GEPRÜFT

PROT. Nr.

O.E.C.D. Report No.: 1301

Bundesanstalt für Landtechnik

A-3250 Wieselburg, Austria

Dieseltractor

SAME ASTER 60 VDT (4 WD)



Date of approval: 19.2.1991

This report has been approved by the O.E.C.D. Coordinating Centre (CEMAGREF, 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. Casani 15, Treviglio (BG), 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 60 VDT "4 WD"
Type:	Wheel-tractor, unit construction
Number of driving wheels:	4
Serial no.:	1148
1st serial no.:	1001

ENGINE:

Make:	S + L + H
Model:	1000.3A
Type:	4 stroke diesel engine direct injection with air cooling system
Serial no.:	8139

Cylinder:

Number/disposition:	3, vertical in line
Bore/stroke:	105/115,5 mm
Capacity:	3000 cm^3
Compression ratio:	17 : 1
Arrangement of valves:	Overhead valves
Cylinder liners:	Without liners

Supercharging: None, naturally aspirated

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:	$53^{\pm 2}$ mm^3/stroke corresponding to 11,49 l/h at rated engine speed and full load $16^{\pm 0,8°}$ 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:	085.1650.4
Type:	Variable speed governor, mechanically acting
Governed range of engine speed:	From 600 to 2680^{+30}_{-0} rev/min engine speed
Rated engine speed:	2500 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:	201.8141.3 (Polypropylene T 81 S)
Main-cleaner:	
Make:	FIAAM
Model:	FAR 376
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:	220 mm
Type of temperature control:	None

Starting system:

Make:	MARELLI
Model:	MI 71 FA 2.5/12 011
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: 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:	255.5630.3/30
Type:	4 chambers-absorption-reflexion type
Location:	60 mm left of engine, 2490 mm height above ground with flap open

TRANSMISSION TO WHEELS:

Clutch:

Make:	Own make (S + L + H)
Model:	490.24
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:	490.31
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:	490.44
Type:	Central axle, bevel gear drive differential and epicyclic reduction gear
Differential lock:	Make: Own make Model: 490.35 Type: Mechanically acting, engaging or disengaging with pedal

Front axle and final drives:

Make:	Own make
Model:	490.43
Type:	Original S + L + H system with central shaft bevel gear drive, differential and epicyclic final drives

Differential lock: Make: Own make
Model: 490.46
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	1,12
2		385,81	1,56
3		252,35	2,39
4		153,19	3,94
1	forward NORMAL N	179,45	3,36
2		128,60	4,69
3		84,11	7,17
4		51,06	11,81
1	forward FAST V	59,81	10,08
2		42,87	14,07
3		28,04	21,51
4		17,02	35,44
1	reverse SLOW I	558,18	1,08
2		400,03	1,51
3		261,65	2,03
4		158,83	3,80
1	reverse NORMAL N	186,06	3,24
2		133,34	4,52
3		87,22	6,92
4		52,94	11,39
1	reverse FAST V	62,02	9,73
2		44,45	13,57
3		29,07	20,75
4		17,65	34,18

*) Calculated with rear tyre dynamic radius index of 640 mm (ISO 4251/1-1984)
test tyre equipment: rear 11,2 R 20
front 14,9/29 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 multiplate wet 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:	620 mm with tyre dynamic radius index of 640 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:	614 rev/min resp. 1050 rev/min
Engine speed at standard power take-off speeds:	2198 rev/min resp. 2381 rev/min
Ratio of rotation speeds (engine speed/ p.t.o. speed):	4,07 resp. 2,38
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:

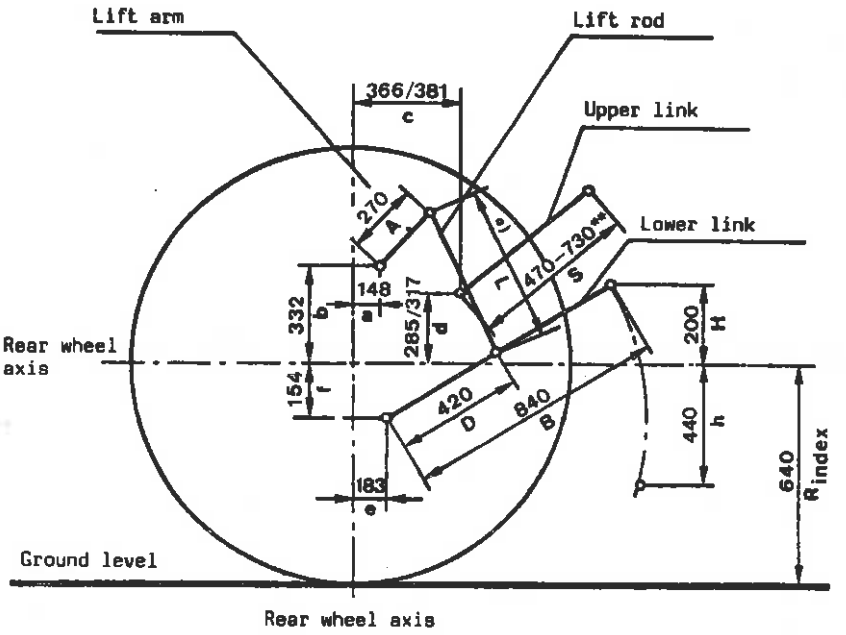
Speed of shaft:	540 rev/min
Travelling distance for one revolution of p.t.o. shaft:	0,438 m with 640 mm tyre dynamic radius index
Number of p.t.o. shaft revolutions for one revolution of rear wheels:	9,182
Direction of rotation with forward gear engaged (viewed from behind tractor):	Clockwise

