GEPRÜFT

PROT. Nr.

O.E.C.D. Report No.: 1442 Full Code

Bundesanstalt für Landtechnik

A-3250 Wieselburg, Austria

Dieseltractor STEYR 9010.20

40 km/h version

Trade name:

STEYR 948 (2 WD)



Date of approval: 23.4.1993

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:	Steyr Landmaschinentechnik GmbH. A-4300 St. Valentin, Austria
Location of tractor assembly:	St. Valentin
Submitted for test by:	Manufacturer
Selected for test by:	Manufacturer by agreement with BLT Wieselburg
Place of running-in:	St. Valentin
Duration of running-in:	65 hours
Location of test:	Wieselburg, Austria

SPECIFICATIONS OF TRACTOR

TRACTOR:

Make:	STEYR
Trade name:	STEYR 948
Type:	9010.20
Model:	40 km/h version
Number of driving wheels:	2
Serial no.:	9010.20 - 01141
1st serial no.:	9010.20 - 01001

ENGINE:

Make:	Steyr
Model:	WD 308.85
Type:	4 stroke diesel engine with direct injection and exhaust turbo supercharger
Serial no.:	308.85-17661

Cylinder:

Number/disposition:	3, vertical in line
Bore/stroke:	100/100 mm

Capacity:	2356 cm^3
Compression ratio:	16,4 : 1
Arrangement of valves:	Overhead valves
Cylinder liners:	Wet liners

Supercharging:

Make:	SCHWITZER
Model:	S1A; no. 311.85.11.0114
Type:	Exhaust turbo supercharger
Pressure:	Up to 600 mbar

Fuel system:

Fuel feed system:	Fuel feed pump integrated in injection pump
Make, model and type of fuel filter:	KNECHT filter 7394471 with water trap
Capacity of fuel tank:	53 l
Make, model and type of injection pump:	BOSCH distributer injection pump VE R 263-4
Serial no.:	
Manufacturer's production setting of injection pump, flow rate and timing:	48^{+0}_{-2} mm^3/stroke at pump speed of pump, 1200 rev/min and full load 6^{+0}_{-2} before TDC at 1 mm pump stroke
Make, model and type of injectors:	BOSCH DLLA 150 S 1067
Injection pressure:	$21,6^{+0,5}_{-0}$ MPa (216^{+5}_{-0} bar)

Governor:

Make:	BOSCH
Type:	Variable speed governor, mechanically acting, incorporated in injection pump
Governed range of engine speed:	From 600 to 2580^{+30}_{-0} rev/min engine speed
Rated engine speed:	2400 rev/min

Air cleaner:

Location of air intake:	Inside the bonnet, above and in front of the radiator
Pre-cleaner:	Incorporated in main-cleaner
Main-cleaner:	
Make:	MANN & HUMMEL or KNECHT
Model:	MANN & HUMMEL 45 114 92 374 or KNECHT LVPO 045S/6
Type:	Piclon combined filter, dry type with integrated cyclonic pre-cleaner with automatic dust-drain valve and changeable paper filter insert and additional safety cartridge
Location:	Above the engine, inside the bonnet
Service intervals:	
Pre-cleaner:	Visual control, each 250 hours
Main-cleaner paper insert:	Cleaning interval: when control lamp indication is shown Changing interval: 1 year
Maintenance indication:	Electric lamp indication, -65 mbar for indication

Lubrication system:

Type of feed pump:	Forced oil circulation
Type of filter:	STEYR 409 07 0036

Cooling system:

Type of coolant:	Water-frost protection mixture down to -20°C
Type of pump:	Centrifugal pump belt driven
Specification of fan:	Puller, 1 driving belt
Number of fan blades:	4
Fan diameter:	420 mm
Coolant capacity:	9,8 l

Type of temperature control:	Thermostat control and electrical coolant thermometer
Superpressure system:	0,5 bar

Starting system:

Make:	MAKO
Model:	MK 04 DC
Type:	Solenoid engaged screw push starter motor
Starter motor power rating:	2,5 kW
Cold starting aid:	Electrically, glow plug in inlet manifold
Safety device:	Electrically starting block system by engaged clutch

Electrical system:

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

Exhaust system:

Make:	EBERSPÄCHER
Model:	16.47.190.01.000
Type:	Absorption-reflexion type
Location:	368 mm left of the median plane of engine, 2270 mm height above ground
Optional:	Absorption-reflexion type with incorporated catalyst 16.47.790.30.000

TRANSMISSION TO WHEELS:

Clutch:

Make:	VALEO
Model:	DL2 267/267

Type:	Dry double clutch with 2 plates
Number of plates:	2
Diameter of plates:	267 mm
Method of operation:	2 plates incorporated in the same clutch housing are operated independent for p.t.o. and gear box

Gear box:

Make:	STEYR
Model:	TW 317
Type:	Mechanically acting gear box
Model:	as tested (40 km/h) 2 forward and 1 reverse group (FORWARD FAST, FORWARD NORMAL, REVERSE) combined with 4 speed change gear and reduction gear (ROAD - FIELD) Total: 16 forward and 8 reverse speeds
Arrangement:	1 lever for group gear (S, L, R) 1 lever for the 4 speed gear (1 - 4) 1 lever for the reduction gear (ROAD, NEUTRAL, FIELD)
Available options:	Synchronised 4 speed change gear top speed 30 km/h Total: 16 forward and 8 reverse speeds

Rear axle and final drives:

Make:	STEYR
Model:	317
Type:	Central axle, pinion and bevel gear, reduction by planetary gear in final drives
Differential lock:	Type: mechanically acting from half axle to differential housing Method of engagement: foot lever operated Method of disengagement: lockable and preselectable, selfdisengaging when not locked

Front axle and final drives:

Make: Own make

Model: 7040.5

Type: Steering axle with hydraulic steering cylinder

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 to 2400 rev/min *)	
-	-	field L	road S	field L	road S
1	forward	286,68	85,79	2,02	6,75
2	normal	164,11	49,11	3,53	11,79
3	L	100,39	30,04	5,77	19,28
4		64,64	19,34	8,96	29,94
1	forward	226,08	67,65	2,56	8,56
2	fast	129,42	38,73	4,47	14,95
3	S	79,17	23,69	7,31	24,44
4		50,98	15,25	11,36	37,96
1		293,71	87,89	1,97	6,59
2	reverse	168,13	50,31	3,44	11,51
3	R	102,85	30,78	5,63	18,82
4		66,23	19,82	8,74	29,22

*) Calculated with rear tyre dynamic radius index of 640 mm (ISO 4251/1 - 1984)
test tyre equipment: rear 14.9 - 28 AS
front 7.5 - 16 AS

POWER TAKE-OFF:

Main power take-off:

Type:	Independent and (optional) proportional to ground speed p.t.o.
Method of engagement:	Hand lever operated, mechanically engaged dry disc clutch, driven by 2nd plate of main clutch
Number of shafts:	1
Method of changing power take-off shaft speeds:	Speed selection by hand lever and spur gears, 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:	34,9 mm
Number of splines:	6, in conformity with ISO R 500 - 1979, type I
Height above ground:	530 mm with type dynamic radius index of 640 mm
Distance from the median plane of the tractor:	0 mm
Distance behind rear wheel axis:	306 mm
P.t.o. speed at rated engine speed:	634 rev/min resp. 1127 rev/min
Engine speed at standard power take-off speeds:	2045 rev/min resp. 2130 rev/min
Ratio of rotation speeds (engine speed/ p.t.o.speed):	3,79 resp. 2,13
Power restriction and max. torque:	None
Direction of rotation (viewed from behind tractor):	Clockwise

540 and 1000 rev/min economic:	Optional and same shaft as 540/1000 rev/min
P.t.o. speed at rated engine speed:	810 rev/min resp. 1440 rev/min
Engine speed at economic standard p.t.o. speeds:	1600 rev/min resp. 1667 rev/min
Ratio of rotation speeds (engine speed/p.t.o. speed):	2,96 resp. 1,66
Middle p.t.o.:	Optional, not on tested tractor
Location:	On the left side of the gear box, 550 mm above ground, 651 mm before rear axle, 186,5 mm left of median plane of tractor
Dimension of p.t.o. shaft end:	ISO R 500 - 1979, type I (35 mm, 6 splines)
P.t.o. speed at rated engine speed:	1183 rev/min
Engine speed at standard p.t.o. speed:	2029 rev/min
Power restriction and max. torque:	None
Direction of rotation (viewed from behind tractor):	Clockwise
Front p.t.o.:	Optional, not on tested tractor
Location:	In front of tractor, direction frontwards, 572 mm above ground, 660 mm before front axle, in median plane Driven directly from the engine by a propellershaft, electromagnetic clutch and spur gear transmission
Dimension of p.t.o. shaft end:	ISO R 500 - 1979, type I (34,9 mm, 6 splines)
P.t.o. speed of rated engine speed:	1200 rev/min
Ratio of rotation speed:	2,00

Power restriction and max. torque: None

Direction of rotation (viewed from front of tractor): Anticlockwise

Power take-off proportional to ground speed:

