the lower links
Relief valve pressure setting:	18±1 MPa
Opening pressure of anti-shock valve:	21±0.5 MPa
Lift pump make and type:	hydraulic BOSCH rotary pump, driven by engine shaft
Transmission between pump and engine:	mechanical
Number and type of filters:	1, replaceable paper cartridge
Site of oil reservoir:	gear-box

Oil capacity:	41 dm^3, in common with gearbox
Number, type and location of tapping points:	6 tapping points, 3 oil circuits for single or double acting cylinders, at rear of tractor
Maximum volume of oil available to external cylinders:	15 dm^3

1.5.2 Front power lift (optional, fitted on tested tractor)

Make:	SAME DEUTZ-FAHR GROUP S.p.A
Model:	702.59
Type:	Original SAME DEUTZ-FAHR GROUP S.p.A system
Type of hydraulic system:	open centre system
Type and number of cylinders:	2, single acting, internal
Type of linkage lock for transport:	none
Relief valve pressure setting:	18±1 MPa
Opening pressure of anti-shock valve:	21±0.5 MPa
Lift pump make and type:	hydraulic BOSCH rotary pump, driven by engine shaft
Transmission between pump and engine:	mechanical
Number and type of filters:	1, replaceable paper cartridge
Site of oil reservoir:	gear-box
Oil capacity:	41 dm^3, in common with gearbox
Number, type and location of tapping points:	none
Maximum volume of oil available to external cylinders:	none

1.6 THREE POINT LINKAGE

1.6.1 Rear three point linkage

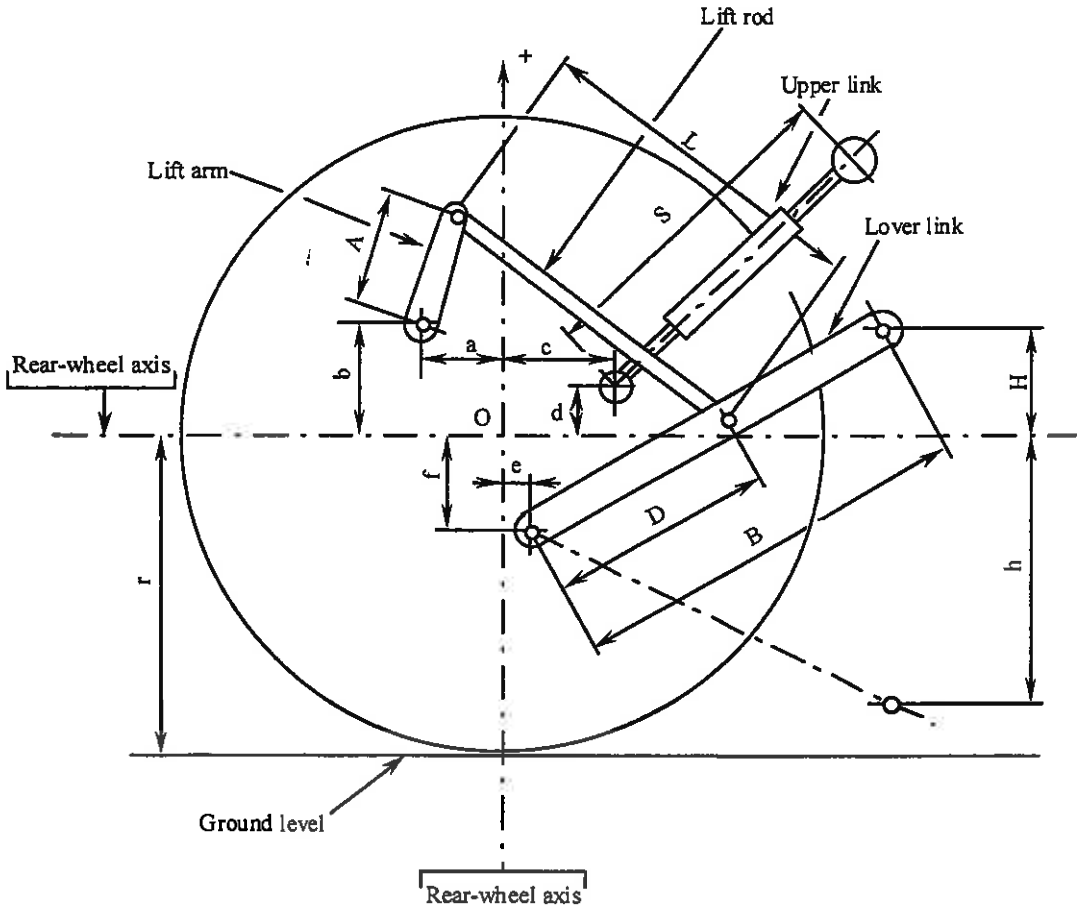
Category: 2nd, implement attachment with three point linkage and lower links with quick connection, in conformity with I.S.O. STANDARD 730/I-1994

Category adapter: none

Table 1. Dimension of rear linkage geometry (when connected to the standard frame)