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 320 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

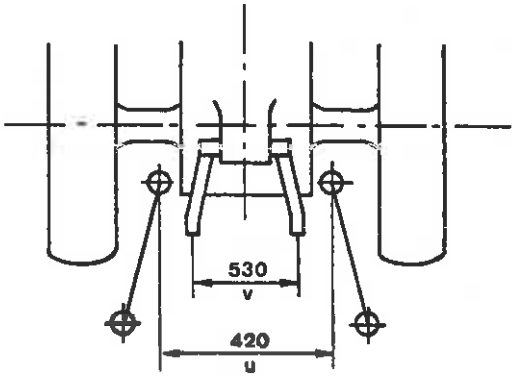
Three-point-linkage: Category II in conformity with ISO 730/1 - 1977

Category adapter: None



*) 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	600
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 (640 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	590	680
Lowest position	(h) mm	255	440	640
Highest position	(H) mm	365	200	40

*) With dynamic radius index 640 mm (ISO 4251/1-1984)

TRAILER HITCH:

Type:	Fork type
Hole diameter:	37 mm
Height above ground:	475/575 mm; 765/810/860 mm
Distance of hitch point from rear wheel axis, horizontally:	570 mm
Distance of hitch point from power take-off shaft end, vertically:	below 145/45 mm; above 145/190/240 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.:	0 mm
max.:	1005 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:	490.54
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:	2064 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. Casani 15, Treviglio (BG)
Protective device:	Cab (full closed)
OECD-approval no.:	CSD 1250/17
Remark:	Description see under OECD-approval no.: CSD 1250/17

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	1110	110 x 110	175
Side lights	1645	110 x 35	790
Rear lights	1450	50 x 60	705
Brake lights	1450	50 x 60	655
Direction indicators front	1680	50 x 60	790
Direction indicators rear	1450	50 x 60	755
Reflectors	1010	dia 80	720

*) Measured with tyre dyn. radius index at rear 640 mm and 465 mm at front (ISO 4251/1-1984)

TEST CONDITIONS

Overall dimensions:

	Length	Width *)	Height at top of	
			exhaust silencer	protective structure
	mm	mm	**) mm	mm
Ballasted	4105	1790	2420/2490	2360
Unballasted	3765	1790	2420/2490	2360

*) Measured on the outside edge of rear wheels
**) Without flap/with flap open

Ground clearance:
(unballasted tractor)

Clearance limiting part: 330 mm under front axle
340 mm under the trailer hitch mounting plate

Tractor mass: With tanks full and cab

		Without	With driver
		kg	kg
Unballasted	Front	1100	1105
	Rear	1540	1610
	Total	2640	2715
Ballasted	Front	1525	1530
	Rear	1875	1945
	Total	3400	3475

Ballast:

	Number of weights	Mass total kg	Water kg
Front	8	310	-
Rear	2 x 1	90	2 x 180
Optional	-	-	-

Tyres and track width specifications:

Tyres:

	Front	Rear
Dimensions	11,2 - 20 AS rim: 8 x 20	14,9 - 28 AS rim: 12 x 28
Ply rating	6	4
Type	diagonal carcass	diagonal carcass
Max. load (tyre manufacturer's)	10,69 kN	15,78 kN
Max. load (tractor manufacturer's)	7,85 kN	18,65 kN
Inflation pressure (tyre manufacturer's)	1,6 bar	1,4 bar
Dynamic radius index	465 mm	640 mm
Chosen track width	1400 mm	1400 mm

Oil and lubrication:

Capacity and change interval:

	Capacity (dm^3)	Oil change (h)	Filter change (h)
Engine	6,7	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)	
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: 23.5.1990, Wieselburg, Austria
Type of dynamometer: SCHENCK eddy-current brake W 780

Main test on: ISO R 500 - 1979, type I (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					
39,78	2500	614	10,46 12,42	263,0	3,20
Power at rated engine speed					
39,78	2500	614	10,46 12,42	263,0	3,20
Standard power take-off speed					
37,9	2200	540	9,57 11,37	252,5	3,33
PART LOADS					
(i) the torque corresponding to maximum power at rated engine speed					
39,78	2500	614	10,46 12,42	263,0	3,20
(ii) 85 % of torque obtained in (i)					
34,97	2602	639	9,38 11,14	268,0	3,14
(iii) 75 % of torque defined in (ii)					
26,43	2622	644	7,68 9,12	290,5	2,90
(iv) 50 % of torque defined in (ii)					
17,70	2634	647	6,02 7,15	340,0	2,48
(v) 25 % of torque defined in (ii)					
8,92	2655	652	4,37 5,19	490,0	1,72
(vi) unloaded					
0	2687	660	2,87 3,41	-	-

