

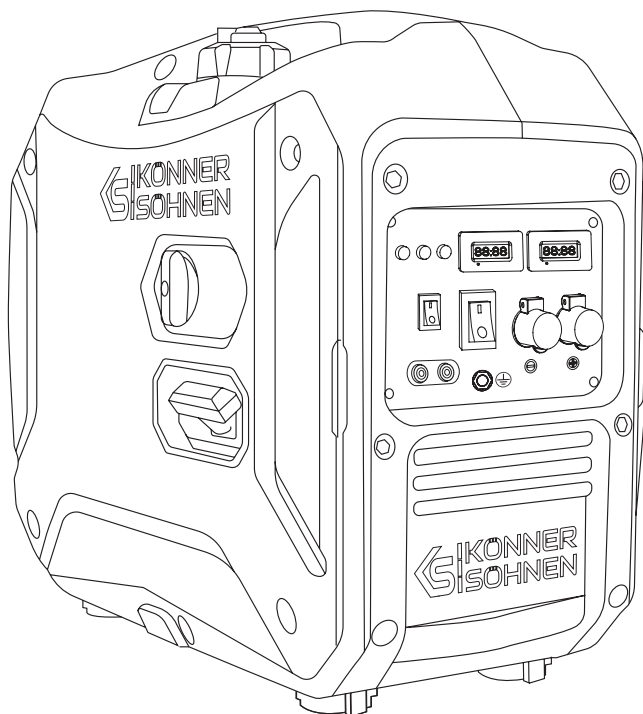
**Please, read this manual
carefully before use!**

Owner's Manual



Direct current generator

KS 24VS-DC
KS 24VGS-DC



INTRODUCTION



Thank you for your purchase of **Könnér & Söhnen®** products. This manual contains a brief description of safety, setup and use. More information can be found on the official importer's website in the support section: **konner-sohnen.com/manuals**

You can also go to the support section and download the manual by scanning the QR code or on the website of the official importer of **Könnér & Söhnen®** at **www.konner-sohnen.com**



We care about the environment, therefore, we consider it expedient to save paper and leave in print a short description of the most important sections.



Be sure to read the full version of the manual before getting started!



The manufacturer of **Könnér & Söhnen®** products reserves the right to make changes that may not be reflected in this manual, namely:

- The manufacturer reserves the right to make changes in the product design, configuration and construction.
- The images and drawings in this manual are for reference only and may differ from the actual components and inscriptions on the products.

Contact information that you are free to use in case of any problems can be found at the end of this manual. All information in this manual is correct to the best of our knowledge and belief at the date of its publication. The current list of service centers can be found on the official importer's website at **www.konner-sohnen.com**



ATTENTION – DANGER!



Failure to follow the recommendations marked with this sign may lead to serious injury or death of the operator or third parties.



IMPORTANT!



Useful information while operating the machine.

SAFETY INFORMATION

1

Do not use the generator in rooms with poor ventilation or in conditions of excessive humidity. Do not place the generator in water or on moist soil. Do not expose the generator to rain, snow, as well as to direct sunlight for a long time. Place the generator on a flat, hard surface, away from flammable liquids/gases (at a minimum distance of 1 m). Install the generator at a distance of not less than 1 m from the front control panel and not less than 50 cm on each side, including the upper part of the generator. Keep unauthorized persons, children, and animals away from work area. Wear safety shoes and gloves.



ATTENTION – DANGER!



As exhaust gases contain poisonous carbon dioxide (CO₂) and carbon monoxide (CO) gases which are dangerous for life, it is strictly forbidden to install the generator in residential buildings, premises connected to residential buildings by a common ventilation system, other rooms from which exhaust gases may enter living premises.

ELECTRICAL SAFETY

1.1



ATTENTION – DANGER!



The generator outputs a DC voltage below 60 V and requires no contact protection.



IMPORTANT!



Using device for other purposes deprives the right for free warranty.



ATTENTION – DANGER!



Be careful. Do not operate the generator, if you are tired, under the influence of drugs or alcohol. Inattention may cause a serious injury.



IMPORTANT!



