

OPERATING INSTRUCTIONS



TRENCHER TR 120 Model TR 120H

„Version 10.2019



EUROPEAN UNION
European Regional Development Fund
Operational Programme Enterprise
and Innovations for Competitiveness



Foreword

Thank you very much that you have just purchased our product, the trencher TR60 HC. Our company has been engaged in production of machines and equipment for many years and has gained considerable experiences in this field. Quality of our machines is proven in 40 countries of Europe and Asia we export to.

This manual brings important instructions for users, i.e. instructions for putting the machine into operation, work safety and operating experiences. You will learn how to carry out maintenance, repairs and service and who is authorised for doing checks and other actions on the machine.

Your local dealer will give you this manual with instructions for operation and maintenance while taking this new machine over. Make sure if you understand everything. If not, do not hesitate and contact your dealer and ask him for explanation. It is very important for you and your work safety to understand all instructions given in this manual.

The firm Laski spol. s r.o. does not bear any responsibility for any claims resulting from disobedience to the instructions given in this manual.

This operation manual includes also work safety instructions in various parts of the text. If there is any work safety rule or instruction in general description, then this instruction is indicated with the following symbol:





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Trencher TR 120 H

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EC CONFORMITY DECLARATION

issued in compliance with applicable EC Directives

We, as the manufacturer, **LASKI, s.r.o.**
Bláhka 263/16
Smržice
CZ-798 17
CRN: 45479593

declares hereby that our product
 - designation: **TRENCHER**
 - type: **TR 120**
 - model: **TR 120/H**
 - serial number:

complies with the given EC Directives:

2006/42/EC
2014/30/EC - EMC
2000/14/EC
2002/88/EC, 97/68/EC

List of technical standards, specifications and harmonised norms used for assessment of its conformity:
EN ISO 12100, EN 474-1+A4, EN 474-10+A1,
EN ISO 13732-1, EN ISO 13849-1, EN ISO
11291, EN ISO 3744, ISO 3767-1, EN ISO
5349-1, EN ISO 19353, EN 1175-2+A2, EN
55012 ed. 2, EN ISO 4413, ISO 11 684

Basic technical parameters:

| Parameter | Unit | Value |
|----------------------|-------|--------------|
| Length | mm | 3250/3470 |
| Width | mm | 670 |
| Height | mm | 1300/1320 |
| Weight | kg | 857 |
| Trench width | mm | max. 300 |
| Max. trench depth | mm | 400 |
| Engine - type | - | KOBER CH 980 |
| Engine performance | kW | 28.1 |
| Max. speed of engine | min-1 | 3600 |

Conformity assessment in accordance with directives 2000/14/EC, art. 14, point 2,
Appendix V


The person participating in this conformity assessment in accordance with directives
 2000/14/EC: **NB 1017, TÜV SÜD Czech s.r.o., Novodvorská 994/136, 142 21 Praha 4**

Measured sound power level of this equipment **L_{WA} = 108,3 dB**

Guaranteed sound power level: **L_{WA} = 110,0 dB**

Completion of technical **Ing. Jiří Kvasnička**
 documentation: **Petra Bezruč 205**
CZ-664 43 Želešice

In Smržice, on 20.3.2018



Ing. Jiří Kvasnička

EC CONFORMITY DECLARATION

issued in compliance with applicable EC Directives

We, as the manufacturer, **LASKI, s.r.o.**

Blištka 263/16

CZ-798 17 Smržice

CRN: 45479593

declare hereby that our product **TRENCHER**

- designation:

- type: **TR 120**

- model: **TR 120/H**

serial number:

complies with the given EC Directives:

Directive No. 2014/30/EC - EMC

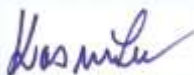
List of technical standards,
specifications and
harmonised norms used for
assessment of its conformity

EN 53012 ed. 2

Basic technical parameters:

| Parameter | Unit | Value |
|----------------------------|--------|-----------------|
| Length | mm | 1250/1470 |
| Width | mm | 570 |
| Height operation/transport | mm | 1360/1920 |
| Engine - type | - | KOMATSU C15-900 |
| Output power | kW/kps | 26.1 |

In Smržice, on 20.3.2018



Ing. Jiří Kvasnička

Product Identification

Our product is identified with its serial number stamped on the type plate placed on the machine frame in front of the chain bar. Upon the take-over of the product we recommend you to fill required data in the following form (1) concerning the given product and your dealer.

Type of product:

Serial number of product:

Engine type:

Serial number of engine:

Dealer's address:

Address of authorised service:

Date of delivery:

Warranty expiration date:

Interruption of warranty period:

The product type plate is located on the machine frame above the cooler.

The type plate includes:

- manufacturer's data
- product trade name
- model
- type
- serial number
- year of manufacture
- weight of machine
- CE marking



Type plate location

Work Safety Instructions

Utilisation

- The trencher TR60 HC facilitates trenching works at cables and lines lying in gardens, schools and parks without moving too much earth. The trench itself is up to 120 cm deep with a plain and clean unvaried profile given by the cutting chain width. The machine is used for trenching in compact soils with small stones in size up to 50 mm in one-man operation.
- This machine is allowed to work only on flat and even terrain or up the permissible limits as to its climbing ability. In this case it is also rated to climb slopes (perpendicularly to the contour) up to 12°.

Not Allowed Use



- Avoid any trenching if there can be some foreign matters and objects, such as metal, glass cullet, stony debris, ceramics etc. hidden in the field. Avoid excessive steering manoeuvres on asphalt and concrete surfaces since these cause excess pad wear.
- Avoid working in the fields with gradients exceeding 12°.
- Avoid working on very soft or unstable ground. The machine could sink, slide, slew or turn over.
- Cross the already made trenches only in the permissible way (see instructions below).
- Avoid working on icy and frozen terrain (it applies also to frost-bound grassed area).
- It is strictly forbidden to start working with removed or missing guards or with faulty safety elements.
- It is forbidden to use this machine if operating temperature in the hydraulic system exceeds 65°C.

Recommendations for rubber tracks:

- Avoid any contact of the rubber tracks with abrasive surfaces. Avoid manoeuvring on hard, stony and uneven surfaces such as rock, stones, stump roots, debris, gravel, etc.
- It is forbidden to drive the machine on steep slopes (along the contour) and in small turning radius with risks of instability.

Generally

- Before use of this machine the user (owner) is obliged to instruct operators with this manual and all operating instructions in a provable way.
- This machine is allowed to be operated only by an operator who is over 18 years old, physically and mentally capable and demonstrably instructed with its operation.
- This manual should be available and at operator's disposal any time.
- Persons under the influence of drugs, alcohol or medication affecting reaction time must never work on or with this machine.
- Keep this machine beyond children's and unauthorised persons' reach. Avoid their presence while working.
- Keep this machine beyond children's and unauthorised person's reach. Avoid their attendance while trenching. Keep them beyond hazardous area which is a space around the machine up to 5 metres.
- Pay special attention to the area on the trencher's right side where its auger turns.
- Every operator of this machine is fully responsible for any injury or damage caused to the third persons within the operating reach of the machine.



