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WORLDWIDE COMMERCIAL & CONSUMER
EQUIPMENT DIVISION

45-220 / D45C

DE	Vertikutierer	BETRIEBSANLEITUNG
FR	Scarificateur	LIVRET D'ENTRETIEN
EN	Scarifier	OPERATOR'S MANUAL
NL	Verticuteerder	BEDIENINGSHANDLEIDING
ES	Escarificador	MANUAL DEL OPERADOR
IT	Arieggiatore	MANUALE DELL'OPERATORE

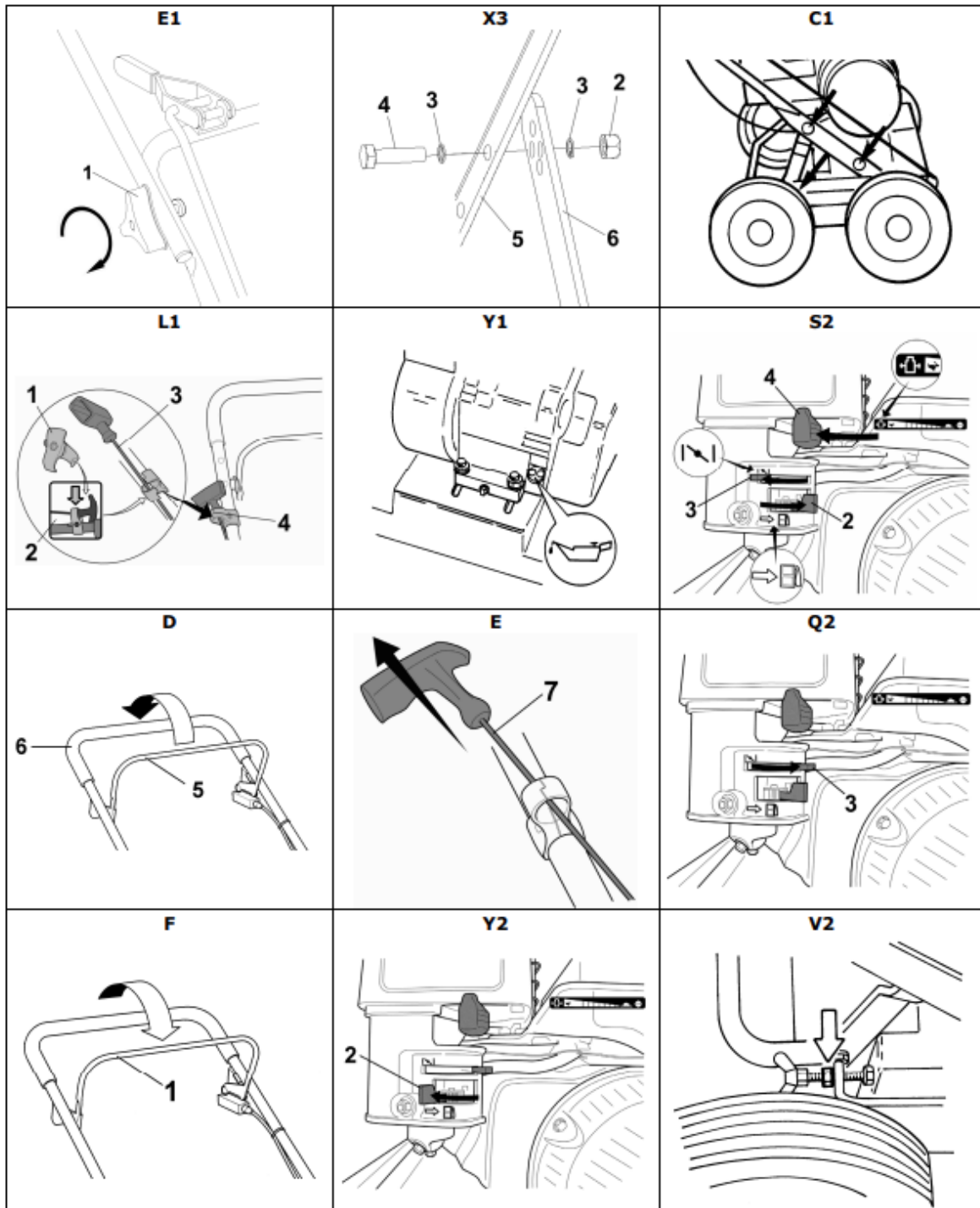


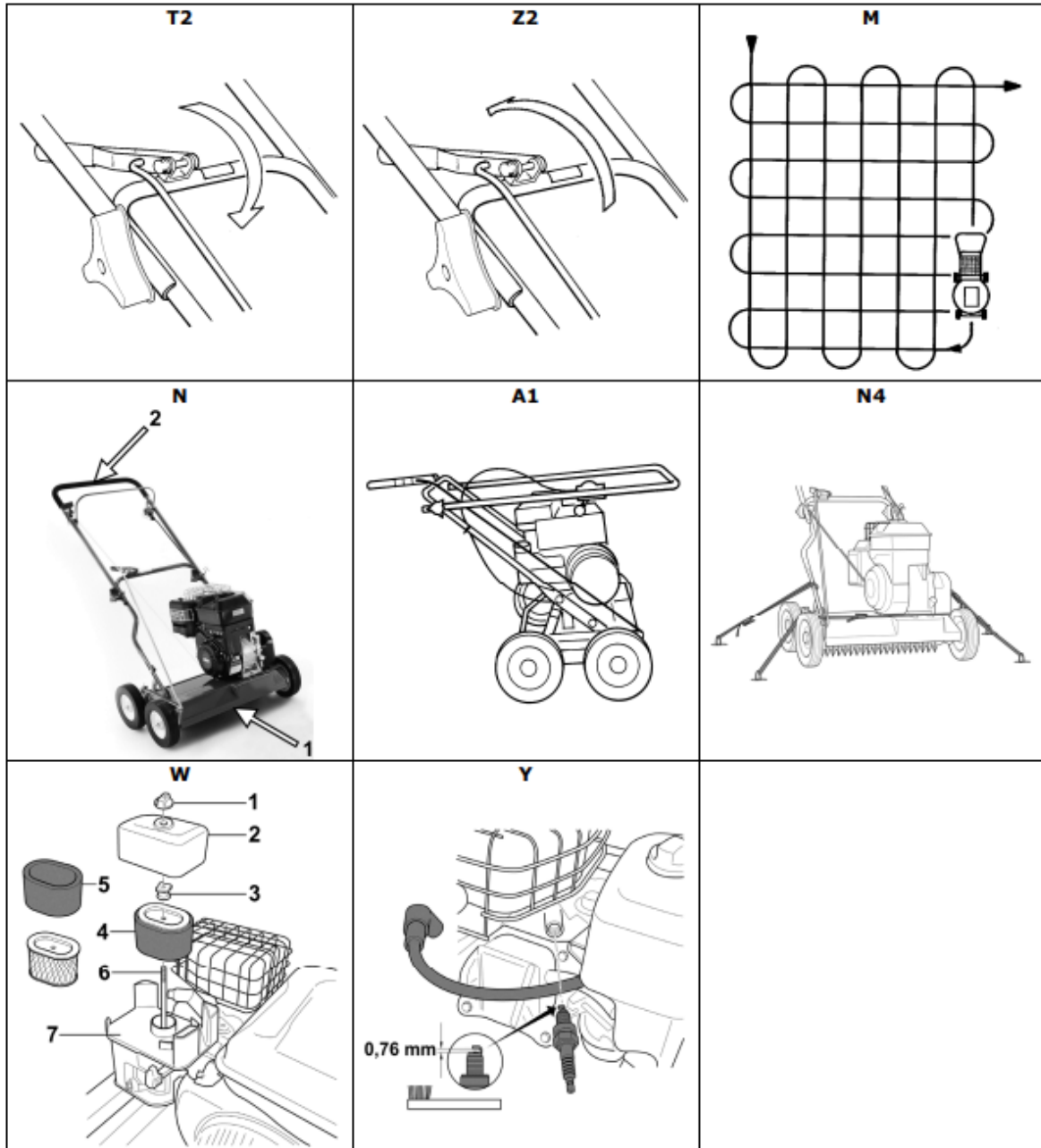
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1 INTRODUCTION

