

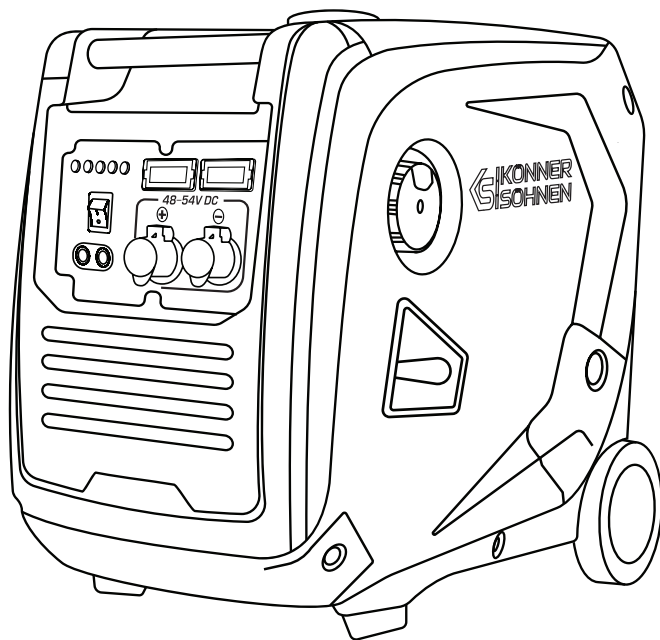
Please, read this manual  
carefully before use!

Owner's Manual



## Direct current generator

KS 48DC-S CO





Thank you for your purchase of **Könnér & Söhnen®** products. This manual contains a brief description of safety, use and debugging. More information can be found on the official manufacturer's website in the support section: **[konner-sohnen.com/us](http://konner-sohnen.com/us)**

You can also go to the support section and download the full version of the manual by scanning the QR code, or on the website of the official importer of **Könnér & Söhnen®** products: **[konner-sohnen.com/us](http://konner-sohnen.com/us)**



*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!**



Manufacturer reserves the right to make alterations into the generators, which may not be reflected in this manual. Pictures and photos of the product may vary from its actual appearance. At the end of this manual, you may find contact information which you are free to use in case of any issues occurrence.

All data, specified in this operation manual is the most up to date for the moment of its publishing. The current list of service centers you can find at the website of official importer: **[konner-sohnen.com/us](http://konner-sohnen.com/us)**



**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**

### WORKING AREA



**ATTENTION – DANGER!**



**When installing the generator, pay attention to the capacity of electrical appliances and their starting current, which may be several times higher than the rated current. The generator cannot run in overload conditions when starting consumers with an inrush current higher than the generator's maximum output.**



**ATTENTION – DANGER!**



**As exhaust gases contain poisonous carbon dioxide (CO<sub>2</sub>) 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. Use only outside and far away from windows, doors and vents! Never use inside of home or garage even if doors and windows are open!**

- Do not use generator in the rain, snow and high humidity conditions, do not touch the generator with wet hands. It's prohibited to leave it in direct sunlight in summer for a long time. For storage of generator prepare a well ventilated area or store it under the canopy.

- Place the generator on a flat, hard surface, far away from flammable liquids/gases.

- Please don't use the generator near flammable gases, liquids or dust. When using the generator exhaust system gets very hot. This may cause fire or explosion of these materials.

- Do not use generator in the rain, snow and high humidity conditions, do not touch the generator with wet hands. It's prohibited to leave it in direct sunlight in summer for a long time. For storage of generator prepare a well ventilated area or store it under the canopy.
- Place the generator on a flat, hard surface, far away from flammable liquids/gases.
- Please don't use the generator near flammable gases, liquids or dust. When using the generator exhaust system gets very hot. This may cause fire or explosion of these materials.
- Be sure to follow cleanliness and good lighting in the work area. Clutter and poor lighting may cause an injury.
- Do not let the presence of unauthorized persons, children or animals when working with generator. If necessary, make sure to fencing the working area.
- Please use safety shoes and protective gloves when working with the generator. All personnel must wear ANSI approved safety goggles while setting up the generator.