		Dimension or range	Settings used in test
		mm	mm
Length of lift arms	(A)	380	380
Length of lower links	(B)	755	755
Distance of lift arm pivot point from rear wheel axis			
- horizontally (rearward)	(a)	177	177
- vertically	(b)	315	315
Horizontal distance between the 2 lower link points	(u)	400	400
Horizontal distance between the 2 lift arm end points	(v)	320	320
Length of upper link	(S)	from 480 to 700	510
Distance of upper link pivot point from rear wheel axis			
- horizontally (rearward)	(c)	397-407	397
- vertically	(d)	260-295-335	260
Distance of lower link pivot point from rear wheel axis			
- horizontally	(e)	183	183
- vertically	(f)	154	154
Distance of lower link pivot points to lift rod pivot points on lower links	(D)	535	535
Length of lift rods	(L)	from 580 to 660	580
Heigth of lower hitch points relative to the rear wheel axis:			
- in low position	(h)	310	310
- in high position	(H)	268	268
Height above ground of lower hitch points when locked in transport position[2]		778	

[2] Assuming the dynamic radius index: 510 mm (ISO 4251/1-1992)



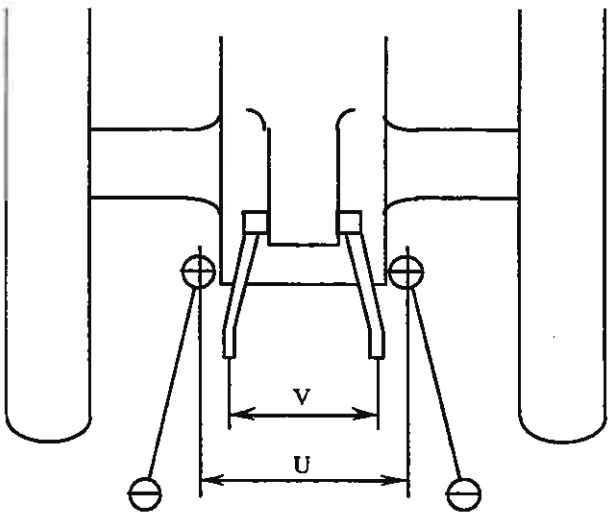


Figure 1. Lift test- Rear linkage geometry

1.6.2 Front three point linkage

Category	2nd, implement attachment with three point linkage and lower links with quick connection
Category adapter	none

Table 2- Dimension of front linkage geometry (when connected to the standard frame)

		Dimension or range	Settings used in test
		mm	mm
Length of lower links	(B)	740	740
Distance of lift arm pivot point from front wheel axis:			
- horizontally (frontward)	(a)	630	630
- vertically	(b)	485	485
Horizontal distance between the 2 lower link points	(u)	850	850
Horizontal distance between the 2 lift arm end points	(v)	270	270
Length of upper link	(S)	from 430 to 680	430
Distance of upper link pivot point from front wheel axis:			
- horizontally	(c)	630-675	630
- vertically	(d)	540-480	480
Distance of lower link pivot point from front wheel axis:			
- horizontally	(e)	438	438
- vertically	(f)	40	40
Distance of lower link pivot points to lift rod pivot points on lower links	(D)	240	240
Length of cylinders:			
- in low position	(L)	560	560
- in high position	(L)	360	360
Height of lower hitch points relative to the front wheel axis:			
- in low position	(h)	150	150
- in high position	(H)	300	300
Height above ground of lower hitch points when locked in transport position[3]		650	

[3] Assuming the dynamic radius index: 350mm (ISO 4251/1-1992)