It is **STRICTLY FORBIDDEN TO CONNECT** to DRY contact (CONTROL TERMINAL) WIRES UNDER VOLTAGE. It may cause the generator to fail

SAFETY PRECAUTIONS FOR OPERATING THE DIRECT CURRENT GENERATOR

1.2

The generator is only suitable for charging batteries whose voltage range (24-27V) matches that of the generator. The charging cables must be securely connected and have sufficient cross-section to withstand charging currents up to 50-60 A. Make sure the generator is off before refueling. **Only use unleaded automobile gasoline with an octane rating of 90 or higher!**



ATTENTION – DANGER!



Fuel contaminates the land and groundwater. Do not allow the leaking gasoline from the tank!

PRECAUTIONS WHEN WORKING WITH HYBRID GENERATOR

1.3



IMPORTANT!



For dual fuel models, only propane-butane mixture for cars (LPG) can be used as gas! It is forbidden to use any other gas!

Before usage make sure, that all the hoses are connected properly. In case of gas leakage, stop the gas flow from the source to generator and ventilate the room as soon as possible. For stopping gas powered engine: disconnect all the connected devices first, then close the gas valve, then turn off the engine. After that set the starter switch to OFF position and turn off the gas supply valve. Automatic operation of the generator is possible only when using gasoline.



ATTENTION – DANGER!



Do not allow sparks near gas powered generator during its work



ATTENTION – DANGER!



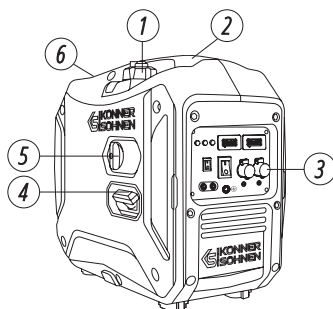
The gas cylinder valve must not be closed when the generator is not running. The generator must not be operated on gas in basements.



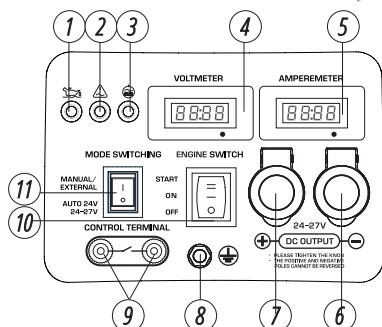
ATTENTION – DANGER!



Pay attention! Usage of gasoline together with liquefied gas is forbidden! When you operate using gasoline, you must stop LPG supply. When you operate generator using LPG - you must stop gasoline supply.



1. Fuel cap with a rotary handle for ventilation
2. Carrying handles
3. Control panel
4. Manual starter
5. Fuel tap
6. Maintenance cover (on the other side of the generator)



1. Operating indicator
2. Overload indicator
3. Low oil level indicator
4. Voltmeter
5. Amperemeter
6. The terminal for connecting the negative wire of the battery
7. The terminal for connecting the positive wire of the battery
8. PE screw
9. Terminals for connecting the control device
10. Engine switch
11. Mode switch of the generator



IMPORTANT!



Manufacturer reserves the right to make changes and/or improvements in design, components set and technical attributes without notice and without incurring obligation. The pictures in this manual are schematical and may not match the parameters of original product.

COMPONENTS OF SET

3

1. Generator
2. Packaging
3. Operating instructions
4. Key candle
5. Screw-driver PH2 6,0 mm
6. Case for accessories



The LPG/gasoline version of the generator is supplied with a 1.5-meter gas hose, a pressure regulator, and a zero-pressure regulator for connection to a gas cylinder. Connecting the generator to an existing low-pressure gas network (LPG only) is not possible with the supplied hose. The pressure regulator requires an input pressure of at least 1.7 bar and has a gas cylinder connection according to DIN 477 with a W 21.80 x 1/14 inch left-hand thread.



IMPORTANT!



Ensure that the control panel, protective grid, and under-side of the generator are well ventilated and free from solid debris, dirt, and water. Insufficient air circulation can cause excessive heat buildup and damage the generator.

Model	KS 24VS-DC	KS 24VGS-DC
Voltage	24–27V	24–27V
Nominal power	1,6 kW	1,4 kW
Current	60 A	50 A
Start	auto, manual/external	auto (when running on gasoline), manual/external
Fuel tank volume	5 l	5 l
LED display	voltage, amperage	voltage, amperage
Noise level Lpa (7m)/Lwa	62/87 dB	62/87 dB
Engine model	KS 100i	KS 100i
Engine volume	79,7 cm ³	79,7 cm ³
Engine type	gasoline, 4 stroke cycle engine	LPG/gasoline, 4 stroke cycle engine
Engine power	2,5 hp	2,5 hp
Crankcase volume	0,4 l	0,4 l
Dimensions (L×W×H)	625×335×540 mm	700×335×540 mm
Net weight	21 kg	21 kg
Protection class	IP23M	IP23M

Fuel consumption depends on many factors, such as load, fuel quality, season, altitude, technical condition of the generator.