Speed of shaft:

Travelling distance for one revolution of p.t.o. shaft: 0,125 m (with tyre dynamic radius index of 640 mm)

Location: At rear of tractor, same shaft end as p.t.o. proportional to engine speed

Number of p.t.o. shaft revolutions for one revolution of rear wheels: 32,17

Direction of rotation with forward gear engaged (viewed from behind tractor): Clockwise

Stationary mode (reduction gear in 0 position, tractor not driving): Speeds at 2400 rev/min rated engine speed

Normal model, 30 km/h:

Group gear	LL	LS	LR
Gear no.: 1	193	226	223
2	370	435	429
3	550	646	638
4	908	1067	1053
Direction of rotation	clockwise	clockwise	anticlockwise
	viewed from behind tractor		

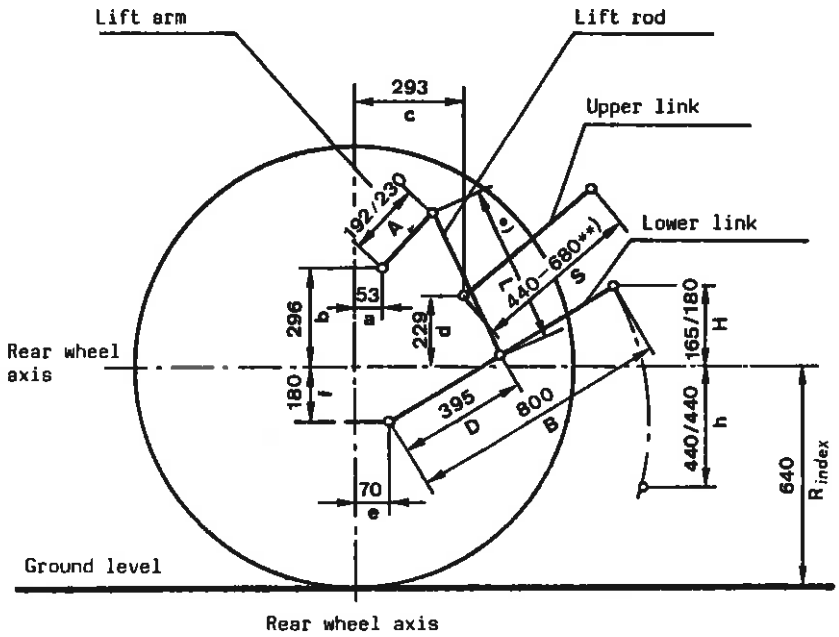
POWER LIFT:

In the rear:

Make:	Own make
Type:	Draught control with two-stage pull, adjustment and upper link sensing, position control, floating position
Type of hydraulic system:	Open center type
Type and number of cylinder:	One single acting type 147 mm stroke, 75 mm diameter
Type of linkage lock for transport:	Hydraulically by throttle valve
Relief valve pressure setting:	17,5 MPa (175 bar)
Opening pressure of cylinder safety valve:	24,5 MPa (245 bar)
Lift pump type:	Gear type pump
Transmission between pump and engine:	Pump directly driven by engine by gear transmission
Type and number of filter:	One filter cartridge in suction line, connected at the hydraulic housing
Site of oil reservoir:	Hydraulic housing
Type, number and location of tapping points:	Up to 4 tapping points (2 oil circuits for single or double acting cylinders), 300 mm behind rear axle, 474 - 546 mm above rear axle, 77 - 130 mm right of median plane In accordance to ISO/DIS 5675 - 1979
Maximum volume of oil available to external cylinders:	6 l

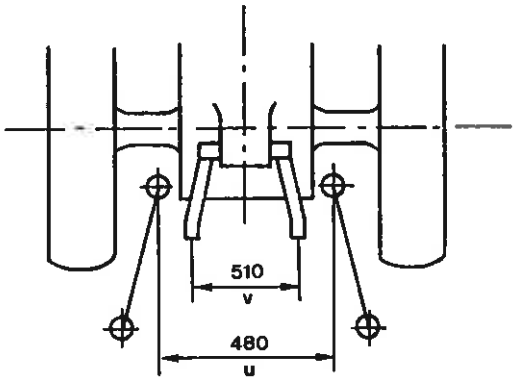
Three-point-linkage:

Category adapter: I/II, in conformity with ISO 730/1-1977



*) Left lift rod adjustable from 450 mm to 555 mm length by thread; right lift rod adjustable from 450 mm to 555 mm by thread.

**) Upper link length adjustable from 440 mm to 680 mm.



Dimensions of linkage geometry:

			Dimension of range mm	Settings used in test mm
Length of lift arms:		(A)	192/230	192/230
Length of lower links:		(B)	800	800
Distance of lift arm pivot points from rear wheel axis:	horizontally	(a)	53	53
	vertically	(b)	296	296
Horizontal distance between the lower link points:		(u)	480	480
Horizontal distance between the 2 lift arm end points:		(v)	510	510
Length of upper link:		(S)	440 - 680	570, 605
Distance of upper link pivot point from rear wheel axis:	horizontally	(c)	293	293
	vertically	(d)	229	229
Distance of lower link pivot point from rear wheel axis:	horizontally	(e)	70	70
	vertically	(f)	180	180

Height of lower link hitch points relative to the rear wheel axis (540 mm above ground)*):

		Min. lift rod length		During test		Max. lift rod length	
Length of lift arms	(A) mm	192	230	192	230	192	230
Linkage distance of lift rod	(D) mm	395					
Length of lift rods	(L) mm	450		550	510	555	
Lowest position	(h) mm	235	345	460	440	425	530
Highest position	(H) mm	250	250	165	180	120	120

Height above ground of lower hitch points when locked in transport position*): Any height within lift range

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

TRAILER HITCH:	On tested tractor
Type:	295.93.0003
Hole diameter:	30,5 mm
Height above ground:	752/735/704/675/386/355 mm
Distance of hitch point from rear wheel axis, horizontally:	514 mm
Distance of hitch point from power take-off shaft end, vertically:	220/205/172/145 mm; -146/-175 mm
horizontally:	207 mm
Maximum vertical permissible load:	9,70 kN
Optional:	
Type:	SCHARMÜLLER HV-AK, Typ 1
Hole diameter:	30,5 mm
Height above ground:	800/752/704/656/608/560/507/434/386 mm
Distance of hitch point from rear wheel axis horizontally:	514 mm
Distance of hitch point from power take-off shaft end, vertically:	268/220/172/124/76/28/-25/-98/-146 mm
horizontally:	207 mm
Maximum vertical permissible load:	9,70 kN
HOLED DRAWBAR:	Category I
Length:	683 mm
Number of holes (with central hole):	5
Distance between holes:	130 mm
Hole diameter:	33 mm

Thickness/width of the drawbar:	30/80 mm
Height above gound min.:	190 mm
max.:	1020 mm
Horizontal distance to power take-off shaft end (rear):	564 mm

STEERING:

Make:	Zahnradfabrik Friedrichshafen (ZF) or DANFOSS, Nordborg
Model:	ZF 8492 or DANFOSS OSPC 125 OR
Type:	Hydrostatic steering
Method of operation:	Steering wheel acting on front wheels
Pump:	35 l/min at nominal revolutions of engine
Rams:	One double acting cylinder, acting on the middle lever arm of the tie rod, dia 60 mm, cylinder rod 25 mm, stroke 175 mm
Working pressure:	12,0 MPa (120 bar)

BRAKES:

Service brake:

Make:	STEYR
Type:	Simplex drum brake
Rear drum diameter:	200 mm, 50 mm width
Method of operation:	Pedal operated, mechanically transmission
Trailer braking take-off:	Optional, hydraulic trailer brake

Parking brake:

Type:	Mechanically acting on the same drum brakes as service brake
Method of operation:	Hand lever with ratchet, mechanically transmission acting on separate linkage with service brake

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

WHEELS:

Number: Front: 2, steering function
Rear: 2, driving function

Wheelbase: 1968 mm

Track width adjustment:

	Minimum mm	Maximum mm	Adjustment method
Front	-	1322	wheels turned around
Rear	1350	1502	

PROTECTIVE STRUCTURE:

Make: Own make

Model: STEYR 125.01

Type: Cab

Manufacturer's name and address: Steyr Landmaschinen GmbH., A-4300 St. Valentin

Protective device: Welded and screwed profile steel tube construction

OECD-approval no.: CSD 1353/2

DRIVER'S SEAT:

Make: KLEPP

Model: Elastomat

Type: 1050 L

Type of suspension: 2 parallel levers with a column-guiding and 2 tension springs

Type of damping: Hydraulically damping

Range of adjustment,
longitudinal: 150 mm
vertical: -

MISCELLANEOUS:

Additional seat: Own make

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	995	140 x 75	200
Side lights	1330	90 x 40	670
Rear lights	1345	90 x 40	845
Brake lights			
Direction indicators front	1290	90 x 40	670
Direction indicators rear	1385	90 x 40	845
Reflectors	1285 765	100 x 60 80 Ø	850 440