## ELECTRICAL SAFETY



**ATTENTION – DANGER!**



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

- The generator produces electricity that may lead to an electric shock while neglecting compliance regulations.
- All connections between the generator and the House or groups of electric consumers must be made by certified electricians in accordance with all electrical rules and regulations.
- Do not allow moisture in the generator. The water inside the device increases the risk of an electric shock.
- In high humidity level conditions generator usage is prohibited. Keep the generator in a dry place only.
- Avoid direct contact with grounded surfaces (pipes, radiators, etc.).
- Be careful when working with power cables. Immediately replace it in case of damage, as damaged wire increases the risk of electric shock.
- Do not connect or disconnect a generator to electricity consumers, which are placed in water on wet or damp soil.
- Do not touch parts of the generator under voltage.
- Connect the generator to those customers only which meet the electrical characteristics and the rated power of the generator.
- Store all electrical equipment dry and clean. Wires with damaged or spoiled insulation should be replaced. You should also replace worn, damaged or rusty contacts.



**IMPORTANT!**



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



**IMPORTANT!**



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

The generator and power consumers form a closed system, with elements affecting each other. This system is physically different from the public grid since it is significantly affected by factors such as unbalanced phase load and non-linear current consumption by power consumers that can cause damage to the generator and power consumers connected to it.

## PERSONAL SAFETY

- Be careful. Do not operate the generator – if you are tired, under the influence of drugs or alcohol. Inattention may cause a serious injury.
- Avoid inadvertent start. Make sure to set the switch to Off when you turn off the generator.



**ATTENTION – DANGER!**



**Noncompliance to these requirements may result in generator combustion or explosion, as well as in electric wiring ignition inside the structure.**

- Make sure no outside objects are on the generator when it is turned on. Using the device for other purposes deprives the right for free warranty. It is not allowed to sit or stand on the generator.
- Always keep a stable position and balance when starting the generator.
- Do not overload the generator, use it only for the purpose.

## SAFETY PRECAUTIONS FOR OPERATING THE DIRECT CURRENT GENERATOR

- The generator is only suitable for charging batteries whose voltage range (48-54 V) matches that of the generator. The charging cables must be securely connected and have sufficient cross-section to withstand charging currents up to 70-75 A.
- Do not start the generator operation upon presence of electric load. Disconnect the load before you stop the engine.
- Generator installation is to be performed at minimum 1 meter safety distance from flammable objects. All explosive and flammable materials or substances are to be kept away from the generator, for its engine produces heat during operation.
- Do not refuel the running generator. DO NOT overfill the fuel tank. Fuel expands when shaken or heated. ALWAYS leave ½ inch" space or more at the top of the tank.
- It is forbidden to smoke allow sparks, flames or any other sources of ignition around the generator.
- **We strongly recommend to use unleaded fuel with octane rating 87 or higher!** It's acceptable to use gasoline with 10% bio-ethanol. Carburetor and fuel piper have increased ethanol tolerance, nevertheless we do not recommend using E10, as it may lead to faster wear of the fuel pipes and carburetor. For long-term storage of the generator - it is necessary to drain the gasoline from the fuel tank and carburetor. DO NOT store generator with gasoline! Observe the permitted storage periods for each type of gasoline!
- Observe the fuel tank refilling. Do not allow overfilling. After filling the tank, all excessive fuel spillage is to be removed from the surface.
- It is forbidden to touch the exhaust system during the generator start and during their process of its running.
- It is forbidden to run the generator in cases when its exposure to rain, snow and possibility of soakage exists.
- Before running the generator, it is necessary to define the place and means of its emergency stop.



**ATTENTION – DANGER!**



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

## SAFETY SYMBOLS DECRYPTION

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### SYMBOLS DESCRIPTION WHEN WORKING WITH GENERATOR



- A.** Be careful when using the device! Follow safety rules listed in manual.
- B.** Keep children out of the generator area.
- C.** Do not use or store the device in high humidity.
- D.** Do not smoke when using the generator!
- E.** The device generates electricity. Follow safety precautions to avoid electric shock.
- F.** Carefully read the manual before using the device.
- G.** Do not touch the generator with wet or dirty hands.
- H.** Follow fire safety rules, do not use open flames near the generator.
- I.** Please don't touch! The muffler heats up when running the generator.

## BESIDES SAFETY SYMBOLS GENERATOR CONTAINS FOLLOWING INSCRIPTION:



Using generator indoors can kill you in minutes! Generator exhaust contains carbon monoxide. This is a poison you cannot see or smell. Never use inside a home or garage. Even if doors and windows are open. Only use outside and far away from windows, doors, and vents.

