MIX 1
Order No.: 30001
MIX 6
Order No.: 30006
MIX 15
Order No.: 30015
MIX 15 eco
Order No.: 30115

Includes

Quick start
Operation Manual
Technical Documentation
Specifications
Thank you for your confidence shown in us!
Congratulations to the purchase of your new product.
For any enquiries, questions or suggestions please do not hesitate to contact us at info@2mag.de.

2mag
Main competence of 2mag is based upon mixing, tempering and measuring/controlling. In these fields we are offering support with our products to the modern laboratory within the standardized daily business as well as for the implementation of highly complex processes in the state-of-the-art research. Due to the fact that 2mag is developing according to customer’s needs, is manufacturing self-contained and under permanent quality control and is also selling on-site together with competent contact persons, we can guaranty our customer an outstanding quality and product performance.

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A Quick start

1. Overview of your product

Magnetic stirrer MIX 1 / MIX 6 / MIX 15 / MIX 15 eco

Image 1: 15-position magnetic stirrer MIX 15 (without power supply unit 100-240 volts)

Your product contains at despatch:

- A modern inductive magnetic stirring system (MIX 1, MIX 6, MIX 15 or MIX 15 eco) consisting of a stainless steel stirring plate with 1 respectively 6 respectively 15 stirring points.
- An external power supply unit with fixed cable for connecting the magnetic stirrer and pluggable power cable (country-specific).
2. Application fields

2.1 Operator
The 100% maintenance- and wear-free magnetic stirrers **MIX 1 / MIX 6 / MIX 15 / MIX 15 eco** are used in the fields of chemistry, medicine, pharmacy, microbiology and biotechnology. The operators are generally working in research and development, production and quality assurance.

2.2 Basic functions
Basic function is stirring of liquids in suitable and chemically resistible vessels.
The stirrer housing is hermetically closed and therefore easy to clean under running water.
Please ensure BEFORE you connect the power supply unit again that the socket is 100% dried!
The maximum ambient temperature is +50°C in air.

2.3 Product combinations
In addition to the use at the conventional laboratory desk our products have also been tested for the application in
- Laminar flow devices
- Safety cabinets
- Safety cabins

2.4 Application not for the intended use
The magnetic stirrers **MIX 1/6/15/15 eco** are explicitly not intended for the application:

- Stirring and warming of flammable liquids
- Warming of pressure-tight closed and NOT pressure-resistant vessels or glasses (e.g. Erlenmeyer flasks, lab flasks)
- At general atmosphere or danger of explosion
- Using immersed in water or oil baths
- Using in incubators (lost heat of the stirrer)

The **2mag** is offering special products for the just mentioned application combinations. More information for this can be found at http://www.2mag.de or at info@2mag.de
2.5 Combinations of vessels

Please use round, chemical resistant and where required heat-resistant vessels made of glass or non-magnetic metal. You can use vessels up to the maximum size stated in the spreadsheet 1.

The vessels should have a thin, even wall thickness. Flat glass bottoms (without any curve to the inside) and smooth surfaces will improve the operating characteristic of the magnetic stirring bar. Uneven surfaces would reduce the stirring power and would cause reaming up of the stirring bar’s gliding surface.

In case you intend to stir large amount of liquids, please chose such stirring flasks that have a comparatively small diameter and thin bottom. The magnetic stirring bar can then be centred better.