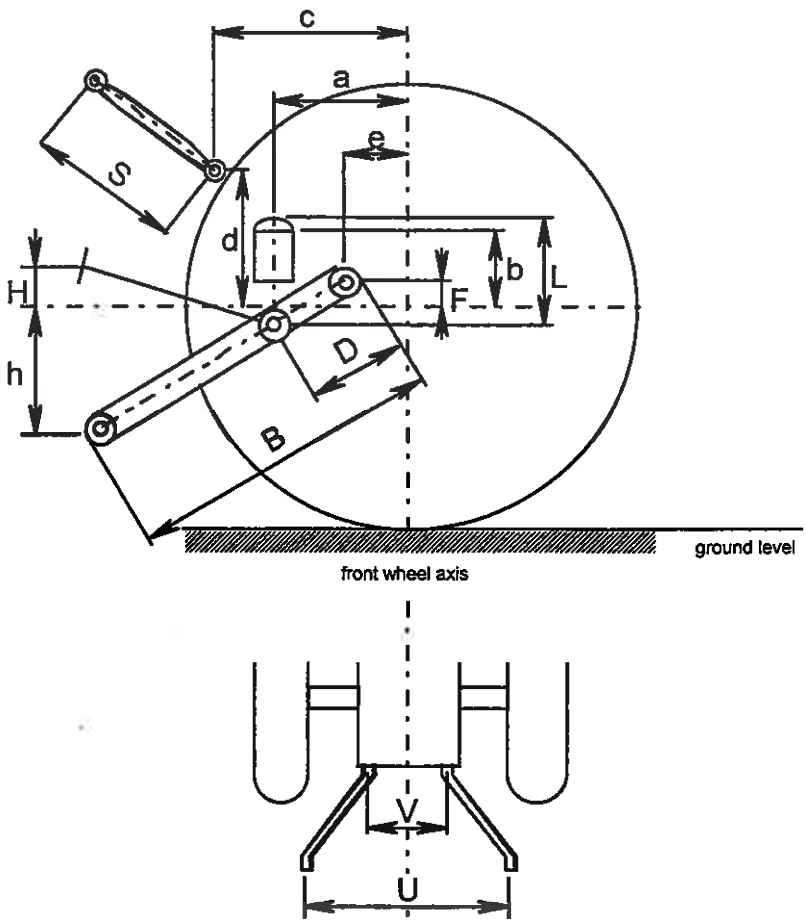


Figure 2. Lift test- Front linkage geometry

1.7 SWINGING DRAWBAR

Optional, not fitted on tested tractor

1.8 TRAILER HITCH

Type:	DGM-GA 4200 C 6t V1.5
Hole diameter:	28 mm
Height above ground:	
- minimum:	250 mm
- maximum:	670 mm
Distance of hitch point from rear wheel axis horizontally:	600 mm
Distance of hitch point from power take-off shaft end:	
- vertically:	270 mm below, 140 mm above
- horizontally:	160 mm
Maximum vertical permissible load:	14.7 kN

1.9 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[4]:	
- minimum:	140 mm
- maximum:	770 mm
Horizontal distance behind power take-off shaft end (rear):	470 mm
Diameter of pin hole:	28 mm

1.10 STEERING

Make/Model/Type:	DANFOSS make, ORBITROL OSPC 80R model, hydrostatic type
Method of operation:	
- pump:	hydrostatic steering with BOSCH hydraulic gear pump
- rams:	single acting ram acting directly on front axle
Working pressure:	15 MPa

1.11 BRAKES

1.11.1 Service brake

Make/Model:	SAME DEUTZ-FAHR GROUP S.p.A. make, 702.54 model
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 178 mm Ø, rear disc 224 mm Ø, FRENDO HDT 303 lining material
Method of operation:	hydraulically actuated with 2 pedals
Trailer braking take-off:	hydraulic brake system

1.11.2 Parking brake:

Type:	fully independent of service brake, 2 oil bath discs mounted on the pinion shaft in the gear box

[4] with tyres 380/70R34 at rear

Method of operation: mechanical by hand lever

1.11.3 Steering brake :

Divided pedal of service brake, for normal unlocked together

1.12 WHEELS

Number:
- front: 2, driving and steering
- rear: 2 driving

Wheelbase: 1926 mm

Track width adjustment:

	Minimum	Maximum	Adjustment method
	mm	mm	
Front	1020	1265	Changing the position of the rims with respect to the disc
Rear	890	1290	Changing the position of the rims in respect to the disc

1.13 PROTECTIVE STRUCTURE

Make/Model/Type: SAME DEUTZ-FAHR GROUP S.p.A. make, C 40 model, not tiltable cab type

Manufacture's name and address: SAME DEUTZ-FAHR GROUP S.p.A. make
Viale F. Cassani 15
24047 TREVIGLIO (BG) - Italy

Protective device: cab, not tiltable

OECD approval
- number: 7/S/0 125
- date of approval: 19th March 1998

1.14 SEAT

1.14.1 Driver's seat

Make/Model/Type: GRAMMER make, MSG 83/3 model, upholstered seat with back rest

Seat and steering wheel reversible: no
Type of suspension: adjustable spring
Type of damping: shock absorber
Range of adjustment:
- longitudinal: 150 mm
- vertical: 60 mm

Safety belt: no

1.14.2 Optional driver's seat

none

1.14.3 Passenger seat

Location: none
Number of places: none

1.15 LIGHTING

	Height above ground of centre[5]	Size	Distance from outside edge of lights to median plane of tractor
	mm	mm	mm
Headlights:	985	160x100	185
Front parking lights	1205	110x35	500
Front direction indicators	1205	110x35	535
Rear parking ligths	1070	50x60	430
Rear direction indicators	1070	50x60	480
Brakes lights	1070	50x60	378
Reflectors	645	Ø 80	480

2 TEST CONDITIONS

2.1 OVERALL DIMENSIONS[6]

	Length		Width		Height at top of	
	with front power lift	without front power lift	minimum	maximum	protective structure	exhaust silencer
	mm	mm	mm	mm	mm	mm
Ballasted	4136	3671	1290	1640	2110	----
Unballasted	4036	3431	1290	1640	2110	----

2.2 GROUND CLEARANCE

Unballasted tractor: 230 mm
Clearance-limiting part: front axle

2.3 TRACTOR MASS

Mass with protective structure and full fuel tank

	Ballasted		Unballasted	
	without driver	with driver	without driver	with driver
	kg	kg	kg	kg
Front	1430	1455	1100	1125
Rear	1160	1210	1240	1290
Total	2590	2665	2340	2415

