

User Manual

Magnetic Stirrer

Model : MS8

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English



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Thank you

Thank you for purchasing a Ratek product.

This User Manual will assist you in the correct installation and operation of the MS8 Magnetic Stirrer, as well as explain the safety requirements for its use.

Important: Please read the contents of this User Manual before unpacking and operating the product.

Unpacking and Checking

Once you have read these instructions in full and understand the installation and safety requirements including those for unpacking the carton, please carefully open the packing and slowly remove the product. Carefully inspect the condition of the product to ensure it has not been damaged in transit. Any damage should be reported immediately to the responsible carrier. If the product is damaged in any way, re-pack the product into the supplied packaging and notify the responsible carrier immediately.

Important: Do not operate the equipment if it has been damaged in any way. Any failures resulting through the use of a damaged product will not be covered by the product warranty.

Carton Contents

Ensure that you have received all items outlined below before proceeding. If you have not received all components in the supplied carton, please re-pack the carton and notify a Ratek Service representative immediately. Contact details are provided in the section of this User Manual titled "Ratek Service Contact Information"

- **Ratek MS8 Magnetic Stirrer**
- **Power Supply with Lead**
- **User Manual**

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Intended Use

This Magnetic Stirrer is intended for the purpose of mixing/stirring liquids inside a vessel.

The Magnetic Stirrer is **not** intended to provide direct-contact between itself and an unprotected medical, food, biological or medico- techno item. In all cases the item should be enclosed in a suitable vessel as described below.

Suitable Articles For Use With This Magnetic Stirrer

- Plastic or glass laboratory vessels that have a flat base and are rated to withstand the intended velocity of agitation.
- *An example of a suitable article would be a glass laboratory flask filled with water and oil.*

Unsuitable Articles For Use With This Magnetic Stirrer

- Any item that does not have a flat base suitable for a stirrer bar to operate.
- Items containing more than 2 litres of liquid/fluid or items containing liquid/fluid with a high viscosity not allowing the stirrer bar to move freely.

Suitable Environments For The Magnetic Stirrer

The Magnetic Stirrer is intended for use in a clean laboratory environment only where adequate ventilation, a good power supply and provisions for routine cleaning are available. The Magnetic Stirrer should not be used outdoors or in dirty, dusty, humid or windy environments. The acceptable operating conditions are outlined further in this User Manual.

General Operation

- The Magnetic Stirrer is plugged into an appropriate power source. It is powered by an alternating current power supply with the appropriate receptacle, rated voltage and frequency for the country of its intended use. Further details on power requirements are outlined in this User Manual.
- A suitable article (as defined above) is placed onto the unit, and a stirring bar placed into the vessel.
- The Magnetic Stirrer is operated via a front panel interface consisting of a power switch and a mixing speed control knob. These controls allow the operator to set a required mixing speed.
- The Magnetic Stirrer should be operated strictly in accordance with the Operating Procedures outlined further in this User Manual.

Operator Responsibility – Safety Considerations

When operated in strict accordance with this User Manual, plus routine cleaning and maintenance being carried out, the product shall provide safe operation for the operator. The operator should be aware of the following before installing and operating the product:

Conditions of Operation

***Note:** The term “Operator” referred to in this User Manual is the primary person who has been tasked to install, maintain and train in the usage of this equipment. Other personnel shall be referred to as “Users”.

- The operator shall be aware that the protection provided by the equipment may be impaired if the equipment is used with accessories not provided or recommended by the manufacturer, is modified in any way or is used in a manner not specified by the manufacturer.
- The operator is responsible for ensuring all users of the product are qualified to do so, and are well versed in common safety concepts. The product should only be operated by an adult who has read and understood this User Manual provided in the appropriate language in its entirety.
- Any user must be informed by the responsible operator of any potential hazards that may arise through the use of this equipment in the course of their work, including any local environmental hazards not related directly to the Magnetic Stirrer. They should also be able to demonstrate that they understand any preventative safety measures in operation prior to operating the equipment.
- The operator shall agree to accept responsibility for the use of the equipment in accordance with this User Manual, and be fully aware that the equipment is designed for commercial use.
- It is assumed that the user and operator have had experience in a commercial environment, and had appropriate training in how to perform their work safely in accordance with any local operational health and safety regulations. The operator and all users should be well versed in local emergency procedures as per the workplace safety regulations in effect.
- Avoid any direct impact with any surface of the equipment, including the casing, disc and most importantly the control panel.
- **Important:** Do not use any sharp or pointed metal objects anywhere near the equipment, in particular the control panel and the motor housing located behind the mixing disc.
- Avoid using the equipment near any other vibrating equipment or source of excessive vibration.