The optimal operating conditions are ambient temperature of 17-25°C, barometric pressure of 0.1 MPa (760 mm Hg), and relative humidity of 50-60%. Under these environmental conditions, the generator can provide maximum performance in terms of the declared specifications.

In the event of deviations from these environmental indicators, the generator performance may vary.

GENERATOR OPERATION

5

Before starting the generator, connect the battery to be charged. The charging cable that connects the generator to the battery pack must be secured with an 70-80A fuse. The generator voltmeter shows the voltage of the connected battery, and the green LED (power indicator) starts flashing. The generator has no integrated battery and is activated by the battery to be charged. The generator can also be started with the manual starter when the connected battery is low.

The gasoline tap (on the side) is opened when operating on gasoline. The ENGINE SWITCH should be in the ON position. Use the mode switch to select the desired mode (AUTO or EXTERNAL CONTROL). In order to manually start the supplied battery, press the ENGINE SWITCH to the START position. If the supplied battery has insufficient charge to start the generator, use the pull starter.

The generator is specially designed for charging batteries and acts as a battery charger with a charging characteristic IUo. The battery is first charged with a constant current of 60 ± 3A (gasoline version) or 50 ± 3A (DualFuel version) until the generator output voltage reaches 27-27,5 V. After that, the generator runs with a constant output voltage. If the initial charging current is below 60A (50A), the output voltage will be 27-27,5 V straight away.

POWER LED (GREEN)

The LED flashes (current consumption below 25 A) or is continuously lit (current consumption above 25 A) as long as the generator output voltage is applied to the DC output terminals.

OVERLOAD LED (RED)

The overload LED lights up when the current consumption reaches the maximum or in case of a malfunction. The red LED is continuously lit when the battery is charging at maximum amperage.

LOW OIL LEVEL LED (YELLOW)

When the oil level is below the lower acceptable limit, the low oil level LED lights up, and the engine stops. Insufficient oil level causes the ignition to turn off.



IMPORTANT!



The overload indicator may light up within several seconds after start-up. However, this is not a malfunction.

BEFORE FIRST START

6

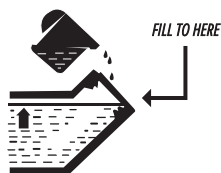
CHECKING THE OIL LEVEL

The generator is shipped without engine oil. Always fill up the engine with engine oil before you start it.

1. Unscrew and remove the oil dipstick and wipe it with a clean, lint-free cloth.
2. Insert the dipstick without screwing it in.
3. Pull the dipstick out again and check the oil level by the marks on it.
4. If the oil level is low, refill the engine oil.
5. Finally, screw the dipstick back in.

Recommended engine oil: SAE 10W-30, SAE 10W-40.

Engine oil capacity: 0.4 L.



CHECKING THE FUEL LEVEL

The fuel tank has a fuel level gauge featuring a float, which shows only an approximate fuel level. You can only determine the exact fuel level by removing the tank cap. **Only use unleaded automobile gasoline with an octane rating of 90 or higher!**

Fuel tank capacity: approx. 5 L.

The LPG/gasoline version (KS 24VGS-DC) can also operate on propane, butane, and their mixtures (LPG group gases). Due to its high boiling point, butane (a camping gas) should only be used in warm weather.



IMPORTANT!



Wipe up spilled fuel immediately with a clean, dry, soft cloth, as the fuel may harm painted surfaces or plastic parts.



IMPORTANT!



Use only unleaded gasoline. Using leaded gasoline can cause serious damage to the inside of the engine.

GETTING STARTED

7



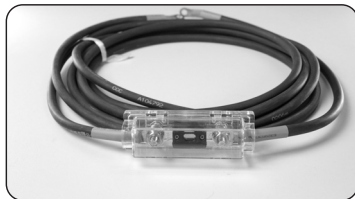
WARNING!