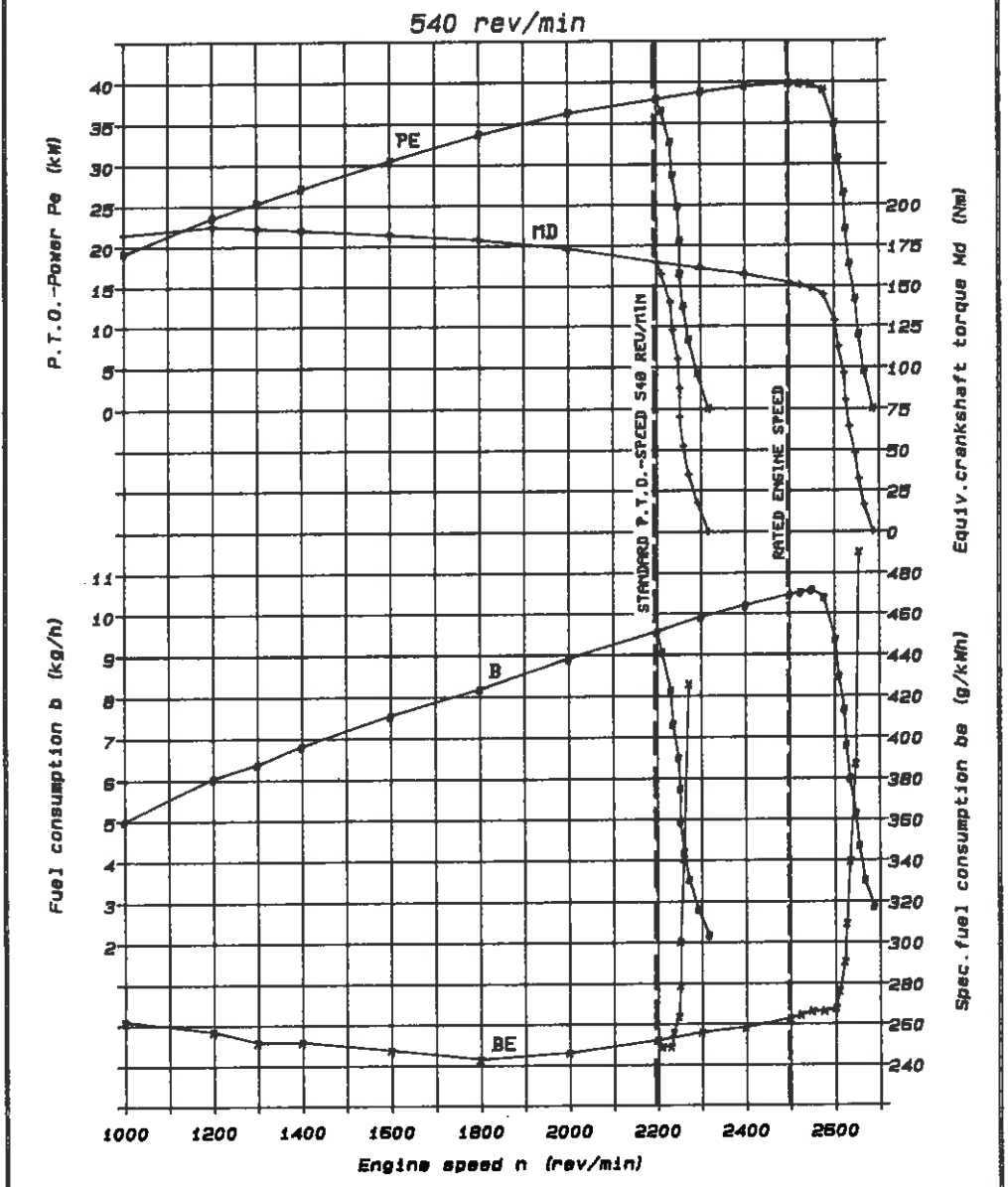
Power	Speed		Fuel consumption		Specific energy
	engine	p.t.o.	hourly	specific	
kW	rev/min	rev/min	kg/h l/h	g/kWh	kWh/l
PART LOADS AT STANDARD POWER TAKE-OFF SPEED					
(i) The torque corresponding to maximum power available					
37,9	2200	540	9,57 11,37	252,5	3,33
(ii) 85 % of torque obtained at maximum power					
32,7	2231	548	8,15 9,68	249,0	3,38
(iii) 75 % of torque defined in (ii)					
24,70	2248	552	6,52 7,74	263,0	3,19
(iv) 50 % of torque defined in (ii)					
16,49	2252	553	4,96 5,89	300,5	2,80
(v) 25 % of torque defined in (ii)					
8,32	2272	558	3,55 4,22	426,5	1,97
(vi) unloaded					
0	2317	569	2,19 2,60	-	-

No load maximum engine speed: 2687 rev/min
Equivalent crankshaft torque
at maximum power: 152 Nm and rated engine speed
Maximum equivalent crankshaft torque: 187,6 Nm at 1200 rev/min of engine

Mean atmospheric conditions **temperature:** 18°C
pressure: 992 mbar
rel. humidity: 70 %

