GUK Range of Ultrasonic Cleaners

Operation and Maintenance Instructions

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1. Standards

All models within this range meet the following standards:

EN 60335-1:2012 + A11:2014 + AC:2014 + A13:2017
EN 55014-1:2017
EN 55014-2:2015
EN 6100-3-2:2014
EN61000-3-3:2013

Related to CE Directive(s):

2014/35/EU (Low Voltage)
2014/30/EU (Electromagnetic Compatibility)

And also:

EN 62321:2009
EN 50581:2012

Related to CE Directive(s):

2011/65/EU (Restriction of Hazardous Substances Directive)

2. Introduction

2.1 General Description

The Guyson GUK range of table-top ultrasonic tanks may be used in domestic, medical, and industrial applications to achieve fast, safe, and reliable cleaning. Common applications of the GUK Ultrasonic Cleaner include laboratory items, precision parts, PCBs, ink cartridges, coins, jewellery, medical instruments, golf balls, electronic parts, lenses and crystals.

The Guyson GUK has a wide range of features fitted as standard, which allows the user to control multiple variables within the cleaning process. This degree of control ensures that the Guyson GUK can be fine-tuned to suit the individual application, and produce the highest possible standards of cleaning across a wide range of surfaces.

Please Note: The GUK is not intended for use on components with heavy contamination, using the tank for this purpose will result in long term damage to the tank and unrealised cleaning results.

2.2 Features

Adjustable power

The GUK range of ultrasonic cleaning baths has a set frequency of 40 kHz. This provides safe and effective cleaning for most common applications. If, however, more delicate items are to be cleaned, then the variable power setting allows a gentler cleaning action to be employed.

Low noise

In order to protect the user from exposure to high noise levels, the GUK has been designed to be under 80dB when in normal operation.

Sweep function

The sweep function creates slight deviations from the set operating frequency. This eliminates single frequency dead spots caused by small variations in the manufacturing tolerance of the transducers.

Degas function

Degassing reduces the amount of absorbed air from the liquid by heating the liquid to boiling point. This air would otherwise act as a cushion for the collapsing cavities and reduce the cleaning effect. Air is absorbed as the liquid cools, so it is recommended to degas after long periods of inactivity, or if the bath has been switched off overnight.

Heating function

Some applications, such as the removal of oils and grease, may be greatly improved by the use of heat. Heating a solution will also make it less viscous, which will aid in the formation of cavitation bubbles.

Always check that the use of heat is suitable, as some residues may harden when heat is applied, making cleaning more difficult!

⚠	**Always consult cleaning solution material data sheets for recommended heat ranges.**

Adjustable timer

The adjustable timer function allows the cleaning cycle to be run for a set time, automatically switching off the sonics and the heat when the cycle is complete.

Memory function

The memory function remembers the last settings used, ensuring a quick start between work periods, or if the machine has entered sleep mode due to inactivity.

Sleep mode

The sleep mode automatically switches off the sonics and the heating when the machine functions have not been interacted with for a set time. This is designed to protect the machine from overheating, to reduce loss of solvent through evaporation, and to save power.

2.3 Data sheets

Model	Maximum Capacity (L)	Tank size (mm)	Maximum ultrasonic rated power (W)	Heating rated power (W)	Frequency (KHz)	Timer settings (Mins)
GUK-2	2	150x135x100	70	100	40	1-99
GUK-3	3.2	240x135x100	120	100	40	1-99
GUK-6	6.5	300x150x150	180	200	40	1-99
GUK-15	15	330x300x150	360	500	40	1-99
GUK-22	22	500x300x150	480	500	40	1-99
GUK-30	30	500x300x200	600	500	40	1-99
GUK-45	45	500x300x300	700	1000	40	1-99

3. Safety Recommendations

Users must establish safe operating procedures for the running of ultrasonic baths, so that in their individual routine schedules, operations are conducted safely, without undue risk to personnel.

This can be achieved from a thorough understanding of the equipment and cleaning solvents and a disciplined application of the knowledge by managers, supervisors and operators to the particular cleaning situations. It is to be noted that despite the increasingly stringent standards imposed by safety legislation, there are many hundreds of Guyson International cleaning units in safe use every day.