- Ensure the equipment is cleaned and maintained in accordance with this User Manual.
- Ensure that all original safety warning labels are in an adequate, legible condition and are firmly affixed to the equipment before using the product.
- Plug the equipment directly into a wall power outlet. Do not plug the equipment into a multi-socket adapter of any kind.
- The equipment is intended for operation in a controlled electromagnetic environment. Avoid the use of transmitting devices (e.g. cellular or mobile telephones) near the equipment whilst operating. A minimum distance of 2 Metres from the product is recommended for any transmitting device.
- The equipment must only be installed and operated in well ventilated areas. The unit is not intended for use in explosive atmospheres or in confined spaces.
- The allowed operating environment must be between 5° Celsius and 40° Celsius ambient air temperature.
- The maximum allowed relative humidity of the operating environment is 80%.
- The equipment should not be stored in direct sunlight, near chemicals, or other contaminants.
- If any of these safety recommendations cannot be achieved or the equipment has been damaged in any way, the equipment should not be installed or operated.
- **Important:** If you have any concerns or questions relating to operator or user safety, please contact the appropriate Ratek Service department before installing and operating the unit. Contact details are provided in this User Manual.

Safety Labels And Markings

The equipment is provided with safety caution labels. An explanation of each caution label is provided below. It is the responsibility of the operator and user to fully understand the meaning of these warning labels prior to operating the equipment.

Operating Procedures

You must take the time to familiarize yourself completely with the following operating procedures before installing or operating the Magnetic Stirrer in order to achieve the best performance and maximum attainable user safety.

Identification of Controls & Functions

Throughout this User Manual, the numerical element representing a control or component of the Magnetic Stirrer will be used to identify it. The figure below indicates all key controls and components of the Magnetic Stirrer with their corresponding numerical element labeled.

Figure 1





Numerical Element & Description of Component

- | | |
|----------|-----------------------|
| 1 | Power switch |
| 2 | Speed control knob |
| 3 | Power indicator light |
| 4 | Nitrile Rubber Mat |
| 5 | Power input socket |
| 6 | 12V Power adaptor |

Safety Warnings




Throughout this User Manual, specific warnings will be supplied which relate to the current operation being referred to. These warnings are supplied in addition to the main warning labels affixed to the product and the key points outlined in the section of this User Manual titled ‘Operator Responsibility – Safety Considerations’.

A graphical symbol as pictured below will be used next to each warning with accompanying text; the danger level for each is described below:

	<p>CAUTION Indicates a possibly highly dangerous situation which may result in serious injury or threat to life if the situation is not avoided.</p>
	<p>CAUTION Indicates a possibly harmful situation which may result in injury or damage to product or property if the situation is not avoided.</p>



Safety Recommendations

The following safety recommendations must be followed to prevent damage or injury. In addition to these safety recommendations, it is assumed that the user and operator have had experience in a commercial environment, and had appropriate training in how to perform their work safely in accordance with any local operational health and safety regulations. The operator and all users should be well versed in local emergency procedures as per the workplace safety regulations in effect.