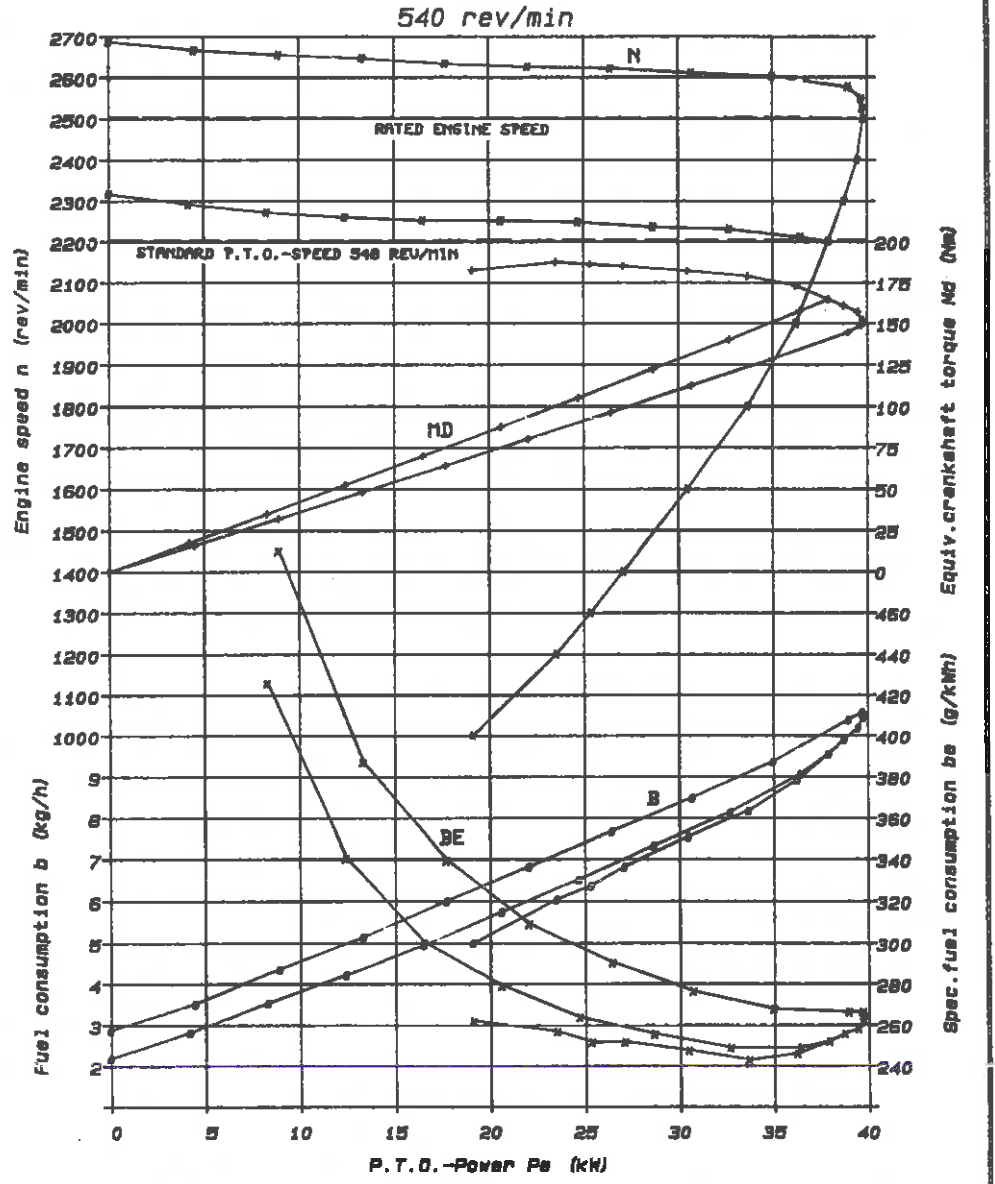
Maximum temperatures. **coolant:** -
engine oil: 118°C
fuel: 49°C
engine air intake: 19°C

Bundesanstalt für Landtechnik Wieselburg/Erlauf, Austria Prot.Nr.:	P.T.O.-test	SAME Typ ASTER 60 VDT 4WD Mot.Typ S+L+H 1000.3A



engine ser.nr. : 8139	atm. pressure: 992 MBAR	fuel temp. : 49 C	signature
tractor ser.nr.: AST 6VT 1148	air temper. : 18 C	d.of tests : 1990-05-29	
fuel : 0,842/15 C	coolant temp.:	test no. : 780-829-90	
engine oil : AGIP SIGMA SAE30	oil temp. : 118 C	curves no. : 1	LUSER

Bundesanstalt für Landtechnik Wieselburg/Erlauf, Austria Prot.Nr.:	P.T.O.-test	SAME Typ ASTER 60 VDT 4WD Mot.Typ S+L+H 1000.3A



engine ser.nr. : 8138	atm. pressure: 992 MBAR	fuel temp. : 42 C	signature
tractor ser.nr.: AST BVT 1148	air temper. : 18 C	d.of tests : 1990-05-23	
fuel : 0.842/15 C	coolant temp.:	test no. : 790-523-90	
engine oil : AGIP SIGMA SAE30	oil temp. : 118 C	curves no. : 2	LUBER

HYDRAULIC POWER AND LIFTING FORCE:

Date of tests: 6.8.1990

Hydraulic power test:

Sustained pressure with relief valve open: 19,0 MPa (190 bar)

Pump delivery rate at minimum pressure (at rated engine speed): 29 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	24,00	17,1	6,84
Flow rate and hydraulic pressure corresponding to maximum hydraulic power	26,00	16,5	7,32