<table>
<thead>
<tr>
<th>Magnetic Stirrer</th>
<th>Stirring vessels</th>
<th>Nominal content</th>
<th>Max. amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>MIX 1</td>
<td>Erlenmeyer flasks Beaker glass Lab flasks</td>
<td>max. 10.000 ml</td>
<td>1</td>
</tr>
<tr>
<td>MIX 6</td>
<td>Erlenmeyer flasks und lab flasks</td>
<td>25 ml 50/100 ml 250/500 ml 1000 ml 2000 ml 3000 ml</td>
<td>6 6 6 6 3 2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>25 ml 50 ml 100/250 ml 600/1000 ml 3000 ml</td>
<td>6 6 6 6 2</td>
</tr>
<tr>
<td>MIX 15</td>
<td></td>
<td>25 ml 50/100 ml 250/500 ml 1000 ml 2000 ml 3000 ml</td>
<td>15 15 8/6 6 3 2</td>
</tr>
<tr>
<td>MIX 15 eco</td>
<td></td>
<td>25 ml 50 ml 100/250 ml 600/1000 ml 3000 ml</td>
<td>15 15 15 8 2</td>
</tr>
</tbody>
</table>

Spreadsheet 1: Combination examples for vessels

Please always place the flasks in the magnetic centre of the magnetic stirrer. This will ensure the optimum stirring effect!
Do never use any pressure-tight closed flasks.

RISK OF BURSTING!

Do only use temperature-resistant vessels. Be careful with plastic flasks!

2.6 Stirring bars
In general, all stirring bars matching the length and diameter can be used. But we recommend using the commercial stirring bars with Samarium Cobalt magnetic core (SmCo). By using this highly energetic magnetic material the maximum stirring power of the magnetic stirrer can be achieved, especially when mixing viscose media.

2.7 Tips and hints to the topic stirring
The mixing flasks should be filled max. up to the middle (high speed range) resp. up to ¾ (low speed range).

Place one magnetic stirring bar in each stirring flask.

Place the stirring flasks right in the centre of the stirring point on the Stirring Hotplate resp. in one borehole of the Stirring Drybath.

In case the magnetic stirring bar turns in an unsteady or jerky way or bounces:
The interaction between the alternating magnetic field and the magnetic stirring bar is too high.
  ➢ Increase the speed or
  ➢ Use a smaller magnetic stirring bar or
  ➢ Decrease the stirring power.
In case the magnetic stirring bar will not be centred or leaves the centre permanently:
The interaction between the alternating magnetic field and the magnetic stirring bar is too low.
Or the stirring bar has a bottom that is uneven or too thick-walled.

Move the flask slightly back and fro and centre it again onto the stirring point of the stirrer surface.
- Reduce the speed or use a longer magnetic stirring bar or one with a larger diameter or
- Use a smaller flask with a thin-walled, even bottom or
- Reduce the filling amount in the flasks or
- Increase the stirring speed.

In case the stirring activity is too weak:
- Use commercial magnetic stirring bars with SamariumCobalt-core.
- Use a longer stirring bar or a stirring flask with smaller diameter.

We recommend using 2mag – ASTEROID stirring bars to increase the stirring performance.
3. Installation

3.1 Safety advice

Please ensure the following basic conditions prior to installation:

The wear-free inductive drive works with magnetism. **Cardiac pacemakers, data storage mediums, magnetic cards and other devices**, which can be affected by magnetic fields, have to be kept away from the fields of the stirring unit as well as from the stirring bars.

The device must not be used in explosive rooms. The power supply unit and the magnetic stirrer must not be dipped in water or any cleaning solutions.

Your supply voltage has to comply with the label of the power supply unit.

To increase the operation safety, the power supply unit should be placed apart from chemical materials and reactions as well as away from thermal influences. For special requirements please contact info@2mag.de.

ATTENTION!
The power supply unit has to be disconnected, BEFORE you connect or disconnect the unit plug.

Always disconnect the power supply unit first before handling the connection cables.
3.2 Installation, connection to the magnetic stirrer

Step by step instruction (please also see image 3)

➢ Take the smaller wire (2) of the power supply unit (1) and connect the round plug (3) with the socket (4) at the backside of the magnetic stirrer (7).
➢ Connect the power cable (5) to the power supply unit (1) and afterwards to the power plug.
➢ The magnetic stirrer is now connected to the power supply unit and ready for operation.

