O.E.C.D. Report No.: 922


Bundesanstalt für Landtechnik

A-3250 Wieselburg, Austria


# Dieseltractor STEYR 357.20

Trade name:

## STEYR 8090





Date of approval: 1985 02 26


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-DAIMLER-PUCH AG., Steyr, Austria<br>STEYR-HELLAS ABE., Sindos, Greece |
| Submitted for test by: | Manufacturer |
| Selected for test by: | Manufacturer by agreement with BLT-Wieselburg |
| Place of running-in: | Steyr, Austria |
| Duration of running-in: | 120 hours |

## SPECIFICATION OF TRACTOR

**TRACTOR:**

| | |
|---|---|
| Make: | STEYR-DAIMLER-PUCH AG. |
| Trade name: | STEYR 8090 |
| Model: | Diesel-tractor STEYR 357.20 |
| Type: | Wheel tractor, rear-wheel driven, unit construction |
| Serial No.: | 357.20 - 08448 (first serial nr.) |

**ENGINE:**

| | |
|---|---|
| Make: | Own make |
| Model: | WD 411.87 |
| Type: | 4 stroke diesel engine with direct injection |
| Serial No.: | 411.87 - 999 |

Cylinders:

| | |
|---|---|
| Number/disposition: | 4, vertical in line |
| Bore/stroke: | 100/110 mm |
| Capacity: | 3456 $cm^3$ |
| Compression ratio: | 16,2/1 |
| Arrangement of valves: | Overhead valves |
| Cylinder liners: | Wet liners |

Fuel system:

| | |
|---|---|
| Capacity of fuel tank: | 96 l or optional 60 l |
| Fuel feed system: | Fuel feed by piston pump (integrated in injection pump)<br>Model V 2 HF 52 B1 FRIEDMANN & MAIER |
| Fuel precleaner: | Optional, PUROLATOR PFC-220 |
| Make, type and model of fuel filter: | PUROLATOR PFC-233<br>Filter with water trap and changeable element, filter cartridge PER 247-F |
| Service interval: | 500 hours changing interval of filter |

| | |
|---|---|
| Make, type and model of injection pump: | In line injection pump<br>FRIEDMANN & MAIER P 24 T 24 [illegible] - 8.85 B II RVF<br>BOSCH PES 4 A 85 D 410 RV 15961 |
| Manufacturer's production setting and injection timing: | $58^{+0}_{-2}$ mm³/stroke at 1100 rev/min and full load<br>$26^{+0}_{-2}$ before TDC |
| Make, type and model of injectors: | FRIEDMANN & MAIER<br>Multi hole injection nozzles, D 1 LMK 150/55 |
| Injection pressure: | $21,6^{+0,5}_{-0}$ MPa ($216^{+5}_{-0}$ bar) |
| Governor: | |
| Make: | FRIEDMANN & MAIER or BOSCH |
| Type: | Variable speed governor, mechanically acting, incorporated in injection pump |
| Model: | R B V 20 - 110/136 D or RSV 250 - 1100 A1CV 16 801 |
| Governed range of engine speed: | From 600 rev/min to $2350^{+30}_{-0}$ rev/min engine speed |
| Rated engine speed: | 2200 rev/min engine speed |
| Super charging: | |
| Make: | KÜHNLE, KOPP & KAUSCH |
| Model: | K 24 2460 G 506 |
| Type: | Exhaust type turbo-supercharger |
| Supercharging pressure: | Max. 806 mbar |
| Air cleaner: | |
| Pre-cleaner: | |
| Make: | MANN & HUMMEL |
| Type: | Cyclonic type with transparent dust container |
| Model: | MANN & HUMMEL 48.056.67.900 |
| Location: | About the motor, above the bonnet |
| Main cleaner: | |
| Make: | MANN & HUMMEL or PUROLATOR |
| Type: | Dry type with changeable filter-paper insert |
| Model: | MANN & HUMMEL 45.165.65.424 or<br>PUROLATOR LP 060 S/1 |
| Location: | About the motor, inside the bonnet |
| Main filter paper insert: | MANN & HUMMEL, model C 15 165/3 or<br>PUROLATOR, model PM 1762 or<br>KNECHT, model AG 87 |

| | |
|---|---|
| Optional: | Additional safety element<br>MANN & HUMMEL paper insert CF 700 or<br>PUROLATOR paper insert AF 3099 or<br>KNECHT paper insert SE 60 |
| Service intervals: | |
| Main cleaner paper insert: | Cleaning interval: when control-lamp indication<br>Changing interval: 2000 hours or 1 year |
| Cyclonic pre-cleaner: | Cleaning interval: 500 hours and visual control |
| Safety element: | Changing interval: after 5 main-cleaner paper inserts, 2 years, or if main-cleaner was defect |
| Maintenance indicator: | Electric lamp indication, -0,65 mbar for indication, PUROLATOR LES 065 IP. |

Lubrication system:

| | |
|---|---|
| Type of feed pump: | EATON pump forced lubrication |
| Total oil capacity including filter: | appr. 9,6 l |
| Oil change period: | 250 hours |
| Type of filter: | One paper filter cartridge in full flow,<br>MANN W 940 or PUROLATOR PC 31 or KNECHT FD 371/12 |
| Filter change period: | 250 hours |
| Recommended oil: | Fuel and lubricants used in test |

Cooling system:

| | |
|---|---|
| Type of coolant: | Water with longtime frost protection down to -20°C in a cooling system with a tubular radiator |
| Specification of pump: | Centrifugal pump with double circuit water cooling |
| Type: | Own make, centrifugal pump, 2 driving belts |
| Model: | - |
| Specification of fan: | 4 blade fan (dia 460 mm, 2 belts driven) |
| Coolant capacity: | 15,5 l (with cab heating 17 l) |
| Type of temperature control: | Thermostat control with electrical cooling water thermometer |
| Superpressure system: | max. 50 kPa (0,5 bar) |

Starting system:

| | |
|---|---|
| Safety device: | Optional |
| Make: | Own make |
| Type: | Electrically starting block system by engaged gear |
| Model and starter motor power rating: | BOSCH, solenoid engaged starter motor<br>12 V, 2,7 kW, 0 001 367 011 |
| Cold starting aid: | Electrically, 2 glow plugs in intake pipe<br>BERU model 184 G (0 102 024 402 11 V)<br>BOSCH model A 250 00 1088 |

Electrical system:

| | |
|---|---|
| Voltage: | 12 V |
| Generator: | Make: BOSCH 0120 339 526<br>Type: three phase type<br>Power: 14 V, 28 A = 392 W |
| Battery: | 1 with 12 V, lead acid type<br>Rating: 135 Ah at 20 hours rating |

Exhaust system:

| | |
|---|---|
| Make: | EBERSPÄCHER or LEISTRITZ |
| Type: | Absorptions-reflexion type |
| Model: | EBERSPÄCHER 16.47.183.01.0.00 or<br>16.47.183.02.0.00 or<br>LEISTRITZ 432.6454 or 432.6483 |
| Location: | 150 mm on the left side of the motor, mouth upwards, 2540 mm above ground |
| Dimension of silencer body: | 2 versions, 714 mm resp. 650 mm length, diameter of silencer 110 mm, diameter of exhaust pipe 55 mm |

**TRANSMISSION:**

Clutch:

Main clutch and p.t.o. clutch:

| | |
|---|---|
| Make: | FICHTEL & SACHS AG. |
| Model: | DUT 310/310 |
| Type: | Dry double clutch with 2 plates included in the same clutch pressure plate but independent operated, the one acting for the power take-off, the other for the gearbox |
| Number of plates: | 2 |
| Diameter of plates: | 310 mm |
| Method of operation: | Main clutch operated by pedal, p.t.o. clutch operated by hand lever |

Gearbox:

| | |
|---|---|
| Make: | Own make |
| Type: | Mechanically acting gear box |
| Model: | TW 357 |
| Basis model I: | 8 forward and 8 reverse speeds 25 km/h |
| Basis model II: | 8 forward and 8 reverse speeds 30 km/h |
| Super crawler group: | Spur gear reduction with clutch<br>Reduction ratio: 4,671<br>With basis model I; 16 forward and 16 reverse speeds 25 km/h<br>With basis model II; 16 forward and 16 reverse speeds 30 km/h |

| | |
|---|---|
| 2nd forward group: | With basis model I; 16 forward and 8 reverse speeds, 30 km/h<br>With basis model II; 16 forward and 8 reverse speeds, 40 km/h |
| Torque amplifier group: | Gear reduction with wet multiplate clutches, electrically - hydraulically activated<br>Speed reduction 1 : 0,81; switched by an electric push botton switch |
| | With basis model I, 16 forward and 16 reverse speeds, 30 km/h |
| | With basis model II; 16 forward and 16 reverse speeds, 40 km/h |
| Arrangement: | 1 lever for group gear (VS, VN, R) and super crawler group<br>1 lever for the 4 speed gear (1 - 4)<br>1 handle for the reduction gear (ROAD, FIELD, 0)<br>1 push botton switch for torque amplifier group |

Rear axle and final drives:

| | |
|---|---|
| Make: | Own make |
| Type: | Central axle; pinion and bevel gear, lockable bevel gear differential, acting by planetary gears on rear wheels |
| Model: | 357 |
| Differential lock: | Typ: mechanically acting from half axle to differential housing<br>Method of engagement: foot lever operated, lockable and preselectable<br>Method of disengagement: self-disengaging |

Front axle:

| | |
|---|---|
| Make: | Own make |
| Type: | Steering axle with hydraulic steering cylinder<br>Working cylinder:<br>bore 58 mm dia, stroke 150 mm, cylinder rod 25 mm dia<br>Track width adjustable (8 steps, each 100 mm) |

Transmission oils:

| | |
|---|---|
| Capacity: | |
| Gear box, rear axle and hydraulic: | appr. 30 l, MIL-L-2105, SAE 80 W, API GL-4 |
| Rear axle final drives: | appr. 2 x 2,7 l, MIL-L-2105, SAE 80 W, API GL-4 |
| Oil changing period: | 1000 hours or 2 years |
| Changing interval of filter in suction line: | 1000 hours or 2 years |

Total ratios and speeds: Basis model I with 2nd forward group, 30 km/h as tested

| Group | Gear nr. | Number of engine revolution of the driving wheels | | Nominal travelling speed at rated engine speed of 2200 rev/min *) km/h | |
|---|---|---|---|---|---|
| | - | field L | road S | field L | road S |
| forward normal VN | 1 | 357,67 | 109,61 | 1,73 | 5,64 |
| | 2 | 203,55 | 62,38 | 3,04 | 9,91 |
| | 3 | 135,22 | 41,44 | 4,57 | 14,91 |
| | 4 | 83,88 | 25,71 | 7,37 | 24,04 |
| forward fast VS | 1 | 293,18 | 89,85 | 2,11 | 6,88 |
| | 2 | 166,85 | 51,13 | 3,70 | 12,08 |
| | 3 | 110,84 | 33,97 | 5,57 | 18,19 |
| | 4 | 68,76 | 21,07 | 8,99 | 29,32 |
| reverse R | 1 | 363,89 | 111,51 | 1,70 | 5,54 |
| | 2 | 207,09 | 63,46 | 2,98 | 9,74 |
| | 3 | 137,57 | 42,16 | 4,49 | 14,66 |
| | 4 | 85,34 | 26,15 | 7,24 | 23,63 |

*) Calculated with index radius of 745 mm and test tyre equipment: 16,9/14 - 34 AS

Optional: Basis model I with torque amplifier group LS

| | | | | | |
|---|---|---|---|---|---|
| forward normal VN | 1 | 357,67 | 109,61 | 1,73 | 5,64 |
| | 2 | 203,55 | 62,38 | 3,04 | 9,91 |
| | 3 | 135,22 | 41,44 | 4,57 | 14,91 |
| | 4 | 83,88 | 25,71 | 7,37 | 24,04 |
| forward fast VN + LS | 1 | 290,28 | 88,96 | 2,13 | 6,95 |
| | 2 | 165,20 | 50,63 | 3,74 | 12,20 |
| | 3 | 109,74 | 33,63 | 5,63 | 18,37 |
| | 4 | 68,08 | 20,86 | 9,08 | 29,62 |
| reverse R | 1 | 363,89 | 111,51 | 1,70 | 5,54 |
| | 2 | 207,09 | 63,46 | 2,98 | 9,74 |
| | 3 | 137,57 | 42,16 | 4,49 | 14,66 |
| | 4 | 85,34 | 26,15 | 7,24 | 23,63 |
| reverse R + LS | 1 | 295,46 | 90,45 | 2,09 | 6,82 |
| | 2 | 168,15 | 51,53 | 3,67 | 11,99 |
| | 3 | 111,70 | 34,23 | 5,53 | 18,05 |
| | 4 | 29,29 | 21,23 | 8,92 | 29,10 |