*) Measured with tyre dynamic radius index at rear 640 mm and 376 mm at front (ISO 4251/1 - 1984)

TEST CONDITIONS

Overall dimensions:

	Length	Width *)	Height at top of	
			exhaust silencer	protective structure
	mm	mm	mm	
Ballasted	3480	1860	2270	2290
Unballasted	3290	1750	2270	2290

*) Measured on the outside edges of the rear wheels

Ground clearance:
(unballasted tractor)

Clearance limiting part:

445 mm under the front axle
390 mm under the crankcase
320 mm under the trailer hitch mounting console

Tractor mass: With tanks full and cab

		Without driver	With driver
		kg	kg
Unballasted	Front	810	825
	Rear	1500	1560
	Total	2310	2385
Ballasted	Front	950	965
	Rear	2180	2240
	Total	3130	3205

Ballast:

	Number of weights	Mass total kg	Water kg
Front	4	125	-
Rear	2 x (2 + 1)	335	2 x 180
Optional	-	-	-

Tyres and track width specifications:

Tyres:

	Front	Rear
Dimensions	7,5 - 16 AS front	14,9 - 28 AS
Ply rating	6	6
Type	diagonal carcass	diagonal carcass
Max. load (tyre manufacturer's)	745 kp resp. 1490 kp with 10 km/h speed limit	1610 kp resp. 2254 kp with 10 km/h speed limit
Max. load (tractor manufacturer's)	-	-
Inflation pressure (tyre manufacturer's)	2,8 bar	1,4 bar
Dynamic radius index	376 mm	640 mm
Chosen track width	1325 mm	1365 mm

Oil and lubrication:

Capacity and change interval:

	Capacity (dm^3)	Oil change (h)	Filter change (h)
Engine	7,2	250	250
Gear box and rear axle	22,0	1000	-
Front axle	-	-	-
Rear axle	-	-	-
Final drive front	-	-	-
Final drive rear	2,0 x 2	1000	-
Hydraulic system	9,6	1000	500
Steering	2,6	-	1000

Specifications:

	Recommended:	Used during test:
Engine oil:		
Type:	One range viscosity oil	
Viscosity:	SAE 30 summer SAE 20 W-20 winter	
Classification:	API CD/MIL-L-2104 CD	As recommended
Transmission oils:		
Type:	Transmission oil	
Viscosity:	SAE 80 W	
Classification:	API GL 4, MIL-L-2105	As recommended
Hydraulic fluid:	Hydraulic oil ISO VG 46/ ISO VG 68	
Steering oil:		
Type:	Hydraulic oil or automatic transmission oil	
Classification:	ATF Dexron II D	As recommended
Grease:		
Type:	Lithium soap basis	
Classification:	NLGI 2 (multigrade grease)	
Number of lubrication points:	18	
Fuel:		
Type:	ELAN diesel fuel In conformity with national standard according to DIN 51601	
Density at 15°C:	0,840 g/cm³	

TEST RESULTS

COMPULSORY TEST:

Main power take-off performance:
Date and location of tests: 8.7.1992, 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

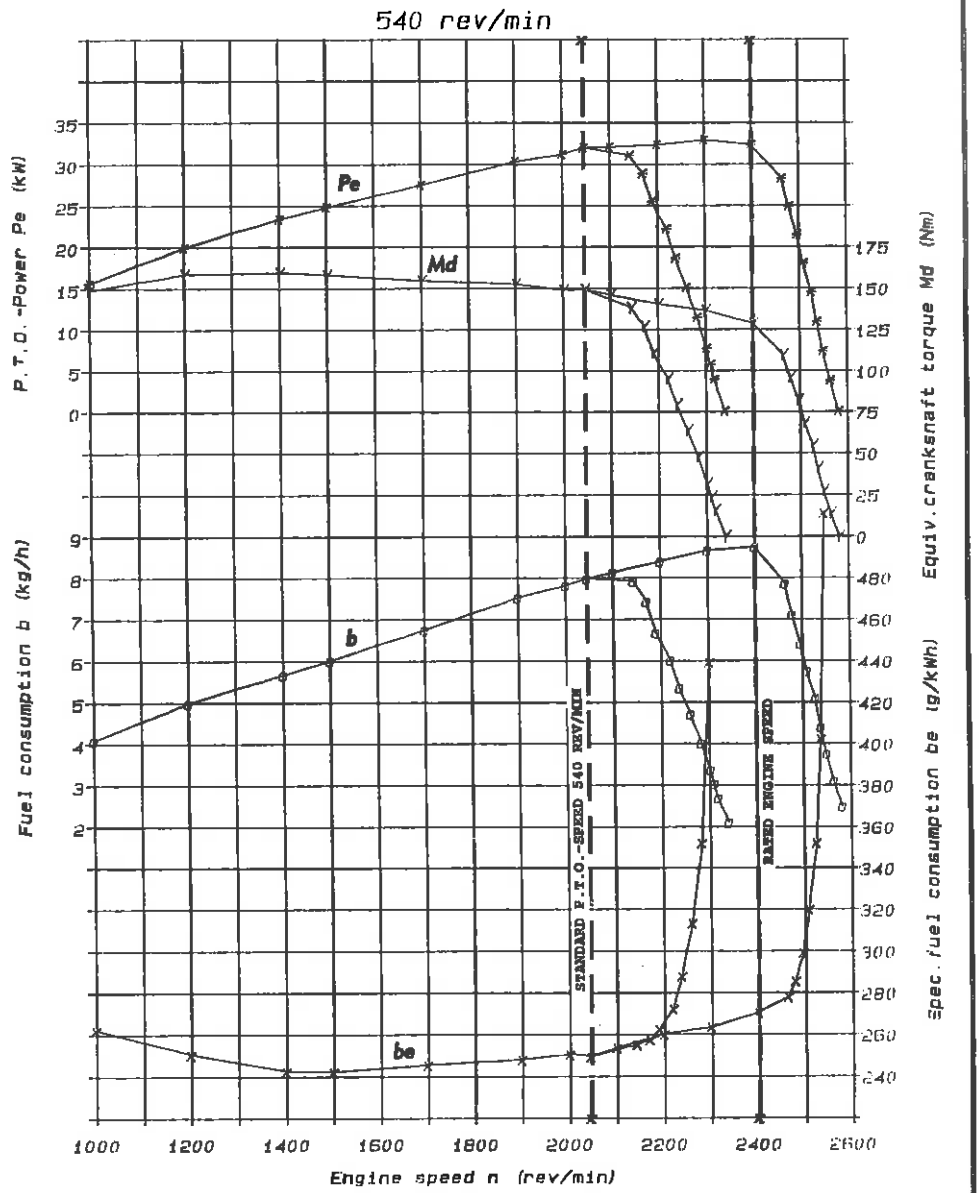
Power	Speed		Fuel consumption			Specific energy
	engine	p.t.o.	hourly		specific	
kW	rev/min	rev/min	kg/h	l/h	g/kWh	kWh/l
MAXIMUM POWER						
Maximum power - 2 hours test						
32,84	2300	607	8,64	10,29	263,0	3,19
Power at rated engine speed						
32,33	2400	634	8,75	10,42	270,5	3,10
Standard power take-off speed						
31,97	2045	540	7,97	9,49	249,5	3,37
PART LOADS						
(i) The torque corresponding to maximum power at rated engine speed						
32,33	2400	634	8,75	10,42	270,5	3,10
(ii) 85 % of torque obtained in (i)						
28,25	2464	651	8,82	9,31	277,0	3,03
(iii) 75 % of torque defined in (ii)						
21,39	2492	659	6,41	7,63	300,0	2,80
(iv) 50 % of torque defined in (ii)						
14,47	2526	667	5,06	6,02	350,0	2,40
(v) 25 % of torque defined in (ii)						
7,34	2549	673	3,75	4,46	511,5	1,65
(vi) unloaded						
0	2581	682	2,48	2,95	-	-

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						
31,97	2045	540	7,97	9,49	249,5	3,37
(ii) 85 % of torque obtained at maximum power						
28,82	2170	573	7,42	8,83	257,5	3,26
(iii) 75 % of torque defined in (ii)						
22,09	2219	586	6,02	7,16	272,5	3,09
(iv) 25 % of torque defined in (ii)						
15,04	2261	597	4,71	5,61	313,5	2,68
(v) 25 % of torque defined in (ii)						
7,66	2302	608	3,36	4,00	439,0	1,92
(vi) unloaded						
0	2340	618	2,11	2,51	-	-

No load maximum engine speed: 2581 rev/min
Equivalent crankshaft torque
at maximum power: 128,6 Nm at rated engine speed
Maximum equivalent crankshaft torque: 159,5 Nm at 1400 rev/min of engine

