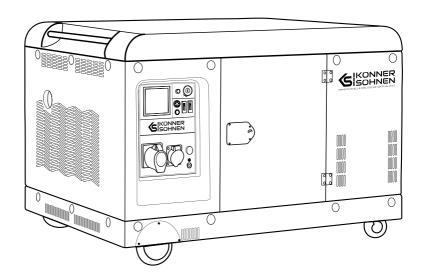


HEAVY DUTY SILENT DIESEL GENERATOR

Diesel Generator

KS 16-1E KS 16-1/3E



INTRODUCTION

Thank you for your purchase of **Könner & 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 thewebsite of the official importer of **Könner & 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.



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



The manufacturer of **Könner & 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**



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



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.



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.



Pay attention to the number of phases of the generator and the electrical system. A three-phase generator is only suitable for three-phase power consumers. Never connect a three-phase generator to a three-phase home network if there are no three-phase power consumers.



The device generates electricity. Follow safety precautions to avoid electric shock.

ELECTRICAL SAFETY



The generator should be used as an IT or TN system based on the application. Earthing and additional protective measures such as insulation monitoring or protection against accidental contact (residual current device) must be provided based on the application and the system used.

The generator produces electricity that may lead to an electric shock while neglecting compliance regulations. All connecting the generator to the network must be made by certified electrician in accordance with all electrical rules and regulations. Connect the generator to the protective ground before operation. Wires with damaged or spoiled insulation should be replaced. You should also replace worn, damaged or rusty contacts.





ATTENTION - DANGER!



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

It is forbidden to connect to the generator devices which can generate current pulses and direct energy towards

the generator (voltage stabilizers, devices with electronic

brakes, on-grid and hybrid inverters, etc.).

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

The generator runs on automotive diesel fuel and conform to European quality standards not lower than Euro V emission standard. The generator runs on automotive diesel fuel. Do not use gasoline, kerosene, fuel oil as fuel. Diesel fuel type should correspond the operating season.

The use of low-grade fuel can lead to a degradation of the manufacturer's declared specifications or to engine failure. Do not add any chemical additives to diesel fuel and do not mix diesel fuel with used engine oil or fuel oil.

Diesel fuel characteristics	Region of use
EN590:96	European Union
BS 2869-A1 or A2	Great Britain

Keep the fuel tank and refueling accessories clean and neat and ensure that no foreign objects / debris get into the fuel tank when refueling the generator. Sulfur content should not exceed 0.5% (less than 0.05% is recommended). Sediment and water content in fuel should not exceed 0.05%. A cetane number of at least 45 must be ensured. For example, biodiesel fuel which is known under the B5 brand, is permitted. This type fuel should contain no more than 5% of fatty acid methyl esters (FAME) and 95% of mineral diesel fuel. Read more about the requirements for biodiesel in the full web version: **konner-sohnen.com/manuals**

Safety symbols and description of inscriptions can be found in the full web version.



To prevent electric shock and avoid damage to your electric devices and generator, simultaneous switching on of three and one phase circuit breaker is prohibited!

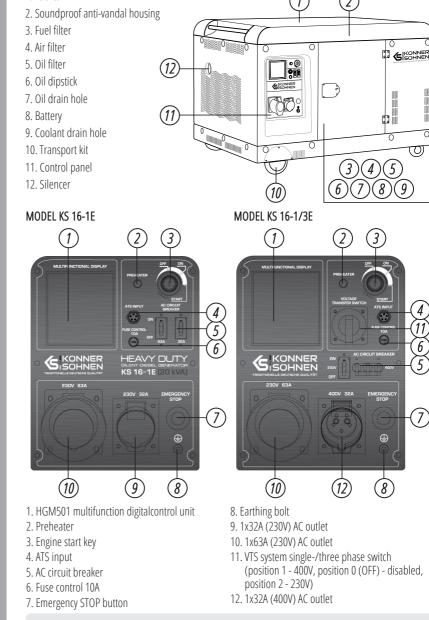
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1. Fuel tank







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.