**POWER TAKE-OFF:**

One p.t.o. shaft, at rear of tractor, in median plane, 445 mm behind rear axle, 635 mm above ground (745 mm tyre index radius)
Dimension: ISO R 500, Typ I (35 mm, 6 splines)

Proportional to engine speed (independent) p.t.o.:

Driven by p.t.o. clutch (dry plate type), speed selector, dog clutch, p.t.o. shaft

Speeds:
540/ 632 rev/min at 1880/2200 rev/min engine speed
1000/1123 rev/min at 1958/2200 rev/min engine speed

Transmission ratio: 3,48 resp. 1,96

Optional:

Not on tested tractor

Additional speeds of the proportional to engine speed (independent) p.t.o.:

540/ 742 rev/min at 1600/2200 rev/min engine speed
1000/1320 rev/min at 1667/2200 rev/min engine speed

Transmission ratio: 2,96 resp. 1,67

Engine speed resp. p.t.o. indication by needle instrument
Direction of rotation: clockwise viewed from driving end

Proportional to ground speed p.t.o.:

Optional, not on tested tractor
Only engageable when reduction gear is on 0 (NEUTRAL = stationary) or L (FIELD) position. Driven by main clutch (dry plate type), group gear, 4 speed change gear, reduction gear (only in position 0 or L (FIELD)), dog clutch, p.t.o. shaft.

Driving mode (reduction gear in L position):
Travelling distance for 1 revolution of p.t.o.: 0,0786 m with 745 mm tyre index radius
Number of p.t.o. revolutions for 1 revolution of driving wheel: 59,58

Stationary mode (reduction gear on 0 position, tractor not driving):

Speeds at 2200 rev/min rated engine speed:

Basis model I with VS group, as tested (30 km/h):

| Group gear: | VN | VS | R | - |
|---|---|---|---|---|
| Gear no.: 1 | 367 | 447 | 360 | |
| 2 | 646 | 786 | 633 | |
| 3 | 969 | 1183 | 953 | |
| 4 | 1563 | 1906 | 1536 | |
| Direction of rotation | clockwise | clockwise | anticlockwise | |
| | viewed from driving end | | | |

Basis model II with super crawler group (30 km/h):

| Group gear: | VN | VS with crawler gear | R | R with crawler gear |
|---|---|---|---|---|
| Gear no.: 1 | 447 | 78 | 444 | 95 |
| | 786 | 138 | 780 | 167 |
| | 1183 | 207 | 1175 | 251 |
| | 1906 | 335 | 1894 | 405 |
| Direction of rotation | clockwise | clockwise | anticlockwise | anticlockwise |
| | viewed from driving end | | | |

Basis model I with torque amplifier group gear (30 km/h):

| Group gear: | VN | VS with amplifier group | R | R with amplifier group |
|---|---|---|---|---|
| Gear no.: 1 | 367 | 452 | 360 | 444 |
| 2 | 646 | 793 | 633 | 780 |
| 3 | 969 | 1198 | 953 | 1173 |
| 4 | 1563 | 1925 | 1536 | 1892 |
| Direction of rotation | clockwise | clockwise | anticlockwise | anticlockwise |
| | viewed from driving end | | | |

Basis model II with torque amplifier group gear (40 km/h):

| Group gear: | VN | VS with amplifier group | R | R with amplifier group |
|---|---|---|---|---|
| Gear no.: 1 | 447 | 551 | 444 | 547 |
| 2 | 786 | 968 | 780 | 961 |
| 3 | 1183 | 1457 | 1175 | 1447 |
| 4 | 1906 | 2349 | 1894 | 2331 |
| Direction of rotation | clockwise | clockwise | anticlockwise | anticlockwise |
| | viewed from driving end | | | |

Basis model II with VS group (40 km/h):

| Group gear: | VN | VS | R | - |
|---|---|---|---|---|
| Gear no.: 1 | 447 | 544 | 444 | |
| 2 | 786 | 957 | 780 | |
| 3 | 1183 | 1440 | 1175 | |
| 4 | 1906 | 2321 | 1894 | |
| Direction of rotation | clockwise | clockwise | anticlockwise | |
| | viewed from driving end | | | |

| | |
|---|---|
| Middle p.t.o.: | Optional, not on tested tractor<br>Rearward direction, on the left side of the gear box, 186,5 mm left of the median plane of tractor, 650 mm above ground, 806 mm before rear axle<br>Dimension: ISO R 500, Type I (35 mm, 6 splines)<br>No power restriction<br>Driven bei p.t.o. clutch<br>Speed:<br>1000/1180 rev/min at 1865/2200 rev/min engine speed<br>Direction of rotation: clockwise viewed from the driving end |
| Front p.t.o.: | Optional, not on tested tractor<br>Forward direction, on the left side of the tractor, 310 mm left hand of median plane, 751 mm above ground, 468 mm before front axle.<br>Driven by middle p.t.o. and propeller shaft with intermediate bearing.<br>No power restriction<br>Same rotation speeds of middle p.t.o.<br>Direction of rotation: anticlockwise viewed from the driving end |
| Belt pulley: | Optional, not on tested tractor<br>At rear of tractor, angle transmission on rear p.t.o., all speeds of rear p.t.o. engageable<br>Dimensions: 250 mm dia, 160 mm width<br>Number of pulley revolutions for 1 revolution of p.t.o.: 2,23 |

**POWER LIFT:**

In the rear:

| | |
|---|---|
| Make: | Own make |
| Type: | Open center type, draught control with two-stage pull adjustment and upper link sensing, position control, floating position |
| Type and number of cylinder: | Single acting hydraulic cylinder, stroke and diameter: 152/85 mm and two additional single acting working cylinders, dia 50 mm |
| 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 |

| | |
|---|---|
| Pump delivery rate at minimum pressure: | 46 l/min at 2200 rev/min engine speed |
| Transmission between pump and engine: | Pump directly driven by engine by gear transmissions |
| Type and number of filter: | One filter in the suction part (common filter with gear box) |
| Time between oil changes: | 1000 hours |
| Time between filter changes: | 1000 hours |
| Oil capacity: | Common oil with gear box and rear axle |
| Site of oil reservoir: | Gear box and rear axle |
| Type and number of tapping points: | Up to 6 tapping points (3 independent oil circuits for double acting cylinders) |
| Location of tapping points: | 400 mm behind rear axle, 240 - 420 mm about rear axle, 150 mm right of median plane<br>In accordance to ISO/DIS 5675 |
| Maximum volume of oil available to external cylinders: | 20 l in stationary mode |
| Recommended oil: | SAE 80 W, MIL-L-2105, API GL-4 |
| Optional: | Not on tested tractor<br>WALTERSCHEID linkage quick coupler, category II |
| In the front: | |
| Optional: | Not on tested tractor<br>Three point linkage, category II, open system, hydraulic power lift, disintegrated construction.<br>Oil supply from own control unit and common oil supply with power lift in the rear.<br>Single acting cylinder, bore/stroke: 60/250 mm |

THREE-POINT-LINKAGE:

| | |
|---|---|
| In the rear: | Category I/II, in conformity to ISO 730/1<br>"STEYR SIMPLEMATIK" standard linkage, double hole lift arms |
| In the front: | Not on tested tractor<br>Category II, open center type<br>Hydraulic power lift, disintegrated construction.<br>Oil supply from own control unit and common oil supply with power lift in the rear.<br>Single acting cylinder, bore/stroke: 60/250 mm |

**HOLED DRAWBAR:** Fitted in the clevis of the lower links of the three point linkage, category I or II

| Dimensions | | Category I | Category II |
|---|---|---|---|
| Length | mm | 683 | 825 |
| Width | mm | 80 | 80 |
| Thickness | mm | 30 | 30 |
| Number of holes (with central hole) | | 5 | 7 |
| Hole diameter | mm | 33 | 33 |
| Distance between holes | mm | 130 | 115 |

| Height above ground *) | Min.lift rod length (585 mm) | Max.lift rod length (670 mm) | Vertical movement |
|---|---|---|---|
| Max.mech.advantage Liftarm 200 mm | from 437 to 930 mm | from 195 to 755 mm | 493/560 mm |
| Min.mech.advantage Liftarm 240 mm | from 325 to 920 mm | from 80 to 740 mm | 595/660 mm |

*) Calculated with tyre index radius of 745 mm

Method of changing: By power lift, lift rod length and changing the lift arm coupling point

Distance to rear axle: 985 mm, lower links 900 mm horizontally

Horizontal distance to power take-off shaft end (rear): 540 mm

**TRAILER HITCH:**

| | |
|---|---|
| | Own make |
| Type: | Fork type |
| Height above ground: | 463/491/821/849 mm |
| Distance of hitch point from rear axle axis horizontally: | 497 mm |
| Distance of hitch point from power take-off shaft end: | |
| vertically: | below 172, 144 mm; about 186, 214 mm |
| horizontally: | rearwards 52 mm |
| Diameter of coupling pin: | 31 mm |
| Maximum vertical permissible load: | 15 kN |

or

| | |
|---|---|
| | ROCKINGER model 248 U (∿∿M 4141) |
| Type: | Fork type |
| Height above ground: | 829/841 mm |
| Distance of hitch point from rear axle axis horizontally: | 544 mm |
| Distance of hitch point from power take-off shaft end: | |
| vertically: | above 194/ 206 mm |
| horizontally: | rearwards 99 mm |
| Diameter of coupling pin: | 30 mm |
| Maximum vertical permissible load: | 15 kN |

or

| | |
|---|---|
| | ROCKINGER model 273 J (∿∿M 4097) |
| Type: | Fork type |
| Height above ground: | 687/728/770/811 mm |
| Distance of hitch point from rear axle axis horizontally: | 587 mm |
| Distance of hitch point from power take-off shaft end: | |
| vertically: | above 56/93/135/176 mm |
| horizontally: | rearwards 162 mm |

| | |
|---|---|
| Diameter of coupling pin: | 33 mm |
| Maximum vertical permissible load: | 15 kN |

or

ROCKINGER model 248 JB (∿∿M 4121)

| | |
|---|---|
| Type: | Fork type |
| Height above ground: | 682/733/765/816 mm |
| Distance of hitch point from rear axle axis horizontally: | 587 mm |
| Distance of hitch point from power take-off shaft end: | |
| vertically: | about 47/98/130/181 mm |
| horizontally: | rearwards 162 mm |
| Diameter of coupling pin: | 30 mm |
| Maximum vertical permissible load: | 15 kN |

or

ROCKINGER model 274 RA (∿∿M 4392)

Not automatically acting

| | |
|---|---|
| Type: | Fork type |
| Height above ground: | 434/513/609/689/739/789/839/889 mm |
| Distance of hitch point from rear axle axis horizontally: | 630 mm |
| Distance of hitch point from power take-off shaft end: | |
| vertically: | below 201/122/26 mm<br>above 54/104/154/204/254 mm |
| horizontally: | rearwards 205 mm |
| Diameter of coupling pin: | 30 mm |
| Maximum vertical permissible load: | 15 kN |

or

ROCKINGER model 248 RB (∿∿M 4391)

Automatically acting

| | |
|---|---|
| Type: | Fork type |
| Height above ground: | 434/513/609/689/739/789/839/889 mm |
| Distance of hitch point from rear axle axis horizontally: | 630 mm |
| Distance of hitch point from power take-off shaft end: | |
| vertically: | below 201/122/26 mm<br>above 54/104/154/204/254 mm |
| horizontally: | rearwards 205 mm |
| Diameter of coupling pin: | 30 mm |
| Maximum vertical permissible load: | 15 kN |

or

Own make

| | |
|---|---|
| Type: | Fork type |
| Height above ground: | 467/825/845 mm |
| Distance of hitch point from rear axle axis horizontally: | 457 mm |
| Distance of hitch point from power take-off shaft end: | |
| vertically: | below 168 mm, about 190/210 mm |
| horizontally: | rearwards 12 mm |
| Diameter of coupling pin: | 28 mm |
| Maximum vertical permissible load: | 15 kN |