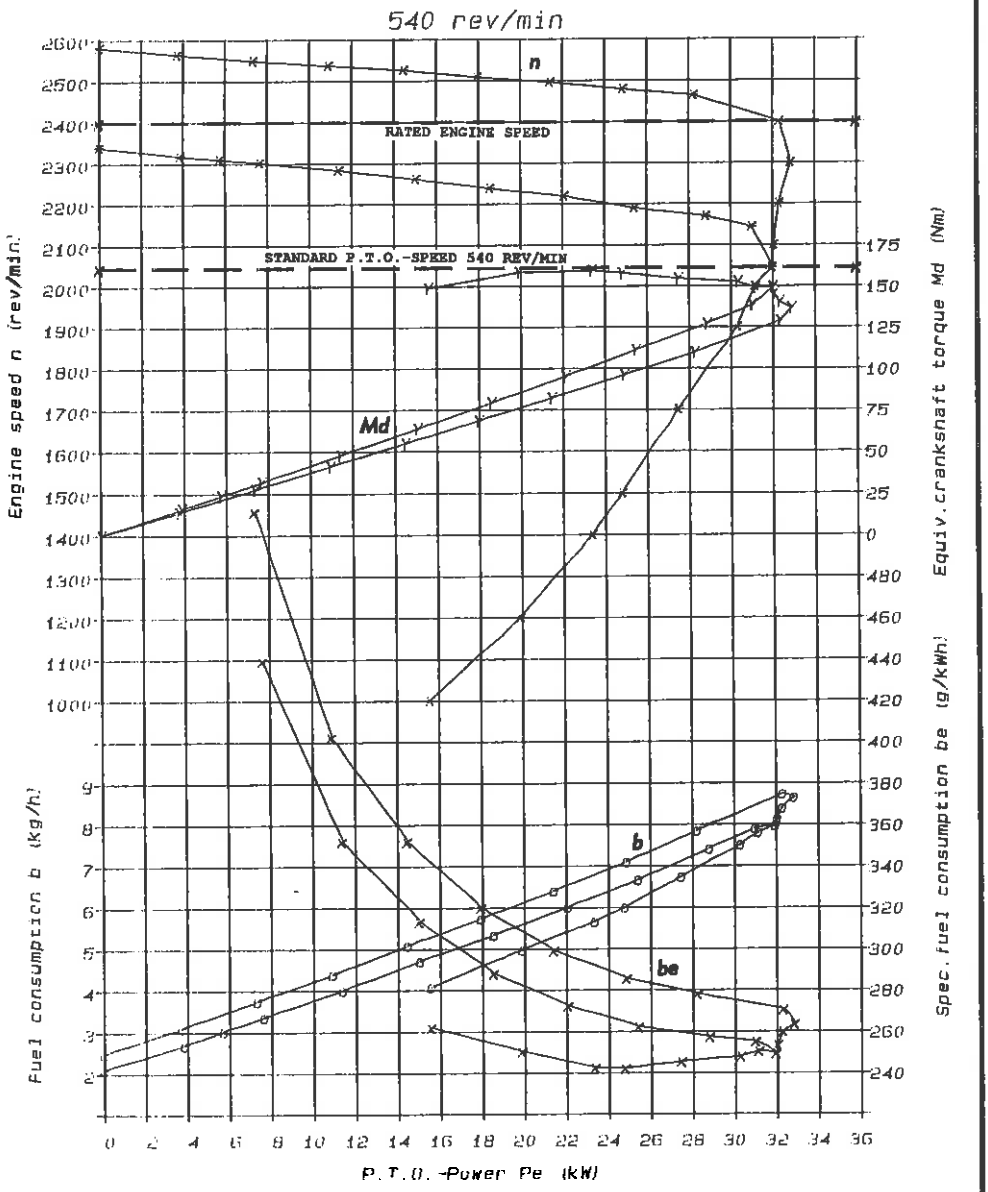
Mean atmospheric conditions	temperature:	18°C
	pressure:	995 mbar
	rel. humidity:	55 %
Maximum temperatures	coolant:	92°C
	engine oil:	109°C
	fuel:	33°C
	engine air intake:	35° C

Bundesanstalt für Landtechnik Wieselburg/Erlauf, Austria Prot.Nr.:	P.T.O.-test	Steyr-Dieseltractor Typ 9010.20 (948) Mot.Typ Steyr WD 308.85



engine ser.nr.	308.85 17661	atm. pressure	995 mbar	fuel temp.	33 C	signature	
tractor ser.nr.	9010.20-01141	air temper.	18 C	d.of tests	1992-07-08		
fuel	. 0.840/15 C	coolant temp.	92 C	test no.	780-686-92		
engine oil	. SAE 30 summer	oil temp.	109 C	curves no.	1	Haider/Schaufler	

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tractor ser.nr. 9010.20-01141	air temper. 18 C	d.of tests 1992-07-08		
fuel . 0.840/15 C	coolant temp. 92 C	test no. 780-686-92		
engine oil . SAE 30 summer	oil temp. 109 C	curves no. 2		Haider/Schaufler

HYDRAULIC POWER AND LIFTING FORCE:

Date of tests: 13.9.1992

Hydraulic power test:

Sustained pressure with relief valve open: 18,0 MPa (180 bar)

Pump delivery rate at minimum pressure (at rated engine speed): 29,4 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	24,2	16,7	6,74
Flow rate and hydraulic pressure corresponding to maximum hydraulic power	24,0	17,0	6,80

Tapping point used for test: At rear of tractor

Temperature of hydraulic fluid, if different from 65° + 5°C: -

Opening pressure of the unloading valve: 18,5 MPa (185 bar)

Closing pressure of the unloading valve: 18,0 MPa (180 bar)

Remarks:

Flow rate corresponding to a hydraulic pressure equivalent up to 80 % (14,8 MPa) of the actual relief valve pressure setting is equal to pump delivery rate at minimum pressure (at rated engine speed).

By reasons of the characteristic of the hydraulic spool valves about 20 % control flow above 14,8 MPa are normal.

Power lift test:

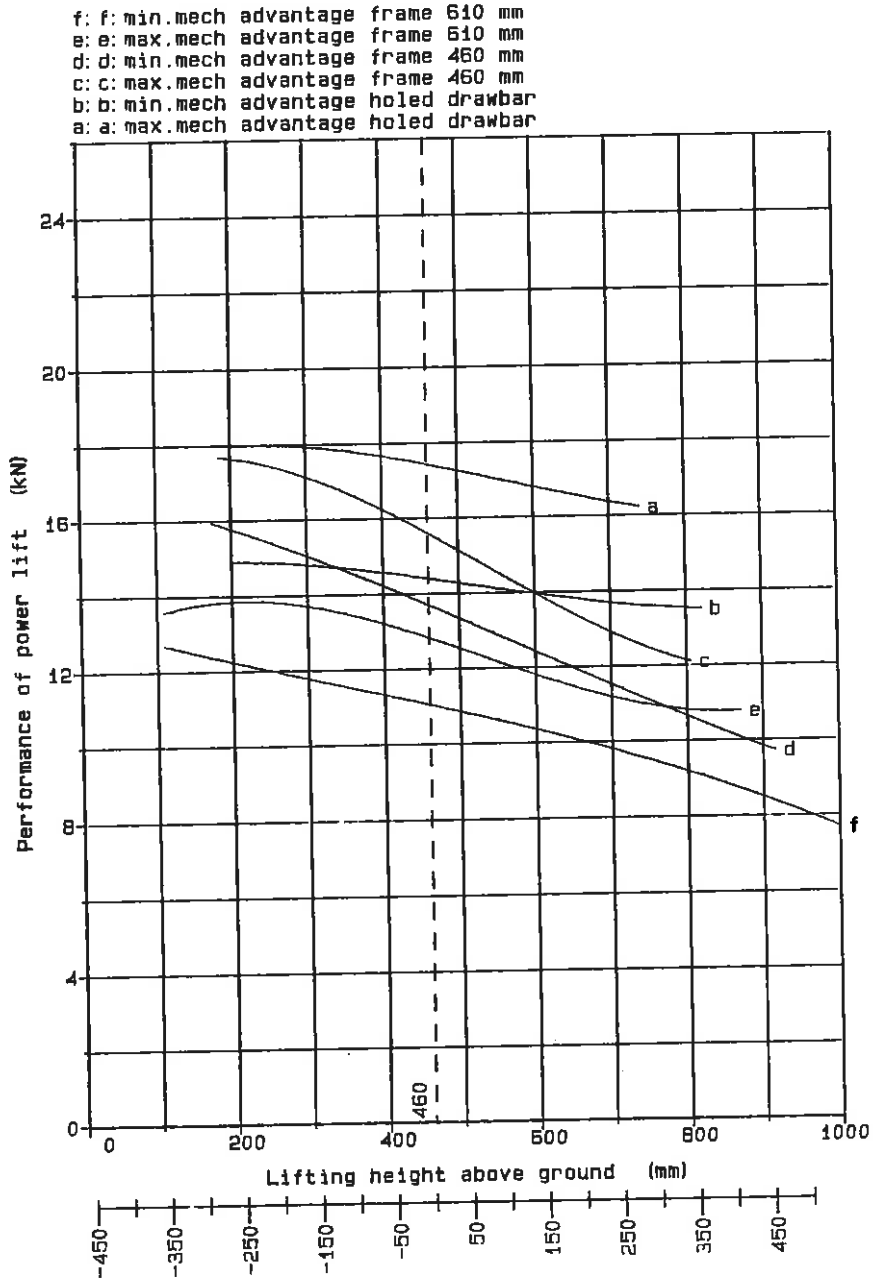
	at the hitch point	on the frame	
		460 mm mast height	610 mm mast height
Height of lower hitch points above ground in down position *)	200/200 mm	200/200 mm	200/200 mm
Vertical movement *)	620/545 mm	620/545 mm	620/545 mm
Maximum corrected force exerted through full range *)	13,6/16,4 kN	9,8/12,2 kN	7,8/10,8 kN
Corresponding pressure of hydraulic fluid	16,7 MPa (167 bar)	16,7 MPa (167 bar)	16,7 MPa (167 bar)
Moment about rear wheel axis *)	11,83 / 14,27 kNm	14,50 / 18,06 kNm	11,54 / 15,98 kNm
Maximum tilt angle of mast from vertical	-	from +2° to 0° and to +8°	from -7° to 0° and to +12°