The person using the generator should have sufficient knowledge of electricity and battery charging. We do not accept any responsibility for incorrect use of the generator and its consequences.

COMMISSIONING

1. Fill the crankcase with engine oil. The recommended amount of oil for each model is indicated in the specification chart.
2. Check oil level with an oil dipstick. It should be between the MIN and MAX marks on the oil dipstick.
3. Check fuel level.
4. Check the air filter for correct installation
5. To connect the generator, use the original wires that come in a kit together with the generator.
6. The wires should first be attached to the terminals on the generator panel and then to the battery.
7. When connecting the wires, tighten the terminals well - both on the generator panel and on the side consumer.
8. Be sure to observe the polarity when connecting.



"+" - (red)
"-" - (black)



IMPORTANT!



Periodically check the connections at the connection points, tighten the terminals if necessary. It is forbidden to use a cable without a fuse or if the fuse is blown



IMPORTANT!



The generator can only be used to charge the battery. It is forbidden to use the generator for direct connection to voltage consumers.

ENGINE START



IMPORTANT!



Each time you start the generator, be sure to check oil and fuel level

MANUAL START

1. Check oil level.
2. Check fuel level.
3. Turn the fuel tap and fuel cap vent to the 'ON' position if you wish to operate the generator on gasoline. Open the valve on the gas cylinder (for KS 24VGS-DC only) if you wish to operate the generator on LPG.
4. Turn the ENGINE SWITCH to the ON position to activate the ignition.
5. For manual start, pull the manual starter until a slight resistance is felt, then pull it toward you relatively sharply. Slowly turn the manual starter by hand, do not release it abruptly.

RUNNING THE GENERATOR IN AUTOMATIC MODE

8

In AUTO mode, the generator monitors the battery voltage and is activated automatically when the battery voltage drops to 23,5-24V. The response time is approx. 5 seconds.

The generator charges the battery with a voltage up to 27-27,5V and a current up to 60-65A (50-55A DualFuel) and shuts down as soon as the battery voltage reaches 27-27,5V and the charging current drops below 25 A. The response time is approx. 30 seconds.

The generator can be started manually by pressing the switch to START at any time, regardless of the battery voltage, but it will shut down within 30 seconds after the current consumption drops below 25 A.

The green LED (power indicator) is continuously lit when the current consumption exceeds 25 A and flashes when the current consumption drops below 25 A.

Where the power consumption should never drop below 25 A (24V busbar) for technical reasons, EXTERNAL CONTROL mode should be used so that the generator does not run continuously.



NOTE



If there have been 5 unsuccessful attempts to start (for example, due to lack of fuel), the generator goes into fault mode. To reset, turn the ENGINE SWITCH to the OFF position, resolve the issue (e.g., refill gasoline), and turn the ENGINE SWITCH to the ON position.

OPERATION IN EXTERNAL CONTROL MODE

9

The generator in EXTERNAL CONTROL mode will be started by closing the CONTROL TERMINAL contacts and stopped by opening them. This mode allows the generator to be optimally adapted to different battery storage systems by external control of devices with potential-free “dry” contacts, which significantly expands the generator’s range of application. Thanks to the bridge between the CONTROL TERMINAL contacts, the generator starts immediately when the ENGINE SWITCH is set to the AUTO position and stops in the OFF position. Such use is recommended in order to be able to start and stop the generator manually regardless of the battery voltage.

Many devices are equipped with potential-free “dry” contacts (inverters, UPSs, batteries with BMS controllers, battery monitors, time relays, etc.) and this allows to implement all possible algorithms of generator use.



IMPORTANT!



MANUAL / EXTERNAL CONTROL mode is recommended for users with good experience with equipment.



IMPORTANT!



It is STRICTLY FORBIDDEN TO CONNECT to DRY contact (CONTROL TERMINAL) WIRES UNDER VOLTAGE. It may cause the generator to fail.

SHUTTING DOWN THE GENERATOR

10

To manually stop the generator, regardless of the operating mode, turn the ENGINE SWITCH to the OFF position.

OVER-VOLTAGE AND OVERLOAD PROTECTION

If for any reason the voltage on the 24 V busbar or battery reaches 30 V or higher, the generator will shut down within 10 seconds.

The generator’s output voltage decreases when the maximum current is exceeded and may be lower than 24 V; however, if it falls below 20 V, it is recognized as a short circuit, and the generator will shut down immediately.