**TOWING HITCH:**

| | |
|---|---|
| Type: | Fork type |
| Height above ground: | 690 mm |
| Distance from front axle: | frontwards from 495 to 780 mm<br>(dependent from number of front ballast) |
| Diameter of coupling pin: | 31 mm |

## STEERING:

| | |
|---|---|
| Method of operation: | Steering wheel acting on front wheels |
| Make: | DANFOSS or ZF-SCHWÄBISCH GMÜND |
| Type: | Hydrostatic steering |
| Model: | DANFOSS OSPC 80 OR or ZF 8491 |
| Working pressure: | 10,0 MPa (100 bar) |
| Oil capacity: | 3,2 l |
| Capacity of oil case: | 1,5 l and 0,3 l for distress |
| Oil change period: | 1000 hours |
| Filter change period: | 1000 hours |
| Recommended oil: | ATF Dexron D |
| Pump delivery rate at rated engine speed (2200 rev/min): | 31,7 l/min |
| Steering cylinder: | One double acting cylinder, acting on the middle lever arm of the tie rod, dia 50 mm, cylinder rod 25 mm, stroke 150 mm |
| Acting piston area: | 26,4/21,5 $cm^2$ |
| Number of revolutions of steering wheel for the whole steering lock: | 3,9 |

## BRAKES:

Service brake:

| | |
|---|---|
| Make: | Own make |
| Type: | Simplex drum brakes |
| | 230 mm diameter, 60 mm width |
| Method of operation: | Pedal operated, hydraulically transmission |
| Trailer braking take-off: | Optional, not on tested tractor<br>In conformity with national regulations |

Parking brake:

| | |
|---|---|
| Type: | Mechanically acting on separate drum brakes<br>230 mm diameter, 30 mm width |
| Method of operation: | Hand lever with ratched, mechanically transmission |

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

**STEERING WHEELS:**

| | |
|---|---|
| Number: | 2, steering function |
| Location: | In front of tractor |
| Tyres: | Pneumatics, diagonal carcass<br>9.00 - 16 AS Front, 8 PR; rim: 6.00 F x 16<br>Maximum permissible load on each tyre:<br>10 590 N (1080 kp) at 3,1 bar inflation pressure<br>13 240 N (1350 kp) at 3,9 bar inflation pressure<br>with speed limit of 8 km/h. |
| Track width: | 1446 - 1846 mm |
| Optional front tyre equipment: | 7,50 - 20 AS Front, 6 PR; rim: 5.50 F x 20<br>11.00 - 16 AS Front, 8 PR; rim: W 8 x 16 |

**DRIVING WHEELS:**

| | |
|---|---|
| Number: | 2, driving function |
| Location: | In the rear of tractor |
| Tyres: | Pneumatics, radial or diagonal carcass<br>16.9 - 34 AS, 8 PR; rim: DW 14 x 34<br>Maximum permissible load on each tyre:<br>23 340 N (2380 kp) at 1,7 bar inflation pressure<br>32 660 N (3330 kp) at 2,1 bar inflation pressure<br>with speed limit of 8 km/h |
| Track width: | 1524 mm (1680 mm by reversed wheels),<br>with adjustable rims: 1445 - 1850 mm |
| Optional rear tyre equipment: | 13.6 - 38 AS, 6 PR; rim: W 12 x 38<br>18.4 - 30 AS, 8 PR; rim: W 15 L x 30<br>18.4 - 34 AS, 8 PR; rim: W 16 x 34<br>9.5 - 44 AS, 8 PR; rim: W 7 x 44<br>9.5 - 48 AS, 8 PR; rim: W 8 x 48 |

**WHEELBASE:** 2195 mm

**PROTECTIVE STRUCTURE SPECIFICATIONS:**

| | |
|---|---|
| OECD approval number: | CSD 0812/2 |
| Trade name: | model STEYR 110.01 |
| Manufacturer's name and address: | STEYR-DAIMLER-PUCH AG., Steyr, Austria |
| Protective device: | Frame, completeable to full closed cab, not tilting<br>Strength tested to national legislation (identical to OECD-Code). |

Materials used in the construction and dimensions:

| | |
|---|---|
| Main frame: | Welded sheet construction with integrated pressed sheet metal roof |
| Mounting: | Rubber mounted, in front on consoles, in the rear on the rear axle |
| Cladding: | Protective structure is fitted only with the front windscreen. When completed to a full cab the side cladding are glassdoors with a metal frame and turnable full glass side windows. The rear cladding is a windscreen which can be turned out. |
| Roof: | Sheet metal roof, integrated in the protective structure. |
| Padding: | Floor: rubber mat<br>Side mudguards: foam rubber cladding<br>Roof: cladding with synthetic material |
| Type of windscreen: | SEKURIT ESG-H E6 43 R-00125, testing nr. E-00070 |
| Optional: | |
| OECD approval number: | CSD 0813/2 |
| Model: | STEYR 110.02<br>Same protective structure, 120 mm lower<br>Strength tested to national legislation (identical to OECD-Code). |

DRIVER'S SEAT:

| | |
|---|---|
| Make and type: | Grammer DS 85/H 3; tested on tractor according to national regulation (Prot.Nr. 162/83) |
| Type of suspension: | X-lever with 2 tension springs, curve-disc and ball-bearing |
| Type of damping: | Hydraulically damping |
| Range of adjustment,<br>longitudinal:<br>vertical: | <br>140 mm<br>60 mm |
| or | |
| Make and type: | As on tested tractor<br>Klepp Elastomat 1050 H-S; according to national regulation (Prot.Nr. 006/84) |
| Type of suspension: | 2 parallel levers with a column-guiding and 2 tensions springs |
| Type of damping: | Hydraulically damping |
| Range of adjustment,<br>longitudinal:<br>vertical: | <br>85 mm<br>60 mm |

**LIGHTING:** Unrestricted beam angle of head light in plane view: 227 mrad (13°)

| | *) Height above ground of centre mm | Size mm | **) Distance from outside edge of tractor to centre mm |
|---|---|---|---|
| Head lights | 985 | 135 x 115 | 835 |
| Side lights | 1605 | 65 x 70 | 210 |
| Rear lights | 1645 | 65 x 70 | 210 |
| Brake lights | | | |
| Direction indicators front | 1605 | 65 x 70 | 115 |
| Direction indicators rear | 1645 | 65 x 70 | 115 |
| Reflectors | 1645<br>740 | 35 x 60<br>80 dia | 163<br>530 |

*) Measured with tyre index radius at rear 745 mm and 402 mm at front
**) With overall width of 1960 mm (measured on the outside edge of the rear wheels)

## TEST CONDITIONS

Track setting and tyre equipment:

Front: 1446 mm
Rear: 1524 mm

Front wheels: 9,00-16 AS front PR 8; rim: 6,00Fx16
Rear wheels: 16,9/14-34 AS PR 8; rim: DW 14 x 34

Overall dimensions:

| | Length | Width *) | | Height at top of | |
|---|---|---|---|---|---|
| | | max. | min. | exhaust silencer | protective structure |
| | mm | mm | mm | mm | mm |
| With ballast | 4110 | 2115 | 1960 | 2560 | 2495/ 2535 **) |
| Without ballast | 3770 | 2115 | 1960 | 2560 | 2495/ 2535 **) |

*) Measured on the outside edges of the rear wheels, max. width by reversed wheels.
**) When fitted with a roof hatch.

Ground clearance:

Clearance-limiting part: 425 mm under the middle lever arm of the tie rod
425 mm under the trailer hitch mounting console
470 mm under the gearbox

Tractor mass and ballasting: (without driver but with tanks full, with protective structure)

| | | Front | Rear | Total |
|---|---|---|---|---|
| Without ballast | kg | 1040 | 1980 | 3020 |
| With ballast | kg | 1471 | 2719 | 4190 |

Ballast:

| | Weights | | Water kg |
|---|---|---|---|
| | Number | Total mass kg | |
| Front | 10 | 342 | - |
| Rear | 4 + 2 | 284 | 2 x 272 |
| Additional | - | - | - |

Fuel and lubricants used in tests:

| | |
|---|---|
| Fuel: | Diesel fuel |
| Type: | ELAN, according to DIN 51601 |
| Specific gravity at 15°C: | 0,845 kg/l |

Oils:

| | Recommended: | Used during test: |
|---|---|---|
| Engine oil: | One range viscosity oil | |
| Type: | API CD, MIL-L-2104 C | SHELL RIMULA X 10 W |
| Viscosity: | SAE 30 summer<br>SAE 20 W/20 winter | |
| Transmission oils: | | |
| Type: | API-GL 4, MIL-L-2105 | SHELL SPIRAX EP 80 |
| Viscosity: | SAE 80 W | |
| Hydraulic fluid: | | |
| Type: | Common oil circuits with transmission | |
| Steering oil: | Automatic Transmission Fluid | |
| Type: | ATF Dexron or<br>ATF M 2 C 33 E/F | SHELL ATF Dexron II |
| Recommended grease: | Lithium soap basis NLGI2 (multigrade grease) | |
| Number of lubrication points: | 17 | |

## TEST RESULTS

**COMPULSORY TEST:**

Main power take-off performance

Date and location of tests: 1984 11 22, Wieselburg, Austria
Type of dynamometer: SCHENK eddy-current brake W 780

Main test on: ISO R 500, Typ 2 (DIN 9611) - 1000 rev/min p.t.o.

| 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 | | | | | |
| 55,70 | 2200 | 1123 | 13,04 15,44 | 234 | 3,606 |
| Standard p.t.o. speed | | | | | |
| 56,60 | 1958 | 1000 | 12,79 15,16 | 226 | 3,734 |
| | | | | | |
| The speed recommended by the manufacturer for drawbar work | | | | | |
| 55,70 | 2200 | 1123 | 13,04 15,44 | 234 | 3,606 |
| PART LOADS<br>Governor hand lever in position giving maximum power | | | | | |
| (i) 85 % of torque at maximum power | | | | | |
| 48,85 | 2269 | 1159 | 11,72 13,89 | 240 | 3,517 |
| (ii) unloaded | | | | | |
| 0 | 2365 | 1208 | 3,10 3,67 | - | - |
| (iii) 50 % of the load defined in (i) | | | | | |
| 25,17 | 2336 | 1193 | 7,26 8,60 | 288,5 | 2,925 |
| (iv) maximum power | | | | | |
| 55,70 | 2200 | 1123 | 13,04 15,44 | 234 | 3,606 |
| (v) 25 % of the load defined in (i) | | | | | |
| 12,69 | 2355 | 1203 | 5,13 6,08 | 404 | 2,088 |
| (vi) 75 % of the load defined in (i) | | | | | |
| 37,19 | 2304 | 1177 | 9,44 11,19 | 254 | 3,323 |