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: -

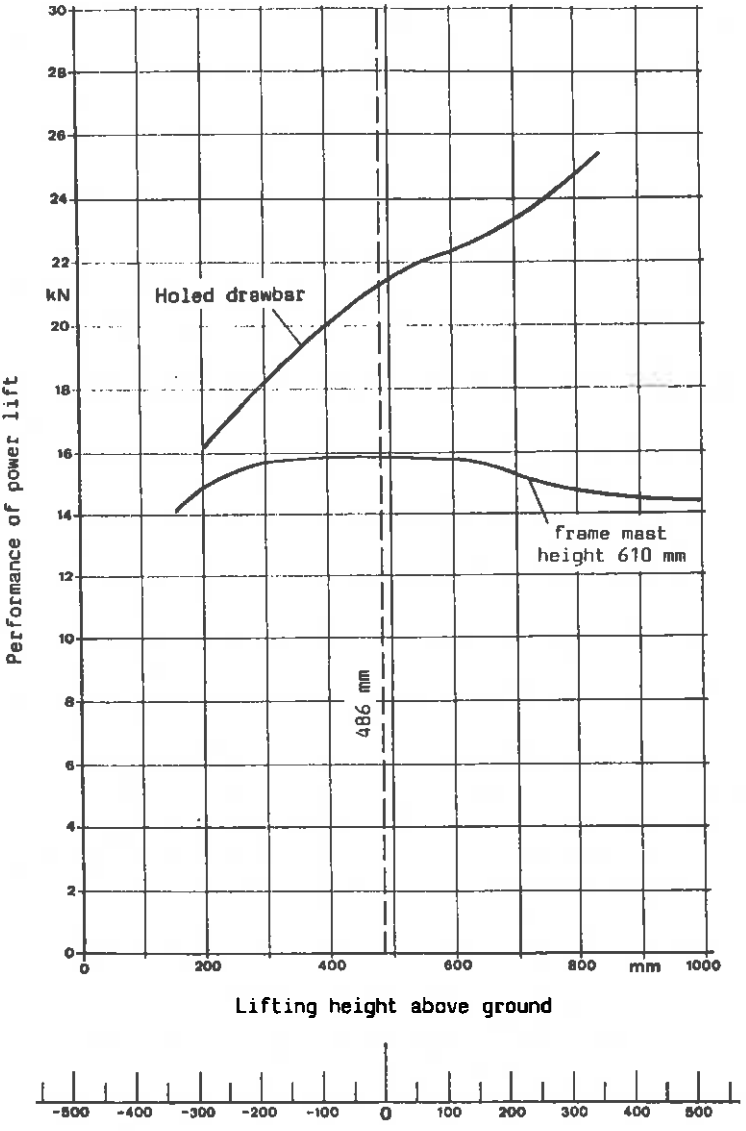
Power lift test:

	at the hitch point	on the frame
Height of lower hitch points above ground in down position	200 mm	200 mm
Vertical movement	640 mm	640 mm
Maximum corrected force exerted through full range	16,2 kN	14,1 kN
Corresponding pressure of hydraulic fluid	17,1 MPa (171 bar)	17,1 MPa (171 bar)
Moment about rear wheel axis	16,6 kNm	23,0 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	-335	-285	-245	-200	-100	-50	0	+50	+100	+200	+300	+355	+435	+515
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: 17,1 MPa (171 bar)														
at the hitch point kN		16,2	17,0	17,9	19,7	20,5	21,3	21,9	22,3	23,2	24,7	25,6		
at the frame (610 mm mast height) kN	14,1	14,9	15,3	15,6	15,9	15,9	15,9	15,8	15,8	15,5	14,9	14,7	14,5	14,5

Performance of power lift:



Height relative to the horizontal plane including the lower link pivot points (dyn. radius index 640 mm)

Drawbar performance:

Date of tests: 19.6.1990
27.7.1990

Type of track: Concrete

Height of drawbar above ground: unballasted 470 mm, ballasted 470 mm

Tyre inflation pressure: front: unballasted 110 kPa, ballasted 120 kPa
rear: unballasted 90 kPa, ballasted 100 kPa

Tyre sizes: front 11,2 - 20 AS, PR 6; rear 14,9 - 28 AS, PR 4

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	6,98	24,59	1,01	2637	15,0	-	-	34	-	91	26	62	99,0
2 L	9,58	24,55	1,40	2638	15,0	-	-	33	-	92	25	62	99,0
3 L	14,73	24,55	2,16	2629	15,0	-	-	33	-	92	25	62	99,0
1 N	20,85	24,53	3,06	2617	15,0	-	-	34	-	98	24	62	99,0
4 L	24,09	24,58	3,53	2598	15,0	389,5	2,16	34	-	98	24	62	99,0
2 N	28,48	24,55	4,18	2565	15,0	368,5	2,29	31	-	95	23	62	99,3
3 N	32,54	17,64	6,62	2500	8,9	321,5	2,62	29	-	96	21	62	99,3
1 V	32,56	12,21	9,61	2500	6,3	321,0	2,62	30	-	98	24	62	99,3
4 N	31,44	9,95	11,38	2500	5,2	332,5	2,49	30	-	100	22	62	99,3
2 V	31,04	8,19	13,64	2500	4,7	337,0	2,46	32	-	101	23	62	99,3