*) Min.mech/max.mech. advantage

Linkage settings for test: See table and figure in specifications

Lifting heights relative to the horizontal plane including the lower link pivot points															
mm		-350	-260	-200	-100	-50	0	50	100	200	280	345	385	455	540
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: 16,7 MPa (167 bar)															
at the hitch point kN	max.mech. advantage		18,0	17,9	17,7	17,6	17,4	17,3	17,1	16,7	16,4				
	min.mech. advantage		15,1	14,8	14,7	14,7	14,6	14,4	14,3	13,8	13,7	13,6	13,6		
at the frame kN (460 mm mast height)	max.mech. advantage		17,8	17,4	16,6	16,2	15,7	15,2	14,7	13,4	12,5	12,2			
	min.mech. advantage		15,9	15,3	14,5	14,0	13,6	13,2	12,8	11,9	11,2	10,7	10,3	9,8	
at the frame kN (610 mm mast height)	max.mech. advantage	13,7	13,8	13,8	13,6	13,2	13,0	12,6	12,2	11,4	11,0	10,9	10,8		
	min.mech. advantage	12,8	12,2	11,9	11,6	11,4	11,2	11,0	10,7	10,1	9,6	9,2	8,9	8,4	7,8

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 test: 6.8.1992

Type of track: Concrete

Height of drawbar above ground: unballasted 650 mm, ballasted 550 mm

Tyre inflation pressure: front: unballasted 140 kPa, ballasted 160 kPa
rear: unballasted 100 kPa, ballasted 110 kPa

Tyre sizes: front: 7,5 - 16 AS, 6 PR; rear: 14.9 - 28 AS, 6 PR

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
(1) Maximum power in tested gears (unballasted tractor)													
L 1 L	10,10	20,20	1,80	2503	15,0	-	-	34	87	101	30	65	99,1
L 1 S	12,79	20,28	2,27	2486	15,0	-	-	34	88	101	30	65	99,1
L 2 L	17,55	20,29	3,10	2462	15,0	372,5	2,24	32	89	100	29	65	99,1
L 2 S	21,87	20,28	3,89	2444	15,0	330,0	2,54	34	91	103	29	66	99,1
L 3 L	27,31	19,23	5,11	2400	12,5	320,5	2,62	34	91	103	29	66	99,1
S 1 L	30,54	17,86	6,16	2400	9,9	286,5	2,93	35	91	104	29	67	99,1
L 3 S	27,51	14,79	6,70	2400	9,1	318,0	2,64	36	92	107	30	68	99,1
S 1 S	28,20	12,74	7,96	2400	7,8	310,5	2,71	37	92	108	30	69	99,1
L 4 L	27,75	11,91	8,39	2400	7,4	315,5	2,66	37	92	108	30	68	99,1

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)													
L 1 L	13,28	27,10	1,76	2485	15,0	-	-	38	89	106	23	74	99,1
L 1 S	16,91	27,16	2,23	2473	15,0	420,5	2,00	32	89	100	25	74	99,1
L 2 L	22,82	26,96	3,06	2430	15,0	383,0	2,19	40	89	111	25	68	99,1
L 2 S	26,79	24,58	3,92	2400	12,6	326,5	2,57	42	88	114	26	68	99,1
L 3 L	27,81	19,09	5,26	2400	9,1	314,5	2,67	42	89	114	28	68	99,1
S 1 L	28,26	16,35	6,23	2400	8,1	309,5	2,71	43	87	114	26	68	99,1
L 3 S	27,50	14,47	6,84	2400	6,9	318,0	2,64	43	87	114	26	68	99,1
S 1 S	27,61	12,35	8,06	2400	6,3	317,0	2,65	44	88	115	28	68	99,1
L 4 L	26,86	11,46	8,42	2400	6,1	326,0	2,58	44	88	115	28	68	99,1
(iii) Five-hour-test at 75 % of pull at maximum power													
S 1 L	22,12	12,28	6,48	2443	5,8	374,5	2,24	40	92	112	28	68	99,3
(iv) Five-hour-test at pull corresponding to 15 % wheelslip in test (ii)													
L 2 L	22,68	27,00	3,02	2432	15,0	385,5	2,18	42	95	116	30	70	99,2

Oil consumption during 10 hours duration of tests (iii) and (iv): 26,3 g/h

TURNING AREA AND TURNING CIRCLE:

Wheel equipment: front: 7.50 - 16 AS, 6 PR
rear: 14.9 - 28 AS, 6 PR

Track of wheel: front: 1325 mm
rear: 1365 mm

Results	With brakes		Without brakes	
	right-hand	left-hand	right-hand	left-hand
	m	m	m	m
Radius of turning area	3,19	3,17	3,73	5,43
Radius of turning circle	2,97	2,95	3,51	4,99

LOCATION OF CENTRE OF GRAVITY:

	mm
Height above ground	771
Distance forward from the vertical plane containing the axis of the rear wheels	681
Distance from the median plane of the tractor, left-side	4,9

BRAKING:

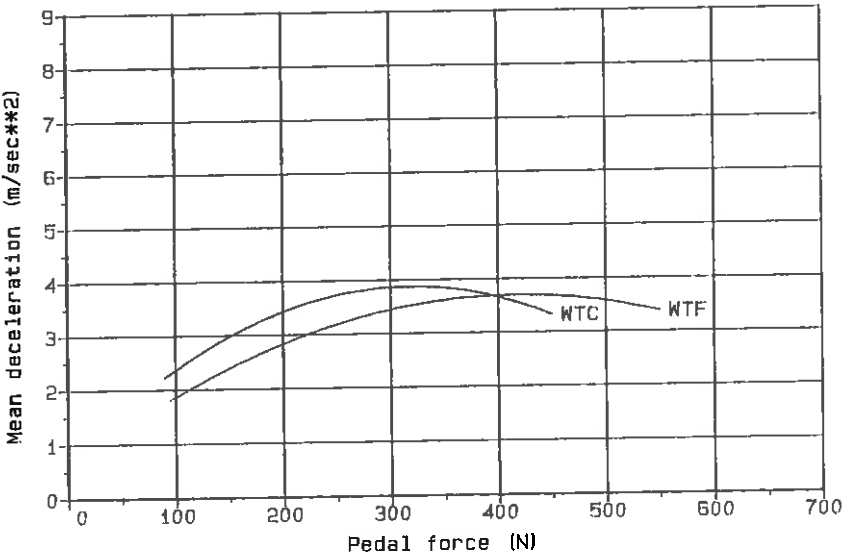
Date of tests: 24.8.1992
Type of track: Concrete
Type of decelerometer: Moto-Meter Nr. 03382 (Kombi-Schreiber)

Tractor mass during brake tests (with driver):

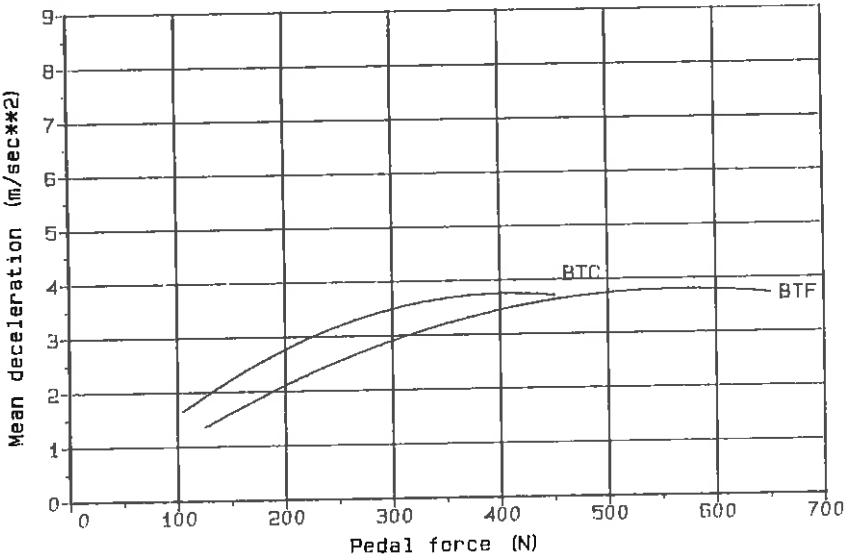
	Front kg	Rear kg	Total kg
Ballasted	965	2240	3205
Unballasted	825	1560	2385