230 V 230 V 400 V Voltage Max Power 16 kVA 16 kVA 20 kVA Nominal Power 15 kVA 15 kVA 18.75 kVA Frequency 50 Hz 50 Hz 69,56 A 23,09 A Current (max) 69,56 A **Engine speed** 3000 rpm 3000 rpm Outlets 1×32A (230V), 1×63A (230V) 1×32A (400V), 1×63A (230V) **Emergency stop button** + + HGM501 multifunction digital control unit HGM501 multifunction digital control unit Display Noise level Lpa (7m)/Lwa 76/96 dB 76/96 dB KS 1400HD **Engine model** KS 1400HD **Engine type** diesel powered two-cylinder, four-stroke air-cooled **Engine power** 30 hp/22 kW 30 hp/22 kW

KS 16-1E

0 1 1	P		
Crank case volume	4	41	
Engine cylinder volume	1326 cm ³	1326 cm ³	
Power output controller	AVR		
Engine start	electro		
Power factor, cosφ	1	1 0.8	
Battery	45 Ah	45 Ah	
ATS output (universal 6-pin)	+	+	
Dimensions (LxWxH)	1320×820×880 mm	1320×820×880 mm	
Weight	360 kg	363 kg	
Protection class	IP23		
Acceptable deviation of a current is 5%			

Model

KS 16-1/3E

The optimum operating conditions are ambient temperature of 17°C–25°C, barometric pressure of 0.1 MPa (760 mm Hg), and relative humidity of 50-60%. Under such ambient conditions, the generator can guarantee maximum performance in terms of the stated specifications. In case of deviations from the above ambient values, the performance of the generator can be different.

Please note that in order to preserve the lifespan of the generator, continuous loads should not exceed 80% of the rated power.

MULTIFUNCTION CONTROL UNIT HGM501

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The HGM501 multifunction control unit is a smart digital controller that combines digital and intelligent functions to monitor and protect the generator set. It also implements start/stop, data measurement, alarm display, shutdown protection of the generator set and other functions. The controller is equipped with LED indicators; it is reliable and easy to use.

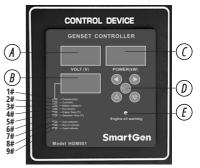
The generator set controller has a microprocessor that enables to accurately measure multiple parameters that can be configured using the front panel of the controller.

The controller has a compact modular design, fire proof enclosure made of ABS plastic. Protection class – IP42.

PERFORMANCE AND FEATURES OF HGM501 MULTIFUNCTION CONTROL UNIT

KEY FEATURES

- 1. Digital display (A) shows the total supply voltage.
- 2. Multifunction display (B) shows current, frequency, battery voltage, total operating hours (maximum 999 hours), engine temperature.
- Controller protects the engine from over- and undervoltage, under- and overfrequency, overload and overtemperature.
- 4. Indicator (E) indicates low oil pressure, in which case the engine immediately turns off.
- 5. Parameters displayed can be adjusted by pressing the touch buttons (UP, DOWN, LEFT, RIGHT).
- 6. All the parameters can be set using the front panel, which is simple and user-friendly.



- A Voltage display
- B Multifunction display
- C Power display
- D Function switching
- E Low oil pressure indicator

Button	Function	Description		
	FUNCTION	 In the settings menu, pressing this button enters or confirms the settings. During normal operation, press the button to switch to frequency display. If the alarm is turned off, press and hold down the button for 1 second to reset the alarm. 		
	UP / SCROLL 1. When setting the parameters, pressing this button increases the set val 2. During normal operation, press this button to switch to the upper LED.			
\bigcirc	DOWN / SCROLL	 When setting the parameters, pressing this button decreases the set value. During normal operation, press this button to switch to the bottom LED. 		

DESCRIPTION OF TOUCH BUTTONS OF SMARTGEN MULTIFUNCTION CONTROL UNIT

Button	Function	Description	
	LEFT	 When setting the parameters, pressing this button returns to the previous menu. During normal operation, press this button to switch to the bottom LED. 	
	RIGHT	 When setting the parameters, press this button to go to the next menu. During normal operation, press this button to switch to the bottom LED. 	

SETTING THE OPERATION MODE

7.3

The controller has two control modes: automatic and manual. You can choose only one of two operating modes. By changing the operation mode, the controller supports completely the previous control mode, and then performs the new mode control procedure in accordance with the current situation.

START-UP PROCEDURE

To turn on the controller and then start the generator, turn the starter key from the OFF position to the ON position. To start the engine, set the starter key to START. After starting the engine, release the starter key.