Dear Garden Lover,

Where pride in a trim lawn is coupled with a love of gardening, gardeners really appreciate good gardening equipment. You have made an excellent choice in purchasing your new scarifier. It combines the power of a major traditional brand with the innovations of modern high-tech. You will feel this when you are working with it and be very pleased with the wonderful result.

Yet before you start work on your lawn, here is some important information which you should always heed.

Before you start your scarifier for the first time, read this operation manual through carefully to familiarise yourself with the correct operation and maintenance of the machine and to avoid injury or damage to your scarifier.

Use the scarifier carefully. The pictograms on the equipment draw your attention to the most important precautionary measures. The meaning of the pictograms is explained on this page.

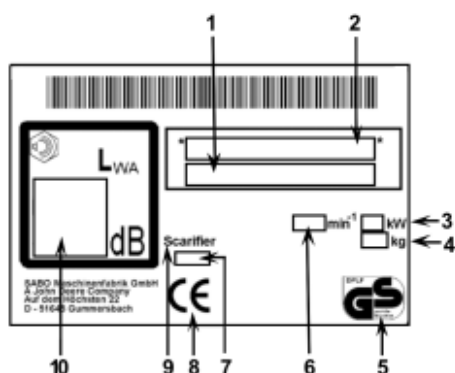
The safety instructions in this operating manual are marked with symbols. The symbols are explained in the table on the following page.

The terms "left" and "right" always refer to the left and right-hand side of the equipment seen in the direction of movement.

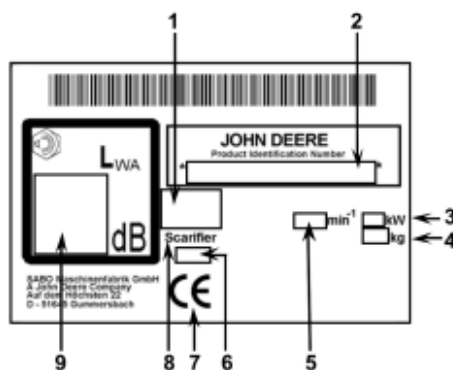
Your scarifier will work reliably when the technical instructions are followed exactly. We would like to point out that any damage to the scarifier caused by operating faults is not covered by warranty / guarantee obligations.

We hope you enjoy cultivating your lawn.

2 EXPLANATION OF THE RATING PLATE AFFIXED TO THE MACHINE



- 1 Type designation
- 2 Model – and Serial number
- 3 Rated input
- 4 Weight
- 5 Certified safety (if available)
- 6 Rated motor speed
- 7 Year of manufacture
- 8 CE conformity symbol
- 9 Scarifier
- 10 Guaranteed sound power level



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- 2 Model – and Serial number
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These operating instructions apply for the following models:

45-220 (SA1568): Operating width 450 mm, engine B&S, 950 Series

D45C (SA1598): Operating width 450 mm, engine B&S, 950 Series

You will find the correct type designation for your equipment on the type plate.

3 EXPLANATION OF THE PICTOGRAMS



Read and follow the operator's manual and safety instructions!



Risk caused by thrown elements when the motor is running - Maintain the safety gap / Keep others away! Keep all persons outside the danger area!



Beware of sharp working tools. - Do not cut your fingers and toes. Please make sure that hands and feet do not get under the housing. - Stop the engine and remove the spark plug connector before carrying out cleaning and maintenance work.



Engine STOP



Danger of objects being flung out when the engine is running - wear eye protection!



Loud noises can lead to hearing impairments - wear ear protection!



Beware of hot surfaces - do not touch the engine and exhaust. Risk of burns!



Exhaust fumes are toxic - do not have the engine running in closed rooms. Risk of poisoning!



Petrol is highly inflammable - keep away from sparks and open flame, do not smoke. Fire hazard!