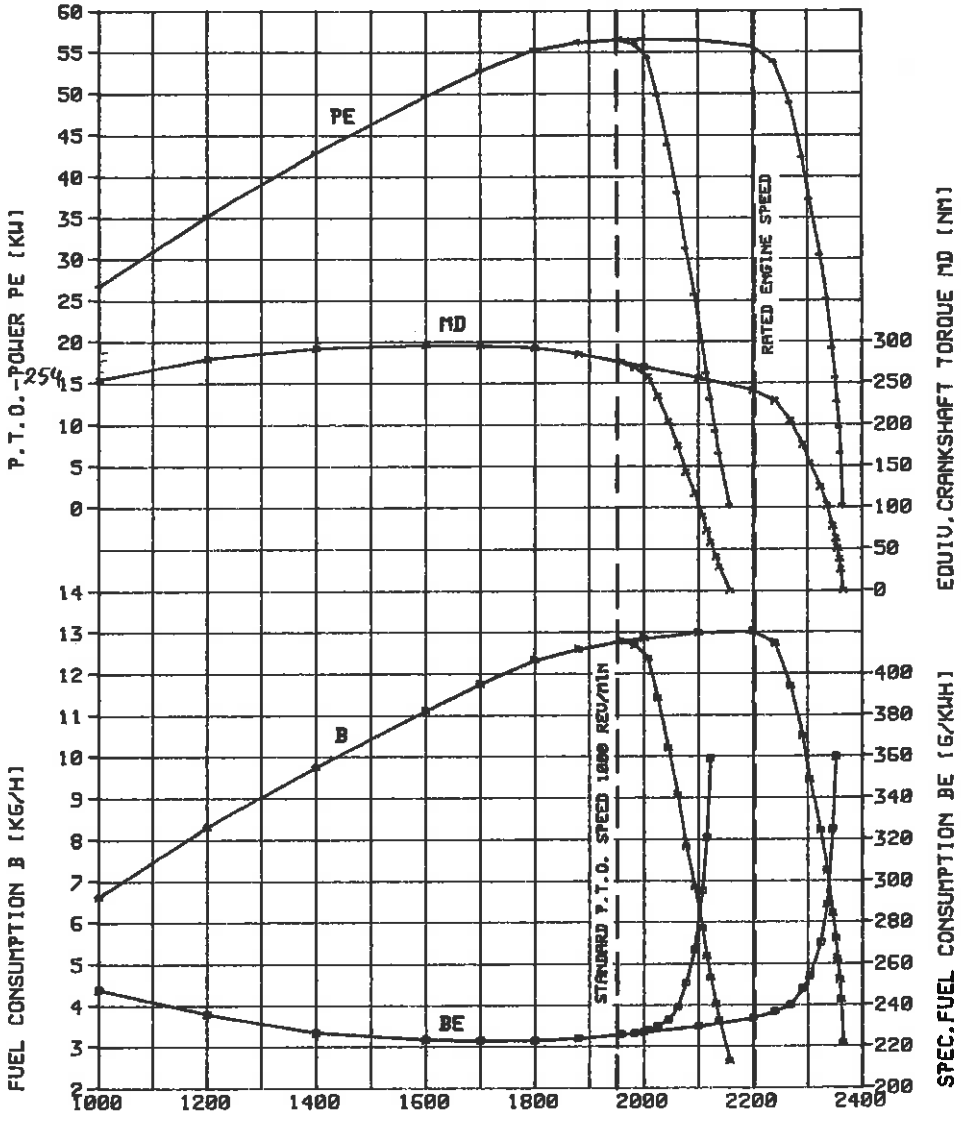
| Power | Speed | | Fuel consumption | | Specific energy |
|---|---|---|---|---|---|
| | engine | p.t.o. | hourly | specific | |
| kW | rev/min | rev/min | kg/h 1/h | g/kWh | kWh/l |
| PART LOADS<br>Governor hand lever in position giving standard p.t.o. speed at full load | | | | | |
| (i) 85 % at torque at standard p.t.o. speed | | | | | |
| 49,74 | 2025 | 1034 | 11,44 13,55 | 230 | 3,670 |
| (ii) unloaded | | | | | |
| 0 | 2158 | 1102 | 2,67 3,16 | - | - |
| (iii) 50 % of the load defined in (i) | | | | | |
| 25,71 | 2093 | 1069 | 6,87 8,14 | 267 | 3,160 |
| (iv) maximum power at standard p.t.o. speed | | | | | |
| 56,60 | 1958 | 1000 | 12,79 15,16 | 226 | 3,734 |
| (v) 25 % of the load defined in (i) | | | | | |
| 13,06 | 2122 | 1084 | 4,69 5,56 | 359 | 2,350 |
| (vi) 75 % of the load defined in (i) | | | | | |
| 38,01 | 2062 | 1053 | 9,09 10,76 | 239 | 3,531 |
| STANDARD SPECIFIC FUEL CONSUMPTION: 240/288,5 - 230/267 g/kWh | | | | | |

No load maximum engine speed: 2365 rev/min
Equivalent crankshaft torque
at maximum power: 241,8 Nm $M_{el\,1000} = 254$ Nm
Maximum equivalent crankshaft torque: 297 Nm at 1600 rev/min on engine

Mean atmospheric conditions: temperature: 15°C
pressure: 984 mbar
humidity: 82 %

Maximum temperatures: coolant: 84°C
engine oil: 107°C
fuel: 41°C
air intake: 19°C

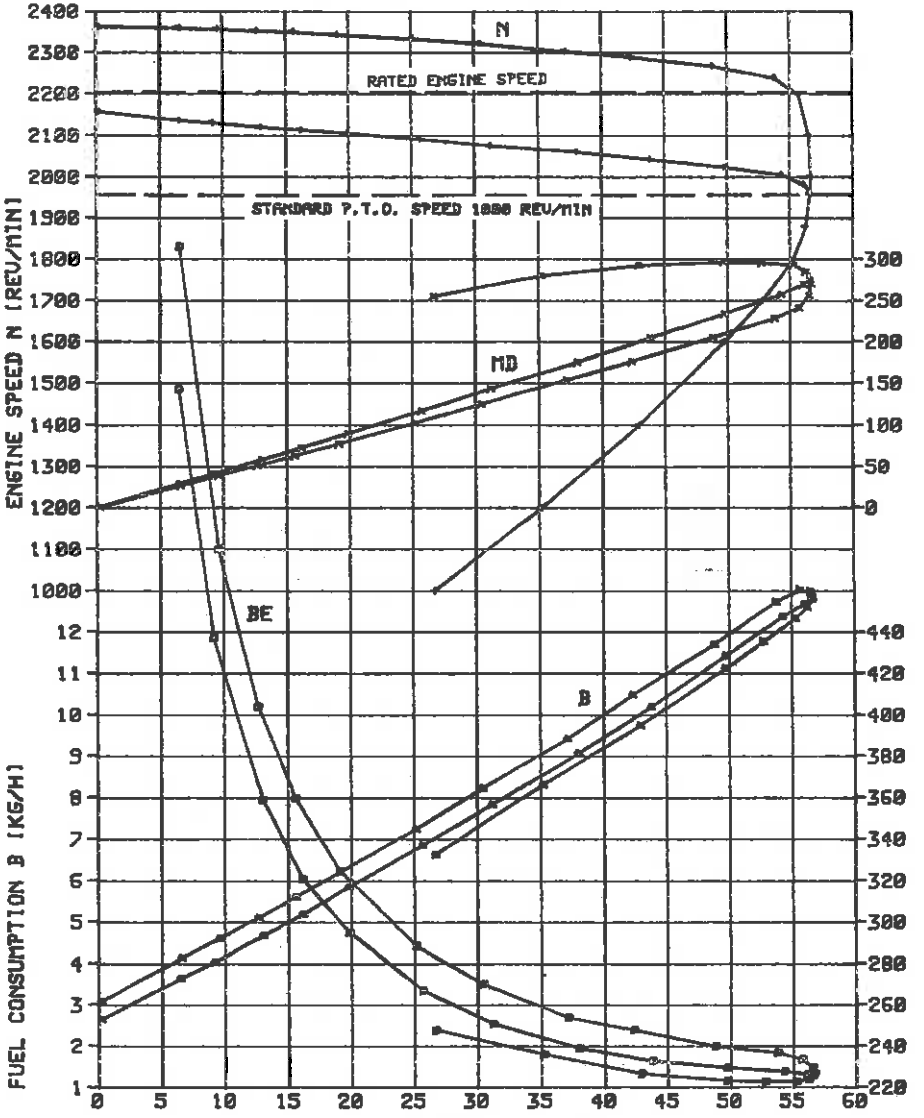
| BUNDESANSTALT FUER LANDTECHNIK WIESELBURG/ERLAUF, AUSTRIA PROT.NR.:143/84 | P.T.O.-TEST 1000 rev/min | STEYR-DAIMLER-PUCH TYP 8090 TURBO MOT.TYP WD 411.87 |
|---|---|---|




| ENGINE SER.NR.: WD 411.87-999 | ATM.PRESSURE : 984 MBAR | FUEL TEMP.: 41 C | SIGNATURE |
|---|---|---|---|
| TRAKTOR SER.NR.: 235.20-88448 | AIR TEMPER. : 15 C | D.OF TESTS: 1984-11-22 | |
| FUEL : 0.844/15 C | COOLANT TEMP.: 84 C | TEST NO. : 140/ZA 137 A | |
| ENGINE OIL : RIMULA X 10W | OIL TEMP. : 107 C | CURVES NO.: 1 | REITHER |

04-MAR-85 DVR.:B100846-DL003.PKU100.PRL20-22

| BUNDESANSTALT FUER LANDTECHNIK WIESELBURG/ERLAUF, AUSTRIA PROT.NR.:143/84 | P.T.O.-TEST 1000 rev/min | STEYR-DAIMLER-PUCH TYP 8090 TURBO MOT.TYP WD 411.87 |
|---|---|---|




| | | | |
|---|---|---|---|
| ENGINE SER.NR.: WD 411.87-999 | ATM.PRESSURE : 984 MBAR | FUEL TEMP.: 41 C | SIGNATURE |
| TRAKTOR SER.NR.: 235.28-88448 | AIR TEMPER. : 15 C | D.OF TESTS: 1984-11-22 | |
| FUEL : 0.844/15 C | COOLANT TEMP.: 84 C | TEST NO. : 148/2R 137 A | |
| ENGINE OIL : RINGLA X 15W | OIL TEMP. : 107 C | CURVES NO.: 2 | REITNER |

Drawbar performance:

Date of tests: 30.10. and 9.11.1984
Type of track: Concrete
Height of drawbar above ground: 660 mm ballasted, 620 mm unballasted

| Gear No. | Speed | Power | Drawbar pull | Engine speed | Slip of wheels | Specific energy | Specific fuel consumption | Temperatures | | | Atmosph. conditions | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Fuel | Coolant | Engine oil | Temperature | rel.humidity | Pressure |
| | km/h | kW | N | rev/min | % | kWh/l | g/kWh | °C | °C | °C | °C | % | mbar |
| (i) Maximum power (unballasted) tyre inflation pressure in the front 1,0 bar, in the rear 1,1 bar | | | | | | | | | | | | | |
| SL 3 | 4,910 | 39,95 | 29290 | 2247 | 15 | 2,673 | 316 | 30 | 80 | 94 | 9 | 82 | 1001 |
| LS 1 | 4,960 | 40,36 | 29291 | 2244 | 15 | 2,688 | 314,5 | 29 | 79 | 93 | 9 | 83 | 1001 |
| SS 1 | 6,101 | 45,96 | 27118 | 2200 | 12,5 | 2,972 | 284,5 | 29 | 78 | 93 | 9 | 84 | 1001 |
| LL 4 | 6,654 | 46,51 | 25164 | 2200 | 11 | 3,008 | 281 | 29 | 77 | 92 | 8 | 84 | 1001 |
| SL 4 | 8,345 | 47,19 | 20360 | 2200 | 8,5 | 3,052 | 277 | 28 | 76 | 91 | 8 | 85 | 1001 |
| LS 2 | 9,277 | 47,49 | 18426 | 2200 | 7,7 | 3,071 | 275 | 28 | 74 | 90 | 8 | 85 | 1001 |
| SS 2 | 11,478 | 47,26 | 14823 | 2200 | 6,4 | 3,056 | 276,5 | 26 | 75 | 90 | 8 | 86 | 1001 |
| LS 3 | 14,321 | 46,70 | 11738 | 2200 | 5,35 | 3,020 | 280 | 25 | 74 | 88 | 8 | 86 | 1001 |