- **Avoid working with inclination exceeding the permissible limit of 12°.**

- **Do not kip the machine to any side more than 22° – risk of damage of the engine.**
- Before work first observe the working area. To ensure maximum life of the trencher and to keep the chain tips sharp, any contacts with stones, flint brick and other hard materials around the base of the trencher should be kept to an absolute minimum.
- Before first putting the machine into operation, ask your local dealer who can instruct you in operation and functions of particular actuators and controls.
- While working, the operator is obliged:
 - ❑ to use only such a trencher which is in optimal operating condition, not damaged through transport, storage or from previous operation,
 - ❑ It is strictly forbidden to do any technical changes on the machine without prior permission of the manufacturer. Use always original spare parts. For servicing or spare parts contact your dealer or an authorised service.
 - ❑ before trenching to learn all local regulations concerning noise and to respect them,
 - ❑ This machine is allowed to work only on flat and even terrain. Avoid working on very soft or unstable ground.
 - ❑ to stop trenching immediately if there are any undesirable objects in the soil,

- ❑ Should the chain bar be in full depth of 1200 mm, it is theoretically possible that a stone up to 220 mm may pass between the auger and the machine frame. In lower depth this theoretical size may be even 290 mm. However, in field conditions, even a 60 mm stone may get jammed between the outer auger edge and the machine frame. This implies that trouble-free stone passage through the auger is in fact an accidental event. Based on it, the stone size that surely does not get stuck is about 50 mm.
- ❑ In the hydraulic distributor for the chain and the auger drive there is an in-built check valve preset to 185 bar. Should the stone get stuck in the auger or block the working chain, this check valve turns on and the auger with the chain will stop. The operator should immediately turn off the auger and the chain drive by means of a control lever on the distributor, stop the travel gear or eventually lift up the chain bar and remove the blocked stone.
- ❑
- ❑ to stop trenching immediately if he hears any strange noises or vibrations that may result from contact of the cutting chain with undesirable objects bringing usually damage of the chain. Turn the machine off and first remove these objects.
- ❑ to respect all work safety instructions.
- ❑ to check up functions of all controls and safety elements before putting the machine into operation,
- ❑ While working, wear always personal protective equipment - protecting shield or goggles, protective gloves, working boots and working clothes properly buttoned.
- ❑ Avoid wearing free parts, such as ties, scarves and shawls, belts, jewellery etc. In case of longer hairs use always a proper head piece. Otherwise, such a person is not allowed to operate this machine.
- This manual describes also some common troubles and failures which could occur and which are easy to be remedied by an instructed person. Other problems and faults should be announced directly to the manufacturer, the LASKI Service Centre that is always ready to help you.
- Before any checks or servicing stop the engine, disconnect the spark plug cable and wait until any motion stops.
- Do not put any objects or tools on the machine.
- While displacing the machine on the plot the chain bar must be set horizontally and the machine operator should stand in the given attendant's place.



- The manufacturer does not bear responsibility for any damages or injuries to the third persons or to other equipment resulted from disobedience to instructions given in this manual.
- When handing the machine over to another person make sure if all controls, guards, other safety elements and its safety switch are complete and fully functional.
- Do not remove guards and other safety elements. They serve for your safety.
- Keep the given intervals for checks of bolted joints. The first check should be done after first three operating hours.
- Always after work clean all parts of the machine. For cleaning do not use fuel or other oil products.
- At windy weather orientate the trencher in such direction to avoid exhaust gases and dust bothering the operator. .
- Stop working if some parts running hot are covered with dust and soil deposits. Clean such parts any time when required.
- Fill up the fuel tank before working and only if the machine is turned off. The fuel tank must be cold.
- Do not fill the fuel tank while the engine is hot or still running.
- Keep fuel tank cap always properly closed while working.
- Do not start if some fuel has been spilled.
- Keep open fire away while filling the fuel tank.
- Keep the machine beyond reach of open fire.
- Some parts of the machine may run warm (exhaust manifold, gearings, hydraulic elements). Do not touch them when the machine is still running or having been just stopped.
- Do not touch the spark-plug wire while the machine is still in use.
- Do not let the engine running in high speed unreasonably.
- Do not change the engine adjustment, especially its speed regulator.
- Never change the chain gearing through an unauthorised action.
- Do not start this machine in confined or ill-ventilated spaces. Engine exhaust gases contain poisonous carbon monoxide. Carbon monoxide is odourless, colourless and can cause death if inhaled
- Do not use the machine under conditions of low visibility, especially at foggy weather, when you may overlook persons coming. Operate it only at daylight or with sufficient lighting.
- Before working learn all functions of individual controls and safety elements and carry out functional checks before any use.
- Do not carry out any repairs that are specified for authorised services only.
- Do not carry out any repair where its solution exceeds your experiences.

- Avoid wearing free parts, such as ties, scarves and shawls, belts etc. In case of longer hairs use always a proper head piece. Otherwise, such a person is not allowed to operate this machine.
- While working, wear always personal protective equipment – protecting shield or goggles, protective gloves, ear protection, working shoes and working clothes properly buttoned.
- Keep all the work safety symbols and markings legible, clear and undamaged.
- Warning! Keep safety distance from the chain bar in motion and all moving parts (auger).
- While working, keep an eye on sufficiently free space in the required direction.
- It is strictly forbidden to place any ballast on the attendant's ramp that may disable the dead man control.
- It is also forbidden to start working with removed guards or with non-functional safety elements.



Residual Risks

FUEL

Fuel can be injurious to the skin - wash off as soon as possible. If taken internally seek immediate medical attention. Refer to your local fuel supplier for the MSDS sheet.

Store fuel only in approved containers, in well ventilated, unoccupied buildings and away from naked flames. Do not fill the fuel tank while the engine is running.

EXHAUST FUMES

Engine exhaust gases contain poisonous carbon monoxide. Carbon monoxide is odourless, colourless and can cause death if inhaled. Avoid inhaling exhaust fumes and never run the engine in a closed building or confined area with insufficient ventilation.

HOT PARTS

Engine components can get extremely hot from operation (exhaust manifold, gearings, hydraulic elements). To prevent severe burns, do not touch these areas while the engine is running - or immediately after it is turned off. Never operate the engine with heat shields or guards removed.

ELECTRICAL SHOCKS

Never touch electrical wires or components while the engine is running - they can be sources of electrical shocks.

CHAIN OR AUGER IN MOTION

When the engine is turned off, the auger and the chain continue to move for a short while. Do not touch these parts until they stop – risk of injury.

BATTERY

Batteries contain acid which is corrosive and poisonous. Handle the battery with care. If splashed there is a risk of burns and / or serious damage to eyes. Wash the affected area

immediately with lots of clean water and seek medical advice immediately. Read the battery MSDS sheet supplied by the manufacturer.

EXPLOSIVE GASES

Gases, if given off from the battery, are explosive. Keep any sparking and flames away.

PERSONAL SAFETY

The following personal protective equipment (P.P.E.) must be worn by the person operating this machine and also all personnel within a 20 metre radius of the machine:

- forestry safety helmet as to EN 397 fitted with a visor as to EN 166
- heavy duty gloves as to EN 388
- full ear protection as to EN 352-3
- close fitting heavy-duty fully protecting clothing
- steel toe protection boots as to EN 345
- dust mask if the ground is very dry.

Noise and Vibrations

Operating noise may even exceed 85 dB(A) if measured in the operator's place. While working, the operator is obliged to wear appropriate hearing protectors.

DUST

If the ground is very dry, a large amount of airborne dust might occur. In this situation a corresponding respiratory mask should be worn.

LIGHTING

Operate this machine only at daylight or with sufficient lighting in the workplace.

Work Safety Symbols

This article introduces work safety symbols (pictographs) used on this machine. Under the relevant figure there is their location (position) on the machine. These work safety symbols warn the operator against risks connected with the machine use. Your respect to the symbol meaning is a precondition for your work safety.

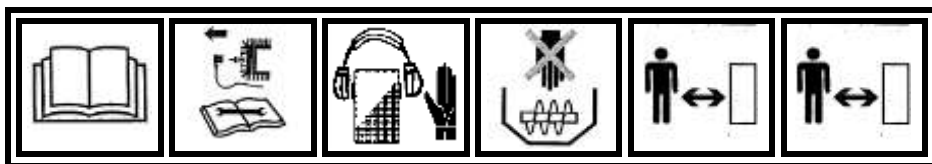


The user is obliged to keep all the work safety symbols legible, clear and undamaged. In case of any damage or illegibility ask your local dealer or an authorised service for a new relevant pictograph.