4 EXPLANATION OF THE SYMBOLS

	WARNING Always read and follow the operating instructions and general safety regulations carefully. Keep the operating instructions for reference purposes. Proper use also includes adherence to the operation, maintenance and service conditions prescribed by the manufacturer.
	WARNING Keep all persons outside the danger area! Contact with the rotating cutters can cause severe injury. Objects ejected at high speed can cause severe injury. You must never scarify the lawn if there are other persons nearby, especially children or animals.
	WARNING Petrol is highly inflammable and explosive. Petrol or oil leaking out onto the hot engine are highly inflammable. Fire and explosions can cause severe injury and material damage. Whilst the engine is running or if the machine is hot, the lid of the petrol tank must not be opened, nor may the tank be filled with more petrol. When the engine is running, the dipstick must always be screwed in firmly.
	WARNING Petrol is highly inflammable and explosive. Fire and explosions can cause severe injury and material damage. No smoking and no naked flames while filling the tank.
	WARNING Watch out for sharp blades! Contact with the rotating cutters can cause severe foot injuries. Only start the motor when standing behind the machine. Ensure that your feet do not get under the housing.
	WARNING Watch out for sharp blades! Contact with the rotating cutters can cause severe hand and foot injuries. When the motor/blade shaft is running, always observe the safety distance to the machine which is maintained by the handlebar. Ensure that your hands and feet do not get under the housing.
	WARNING Objects thrown upwards can cause serious injuries. Before scarifying areas covered in leaves in particular, remove all stones, sticks, wires, toys and other objects from the lawn. Never use the equipment with the protective devices damaged or missing. Missing or damaged safety and protective devices are a safety hazard for both you and other people. Before initial use, check to make sure the cutting tool is fitted tightly, then check the cutter blades for a tight fit, wear and damage every time you do any scarifying work. Have an authorised workshop replace worn or damaged blades. Before starting the engine, check whether the tools have been removed.
	CAUTION The engine and exhaust reach very high temperatures during operation. Danger of burns! Allow the machine to cool down for at least 15 minutes before starting any maintenance or cleaning work. Never operate the machine with a damaged or missing exhaust protection grill.
	CAUTION If the spark plug connector is not removed when carrying out work on the unit, the motor may start accidentally and serious injuries would be the consequence. Switch the motor off before doing any maintenance and repair work, remove the spark plug connector and the ignition key, if there is one. Never remove the spark plug connector when the motor is running. Risk: Electric shock! For the appropriate cleaning or maintenance tips, consult the operating instructions. Insufficient equipment maintenance will lead to safety-related faults.

	WARNING Contact with the rotating cutting tool can lead to serious hand and foot injuries. Objects thrown upwards can cause serious injuries. Switch off the engine and wait until the cutting tool has come to a standstill: – when the device needs lifting or tilting e.g. for transportation; – when driving outside the lawn on paths or streets; – if the machine is left unsupervised for a short time; – before the scarifying depth is set; – before filling with fuel. Only refill when the engine is cold!
	CAUTION Contact with the sharp edges of the scarifier cutters can cause severe injury. Protective gloves must be worn at all times during maintenance and cleaning work.
	WARNING Wear protective goggles! Wear ear protection! Objects thrown upwards can cause serious injuries. Loud noises can lead to hearing impairments. Never do any scarifying without wearing protective goggles or ear protection.

5 PROPER USE

- The machine is intended solely for scarifying grass and lawn surfaces in the course of normal garden and landscaping care ("Proper use"). Any further form of use constitutes improper use; the manufacturer accepts no liability for any resulting damage; the risk is borne solely by the user. Proper use of the machine also includes the observation of the operating, maintenance and servicing requirements specified by the manufacturer.
- If used in public areas, parks, sports grounds, on roads and in agricultural and forest areas, special care must be taken.
- The scarifier must not be used in particular for the removal of weeds between stones or paving stones, on terraces or paths, as a rotavator or for levelling uneven areas of ground, such as molehills.
- The use of any additional equipment and attachments not approved by the manufacturer is prohibited. If such additional equipment and attachments are used, the CE conformity and guarantee are considered null and void. Unauthorised modifications to this lawn mower exclude the manufacturer from liability for any damage resulting from these modifications.

6 GENERAL SAFETY GUIDELINES FOR THE PETROL SCARIFIER

General safety instructions

- For your own safety and in order to ensure that the machine functions correctly, please read this operator's manual carefully. Acquaint yourself with the controls and the correct use of the machine. Keep the operating instructions for reference purposes.
- Please remember that the person operating or using the machine bears full responsibility not only for possible risks to other people or their property, but also for accidents which occur whilst using the machine.
- This operator's manual is part of the scope of supply of the machine and must be handed over to the purchaser of the machine in the event of resale.
- Never allow children or persons under the age of 16 or other persons who are not familiar with the operator's manual to use the machine. Local regulations can determine the minimum age of the person allowed to use the machine.
- Please explain the possible dangers and how to prevent accidents to every person who is supposed to work with this machine. This machine may only be used, maintained or serviced by persons who are familiar with the machine, and who are aware of the possible dangers. The applicable accident prevention regulations, and other generally accepted safety and occupational health rules must also be observed.
- This equipment is not meant to be used by persons with restricted physical, sensory or mental capabilities or lacking in experience and/or knowledge, unless they are accompanied by a person responsible for their safety and unless they received instructions from the person on how the equipment is to be used. This responsible person must decide in advance, whether the person with restricted physical, sensory or mental capabilities is suitable for this activity.



You must never scarify the lawn if there are other persons nearby, especially children or animals.

- Please keep your machine in a safe place! Machines which are not being used should be kept in a dry, locked room out of reach of children.
- Machine safety and protective devices must not be manipulated or disabled.

Preparatory measures

- When scarifying you must always wear a strong pair of shoes or safety shoes and long trousers. Avoid wearing loose clothing or clothing with cords or belts hanging down. Do not scarify whilst you are barefooted or wearing sandals. Wear protective goggles to protect your eyes.
- Loud noises can lead to hearing impairments. Wear ear protection.



Before and during scarifying, check the whole area the equipment is being used on and remove all stones, sticks, wires, toys and other objects which can be caught and catapulted out.



If you also use an automatic mower for lawn care, the following safety instructions must be heeded with regard to the working area of the automatic mower:

- Before working on these areas (mowing, scarifying etc.) always check the range of the boundary wire.
- If the wires are laid in the ground they must be checked, no wires may be visible, with particular attention necessary at the charging station.
- If the boundary wires are laid above ground they should be routed tight directly on the ground and not lie loose in the grass. The wires must be sufficiently fixed using boundary staples, see the operating manual.
- The boundary staples must not project, if this is the case push them firmly in place.
- Remove any residual wires that are lying around before starting to mow. In the cases described above, there is a risk of the wire being pulled in and wound up by the tool; this can lead to serious injury.
- Low-hanging branches and similar obstacles can injure the operator or interfere with the scarifying operation. Before scarifying, identify potential obstacles such as low-hanging branches, and trim back or remove those obstacles.