| Gear No. | Speed | Power | Drawbar pull | Engine speed | Slip of wheels | Specific energy | Specific fuel consumption | Temperatures | | | Atmosph.conditions | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Fuel | Coolant | Engine oil | Temperature | rel.humidity | Pressure |
| | km/h | kW | N | rev/min | % | kWh/l | g/kWh | °C | °C | °C | °C | % | mbar |
| (ii) Five-hour-test at 75 % of pull at maximum power | | | | | | | | | | | | | |
| LL 4 | 7,104 | 37,00 | 18751 | 2253 | 6 | 2,520 | 335 | 44 | 81 | 103 | 8 | 78 | 985 |
| (iii) Five-hour-test at pull corresponding to 15 % wheelslip in test (ii) | | | | | | | | | | | | | |
| LL 3 | 3,904 | 42,05 | 38776 | 2207 | 15 | 2,725 | 310 | 44 | 81 | 104 | 7 | 94 | 979 |
| (iv) Maximum power (ballasted) tyre inflation pressure in the front 1,6 bar, in the rear 1,3 bar | | | | | | | | | | | | | |
| LL 1 | 1,550 | 16,68 | 38737 | 2313 | 15 | - | - | 32 | 75 | 96 | 9 | 88 | 983 |
| SL 1 | 1,881 | 20,26 | 38776 | 2302 | 15 | - | - | 37 | 76 | 99 | 9 | 88 | 983 |
| LL 2 | 2,679 | 28,86 | 38777 | 2276 | 15 | 2,135 | 396 | 37 | 78 | 100 | 9 | 88 | 983 |
| SL 2 | 3,239 | 34,88 | 38776 | 2254 | 15 | 2,374 | 356 | 37 | 77 | 100 | 8 | 89 | 983 |
| LL 3 | 3,908 | 42,09 | 38778 | 2204 | 15 | 2,719 | 311 | 37 | 79 | 100 | 8 | 89 | 983 |
| SL 3 | 4,979 | 45,13 | 32636 | 2200 | 11 | 2,921 | 289,5 | 37 | 78 | 100 | 7 | 90 | 983 |
| LS 1 | 5,043 | 45,31 | 32345 | 2200 | 10,9 | 2,932 | 288 | 36 | 76 | 98 | 7 | 90 | 983 |
| SS 1 | 6,312 | 47,00 | 26802 | 2200 | 8,6 | 3,042 | 278 | 36 | 77 | 98 | 7 | 90 | 983 |
| LL 4 | 6,802 | 47,23 | 25000 | 2200 | 8 | 3,057 | 276,5 | 36 | 77 | 98 | 7 | 90 | 983 |
| SL 4 | 8,436 | 46,86 | 20000 | 2200 | 6,5 | 3,033 | 278,5 | 35 | 76 | 97 | 7 | 90 | 983 |
| LS 2 | 9,360 | 46,41 | 17851 | 2200 | 5,9 | 3,004 | 281,5 | 33 | 75 | 97 | 7 | 90 | 983 |
| SS 2 | 11,540 | 45,18 | 14096 | 2200 | 4,9 | 2,924 | 289 | 33 | 74 | 98 | 7 | 90 | 983 |

Total oil consumption during 10 hours duration of tests (iii) and (iv): 37,4 g/h

## TURNING SPACE AND TURNING CIRCLE:

Wheel equipment: front: 9,00 - 16 AS, Front, 8 PR
rear: 16,9 - 34 AS, 8 PR

Track of wheel: front: 1446 mm
rear: 1524 mm

| Results | With brakes | | Without brakes | |
|---|---|---|---|---|
| | right-hand | left-hand | right-hand | left-hand |
| | m | m | m | m |
| Radius of turning space | 3,68 | 3,43 | 4,18 | 3,83 |
| Radius of turning circle | 3,48 | 3,23 | 3,98 | 3,63 |

## LOCATION OF CENTRE OF GRAVITY:

| | mm |
|---|---|
| Height above ground | 966 |
| Distance forward from the vertical plane containing the axis of the rear wheels | 748 |
| Distance from the median plane of the tractor | to right 6 |

## BRAKING:

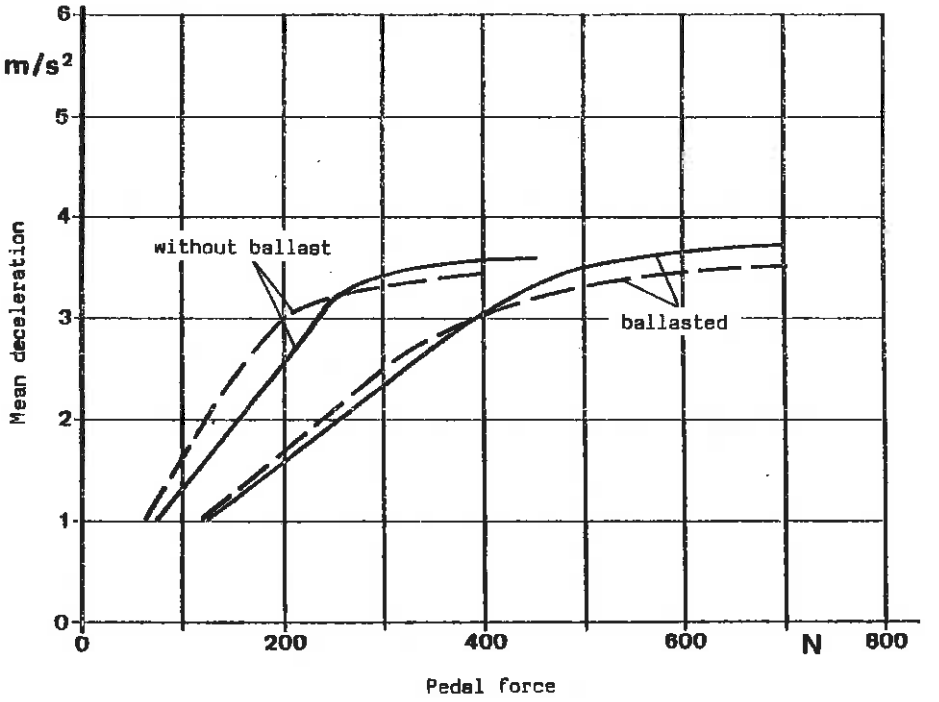
Date of tests: 5.11.1984
Type of track: Concrete
Type of decelerometer: Moto-Meter Nr. 03382 (Kombi-Schreiber)

Tractor mass during brake tests (with driver):

| | Front kg | Rear kg | Total kg |
|---|---|---|---|
| Ballasted | 1486 | 2779 | 4265 |
| Unballasted | 1055 | 2040 | 3095 |

Service brake:

Type-0-test (cold brakes)———, Type-I (fade)test — — — — — — —




Speed before application of brakes: 30 km/h
The tractor brakes were heated by towing of the tractor for 1 km.

Maximum deviation of tractor from its original course: -

Abnormal vibration: -

Parking brake device test:

| | Ballasted tractor on 18 %-slope | | Unballasted tractor on 12 %-slope with trailer of 3000 kg | |
|---|---|---|---|---|
| | up | down | up | down |
| Braking device control force | 100 N | 60 N | 130 N | 100 N |

**MEASUREMENT OF EXTERNAL NOISE LEVEL:**

| | |
|---|---|
| Date of tests: | 31.10.1984 |
| Type of sound level meter: | BRÜEL & KJAER 2200 and 2308 |
| Type of track: | Concrete |
| Gear number: | VS 4 S |
| Travelling speed before acceleration: | 22,6 km/h |
| Sound level: | 83 dB(A) |

**NOISE MEASUREMENT AT DRIVER'S EAR:**

| | |
|---|---|
| Date of tests: | 31.10.1984 |
| Type of sound level meter: | BRÜEL & KJAER 2200 and 2308 |
| Type of track: | Concrete |

Safety cab full closed.

| Gear | Drawbar pull at which the tractor develops the max. sound level | Measured travelling speed | Sound level |
|---|---|---|---|
| - | kN | km/h | dB(A) |
| VN 1 L | 28,79 | 1,52 | 83 |
| VS 1 L | 28,58 | 1,94 | 83 |
| VN 2 L | 28,59 | 2,73 | 83 |
| VS 2 L | 28,41 | 3,30 | 83 |
| VN 3 L | 29,32 | 4,04 | 83 |
| VS 3 L | 29,22 | 4,86 | 83 |
| VN 1 S | 28,95 | 4,97 | 83,5 |
| VS 1 S | 24,79 | 6,30 | 84,5 |
| VN 4 L *) | 23,19 | 6,84 | 83 |
| VN 4 L *) | light load | 7,80 | 83 |
| VS 4 L | 19,07 | 8,45 | 84,5 |
| VN 2 S | 16,36 | 9,53 | 83,5 |
| VS 2 S | 13,93 | 11,66 | 87 |
| VN 3 S | 10,14 | 14,60 | 84 |
| VS 3 S | 8,37 | 17,96 | 84,5 |
| VN 4 S | 6,39 | 23,75 | 84,5 |
| VS 4 S | light load | 30,19 | 85 |

*) The VN 4 L gear corresponds to the nominal travelling speed nearest to 7,5 km/h.

## POWER LIFT AND HYDRAULIC PUMP PERFORMANCE:

Date and location of tests: 14.11.1984, Wieselburg, Austria

Hydraulic fluid:

Make and type: SHELL SPIRAX EP 80

Viscosity: SAE 80 W, API-GL 4, MIL-L-2105

Type of hydraulic system: Open center type

Hydraulic fluid temperature at beginning of test: 60°C

Type of linkage lock for transport: Hydraulically by throttle valve

Opening pressure of the cylinder overpressure safety valve (manufacturers specification): 24,5 MPa (245 bar)

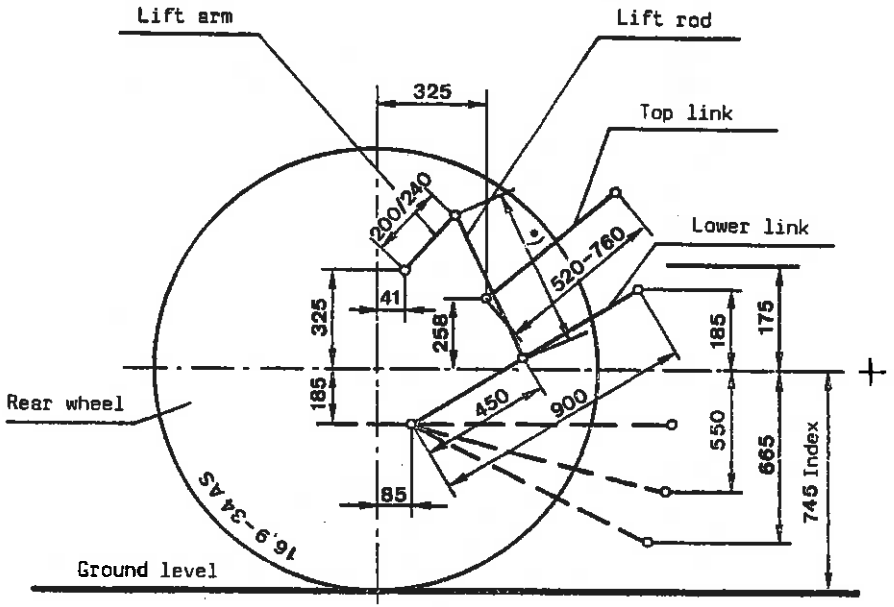
Power lift:

| | *) Height of lower hitch point above ground in down position<br>mm | Vertical movement<br>mm | Max. force exerted through full range<br>kN | Corresponding pressure of hydraulic fluid<br>MPa | *) Moment about rear axle<br>kNm | Max. lift angle of mast over range of lift<br>(+)<br>degrees |
|---|---|---|---|---|---|---|
| At hitch points | 290/180 | 545/640 | 39,0/33,2 | 16,7 (167 bar) | 38,4/32,7 | |
| On the frame 460 mm mast height | 290/180 | 545/640 | 31,8/26,3 | 16,7 (167 bar) | 31,3/25,9 | from +3° to 0° and to +3° |
| On the frame 520 mm mast height | 290/180 | 545/640 | 30,4/24,5 | 16,7 (167 bar) | 29,9/24,1 | from -1° to 0° and to +5° |

*) Max./min. mechanical advantage

Hydraulic pump performance:

| | |
|---|---|
| Sustained pressure of the relief valve: | 18,0 MPa (180 bar) |
| Opening pressure of the relief valve: | 18,5 MPa (185 bar) |
| Pump delivery rate at minimum pressure and rated engine speed: | 46 l/min |
| Hydraulic power at 90 % of relief valve setting: | 12,58 kW at 16,7 MPa (167 bar) |
| Pump delivery rate at stated power: | 45,2 l/min |
| Temperature of hydraulic fluid: | 60°C |




*) Left lift rod adjustable from 585 mm to 670 mm length by a thread, right lift rod adjustable from 545 mm to 670 mm length by gear and thread.