KONNER SOHNEN KS 48DC-S CO DIRECT CURRENT GENERATOR GENERADOR DE TENSION CONSTANTE			
RATED POWER POTENCIA NOMINAL	3.5kW	RATED CURRENT CORRIENTE NOM.	7.5A
MAX POWER POTENCIA MAXIMA	4.0kW	VOLTAGE VOLTAJE	48-54V
RATED SPEED VELOCIDAD NOM.	3600rpm	WEIGHT PESO	88 lbs. 5/IN
RATED AMBIENT TEMP. TEMP. AMBIENTE NOMINAL	25°C	INSULATION CLASS CLASE DE AISLAMIENTO	H
Konner & Sohnen® manufactured under license and control of Dimax International GmbH, Flieger Broich 203, 40235 Düsseldorf, Germany. Made in China. Official importer and representative in the USA: KS Energy Solutions Inc. Balcones Drive STE 100 Austin, TX 78751, USA. konner-sohnen.com/us			

Specification table.  
For different models this table is different.  
All characteristics are given in the "Specifications".



We strongly recommend to use unleaded fuel with octane rating of 87 or higher. It's acceptable to use gasoline with 10% bio-ethanol (E10). Carburetor and fuel piper have increased ethanol tolerance, nevertheless we do not recommend using E10, as it may lead to faster wear of the fuel pipes and carburetor.



Information on the required level of oil is in the crankcase.

## MAINTAIN AIR FILTER!

⚠ Clean up in cleansing solvent (not flammable) and dry up once every 50 hours (every 10 hours in usually dusty conditions) and then immerse in clean engine oil until saturated, squeeze out excessive oil.

⚠ La limpieza del filtro de aire debe realizarse cada 50 horas de funcionamiento del generador (cada 10 horas en caso de condiciones inusualmente polvorientas).

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

Recommended maintenance schedule		Every start	First month or 20 hours	Every 3 months or 50 hours	Every 6 months or 100 hours	Every year or 360 hours
Motor oil	Check the level	X	X	X		
	Replace					
Air filter	Check	X	X	X		
	Replace				X	
Spark plug	Check/Clean out		X	X		
Fuel tank	Check the level	X			X	
	Clean out					X
Fuel filter	Check		X	X		

\* Clean out more often in a dusty conditions  
\*\* Maintenance should be done only by authorized specialist



Maintenance information translated into the language of the country where the generator is sold you may find in "Maintenance".



Grounding

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OUTSIDE™**

WWW.TAKEYOURGENERATOROUTSIDE.COM

**PGMA**  
 Portable Generator Manufacturers' Association

## CARBON MONOXIDE SAFETY: THE BIG PICTURE

Taking your generator outside is the only safe way to use it. It is absolutely mandatory for keeping your family safe from carbon monoxide, which is a colorless, odorless threat. There are other things to know about generator safety including potential electrical hazards. By educating yourself about all risks, you'll be better prepared to protect yourself, your family, and others.


[www.TakeYourGeneratorOutside.com](http://www.TakeYourGeneratorOutside.com)


**1. ALWAYS READ THE OPERATOR'S  
MANUAL FIRST**

**2. KNOW THE SYMPTOMS**

- HEADACHE
- NAUSEA
- SHORTNESS OF BREATH
- DIZZINESS
- FATIGUE

**IF YOU FEEL SYMPTOMS,  
LEAVE RIGHT AWAY**



**3. STAY ALERT WITH CARBON  
MONOXIDE DETECTORS**

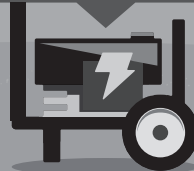
**4. PROTECT LINE WORKERS FROM  
BACKFEED. INSTALL A TRANSFER  
SWITCH BEFORE CONNECTING A  
GENERATOR DIRECTLY TO  
HOUSEHOLD WIRING.**



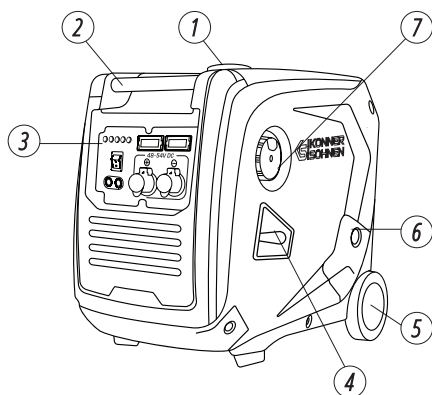
**5. CHOOSE GENERATORS WITH CO SHUT OFF  
SYSTEMS THAT MEET ANSI/PGMA G300-2018  
STANDARD REQUIREMENTS**