WARNING



- Petrol is highly inflammable and explosive. Fire and explosions can cause severe injury and material damage.
- Store petrol only in a suitable container, and out of the reach of children.
- Never fill containers inside a vehicle or on a truck or trailer bed with a plastic liner. Always place containers on the ground away from your vehicle before filling up.
- Only fill the tank in the open and when the engine is cold. No smoking and no naked flames while filling the tank.
- Fuel operated equipment, which is positioned on a load floor or a trailer, must not be refuelled from a filling pump, but must be refuelled by a fuel container.
- The petrol must be filled into the tank before starting the engine.
- Whilst the engine is running or if the machine is hot, the lid of the petrol tank must not be opened, nor may the tank be filled with more petrol.
- If petrol has overflowed, you must not attempt to start the engine. Instead, remove the machine from the area contaminated with petrol, and wipe the overflowed petrol off the engine. Avoid any attempt to start the engine until the petrol fumes have evaporated.
- For safety reasons, the petrol tank on the lawnmower and the petrol container must be closed again carefully.
- If any damage has occurred, the petrol tank and the petrol tank lid must be exchanged.
- Before using the scarifier and to avoid danger, check the machine for firm seating of screw fittings, correct assembly and the condition of the blade shaft. Worn or damaged blades and attachment screws must be replaced.
- The condition of the pictograms must be checked every time the device is used. Worn or damaged pictograms must be replaced.

Handling

- The machine must not be operated in potentially explosive surroundings.
- The internal combustion engine must never be used in enclosed rooms in which dangerous exhaust fumes can build up - danger of poisoning.




- People with pacemakers must not touch any parts of the engine which might be live.
- Attention! Do not operate the unit in front of the extraction openings of air conditioning systems.
- Do not scarify in bad weather when lightning could strike.
- Never remove the spark plug connector when the motor is running. Risk: Electric shock!
- Do not wear radio or music headphones. Safe service and operation requires your full attention.
- Only use the scarifier during daylight or if the lighting is good. Always push the machine at walking pace.
- Use care when approaching blind corners, shrubs, trees, or other obstacles that may obscure vision.
- Do not move too closely to compound steps, trenches and banks. The equipment can suddenly topple over when a wheel suddenly gives way over the edge of a ditch or trench or when an edge suddenly yields.
- Do not operate the equipment when you are sick, tired or under the influence of alcohol, medicine or drugs.
- Avoid using the machine if possible on wet grass, in order to avoid the danger of slipping.
- Always make sure that you are standing securely whilst using the scarifier on slopes. Always work at right angles to the slope, never straight up or down. Please be especially careful when you change direction when using the scarifier on a slope.
- Do not scarify excessively steep slopes! Scarifying slopes always means additional risks. Your scarifier is powerful enough to scarify on slopes with a gradient of up to 46% (25° angle). For safety reasons, however, we urgently recommend you do not exploit this theoretical performance potential. Always make sure you have a firm stance. Manually guided scarifiers should never be used for slopes with a gradient in excess of 26% (15° angle of slope). Stability may be lost.
- Please be especially careful when turning the machine or pulling it towards yourself.
- If you walk backwards whilst using the machine, you can easily stumble so this should be avoided. Avoid unnatural body positions. Ensure that you are standing securely and keep your balance at all times.
- Always observe the safety distance to the machine which is maintained by the handlebar.
- In order to avoid the machine slipping when being carried, always hold the machine by the grip devices provided (housing, transverse bar of the lower handlebar section).
- Note the weight of the machine before lifting or carrying it (see technical data). Lifting heavy weights can lead to health problems.
- Never lift or carry the machine when the engine is running.
- Never use the machine with safety and protective devices damaged or missing. Missing or damaged safety and protective devices are a safety hazard for both you and other people.

Safety equipment includes (see chapter Component description):







- Motor stop safety control bar (1)
The scarifier is equipped with a motor stop device. During operation and in the event of a hazard, the engine is switched off by releasing the motor stop bar. The engine and the cutting tool must come to a standstill. Note! The cutting tool runs on for a while! If this is not the case, please consult your nearest authorised workshop. After release, the bar must always return to the position shown in the "component description" diagram. If this is not the case, it must be checked immediately by an authorised workshop. The function of the safety control bar must never be put out of operation. It is important to make sure that the safety control bar functions correctly. If this is not the case, have it repaired by an authorised specialist workshop.

Protective equipment includes (see chapter **Component description**):

- 
 - Housing, splash guard (7)
 These protection units protect against injuries from objects that are thrown upwards.
 The equipment must not be operated with a damaged housing or without correctly attached splash guard.
- 
 - Housing
 This protection unit protects against injuries through contact with the rotating cutting tool.
 The equipment must not be operated with a damaged housing. Please make sure that hands and feet are not placed underneath the housing.
- Belt drive covers (3), engine covers (8)
 These protection units protect against injuries through moving parts.
 The equipment must not be operated with damaged covers or without correctly attached covers.
- 
 - Exhaust protection grill (11)
 The engine/exhaust becomes very hot. The protection grill protects the user against burns.
 Do not operate the machine without the exhaust protection grill.

The safety devices must not be modified.


- Do not change the basic settings of the engine or operate the engine at excessive speed.

- 
 When you start the machine, make sure that your feet are at a sufficiently safe distance away from the cutting blades.
- 
 When the engine is started, the machine must not be tilted on end, if necessary it must be tilted by pressing the guide bar down so that the cutting tool is pointing in the direction away from the user, but only as far as absolutely necessary. As long as the equipment has not been lowered to the ground again, both your hands must be on the top part of the bar.
- 
 Never put your hands or feet near or under revolving parts. Always make sure that your hands or feet do not get under the housing.
- 
 Stop the engine by releasing the motor stop bar, disconnect the spark-plug connector, make sure that all moving parts have come to a complete standstill and the ignition key, if there is one, has been removed:
 - if you intend to leave the machine;
 - before you inspect, clean or carry out work on the machine;
 - before unblocking jams or removing blockages in the ejection channel;
 - if a foreign body has been encountered;
 - when the machine starts to vibrate strangely.






- If a foreign object has been encountered or if the machine becomes blocked, e.g. by driving onto an obstacle, a specialist dealer must check whether parts of the machine have been damaged or deformed. Any necessary repairs must also be carried out by an authorized specialist workshop.
- If the machine starts to vibrate unusually heavily or to make unusual noises, please have it checked immediately by an authorised workshop. Heavy vibrations on your hands can damage your health. Please contact an authorised workshop immediately if heavy vibrations occur.

WARNING

The noise and vibration levels shown in these operating instructions are the maximum levels for use of the machine.
 The use of an unbalanced cutting element, the excessive speed of movement, or the absence of maintenance have a significant influence on noise emissions and vibrations. Consequently, it is necessary to take preventive steps to eliminate possible damage due to high levels of noise and stress from vibration. Maintain the machine well, wear ear protection devices, and take breaks while working. Adhere to the maintenance work listed in this operating manual and have the equipment checked and serviced regularly by an authorised workshop.