MAINTENANCE

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This manual compliance! You can find a list of service center addresses on the website of exclusive importer: **www.konner-sohnen.com**

TECHNICAL MAINTENANCE WORKS

Unit	Action	At each start	First month or 20 operating hours	Every 3 months or 50 operating hours	Every 6 months or 100 operating hours	Every year or 300 operating hours
Motor oil	Level check	✓				
	Replacement		✓	✓		
Air filter	Check /Cleaning	✓	✓	✓		
	Replacement				✓	
Spark plug	Cleaning		✓	✓		
	Replacement				✓	
Fuel tank	Level check	✓				
	Cleaning					✓
Fuel filter	Check (clean out)		✓	✓		

- If the generator often operates at high temperature or high load, the oil should be replaced every 25 operating hours.
- If the engine often runs in dusty or other harsh conditions, clean the air filter every 10 operating hours.
- If you missed the maintenance time, perform it as soon as possible to save the generator engine.



IMPORTANT!

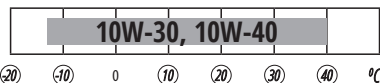


The manufacturer shall not be liable for any damage caused by failure to perform maintenance work.

RECOMMENDED OILS

12

Use oils designed for four-stroke cycle vehicle engines SAE10W-30, SAE10W-40. Motor oils with other viscosity levels, may be used only if the average air temperature in your region does not exceed the limits of the temperature range, specified in the table.



Upon oil level decrease it is necessary to add the required quantity in order to provide the correct generator operation. It is necessary to check the oil levels according to technical maintenance schedule. Further details can be found in the full version of the manual on our website.

AIR FILTER TECHNICAL MAINTENANCE

13

Air filter cleaning is to be performed each 50 hours of the generator operation (every 10 hours in unusually dusty conditions).

CLEANING THE FILTER:

1. Open the clips on the upper cap of the air filter.
2. Remove the sponge filtering element.
3. Remove all dirt deposits inside the hollow case of the air filter.
4. Thoroughly wash the filtering element in warmsoapy water.
5. Dry the sponge filter.
6. Dry filtering element is to be moistened by motor oil and excess oil is to be squeezed out.

SPARK PLUGS TECHNICAL MAINTENANCE

14

Spark plug has to be intact, without soot deposits and to have a correct gap.

SPARK PLUG VERIFICATION:

1. Remove the cap from the spark plug.
2. Remove the spark plug by means of a corresponding spanner.
3. Recommended replacement spark plugs: Torch E5RTC , Champion RL95YC , NKG BPR5HS, Bosch W8B.
4. Measure the gap. It has to be within range 0.7-0.8 mm.
5. In case of repeated use, the spark plug has to be cleaned by means of a metal brush.
After that – set the correct gap.

DAMPER AND FLAME ARRESTER MAINTENANCE

15

The engine and damper will get very hot after the generator has been started. Do not touch the engine or damper with any part of your body or clothing during inspection or repair until they have cooled down.

Remove the screws and then pull the protective cover towards you. Loosen the bolts and remove the cover, screen and flame arrester of the damper. Descal the screen and flame arrester of the damper with a wire brush. Inspect the screen and flame arrester of the damper. Replace them if they are damaged. Replace the flame arrester. Replace the screen and cover of the damper. Replace the cover and tighten the screws.



IMPORTANT!



Match the protrusion of the flame arrester to the hole in the pipe damper.

FUEL FILTER

16



IMPORTANT!

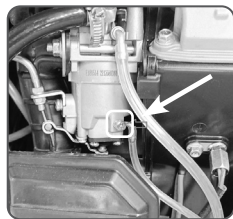


Never use gasoline while smoking or in the immediate vicinity of an open flame.

1. Remove the fuel tank cap and fuel filter.
2. Clean the filter with gasoline.
3. Wipe the filter and replace it.
4. Replace the fuel tank cap.
Make sure that the fuel tank cap is tight.

STORAGE

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To drain gasoline from the carburetor, turn off the fuel valve and wait until the generator has cooled down sufficiently. Place a drip pan under the carburetor and loosen the drain screw on the carburetor (see fig.). Make sure that no fuel leaks onto the generator. Tighten up the screw again.