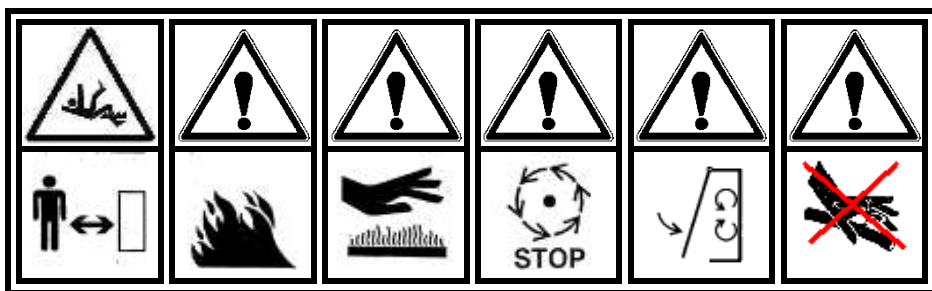




Trencher TR 120 H



| 1 | 2 | 3 | 4 | 5 | 6 |
|--|---|--|--|--|---|
| Read this operating manual before use. | Always follow the manual while maintaining, servicing or repairing the machine and disconnect the spark plug cable. | Wear personal protective equipment – eye protection, hearing protectors and protective gloves. | Warning! Rotating auger. Hit and pull-in hazard. | Keep safety distance from turning parts. | Warning! Keep safety distance from chain bar in motion. |



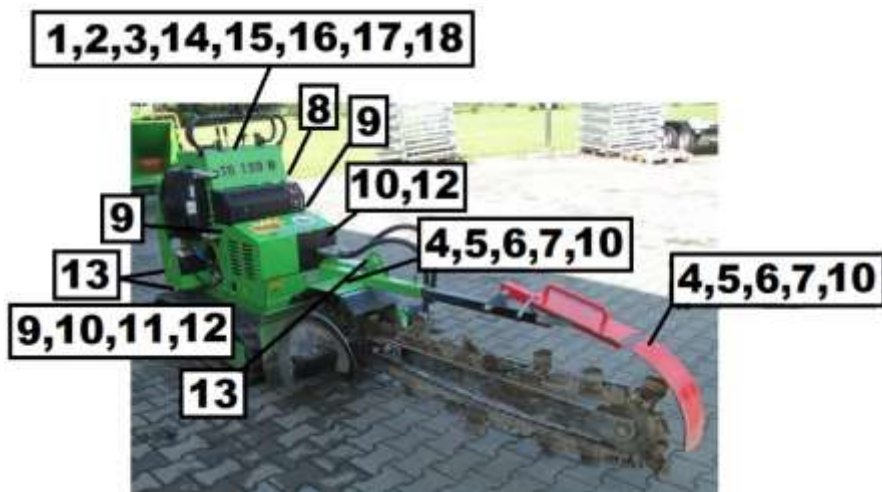
| 7 | 8 | 9 | 10 | 11 | 12 |
|---|---|---|---|--|--|
| Keep safety distance from moving parts. | Warning! Fuel is highly flammable! Keep open fire away! | Warning! Hot parts of exhaust manifold. | Warning! Turning parts are running out. | Warning! Close all guards before starting the machine. | Warning! Risk of high-pressure liquid leakage. |



| | | | | | |
|----|----|----|----|----|----|
| 13 | 14 | 15 | 16 | 17 | 18 |
|----|----|----|----|----|----|

| | | | | | |
|-----------------|---|-------------------------|----------------------|------------------------------|----------------------------------|
| Lashing points. | Avoid working with inclination exceeding permissible limit. | Wear protective gloves. | Wear ear protection. | Wear face protecting shield. | Wear steel toe protection boots. |
|-----------------|---|-------------------------|----------------------|------------------------------|----------------------------------|

Obr. 5 – Work safety symbols on the machine



Obr. 6 – Work safety symbols on the machine

Noise and Vibrations

Operation of this machine brings following emissions:

| Operating mode/engine | | KOHLER CH 980 |
|-----------------------|-----------------|---------------|
| Sound power | $L_{W(A)}$ (dB) | 110 |
| Noise at max. speed | L_A (dB) | 92,4 |

All measurements taken in accordance with: ČSN EN ISO 11201, ČSN EN ISO 3744

Technical Description

This is trencher designed as a self propelled machine to be controlled by an attendant standing in the given attendant's place (ramp). Its **tracked chassis** can change its track width and its travel gear is powered by hydrodrive with continuous



Trencher TR 120 H

regulation. Adjustment of the track base can be done also by means of a hydraulic cylinder. Profiled rubber tracks are stretched on rollers.

This machine is powered by the **engine** KOHLER CH 980, four-stroke, air-cooled, power output of 35 HP. The engine is used also for hydraulic drives of the travel gear and the trenching device.

Trenching Device

This device consists of a link chain which runs on a special bar. The chain links hold tips that cut the soil and bring it to an auger. Above the bar there is a guiding block which helps keeping flatness at trenching. It serves also as a fixed point at displacement of the machine. The auger puts the soil aside approximately 15 cm from a new trench.

The chain bar is height-adjustable and hydraulically controlled by hydraulic cylinders. The guiding block for flat trenching is mounted close to the chain bar edge. The chain tips are fitted as left and right and intended for cutting the soil and bringing it to the auger.

Fully hydraulic control of the machine is based on actuators installed in the upper part of machine. They are in fact hydraulic valves controlling particular functions.

The hydraulic system is designed for power transmission from the engine to the working parts of the trencher. It comprises also hydraulic hoses, cooler with filters and electromagnetic valves.

Technical Parameters

| Parameter | Unit | Value |
|------------------------------|--------|--------------|
| Overall length | mm | 3250/2470 |
| Overall width: | mm | 870 |
| Overall height: | mm | 1360/1920 |
| Weight: | kg | 867 |
| Tracks | | 180x37x72 FP |
| Speed | m/hod | 20 ÷ 120 |
| Travel speed | km/hod | 4,2 |
| Max. permissible inclination | ° | 12 |
| Max trench depth | cm | 120 |

| | | |
|------------------------|-------|--|
| Trench width | cm | max. 200 |
| Trenching chain | - | 1,654", with 80 pitches |
| ENGINE Type: | - | KOHLER CH 980, four- stroke, air-cooled |
| Fuel | - | unleaded petrol (ON 95) |
| Power output: | HP/kW | 18,6/25 at 3600 rpm |
| Engine oil charge | l | 1,9 |
| Fuel tank capacity: | l | 16 |
| Hydraulic oil capacity | l | 53 |
| Hydraulic oil | - | OH HV46, ISO VG46 |
| Cooling | - | air-cooled |
| Starter | - | electric |
| Battery | | Pb, 44 Ah, 12 V |

Transport

This machine can be transported to site either on a trailer or on a low-bed truck. It is not designed for driving on public roads.



Rubber tracks are designed only for use on soft terrain, not for hard and abrasive surfaces such as sand, stone, minerals, etc. Use of rubber tracks on these surfaces can cause premature wear and deformation, hence reducing useful life of the tracks.



Loading/unloading

Always perform the machine loading and unloading operation with the trailer parked on a solid and level surface.

Ensure that the hand brake is on (if fitted) and the trailer wheels are chocked prior to attempting to move the machine onto/from the trailer.

If loading on a gradient, always ensure that the trailer wheels are adequately chocked. Failure to do so may result in the brake de-activating and allowing the trailer to roll. Turn the trailer to an appropriate position and chock both trailer wheels. Do not move the trailer with the machine engine running.

Remember to use a purpose-designed ramp or a loading platform for loading and unloading the trencher. The ramp must be strong enough to support the weight of the machine (min. carrying capacity of 1000 kg).

Make sure the slope of the ramp is less than 12°.

For loading/unloading keep the tracks extended to maximum.

Before loading the machine clean thoroughly the ramp and the loading area. Ramps or areas that are dirty with oil, mud or ice are slippery and dangerous.