Image 3: Installation, rear side of the magnetic stirrer MIX 15

Description functional elements of control unit - backside
1. Power supply unit (100-240 volts)
2. Low voltage cable between power supply unit and magnetic stirrer
3. Low voltage plug
4. Low voltage socket at magnetic stirrer
5. Power cord
6. Magnetic stirrer
4. Operating of the magnetic stirrer MIX 1/6/15/15 eco

The operation of the stirrers MIX1, MIX 6, MIX 15 and MIX 15 eco is identical!

Image 4: Operating elements, magnetic stirrer MIX 1/6/15/15 eco

4.1 Description operating elements

7 Magnetic stirrer MIX 15 (operation identical with MIX 1 / 6 / 15 eco)

Stirrer control
8 ON/OFF key for magnetic stirrer
9 MODE-Taste for power adjustment of the magnetic stirrer (not available at MIX 15 eco)
10 Display for speed indicator and power indicator
11 MINUS-key (-) for reduction of stirrer speed
12 PLUS-key (+) for increase of the stirrer speed
Operating of the magnetic stirrer

After the cables have been installed correctly according to Installation, connection to the magnetic stirrer, the magnetic stirrer MIX 1/6/15/15 eco will be ready for operation.

4.2 Stirring operation and stirrer control

Turning On and Off
Please press the On/OFF-key (8) once. The magnetic stirrer will be switched on by that. The current stirring speed will be shown in the display (10).
By pressing the ON/OFF-key (8) once more, the magnetic stirrer will be switched off again. The display indicator (10) expires.

SoftStart
After the magnetic stirrer was switched on, the stirring bars in the flasks will first be caught, afterwards centred in the flask and then – to increase the operating safety – be smoothly accelerated to the set speed accurately.
The accelerating phase will be shown by the illumination of a dot at the right segment of the LED-display (10).

Power adjustment (not available for MIX 15 eco)
A newly developed and extremely efficient magnetic stirrer will come into operation.
The inductive drive concept causes an operational heat output by the magnetic stirrer. To reduce the heat output the power of the magnetic stirrer can be adjusted.
A high power setting is necessary to mix viscose media and large amounts to be stirred in a strong and efficient way.
A low power setting guaranties a warming-free long-term use for example of aqueous probes at room temperature.

The stirring power can be adjusted in four steps by using the MODE-key (9). By pressing the MINUS-key (11) respectively the PLUS-key (12) just after pressing the MODE-key, the power can be adjusted between 25/50/75/100%.

The current value is now shown on the display (10). The display (10) will turn back to the current speed indicator after approx. 5 seconds.
The power adjustment is finished again at the time the speed range is shown.
The power adjustment can also be finished immediately by pressing the MODE-key (9) again.
**Stirrer speed adjustment**
The speed of the magnetic stirrer can be adjusted by pressing the MINUS-(11) resp. the PLUS-key (12).
The adjusted speed will be shown in the display (10) when the magnetic stirrer is switched on. The speed range can be adjusted between 100 and 2000 rpm in steps by 10.
By constantly pressing the MINUS- resp. the PLUS-keys, an accelerated adjustment of the speed can be achieved.

**QuickSet**
To enter the start- respectively maximum speed directly and quickly there is the Quickset-function available.
The use of the following described keys will be made with the stirrer turned on.

**Setting the Start Speed**
Press the MINUS-key (11) permanently and press shortly the ON/OFF-key (8) afterwards. The start speed “100” will be set.

**Setting the Maximum Speed**
Press the PLUS-key (12) permanently and press shortly the ON/OFF-key (8) afterwards. The maximum speed “2000” will be set.

**Display, Magnetic Stirrer**
The display (10) provides as described above a description of:

- Current stirring speed (always with switched on magnetic stirrer)
- Set power (after pressing the MODE-key (9))
- To check, whether the magnetic stirrer is switched on. The display will not be illuminated in case the stirrer is switched off.

