O.E.C.D. Report No.: 1307

Bundesanstalt für Landtechnik

A-3250 Wieselburg, Austria

Dieseltractor

SAME ASTER 70 VDT (4 WD)



Date of approval: 5.4.1991

his report has been approved by the O.E.C.D. Coordinating Centre
EMAGREF, France) as being in accordance with the O.E.C.D. Test Code

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Tractor manufacturer's name and address:	S + L + H Viale F. Cassani 15, I-24047 Treviglio, Italy
Location of tractor assembly:	Treviglio (BG), Pieve di Cento, Italy
Submitted for test by:	Manufacturer
Selected for test by:	Manufacturer by agreement with BLT-Wieselburg
Place of running-in:	Treviglio (BG), Pieve di Cento, Italy
Duration of running-in:	50 hours
Location of test:	Wieselburg, Austria

SPECIFICATIONS OF TRACTOR

TRACTOR:

Make:	SAME
Trade name:	ASTER 70 VDT "4 WD"
Type:	Wheel-tractor, unit construction
Number of driving wheels:	4
Serial no.:	1403
1st serial no.:	1001

ENGINE:

Make:	S + L + H
Model:	1000.3AT
Type:	4 stroke diesel engine direct injection with air cooling system
Serial no.:	1658

Cylinder:

Number/disposition:	3, vertical in line
Bore/stroke:	105/115,5 mm
Capacity:	3000 cm^3
Compression ratio:	16 : 1
Arrangement of valves:	Overhead valves
Cylinder liners:	Without liners

Supercharging:

Make:	GARRET
Model:	T 25
Type:	Exhaust turbo supercharger
Supercharging pressure:	0,80 MPa

Fuel system:

Fuel feed system:	AC CORONE fuel feed pump
Make, model and type of fuel filter:	FIAAM FNA 166/00 With changeable filter cartridge and water trap
Capacity of fuel tank:	78 l
Make, model and type of injection pump:	BOSCH PFR IK 90 A 503 Innerset pump, one for every cylinder, without serial number
Manufacturer's production setting of injection pump, flow rate and timing:	$65^{\pm 2}$ mm^3/stroke corresponding to 14,11 l/h at rated engine speed and full load $16^{\pm 0.5°}$ before TDC
Make, model and type of injectors:	BOSCH DLLA 150 S 925 Multihole injection nozzles
Injection pressure:	$180^{\pm 1,5}$ bar

Governor:

Make:	Own make
Model:	085.1650.0
Type:	Variable speed governor, mechanically acting
Governed range of engine speed:	From 600 to $2680^{\pm 30}$ rev/min engine speed
Rated engine speed:	2350 rev/min

Air cleaner:

Location of air intake:	Inside the bonnet, in front the radiator
Pre-cleaner:	Incorporated in main-cleaner
Make:	Own make
Model:	200.8156.3 (Polypropylene T 81 S)
Main-cleaner:	
Make:	FIAAM
Model:	FLI 6620
Type:	Dry paper element filter
Location:	Inside the bonnet, in front of engine

Service intervals:	
Pre-cleaner:	Visual control
Main-cleaner paper insert:	Cleaning when service indication is warning
Maintenance indication:	Electric lamp indication, -94 mbar for indication

Lubrication system:

Type of feed pump:	Forced feed from gear pump
Type of filter:	FIAAM FT 4803 in full flow

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
Type of temperature control:	None

Starting system:

Make:	MAGNETI MARELLI
Model:	MT 71 FA 2.5/12 D 11
Type:	Solenoid engaged starter motor
Starter motor power rating:	2,5 kW, 12 V
Cold starting aid:	Thermostarter (optional)
Safety device:	Preventing engine start on the clutch pedal

Electrical system:

Voltage:	12 V, negative earth
Generator:	Make: MAGNETI MARELLI Model: AA 125 R-14 V-55 A Type: three phase type Power: 14 V, 55 A, 770 W
Battery:	1 with 12 V, lead acid type Rating: 100 Ah at 20 hours rating

Exhaust system:

Make:	S + L + H
Model:	255.5630.3/10
Type:	4 chambers-absorption-reflexion type
Location:	500 mm left of engine (middle), 490 mm height above ground in vertical position.

TRANSMISSION TO WHEELS:

Clutch:

Make:	Own make (S + L + H)
Model:	494.24
Type:	Single dry disk clutch, only for travelling of tractor
Number of plates:	1
Diameter of plate:	280 mm
Method of operation:	Mechanically acting by pedal

Gear box:

Make:	Own make
Model:	494.31
Type:	Mechanical synchronized speed change gear
Model:	(as tested) 3 forward and 1 reverse group (FORWARD: FAST, NORMAL, SLOW) combined with 4 speed change gear Total: 12 forward and 12 reverse gears
Arrangement:	1 lever for group gear (FAST, NORMAL, SLOW) 1 lever for FORWARD/REVERSE group 1 lever for the 4 speed gear (1 - 4)
Available options:	Four speeds forward, with four ranges of speed and one reverse group Total: 16 forward and 16 reverse gears

Rear axle and final drives:

Make:	Own make
Model:	494.44
Type:	Central axle, bevel gear drive differential and epicyclic reduction gear
Differential lock:	Make: Own make Model: 494.35 Type: Mechanically acting, engaging or disengaging with pedal

Front axle and final drives:

Make:	Own make
Model:	494.43
Type:	Original S + L + H system with central shaft bevel gear drive, differential and epicyclic final drives

Differential lock: Make: Own make
Model: 494.46
Type: Mechanically acting, in common with rear differential lock control system

Front wheel drive: Mechanically engaged, hand lever operated

Total ratios and travelling speeds:

Gear no.	Group	Number of engine revolutions for one revolution of driving wheels	Nominal travelling speed at rated engine speed of 2500 rev/min *) km/h
1	forward SLOW L	538,34	1,14
2		385,81	1,59
3		252,35	2,44
4		153,19	4,01
1	forward NORMAL N	179,45	3,43
2		128,60	4,78
3		84,11	7,32
4		51,06	12,05
1	forward FAST V	59,81	10,29
2		42,87	14,36
3		28,04	21,96
4		17,02	36,17
1	reverse SLOW t	558,18	1,10
2		400,03	1.54
3		261,65	2,35
4		158,83	3,87
1	reverse NORMAL N	186,06	3,31
2		133,34	4,53
3		87,22	7,06
4		52,94	11,63
1	reverse FAST V	62,02	9,92
2		44,45	13,85
3		29,07	21,18
4		17,65	34,90

*) Calculated with rear type dynamic radius index of 695 mm (ISO 4251/1-1984)
test tyre equipment: rear 16,9 R 30
front 14,5 - 20 AS

Number of revolutions of front wheels for one revolution of rear wheels: 1,3846

POWER TAKE-OFF:

Main power take-off:

Type:	Independent, at rear of tractor; in median plane of tractor
Method of engagement:	Engaged or disengaged by hand lever, driven by single dry disk clutch independent of travel clutch
Number of shafts:	1
Method of changing power take-off shaft speeds:	Speed selection by hand lever and spur gear, no changing of shaft ends.