	<p>CAUTION If the equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.</p>
	<p>CAUTION A surge protected power outlet is strongly recommended as it provides some protection for the equipment in areas of poor electrical quality as well as providing some protection against lightning strikes. The equipment should be operated on a good, reliable supply of power at all times.</p> <p>Note: The Magnetic Stirrer should not be operated on the same electrical circuit as other high voltage household appliances such as fridges, clothes dryers, washing machines or other continuous operation high voltage devices. These types of devices can create power fluctuations that are undesirable for electrically sensitive equipment. Consult your workplace administrator or electrical maintenance staff if you are unsure.</p>
	<ul style="list-style-type: none"> - ALWAYS wear protective eyewear when working with the equipment. - ALWAYS place the Magnetic Stirrer on a strong, even, dry, flat, smooth surface to allow the rubber feet to hold the mixer securely. - ALWAYS turn off power before moving the equipment to a new location. - ALWAYS turn off the mains power supply at the outlet when the unit is not in operation. - ALWAYS be careful of water or other liquids near the working area and ensure any spills cannot come in contact with the Magnetic Stirrer control panel or mains power supply. Ensure benches are kept dry at all times. - ALWAYS operate the Magnetic Stirrer in a well ventilated area with adequate clearance around the Magnetic Stirrer as indicated in case of spillage. - ALWAYS use only the original mains power supply. Replacement non-genuine supplies may not be suitable. - ALWAYS ensure the equipment is included in your electrical test and tag register. - NEVER operate the equipment if the electrical test tag is out of date. - NEVER operate the equipment if you believe it is damaged in any way. - NEVER operate the Magnetic Stirrer if the mains power supply is damaged in any way - NEVER use any sharp or metal objects near the Magnetic Stirrer control panel

Preparation & Installation

The Magnetic Stirrer should be installed and operated in strict accordance with the following instructions.

	<p>CAUTION Be careful when lifting and observe your local operational health and safety requirements for lifting before unpacking the carton.</p>
<p>Unpacking and Installing</p>	
<ul style="list-style-type: none"> - Carefully remove all packaging material from the Magnetic Stirrer, as well as the User Manual and any other supplied accessories. - Carefully inspect the Magnetic Stirrer, mains power supply and all packaging for any signs of damage. If any signs of damage are present, do not install or operate the equipment. Contact the supplier of your equipment if you have received a damaged product. - Place the Magnetic Stirrer in an upright position as per Figure 1 on a strong, even, flat, smooth surface. - Ensure that there is a minimum unobstructed distance of 100 millimetres between the left, right and rear panels of the Magnetic Stirrer and any other object or wall. - Ensure that there is a suitable mains power supply outlet within reach of the supplied mains power supply without placing any strain whatsoever on the lead or plug. The Magnetic Stirrer should not be plugged into any double-adaptor, power board, or power point splitter of any kind but instead directly into a wall mounted power socket. - Ensure that there is a minimum unobstructed distance of 500 millimetres in front of the Magnetic Stirrer to allow adequate room for the user to maintain a safe operating distance of 300 millimetres. 	
	<p>CAUTION The Magnetic Stirrer is designed for the purpose of agitating vessels containing liquids.</p> <p>The contents of these vessels is the sole responsibility of the user or operator, and the use of corrosive, flammable, combustible, hazardous, environmentally unsafe or otherwise dangerous materials within the container is done so at the risk and liability of the user or operator.</p> <p>ALWAYS be 100% sure of the contents of your containers, the expected behavior once agitated and the applicable safety measures that should be employed when handling such substances.</p> <p>ALWAYS ensure your containers are firmly sealed and there is no chance of the sample leaking onto the Magnetic Stirrer or coming into contact with the Operator.</p>

Using The Magnetic Stirrer

Connecting Power	
	<p>CAUTION</p> <p>A surge protected power outlet is strongly recommended as it provides some protection for the equipment in areas of poor electrical quality as well as providing some protection against lightning strikes. The equipment should be operated on a good, reliable supply of power at all times.</p> <p>Note: The Magnetic Stirrer should not be operated on the same electrical circuit as other high voltage household appliances such as fridges, clothes dryers, washing machines or other continuous operation high voltage devices. These types of devices can create power fluctuations that are undesirable for electrically sensitive equipment. Consult your workplace administrator or electrical maintenance staff if you are unsure.</p> <p>IMPORTANT: Use of an incorrect power supply will void the product warranty and waive all manufacturer liability for any and all damage caused by such use. If you are unsure about the rating of your power supply, consult your workplace administrator or electrical maintenance staff to determine if your power supply is suitable for use with this product before connecting the power supply.</p>
	<p>CAUTION</p> <p>Regularly check the mains power supply condition over the life of the product, and do not operate the equipment if you suspect there is damage to any part of the equipment or the mains power supply.</p>
	<ul style="list-style-type: none"> - Insert the plug end of the mains power supply lead firmly into a properly rated, wall mounted power supply outlet. - Insert the lead end of the power supply into the socket on the rear of the mixer. <p>If there are double-adapters or oversized DC power packs causing obstruction of the mains power supply plug, these should first be removed.</p>
	<ul style="list-style-type: none"> - Ensuring your hands are dry, switch on the power on the mains power supply outlet.
Adjusting The Mixing Control	
	<p>The Magnetic Stirrer features adjustable mixing speed control to deliver gentle agitation through to vigorous mixing.</p> <p>To change the mixing speed</p> <ul style="list-style-type: none"> - Slowly turn the speed control knob (element 2 in Figure 1) clockwise to increase the speed, or anti-clockwise to decrease the speed. - The speed may be adjusted during mixing to achieve the desired level of mixing inside the vessel.