The wear-free inductive drive works with magnetism. **Cardiac pacemakers, data storage mediums, magnetic cards and other devices**, which can be affected by magnetic fields, have to be kept away from the fields of the stirring unit as well as from the stirring bars.
4.3 Operation differences of MIX 15 eco

Please note following operation differences at MIX 15 eco:

The MODE-key (9) is not available. The stirring power of MIX 15 eco is not changeable. The stirring power is fixed at 10 watts.

The start speed is 100 rpm. The maximum speed is 1200 rpm.

All other functions are unlimited available.

4.4 Warning notices:

- The magnetic stirrers MIX 1, MIX 6, MIX 15 and MIX 15 eco are not suitable for using in water baths, incubators, ovens and humid atmosphere!
B Maintenance, Cleaning and Care

Do not use any cleaning agent or cleaning rag that is based on chlorine with metallic components or ammonia. These agents may harm the surface.

The magnetic stirrer must not be dipped in water or any cleaning solutions.

2mag devices are generally maintenance-free.

Due to their construction the 2mag devices are very robust and designed for the professional daily use.

We recommend cleaning the devices’ surfaces with f. ex. cleaning agents containing tensides or isopropyl alcohol regularly.

BEFORE cleaning the surfaces, switch off the device with the power switch and pull out the power cable afterwards.
C Service case and customer service

During service, the device may only be opened by an authorized customer service.

In case of any defect on the device, please make sure to contact us first. We will be ready to offer help quickly and straightforward.

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Fax: +49 89 14334369
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Web: www.2mag.de

Warranty:

Due to their construction, the 2mag devices are very robust and designed for the professional daily use.

The magnetic drive works without any mechanically moved parts as e.g. belts, bearings or motors. Therefore a maximum of reliability within daily use is achieved.

Should in any case, despite our strict quality control, a system part not work without any fault, it can be repaired or exchanged by our customer service without any problems.

We guarantee 3 years warranty on all material and manufacturing defects.
**D Errors**

**The magnetic stirring bar is turning in an unbalanced way:**
There is no denying that magnetic stirring bars are aging in the course of time. This may happen by e.g. sterilizing, usage at high temperatures or causing stress (dropping down). The magnetism can be decreased by this. Separate out this stirring bar and exchange it by a new one.

**The magnetic stirrer is not ready for operation despite the power connection has been made:**
Please get into contact with us.

In general, we are ready to help you in case of problems.
For any enquiries, questions or suggestions please do not hesitate to contact us at info@2mag.de
## E Technical details

### Magnetic stirrer MIX 1

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<thead>
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<td>Order no.</td>
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<tr>
<td>Stirring points</td>
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</tr>
<tr>
<td>Stirring volume</td>
<td>1 – 10,000 ml</td>
</tr>
<tr>
<td>Speed range</td>
<td>100 – 2,000 rpm</td>
</tr>
<tr>
<td>Stirring power (max.)</td>
<td>20 watts</td>
</tr>
<tr>
<td>Power setting</td>
<td>4-steps (25/50/75/100%)</td>
</tr>
<tr>
<td>Material housing</td>
<td>stainless-steel</td>
</tr>
<tr>
<td>Material sealing</td>
<td>PUR</td>
</tr>
<tr>
<td>Measurements (WxDxH)</td>
<td>180 x 230 x 38 mm</td>
</tr>
<tr>
<td>Weight</td>
<td>approx. 4.0 kg</td>
</tr>
<tr>
<td>Permitted operation</td>
<td>-10 up to +50 °C (at 80% humidity)</td>
</tr>
<tr>
<td>Permitted storage</td>
<td>-40 °C up to +70 °C, 10–95 %, 500-1060 hPa</td>
</tr>
<tr>
<td>Protection category</td>
<td>IP 64</td>
</tr>
<tr>
<td>Operating voltage</td>
<td>48 VDC</td>
</tr>
<tr>
<td>Electrical data</td>
<td>100-240 V / 50-60 Hz / 1.5 A</td>
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### Magnetic stirrer MIX 6 and MIX 15