Maintenance work on the system should only be undertaken by competent engineers after authorisation by Guyson International Ltd.

FAILURE TO USE THIS MACHINE IN ACCORDANCE WITH THIS MANUAL CAN RESULT IN SERIOUS INJURY OR DEATH. READ THE FOLLOWING CAREFULLY BEFORE YOU ATTEMPT TO OPERATE THE MACHINE.

3.1 Hazards and warnings

	BLUE CIRCLE signs are mandatory. These are used to prescribe a behaviour necessary for the safe use of the equipment.

	YELLOW TRIANGLE signs are warnings. These indicate a hazard or danger about which you should take care.

	RED CIRCLE signs prohibit behaviours. These inform of actions which you must not do. Performing these actions presents a risk to health and safety.

3.1.1 General Hazards and Guidelines

	Keep this operators manual available to users at all times.
	This equipment should be used in a well-lit area.
	If the equipment is dismantled / decommissioned, ensure it complies with local environmental laws.
	Before performing any cleaning or maintenance, the equipment must be switched off and disconnected from the power supply.
	Whenever emptying or replacing water or cleaning fluid, make sure that the water or cleaning fluid in the tank is at room temperature or cool. Also be sure to turn off the device and unplug the power cord during this process.
	Before turning on the heating function 611 the tank 1/2 - 2/3 full with water or cleaning fluid to prevent damage from the heating element.
	This unit should be stored in a cool dry place, away from any heat sources and moisture.
	Wash solutions may produce harmful vapours when heated. Consult manufacturers' Material Data Sheets and wear appropriate breathing apparatus.
	Goggles (to EN166) should be worn when handling liquid concentrates and at all times when there is a risk of splashing with the working solution.

	Suitable protective clothing must be worn when using wash solutions; if contaminated, clothing should be removed immediately and cleaned before re-use. Cleaning solutions tend to have a degreasing effect on the skin leaving it in a dry condition.

	Impervious gloves (please refer to the chemical manufacturer's Material Safety Data Sheets) should be worn routinely.

Wash solutions may contain harmful chemicals. Contact of the cleaning solution with the eyes and skin must be avoided. Consult manufacturer's material data sheets and wear appropriate PPE when filling, topping up, using, or cleaning equipment.

Where the advised precautions are taken in using cleaning solutions, the need for first aid treatment will be rare, but it is essential for all users to be aware of the actions to be taken in the event. (Always refer to the cleaning solution manufacturer's Material Safety Data Sheets).

Users must give some forethought as to where medical attention will be obtained, and, where treatment or examination is necessary, the medical authority should be presented with the manufacturer's literature pertaining to the product.

	Wash solutions may contain chemicals which are poisonous to users and the environment. Consult material data sheets and local authorities regarding safe disposal of chemicals.

Contaminated solutions should be disposed of in accordance with local Water Authority regulations.

	DO NOT operate this unit without either water or cleaning fluid in the tank as damage may occur.

	DO NOT use any corrosive cleaning fluid with strong acidity or alkalinity to avoid damage to the tank.

	DO NOT use organic solvents, these are volatile and can create harmful atmospheric environments for operators.

	DO NOT allow any objects or cleaning fluid to enter inside of the machine.

	DO NOT operate the unit continuously for more than 99 minutes and please wait more than 30 minutes before next use, otherwise the lifetime of the unit will be shortened.
	After use, wipe down the stainless steel tank and housing with a clean dry cloth. DO NOT wash the unit with water directly.
	Parts activated by ultrasound transfer ultrasonic energy when touched. Contact can result in painful inflammations. DO NOT touch parts when they are submerged in the ultrasonic tanks.
	DO NOT immerse any part of your body in the tank whilst the ultrasonics are in operation. There may be adverse effects both from the action of the ultrasonics and from the cleaning solution.
	DO NOT drop heavy objects into a cleaning tank. There is a serious risk from splashing liquid of it entering the eyes. Where such a risk is perceived goggles must be worn.
	DO NOT use chemicals that have not been specified by Guyson International.
	DO NOT ever use alcohol, gasoline or flammable solutions. Doing so could cause a fire or explosion and will void your warranty. USE ONLY water-based solutions.
	DO NOT continue to use if any part has failed or is in poor condition. Using equipment in a state of fault may be dangerous and may void warranty.
	DO NOT modify or substitute or remove any equipment or controls supplied on or with the equipment without our prior written assessment and consent.