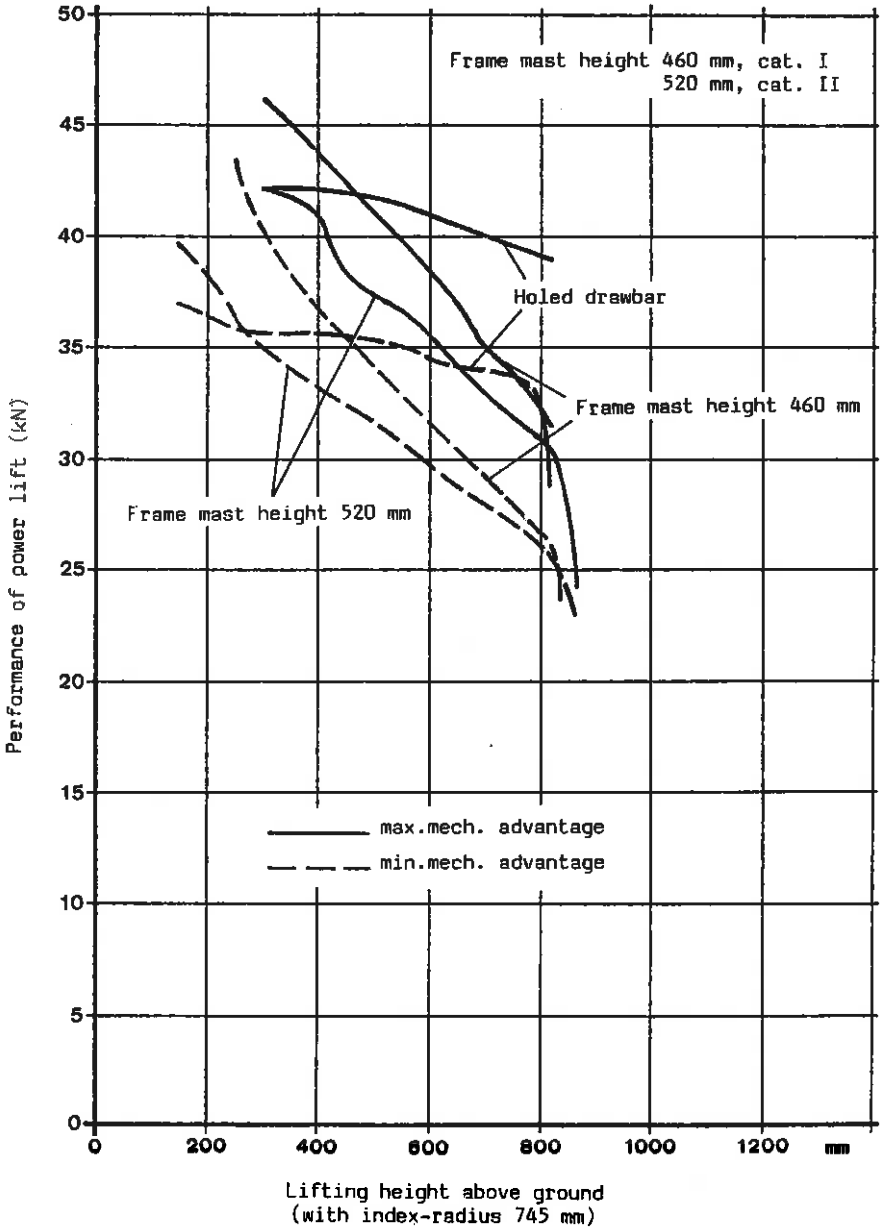
Linkage geometry when connected to the standard frame (mast height 520 mm)

| Projected length in side view | | | Maximum mechanical advantage | Minimum mechanical advantage |
|---|---|---|---|---|
| Lower links | | mm | 900 | 900 |
| Lift arms | | mm | 200 | 240 |
| Lift rods | | mm | 635 | 635 |
| Top link | | mm | 650 | 650 |
| Distance of lift rod connection point from pivot point of lower link | | mm | 450 | 450 |
| This dimensions are given relative to the rear wheel centre line, 745 mm above the ground level | Lower link pivot point | mm | 85 behind 185 below | 85 behind 185 below |
| | Top link pivot point | mm | 325 behind 258 above | 325 behind 258 above |
| | Lift arm pivot point | mm | 41 behind 325 above | 41 behind 325 above |
| | Maximum and minimum height of lower link hitch points | mm | 90 above 455 below | 75 above 565 below |
| | Height of lower link hitch points locked in transport position | mm | from 90 above to 455 below | from 75 above to 565 below |

## Performance of power lift

| Lifting heights in relation to a horizontal line through the lower link pivot point mm | | -390 | -330 | -250 | -200 | -150 | -100 | -50 | 0 | +50 | +100 | +150 | +230 | +250 | +275 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lifting force at the hitch-points kN (Values for the pressure, calculated with 90 % of sustained oil pressure) | max.mech. advantage | | | 42,0 | 42,0 | 42,0 | 42,0 | 41,9 | 41,5 | 41,0 | 40,5 | 40,2 | 39,4 | 39,0 | |
| | min.mech. advantage | 37,4 | 36,4 | 35,7 | 35,7 | 35,6 | 35,5 | 35,4 | 35,0 | 34,4 | 34,1 | 33,8 | 33,2 | | |
| | Maximum force exerted through whole range: 39,0/33,2 kN (3975/3385 kp) with additional working cylinders | | | | | | | | | | | | | | |
| | Calculated oil pressure: 16,7 MPa (167 bar) | | | | | | | | | | | | | | |
| Lifting force at the standard frame 460 mm mast height, 510 mm behind lower links hitch-points kN (Values for the pressure, calculated with 90 % of sustained oil pressure) | max.mech. advantage | | | 46,4 | 45,1 | 43,3 | 42,0 | 40,7 | 39,4 | 38,0 | 36,3 | 34,6 | 32,6 | 31,8 | |
| | min.mech. advantage | | 44,8 | 39,7 | 38,1 | 36,8 | 35,2 | 34,0 | 32,7 | 31,3 | 30,2 | 29,0 | 26,9 | 26,3 | |
| | Maximum force exerted through whole range: 31,8/26,3 kN (3240/2680 kp) with additional working cylinders | | | | | | | | | | | | | | |
| | Calculated oil pressure: 16,7 MPa (167 bar) | | | | | | | | | | | | | | |
| Lifting force at the frame with 720 mm mast height and 610 mm behind lower links hitch-points kN | max.mech. advantage | | | 42,1 | 42,0 | 41,1 | 38,4 | 37,3 | 36,3 | 35,0 | 34,2 | 33,0 | 31,2 | 30,7 | 30,4 |
| | min.mech. advantage | 39,6 | 38,0 | 34,8 | 34,2 | 33,4 | 32,6 | 31,7 | 30,4 | 29,2 | 28,4 | 27,5 | 26,0 | 25,3 | 24,5 |
| | Maximum force exerted through whole range: 30,4/24,5 kN (3100/2500 kp) | | | | | | | | | | | | | | |
| | Calculated oil pressure: 16,7 MPa (167 bar) | | | | | | | | | | | | | | |

The hydraulic normally is fitted with additional working cylinders.


Frame mast height 460 mm, cat. I
520 mm, cat. II
Holed drawbar
Frame mast height 460 mm
Frame mast height 520 mm
max.mech. advantage
min.mech. advantage
Performance of power lift (kN)
50
45
40
35
30
25
20
15
10
5
0
0
200
400
600
800
1000
1200
mm
Lifting height above ground
(with index-radius 745 mm)

## OPTIONAL TESTS

Main power take-off performance

Date and location of tests: 1984 11 22, Wieselburg, Austria
Type of dynamometer: SCHENK-eddy current brake W 780

Main test on: ISO R 500, Typ I (DIN 9611) - 540 rev/min p.t.o.

| 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 | | | | | |
| 55,11 | 2200 | 632 | 13,06 15,47 | 237 | 3,562 |
| Standard p.t.o. speed | | | | | |
| 55,73 | 1880 | 540 | 12,68 15,02 | 227,5 | 3,710 |
| | | | | | |
| The speed recommended by the manufacturer for drawbar work | | | | | |
| 55,11 | 2200 | 632 | 13,06 15,47 | 237 | 3,562 |
| PART LOADS<br>Governor hand lever in position giving maximum power | | | | | |
| (i) 85 % of torque at maximum power | | | | | |
| 48,25 | 2266 | 651 | 11,77 13,95 | 244 | 3,458 |
| (ii) unloaded | | | | | |
| 0 | 2367 | 680 | 3,11 3,68 | - | - |
| (iii) 50 % of the load defined in (i) | | | | | |
| 24,83 | 2332 | 670 | 7,37 8,74 | 297 | 2,842 |
| (iv) maximum power | | | | | |
| 55,11 | 2200 | 632 | 13,06 15,47 | 237 | 3,562 |
| (v) 25 % of the load defined in (i) | | | | | |
| 12,53 | 2353 | 676 | 5,23 6,19 | 417 | 2,023 |
| (vi) 75 % of the load defined in (i) | | | | | |
| 36,75 | 2301 | 661 | 9,59 11,36 | 261 | 3,233 |

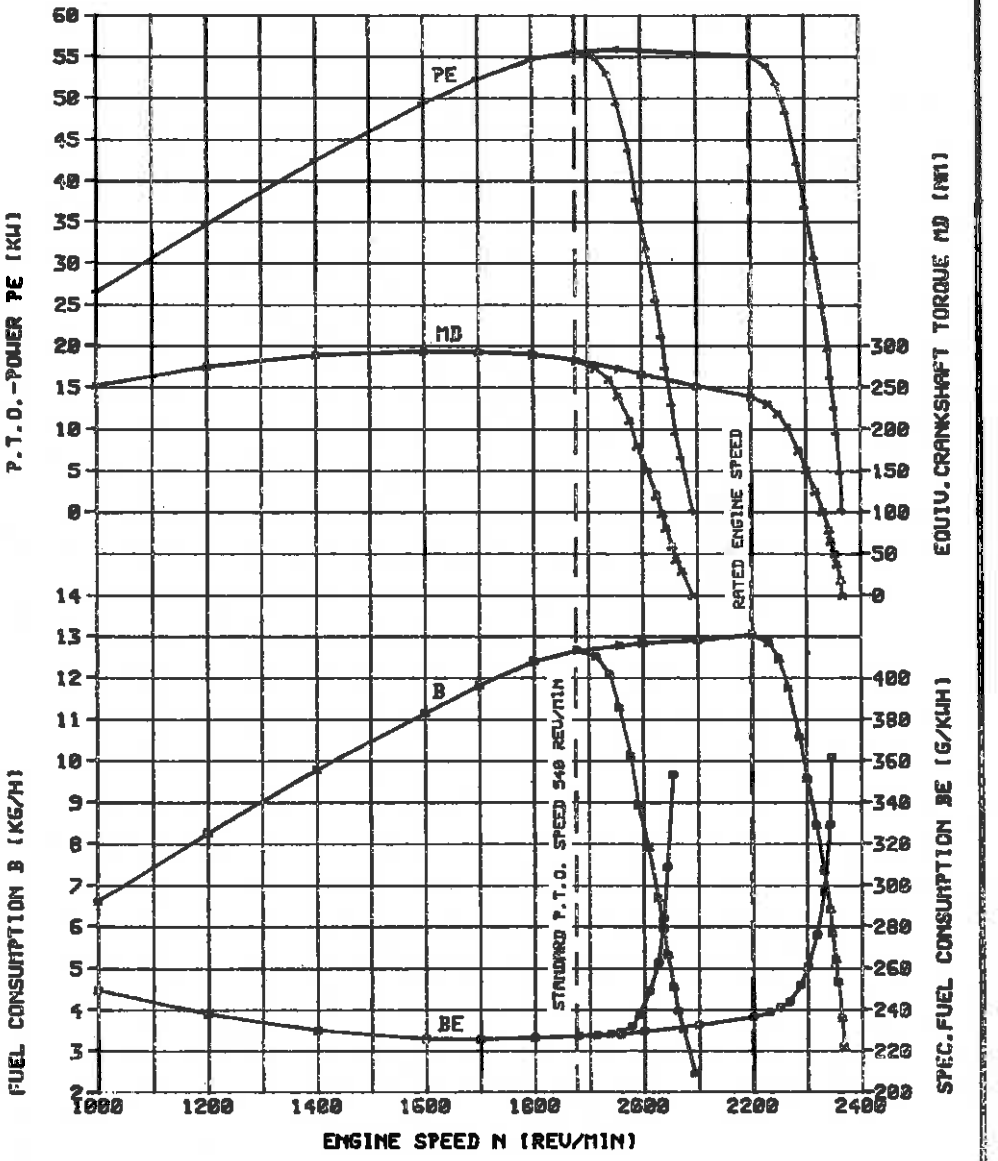
| Power | Speed | | Fuel consumption | | Specific energy |
|---|---|---|---|---|---|
| | engine | p.t.o. | hourly | specific | |
| kW | rev/min | rev/min | kg/h l/h | g/kWh | kWh/l |
| PART LOADS<br>Governor hand lever in position giving standard p.t.o. speed at full load | | | | | |
| (i) 85 % at torque at standard p.t.o. speed | | | | | |
| 49,29 | 1956 | 562 | 11,31 13,40 | 229,5 | 3,677 |
| (ii) unloaded | | | | | |
| 0 | 2092 | 601 | 2,48 2,94 | - | - |
| (iii) 50 % of the load defined in (i) | | | | | |
| 25,55 | 2026 | 582 | 6,72 7,96 | 263 | 3,209 |
| (iv) maximum power at standard p.t.o. speed | | | | | |
| 55,73 | 1880 | 540 | 12,68 15,02 | 227,5 | 3,710 |
| (v) 25 % of the load defined in (i) | | | | | |
| 12,95 | 2054 | 590 | 4,58 5,42 | 353,5 | 2,387 |
| (vi) 75 % of the load defined in (i) | | | | | |
| 37,64 | 1991 | 572 | 8,96 10,61 | 238 | 3,546 |
| STANDARD SPECIFIC FUEL CONSUMPTION: 244/297 - 229,5/263 g/kWh | | | | | |