Service brake:

WTC: unballasted, 2WD, cold
WTF: unballasted, 2WD, fade



BTC: ballasted, 2WD, cold
BTF: ballasted, 2WD, fade



Speed before application of brakes: 39,60 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
	175 N	200 N

MEASUREMENT OF EXTERNAL NOISE LEVEL:

Date of test: 24.8.1992

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

Type of track: Concrete

Gear number: S 4 S

Travelling speed before acceleration: 28,1 km/h

Sound level: 81,5 dB(A)

OPTIONAL TESTS

Main power take-off performance:

Date and location of tests: 9.7.1992, 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						
33,48	2300	1080	8,69	10,35	259,5	3,23
Power at rated engine speed						
32,90	2400	1127	8,77	10,44	266,5	3,15
Standard power take-off speed						
32,40	2130	1000	8,20	9,76	253,5	3,32
PART LOADS						
(i) The torque corresponding to maximum power at rated engine speed						
32,90	2400	1127	8,77	10,44	266,5	3,15
(ii) 85 % of torque obtained in (i)						
28,69	2462	1156	7,87	9,37	274,5	3,06
(iii) 75 % of torque defined in (ii)						
21,77	2492	1170	6,47	7,70	297,0	2,83
(iv) 50 % of torque defined in (ii)						
14,68	2520	1183	5,11	6,08	348,5	2,41
(v) 25 % of torque defined in (ii)						
7,42	2550	1197	3,81	4,54	514,0	1,63
(vi) unloaded						
0	2575	1209	2,60	3,10	-	-

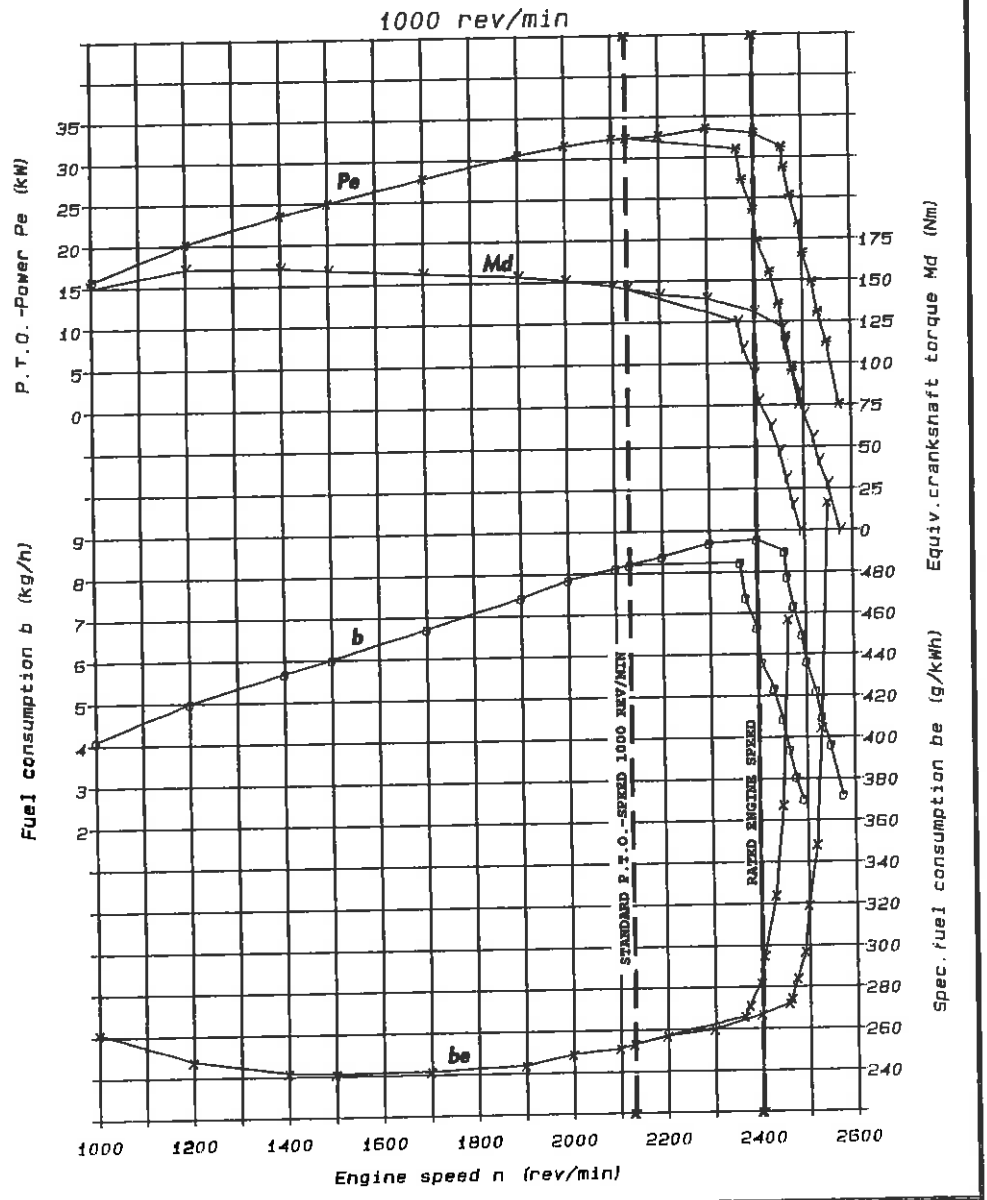
Power	Speed		Fuel consumption			Specific energy
	engine	p.t.o.	hourly		specific	
kW	rev/min	rev/min	kg/h	l/h	g/kWh	kWh/l
PART LOADS AT STANDARD POWER TAKE-OFF SPEED						
(i) The torque corresponding to maximum power available						
32,40	2130	1000	8,20	9,76	253,5	3,32
(ii) 85 % of torque obtained at maximum power						
30,97	2364	1110	8,23	9,80	266,0	3,16
(iii) 75 % of torque defined in (ii)						
23,51	2398	1125	6,64	7,91	282,5	2,97
(iv) 25 % of torque defined in (ii)						
15,93	2432	1142	5,16	6,14	324,5	2,59
(v) 25 % of torque defined in (ii)						
8,09	2464	1157	3,70	4,41	457,5	1,83
(vi) unloaded						
0	2492	1170	2,51	2,99	-	-

No load maximum engine speed: 2575 rev/min
Equivalent crankshaft torque
at maximum power: 130,9 Nm at rated engine speed
Maximum equivalent crankshaft torque: 160,4 Nm at 1400 rev/min of engine

Mean atmospheric conditions
temperature: 19°C
pressure: 995 mbar
rel. humidity: 50 %

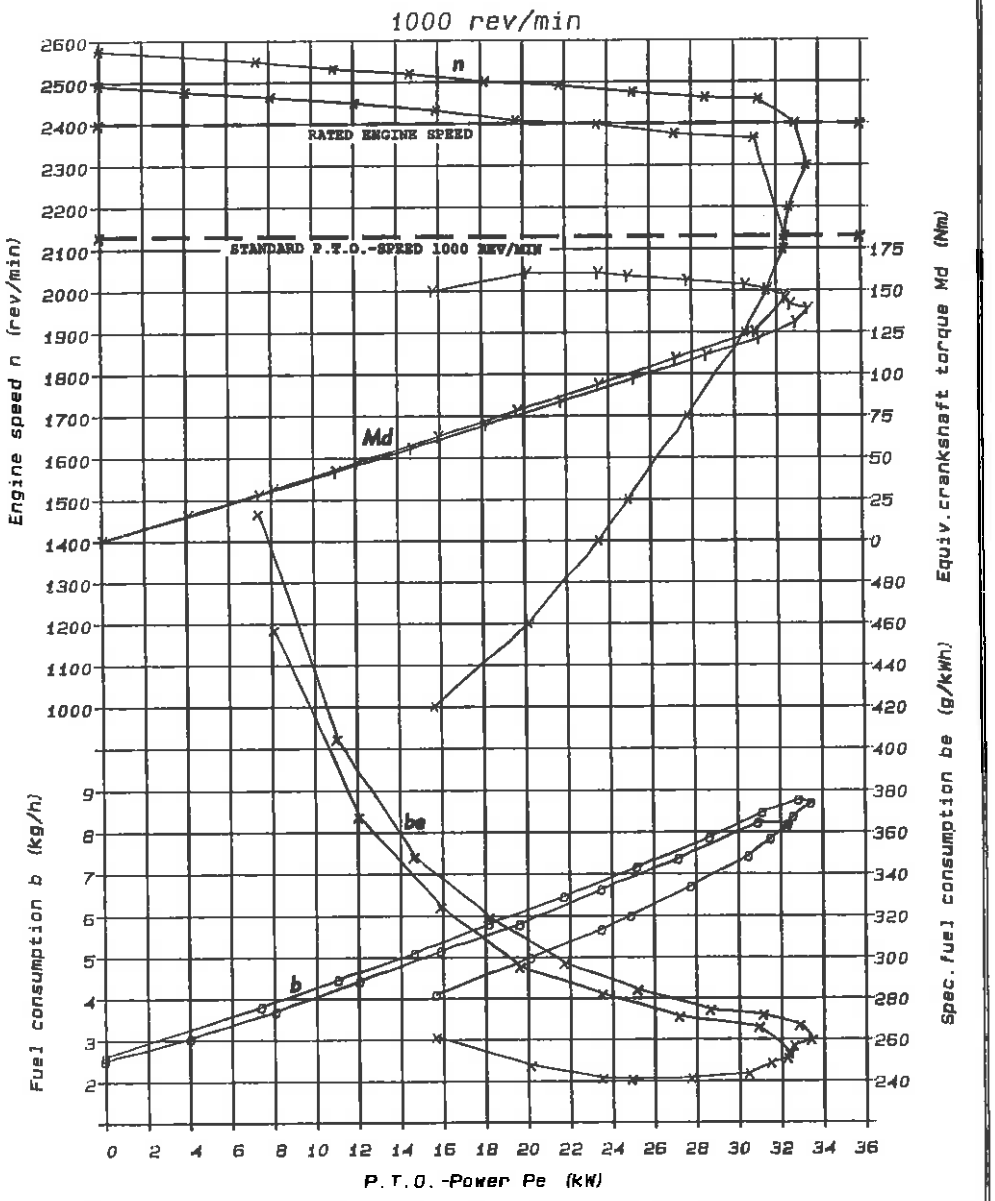
Maximum temperatures
coolant: 93°C
engine oil: 108°C
fuel: 33°C
engine air intake: 36° C