Operating the Magnetic Stirrer



CAUTION

When working with glass tubes, flasks, bottles, breakable or other brittle or fragile articles it is important to wear appropriate safety eyewear and protective gloves to ensure operator safety. In addition, the Magnetic Stirrer should be used in accordance with your operational health and safety policies.

- Load your flask or bottle onto the rubber mat of the unit
- Insert your mixing bar / flea into the vessel (not supplied)
- Switch on the power.
- Select the desired agitation speed. Refer to the section in this User Manual titled “Adjusting The Mixing Control” for instructions.
- The speed may be adjusted as desired.
- Once desired mixing has been achieved turn the speed dial anti-clockwise to slow the mixing bar.
- Remove the flask or bottle once mixing is complete.
- If the mixer is no longer being used, switch the power to Off (element 1 in Figure 1)




Storing & Relocating The Magnetic Stirrer


The Magnetic Stirrer should be stored out of direct sunlight at an ambient temperature below 30° Celsius in a clean and dry location which meets the environmental conditions required as detailed in the technical specifications of this User Manual.

- Switch the power to “Off” (element 1 in Figure 1)
- Unplug the equipment from the mains power supply outlet.
- Ensure the Magnetic Stirrer is clean and dry. If required, clean it according to the section of this User Manual titled “Routine Cleaning & Maintenance”.
- Relocate it to an appropriate storage location. Ensure the Magnetic Stirrer is stored in a clean and dry location away from potential damage by accidental knocks and bumps.

Routine Cleaning And Maintenance

To maintain the Magnetic Stirrer in good, safe working order and ensure maximum product lifespan, regular cleaning and general maintenance is required. The Magnetic Stirrer should be cleaned at least once every month for a unit being used on a daily basis, for infrequently used Magnetic Stirrers a cleaning frequency of once every 3 months is recommended. On each occasion, the general maintenance routine should be employed following cleaning.

Cleaning The Magnetic Stirrer	
	<p>CAUTION</p> <p>Do not use alcohol based cleaners or solvents on the Magnetic Stirrer as these may break down certain components of it's construction, reducing it's life and potentially creating a hazardous situation. Use only a mild household detergent when cleaning the Magnetic Stirrer.</p>
	<p>CAUTION</p> <p>If the Magnetic Stirrer has been used with any dangerous, chemical or biological substances it should be decontaminated prior to cleaning. Decontaminate the Magnetic Stirrer using a decontamination procedure appropriate to the contaminant, however in all cases ensure the following :</p> <ul style="list-style-type: none"> - No decontamination or cleaning agents are used which could cause a hazardous situation to arise as a result of a reaction with parts of the Magnetic Stirrer or with any materials contained in it. For example, substances that may compromise the integrity or function of electrical insulation, electrical components or other components. - Ratek are consulted prior to decontamination or cleaning being undertaken if there is any doubt about the compatibility of decontamination or cleaning agents with parts of the Magnetic Stirrer or with any materials contained in it.
	<p>CAUTION</p> <p>When cleaning the unit, only use a damp sponge. Do not use a sodden wet sponge. Do not make any part of the control panel, any exposed control or receptacle or any part of the Magnetic Stirrer excessively wet. If these receptacles and controls remain wet once electrical power is restored they can create a hazardous situation sufficient to cause serious injury or risk to life due to electrical shock. Always ensure the unit and in particular all controls and receptacles are completely dry before restoring electrical power.</p>
	<ul style="list-style-type: none"> - Unplug the equipment from the mains power supply outlet. - Allow the Magnetic Stirrer to air dry, or use a dry cloth to remove water from all surfaces. - Using a mild detergent and damp sponge, clean around the disc and the top of the machine as well as the control panel, ensuring no water is allowed to get behind any switches or knobs. - Wipe the underside of the rubber feet to ensure the mixer will remain securely in place during operation. - Once the Magnetic Stirrer is clean, use a soft dry cloth to dry all surfaces of the mixer paying particular attention to any controls or receptacles. - Once cleaning has been completed, it may be re-installed and operated in accordance with this User Manual.