Power take-off proportional to engine speed:

540 and 1000 rev/min

Location:	At rear of tractor
Diameter of power take-off shaft end:	35 mm
Number of splines:	6, in conformity with ISO R 500 - 1979, type I
Height above ground:	690 mm with tyre dynamic radius index of 695 mm
Distance from the median plane of the tractor:	0 mm
Distance behind rear wheel axis:	396 mm
P.t.o. speed at rated engine speed:	616 rev/min resp. 1034 rev/min
Engine speed at standard power take-off speeds:	2058 rev/min resp. 2272 rev/min
Ratio of rotation speeds (engine speed/ p.t.o. speed):	3,81 resp. 2,27
Power restriction and max. torque:	Power and torque of the engine
Direction of rotation (viewed from behind tractor):	Clockwise

Power take-off proportional to ground speed:

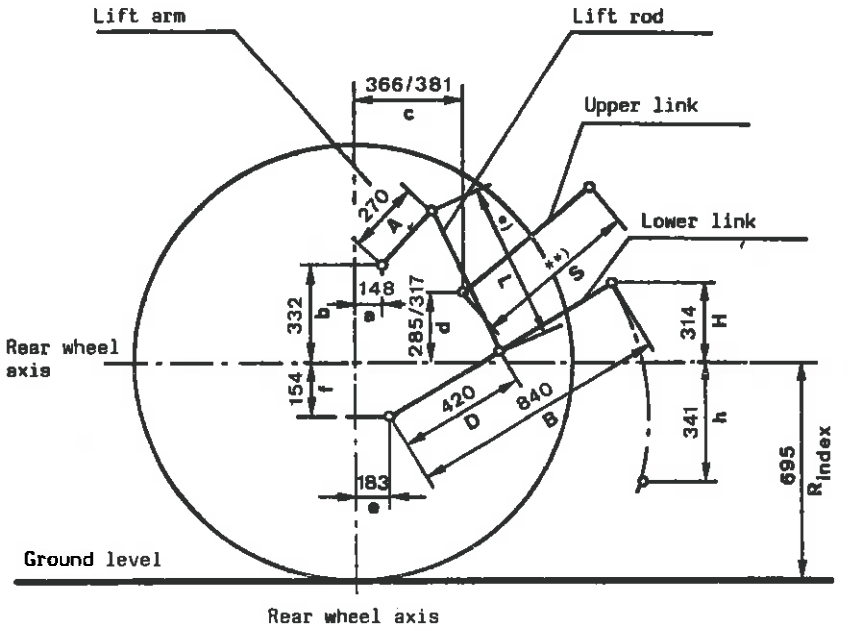
Speed of shaft:	540 rev/min
Travelling distance for one revolution of p.t.o. shaft:	0,426 m with 695 mm tyre dynamic radius index

Number of p.t.o. shaft revolutions for one revolution of rear wheels:	9,806
Direction of rotation with forward gear engaged (viewed from behind tractor):	Clockwise

POWER LIFT:

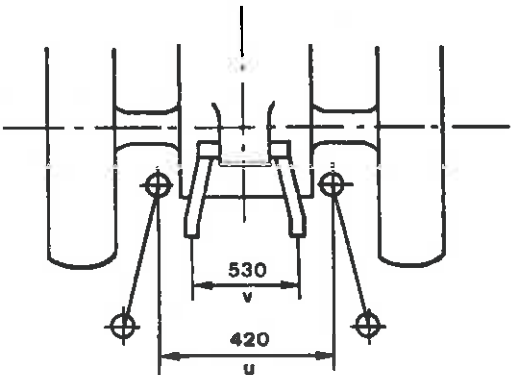
In the rear:	
Make:	MITA
Model:	M 65 S
Type:	Draught and position control and upper link sensing, both mixable, floating position
Type of hydraulic system:	Open center type
Type and number of cylinder:	One internal single acting hydraulic cylinder
Type of linkage lock for transport:	Mechanically acting with screwed tie rods which are locking the lower links
Relief valve pressure setting:	18,0 MPa (180 bar)
Opening pressure of cylinder safety valve:	20,0 MPa (200 bar)
Lift pump type:	Rotary type pump
Transmission between pump and engine:	Mechanically driven by engine shaft
Type and number of filter:	One replaceable paper cartridge
Site of oil reservoir:	Gear box
Type, number and location of tapping points:	2 tapping points in accordance to ISO DIS 5675-1979, 300 mm behind rear axle, 470 - 530 mm above rear axle, 125 mm right of median plane
Maximum volume of oil available to external cylinders:	4 dm^3
Three-point-linkage:	Category II in conformity with ISO 730/1 - 1977
Category adapter:	None

Figures of power lift:



*) Left lift rod adjustable from 505 mm to 680 mm length by thread, right lift rod adjustable from 510 mm to 690 mm by gear and thread.

**) Upper link length adjustable from 470 mm to 730 mm.



Dimensions of linkage geometry:

			Dimension of range mm	Settings used in test mm
Length of lift arms:		(A)	270	270
Length of lower links:		(B)	840	840
Distance of lift arm pivot points from rear wheel axis:	horizontally	(a)	148	148
	vertically	(b)	332	332
Horizontal distance between the 2 lower link points:		(u)	420	420
Horizontal distance between the 2 lift arm end points:		(v)	530	530
Length of upper link:		(S)	470 - 730	590
Distance of upper link pivot point from rear wheel axis:	horizontally	(c)	366; 381	381
	vertically	(d)	285; 317	285
Distance of lower link pivot point from rear wheel axis:	horizontally	(e)	183	183
	vertically	(f)	154	154

Height of lower link hitch points relative to the rear wheel axis (695 mm above ground)*):

		Min. lift rod length	During test	Max. lift rod length
Length of lift arms	(A) mm	270		
Linkage distance of lift rod	(D) mm	420		
Length of lift rods	(L) mm	510	615	680
Lowest position	(h) mm	260	495	645
Highest position	(H) mm	360	160	30

*) with dynamic radius index 695 mm (ISO 4251/1-1984)

TRAILER HITCH:

Type:	Fork type
Hole diameter:	37 mm
Height above ground:	530/630 mm , 820/870/920 mm
Distance of hitch point from rear wheel axis, horizontally:	570 mm
Distance of hitch point from power take-off shaft end, vertically:	below 160/60 mm ; above 130/180/230 mm
horizontally:	175 mm
Maximum vertical permissible load:	14,7 kN

HOLED DRAWBAR:

Length:	965 mm
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 min.:	50 mm
max.:	1055 mm
Horizontal distance to power take-off shaft end (rear):	685 mm

STEERING:

Make:	DANFOSS
Model:	DANFOSS ORBITROL OSPC 80 ON
Type:	Hydrostatic steering
Method of operation:	Steering wheel acting on front wheels
Pump:	Gear pump, directly driven by engine
Rams:	One double acting cylinder fitted on front axle
Working pressure:	9,0 MPa (90 bar)