Bundesanstalt für Landtechnik Wieselburg/Erlauf, Austria Prot.Nr.:	P.T.O.-test	Steyr-Dieseltractor Typ 9010.20 (948) Mot.Typ Steyr WD 308.85



engine ser.nr. 308.85 17661	atm. pressure. 995 mbar	fuel temp. 33 C	signature	
tractor ser.nr. 9010.20-01141	air temper. 19 C	d.of tests . 1992-07-09		
fuel . 0.840/15 C	coolant temp. 93 C	test no. 780-686-92		
engine oil . SAE 30 summer	oil temp. . 108 C	curves no. 3	Haider/Schaufler	

Bundesanstalt für Landtechnik Wieselburg/Erlauf, Austria Prot.Nr.:	P.T.O.-test	Steyr-Dieseltractor Typ 9010.20 (948) Mot.Typ Steyr WD 308.85



engine ser.nr.	308.85 17661	atm. pressure.	995 mbar	fuel temp.	33 C
tractor ser.nr.	9010.20-01141	air temper.	19 C	d.of tests	1992-07-09
fuel	0.840/15 C	coolant temp.	93 C	test no.	780-686-92
engine oil	SAE 30 summer	oil temp.	108 C	curves no.	4

signature

Haider/Schaufler

Engine performance:

Date and location of test: 22.6.1992, Wieselburg, Austria
Type of dynamometer: SCHENCK eddy-current brake W 150

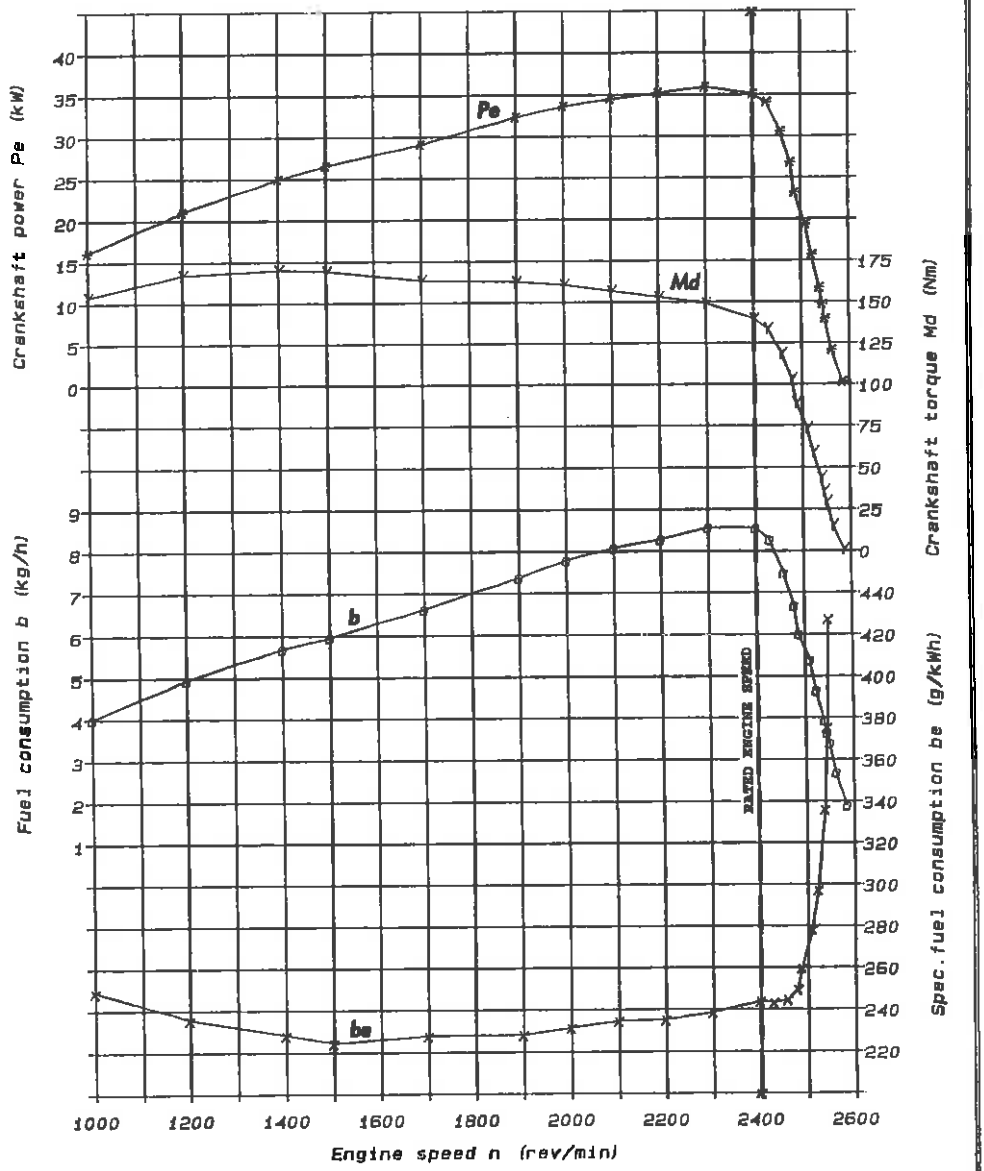
Power	Engine speed	Fuel consumption		Specific energy
		hourly	specific	
kW	rev/min	kg/h l/h	g/kWh	kWh/l
Maximum power - 2 hours test				
35,88	2300	8,56 10,19	238,5	3,52
Power at rated engine speed				
35,04	2400	8,55 10,18	244,0	3,44
Part loads				
(i) The torque corresponding to maximum power at rated engine speed				
35,04	2400	8,55 10,18	244,0	3,44
(ii) 85 % of torque obtained in (i)				
30,50	2458	7,46 8,89	244,5	3,43
(iii) 75 % of torque defined in (ii)				
23,13	2488	6,00 7,14	259,5	3,24
(iv) 50 % of torque defined in (ii)				
15,64	2523	4,65 5,54	297,5	2,82
(v) 25 % of torque defined in (ii)				
7,90	2550	3,79 4,02	427,5	1,97
(vi) unloaded				
0	2585	1,89 2,25	-	-

Optimum fuel consumption: 218,70 g/kWh at 21,0 kW and 1500 rev/min
No load maximum engine speed: 2585 rev/min
Torque at maximum power: 139,4 Nm at rated engine speed
Maximum torque: 170 Nm at 1400 rev/min of engine

Mean atmospheric conditions:
temperatur: 24°C
pressure: 989 mbar
relative humidity: 65 %