Avoid steering when going up or down the ramps since this can be extremely dangerous. If it is absolutely necessary to steer, first drive the machine back down to the ground and off the ramps or back onto the vehicle / trailer bed and then change the direction of travel and start back up or down the ramp again.

To load or unload the machine you can use also some lifting means (min. carrying capacity of 1000 kg) with adequate chains, straps or cables.

Fasten retention chains, straps or cables to the machine chassis and on the loading floor (see lashing point symbols). Do not put them over or against hydraulic hoses or other rubber parts. Make sure that they do not cause damage to rubber tracks, hydraulic hoses, elements or cylinders. Fasten each corner of the machine and fasten the front arm to the trailer / vehicle bed with a chain / strap or a suitable anchor.



Lashing points for loading and fixing on the trailer or truck body. For lifting of the rear part use the upper lashing points, to fasten retention straps on the load floor use the lower ones. The front hole can be used for both ways of cording.

Product Delivery

- This product is delivered completely mounted and attached to a wooden pallet.
- While handling you may use a lift truck or a tackle with min. carrying capacity of 1000 kg (suspension in the given lashing points only).
- For any handling you need min. ceiling height of 2 m.
- The manufacturer delivers this machine shrink-wrapped. The protective foil protects the machine against weather effects but in no case against mechanical damage, fall etc. The protective foil is recyclable; dispose it according to valid local regulations.
- While putting the machine aside (e.g. at reloading), we recommend to place it under a shelter.
- While unloading, put the product always on a solid and level surface.
- It is not allowed to put it on a labile base.
- It is not allowed to put any objects or tools on the machine or to pile two machines on each other.
- This product is delivered completely mounted and attached to a wooden pallet.
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Handling

After delivery unload the machine from the transport pallet as follows:

- Cut the binding band carefully. Be aware, the band is tightened up and after cutting its both ends may 'shoot out'. While cutting the band, use protective gloves and goggles.
- Remove the chocks from the tracks.
- Fill the fuel tank, connect the battery, check up the oil engine level and try to start the engine.
- Lift up the chain bar.
- Put the chocks to the pallet in the required direction and in spacing of the required wheel track.
- Keep free space around the pallet for going down. Be aware of potential insufficient de-aeration of the hydraulics. It might cause unwished motion while going down.
- Be aware while the machine leaves the pallet – it may shortly accelerate.

Precautions in Design

This machine is provided with safety guards protecting against any contact with rotating parts (hit and pull-in hazard) and against hot parts (exhaust manifold). The guards are fixed, bolted down and solid; only the guard over the exhaust manifold is





perforated.

While trenching, the attendant must remain in the intended attendant's workplace (on the attendant's ramp). Therefore this machine is equipped with a sensor sensing presence of the attendant in the right workplace (see fig.).

Control levers are self-returning in their neutral position.

While working, the attendant must stand on the attendant's ramp. Otherwise the engine turns off (dead-man control).

Moving parts on this machine, particularly bar, chain and auger, are located beyond attendant's reach.

While starting the engine, the attendant must stand on the attendant's ramp.

Controls

This machine can be controlled by control levers located on the machine upper board (see fig. 8).



Fig. 8 Trencher controls

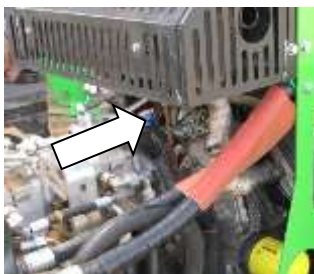
- | | |
|--------------------------|---|
| 1. Ignition key | 10. Chain control |
| 2. Standby indicator | 11. Hydraulic oil dosing into quick couplers for peripheral equipment |
| 3. Hour counter | 12. Lever for gear control and creeping |
| 4. Working lights switch | 13. Left track control forward |
| 5. Side warning lights | 14. Left track control backward |
| 6. Voltmeter | 15. Right track control forward |
| 7. Engine speed control | 16. Right track control backward |
| 8. Choke control | |
| 9. Chain bar up / down | |

Use

Before Putting into Operation



- Before the first putting into operation check up the machine for contingent damages and completeness after its transport and storage.
- Exchange all damaged or worn parts. Use always original spare parts. For servicing or spare parts contact your dealer or an authorised service point.
- Check up the engine oil level. When the machine is on level ground the oil should be between the MAX and MIN marks on the oil dipstick. Check up the hydraulic oil level – it should be between the MAX and MIN marks on the oil gauge. Check up the fuel tank level – fuel volume should be sufficient for the job to be done.
- The oil dipstick is accessible under the engine hood.



Arrow pointing to engine oil dipstick



Fuel tank with level indicator



Hydraulic oil tank with oil gauge

Fig. 11 Indication of service fluids

- Check out tightening of bolted joints, especially on all moving parts, guards and completeness of other parts.
- For the engine operation use only unleaded petrol ON 95.
- Keep this machine beyond children's and unauthorised persons' reach. Avoid their presence while working.
- Do not let the chain bar sink on a hard surface – for underlaying use a wooden board.

At the first start there is much more air in the intake manifold and on this account the engine may not roar to life immediately when turning the switch key for the first time. Do not let the engine crank for a longer time than 10 sec. For the first start we recommend to pump fuel by hand on the fuel delivery pump.

- After short cranking check up if the fuel filter is filled with fuel. At light knocking you can see darker fuel level in the filter. If this level reaches about $\frac{3}{4}$ of the filter height, try to crank the engine again by turning the ignition key shortly.
- Keep an interval between two starts (standstill) 30 sec at least.
- After starting do not increase the engine speed immediately. Allow the engine to run at no more than fast idle speed to warm up the engine and hydraulic oil for about one minute and then you can set it to its max. speed.
- Do not leave the machine unattended.
- If you heard any strange noise or vibrations or felt a strange smell while working, then turn off the machine immediately and contact your dealer or directly the manufacturer.



Transport, Handling and Storage

- This machine is allowed to be transported to site either on a trailer or on a low-bed truck. It is not designed to go on public roads.
- Special trailer for transport optionally.
- When loading the trencher on a trailer, let the chain bar sink carefully on the loading floor, fasten retention chains, straps or cables to the machine chassis. Do not put them over or against hydraulic hoses. Make sure that they do not cause damage to rubber tracks. Fasten each corner of the machine and fasten the front arm to the trailer / vehicle bed with a chain / strap or a suitable anchor.
- Remember to use a purpose-designed ramp or a loading platform for loading and unloading the trencher. The ramp must be strong enough to support the weight of the machine (min. carrying capacity of 1000 kg).
- Do not load the machine by means of ramps if the height of the given loading area exceeds 750 mm. In this case the ramps should be 3,6 m long at least to avoid rollover risk.
- While loading/unloading, proceed always slowly and very carefully. Keep an eye on proper contact between the tracks and the ramps.
- Avoid any handling with inclination exceeding the permissible limit of 12°.
- **While moving and loading the trencher, let always the chain bar lifted and the engine turned off.**
- When going to another working site go always ascend and descend slopes and proceed very carefully. Work and motion in hilly fields require more working experience.

- **Store the trencher always in dry (sheltered) space to protect it against weather effects.**
- Keep the stored machine beyond unauthorised person's reach. Pull the ignition key out and keep it separately.
- Before storage clean all parts of the machine.
- Remove any spilled oil immediately and wipe off all oily spots.
- Exchange all damaged or worn parts. Use always original spare parts. For servicing or spare parts contact your dealer or an authorised service point.
- Do not apply any grease or similar agents on elastic hydraulic hoses.
- Check up hydraulic hoses for wear. Replace them if necessary or every 4 years at least!
- Protect the rubber tracks against oil products.
- Before putting the machine aside for a longer time change the engine oil and its filter. Clean the air filter.
- Discharge the used oil into a special bin and dispose it always in accordance with applicable laws and local regulations.
- Remove any spilled oil and clean all oily spots properly.
- Always put the machine aside on a flat and solid floor and block it against unwilling motion by means of scotch blocks.
- Do not let the chain bar sink on a hard surface (concrete) – for underlaying use a wooden board.
- Do not put any objects or tools on the machine.
- Store the fuel canisters separately.