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	8,67	30,95	1,01	2644	15,0	-	-	31	-	91	23	60	99,5
2 L	12,23	31,35	1,40	2625	15,0	-	-	31		93	27	60	99,5
3 L	18,43	31,30	2,12	2618	15,0	-	-	29	-	95	27	60	99,5
1 N	25,89	31,36	2,97	2590	15,0	379,5	2,21	29	-	95	24	60	99,5
4 L	30,14	31,40	3,46	2554	15,0	348,5	2,42	29	-	98	22	60	99,5
2 N	32,69	28,18	4,18	2500	11,1	320,0	2,63	29	-	97	21	60	99,5
3 N	33,16	17,83	6,70	2500	6,8	315,5	2,67	28	-	97	21	60	99,5
1 V	32,70	12,25	9,61	2500	5,0	320,0	2,63	28	-	97	19	62	99,5
4 N	30,56	9,67	11,38	2500	4,1	342,0	2,46	27	-	96	20	62	99,5
2 V	30,20	7,99	13,61	2500	3,7	346,5	2,43	27	-	95	20	62	99,5
(iii) Five-hour-test at 75 % of pull at maximum power													
3 N	26,17	13,35	7,06	2595	5,6	367,0	2,30	48	-	111	27	55	99,4
(iv) Five-hour-test at pull corresponding to 15 % wheelslip in test (ii)													
4 L	30,25	31,38	3,47	2558	15,0	347,0	2,43	50	-	120	25	55	99,7

Oil consumption during 10 hours duration of tests (iii) and (iv): 60 g/h

TURNING AREA AND TURNING CIRCLE:

Wheel equipment: front: 11,2 - 20 AS front, PR 6
rear: 14,9 - 28 AS, PR 4

Track of wheel: front: 1400 mm
rear: 1400 mm

Results	With brakes		Without brakes	
	right-hand	left-hand	right-hand	left-hand
	m	m	m	m
Radius of turning area	3,24/3,09	3,33/3,17	5,12/4,73	4,95/4,55
Radius of turning circle	3,07/2,92	3,16/3,00	4,95/4,56	4,78/4,37

Four-wheel-drive switched: ON/OFF

LOCATION OF CENTRE OF GRAVITY:

	mm
Height above ground	828
Distance forward from the vertical plane containing the axis of the rear wheels	840
Distance from the median plane of the tractor, left-side	4

BRAKING:

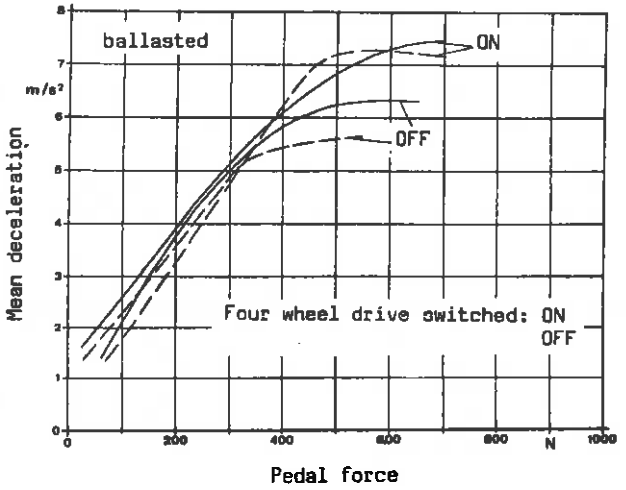
Date of tests: 13.7.1990; 20.7.1990
Type of track: Concrete
Type of decelerometer: Moto-Meter Nr. 03382 (Kombi-Schreiber)

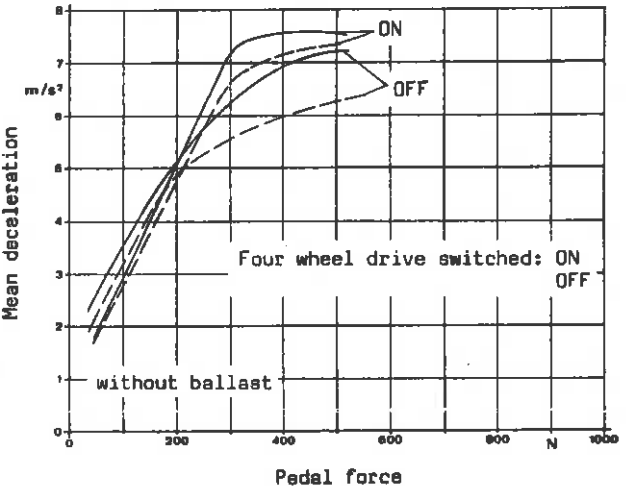
Tractor mass during brake tests (with driver):

	Front kg	Rear kg	Total kg
Ballasted	1530	1945	3475
Unballasted	1105	1650	2715

Service brake:

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





Speed before application of brakes: 36,7 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	
Braking device control force	up	down
	300/300 N	300/300 N

Four-wheel-drive switched: ON/OFF

MEASUREMENT OF EXTERNAL NOISE LEVEL:

Date fo tests: 19.6.1990

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: 85,0 dB(A)

OPTIONAL TEST

Main power take-off performance

Date and location of tests: 23.5.1990, Wieselburg, Austria
Type of dynamometer: SCHENCK eddy-current brake W 780

Main test on: ISO R 500 - 1979, type I (DIN 9611) - 1000 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					
38,43	2500	1050	10,08 11,97	262,5	3,21
Power at rated engine speed					
38,43	2500	1050	10,08 11,97	262,5	3,21
Standard power take-off speed					
38,0	2381	1000	9,75 11,58	256,5	3,28
PART LOADS					
(i) the torque corresponding to maximum power at rated engine speed					
38,43	2500	1050	10,08 11,97	262,5	3,21
(ii) 85 % of torque obtained in (i)					
33,72	2595	1090	9,11 10,82	270,0	3,12
(iii) 75 % of torque defined in (ii)					
25,56	2624	1102	7,49 8,90	293,0	2,87
(iv) 50 % of torque defined in (ii)					
17,09	2631	1105	5,78 6,87	338,0	2,49
(v) 25 % of torque defined in (ii)					
8,62	2655	1115	4,20 4,99	487,0	1,73
(vi) unloaded					
0	2671	1122	2,82 3,35	-	-