[5] with tyres 240/70R16 front and 380/70R20 rear
[6] with tyres 240/70R16 front and 380/70R20 rear

	Number	Total mass	
		kg	kg
Front weight	1	250	none
Rear wheels	none	none	none
Optional	none	none	none

2.5 TRACK SPECIFICATIONS

none

2.6 TYRES AND TRACK WIDTH SPECIFICATIONS

	Front	Rear
Tyres:		
- make	Good Year	Good Year
- model	DT 810	DT 810
- dimensions	240/70R16	380/70R20
- ply rating	-------	------
- load index/speed	104 A8	122 A8
- type	radial	radial
- maximum load (tyre manufacturer's)	900 daN	1500 daN
- inflation pressure (tyre manufacturer's)	240 kPa	160 kPa
- dynamic radius index	350 mm	510 mm
Chosen track width:	1020 mm	890 mm
Technically permissible axle load	1800 daN	3000 daN
Others tyres available	280/65R15.5	380/70R20

2.7 FUEL

Type: ERG DIESEL oil, in conformity with national standard.
Density at 15 °C: 0.830 g/cm^3

2.8 OILS AND LUBRICANTS

2.8.1 Capacity and change interval

	Capacity	Oil change	Filter change
	dm^3	h	h
Engine with filter	6.7	150	300
Gear box with rear axle, final drive, hydraulic system and steering	41	1200	when the warning lamp is lighted
Front axle	6	1200	--------
Front final drive	3	1200	--------
Front P.T.O transmission	2.5	1200	--------
Brakes	2.5	max. level	--------

2.8.2 Specifications (SAE, API, CCMC, ACEA, Mil.L, ISO)

	Recommended	Used during test
Engine oil - Type: - Viscosity: - Classification:	AKROS TURBO 15 W/40 12.50 cSt API SE - CD	As recommended
Hydraulic fluid - Type: - Viscosity: - Classification	AKROS MULTI 11.50 cSt API GL 4	As recommended
Front and rear axle, final drives and gear box - Type: - Viscosity: - Classification:	AKROS MULTI 11.50 cSt API GL 4	As recommended
Steering oil - Type: - Viscosity: - Classification:	AKROS MULTI 11.50 cSt API GL 4	As recommended
Braking oil - Type: - Viscosity: - Classification:	AKROS MATIC 6.7 cSt API GL4	As recommended

2.8.3 Grease:

Type: AKROS GREASE T2 NLGI2 LITIO/Ca
Number of lubrication points: 10

3 COMPULSORY TESTS

3.1 MAIN POWER TAKE-OFF

Date and location of tests: 14th-18th September 1998, I.M.A., TORINO, ITALY
Type of dynamometer: Parasitic currents, BORGHI&SAVERI FA300-30SP

Power	Speed		Fuel consumption			Specific energy
	Engine	P.t.o.	Hourly		Specific	
kW	rev/min		kg/h	l/h	g/kWh	kWh/l
3.1.1 MAXIMUM POWER - TWO HOUR TEST						
39,67	2350	611	10,46	12,60	264	3,15
3.1.2 3.1.2 POWER AT RATED ENGINE SPEED						
39,67	2350	611	10,46	12,60	264	3,15
3.1.3 3.1.3 STANDARD POWER TAKE OFF SPEED 540±10 rev/min)						
37,39	2081	541	9,81	11,82	262	3,16
3.1.4 PART LOADS						
3.1.4.1 the torque corresponding to maximum power at rated engine speed						
39,67	2350	611	10,46	12,60	264	3,15
3.1.4.2 85% of torque obtained in 3.1.4.1						
34,60	2412	627	9,22	11,11	266	3,11
3.1.4.3 75% of torque defined in 3.1.4.2						
26,62	2469	642	7,65	9,22	287	2,89
3.1.4.4 50% of torque defined in 3.1.4.2						
17,85	2492	648	5,91	7,12	331	2,51
3.1.4.5 25% of torque defined in 3.1.4.2						
9,05	2523	656	4,48	5,40	495	1,67
3.1.4.6 unloaded						
-	2542	661	3,17	3,82	-	-