	Maintenance
	<ul style="list-style-type: none"> - Unplug the equipment from the mains power supply outlet. - Under good light, carefully inspect the mains power supply and check for any signs of wear, over-extension or damage. If you believe the lead to be damaged in any way, contact your supplier. - Carefully check to ensure all safety warning labels are affixed and in a good readable condition. Refer to the section in this User Manual titled "Safety Labels & Markings" for a table of factory-fitted warning labels. If any labels are missing, illegible or otherwise not functional, contact your supplier to obtain new replacement labels before operating the equipment. - Ensure all controls and switches are good condition. If any are found to be loose or not operating correctly, have an authorized service technician repair the unit before operating it.
	<p>CAUTION</p> <p>If any controls or switches are found to be loose or in poor condition, do not operate the equipment. Loose or damaged electrical controls and connections may create a hazardous situation sufficient to cause serious injury or risk to life. Refer the equipment to an authorized service technician for repair.</p>

Technical Specifications

Power requirements	12V DC (500mA or greater) plug pack tip POSITIVE
Motor	12 volt DC
Speed Controller	Solid State Analogue
Speed Range	250 to 2400 RPM Variable (depending on viscosity)
Capacity	Up to 2 Litre (depending on viscosity)
Drive	Direct drive
Stirring Bar	Up to 40mm (Not supplied)
Overall Dimensions	W165 x D120 x H85mm
Nett Weight	1.5 Kg
Environmental Conditions	<p>Suitable for use according to IEC 61010-1 standard as follows :</p> <ul style="list-style-type: none"> - Indoor use - Altitude up to 2,000 Metres - Temperature 0° Celsius to 45° Celsius - Maximum relative humidity 80 % for temperatures up to 31° Celsius decreasing linearly to 50 % relative humidity at 40° Celsius - MAINS supply voltage fluctuations up to ± 10 % of the nominal voltage <p>Over-voltage Category – II Pollution Degree – 2</p>

Disposal

At end of life, this equipment should be disposed of in an environmentally friendly way. This equipment cannot be disposed of with other general waste, but instead taken to your local or regional waste collection facility for recycling and/or suitable treatment procedure.

For more information about where you can drop off your waste equipment for recycling, please contact your local government office, your household waste disposal service or your nearest commercial recycling centre.

EMC Conformity



AS/NZS CISPR 14.1:2010 Electromagnetic compatibility - Requirements for household appliances, electric tools and similar apparatus – Emission. This forms the basis of compliance to the requirements of the Electromagnetic Compatibility Framework ('C TICK').

Ratek Service Contact Information

Ratek are here to assist you in getting the most from your Magnetic Stirrer. Our friendly staff can assist you at any stage of the product lifecycle.

If you have any concerns or questions regarding the operation of your Magnetic Stirrer, please contact us.

	Contact Us
	Ratek Instruments Pty Ltd 60 Wadhurst Dve Boronia Victoria 3155 Australia Telephone : 613 9887 2161 Fax : 613 9887 2163 Email: sales@ratek.com.au Web: www.ratek.com.au

Troubleshooting

The Magnetic Stirrer provides a simple-to-operate user interface when used in conjunction with this User Manual.

If at any stage you experience abnormal operation (anything other than that described in this Operating Manual) this may indicate a fault condition. If the Magnetic Stirrer fails to operate, this may also indicate a fault condition.

Fault conditions must be referred to an authorized service technician immediately and the equipment should be unplugged from the mains power supply socket.