The voltage, power and frequency displays will show the actual readings. Press the 🙆 or 💽 button to switch between indicators 1# - 6# and the multifunction display will show the corresponding settings. Press the button to return to the frequency display.

LED status:

1# Frequency, Hz	4# Operating hours (H)	7# Operation indicator
2# Current, A	5# Engine temperature, °C	8# Start indicator
3# Battery voltage, V	6# Automatic protection	9# Low oil pressure indicator

Before starting the engine, make sure all parameter settings are correct.

Before starting the generator set, the low oil pressure indicator will turn on for a few seconds; if this is not the case, the oil pressure switch or its return circuit might be faulty; in this case, please do not continue operation until the problem is resolved.

POWER-OFF PROCEDURE

- Automatic power-off. If the automatic protection status is turned on, the system will be automatically stopped. If a low oil pressure signal is detected for 2 seconds during normal operation of the generator set, the device will be stopped.
- **2) Manual power-off**. Turning the starter key from the ON position to the OFF position powers off the device in any case.

7.4

In automatic protection mode, in addition to protection against low oil pressure, all other protections (overand undervoltage, under- and overfrequency, overload and overtemperature) are active.

PROTECTION AGAINST VOLTAGE VARIATIONS

When the nominal voltage limits are exceeded by $\pm 10\%$, the voltage LED starts to flash; after a 7-second delay at undervoltage or a 3-second delay at overvoltage, an emergency shutdown will be triggered. After that, the voltage LED continues to flash and shows the previous alarm.

FREQUENCY PROTECTION

50 Hz: (45-55) Hz

TRADITIONELLE DEUTSCHE QUALITÄI

If the set value is exceeded, the frequency LED starts to flash; after a 7-second delay at underfrequency or a 3-second delay at overfrequency, an emergency shutdown will be triggered. After that, the frequency LED continues to flash and shows the previous alarm.

OVERLOAD PROTECTION

- If the set value is exceeded by 5% or less, the alarm will not be triggered.
- If the set value is exceeded by more than 5%, the power LED will start to flash.
- If the set value is exceeded by 5%-7.5% and lasts for more than 3 hours, an emergency shutdown will be triggered.
- If the set value is exceeded by 7.5%-10% and lasts for more than 1 hour, an emergency shutdown will be triggered.
- If the set value is exceeded by more than 10% and lasts for more than the preset value of the overload protection delay, an emergency shutdown will be triggered (by default: 30 sec).
- After the emergency shutdown is triggered, the power LED continues to flash and shows the pre-alarm value.

LOW OIL PRESSURE PROTECTION

Regardless of whether the automatic protection mode is enabled or not, the generator set will turn off if a low oil pressure status lasts for more than 2 seconds.

GENERATOR OVERHEAT PROTECTION

If the generator temperature exceeds 95 °C, the LED will start to flash; after a 7-second delay the protection is triggered; the LED continues to flash and shows the values of the previous protection. Not available in the generator models described in this manual.

BATTERY VOLTAGE PROTECTION

Battery voltage protection is enabled regardless of whether the automatic protection mode is enabled or not and whether the generator set is running or not. If the battery voltage is lower than 8 V or higher than 16.5 V, the gas discharge display or the LED display will start to flash, but no safety shutdown will be triggered.

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The generator is supplied without fuel. Before the operation please fill the fuel. Guidelines for filling are below. Generators are supplied without motor oil. The generator casing may contain residues of oil after tests conducted during production.

Before starting to use the generator, be sure to pour oil. Recommendations on oil and it's filling process are below. Follow maintenance recommendations during the first month or twenty hours (whichever occurs first) contained in the "Maintenance" section.

For commissioning please charge the battery. Please use additional battery charger (not included) to charge the battery. Upon accumulator unit recharge, it is mandatory to verify the polarity correctness (+ to +, - to -) or let the generator work at least one hour at 50% load at the first start.

This material is for informational purposes only and does not constitute a manual for installing the equipment or connecting it to the mains, but we strongly recommend that you read the instructions below. Equipment connection must always be carried out by a certified electrician responsible for the installation and electrical connection of the equipment according to local laws and regulations. The manufacturer assumes no liability for improper connection of the equipment or for any material or physical damage that may result from improper installation, connection or operation of the equipment.

Before starting the engine, make sure that the rated power of power consumers matches with the power of generator. Do not exceed the nominal power of the generator. Do not connect the device before starting the engine!