BRAKES:

Service brake:

Make:	S + L + H
Model:	494.54
Type:	Oil bath disc, total 4 discs, 2 at front and 2 at rear differential half shafts FRENDO HDT 303 lining material
Front disc diameter:	223 mm
Rear disc diameter:	178 mm
Method of operation:	Hydraulically acting with 2 pedals
Trailer-braking take-off:	Optional, not on tested tractor Hydraulic brake system

Parking brake:

Type:	Full independent by service brake, 1 oil bath disc mounted on the pinion shaft in the gear box ISIBOND Sinterix lining material
Method of operation:	Mechanically by hand lever with ratched

Steering assistance brake: Operated by divided pedal of service brake, pedals disconnectable by a flap

WHEELS:

Number:	Front: 2, steering and driving function Rear: 2, driving function
Wheelbase:	2194 mm
Track width adjustment:	

	Minimum mm	Maximum mm	Adjustment method
Front	1400	1785	Changing the position of the rims in respect of the disc
Rear	1400	1900	

PROTECTIVE STRUCTURE:

Make:	S + L + H
Model:	C 31
Manufacturer's name and address:	S + L + H SpA., Viale F. Cassani 15, Treviglio (BG)
Protective device:	Cab (full closed)
OECD-approval no.:	CSD 1250/13
Remark:	Description see under OECD-approval no.: CSD 1250/13

DRIVER'S SEAT:

Make:	SABLE
Model:	DS 83
Type:	Unholstered seat with back rest
Type of suspension:	Adjustable spring
Type of damping:	Shock absorber
Range of adjustment, longitudinal:	150 mm
vertical:	60 mm

MISCELLANEOUS:

Additional seat:	Optional
Location:	On left side of driver's seat
Number of places:	1

LIGHTING:

	*) Height above ground of centre mm	Size mm	Distance from outside edge of lights to median plane of tractor mm
Head lights	1130	110 x 110	175
Side lights	1690	110 x 35	790
Rear lights	1485	50 x 60	705
Brake lights	1485	50 x 60	655
Direction indicators front	1725	50 x 60	790
Direction indicators rear	1485	50 x 60	755
Reflectors	1070	dia 80	720

*) Measured with tyre dyn. radius index at rear 695 mm and 503 mm at front (ISO 4251/1-1984)

TEST CONDITIONS

Overall dimensions:

	Length	Width *)
	mm	mm
With ballast	4220	1930
Without ballast	3900	1930

*) Measured on the outside edges of the rear wheels

Ground clearance:
(unballasted tractor)

Clearance limiting part: 365 mm under front axle
390 mm under trailer hitch mounting plate

Tractor mass: **With tanks full** and cab

		Without driver	With driver
		kg	kg
Unballasted	Front	1182	1195
	Rear	1668	1730
	Total	2850	2925
Ballasted	Front	1600	1613
	Rear	2150	2215
	Total	3750	3828

Ballast:

	Number of weights	Mass total kg	Water kg
Front	8	310	-
Rear	2	88	2 x 251
Additional	-	-	-

Tyres and track width specifications:

Tyres:

	Front	Rear
Dimensions	14,5 - 20 AS rim: 11 x 20	16,9 - R 30 rim: 14 x 30
Ply rating	10	10
Type	diagonal carcass	radial carcass
Max. load (tyre manufacturer's)	17,06 kN	19,26 kN
Max. load (tractor manufacturer's)	7,85 kN	14,70 kN
Inflation pressure (tyre manufacturer's)	2,5 bar	2,0 bar
Dynamic radius index	503 mm	695 mm
Chosen track width	1500 mm	1500 mm

Oil and lubrication:

Capacity and change interval:

	Capacity (dm^3)	Oil change (h)	Filter change (h)
Engine	7,1	150	300
Gear box	28,0	2400	2400
Front axle	6,0	1200	-
Rear axle	Common with gear box		
Final drive front	3,0	1200	-
Final drive rear	Common with gear box		
Hydraulic system	Common with gear box		
Steering	Common with gear box		Filter warning lamp is lighting on the dashboard

Specifications:

	Recommended:	Used during test:
Engine oil:		
Type:	One range viscosity oil	
Viscosity:	SAE 30 summer SAE 10 W-20 winter	
Classification:	API CD-SF, MIL-L-2104 D	AGIP DIESEL SIGMA S
Transmission oils:		
Type:	Transmission oil	
Viscosity:	11,3 mm^2/s at 100°C	
Classification:	API GL 4	AGIP ROTRA THT SL
Hydraulic fluid:	Common with circuits with transmission	
Steering oil:		
Type:	Transmission oil	
Viscosity:	11,3 mm^2/s at 100°C	
Classification:	API GL 4	AGIP ROTRA THT SL
Brake fluid:		
Type:	-	
Classification:	FMVSS 116 DOT 4	AGIP brake fluid DOT 4
Grease:		
Type:	Lithium soap basis	
Classification:	NLGI 2 (multigrade grease)	
Number of lubrication points:	13	
Fuel:		
Type:	In conformity with national standard according to DIN 51601	
Density at 15°C:	0,842 g/cm^3	

TEST RESULTS

COMPULSORY TEST:

Main power take-off performance

Date and location of tests: 26.6.1990, Wieselburg, Austria
Type of dynamometer: SCHENCK eddy-current brake W 780