**6. KEEP IT OUTSIDE AND FAR AWAY  
FROM DOORS AND WINDOWS**

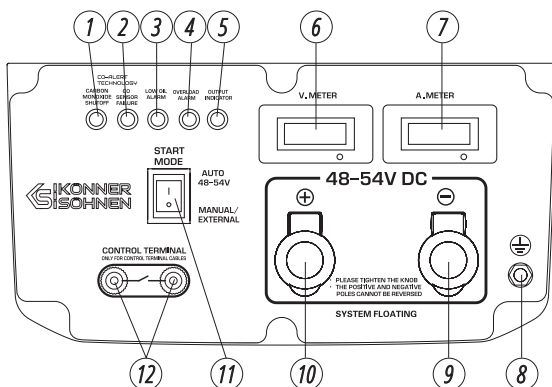
**7. POINT FUMES AWAY FROM  
HOME AND PEOPLE**



For more information about portable generator safety, visit [www.TakeYourGeneratorOutside.com](http://www.TakeYourGeneratorOutside.com)



1. Fuel tank cap
2. Carrying handles
3. Control panel
4. Manual starter
5. Transport wheels
6. Maintenance cover
7. Multifunction engine switch



1. Carbon monoxide shutoff
2. CO sensor failure
3. Low oil level indicator
4. Overload indicator
5. Operating indicator
6. Voltmeter
7. Amperemeter
8. Earthing bolt
9. The terminal for connecting the negative wire of the battery
10. The terminal for connecting the positive wire of the battery
11. Switch mode of the generator
12. Terminals for connecting the control device



**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.**

<b>Model</b>	<b>KS 48DC-S CO</b>
<b>Voltage</b>	48-54 V
<b>Nominal power</b>	3.6 kW
<b>Current</b>	70 A
<b>Start</b>	auto, manual/external
<b>Fuel tank volume</b>	3.2 gal. (12L)
<b>LED display</b>	voltage, amperage
<b>Noise level Lpa (23 ft.)</b>	62 dB
<b>Engine model</b>	KS 240
<b>Engine volume</b>	223 cc
<b>Engine type</b>	gasoline, 4 stroke cycle engine
<b>Engine power</b>	7.5 hp
<b>Crankcase volume</b>	20 fl. oz (0.6L)
<b>Dimensions (LxWxH)</b>	27.5"×18.7"×22.4"
<b>Net weight</b>	88 lbs
<b>Protection class</b>	IP23M

To ensure reliability and increase the engine service life, peak powers may be slightly limited by circuit breakers.

The optimal operating conditions are ambient temperature of 63–77 °F, 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.



**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.**

## GENERATOR OPERATION

## 7

Before starting the generator, connect the battery pack to be charged. The charging cable that connects the generator to the battery pack must be secured with an 80-100 A 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 pack to be charged. The generator can also be started with the manual starter when the connected battery is low.

A multi-function rotary selector combines a fuel valve, a generator switch and a start button.

The generator is specially designed for charging batteries and acts as a battery charger with a charging characteristic IU0. The battery is first charged with a constant current of 70-75 A until the generator output voltage reaches 53.5-54 V. After that, the generator runs with a DC output voltage. If the initial charging current is below 70 A, the output voltage will be 53.5-54 V straight away.



## POWER LED (GREEN)

The LED flashes (current consumption below 20 A) or is continuously lit (current consumption above 20 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.**

## CARBON MONOXIDE SHUTOFF

Flashing red light: dangerous levels of carbon monoxide gas have built up leave immediately until area has aired out. Move generator to well-ventilated area before operation. The CO sensor monitors for the accumulation of poisonous carbon monoxide gas around the generator when the engine is running. If increasing levels of CO gas are detected, the CO Sensor automatically shuts down the engine.

## CO SENSOR FAILURE

Flashing yellow light: carbon monoxide sensor malfunction, sensor needs service.

## BEFORE FIRST START

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## 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.

**Engine oil capacity:** 20 fl. oz (0.6L)

## 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. **We strongly recommend to use unleaded fuel with octane rating 87 or higher!** It's acceptable to use gasoline with 10% bio-ethanol. Carburetor and fuel piper have increased ethanol tolerance, nevertheless we do not recommend using E10, as it may lead to faster wear of the fuel pipes and carburetor. For long-term storage of the generator - it is necessary to drain the gasoline from the fuel tank and carburetor. DO NOT store generator with gasoline! Observe the permitted storage periods for each type of gasoline!