The generator is not intended for continuous operation at maximum power. Operation in this mode significantly reduces the engine life of the generator. In peak power supply mode, the generator can only be used for a short time to start equipment, which has higher starting currents at the time of start (starting of motors or other electrical appliances).

After starting the engine, make sure the voltmeter readings correspond to the nominal (at 50 Hz 230V \pm 5% for single-phase units and 400 \pm 5% for threephase).

MOTORSTART

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ELECTRIC START

- Do not connect any power consumers to the generator before you start the engine.
- Connect the terminals to the battery and observe the correct polarity: "plus" to "plus", "minus" to "minus".
- Set the start key to ON.
- Turn the key clockwise to the START position.
- After a successful start, release the key and it will automatically return to the ON position.
- If the engine does not start after pressing and holding down the key in the START position for 5 seconds, try again in 15 seconds. Lengthy operation of the engine start system may discharge the battery. When the generator is running, leave the key in the ON position.
- After three minutes of the generator operation, switch the circuit breaker (emergency switch) to the upper position (ON).



If engine does not start after three or four attempts, it may mean that the fuel system has some air inside. Remove the air from the fuel system (drain the diesel fuel, with the fuel there will be excess of air).



Do not let the simultaneous connection of two or more devices. Start of many devices requires large power capacity.



Devices are to be connected in turns, according to its maximum allowed power. Do not connect the consumers in first 3 minutes after the generator start. Do not stop the generator, if there are any devices connected. This may result to generator breakdown.

STARTING IN THE COLD SEASON

- When the air temperature is lower than $+5^{\circ}$ C it is necessary to use the "Warming-up" function when starting.
- Turn the ignition key to ON position and push the heating button HEAT. Hold it and turn the ignition key to START.

Do not hold the button "Warming-up" more than 10 seconds, it may cause the failure of incandescent candles.

STARTING THE GENERATOR USING THE ATS UNIT:

When starting the generator in automatic or manual mode using the ATS unit (automatic transfer switch), the start key on the generator control panel must be in the "OFF" position.

DURING GENERATOR OPERATION:

- You may use the generator, if the voltage meter displays the value 230V+/- 5% (50 Hz) and 400V+ / 5% (50 Hz) for three-phase generator.
- Watch the voltage meter and in case of excessive indices values, stop the generator operation.
- All "generator to network" connections are to be carried out by a certified electrician. Any mistakes may result in serious equipment damage.



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IN ORDER TO STOP THE ENGINE, PERFORM THE FOLLOWING ACTIONS

- 1. Set the emergency switch to OFF, stop all power consuming devices connected to the generator.
 - 2. Let the generator run at no load for 3 minutes for alternator to be cooled.
 - 3. Turn the key to OFF position.
 - 4. For all types of diesel generators there is an emergency stop lever for the engine. Use it in case of emergency only

MODELS WITH VTS SYSTEM VTS

12

Models named "1/3" are equipped with a VTS phase switching system. These models can operate in singlephase (230V) and three-phase (400V) almost without loss of power.

Switching modes is only allowed when the load is completely switched off.

FOR THREE-PHASE DIESEL GENERATOR

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Three-phase diesel generator load must be distributed on all three phases, and the load on all phases must be balanced. The load on 1 phase should not exceed 1/3 of the total generator capacity. Maximum permissible imbalance is 20%.

Only 1 or 2 phase load leads to the generator breakage. The total load and total current on all three phases should not exceed nominal load and current of the generator.



An overload may lead to automatic activation of generator protection machine. Reduce the load. Reconnect the generator no earlier than 5 minutes after switching off.

TECHNICAL MAINTENANCE WORKS

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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**

Node	Service type	Every start	First month or after 20 hrs	Each 3 months or after 50 working hrs	Each 6 months or after 100 working hrs
Motor oil	Check the level	S			
	Replace		S		S
Ala Citera	Check		S		
Air filter	Replace			S	
Oil filter	Replace		Ø		S
Fuel tenk	Check the level	Ø			
Fuel tank	Check/Clean				S
Fuel filter	Check/Clean		Ø	S	
ruei liiter	Replace				Ø

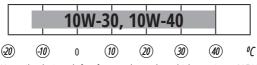
TECHNICAL MAINTENANCE WORKS

RECOMMENDED OILS

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High Limit

Low Limit



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.