Main test on: ISO R 500 - 1979, type 2 (DIN 9611) - 1000 rev/min

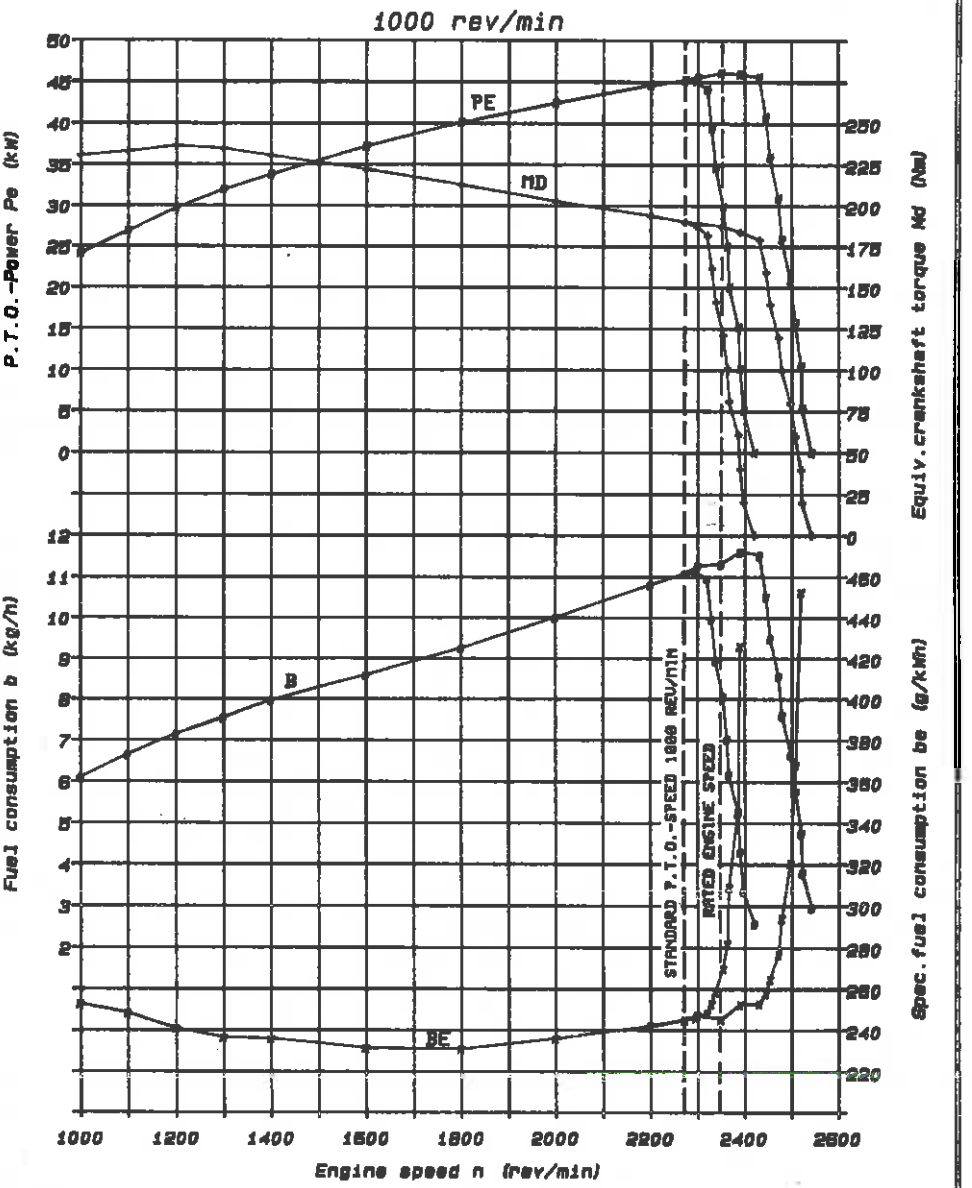
Power	Speed		Fuel consumption		Specific energy
	engine	p.t.o.	hourly	specific	
kW	rev/min	rev/min	kg/h 1/h	g/kWh	kWh/l
MAXIMUM POWER					
Maximum power - 2 hours test					
46,11	2350	1034	11,32 13,44	245,5	3,43
Power at rated engine speed					
46,11	2350	1034	11,32 13,44	245,5	3,43
Standard power take-off speed					
45,20	2272	1000	11,08 13,16	245,0	3,43
PART LOADS					
(i) the torque corresponding to maximum power at rated engine speed					
46,11	2350	1034	11,32 13,44	245,5	3,43
(ii) 85 % of torque obtained in (i)					
40,79	2445	1076	10,53 12,51	258,0	3,26
(iii) 75 % of torque defined in (ii)					
30,93	2472	1088	8,57 10,18	277,0	3,04
(iv) 50 % of torque defined in (ii)					
20,82	2497	1099	6,68 7,93	321,0	2,63
(v) 25 % of torque defined in (ii)					
10,50	2520	1109	4,76 5,65	453,5	1,86
(vi) unloaded					
0	2542	1119	2,97 3,53	-	-

Power	Speed		Fuel consumption		Specific energy
	engine	p.t.o.	hourly	specific	
kW	rev/min	rev/min	kg/h 1/h	g/kWh	kWh/l
PART LOADS AT STANDARD POWER TAKE-OFF SPEED					
(i) The torque corresponding to maximum power available					
45,20	2272	1000	11,08 13,16	245,0	3,43
(ii) 85 % of torque obtained at maximum power					
39,38	2329	1025	9,95 11,82	252,5	3,33
(iii) 75 % of torque defined in (ii)					
29,84	2354	1036	8,06 9,57	270,0	3,12
(iv) 50 % of torque defined in (ii)					
20,01	2367	1042	6,18 7,34	309,0	2,73
(v) 25 % of torque defined in (ii)					
10,09	2390	1052	4,30 5,11	426,0	1,97
(vi) unloaded					
0	2420	1065	2,58 3,06	-	-

No load maximum engine speed: 2542 rev/min
Equivalent crankshaft torque
at maximum power: 187,4 Nm and rated engine speed
Maximum equivalent crankshaft torque: 236 Nm at 1200 rev/min of engine

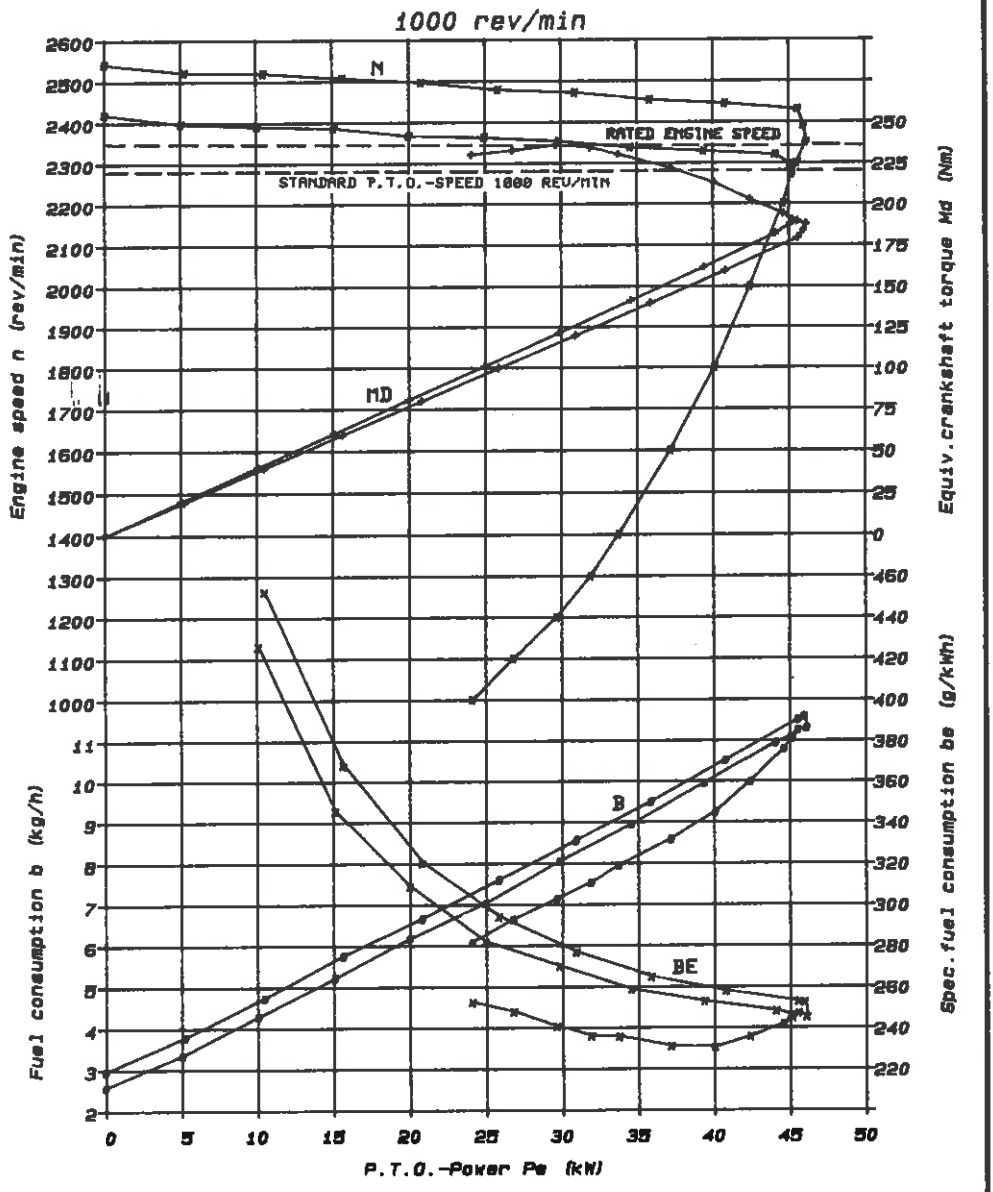
Mean atmospheric conditions	temperature:	21°C
	pressure:	998 mbar
	rel. humidity:	70 %
Maximum temperatures	coolant:	-
	engine oil:	123°C
	fuel:	40°C
	engine air intake:	23°C