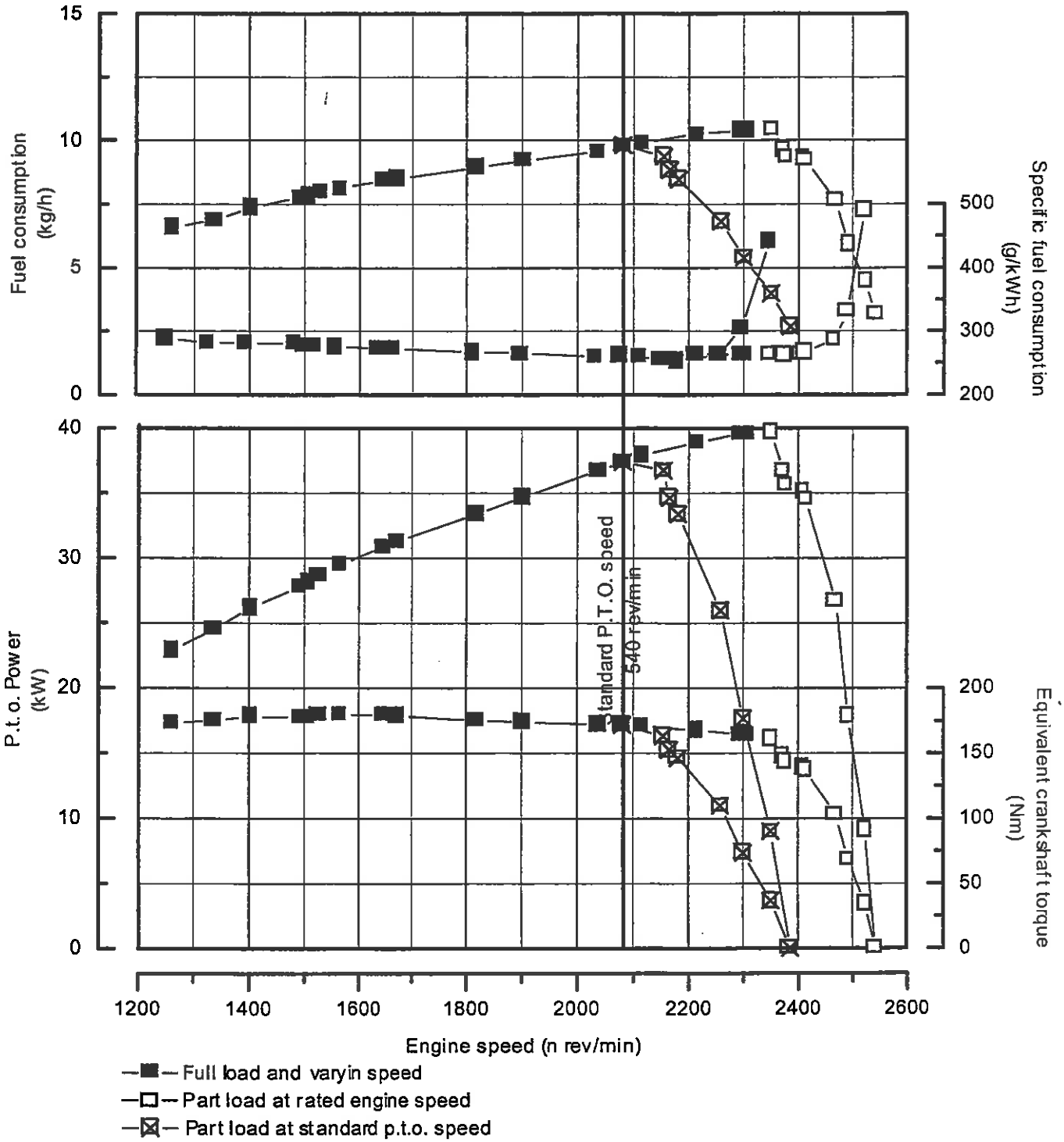
Power	Speed		Fuel consumption			Specific energy
	Engine	P.t.o.	Hourly		Specific	
KW	rev/min		kg/h	l/h	g/kWh	kWh/l
3.1.5 PART LOADS AT STANDARD POWER TAKE OFF SPEED (540±10 rev/min)						
3.1.5.1 the torque corresponding to maximum power						
37,39	2081	541	9,81	11,82	262	3,16
3.1.5.2 85% of torque obtained in 3.1.5.1						
33,37	2181	567	8,46	10,19	254	3,27
3.1.5.3 75% of torque defined in 3.1.5.2						
25,94	2258	587	6,82	8,22	263	3,16
3.1.5.4 50% of torque defined in 3.1.5.2						
17,66	2300	598	5,38	6,48	305	2,72
3.1.5.5 25% of torque defined in 3.1.5.2						
9,02	2350	611	3,98	4,80	441	1,88
3.1.5.6 unloaded						
-	2385	620	2,67	3,22	-	-

No load maximum engine speed: 2542 rev/min
Torque (equivalent crankshaft) at maximum power:
- at rated engine: 161,2 Nm
- at standard power take-off speed: 171,6 Nm