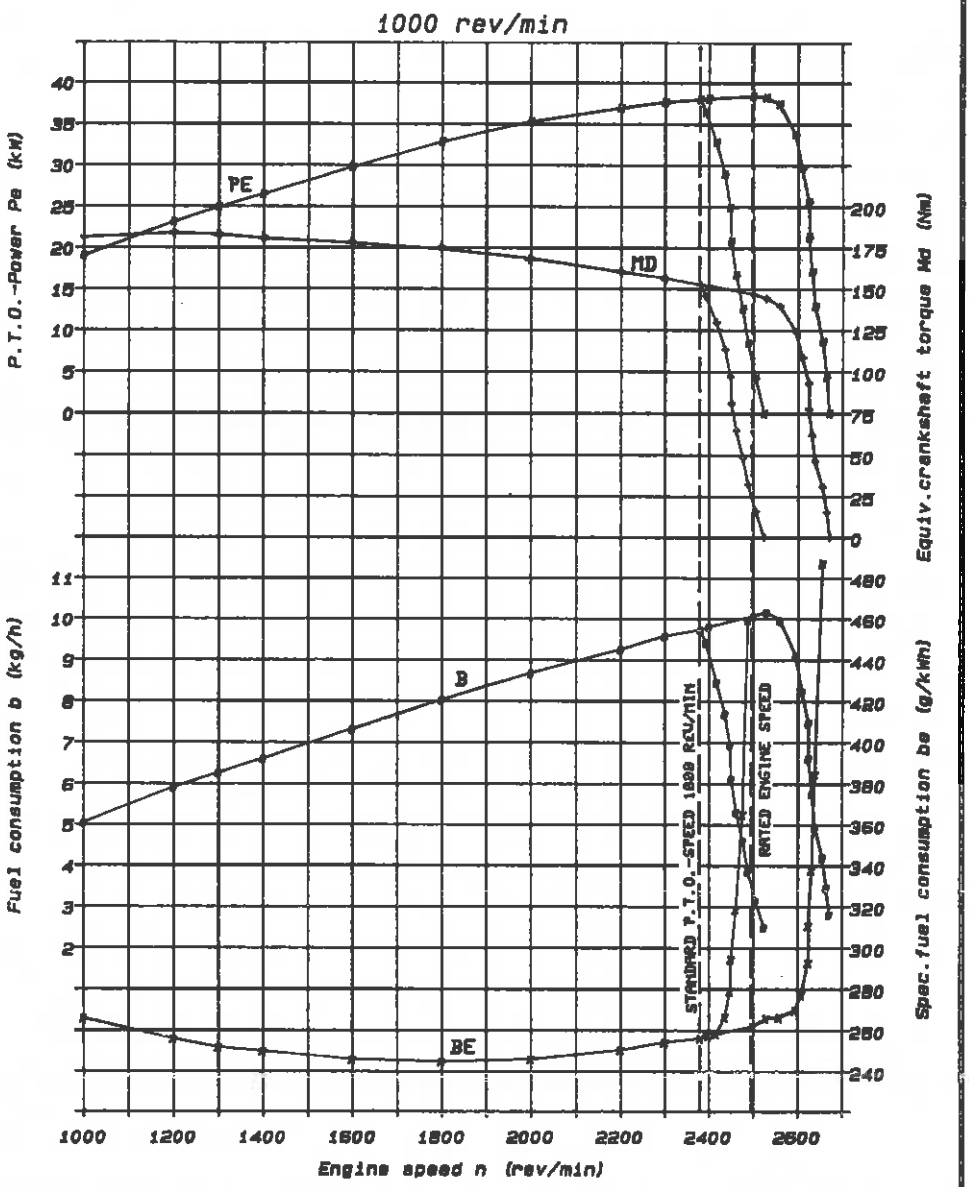
Power	Speed		Fuel consumption		Specific energy
	engine	p.t.o.	hourly	specific	
kW	rev/min	rev/min	kg/h l/h	g/kWh	kWh/l
PART LOADS AT STANDARD POWER TAKE-OFF SPEED					
(i) The torque corresponding to maximum power available					
38,00	2381	1000	9,75 11,58	256,5	3,28
(ii) 85 % of torque obtained at maximum power					
32,78	2417	1015	8,47 10,06	258,5	3,26
(iii) 75 % of torque defined in (ii)					
24,89	2448	1028	6,96 8,27	279,5	3,01
(iv) 50 % of torque defined in (ii)					
16,70	2461	1034	5,32 6,32	318,5	2,64
(v) 25 % of torque defined in (ii)					
8,40	2488	1045	3,88 4,61	462,0	1,82
(vi) unloaded					
0	2524	1060	2,51 2,98	-	-

No load maximum engine speed: 2671 rev/min
Equivalent crankshaft torque
at maximum power: 146,8 Nm and rated engine speed
Maximum equivalent crankshaft torque: 183,7 Nm at 1200 rev/min of engine

Mean atmospheric conditions
temperature: 22°C
pressure: 992 mbar
rel. humidity: 70 %