Bundesanstalt für Landtechnik Wieselburg/Erlauf, Austria Prot.Nr.:	P.T.O.-test	SAME Typ ASTER 70 VDT 4WD Mot.Typ S+L+H 1000.3 AT



Engine ser.nr. : 1558	atm. pressure: 988 MBAR	fuel temp. : 40 C	signature
Tractor ser.nr.: AST 7VT 1483	air temper. : 21 C	d.of tests : 1990-09-26	
Oil : 0.842/15 C	coolant temp.:	test no. : 780-824-90	
Engine oil : AGIP SIGMA BAE30	oil temp. : 123 C	curves no. :	LUGER

Bundesanstalt für Landtechnik Wieselburg/Erlauf, Austria Prot.Nr.:	P.T.O.-test	SAME Typ ASTER 70 VDT 4WD Mot.Typ S+L+H 1000.3 AT



engine ser.nr. : 1888	atm. pressure: 988 MBAR	fuel temp. : 40 C	signature
tractor ser.nr.: AST 7VT 1403	air temper. : 21 C	d.of tests : 1990-06-26	
fuel : 0.842/15 C	coolent temp.:	test no. : 780-524-90	
engine oil : AGIP SIGMA SAE30	oil temp. : 123 C	curves no. : 2	LUGER

HYDRAULIC POWER AND LIFTING FORCE:

Date of tests: 18.9.1990

Hydraulic power test:

Sustained pressure with relief valve open: 20,0 MPa (200 bar)

Pump delivery rate at minimum pressure (at rated engine speed): 26,40 l

	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	18,0	18,0	5,40
Flow rate and hydraulic pressure corresponding to maximum hydraulic power	21,9	16,5	6,02

Tapping point used for test: At rear of tractor

Temperature of hydraulic fluid, if different from 65° ± 5°C: 62°C

Opening pressure of the unloading valve: -

Closing pressure of the unloading valve: -

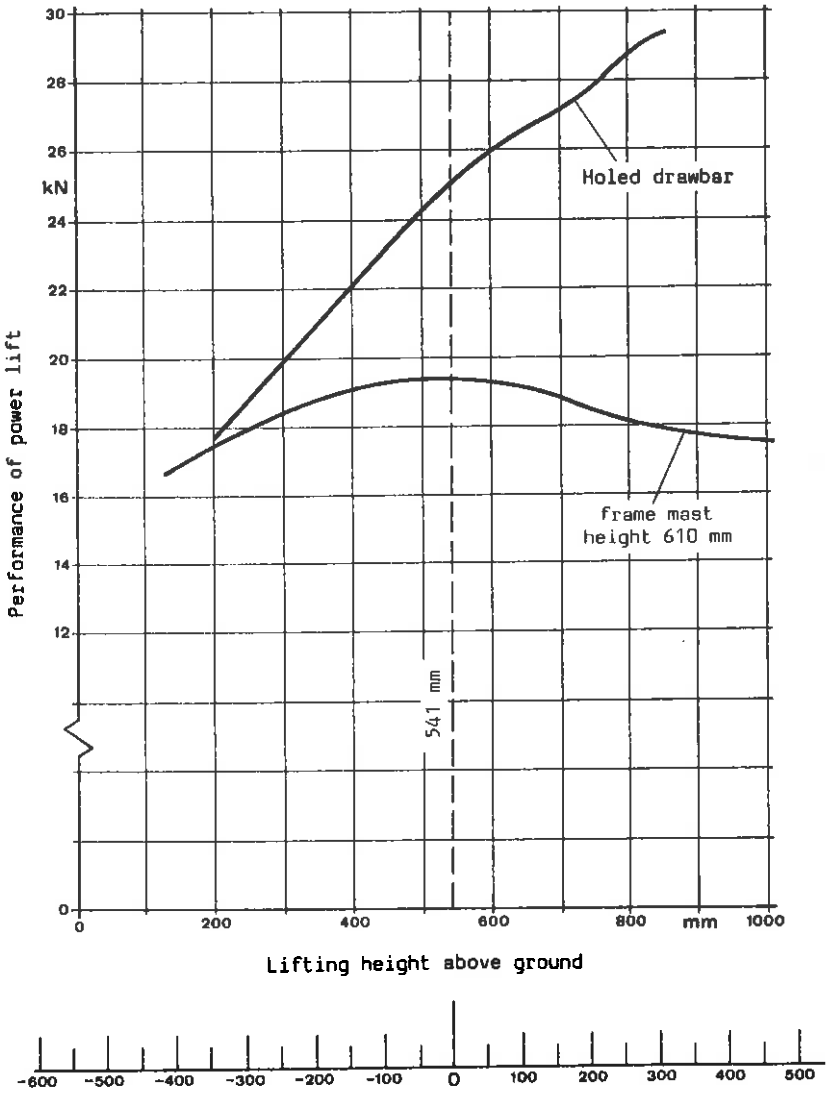
Power lift test:

	at the hitch point	on the frame
Height of lower hitch points above ground in down position	200 mm	200 mm
Vertical movement	655 mm	655 mm
Maximum corrected force exerted through full range	17,7 kN	16,7 kN
Corresponding pressure of hydraulic fluid	18,0 MPa (180 bar)	18,0 MPa (180 bar)
Moment about rear wheel axis	18,1 kNm	27,3 kNm
Maximum tilt angle of mast from vertical	-	from +3° to 0° and to +12°