Make a written note of any abnormal operation and contact Ratek using the contact details provided in the section of this User Manual titled "Ratek Service Contact Information" if you believe your equipment is exhibiting a fault condition.

Warranty Conditions

This Ratek product is covered by a 3 year parts and 12 months labour return-to-base warranty effective from the date of purchase. The product is manufactured in Melbourne, Australia.

The warranty is offered by Ratek Instruments Pty. Ltd. located at 60 Wadhurst Drive, Boronia, Victoria, Australia 3155, phone number +613 9887 2161.

- This warranty covers the repair or replacement of any parts or components found to be defective, subject to the service options listed below.
- The warranty is a return-to-base warranty, meaning the product must be returned to Ratek Instruments or an authorised Ratek agent for service at the discretion of Ratek Instruments. Where practical an on-site repair may be carried out at the discretion of Ratek Instruments.
- This warranty excludes any defect resulting from misuse, neglect, accidental damage, improper voltage, operation of the product outside the acceptable operating conditions as indicated in these operating instructions or any alteration which affects the performance of the equipment.
- It does not extend to any costs associated with delivery of the product to or from Ratek Instruments or an authorised Ratek agent, damage, or loss incurred during transport.
- This warranty is in addition to any statutory regulations and provisions implied by the Trade Practices Act and any relevant State or Federal Government obligations, applicable only when purchased within Australia.
- The product may be replaced within the warranty period at the discretion of Ratek Instruments, however repair will be the normal course of action.
- For a period of 3 years from date of purchase, replacement parts will be supplied at no charge and the original components returned to the repairer. These replacement parts may be installed by an approved service agent with prior written agreement from Ratek Instruments.
- For a period of 12 months from date of purchase, service labour and repairs will be carried out at no charge by an approved repairer or Ratek Instruments at the discretion of Ratek Instruments.
- The limit of liability shall extend to the repair of the product only, all other compensation claims are excluded from this guarantee.
- The warranty does not extend to claims of suitability where the product does not deliver the intended function or fails to operate.
- No claims of suitability are made in relation to the product by Ratek Instruments. Any claim of suitability lies with the operator.
- The product is used at the risk of the operator. Any loss or damage caused to any item used with the product including but not limited to biological samples, tubes, racks, accessories, flasks, containers or the contents of such containers caused by the malfunction of the product or the failure of the product to function is not covered by this warranty.
- Proof of purchase is required for all warranty repairs.

DOA Product

Any claim under this warranty must be made within 7 days of the date of purchase of the product. To make a claim under the Warranty, you must present the product, together with proof of purchase or issue, to the store where you purchased the product from. If the product is defective and does meet the Warranty, you will be provided with a replacement product, or where that is not possible, a refund. Ratek Instruments will pay your reasonable, direct expenses of claiming under this Warranty. You may submit details and proof of your expense claim to Ratek Instruments for consideration.

This Warranty is provided in addition to other rights and remedies you have under law. Our goods come with guarantees that cannot be excluded under the Australian Consumer Law. You are entitled to a replacement or refund for a major failure and compensation for any reasonably foreseeable loss or damage. You are also entitled to have the goods repaired or replaced if the goods fail to be of acceptable quality and the failure does not amount to a major failure.

Return & Repair Procedures

The product is engineered from quality components designed to give long trouble-free operation. In the event that a technical problem has occurred that requires servicing by a Ratek Service agent, please follow these steps before returning the unit:

- Contact the supplier from where the equipment was purchased. If this is not possible, please contact Ratek Instruments either via email to service@ratek.com.au, or phone on +613 9887 2161 during business hours AEST. You may be referred to a local repair agent for service.
- Clean the unit thoroughly in accordance with this Operating Manual. If necessary, decontaminate the unit to ensure safety for the service technicians.
- Pack the unit into its original packaging with the supplied mains power supply and use all original protective inserts. If the original packaging is not available, the unit must be packed with extreme care to ensure a safe journey. “Fragile” and “This Way Up” labels should be applied to the carton in a prominent location. No liability for a unit damaged in transit will be accepted. Use only reputable carrier services.
- Provide a full and complete fault description and your return contact details in the package and return the product as advised by the service representative.