Recommendations for chassis with rubber tracks:

- Avoid manoeuvring on hard, stony and uneven surfaces such as rock, gravel, concrete etc.
- Avoid keeping the rubber tracks in direct sunlight for more than 3 months.
- Avoid excessive steering manoeuvres on asphalt and concrete surfaces since these cause excess pad wear.
- Avoid driving on asphalt surfaces when their temperature exceeds 60°C since this causes both excess pad wear and damage to the asphalt surface.
- Manoeuvres with a loose track on an irregular surface can cause the pad to detach and /or damage to the rubber track.



Rubber tracks are designed only for use on soft terrain, not for hard and abrasive surfaces such as sand, stones, minerals, etc. Use of rubber tracks on these surfaces can cause premature wear and

deformation hence reducing the useful life of the tracks.

- Avoid contact between sharp concrete edges etc. and the rubber track.
- Fuels or synthetic oils must never come in contact with the rubber track. If this does happen then they must immediately be cleaned and neutralized.
- Avoid using rubber tracks in marine and seaside environments since saline air or salt in general corrode adhesion between rubber and metal inner core.

Checklist before Operation

- Before the first putting into operation check up the machine for contingent damages and completeness after its transport and storage.
- Check out tightening of bolted joints, especially on the chain.
- Check out the chain for its condition (attachment and wear of blades, bolts, etc.). Check out condition of the blades. Replace them if worn or damaged.
- CAUTION! The blades are fitted as left and right. Be aware of it while changing them.
- Check up hydraulic hoses for wear. Replace them if necessary or every four years at least.
- Check up the rubber tracks for wear.
- Check up volume of service fluids available.
- It is strictly forbidden to start the machine with removed guards.
- It is strictly forbidden to do any technical changes on the machine.
- Check out the hydraulic system for condition and contingent leakage. Wipe off all oily spots found on the machine.
- If any adjustment is required, do it always at standstill only.
- Observe the working area. If any person, children or animals approach while trenching (within a 20 metre radius of the machine), then stop working immediately.
- The person operating this machine must always wear corresponding PPE, such as forestry safety helmet fitted with a visor, full ear protection, steel toe protection boots, heavy duty gloves, close fitting heavy-duty fully protecting clothing.



- Make sure whether the locking pin is properly inserted and the terminal switch closed. The pin must be forelocked and the switch contact pressed, see the fig.
- Connect/check up the battery connections.

Starting the Engine

This trencher is equipped with an electric starter controlled by the ignition key in the switchbox. On the switchbox there is also a standby indicator (see fig. 14). Before start this indicator should be ON. Otherwise the engine cannot be started.

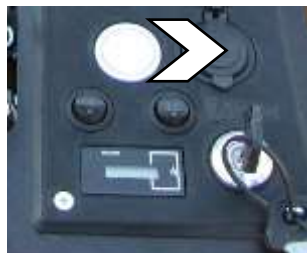
Before starting it is necessary to re-connect the battery that should be properly charged.

A partially discharged or flat battery prevents starting and the engine cannot roar to life.



Starting the Engine

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Before starting it is necessary to re-connect the battery that should be properly charged.

A partially discharged or flat battery prevents starting and the engine cannot roar to life.




The battery contacts must be connected so that the red connector comes to the plus contact (+) and the blue connector comes to the minus contact (-).

Before starting the ignition key is inserted and set in the position “0” or “OFF”.

Starting procedure:

- Turn the battery disconnecter on and re-connect the battery.
- Step on the attendant ramp – the green indicator on the switchbox should light up.
- For cold start set the choke lever in the position ON. Set the lever of speed regulation to ½ of its stroke.

Use the choke only for cold (first) start. Should the engine be still warm, do not use the choke – the engine roars to life also with higher speed.

- Turn the ignition key in the START position or I.
-  Starting procedure:
- Turn the battery disconnecter on and re-connect the battery.
 - Step on the attendant ramp – the green indicator on the switchbox should light up.
- For cold start set the choke lever in the position ON. Set the lever of speed regulation to ½ of its stroke.

Use the choke only for cold (first) start. Should the engine be still warm, do not use the choke – the engine roars to life also with higher speed.

- Turn the ignition key in the START position or I.
- Do not crank the engine for a longer time than 10 sec. When the engine roars to life, release the key immediately.

If the engine does not roar to life within 10 sec, release the key in the position “0” again. Keep an interval between two starts (standstill) 60 sec at least.



- Do not crank the engine for a longer time than 10 sec. When the engine roars to life, release the key immediately.

If the engine does not roar to life within 10 sec, release the key in the position “0” again. Keep an interval between two starts (standstill) 60 sec at least.



Putting into Operation

- Do not start this machine in confined or ill-ventilated spaces. Do not use the machine under conditions of low visibility, especially at foggy weather, when you may overlook persons coming. Operate it only at daylight or with sufficient lighting.
- Every operator of this machine is fully responsible for any injury or damage caused to third persons, animals and property within the operating reach of the machine.

- Before work first observe the working area. To ensure maximum life of the trencher and to keep the chain tips sharp, any contacts with stones, flint brick and other hard materials around the base of the trencher should be kept to an absolute minimum.
- Avoid going over contingent obstacles that could cause damage of the rubber tracks.
- Avoid going or working on slopes with inclination exceeding the permissible limit of 12°.
- Any transport to site or dislocation on site is allowed only with the chain drive off.
- Allow the engine to run at no more than fast idle speed to warm up the engine and hydraulic oil (especial in winter time) to reach its required oil pressure and flow rate.
- Start working with the machine and press the chain bar slowly into the trench to reach the required trenching depth. To reach the required depth you can move the trencher also slightly back.
- While pressing the chain bar into the soil, avoid any machine motion forwards.
- It is always necessary to adapt the machine speed forwards to on-site conditions, particularly to real properties of the soil. Local conditions and soil properties may considerably differ. First set the machine speed slow and then speed up slowly, never conversely.
- While trenching, try to keep the engine speed constant resp. according to current machine load (listen to its operating noise). Optimum speed of the engine should be set on 2/3 of its max. value.



- It is not possible to repair (renew) the already finished trench by going through the trench repeatedly because of the soil put already aside.
- We recommend to trench on level grounds or downhill only, not uphill.
- Avoid working along the hill contour. It may come to undermining the slope – any angle correction of the chain bar is not possible.
- Observe the working area all the time, also while backing. If any person, children or animals approach while trenching, then stop working immediately.
- Should the trench line be straight only, first mark the required travelling direction on the ground in order to observe and to keep an equal distance of the tracks from the marked line.

- While working on slippery or muddy ground (not only icy) or on slopes, the trencher tracks may slip. In this case it is necessary to make continuous corrections for keeping the required trench line.

To avoid slipping the machine into the trench:

- go always perpendicularly to the trench while crossing it;
- while connecting it with another trench you shall also cross the already made trench perpendicularly so that the trench should be in the middle of the track length. Then set both tracks into motion in opposite directions and the machine turns in the required direction of the trench line. Contrarily, if you need to go away from the trench, set both tracks into motion in opposite directions again so that the machine shall be perpendicularly to the trench and go away.

If you heard any strange noise or vibrations or felt a strange smell while working, then turn off the engine and pull out the ignition key. Detect the cause and remedy the failure. Do not carry out any repair where its solution exceeds your experiences. In this case contact your dealer or



directly the manufacturer. It is forbidden to work with the trencher being out of order.