	DO NOT block or restrict ventilation slots.
	DO NOT operate this unit without either water or cleaning fluid in the tank as damage may occur.
	Parts activated by ultrasonic energy heat up! Danger of burns in the event of contact!
	The equipment is RFI suppressed. For technical reasons, there is a stray magnetic field of only a few metres. This is permitted, although it can impair the function of special medical equipment. This should be taken into account when installing and operating the device.
	Use only original equipment replacement components.
	This equipment must be only used by competent operators who are properly skilled, duly trained, and have read and understood the operating and safety instructions.
	Regularly check condition of electrical leads.

3.2 Potential Misuse

In normal operation, the main hazard to users of this equipment arises from possible exposure to excessive noise levels. There are subsidiary hazards associated with the handling of some of the cleaning products and also from skin contact with hot cleaning liquids.

Experience has shown that observance of the following simple rules will assist in securing the safer operation of a cleaning unit.

3.3 Noise Emisssions

The operation of this equipment can generate noise levels which can be damaging to the ears. It is essential that the operator and all other personnel in the vicinity be made aware of this and that suitable ear defenders are worn.

Use of the ultrasonic cleaning system is attended by the emission of characteristic, high pitched noise consisting largely of harmonics and sub-harmonics of the basic working frequency. Individual tests have shown that the total noise emitted from Guyson International baths is below the lower exposure action value of 80dB(A) (Leq) (reference “The Noise at Work Regulations 2005”).

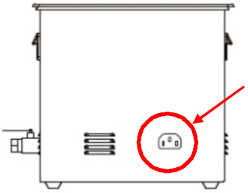
There is a need for users to ensure that the noise intensity does not increase with time during routine use. In some circumstances, the provision of ear defenders for operators may be necessary.

Particular care should be taken to avoid siting ultrasonic cleaning equipment near other noisy machinery, since the combined noise intensity could exceed the required safe limit. Where such a combination is unavoidable, it is strongly recommended that noise level measurements should be made.

3.3.1 Noise reduction

To help reduce sound emissions, the GUK range of ultrasonic cleaners are fitted with a sound reduction skin. If noise emissions have increased, the condition of the skin should be checked.

4. Installation



The GUK range of cleaners comes with a choice of two power leads, with the exception of the GUK-45 which will have a single lead already installed.

Check the lead is correct for the mains power supply it is to be connected to, and fit to the rear of the unit.

4.1 Environmental

Wash solutions may contain chemicals which are poisonous to users and the environment. Consult material data sheets and local authorities regarding safe disposal of chemicals.

To ensure minimum environmental impact the system does not use chemicals which may directly deplete the ozone layer. However, in order to prevent possible contamination of water supplies, sewers etc., all waste solutions should be disposed of in accordance with Local Water Authority regulations. The method of disposal will be dependent upon the cleaning solution type, contaminant composition and stringency of local regulations.

4.2 Siting

In order to ensure efficient operation of the system and to maintain a safe working environment for associated personnel, it is imperative that the following conditions are met:

- The unit must be sited in a dry, draught-free well-ventilated area, with good accessibility on all sides.
- It must be placed on a level and secure base.

4.3 Lifting/Moving

If it becomes necessary to relocate the bath, always disconnected from the mains before moving or emptying.

When moving the bath, allow the solution to cool before using the drain tap to empty the tank.

Waste solution must be disposed of safely.