- 
 Stop the engine by releasing the motor stop bar, make sure that all moving parts have come to a complete standstill,
 - when you have to lift or tilt the scarifier e.g. for transportation;
 - when you need to transport the machine to and from the area to be scarified;
 - when driving off the lawn;
 - if you have to leave the machine for a short time;
 - if you wish to adjust the scarifying depth;
 - before you fill it with fuel. Only refill when the engine is cold!
- If the engine is equipped with a petrol shut-off valve, this should be closed after scarifying.

Maintenance and storage

- Insufficient equipment maintenance will lead to safety-related faults.
- Ensure that all screws have been tightened securely and that the machine is in a safe working condition.
- 
 Never store a machine which still contains petrol inside a building where petrol fumes may come into contact with naked flames or sparks or where they may ignite.
- 
 The engine and exhaust reach very high temperatures during operation. Allow the machine to cool down for at least 15 minutes before starting any maintenance or cleaning work.
 - To reduce the risk of fire, keep the motor, silencer (exhaust) and fuel tank free from grass, leaves or leaking oil (grease). When placing on the side, ensure that no oil or fuel comes out of the machine. Fire hazard!
 Allow the motor to cool down before storing the machine in a closed room. Do not store the machine in the vicinity of open flames or fire sources such as boilers or heaters.
- 
 Before you start scarifying, always check the condition and firm attachment of the cutter blade shaft. Worn or damaged blades must always be replaced. Always have a specialist workshop replace the cutter blades or work on the cutter blade shaft. If the cutter blade shaft is assembled incorrectly parts can become loose, which can lead to serious injuries.
 - Make sure that the spark plug connector is firmly seated! Touching is only a risk if the spark plug connector is not installed correctly.
 - For reasons of safety, always replace worn or damaged parts.
- 
 Protective gloves must be worn at all times during maintenance and cleaning work.
- 
 Maintenance and cleaning work may only be carried out on level surfaces with the engine switched off and the spark plug connector disconnected. Regular maintenance is essential for safety and top performance.
 - Never remove the spark plug connector when the motor is running! Risk: Electric shock.
 - If the tank has to be emptied, this should be done in the open, and with a cold engine. Take care to ensure that no fuel is spilt.

For reasons of warranty and safety, only genuine spare parts may be used. Non-equivalent spare parts can damage the machine and are a safety hazard.

EN

7 DESCRIPTION OF COMPONENTS



- 1 Safety grip
- 2 Tank cap
- 3 Belt drive cover
- 4 Oil filling nozzle
- 5 Engine fixing
- 6 Adjusting screw scarifying depth
- 7 Splash guard
- 8 Engine cover
- 9 Petrol tap
- 10 Air filter
- 11 Exhaust protection grill
- 12 Spark plug
- 13 Scarifier lever
- 14 Starter cable grip

8 PREPARATION

The following parts are included in the packaging for assembly of the scarifier:

- Scarifier with preassembled handle
- Tool bag with the following contents:
 - Operator's manual with Declaration of Conformity
 - Warranty conditions (depending on model)
 - Spark plug key
 - Various fixing parts

In the unlikely event of a missing part, please contact your dealer.

NOTE

Always remove the spark plug connector before fitting the bar and the starter cable holder. Following assembly, at the latest before starting the engine, push the spark plug connector back in place.

Attach guide bar (Illustration E1 + X3 + C1)

- Open out the folded guide bar by pulling upwards.
- When the top and bottom sections of the guide bar are aligned, firmly tighten the knurled nuts (1) on both sides by hand **E1**.
- Use the nuts (2), washers (3) and hexagon bolts (4) from the tool bag **X3**.
- Raise the lower guide bar section (5) and place against the upper, centre or lower bore holes of the previously mounted support (6) in order to set the different bar angles **X3**:
Upper bore hole = Steep bar setting (for taller users)
Lower bore hole = Flat bar setting (for shorter users)
- From the outside and on both sides, insert the hexagon bolts (4) with fitted washer (3) through the lower bar section (5) and support (6), fit the second washer (3) and screw into place with the nut (2).
- Firmly tighten all screw connections **C1**.

Handle starter assembly (Illustration L1)

- Remove the starter cable holder (1) from the tool bag.
- Unscrew the nut until the two halves can be pushed over the bar.
- There is a sticker (2) on the top bar showing the position of the starter cable holder.

NOTE

For reasons of safety, the starter cable holder may only be fitted in the prescribed position.

- Pull the starter cable (3) out and insert it into the starter cable holder.
- Fit the two halves (4) together and turn them outwards slightly, tighten the nut again. This prevents the starter cable from popping out.
The starter cable holder must be fitted / aligned in such a way that the starter cable is freely accessible and does not rub against any other parts.

9 BEFORE USING THE SCARIFIER FOR THE FIRST TIME



Safety instruction!

See table for explanation of symbols page 3

Check all screw connections and the spark plug connector for a tight fit. Tighten the screws if necessary. Special attention must be paid to the assembly and condition of the cutter blade shaft (refer to the chapter "Cutter blade shaft care").

Always have work on the cutter blade shaft done by an authorised specialist workshop. If the cutter blade shaft is assembled incorrectly parts can become loose, which can lead to serious injuries.

The scarifier is equipped with a motor stop device.

Before using the equipment for the first time, make sure that the motor stop safety control bar is working perfectly. When the control bar is released, the engine and the cutting tool must come to a standstill. Note! The cutting tool runs on for a while. If this is not the case, please consult your nearest authorised workshop.

After release, the bar must always return to the position shown in the "component description" diagram.

If this is not the case, it must be checked immediately by an authorised workshop.

Machine safety and protective devices must not be manipulated or disabled!

Make sure that all protective devices have been attached properly and are not damaged.

Filling with oil (Illustration Y1)



Safety instruction!

See table for explanation of symbols page 3

IMPORTANT

Avoid damage! Engine is delivered without oil. You must add oil before running the engine.

- Before starting the scarifier the first time fill motor oil (for quantity and type, see technical data) into this opening with a funnel after unscrewing the oil filler plug.
- Pour in oil slowly. Do not pour in too much oil.
- Replace oil filler plug and retighten.

Checking the oil level

- Position the lawn scarifier horizontally on level ground.
- Unscrew oil filler plug.
- The oil level should reach the lower edge of the filter neck.
- Replace oil filler plug and retighten.

Filling with fuel



Safety instruction!