Oil viscosity according to SAE standards or service category, are specified on the API capacity sticker. 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 maintanance schedule. The detailed description of oil filling and draining can be found in the full version of the manual.

AIR FILTER TECHNICAL MAINTENANCE

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Air filter replacement is to be performed each 50 hours of the generator operation (every 20 hours in unusually dusty conditions).

Never run the engine with the air filter removed or without the filter. Otherwise dirt and dust lead to rapid breakage of engine parts. Failure in this case will not be repaired.

FUEL FILTER TECHNICAL MAINTENANCE

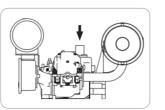


There are two kinds of fuel filters in Könner & Söhnen diesel generators. They prevent the ingress of contaminants from diesel fuel to the engine.

COARSE CLEANING FUEL FILTER

Remove the filter after the possible hard particles hit every 50 operating hours. Never use water for purification the filter.

- 1. Remove the fuel cap.
- 2. Remove the fuel filter.
- 3. Use diesel fuel to clean the filter.
- 4. Put the filter back to the fuel tank.



THE FUEL FILTER IN THE FUEL SUPPLY PIPELINE

This filter has to be replaced every 100 operating hours.

BATTERY USE

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To prolong battery life it is recommended to do battery charging with an external device (not included) every three months.

Battery warranted – three months from the date of purchase of the generator.

STORAGE

Storage room has to be dry and free from dust deposits. Storage room also has to be locked away from children. Information on long-term storage and transportation can be found in the full version of the manual.

Potential faults and troubleshooting methods, as well as average device capacities can be found in the full version of the manual.

BATTERY AND GENERATOR DISPOSAL

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

WARRANTY SERVICE TERMS

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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.



EC Declaration of Conformity

Nr. 204

The following products have been tested by us with the listed standards and found in compliance with the European Community Machinery Directive 2006/42/EC, Low Voltage Directive 2014/35/EU, Electromagnetic compatibility Directive (EMC) 2014/30/EC, Noise Directive 2000/14/FC

Manufacturer:	DIMAX INTERNATIONAL GmbH
Address:	Flinger Broich 203, 40235 Duesseldorf, Germany
Product:	Diesel generator "Könner & Söhnen"
Type / Model:	KS 16-1E, KS 16-1/3E

The statement is based on a single evaluation of above mentioned products. It does not imply an assessment of the whole production and does not permit the use of the test lab. logo. The manufacturer should ensure that all product in series production are in conformity with the product sample detalied in this report. The applicant should hold the whole technical report at disposal of the competent all the right.

Applied EC Directives:	2006/42/EC Machinery Directive
	2014/35/EU Low Voltage Directive
	2014/30/EC Electromagnetic compatibility Directive (EMC)
	2000/14/EC Noise Directive
	2016/1628/EU Non-Road mobile machinery emissions
Applied Standards:	EN ISO 12100:2010;
	EN 1679-1:1998+A1:2011;
	EN 60204-1:2018;
	EN 61000-3-3:2013;
	EN 61000-3-2:2014;
	EN 61000-6-1:2007;
	EN ISO 3774:2010;
	ISO 8528-10:1998.

Diesel engines KS 1400HD correspond to European Emission Standard Euro V (STAGE V). This is confirmed by EUTYPE-APPROVAL CERTIFICATE issued by department of transport of Madrid, Spain. Technical service responsible for carrying out the test -IDIADA. Date of test reports 27/01/2022

2000/14/EG 2005/88/EG Annex III

For models KS 16-1E, KS 16-1/3E Noise measured Lwa = 95 dB (A), guaranteed Lwa = 96 dB (A)



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International GmbH Flinger Broich 203 40235 Düsseldorf USt-ID DE296177274

DIMAX

We DIMAX INTERNATIONAL GmbH hereby declare that specified above conforms covering European Parliament and Council Directives, 2006/42/EC of 17 May 2006 Machinery Directive, 2014/35/EU Low Voltage Directive of 26 February 2014, Electromagnetic compatibility Directive (EMC) 2014/30/EC of 26 February 2014, Noise Directive 2000/14/EC of 8 May 2000. The CE mark above can be used under the responsibility of manufacturer. After completion of an EC declaration of Conformity and compliance with all relevant EC directives.



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