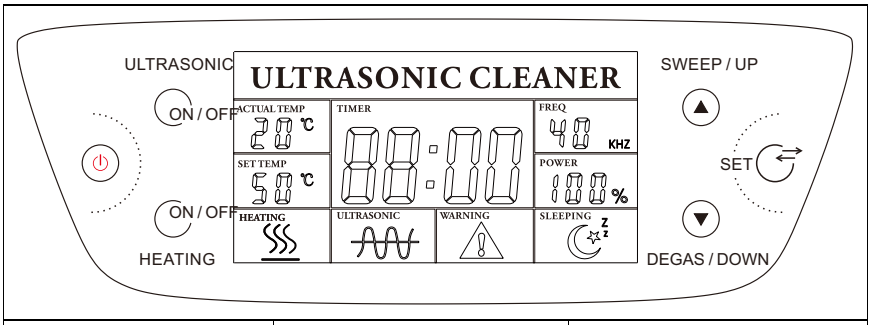
5. Testing

On initial power-up:

- Check sonics start when ULTRASONIC ON is selected
- Check heating starts when HEATING ON is selected
- Check ACTUAL TEMP with a calibrated probe
- Set the TIMER and ensure sonics and heat switch off at the end of the timed period
- Set the SLEEP MODE and ensure sonics and heat switch off at the end of the timed period

6. Basic Operation

6.1 Panel overview



	POWER BUTTON	HEATING	HEATING WORKING STATUS	POWER	POWER LEVEL
ULTRASONIC ON / OFF	ULTRASONIC ON/OFF	TIMER	TIMER WINDOW	SLEEPING	SLEEP MODE
ON / OFF HEATING	HEATING ON/OFF	ULTRASONIC	ULTRASONIC WORKING STATUS	SWEEP / UP	SWEEP / UP ADJUST
ACTUAL TEMP	ACTUAL TEMP	WARNING	WARNING ICON	DEGAS / DOWN	DEGAS / DOWN ADJUST
SET TEMP	USER SET TEMP	FREQ	FREQUENCY DISPLAY	SET	SET BUTTON

6.2 Getting started

Please Note: The GUK should under no circumstances be operated without the use of the basket, doing so will expose the system to a high degree of potential damage.

- Place the unit on a flat and stable working platform
- Add enough cleaning fluid (usually water) to the tank to completely immerse the items to be cleaned. The fluid level in the tank should always be about 2/3 full.
- Connect the grounded power cable. The backlight of the LCD display will illuminate.
- If no set-up parameters need to changed, simply press the ULTRASONIC ON/OFF button to start the cleaning. If you would like to reset the heating temperature, timer or power level, please refer to the instructions below.
- First press the SET BUTTON to select the item you wish to set up. There are three different settings to select. Each time the SET button is pressed, it will scroll to the next possible selection in the following order:

SETTEMP → TIMER → POWER → SETTEMP

- Once the desired setting is flashing, use the adjustment buttons to set the parameter (item will time out and stop flashing if left untouched for more than 10 seconds).

6.2.1 Setting the temperature (SETTEMP)

- Press the SET button until the "SETTEMP" icon is flashing.
- Use the adjustment buttons ▲▼ to select the desired temperature setting. Each button press will adjust temp by 1 degree Celsius, or you can press and hold for continuous adjustment. The maximum setting temperature is 80°C.
- After setting the temperature, press the HEATING button to start heating. The heating working status icon will flash. If the actual temp is ≥ the set temp, heating will stop and the status will stop flashing. To stop heating function, press the HEATING button once more.

Note: The unit will not enter sleep mode during heating.

	If you switch on the heater without water or other cleaning fluid in the tank, once the actual temperature reaches the warning temperature it will trigger an alarm for 15 seconds; the triangle warning icon will appear on the screen.

6.2.2 Setting the timer (TIMER)

Press the SET button until the TIMER window starts flashing.
Use the adjustment buttons ▲▼ to select the desired cleaning time. The time range is adjustable from 1 to 99 minutes Each button press will adjust the timer by 1 minute, or you can press and hold for continuous adjustment.

6.2.3 Setting the ultrasonic power (POWER)

- Press the SET button until the POWER icon is flashing.

- Use the adjustment buttons ▲▼ to select the desired power level. The power level is adjustable from 10% to 100%. Each button press will adjust the power level by 10% or you can press and hold for continuous adjustment.
- Press the ULTRASONIC ON/OFF button to switch on the ultrasonic function, the ULTRASONIC WORKING STATUS icon will light up. Pressing the button a second time will turn off the ultrasonic function and the light will go out.

6.2.4 Sweep function

With ultrasonic on, press the SWEEP / UP adjustment button directly to start the sweep function. The FREQUENCY DISPLAY icon flashes. To stop the sweep function, press the SWEEP / UP button once more.