See table for explanation of symbols page 3

- Only fill the tank with fresh and clean unleaded standard petrol.
Fuel with up to 10% ethanol is acceptable.
- Unscrew tank cap.
- Fill tank with fuel using a funnel up to max. lower edge of filling nozzle.
- Replace tank cap and screw tight.



10 STARTING THE ENGINE (Illustration S2 + D + E + Q2)



Safety instruction!
See table for explanation of symbols page 3

Before starting the engine make sure that the cutter blade shaft/the machine is in the surface cutting position Z2.

Start the engine from the right-hand side of the scarifier. Always place the scarifier on a level area which is not covered with high grass (if the grass is too high it will block the cutter blade shaft start-up and make starting the scarifier more difficult). When the engine is started, the machine must not be tilted on end, if necessary it must be tilted by pressing the guide bar down so that the cutting tool is pointing in the direction away from the user, but only as far as absolutely necessary. As long as the equipment has not been lowered to the ground again, both your hands must be on the top part of the bar.

CAUTION

Hold the starter cable handle firmly when starting. The handle may otherwise slip out of your hand. Risk of injury!

- Open the fuel cock (2) S2.
- In a cold engine, push the choke lever on the engine (3) in position "Choke" N.
- Move the throttle control lever (4) backwards to position "Hare". During engine operation, the throttle control lever should remain in "Hare" position.
- To start the engine, first hold the red button (5) pressed and then pull the control handle (6) on the top guide tube. During operation, the control handle must remain held in this position D.
- Slowly pull the starter cable (7) until resistance is felt, then pull it out rapidly, – the engine begins to run, slowly recoil the cable E.
- Under certain circumstances the starting process must be repeated.
- After the engine has warmed up, push the choke lever (3) forwards in operating position Q2.
- In an operationally hot engine, push the choke lever on the engine (3) forwards in operating position. Start the engine as described above.
- If the engine does not start running, then proceed as when starting a cold engine.

11 SWITCHING OFF THE ENGINE (Illustration F + Y2)

- Release the safety control bar (1) F. The engine switches off and the cutting tool comes to standstill. Attention! The cutting tool runs for a while!
- Close the fuel cock (2) Y2.

12 EMERGENCY STOPPING

Release the safety grip.

- The cutters will stop. Attention! The cutting tool runs for a while!
- The engine will stop.

NOTE

Before every scarifying job, make sure that the safety control bar is working perfectly.

- When the control bar is released, the engine must switch off and the cutting tool must come to a standstill. Note! The cutting tool runs on for a while.

If this is not the case, please consult your nearest authorised workshop.

13 ADJUSTING THE SCARIFYING DEPTH



Safety instruction!
See table for explanation of symbols page 3

The scarifying depth must only be adjusted with the motor switched off!

To work with the scarifier, the scarifier lever is pushed forward into the "scarify" position T2. This lowers the machine with cutter shaft and the blades penetrate the turf.

The working depth depends on the blade wear, and must also be set taking into account the relevant grass and ground conditions.

Always check and adjust the scarifying depth on a level area of lawn.

With the blade shaft lowered, the blades should just be in contact with the turf. A working depth of up to 3-5 mm is recommended. In the case of a well-tended lawn with soft ground, the working depth can be set slightly deeper. In case of a very mossy lawn surface, the initial working depth should be slightly less.

Setting (Illustration V2 + T2 + Z2)

Set the scarifying depth as follows:

- After loosening the counter nut, set the working depth on the adjusting screw V2 so that the blades of the lowered scarifier (hand lever forward) T2 penetrate approx. 3 to 5 mm deep into the ground.
- Retighten the counter nut after the adjustment.
- To lift the device from the set working position, move the lever all the way to the back to position "transporting". This does not change the set scarifying depth Z2!

After a few hours of operation, a readjustment of the scarifying depth becomes necessary due to wear. The more intensively you use it, the more wear on the blades. Hard or very dry soils accelerate the wear. In this case, proceed in the same manner for the scarifying depth adjustment as described above.

14 SCARIFIER OPERATION



Safety instruction!
See table for explanation of symbols page 3

Using the machine on slopes

NOTE

The device can be used on banks and slopes with a gradient of up to 46% (25° angle). Any steeper slopes can lead to engine damage. For safety reasons, however, we urgently recommend you do not exploit this theoretical performance potential. Always make sure you have a firm stance. Manually guided scarifiers should never be used for slopes with a gradient in excess of 26% (15° angle of slope). Stability may be lost!

Checking the oil level

Check the oil level every time before using the scarifier Y1. Never let the engine run with not enough or too much oil. Irreparable damages could occur.

Checking operating safety

The scarifier is equipped with a motor stop device. Before every scarifying job, make sure that the motor stop safety control bar is working perfectly. When the control bar is released, the engine and the cutting tool must come to a standstill. Note! The cutting tool runs on for a while. If this is not the case, please consult your nearest authorised workshop.

After release, the bar must always return to the position shown in the "component description" diagram.

If this is not the case, it must be checked immediately by an authorised workshop.

Machine safety and protective devices must not be manipulated or disabled.

Make sure that all protective devices have been attached properly and are not damaged.

To avoid danger, check the condition and tight fit of the cutter blades before every scarifying job (refer to the chapter "Cutter blade shaft care" for more details). Always have work on the cutter blade shaft done by a specialist workshop. If the cutter blade shaft is assembled incorrectly parts can become loose, which can lead to serious injuries.

Also check machine screws and nuts for a firm fit every 10 operating hours and tighten if necessary.

Make sure the spark plug connector is fitted tightly. Contact is only dangerous if the plug connector has not been installed correctly. Never pull the plug connector off with the engine running. Danger: electric shock.

If the cutter blade shaft becomes blocked e.g. by colliding with an obstacle or through foreign objects, have an authorised workshop check whether any parts of the scarifier are damaged or deformed. Always have any necessary repairs done by an authorised workshop too.

If the machine starts to vibrate unusually heavily or to make unusual noises, please have it checked immediately by an authorised workshop.

Time restrictions

The time at which scarifiers may be used varies from region to region. Please ask the relevant authorities before using your scarifier.



Tips on caring for your lawn (Illustration M)

When using the machine, always guide it in straight lines at medium walking speed. Due to the forward direction of rotation of the blade shaft, only a slight pushing force is required. Depending on the properties of the surface, it may be necessary to hold the machine back against the working direction. Avoid moving in tight curves.

On very mossy and weedy lawns, it is advisable to apply the scarifier a second time, at right-angles to the first working direction. When using the machine without a grass collector, removes the loose grass from the lawn before the second run. Loose grass lying on the lawn will have an adverse effect on the result, put an additional strain on the machine and make the work unnecessarily difficult for the user (stronger pushing forces).