Linkage settings for test: See table and figure in specifications

Lifting heights relative to the horizontal plane including the lower link pivot points														
mm	-415	-375	-340	-270	-200	-100	-50	0	100	200	255	315	390	470
Lifting forces (the values measured are corrected to correspond to a hydraulic pressure equivalent to 90 % of the actual relief valve pressure setting or to maximum power delivered by the hydraulic system, which is lower)														
Corresponding pressure: 18,0 MPa (180 bar)														
at the hitch point kN			17,7	19,2	20,8	23,0	24,0	24,9	26,5	27,6	28,7	29,4		
at the frame (610 mm mast height) kN	16,7	17,1	17,4	18,1	18,7	19,2	19,3	19,3	19,2	18,5	18,2	17,9	17,7	17,5

Performance of power lift:



Height relative to the horizontal plane including the lower link pivot points (dyn. radius index 695 mm)

Drawbar performance:

Date of tests: 20.9.1990
16.10.1990

Type of track: Concrete

Height of drawbar above ground: unballasted 520 mm, ballasted 520 mm

Tyre inflation pressure: front: unballasted 110 kPa, ballasted 120 kPa
rear: unballasted 100 kPa, ballasted 110 kPa

Tyre sizes: front 14,5 - 20 AS, PR 10; rear 16,9 R 30, PR 10

Gear	Power	Drawbar pull	Speed	Engine speed	Slip of wheels	Specific fuel consumption	Specific energy	Temperature			Atmosph. conditions		
								Fuel	Coolant	Engine oil	Temperature	Rel.humidity	Pressure
	kW	kN	km/h	rev/min	%	g/kWh	kWh/l	°C	°C	°C	°C	%	kPa
(i) Maximum power in tested gears (unballasted tractor)													
1 L	8,09	26,95	1,08	2502	15,0	-	-	34	-	96	19	73	99,5
2 L	11,10	26,90	1,48	2496	15,0	-	-	34	-	96	19	73	99,5
3 L	16,71	26,95	2,23	2473	15,0	-	-	32	-	97	18	73	99,5
1 N	23,69	26,92	3,17	2463	15,0	352,5	2,39	32	-	100	20	73	99,5
4 L	27,49	26,95	3,67	2456	15,0	338,0	2,49	32	-	104	19	72	99,5
2 N	33,21	27,00	4,43	2441	15,0	320,0	2,63	33	-	106	21	72	99,5
3 N	39,71	20,78	6,88	2350	8,7	283,0	2,97	32	-	105	19	76	99,5
1 V	40,19	14,51	9,97	2350	6,0	280,0	3,01	31	-	105	19	76	99,5
4 N	38,73	11,82	11,81	2350	5,1	290,5	2,90	30	-	104	20	70	99,5
2 V	38,76	9,89	14,11	2350	4,7	290,0	2,90	30	-	102	19	70	99,5

Gear	Power	Drawbar pull	Speed	Engine speed	Slip of wheels	Specific fuel consumption	Specific energy	Temperature			Atmosph. conditions		
								Fuel	Coolant	Engine oil	Temperature	Rel.humidity	Pressure
	kW	kN	km/h	rev/min	%	g/kWh	kWh/l	°C	°C	°C	°C	%	kPa
(ii) Maximum power in tested gears (ballasted tractor)													
1 L	10,06	34,70	1,04	2495	15,0	-	-	34	-	96	22	68	99,0
2 L	14,18	34,73	1,48	2491	15,0	-	-	34	-	96	22	68	99,0
3 L	21,43	34,71	2,23	2472	15,0	345,0	2,44	32	-	102	20	68	99,0
1 N	29,93	34,80	3,10	2446	15,0	355,0	2,37	31	-	105	18	70	99,0
4 L	34,71	34,71	3,60	2430	15,0	315,0	2,67	34	-	109	21	70	99,0
2 N	39,48	32,90	4,33	2350	11,5	285,0	2,96	32	-	106	20	70	99,0
3 N	41,00	21,02	7,02	2350	6,4	274,5	3,07	32	-	106	20	70	99,0
1 V	40,60	14,60	10,01	2350	4,8	277,0	3,04	30	-	108	19	70	99,0
4 N	38,31	11,68	11,81	2350	4,2	293,5	2,87	35	-	110	24	68	99,0
2 V	38,14	9,73	14,11	2350	3,8	295,0	2,85	35	-	110	22	68	99,0
(iii) Five-hour-test at 75 % of pull at maximum power													
3 N	32,39	15,80	7,38	2441	4,9	328,0	2,57	32	-	110	12	80	99,0
(iv) Five-hour-test at pull corresponding to 15 % wheelslip in test (ii)													
4 L	34,94	34,75	3,62	2430	15,0	313,0	2,69	50	-	118	19	60	99,3

Oil consumption during 10 hours duration of tests (iii) and (iv): 39,5 g/h

TURNING AREA AND TURNING CIRCLE:

Wheel equipment: **front:** 14,5 - 20 AS, 10 PR
rear: 16,9 R 30, 10 PR

Track of wheel: **front:** 1500 mm
rear: 1500 mm

Results *)	With brakes		Without brakes	
	right-hand	left-hand	right-hand	left-hand
	m	m	m	m
Radius of turning area	3,42/4,07	3,40/4,20	5,25/4,92	5,10/4,75
Radius of turning circle	3,25/3,90	3,23/4,03	5,08/4,75	4,93/4,58

*) Four-wheel-drive switched: ON/OFF

LOCATION OF CENTRE OF GRAVITY:

	mm
Height above ground	907
Distance forward from the vertical plane containing the axis of the rear wheels	896
Distance from the median plane of the tractor, left-side	11

BRAKING:

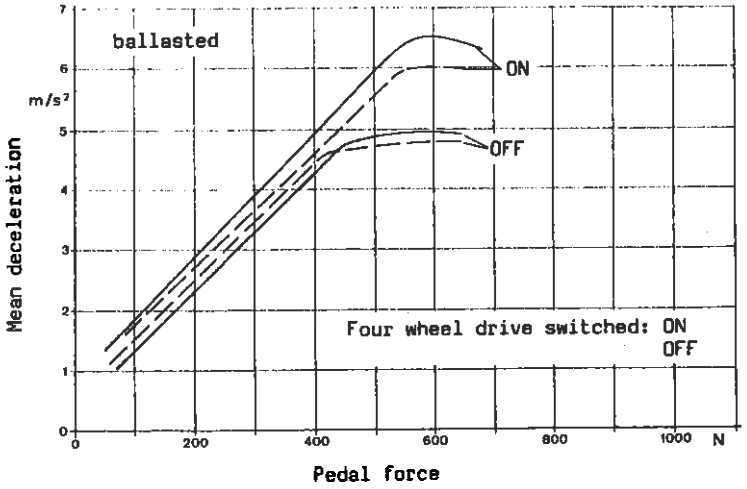
Date of tests: 20.9.1990
Type of track: Concrete
Type of decelerometer: Moto - Meter Nr. 03382 (Kombi-Schreiber)