6.2.5 Degas function

With ultrasonic on press the DEGAS / DOWN adjustment button directly to start the degas function. The ULTRASONIC WORKING STATUS icon flashes. To stop the degas function, press the DEGAS / DOWN button once more.

6.2.6 Sleep mode

After use, if the machine is left untouched for 5 minutes, it will enter sleep mode. Alternatively you can press the POWER button to enter sleep mode. The SLEEP MODE icon will light when in sleep mode. To return to active mode from sleep mode, simply press the POWER button again.

6.2.7 Memory function

This unit will automatically save the most recently used setup parameters for next use. To repeat the last cleaning after entering sleep mode, just press the POWER button to re-activate the unit. You can now continue cleaning as normal using previous settings.

When the unit is not in use please unplug the power cable directly

6.3 Shutting down

When the bath is not in use it must be shut down.

Set heater and Sonics switches to their off positions and unplug from the mains socket. Lids should be left in position to minimise evaporation of the liquid and to prevent foreign objects entering the tank.

6.4 Draining and cleaning

- Switch off and disconnect from the power supply
- Allow cleaning solution to cool
- Drain the bath into an approved container
- Thoroughly rinse the bath with water
- Clean out the bath, paying particular attention to the base and corners as any deposit or surface dullness will decrease ultrasonic activity
- Remove all traces of any cleaning agent used
- Refill to above the minimum solution level
- Reconnect the power

7. Troubleshooting

This section is intended to be an aid in dealing with problems that can arise when using this equipment.

Effect	Cause	Action
High consumption of solution	Excessive fluid loss	Use alternative basket design Re-align components in basket Withdraw basket more slowly
Overheating	Thermostat failure Low liquid level	Switch off and unplug unit. Allow to cool Check temperature is in the <80ºC Top up to above minimum solution level
Unit will not heat	Over temperature cut-out has switched due to low liquid level or temperature control failure Thermostat failure	Contact Guyson
Localised pitting corrosion	Heavy build-up of solid contamination including deposits Basket not being used	Drain and clean tank Always use a basket
Unsatisfactory cleaning	Solution very contaminated Basket too full	Change cleaning liquid Reduce number of parts in the basket
Unit not working	Power failure	Check mains supply and fuses Contact Guyson

8. Maintenance

Maintenance is essential to keep the equipment operating efficiently. It falls into two categories:

- Routine, preventative operations that are performed by operators
- One-off operations to correct plant failures; these are usually beyond the scope of the normal operators and require the services of a qualified electrician or a technician from Guyson International.

In all cases where the cause of failure is uncertain, reference should be made to Guyson International Limited.

The following schedules list the tasks that must be carried out, but the frequency of their implementation will be determined by the working environment of the machine, e.g. the type of components being cleaned, the nature of the cleaning liquid, the amount and type of contamination etc. A suggested initial maintenance frequency is annotated by each item.

When any maintenance work is carried out, strict compliance with the following safety precautions must be enforced.

- Only qualified electrical personnel are permitted to remove any panels from the machine that will expose live terminals.
- Before any electrical connections are disturbed that will expose live terminals, the supply must be removed from the machine.
- Whenever an ultrasonic bath contains cleaning liquid, care must be taken to prevent contact with the skin and eyes. The wearing of impervious gloves and, if necessary, eye protection is recommended.

In addition to the tasks listed, the operator should be constantly aware of the running conditions of the machine. Any deterioration in performance should be investigated immediately and, where possible, the cause identified and the fault rectified.

	IMPERVIOUS GLOVES AND EYE PROTECTION MUST BE WORN WHEN HANDLING CLEANING SOLUTION.

8.1 Daily

- Check the mains cable for wear or damage
- Check solution is above the minimum level
- Check the cleanliness of the cleaning solution
- Cleaning solution which has debris or discolouration must be replaced
- Check condition of sound reduction skin

9. Spares and Servicing

A maintenance and service agreement for this system is available as anoptional extra, for further details please refer to contact details below.

When ordering spares or accessories please quote the following information:-

Customer Account Number
Machine Serial Number
Product code of item required

Please contact Guyson International on the details below for further help.

Customer Service Department
Guyson International Ltd
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