- **It is strictly forbidden to block the machine controls anyhow and to prevent their return in the neutral position. It is also forbidden to start working with removed guards or with non-functional safety elements/switches (dead-man control – any ballast on the attendant's ramp).**
- If fuel refilling is required then put the machine out of operation and let the engine cool down. Be aware of flammable petrol vapours.
- For filling the tank use always a proper funnel and canisters.
- If any petrol is spilled or overflowed then wipe off the spots and let them fully evaporate before the next start.

Putting the Trencher Aside

It is possible to put the trencher aside only on flat and even terrain or up to the permissible limits as to its climbing ability, i.e. up to 12°. Avoid putting it aside on soft or unstable ground.



The trencher is powered hydraulically, i.e. by means of a hydraulic pump. After some operation hydraulic oil will get hot and the entire system may show some oil leakage. It may bring slow unwished motion of the tracks. That is why you should insert a corresponding locking pin into the idle track wheel, see fig. In its locking position the pin must be forelocked.

While working, this locking pin is located on the RH machine side (see fig.) Should the pin be pulled out from its holder, the engine shall turn off. During operation the pin is placed in a box close to the fuel tank neck.



When the trencher has been put aside on hilly terrain, this locking pin may stuck in the idle wheel teeth which makes its next pull-out more difficult.



Emergency Situations

- If any person or animal approaches the working area while trenching (within a 20 metre radius of the machine), then stop working immediately.
- If you heard any strange noise or vibrations or felt a strange smell while trenching, then turn off the machine immediately, pull out the ignition key and contact your dealer or directly the manufacturer.
- Working in the fields with gradients exceeding of 12°.
- In case of fire or breakdown, stop trenching immediately.
- In case of fire use a foam extinguisher only.
- If you cannot damp the fire down yourself, call for a fire brigade.

Routine Maintenance



- Any servicing of the trencher should be carried out by authorised persons only.
- Check up the machine for completeness and its general condition.
- Check up the trenching chain and the rubber tracks for tightness and wear and keep them in proper condition.
- Check up the V-belt of the hydrodrive for tightness and wear and keep it in proper condition.
- Keep regular intervals for lubrication of the machine especially of the chain bar bearings.
- Check up the hydraulic hoses for wear. Replace them if necessary or every four years at least.

Maintenance of Tracked Undercarriage

Rubber track tension:

When the tracked undercarriage is lifted, the rubber track should sag 20-30 mm. When its tension



decreases, it must be re-tightened to prevent the track from coming off.

The track is to be tightened by turning the stretching bolt above the idler wheel. The bolt head is accessible under its cap.

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Fig. 23 Grease nipple cap



The track is to be tightened by turning the stretching bolt above the idler wheel. The bolt head is accessible under its cap.

Correct inspection and maintenance procedures:



- Always perform maintenance actions on a solid and level surface.
- Never grease or lubricate or perform maintenance on the machine while being in motion. Solidly support the undercarriage if it needs to be lifted up for maintenance purposes.
- Use great care when maintaining the hydraulic system since oil is very hot when the machine has just finished working. Oil circuits are under high pressures even when the machine is not working.
- Keep all components properly installed and in good condition.
- Immediately repair all damage and replace worn or broken parts.
- Remove any build-ups of grease, oil or debris regularly.
- Check up regularly hydraulic hoses for oil leaks and/or damage.
- Use recommended lubricants only. Never mix different brands of lubricants.
- Use only original spare parts.

- Keep clean the undercarriage widening cylinder and track-stretcher grease nipples.
- Intervals for routine maintenance are indicated for normal work conditions. If the tracked undercarriage is used in severe work conditions, then maintenance must be performed at shorter intervals accordingly.
- Dispose of lubricants always in an ecologically safe way. Thoughtless disposal of lubricants can damage the environment. Become familiar with local anti-pollution laws and regulations.
- Use suitable containers when draining lubricants. Do not use beverage or food containers that might tempt someone to drink from them.
- Never pour lubricants on the ground or in a canal, pond or watercourse. While disposing of lubricants, comply always with all applicable environmental protection regulations.

Gear oil:

Avoid using oils with different characteristics and brands.

Removing the rubber track:

- Stop the machine on a solid and level surface. Jack up side of the machine under its main frame and support it in safe position.
- Remove the cap on the tension bolt, loosen the bolt and release the idler wheel.
- Exercise force sideways to slide the track and lift it off the front idler wheel.



Installing the rubber track:



Make sure that you are always in safe conditions with the machine lifted before

performing this track installation operation.

- Mesh the track links in the sprocket and place the other end of the track on the front idler wheel.
- Rotate the driving gear in reverse slowly and push the track soles into the frame.
- Position the track using a steel tube and turn the driving gear again.
- Make sure the track links mesh correctly with the sprocket and with the front idler wheel.
- Adjust track tension as set out previously. Replace the cover and lower the machine back onto the ground.

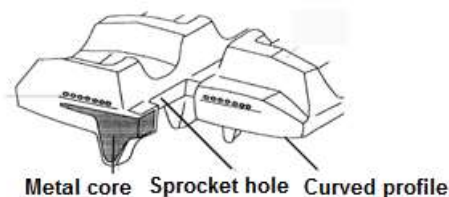


Fig. 26 Rubber track structure

The structure of the rubber track is shown above (fig 26). The steel cables and the metal core are embedded in the rubber. The curved profiles function gives stability on soft terrain. The wheel guides, located on the inside of the track, prevent the track from sliding off the guide rollers.



Breakage of steel cables:

Excess track tension can cause steel cables to break in the following conditions:

- when stones or foreign matters accumulate between the track and the undercarriage frame;
- when the track slips off its guide system;
- in case of great friction, e.g. rapid changes in direction.

Breakage of metal core:

Excess track tension can cause the metal core to bend or break, just like the steel cables as stated above.

Other causes may include:

- improper contact between track and sprocket;
- rotation of internal rollers;
- operation on sandy terrain.

Maintenance of Chassis

See a separate manual for the tracked undercarriage.

Lubrication



Undercarriage grease points:

Perform this maintenance procedure every 100 work hours, using lithium grease with EP2 consistency.

Clean grease nipples before connecting them to the grease gun. Clean all grease being extruded.

Lubrication should be at more frequent intervals if the tracked undercarriage is used in particularly severe operating conditions.

Lubrication should be done at more frequent intervals if the machine is used in more dusty (severe) operating conditions.

Grease nipple on the chain bar



Grease nipple located on the auger and on the chain drive shaft.

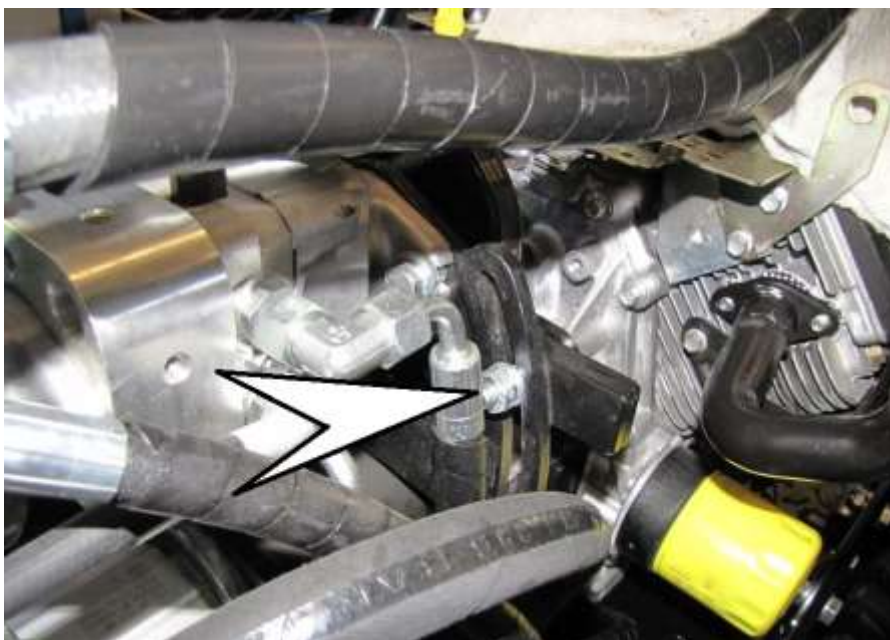


The chain bar grease points are especially hinges that serve for swinging motions. These points are marked with white triangular marks.