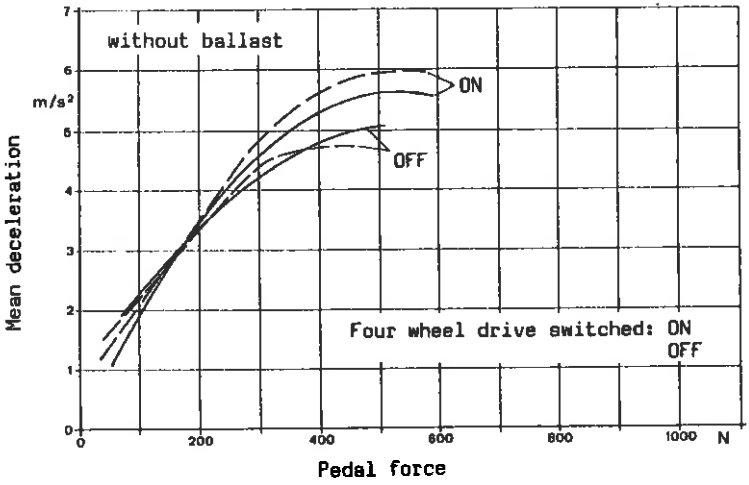
Tractor mass during brake tests (with driver):

	Front kg	Rear kg	Total kg
Ballasted	1613	2215	3825
Unballasted	1195	1730	2925

Service brake:

Four-wheel-drive switched ON and OFF
Type-0-test (cold brakes ————, Type-I-(fade test)— — — — — —





Speed before application of brakes: 37,91 km/h
The tractor brakes were heated by towing of the tractor for 1 km.

Maximum deviation of tractor from its original course: None

Abnormale vibration: None

Parking brake device test:

	Ballasted tractor on 18 % slop	
	up	down
Braking device control force	330/330 N	330/330 N

Four-wheel-drive switched: ON/OFF

MEASUREMENT OF EXTERNAL NOISE LEVEL:

Date of tests: 24.10.1990

Type of sound level meter: BRÜEL & KJAER 2209 and 2308

Type of track: Concrete

Gear number: 4 V

Travelling speed before acceleration: 28,4 km/h

Sound level: 89,0 dB(A)

OPTIONAL TESTS

Main power take-off performance

Date and location of tests: 26.6.1990, Wieselburg, Austria
Type of dynamometer: SCHENCK eddy-current brake W 780

Main test on: ISO R 500 - 1979, type 1 (DIN 9611) - 540 rev/min

Power	Speed		Fuel consumption		Specific energy
	engine	p.t.o.	hourly	specific	
kW	rev/min	rev/min	kg/h l/h	g/kWh	kWh/l
MAXIMUM POWER					
Maximum power - 2 hours test					
45,21	2350	616	11,25 13,36	249,0	3,38
Power at rated engine speed					
45,21	2350	616	11,25 13,36	249,0	3,38
Standard power take-off speed					
43,09	2058	540	10,12 12,02	235,0	3,58
PART LOADS					
(i) the torque corresponding to maximum power at rated engine speed					
45,21	2350	616	11,25 13,36	249,0	3,38
(ii) 85 % of torque obtained in (i)					
39,93	2440	640	10,63 12,63	266,0	3,16
(iii) 75 % of torque defined in (ii)					
30,27	2466	647	8,35 9,91	276,0	3,05
(iv) 50 % of torque defined in (ii)					
20,34	2485	652	6,45 7,66	317,0	2,66
(v) 25 % of torque defined in (ii)					
10,26	2508	658	4,57 5,43	445,5	1,89
(vi) unloaded					
0	2524	662	2,71 3,22	-	-

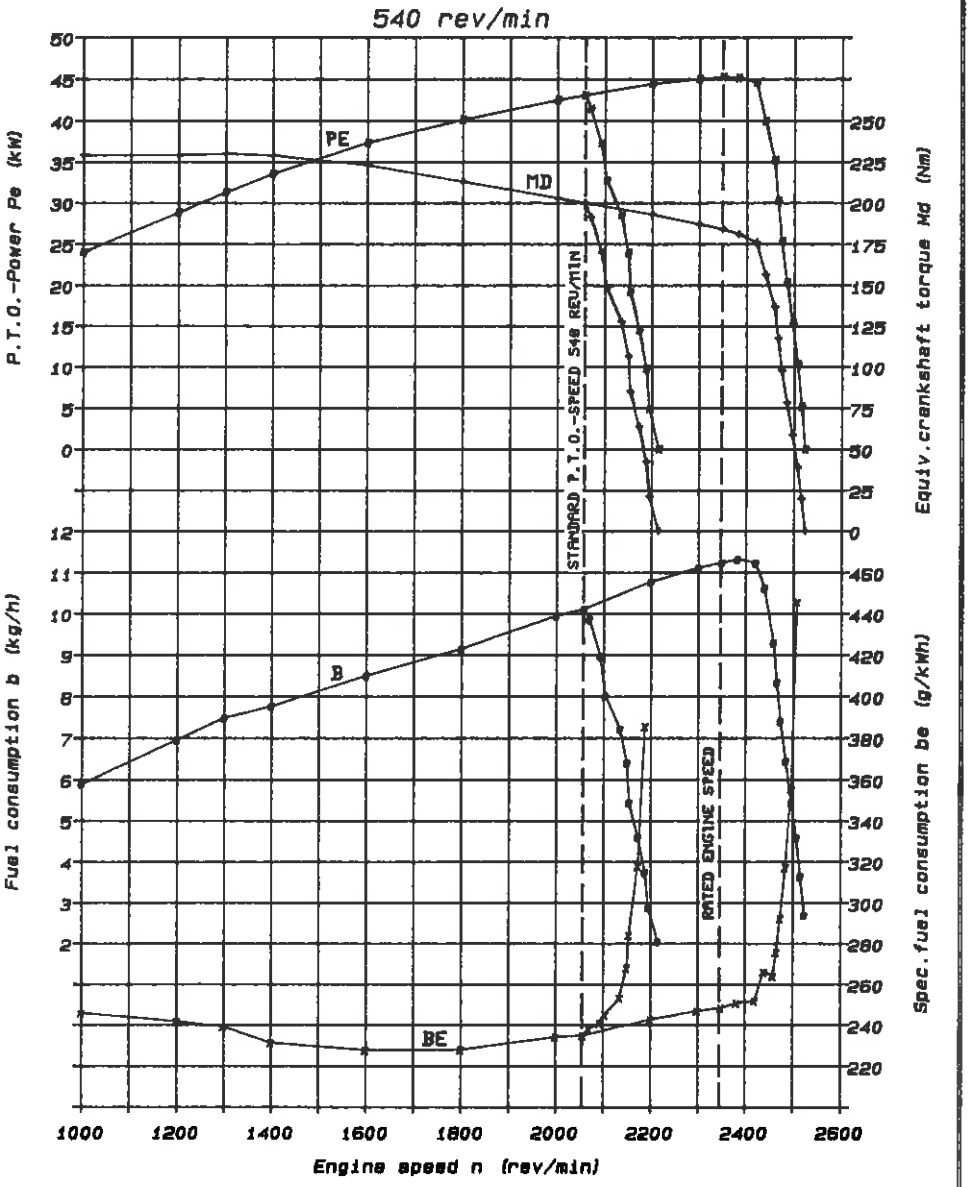
Power	Speed		Fuel consumption		Specific energy
	engine	p.t.o.	hourly	specific	
kW	rev/min	rev/min	kg/h l/h	g/kWh	kWh/l
PART LOADS AT STANDARD POWER TAKE-OFF SPEED					
(i) The torque corresponding to maximum power available					
43,09	2058	540	10,12 12,02	235,0	3,58
(ii) 85 % of torque obtained at maximum power					
37,24	2093	549	8,98 10,67	241,0	3,49
(iii) 75 % of torque defined in (ii)					
28,49	2135	560	7,22 8,57	253,5	3,32
(iv) 50 % of torque defined in (ii)					
19,16	2154	565	5,45 6,47	284,5	2,96
(v) 25 % of torque defined in (ii)					
9,73	2188	574	3,75 4,45	385,5	2,19
(vi) unloaded					
0	2215	581	2,06 2,45	-	-