No load maximum engine speed: 2367 rev/min
Equivalent crankshaft torque
at maximum power: 239,2 Nm
Maximum equivalent crankshaft torque: 294,9 Nm at 1600 rev/min at engine

Mean atmospheric conditions: temperature: 15°C
pressure: 984 mbar
humidity: 78 %

Maximum temperatures: coolant: 85°C
engine oil: 107°C
fuel: 41°C
air intake: 19°C

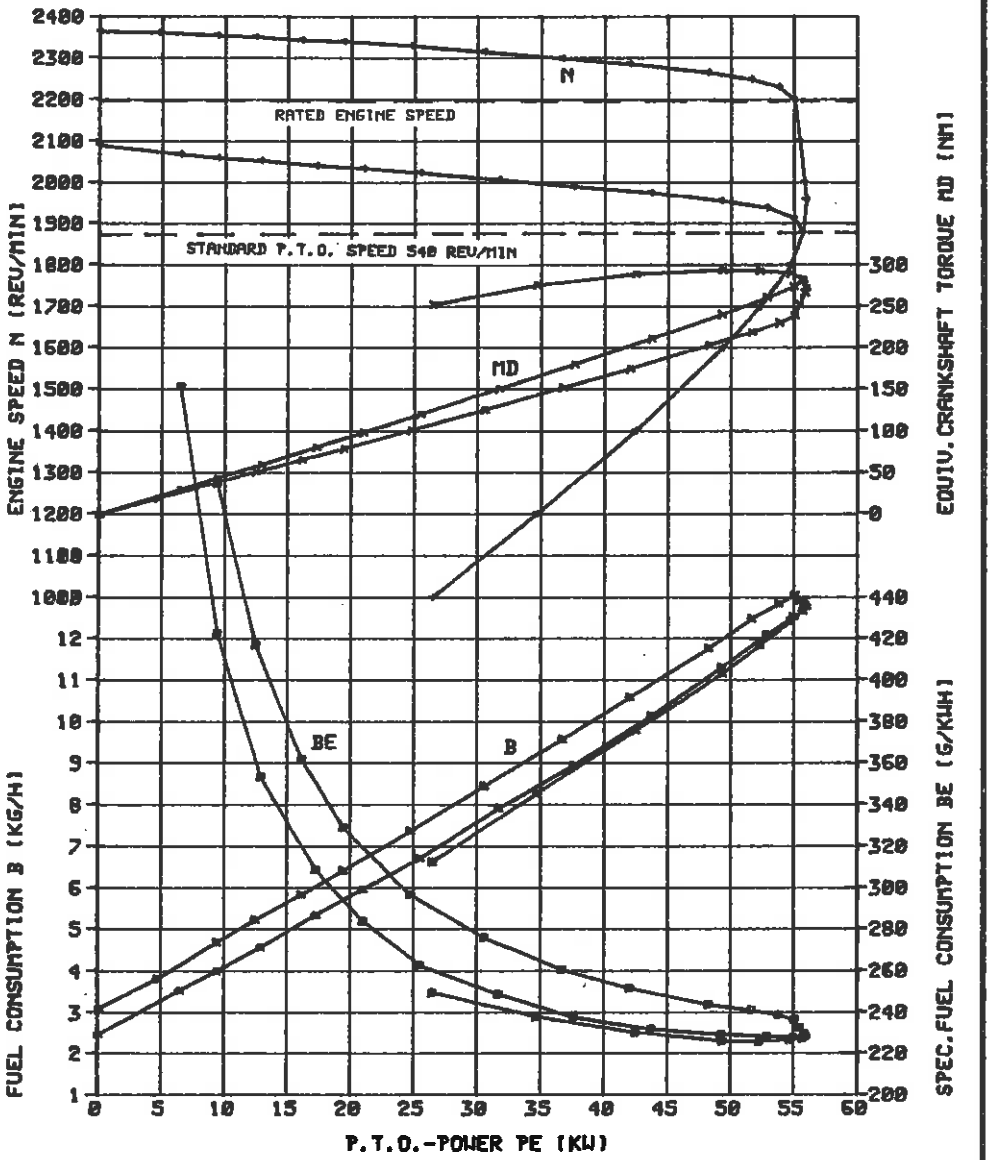
| BUNDESANSTALT FUER LANDTECHNIK WIESELBURG/ERLAUF, AUSTRIA PROT.NR.: 143/84 | P.T.O.-TEST 540 rev/min | STEYR-DAIMLER-PUCH TYP 8090 TURBO MOT.TYP WD 411.87 |
|---|---|---|




| ENGINE SER.NR.: WD 411.87-335 | ATM. PRESSURE : 984 MBAR | FUEL TEMP.: 41 C | SIGNATURE |
|---|---|---|---|
| FACTOR SER.NR.: 235.20-06448 | AIR TEMPER. : 15 C | D.OF TESTS: 1984-11-22 | |
| FUEL : 0.844/15 C | COOLANT TEMP.: 88 C | TEST NO. : 148/ZA 137 A | |
| ENGINE OIL : RINGLA X 10W | OIL TEMP. : 107 C | CURVES NO.: 3 | REITHER |

17-JAN-84 DOK.: 01/84-MAG-MESSD.PROTOKOLL-21

| BUNDESANSTALT FUER LANDTECHNIK WIESELBURG/ERLAUF, AUSTRIA PROT.NR.: 143/84 | P.T.O.-TEST 540 rev/min | STEYR-DAIMLER-PUCH TYP 8090 TURBO MOT.TYP WD 411.87 |
|---|---|---|




| | | | |
|---|---|---|---|
| ENGINE SER.NR.: WD 411.87-999 | ATM.PRESSURE : 984 MBAR | FUEL TEMP.: 41 C | SIGNATURE |
| TRAKTOR SER.NR.: 235.20-88448 | AIR TEMPER. : 15 C | D.OF TESTS: 1984-11-22 | |
| FUEL : B.844/15 C | COOLANT TEMP.: 88 C | TEST NO. : 140/ZA 137 A | |
| ENGINE OIL : RINALA X 10W | OIL TEMP. : 107 C | CURVES NO.: 4 | REITNER |

17-JAN-84 DOK.:B1000846-DL003;PROT100;MKL28-21

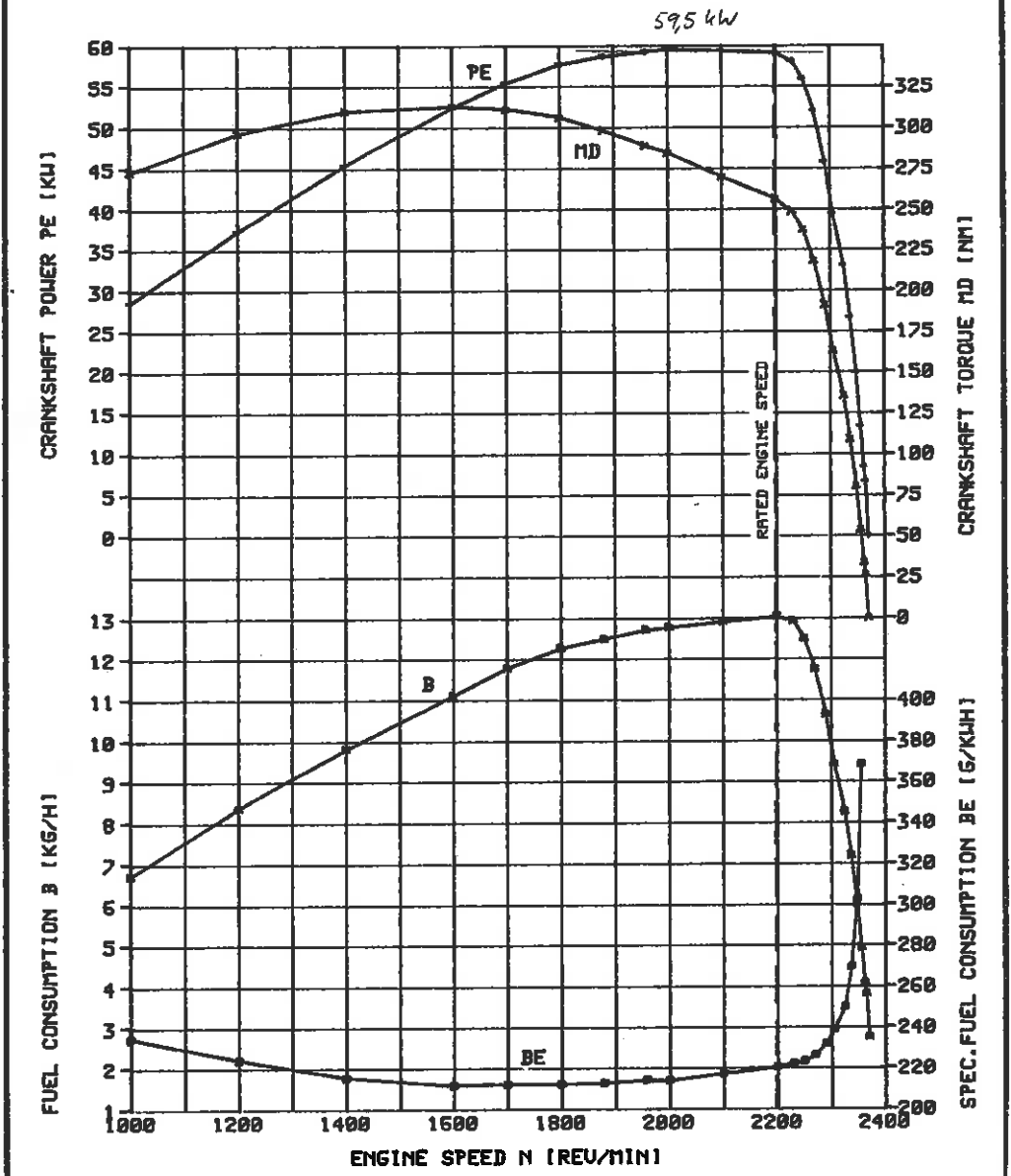
Engine performance

Date and location of test: 1984 09 12, Wieselburg, Austria
Type of dynamometer: SCHENK-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 | | | | | |
| 59,18 | 2200 | 13,07 | 15,46 | 221 | 3,827 |
| Standard p.t.o. speed - 1000/540 rev/min | | | | | |
| 59,33 | 1958 | 12,73 | 15,06 | 214,5 | 3,939 |
| 58,75 | 1880 | 12,51 | 14,81 | 213 | 3,967 |
| The speed recommended by the manufacturer for drawbar work | | | | | |
| 59,18 | 2200 | 13,07 | 15,46 | 221 | 3,827 |
| Part loads | | | | | |
| (i) 85 % of torque at maximum power | | | | | |
| 51,98 | 2270 | 11,77 | 13,93 | 226,5 | 3,731 |
| (ii) unloaded | | | | | |
| 0 | 2370 | 2,78 | 3,29 | - | - |
| (iii) 50 % of the load defined in (i) | | | | | |
| 26,76 | 2337 | 7,22 | 8,54 | 269,5 | 3,134 |
| (iv) maximum power | | | | | |
| 59,18 | 2200 | 13,07 | 15,46 | 221 | 3,827 |
| (v) 25 % of the load defined in (i) | | | | | |
| 13,43 | 2356 | 4,95 | 5,86 | 369 | 2,291 |
| (vi) 75 % of the load defined in (i) | | | | | |
| 39,53 | 2305 | 9,46 | 11,19 | 239 | 3,532 |