Loose materials can best be removed by vacuuming with a TurboStar lawn mower or manual raking.

15 SERVICE INTERVALS

IMPORTANT

Avoid damage! Under extreme or unusual conditions, shorter servicing intervals than the ones specified below may be necessary. If you establish any problems, please contact an authorised workshop.

Carry out routine servicing on the machine in line with the following servicing intervals. Work must be carried out at the following servicing intervals in addition to the maintenance work listed in these operating instructions.

Before initial use

- Check the oil level **Y1**.
- Check all screw connections for a tight fit.
- Check the cutter blade and have an authorised workshop tighten it if necessary.
- Check whether the safety control bar is working properly.
- Check that all protective devices have been attached properly and are not damaged.

Before every operation

- Check the lawn area and remove any objects.
- Check the area of the boundary wires (if an automatic mower is being used for lawn care).
- Check the oil level **Y1**.
- Check the condition and firm fit of the blades and have them replaced or tightened by an authorised workshop if necessary.
- Check whether the safety control bar is working properly.
- Check that all protective devices have been attached properly and are not damaged.

Every 10 operating hours

- Check all screw connections for a tight fit.
- Check the blade shaft for wear and a tight fit.

After every operation

- Clean the scarifier.
- Check the blades for damage and wear.

Running-in time – after the first 5 operating hours

- Change the engine oil.

Every 25 operating hours or every three months

- Clean the air filter paper insert **W**.
- Clean the pre-filter **W**.

Every 50 operating hours

- Change the engine oil.
- Clean the spark plug and adjust electrode distance **Y**.

During annual servicing

- Have the air filter paper insert replaced **W**.
- Have the pre-filter replaced **W**.
- Have the spark plug replaced **Y**.
- Have the area under the belt cover cleaned.
- Have the control bar, motor stop throttle cable checked and repaired if necessary.

16 CARE AND SERVICING OF YOUR SCARIFIER

Regular care is the best way to guarantee a long service life and problem-free operation. Insufficient equipment maintenance will lead to safety-related faults!

Only use original spare parts because only those guarantee safety and quality!



Cleaning

IMPORTANT

To clean the scarifier and for maintenance work tip it forwards. Secure the scarifier in the raised position!

Remove all dirt and grass directly after scarifying. Use a brush or cloth to clean.

IMPORTANT

Never clean engine parts (like ignition system, carburettor, etc.) seals and bearing points with high-pressure cleaner or normal water jet. Damages or expensive repairs can be the result.

Storage

Always keep the machine in a clean condition in a closed, dry room out of reach of children. Always allow the engine to cool down before you store the machine in a closed room.

Transporting and securing the equipment (Illustration N + A1 + N4)

- In case the equipment has to be carried, hold it on the housing at the front and on the cross tube of the top guide bar at the back (see Figure **N**).
- For space-saving storage or for transportation, the top part of the bar can be folded down over the engine. To do this, loosen the grip nuts and swivel the top part of the bar above the engine (see Figure **A1**). Ensure that the cable for motor operation is not kinked or squeezed! Now hold the housing at the front and the cross bar of the bottom part of the guide bar at the back for transport.

CAUTION

When folding the bar for transport and storage, the bar may fold over unintentionally when the grip nuts are released. In addition, beware of potential crushing spots between the bottom and top parts of the bar. This may result in risk of injury!

Please take the weight of the machine into consideration before lifting it (see Technical Data). Lifting large weights can result in health problems.

We recommend that this equipment should always be lifted or carried by at least two people, when other means of help are not at disposal.

When this equipment is transported on a load area, a loading ramp should be used for loading and unloading.

NOTE

Avoid injuries! Be especially careful when loading or unloading the equipment. When a trailer is used, we recommend ensuring that it is equipped with stable sidewalls.

Only the marked points on the transport vehicle may be used to secure the equipment.

- Park the means of transport on level ground so that the equipment cannot roll away before it is secured.
- Remove the collecting bag and secure it separately during transport.
- Secure the equipment with approved load-securing devices (e.g. tie-down straps with clamping elements) on or inside the vehicle. Tie-down straps are belt bands made of synthetic fibres. Every tie-down strap is marked with a label. The label contains important details for application. The information on this label must be heeded when using the tie-down strap.
- For loaded goods that can roll, we recommend using direct strapping with four lashing straps. For this purpose, the belts are fastened directly on the fastening points on the equipment (see Figure **N4**) and in the tie-down strapping points on the loading surface and slightly pre-tensioned.

NOTE

Do not tighten the belts too firmly. Fixing the equipment too firmly can cause damage.



Maintenance of the blade shaft

Before using the machine, always check the condition and firm seating of the blades. Worn or damaged blades should be replaced immediately.

WARNING

Always have replacement of the blade shaft carried out by an authorised workshop. An incorrectly assembled blade shaft can cause parts to become detached, possibly leading to serious injury.

Only use genuine scarifying cutter blades for replacement. Non-equivalent spare parts can damage the machine and are a safety hazard.

Replacement scarifying cutter blades must be marked permanently with the name and/or company logo of the manufacturer or supplier and the part number.

Replacing the drive V-belt

For replacement, use only original drive belts.

Let the V-belt to be replaced only in authorised professional workshop.

Servicing the wheels

The wheels have been lubricated with a durable grease. Maintenance is unnecessary.

17 SERVICING THE ENGINE



WARNING

Avoid injury! Engine exhaust fumes contain carbon monoxide and can cause serious illness or death.

Do not run an engine in an enclosed area, such as a garage, even with doors and windows open.

Move the machine to an outside area before starting the engine.

IMPORTANT

To clean the scarifier and for maintenance work tip it forwards. Secure the scarifier in the raised position!

ATTENTION

When tilting the mower upwards, ensure that no oil or fuel comes out of the machine. Fire hazard!

The regular implementation of the prescribed maintenance and care work are the prerequisite for a permanent and fault-free functionality of the motor and also the basic requirement for any guarantee claims.

The motor should be kept clean, particularly on the outside, and the silencer and cylinder area must always be kept free from foreign bodies (e.g. grass residue). The exhaust and motor reach very high temperatures when in use. Flammable foreign bodies such as foliage, grass etc. may catch fire.

Perfect cooling can also only be ensured when cylinder ribs are always clean.

IMPORTANT

Never use a pressure cleaner or ordinary water jet to clean the motor. Damages or expensive repairs can be the consequence of such action.

Oil change

NOTE

For environmental reasons, we recommend that the oil change is performed by an authorised workshop.