Perform this maintenance procedure every 50 work hours, using lithium grease with EP2 consistency.

Hydrogenerator Belt Tightening

The hydrogenerator and its belt gearing are accessible under the engine hood. For belt tightening the hydrogenerator is installed on a sliding plate. To tighten the V-belt, loosen the locking nut (see arrow) and just move the whole assembly on its base plate as required. After belts tightening, retighten the locking nut again.



- For belt change move the bolt quite down in the guiding slot. In this position remove the worn belt and put a new one on the belt pulley.
- Tighten the belt and keep its optimal slack by displacement of the bolt in the slot.
- Optimal belt tension/slack at finger pressure (50 N) is 10 mm in the middle of the belt length.
- Having reached the recommended belt slack value, retighten the locking nut again.

Belt creeping, or excessive belt tension, may bring considerable impact on service life of the belt.



- For belt change move the bolt quite down in the guiding slot. In this position remove the worn belt and put a new one on the belt pulley.
- Tighten the belt and keep its optimal slack by

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- Optimal belt tension/slack at finger pressure (50 N) is 10 mm in the middle of the belt length.
- Having reached the recommended belt slack value, retighten the locking nut again.

Belt creeping, or excessive belt tension, may bring considerable impact on service life of the belt.

Maintenance of Engine

See a separate manual for the tracked undercarriage.

Maintenance Intervals

***Every 8 – 15 hours,
respectively daily checks
before starting***

- Check up engine / hydraulic oil level.
- Check up engine air intake.
- Check up cooling air intake.
- Remove contingent debris and oily spots on the machine.
- Make sure that all the tips and retaining bolts on the chain bar are tight and in good condition.
- Remove contingent debris on the oil cooler.

Every 50 hours

- Check up tightening of all bolted joints.
- Check up the rubber tracks for correct tension and contingent damage.
- Check up tension and condition of the belt between the engine and its cooling fan.
- Clean up cyclone separator.
- Clean up the cooling fan, vanes and oil cooler.

Every 250 hours

- Check up tightening of all bolted joints.
- Check up and clean the primary air filter and replace its filter element as needed.
- Change engine oil and oil filter element.
- Check up the air filter indicator for proper

function

- **Do not tighten the cylinder head nuts.**
- Make sure that all the retaining bolts on the chain bar are tight and in good condition.
- Change primary fuel filter.

Every 500 hours

- Check up and clean the air filter.
- Check up and set the valve play.
- Check up all hydraulic elements for condition, function and tightness.
- Change hydraulic oil and oil filter.

Every 1000 hours

- Change fuel filter.

Engine oil sorts used in dependence on operating conditions:

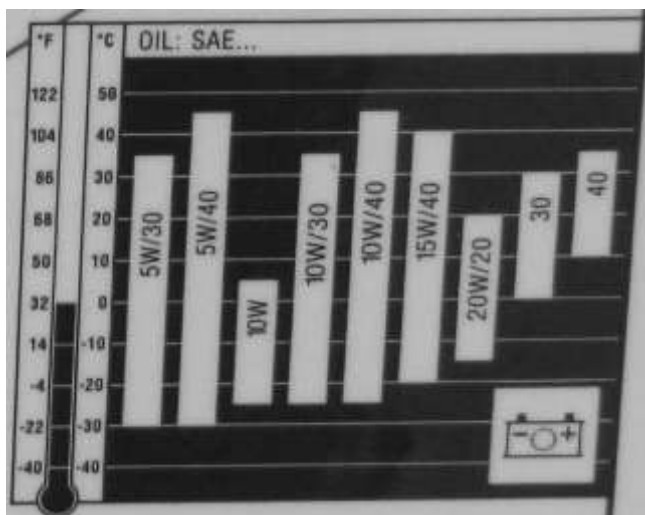


Fig. 58 Engine oil sorts

Failures and Troubleshooting

| Failure | Cause | Remedy | |
|---|--|---|-----------------|
| Engine does not start however it is possible to crank it by starter | Lack of fuel in fuel tank | Refill Check up the entire fuel system: - fuel supply line - primary fuel filter - fuel filter | |
| | Insufficient compression stroke: - wrong valve clearance - wear of valves - wear of cylinders and/or piston rings | Check valve clearance and adjust it if needed | |
| Problematic starting at low temperatures | Too low speed at starting | Change engine oil and refer to its proper viscosity | SE RVI CE |
| | - solid oil - battery insufficiently charged | - use recommended oil sorts only - recharge battery - resp. contact authorised service point | |
| Starter does not turn on, resp. engine does not crank | Failure of electric equipment: - loose connection of battery and/or wiring - oxidized contacts - discharged or faulty battery - starter failure - failure of relay or controls | Check up electric equipment and particular components | SE RVI CE |
| Engine roars to life but does not run after starter disconnection | Speed regulator lever not sufficiently in START position | Set the lever to START | |
| | Fuel filter fouled - fuel supply line broken - error indication in connection with automatic controls - low oil pressure - fouled filter - faulty alternator | Change - check up entire fuel system - check up oil level - check up filter and clean or replace it as needed - see Engine Manual | SE RVI CE |
| Engine turns off | Lack of fuel | Refill | SE RVI CE |
| | Fuel pre-filter or fuel filter fouled | Check and replace as needed | |
| | Belt on cooling fan broken | Change | |
| | Mechanical failure | Check and remedy | |
| Insufficient engine power | Insufficient fuel supply: - lack of fuel - fuel filter fouled - insufficient fuel tank venting - fuel line leakage - speed regulator lever does not remain in required position | - refill - change filter - check and remedy - check and remedy - unblock | |
| Insufficient | Air filter fouled | Clean filter or replace it as needed | |