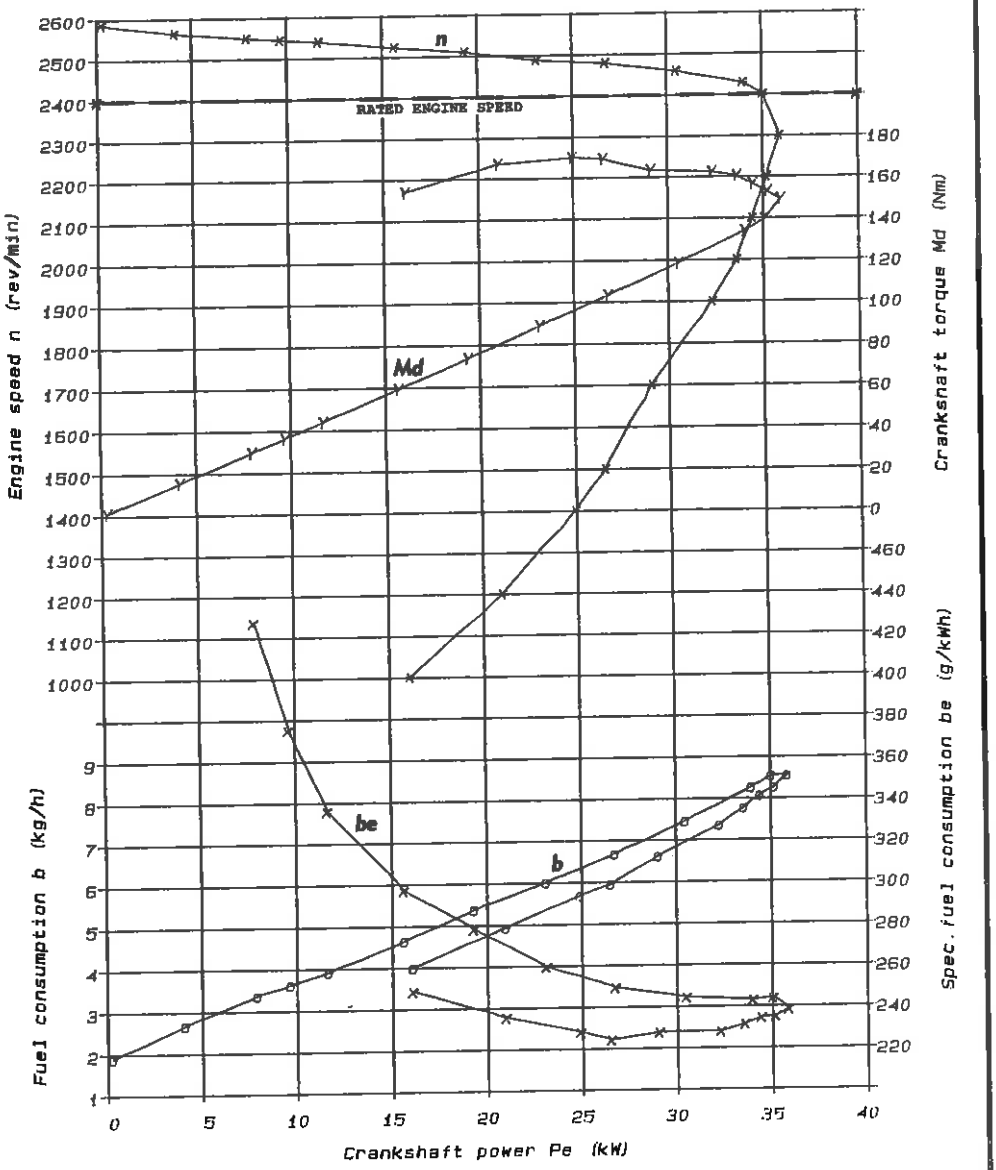
Maximum temperatures:
coolant: 96°C
engine oil: 115°C
fuel: 29°C
engine air intake: 41°C

Bundesanstalt für Landtechnik Wieselburg/Erlauf, Austria Prot.Nr.:	Engine-test	Steyr-Dieseltractor Typ 9010.20 (948) Mot.Typ Steyr WD 308.85



engine ser.nr.	308.85 17661	atm. pressure	989 mbar	fuel temp.	29 C	signature	
tractor ser.nr.	9010.20-01141	air temper.	24 C	d.of tests	1992-06-22		
fuel	D.B40/15 C	coolant temp.	96 C	test no.	780-686-92		
engine oil	SAE 30 summer	oil temp.	115 C	curves no.	5	Haider	

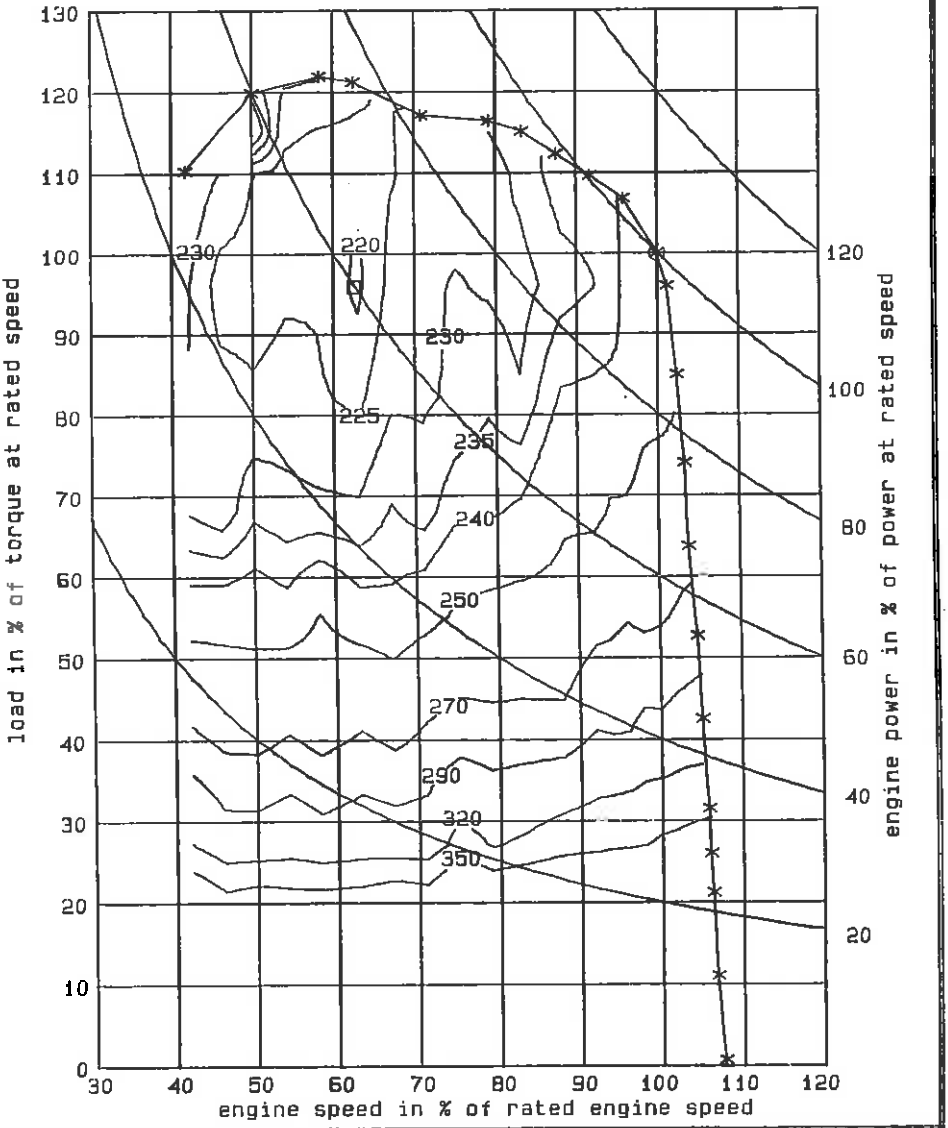
Bundesanstalt for Landtechnik Wieselburg/Erlauf, Austria Prot.Nr.:	Engine-test	Steyr-Dieseltractor Typ 9010.20 (948) Mot.Typ Steyr WD 308.85



engine ser.nr. 308.85 17661	atm. pressure: 989 mbar	fuel temp. 29 C	signature
tractor ser.nr. 9010.20-01141	air temper. 24 C	d.of tests . 1992-06-22	
fuel . 0.840/15 C	coolant temp. 96 C	test no. 780-686-92	
engine oil : SAE 30 summer	oil temp. 115 C	curves no. 6	Haider

BUNDESANSTALT FÜR LANDTECHNIK eselburg/Erlauf, Austria Prot.Nr.:	ENGINE PERFORMANCE CHARACTERISTIC	Steyr-Dieseltractor Typ 9010.20 (948) Mot.Typ Steyr WD 308.85

□ . min. fuel 218.70 g/kWh at n = 1500. rev/min
Md = 133.69 Nm, P = 21.0 kW
✱ . N = 2400. rev/min, Md = 139.4 Nm, P = 35.0 kWh



ngine ser.nr.	308.85 17661	atm. pressure:	981 mbar	fuel temp.	30 C	signature	
ractor ser.nr.	9010.20-01141	air temper.	29 C	d.of tests	1992-06-23		
uel :	0.840/15 C	coolant temp.	95 C	test no.	780-686-92		
ngine oil :	SAE 30 summer	oil temp.	110 C	curves no.	7	Haider	

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REPAIRS: None

REMARKS: None

The head of department:

(Dipl.Ing. H. Lampel)
Oberrat

Bundesanstalt für Landtechnik Wieselburg a. d. Erlauf

Test and report carried out by:

(Ing. Hermann Schaufler)

The director of testing station:

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