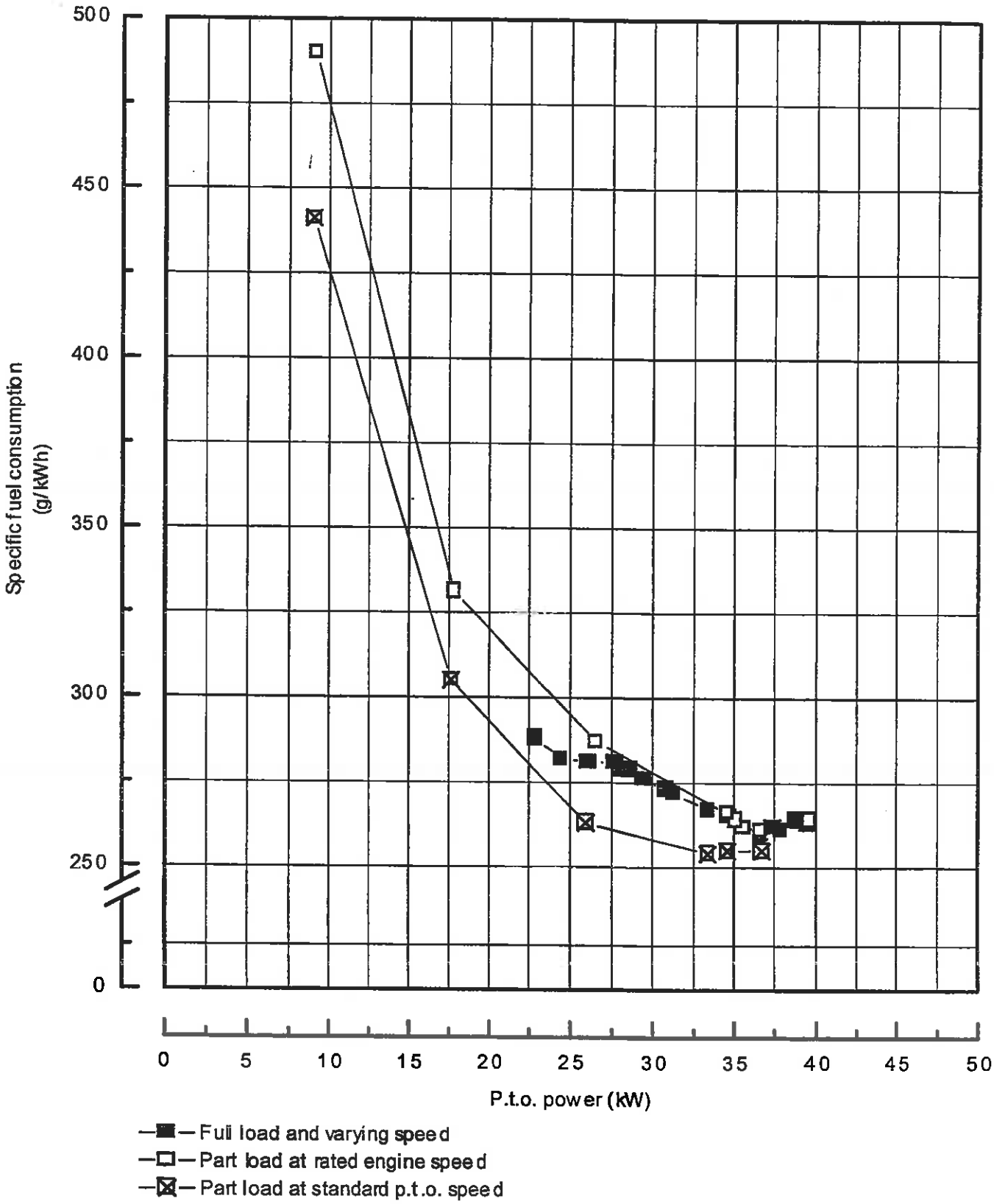
Maximum torque (equivalent crankshaft): 179,7 Nm at 1565 rev/min of the engine

Mean atmospheric conditions	
Temperature	21.0 °C
Pressure	99.8 kPa
Relative humidity	65 %
Maximum temperature	
Coolant	—— C
Engine oil	150.8 °C
Fuel	35.5 °C
Engine air intake	26.6 °C

Graph 1. Power take-off test



Graph 2. Power take-off test



3.2 HYDRAULIC POWER AND LIFTING FORCE

Date of tests: 21st October 1998

3.2.1 Hydraulic Power Test

Sustained pressure with relief valve open: 18.0 Mpa
Pump stalled: no
Pump delivery rate at minimum pressure: 36.2 l/min

	Flow rate	Pressure	Power
	l/min	MPa	kW
Flow rate corresponding to a hydraulic pressure equivalent to 90% of the actual relief valve pressure setting and corresponding hydraulic power	34.0	16.2	9.18
Flow rate and hydraulic pressure corresponding to maximum hydraulic power	34.0	16.2	9.18

Tapping point used for test: at rear of tractor
Temperature of hydraulic fluid: 65±5 °C
Opening pressure of the unloading valve: --- MPa
Closing pressure of the unloading valve: --- MPa

3.2.2 Power lift test

3.2.2.1 Rear power lift

Rear power lift linkage settings for test - see Table 1 and Figure 1

	at the hitch point	on the frame
Height of lower hitch points above ground in down position	200 mm	200 mm
Vertical movement		
- with lifting force	496 mm	488 mm
- without lifting force	578 mm	580 mm
Maximum corrected force exerted through full range	17.86 kN	11.98 kN
Corresponding pressure of hydraulic fluid	18.0 MPa	18.0 MPa
Moment about rear-wheel axis	16.75 kNm	18.54 kNm
Maximum tilt angle of mast from the vertical	none	12.5 degrees