No load maximum engine speed: 2524 rev/min
Equivalent crankshaft torque
at maximum power: 183,7 Nm and rated engine speed
Maximum equivalent crankshaft torque: 230 Nm at 1300 rev/min of engine

Mean atmospheric conditions
temperature: 22°C
pressure: 997 mbar
rel. humidity: 70 %

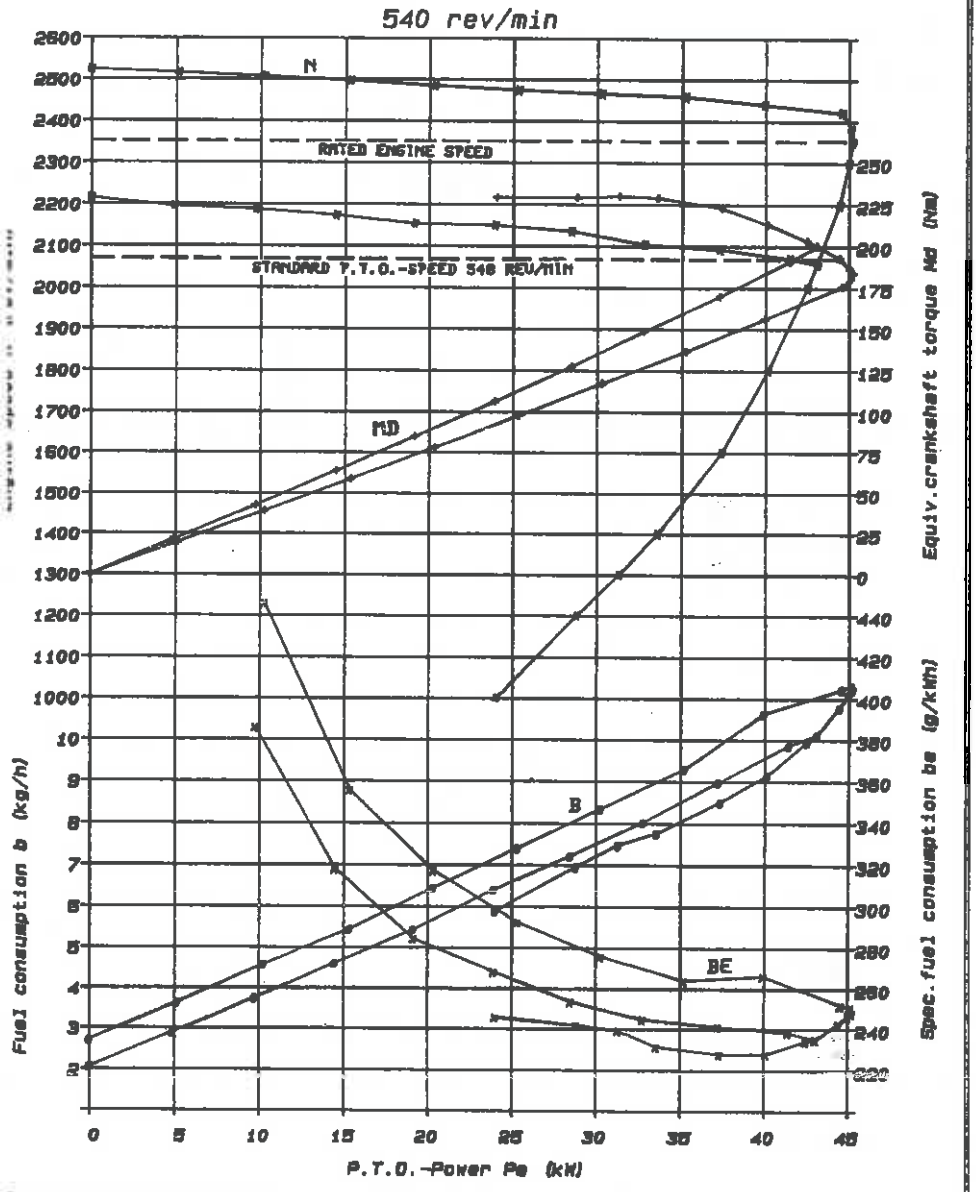
Maximum temperatures.
coolant: -
engine oil: 129°C
fuel: 46°C
engine air intake: 28°C

Bundesanstalt für Landtechnik Wieselburg/Erlauf, Austria Prot.Nr.:	P.T.O.-test	SAME Typ ASTER 70 VDT 4WD Mot.Typ S+L+H 1000.3 AT



engine ser.nr. : 1658	atm. pressure: 998 MBAR	fuel temp. : 46 C	signature
tractor ser.nr.: AST 7VT 1403	air temper. : 22 C	d.of tests : 1990-08-26	
fuel : 0.842/15 C	coolant temp.:	test no. : 780-524-90	
engine oil : AGIP SIGMA SAE30	oil temp. : 129 C	curves no. : 3	LUGER

Bundesanstalt für Landtechnik esselburg/Erlauf, Austria Prot.Nr.:	P.T.O.-test	SAME Typ ASTER 70 VDT 4ND Mot.Typ S+L+H 1000.3 AT



ine ser.nr. : 1658	atm. pressure: 998 MBAR	fuel temp. : 45 C	signature	
ctor ser.nr.: AST 7VT 1403	air temper. : 22 C	d.of tests : 1990-06-25		
: 0.842/15 C	coolant temp.:	test no. : 780-624-90		
ine oil : AGIP SIGMA SAE30	oil temp. : 129 C	curves no. : 4	LUGER	

REPAIRS:

REMARKS: -



The director of testing station:

(Dipl.Ing.Dr. J. Schrottmaier)
Oberrat

Test and report carried out by:

(Ing. Hermann Schaufler)