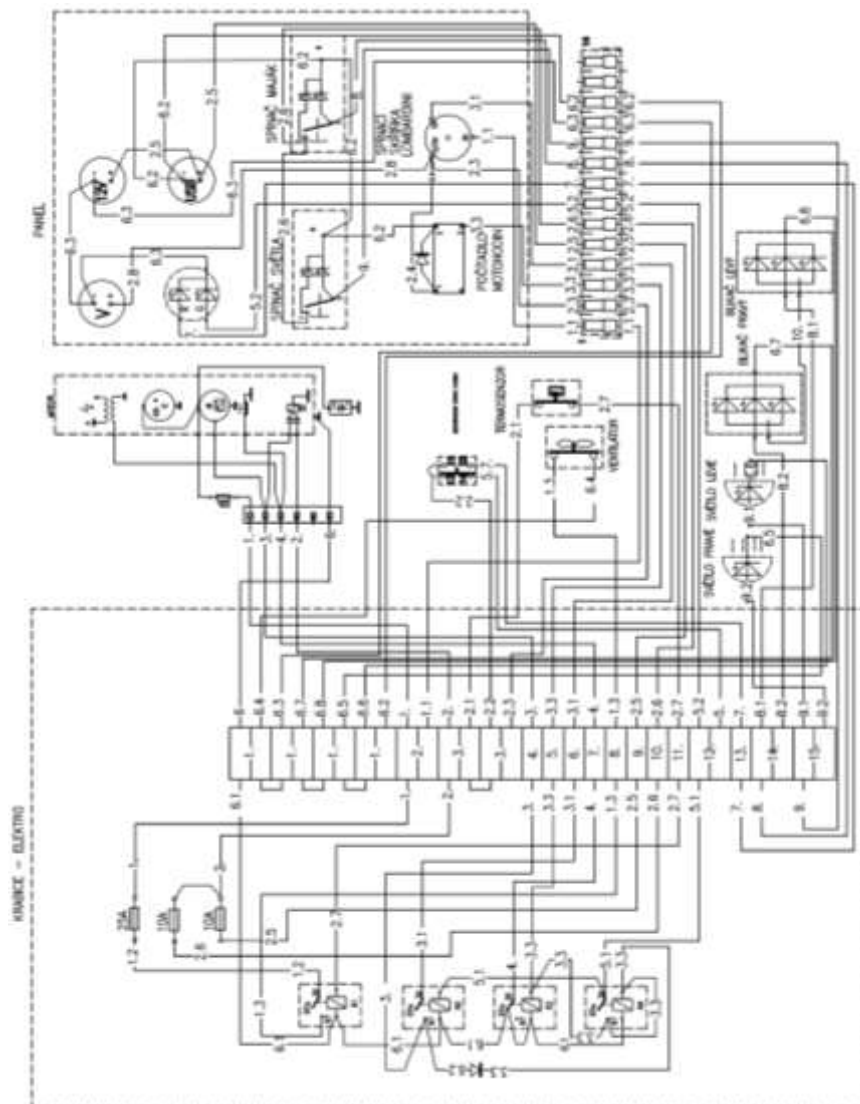
Trencher TR 120 H

| | | | |
|--|--|---|-----------------|
| engine power, loss of speed, black exhaust fumes | Valve clearance not OK | Adjust | |
| Excessive engine temperature | Sucked-oil amount in engine Insufficient cooling: - debris in cooling air line | - piston rings worn or stuck - too much oil, check up oil dipstick - check up cooling air intake, clean as needed | |
| Trenching chain cannot be set in motion | Blown fuse | Replace | |
| Insufficient trenching quality | Chain tips blunt | Remove blades or regrind | SE RVI CE |

NOTE:

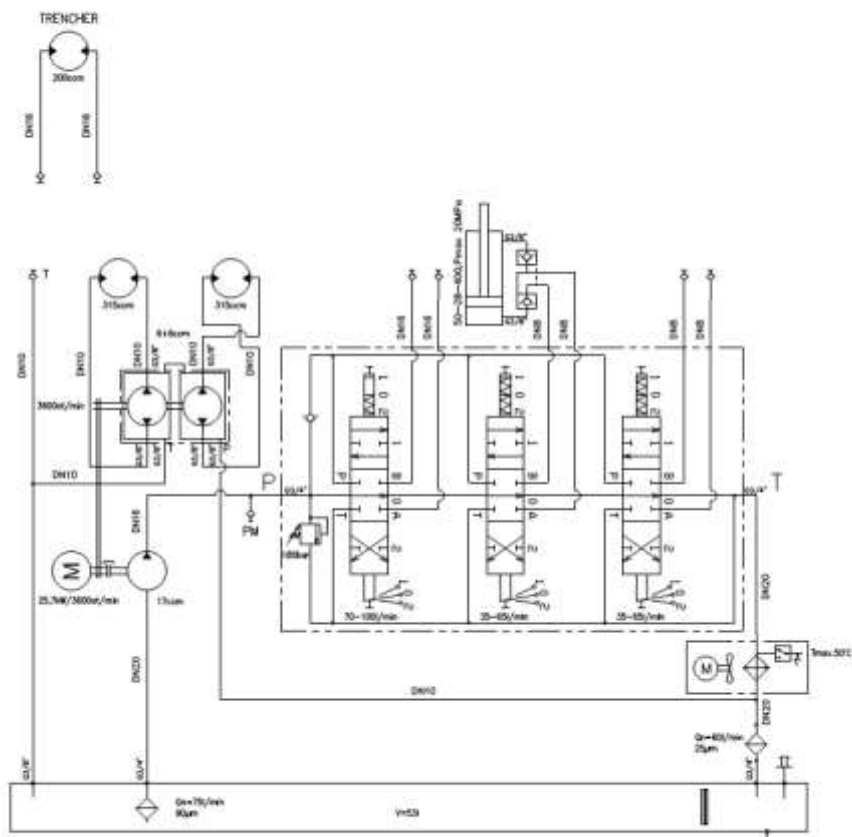
The note "SERVICE" in the "Remedy" column means that this operation should be done by an authorised service only.

ELECTRIC CIRCUITRY



HYDRAULICS

SCHEMA HYDRAULICKÉHO OBVODU DRÁŽKOVACE TR 120 H





Warranty

The manufacturer provides warranty on this product for a period as stated in the enclosed Letter of Indemnity. This warranty period begins upon delivery to the customer.

This warranty covers all failures resulted from faulty assembly, manufacture and materials.

The manufacturer bears no responsibility for damages resulted from user's wrong usage, such as:

- Usage by an unauthorised person.
- Unauthorised changes, repairs and actions on the machine.
- Usage of unoriginal spare parts or parts intended for other models.
- Disobedience to instructions for use.
- Damage of the machine caused by faulty handling, maintenance or overloading.
- This warranty does not cover faults resulted from damages caused by the user.
- This warranty does not cover parts being subject to ordinary wear and tear.
- This warranty does not cover any damage of machine caused by usage of unoriginal spare parts.
- This warranty does not cover consequences resulted from weather effects

Any warranty claims must be submitted in writing with papers concerning acceptance for warranty or post-warranty repair

Service Report

| | |
|---|---|
| Type of machine: | Serial number: |
| Day of inspection: after six months | Working hours: after 50 hours |

Operations done:

- | | | |
|--|-----|----|
| <input type="checkbox"/> Engine oil - change | Yes | No |
| Sort / viscosity | | |
| <input type="checkbox"/> Oil filter – change | Yes | No |
| <input type="checkbox"/> Air filter – change | Yes | No |
| <input type="checkbox"/> Fuel filter – change | Yes | No |
| <input type="checkbox"/> Solidification point of coolant | | °C |
| <input type="checkbox"/> Hydraulic oil – change | Yes | No |
| Sort / viscosity | | |
| <input type="checkbox"/> Oil filter element – change | Yes | No |

Stamp of service station; technician's signature

Additional data:

Date: Working hours:

.....
.....

Date: Working hours:

.....
.....

Next service inspection (whichever occurs first)

Date: Working hours:



Service Report

| | |
|--------------------|----------------|
| Type of machine: | Serial number: |
| Day of inspection: | Working hours: |

Operations done:

- | | | |
|--|-----|----|
| <input type="checkbox"/> Engine oil - change | Yes | No |
| Sort / viscosity | | |
| <input type="checkbox"/> Oil filter - change | Yes | No |
| <input type="checkbox"/> Air filter - change | Yes | No |
| <input type="checkbox"/> Fuel filter - change | Yes | No |
| <input type="checkbox"/> Solidification point of coolant | | °C |
| <input type="checkbox"/> Hydraulic oil - change | Yes | No |
| Sort / viscosity | | |
| <input type="checkbox"/> Oil filter element - change | Yes | No |

Stamp of service station; technician's signature

Additional data:

Date: Working hours:

.....
.....

Date: Working hours:

.....
.....

Next service inspection (whichever occurs first)

Date: Working hours:



Service Report

| | |
|--------------------|----------------|
| Type of machine: | Serial number: |
| Day of inspection: | Working hours: |

Operations done:

- | | | |
|--|-----|----|
| <input type="checkbox"/> Engine oil - change | Yes | No |
| Sort / viscosity | | |
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| <input type="checkbox"/> Fuel filter – change | Yes | No |
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| Sort / viscosity | | |
| <input type="checkbox"/> Oil filter element – change | Yes | No |

Stamp of service station; technician's signature

Additional data:

Date: Working hours:

.....

Date: Working hours:

.....

.....

Next service inspection (whichever occurs first)

Date: Working hours:



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