The first oil change in a new engine is required after approx. 5 operating hours. Later, it should be done every 50 operating hours or at least once per season.

Check the oil level regularly. Check the oil level every 8 hours or prior to starting the engine.

- Before the engine or the equipment is tilted to drain oil, empty the petrol tank and let the engine to run until it stops due to lack of fuel.
- Stop the engine and remove the spark plug connector. Close the fuel tap **Y2**.
- Renew the oil as long as the engine is hot.
- To change the oil, undo the oil drain screw and tilt the scarifier sideways so that the used oil can drain into a container.

Do not drain used oil into the sewage system or soil; dispose of it according to the local regulations.

- Position the scarifier straight and fill brand-name oil into the spout (for quantity and quality, see technical data)! Check the oil level (see the chapter **Filling oil**, Figure **Y1**). If the oil level is correct, screw the oil drain screw in and tighten it.

Cleaning and replacing the air filter (Illustration **W**)

IMPORTANT

Never let the engine start or run whilst the air filter is removed.

- Loosen the nut (1) on the air filter cover (2) and remove the cover.
- Remove the fastening nut (3) and remove the filter (4). Remove the pre-filter (5) from the paper filter element.
- Clean the paper filter element every 25 operating hours. If slightly dirty, knock the dirt off; if very dirty or damaged, replace it. Do not blast out the paper filter using compressed air. Do not grease it.
- Clean the pre-filter every 25 operational hours. Wash the pre-filter in hot water with liquid detergent, rinse it out, press out excess water and allow it to dry thoroughly in air. Do not lubricate the pre-filter with oil.
- Insert the dry pre-filter on the paper filter element and fit both on the stud bolt (6) and air filter plate (7). Pay attention to ensure that the filter engages safely with the filter plate. Fasten the filter with the nut (3).
- Put the cover (2) on the air filter and fasten it with the nut (1) on the air filter plate (7).

In the case of unfavorable operation conditions (severe formation of dust), cleaning is required after every scarifying procedure. Replace the paper filter element and pre-filter annually.

(Please see original spare parts and accessories for Order No. of filter element and pre-filter)

Checking the spark plug (Illustration **Y**)

To check for wear, remove the spark plug connector and unscrew the spark plug. If the electrode is badly worn the spark plug must be replaced as a matter of course. (Order no. see original spare parts list and accessories).

Otherwise it is sufficient to clean the spark plug and set the electrode gap to 0.76 mm. Screw the spark plug (pay attention to sealing ring) into the engine by hand and tighten using the socket wrench. Press on spark plug connector. Replace the spark plug annually.

Correct winter storage of the engine (or when not used for a long period of time)

- Empty the petrol tank or allow the engine to run until it stops due to lack of fuel.
- Switch off engine and disconnect spark plug cable. Close petrol tap **Y2**.
- Drain off the oil while the engine is still warm. Fill with fresh oil (for quantity and type, see technical data).
- Clean grass and chaff from cylinder and cylinder head fins and around muffler.
- Always keep the machine in a clean condition in a closed, dry room out of reach of children.

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18 TROUBLESHOOTING

Fault	Possible cause	Remedy
Engine does not start	Safety grip not pressed down.	Press safety grip to upper part of handlebar D .
	Petrol tap closed.	Open the petrol tap S2 .
	Choke lever on the engine in the operating position.	Place the choke lever on the engine to ⌂ "Choke" position S2 (see "Starting the engine").
	Fuel tank is empty.	Fill fuel tank with clean and fresh fuel.
	Spark plug connector loose.	Press on spark plug connector or have it checked by an authorized dealer.
	Spark plug defective or dirty or electrode burnt out.	Replace or clean spark plug, set electrode gap to 0.76 mm Y .
	Excessive petrol supply to engine (spark plug wet).	Have it checked by an authorized dealer.
Air filter dirty	Clean or replace air filter insert W .	
Engine power decreasing	Air filter soiled.	Clean or replace the air filter insert W .
	Spark plug clogged with soot.	Have it checked by an authorised workshop.
	Fuel old or soiled	Empty the petrol tank and fill with fresh petrol.
Engine runs irregularly	Air filter dirty.	Clean or replace air filter insert W .
	Spark plug contaminated with soot.	Have it cleaned by an authorized dealer.
		Have it checked by an authorized dealer.
Extreme vibration	Engine fastening loose.	Have it checked by an authorized dealer
Blade shaft will not turn	V-belt defective	Have it checked and replaced if necessary by an authorized specialist workshop.

In case of faults and defects which have not been listed here, please contact the nearest authorized dealer.

Repairs which require specialized knowledge should only be performed by a qualified expert. Your authorized dealer will naturally also be glad to help if you do not wish to perform the maintenance work described here yourself.

19 TECHNICAL DATA
Engine

Motor	B&S 4-stroke motor, 950 Series
Capacity	208 cm ³
Rotation speed	3300 min ⁻¹
Power of Device	3.7 kW
Electrode gap	0.76 mm
Fuel	Unleaded standard petrol, with max.10% ethanol
Tank capacity	approx. 3.5 litres
Lubricating oil	SAE 30 * SAE 10W30 ** or similar brand name oil, minimum quality SF
Oil quantity	0.55 – 0.6 litres

* Below 4°C the use of SAE 30 will result in hard starting.

** Above 27°C the use of 10W-30 may cause increased oil consumption. Check oil level more frequently.

Scarifier

Housing	Die-cast aluminium
Operating width	450 mm
Scarifier cutters	19 pieces
Weight	44 kg
Length	1140 mm
Width	690 mm
Height	1000 mm
Wheels front / rear	Ø 200 mm / Ø 200 mm
Bearing front / rear	Needle bearing

Sound power level

Guaranteed sound power level; measured according to 2000/14/EC	L _{WA} = 98 dB(A)
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Sound pressure level

Emission sound pressure level at operator's workplace; measured according to DIN EN 13684	L _{PA} = 81 dB(A)
Measuring inaccuracy; according to ISO 4871	3 dB

Vibrations

Vibrations on the lawnmower's handlebar; measured according to DIN EN 13684	a _W = 6.5 m/s ²
Measuring inaccuracy; according EN 12096	3.3 m/s ²

20 ORIGINAL SPARE PARTS

Motor oil	SA24208
Spark plug	M152656
Air filter insert	SAU14364
Pre-filter	SAU14365
Scarifying blades	For safety reasons, scarifying blades must always be replaced by an authorised workshop. This workshop has the respective spare part numbers for the scarifying blades available.

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