Lifting heights relative to the horizontal plane including the lower pivot points								
mm	-156	-100	0	+100	+200	+300	+332	+340
Lifting forces[7]								
at the hitch points kN	17.86	18.30	18.58	18.75	18.73	19.19	----	19.40
Corresponding pressure:18.0 Mpa								
at the frame kN	16.52	16.90	16.39	15.25	14.16	12.43	11.98	----
Corresponding pressure: 18.0 MPa								

3.2.2.2 Front power lift

Front power lift linkage settings for test - see Table 2 and Figure 2

	at the hitch point	on the frame
Height of lower hitch points above ground in down position	200 mm	200 mm
Vertical movement - with lifting force - without lifting force	 420 mm 450 mm	 415 mm 445 mm
Maximum corrected force exerted through full range	14.68 kN	9.84 kN
Corresponding pressure of hydraulic fluid	18.0 MPa	18.0 MPa
Moment about front-wheel axis	17.29 kNm	17.86 kNm
Maximum tilt angle of mast from the vertical	none	7.5 degrees

Lifting heights relative to the horizontal plane including the lower pivot points								
mm	-190	-100	0	+100	+150	+200	+225	+230
Lifting forces								
at the hitch points kN	14.77	14.68	15.18	15.42	15.52	15.60	----	15.61
Corresponding pressure: 18.0 Mpa								
at the frame kN	15.58	13.64	12.45	11.35	10.71	9.84	9.99	----
Corresponding pressure: 18.0 MPa								

[7] The values of measured forces are corrected to correspond to a hydraulic pressure equivalent to 90% of the actual relief valve pressure setting

3.3 DRAWBAR POWER TEST (ballasted and unballasted tractor)

Date of tests: 28th September-9th October 1998
Type of track:. Asphalt

	Height of hitch above ground	Tyre inflaction pressure	
		Front	rear
Unballasted	450 mm	160 kPa	160 kPa
Ballasted	455 mm	160 kPa	160 kPa

Gear and range	Power	Drawbar pull	Speed	Engine speed	Slip of wheels	Specific fuel consumption	Specific energy	Temperature			Atmospheric conditions		
								Fuel	Coolant	Engine oil	Temperature	Relative humidity	Pressure
	kW	daN	km/h	min^{-1}	%	g/kWh	kWh/l	°C	°C	°C	°C	%	kPa
3.3.1 MAXIMUN POWER IN TESTED GEARS (unballasted tractor)													
4 Mean High	21,75	2148	3,64	2433	14,8	368	2,25	30	-	149	10	98	99.8
5 Mean Low	**26,66**	**2158**	**4,45**	**2352**	**15,0**	**356**	**2,33**	**30**	**-**	**149**	**10**	**98**	**99.8**
5 Mean High	28,69	1805	5,72	2354	9,0	343	2,42	30	-	149	10	98	99.8
1 Fast Low	29,80	1766	6,08	2353	8,3	340	2,44	30	-	142	11	98	99.8
1 Fast High	29,53	1442	7,37	2353	7,3	351	2,37	30	-	142	11	98	99.8
2 Fast Low	30,45	1226	8,94	2352	5,5	336	2,47	30	-	142	11	98	99.8
2 Fast High	29,62	981	10,87	2351	4,3	323	2,57	30	-	142	11	98	99.8
3 Fast Low	29,93	824	13,08	2352	3,7	318	2,61	30	-	142	11	98	99.8
3 Fast High	28,92	662	15,72	2351	3,4	329	2,53	30	-	142	11	98	99.8
3.3.2 MAXIMUN POWER IN TESTED GEARS (ballasted tractor)													
1 Slow Low	1,19	2462	0,17	2537	15,3	-	-	18	-	135	10	98	99.8
1 Slow High	1,43	2453	0,21	2535	15,0	-	-	15	-	136	11	95	99.8
2 Slow Low	1,71	2472	0,25	2534	15,0	-	-	16	-	136	11	95	99.8
2 Slow High	2,04	2453	0,30	2535	15,0	-	-	16	-	137	11	95	99.8
3 Slow Low	2,44	2462	0,36	2532	15,1	-	-	15	-	138	12	90	99.8
3 Slow High	2,90	2433	0,43	2534	15,0	-	-	14	-	138	12	90	99.8
4 Slow Low	3,41	2453	0,50	2534	14,7	-	-	16	-	137	12	90	99.8
4 Slow High	4,03	2433	0,60	2528	15,1	-	-	17	-	137	12	90	99.8
5 Slow Low	5,07	2423	0,75	2521	15,1	-	-	18	-	136	13	85	99.8
5 Slow High	6,04	2394	0,91	2518	14,7	-	-	19	-	135	13	85	99.8
1 Mean Slow	7,23	2413	1,08	2482	15,1	-	-	20	-	133	13	80	99.8
1 Mean High	8,61	2403	1,29	2473	15,1	-	-	20		134	13	80	99.8