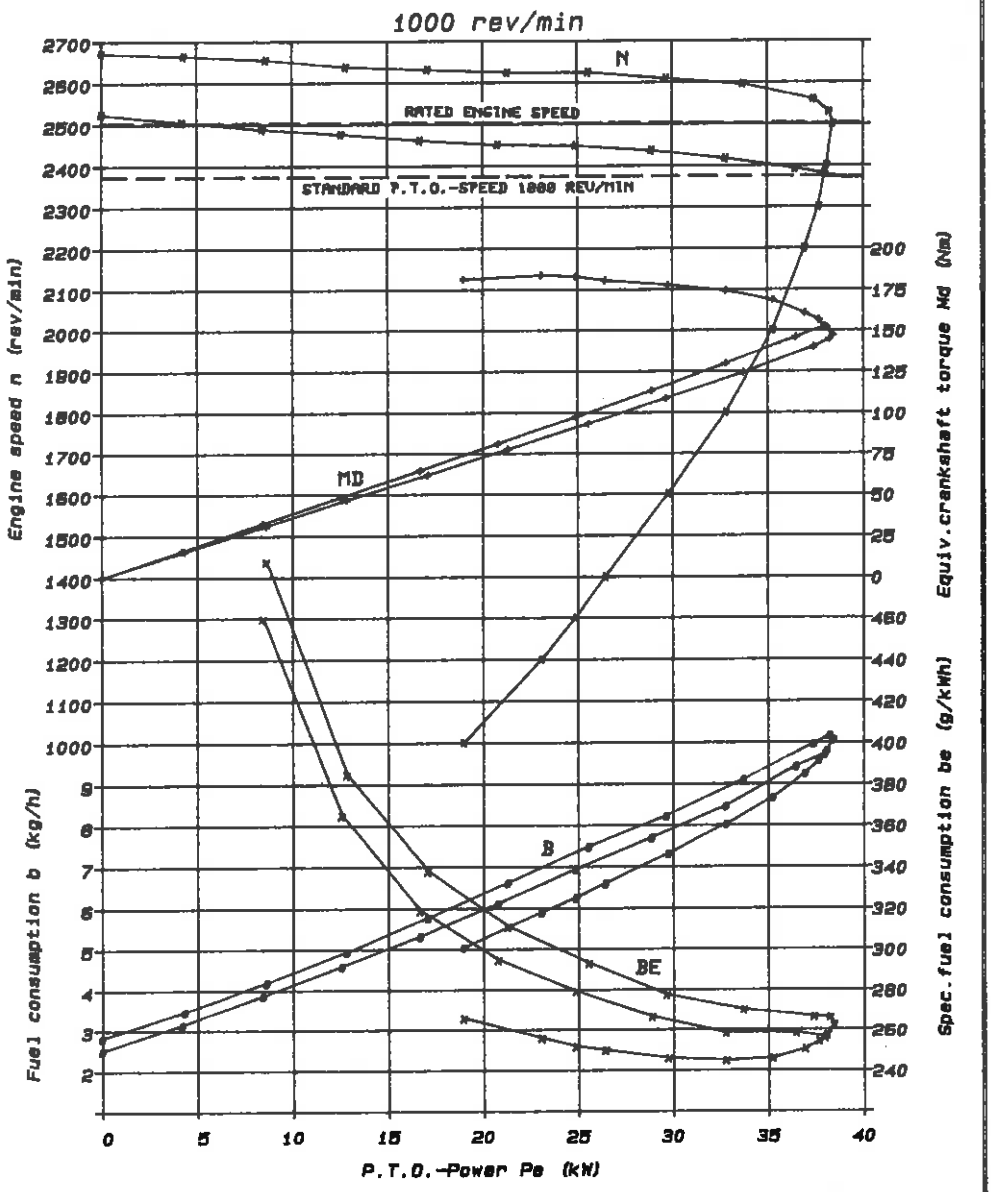
Maximum temperatures.
coolant:
engine oil: 122°C
fuel: 51°C
engine air intake: 28°C

Bundesanstalt für Landtechnik Wieselburg/Erlauf, Austria Prot.Nr.:	P.T.O.-test	SAME Typ ASTER 60 VDT 4WD Mot.Typ S+L+H 1000.3A



engine ser.nr. : 8139	atm. pressure: 992 MBAR	fuel temp. : 51 C	signature
reactor ser.nr.: AST 6VT 1148	air temper. : 22 C	d.of tests : 1990-05-29	
Diesel : 0.842/15 C	coolant temp.:	test no. : 780-623-90	
engine oil : AGIP SIGMA SAE30	oil temp. : 122 C	curves no. : 3	LUGER

Bundesanstalt für Landtechnik Wieselburg/Erlauf. Austria Prot.Nr.:	P.T.O.-test	SAME Typ ASTER 60 VDT 4WD Mot.Typ S+L+H 1000.3A



engine ser.nr. : 8139	atm. pressure: 992 MBAR	fuel temp. : 51 C	signature
tractor ser.nr.: AST 6VT 1148	air temper. : 22 C	d.of tests : 1990-05-23	
fuel : 0.842/15 C	coolant temp.:	test no. : 780-523-90	
engine oil : AGIP SIGMA SAE30	oil temp. : 122 C	curves no. : 4	LUSER

REPAIRS: -

REMARKS: -

The director of testing station:

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

Bundesanstalt für Landtechnik, Wieselburg a. d. Erlauf

Test and report carried out by:

(Ing. Hermann Schaufler)