Optimum fuel consumption: 211 g/kWh at 54,4 kW and 1700 rev/min
No load maximum engine speed: 2370 rev/min
Torque at maximum power: 256,9 Nm
Maximum torque: 313,2 Nm at 1600 rev/min of engine
Mean atmospheric conditions: temperature: 15°C
pressure: 989 mbar
relative humidity: 85 %
Maximum temperatures: coolant: 87°C
engine oil: 104°C
fuel: 34°C
engine air intake: 15°C

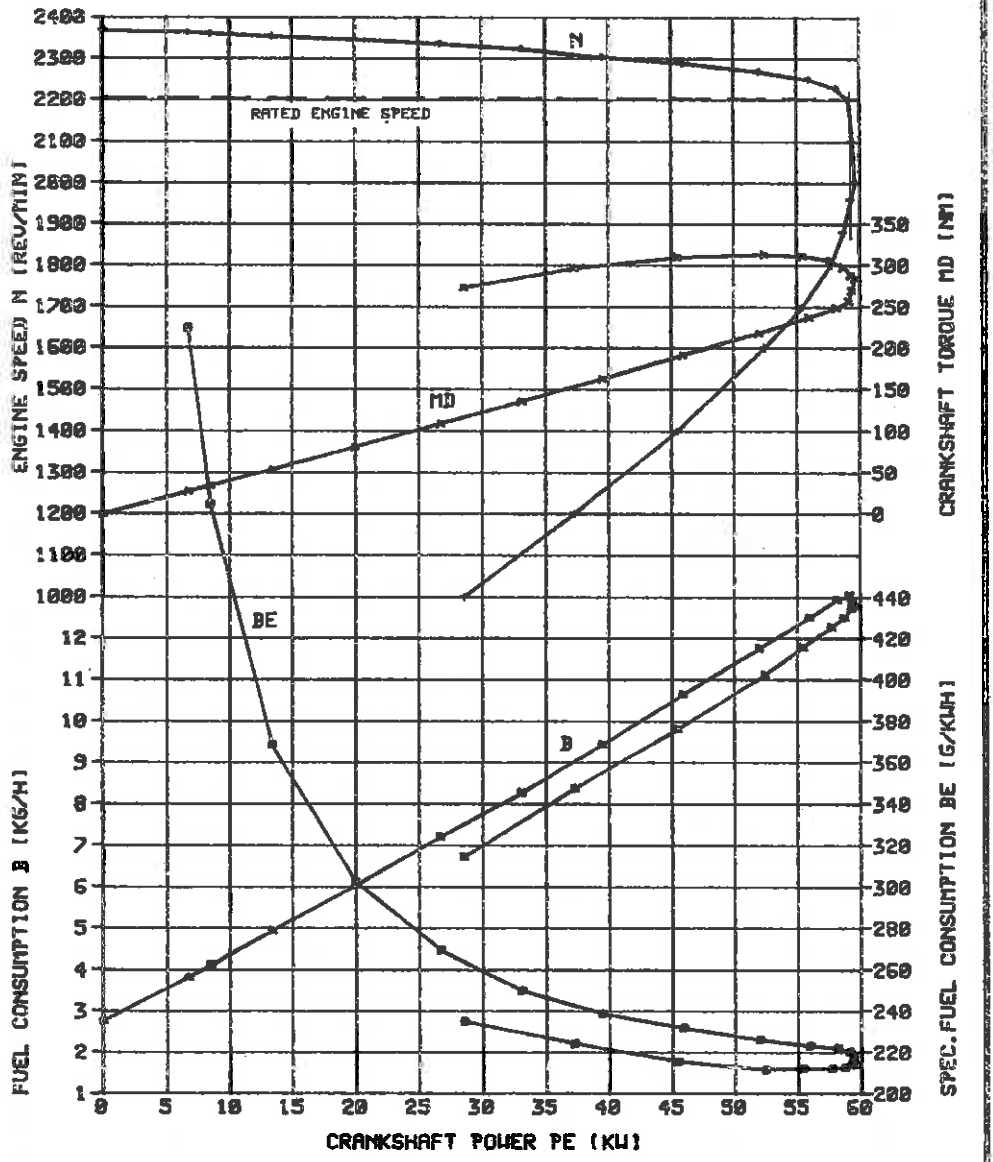
| BUNDESANSTALT FUER LANDTECHNIK WIESELBURG/ERLAUF, AUSTRIA PROT.NR.: 143/84 | ENGINE-TEST | STEYR-DAIMLER-PUCH TYP 8090 TURBO MOT.TYP WD 411.87 |
|---|---|---|




| | | | |
|---|---|---|---|
| ENGINE SER.NR.: WD 411.87-999 | ATM.PRESSURE : 989 MBAR | FUEL TEMP.: 34 C | SIGNATURE |
| TRAKTOR SER.NR.: 235.28-88448 | AIR TEMPER. : 15 C | D.OF TESTS: 1984-09-12 | |
| FUEL : 0.845/15 C | COOLANT TEMP.: 87 C | TEST NO. : 140/M 183 | |
| ENGINE OIL : RINULA X 10W | OIL TEMP. : 104 C | CURVES NO.: 5 | LUGER |

22-JAN-85 DOR.:8188846-DL883.MKU188.MKL28-KW

| | | |
|---|---|---|
| BUNDESANSTALT<br>FUER LANDTECHNIK<br>IESELBURG/ERLAUF, AUSTRIA<br>PROT.NR.: 143/84 | ENGINE-TEST | STEYR-DAIMLER-PUCH<br>TYP 3050 TURBO<br>MOT.TYP WD 411.67 |



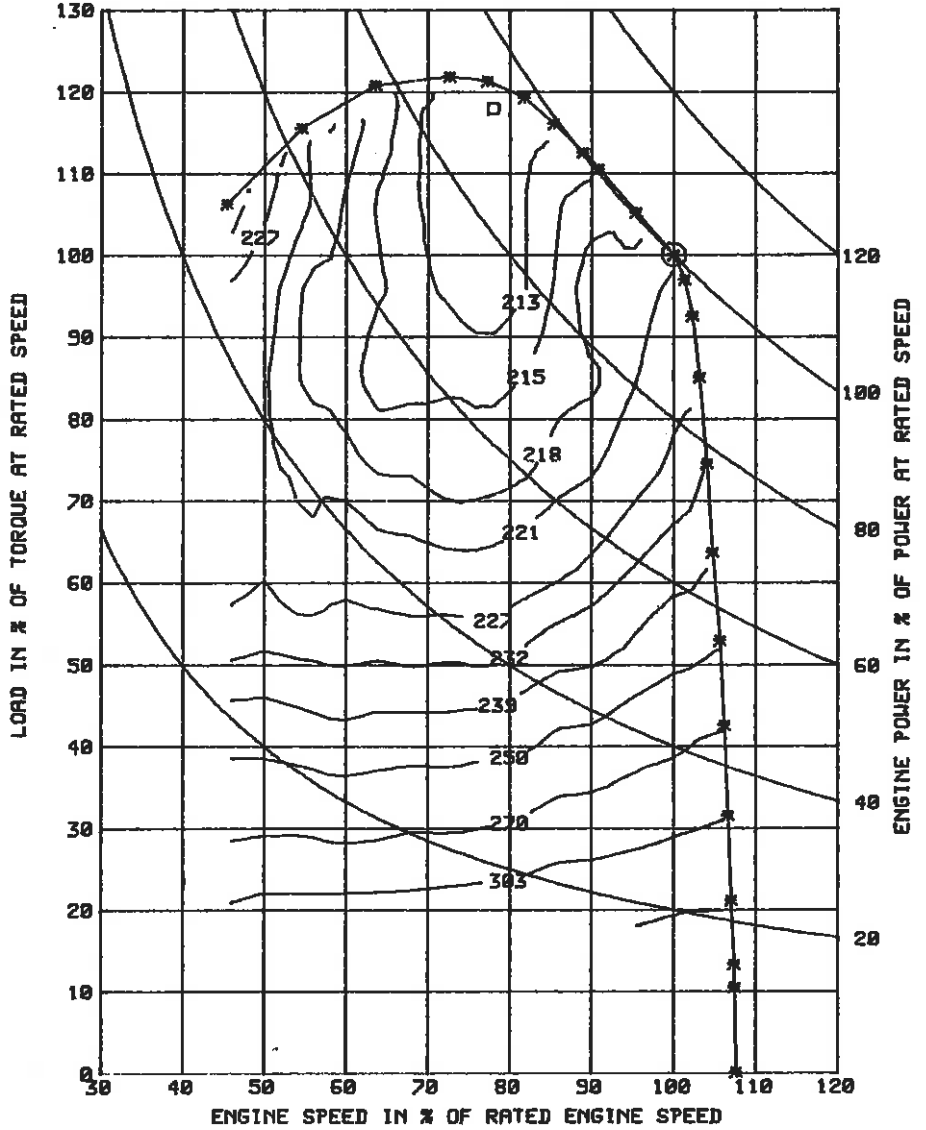

| | | | |
|---|---|---|---|
| ENGINE SER.NR.: WD 411.67-999 | ATM.PRESSURE : 989 MBAR | FUEL TEMP.: 34 C | SIGNATURE |
| MOTOR SER.NR.: 235.20-00448 | AIR TEMPER. : 15 C | D.OF TESTS: 1984-09-12 | |
| OIL : 8.8KG/15 C | COOLANT TEMP.: 87 C | TEST NO. : 148/M 183 | |
| ENGINE OIL : RIMULA X 10W | OIL TEMP. : 104 C | CURVES NO.: 6 | LUGER |

22-JAN-85 JOB:/0100846-0000.MRC100.MRL20-KW

| BUNDESANSTALT FUER LANDTECHNIK WIESELBURG/ERLAUF, AUSTRIA PROT.NR.: 143/84 | ENGINE PERFORMANCE CHARACTERISTICS | STEYR TYP 8090 TURBO MOT.TYP WD 411.87 |
|---|---|---|

D ....MIN.FUEL CONS. 211.00 G/KWH AT N = 1716. REV/MIN, MD = 303.11 NM, P = 54.5 KW

Ⓝ ....N = 2200. REV/MIN, MD = 257. NM, P = 59.2 KW




| | | | |
|---|---|---|---|
| ENGINE SER.NR.: WD 411.78-999 | ATM.PRESSURE : 989 MBAR | FUEL TEMP.: 34 C | SIGNATURE |
| TRAKTOR SER.NR.: | AIR TEMPER. : 15 C | D.OF TESTS: 1984-03-12 | |
| FUEL : B.045/15 C | COOLANT TEMP.: 87 C | TEST NO. : 148/M 183 | |
| ENGINE OIL : RIMULA X 10W | OIL TEMP. : 104 C | CURVES NO.: 7 | LUGER |

EDV-DL003:PROT82.DAT:PKL184V