**Fuel tank capacity:** approx. 3.2 gal. (12L)



**IMPORTANT!**



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



**IMPORTANT!**



**Do not change the controller settings in terms of the amount of fuel or speed governor (this adjustment was made at the factory). Otherwise, this may result in changes in the engine operation or its failure.**



**WARNING!**



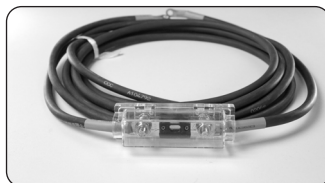
**All connecting the generator to the network must be made by certified electrician in accordance with all electrical rules and regulations.**

### 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.**

## RUNNING THE GENERATOR IN AUTOMATIC MODE

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In AUTO mode, the generator monitors the battery voltage and is activated automatically when the battery voltage drops to 47.5-48 V. The response time is approx. 5 seconds.

The generator charges the battery with a voltage up to 53.5-54 V and a current up to 70-75 A and shuts down as soon as the battery voltage reaches 53.5-54 V and the charging current drops below 20 A. The response time is approx. 30 seconds.

The generator can be started manually by pressing the START button at any time, regardless of the battery voltage, but it will shut down within 30 seconds after the current consumption drops below 20 A.

The green LED (power indicator) is continuously lit when the current consumption exceeds 20 A and flashes when the current consumption drops below 20 A.

Where the power consumption should never drop below 20 A (48 V busbar) for technical reasons, EXTERNAL CONTROL mode should be used so that the generator does not run continuously.



**NOTE**



**If there is no fuel in the tank the generator will do 5 attempts to start the generator, then go to error mode. To unlock, you need to update the switch to the OFF position, refuel, and follow the instructions to switch to the desired mode.**

## EXTERNAL CONTROL MODE

**11**

The EXTERNAL CONTROL mode is enabled by closing the CONTROL TERMINAL contacts and disabled by opening them. This mode enables optimal generator integration into various power supply systems through external control of devices using "dry" contacts, thus considerably expanding its range of applications. With a jumper fitted between the CONTROL TERMINAL contacts, the generator will kick in as soon as the multi-function rotary selector is set to "ON" and will shut down as soon as it is set to "OFF". This application is advisable where the generator needs to be turned on and off manually, regardless of the connected battery voltage.

Multiple devices are equipped with potential-free "dry" contacts (inverters, uninterruptible power supplies, BMS batteries, battery voltage monitors, time relays, etc.), enabling various generator applications.



**IMPORTANT!**



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



**IMPORTANT!**



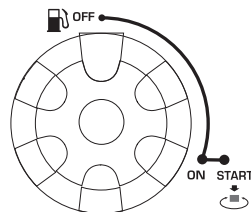
**It is STRICTLY FORBIDDEN TO CONNECT to DRY contact (CONTROL TERMINAL) WIRES UNDER VOLTAGE. It may cause the generator to fail.**

## SHUTTING DOWN THE GENERATOR

**12**

**TO STOP THE ENGINE, PROCEED AS FOLLOWS:**

1. To stop the generator in any mode move the switch wheel to the OFF position.



## MAINTENANCE

**13**

This manual compliance! You can find a list of service center addresses on the website of exclusive importer: [www.konner-sohnen.com/us](http://www.konner-sohnen.com/us)

## 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	LEVEL CHECK				
	Replacement		REPLACEMENT	REPLACEMENT		
Air filter	Check /Cleaning	CHECK / CLEANING	CHECK / CLEANING	CHECK / CLEANING		
Spark plug	Cleaning		CLEANING	CLEANING		
Fuel tank	Level check	LEVEL CHECK				
	Cleaning					CLEANING
Fuel filter	Check (clean out)		CHECK (CLEAN OUT)	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!**

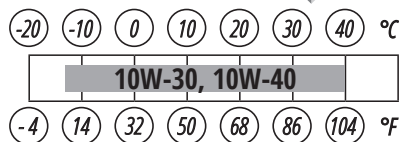


**The manufacturer shall not be liable for any damage caused by failure to perform maintenance work.**

## RECOMMENDED OILS

**14**

The SAE viscosity grade shown in the following table. Use oils designed for four-stroke cycle vehicle engines SAE10W-30. 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.