Storage room has to be dry and free from dust deposits. Storage room also has to be locked away from children and animals. It is recommended to store and use the generator at temperature of -20°C to +40°C. Avoid direct sunlight, rain on the generator. Information on long-term storage and transportation can be found in the full version of the manual.

GENERATOR DISPOSAL

18

To prevent environment damage generator should be separated from ordinary waste. Please recycle them in the safest way, passing it to special place for disposal.

Typical failures	Possible reason	Solution
Engine will not start	The ENGINE SWITCH is set to the "OFF" position	Set the ENGINE SWITCH to the "AUTO" position
	No fuel in tank	Fill the tank with unleaded automobile gasoline with an octane rating of 90-95
	Fuel is old and has lost its properties	Change fuel
	Soiled carburetor	Clean the carburetor and drain the sludge
	Insufficient engine oil level	Top up engine oil to required level
	Spark plug defective	Replace the spark plug
Decreased engine power/ troubled engine start	Soiled carburetor	Clean the carburetor and drain the sludge
	Soiled air filter	Clean the air filter or replace it
	Spark plug defective	Replace the spark plug
	Incorrect spark plug electrode spacing	Set correct electrode spacing
Engine overheated	Cooling fins are dirty	Clean the cooling fins
	Air filter is dirty	Clean the air filter
Generator shuts off and error indicator is on	Potential battery problem (it must be charged)	Check battery parameters and remedy problems

The international manufacturer warranty is 1 year or 1000 hours (whichever comes first). The warranty period starts from the date of purchase. In cases when warranty period is longer than 1 year according to local legislation please contact your local dealer. The Seller which sells the product is responsible for granting the warranty. Please contact the Seller for warranty. Within the warranty period, if the product fails because of defects in the production process, it will be exchanged on the same product or repaired.

The warranty card should be kept throughout the warranty period. In case of warranty card loss, a second one will not be provided. The customer must provide the warranty card and buyer's check during request for repair or exchange. Otherwise, the warranty service will not be provided. The warranty card, attached to the product during sale, should be correctly and fully completed by the retailer and customer, signed and stamped. In other cases, warranty is not considered as valid.

Provide clean product to the service center. Parts, that must be replaced, are the property of the service center.

WARRANTY EXCLUSIONS:

- If the user has failed to comply with the instructions in this manual.
- If the product features damaged or missing identification stickers or labels, serial numbers, etc.
- If product malfunction was due to improper transportation, storage and maintenance.
- In case of mechanical damages (cracks, chips, impact and fall marks, deformation of housing, power cord, plug or any other components), including those resulting from the freezing of water (ice formation), provided there are foreign objects inside the unit.
- If the product has been improperly installed and connected to the mains supply or misused.
- If the claimed malfunction cannot be diagnosed or demonstrated.
- If proper operation of the product can be restored following cleaning from dust and dirt, appropriate adjustment, maintenance, oil change, etc.
- If the product is used for business related purposes.

- If faults are detected, which have been caused by product overload. Signs of overload are molten or discolored parts as a result of high temperatures, damaged cylinder or piston surfaces, degraded piston rings or connecting rod bushes.
- If there are faults caused by contamination or fouling such as contamination of the fuel, oil or cooling system.
- If electrical cables or plugs show signs of mechanical or thermal damage.
- In the event of foreign liquids and objects, metal chips, etc. inside the product.
- If the malfunction is caused by the use of non-original spare parts and materials, oils, etc.
- If there are two or more faulty units that are not interconnected.
- If the damage was caused by natural factors such as dirt, dust, humidity, high or low temperature, natural disasters.
- In case of simultaneous failure of the rotor and stator.
- For wear parts and accessories (spark plugs, nozzles, pulleys, filter and safety elements, batteries, detachables, belts, rubber seals, clutch springs, axles, hand starters, grease, mountings, working surfaces, hoses, chains, and tires).
- To preventive maintenance (cleaning, greasing, washing), installation and adjustment.
- If the product was tampered with, independently repaired or modified.
- In case of malfunctions resulting from normal wear and tear as a result of long-term use (end of life).
- If product operation was not stopped and continued after detecting a malfunction.
- Batteries supplied with equipment are covered by a warranty of three months.
- When using low-grade or inappropriate fuel.

CONTACTS

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Hergestellt unter Lizenz und Kontrolle der DIMAX International GmbH.

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