Gear and range	Power	Drawbar pull	Speed	Engine speed	Slip of wheels	Specific fuel consumption	Specific energy	Temperature			Atmospheric conditions		
								Fuel	Coolant	Engine oil	Temperature	Relative humidity	Pressure
	kW	daN	km/h	min^{-1}	%	g/kWh	kWh/l	°C	°C	°C	°C	%	kPa
2 Mean Low	10,16	2389	1,53	2463	14,9	-	-	20	-	133	14	70	99.8
2 Mean High	12,25	2403	1,83	2460	15,0	-	-	21	-	131	14	70	99.8
3 Mean Low	14,45	2379	2,19	2454	14,8	-	-	22	-	136	14	70	99.8
3 Mean High	17,57	2423	2,61	2447	15,2	392	2,12	22	-	134	15	60	99.8
4 Mean Low	19,97	2389	3,01	2411	14,7	377	2,20	22	-	136	15	60	99.8
4 Mean High	23,18	2369	3,52	2352	14,8	362	2,29	20	-	138	15	60	99.8
5 Mean Low	30,01	2345	4,61	2351	11,8	331	2,51	20	-	138	15	60	99.8
5 Mean High	31,52	2001	5,67	2347	9,54	322	2,58	19	-	139	15	60	99.8
1 Fast Low	32,84	1942	6,09	2349	7,91	311	2,67	18	-	139	16	50	99.8
1 Fast High	33,27	1619	7,40	2352	6,91	310	2,67	17	-	138	16	50	99.8
2 Fast Low	32,93	1334	8,88	2349	5,92	313	2,66	17	-	138	16	50	99.8
2 Fast High	32,15	1079	10,73	2349	5,47	322	2,58	17	-	138	16	50	99.8
3 Fast Low	31,49	883	12,84	2349	5,22	335	2,48	14	-	138	16	50	99.8
3 Fast High	30,97	716	15,57	2349	4,19	340	2,44	14	-	138	16	50	99.8
3.3.3 FIVE HOURS TESTS													
3.3.3.1 HOUR TEST at 75% of pull at maximum power													
1 Fast High	26,07	1216	7,72	2418	5,58	330	2,51	15	-	138	17	50	100.1
3.3.3.2 FIVE HOUR TEST at pull corresponding to 15% wheelslip – with 240 kg as additional ballast													
4 Mean High	24,51	2369	3,72	2387	⌘	⌘	⌘	25	-	137	16	70	99.9

⌘ The test was carried out with additional ballast; the not quoted figures are irrelevant

Oil consumption during ten hours duration of test 3.3.3.1and 3.3.3.2 70

3.4 TURNING AREA AND TURNIG CIRCLE

Wheels equipment:
- front: 240/70R16 (104 A8)
- rear: 380/70R20 (122 A8)

Track width:
- front: 1020 mm
- rear: 890 mm

	With brakes		Without brakes	
	Right-hand	Left-hand	Right-hand	Left-hand
	m	m	m	m
Radius of turning area	3.40	3.35	3.80	3.75
Radius of turning circle				
-at the front wheel	3.50	3.50	3.90	3.85
-at the front power lift	4.05	4.00	4.35	4.30

3.5 LOCATION OF CENTRE OF GRAVITY

Height above ground	630 mm
Distance forward from the vertical plane, containing the axis of the rear wheels	905 mm
Distance from the median plane of the tractor: to the right	8 mm

3.6 BRAKING

Date of tests: 2nd November 1998
Type of track: asphalt
Type of decelerometer: DATRON

3.6.1 Cold service braking device test

Ballasted tractor		
Speed before application of brake	Braking device control force	Mean deceleration
km/h	daN	m/s^2
32.0	15	0.88
32.0	23	2.28
32.0	30	3.29
32.0	37	3.91
32.0	42	4.39
32.0	53	4.70

Unballasted tractor		
Speed before application of brake	Braking device control force	Mean deceleration
km/h	daN	m/s^2
32.0	13	0.97
32.0	22	2.31
32.0	28	3.29
32.0	39	4.76
32.0	45	4.94
32.0	53	5.34

Maximum deviation of the tractor from its original course: none
Abnormal vibration: none

3.6.2 Fade test

Speed before application of brake	Braking device control force	Mean deceleration
km/h	daN	m/s^2
32.0	12	0.56
32.0	25	1.42
32.0	33	2.78
32.0	39	3.87
32.0	44	4.25
32.0	54	4.39

Maximum deviation of the tractor from its original course: none
Abnormal vibration: none
Brake heating method: by means of towing the tractor for 1 km at 25 km/h with a towing force of 2.61 kN

3.6.3 Parking braking device test

	Uphill	Downhill
Braking device control force	14 daN	14 daN

3.7 MEASUREMENT OF EXTERNAL NOISE LEVEL

Date of tests:	1st October 1998- I.M.A. - TORINO
Sound level meter make, model and type:	RION make, NA 29 E model, impulse precision type
Type of track:	asphalt
Gear number:	5 High Fast
Travelling speed before acceleration:	24 km/h
Sound level:	78.0 dB(A)

4 OPTIONAL TESTS RESULTS

None

5 REPAIRS

None

6 REMARKS

None

7 ANNEXE

None

The Head of the Section

E. CAVALLO

The Director

P. PICCAROLO

Torino, 30th December 1998