## TO DRAIN ENGINE OIL, PERFORM THE FOLLOWING ACTIONS

1. Please drain the oil while the engine is warm. This provides a quick and complete oil drain.
2. Wear protective gloves to avoid getting oil on the skin.
3. Remove the cover of generator (fig. 1).
4. Place a drain oil holding tank under the engine (fig. 2).
5. Turn the drain cap, located in the engine under the oil-depth gage cap, by means of spanner (fig. 3).
6. Wait till the oil drains.
7. Replace the drain cap and tighten it well.
8. Close the maintenance cover (fig. 1).

Fig. 1

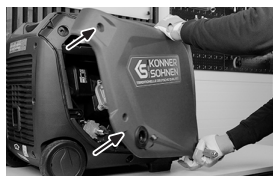


Fig. 2

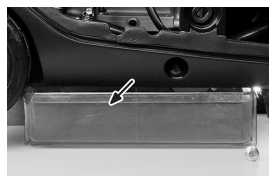


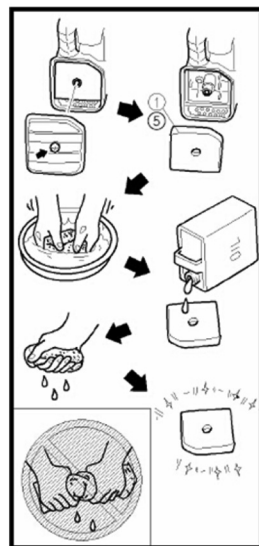
Fig. 3



Air filter cleaning is to be performed every 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 warm soapy 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.



## DAMPER AND FLAME ARRESTER MAINTENANCE

## 16

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 (fig. 4). Loosen the bolts and remove the cover, screen, and flame arrester of the damper. Descale 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.

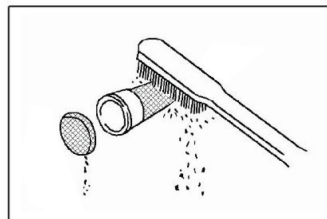
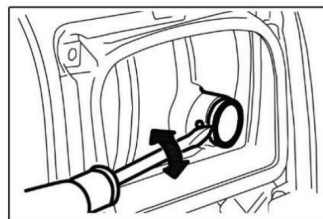


**IMPORTANT!**



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

Fig. 4



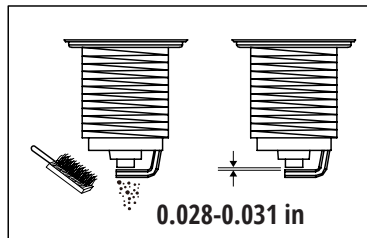
## SPARK PLUGS TECHNICAL MAINTENANCE

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Spark plug must 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. Examine the spark plug. If is shattered – it is necessary to replace it.  
Recommended replacement spark plugs – F7TC.
4. The gap should be 0.7-0.8 mm (0.028-0.031 in).
5. In case of repeated use, the spark plug must be cleaned by means of a metal brush.  
After that – set the correct gap.



## FUEL FILTER

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**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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**IMPORTANT!**



**DO NOT store generator with gasoline!**



**IMPORTANT!**



**The generator must be stored and transported with a closed vent at all times!**

For long-term storage of the generator - it is necessary to drain the gasoline from the fuel tank and carburetor. **DO NOT** store generator with gasoline! Observe the permitted storage periods for each type of gasoline! The storage room has to be dry and free from dust deposits. The storage room also has to be locked away from children and animals. It is recommended to store and use the generator at temperatures of  $-4^{\circ}\text{F}$  to  $+104^{\circ}\text{F}$ . Avoid direct sunlight, rain on the generator.

## GENERATOR DISPOSAL

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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
<b>Engine will not start</b>	Rotary selector switch is in the "OFF" position	Set the rotary selector to "ON"
	No fuel in tank	Fill the tank with unleaded fuel with octane rating of 87 or higher
	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
<b>Decreased engine power/ troubled engine start</b>	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
<b>Engine overheated</b>	Cooling fins are dirty	Clean the cooling fins
	Air filter is dirty	Clean the air filter
<b>Generator shuts off and error indicator is on</b>	Potential battery problem (it must be charged)	Check battery parameters and remedy problems

## CONTACTS

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