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<th>MIX 6</th>
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<td>30015</td>
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<tr>
<td>Stirring points</td>
<td>6</td>
<td>15</td>
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<tr>
<td>Stirring point distance</td>
<td>130 mm</td>
<td>65 mm</td>
</tr>
<tr>
<td>Stirring volume/point</td>
<td>1 – 3,000 ml</td>
<td>1 – 3,000 ml</td>
</tr>
<tr>
<td>Speed range</td>
<td>100 – 2,000 rpm</td>
<td></td>
</tr>
<tr>
<td>Stirring power (max.)</td>
<td>20 watts</td>
<td></td>
</tr>
<tr>
<td>Power setting</td>
<td>4-stufig (25/50/75/100%)</td>
<td></td>
</tr>
<tr>
<td>Material housing</td>
<td>stainless-steel</td>
<td></td>
</tr>
<tr>
<td>Material sealing</td>
<td>PUR</td>
<td></td>
</tr>
<tr>
<td>Measurements (WxDxH)</td>
<td>245 x 425 x 38 mm</td>
<td></td>
</tr>
<tr>
<td>Weight</td>
<td>approx. 8.8 kg</td>
<td>approx. 8.8 kg</td>
</tr>
<tr>
<td>Permitted operation</td>
<td>-10 up to +50 °C (at 80% humidity)</td>
<td></td>
</tr>
<tr>
<td>Permitted storage</td>
<td>-40 °C up to +70 °C, 10–95 %, 500-1060 hPa</td>
<td></td>
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<tr>
<td>Protection category</td>
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<tr>
<td>Operating voltage</td>
<td>48 VDC</td>
<td></td>
</tr>
<tr>
<td>Electrical data</td>
<td>100-240 V / 50-60 Hz / 1.5 A</td>
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### Magnetic stirrer MIX 15 eco

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<tr>
<td>Stirring points</td>
<td>15</td>
</tr>
<tr>
<td>Stirring volume</td>
<td>1 – 1,500 ml</td>
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<tr>
<td>Speed range</td>
<td>120 – 1,200 rpm</td>
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<tr>
<td>Stirring power (max.)</td>
<td>10 watts</td>
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<td>Power setting</td>
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<tr>
<td>Material housing</td>
<td>stainless-steel</td>
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<tr>
<td>Material sealing</td>
<td>PUR</td>
</tr>
<tr>
<td>Measurements (WxDxH)</td>
<td>245 x 425 x 38 mm</td>
</tr>
<tr>
<td>Weight</td>
<td>approx. 8.8 kg</td>
</tr>
<tr>
<td>Permitted operation</td>
<td>-10 up to +50 °C (at 80% humidity)</td>
</tr>
<tr>
<td>conditions</td>
<td></td>
</tr>
<tr>
<td>Permitted storage</td>
<td>-40 °C up to +70 °C, 10–95 %, 500-1060 hPa</td>
</tr>
<tr>
<td>conditions</td>
<td></td>
</tr>
<tr>
<td>Protection category</td>
<td>IP 64</td>
</tr>
<tr>
<td>Operating voltage</td>
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</tr>
<tr>
<td>Electrical data</td>
<td>100-240 V / 50-60 Hz / 1.5 A</td>
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### Accessory Magnetic Stirring Bar ASTEROID 40

<table>
<thead>
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<tbody>
<tr>
<td>Order no.</td>
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<tr>
<td>Shape</td>
<td>triangle, concave</td>
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<tr>
<td>Material</td>
<td>PTFE</td>
</tr>
<tr>
<td>Measurement (DxL)</td>
<td>Ø 28 x 40 mm</td>
</tr>
<tr>
<td>Weight</td>
<td>ca. 0.06 kg</td>
</tr>
</tbody>
</table>

*Image 5: Stirring bar ASTEROID 40*

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**2mag AG**  
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EU-DECLARATION OF CONFORMITY
FOR TECHNICAL DEVICES

(acc. to EU-guideline 89/336 EWG, annex II)

2mag AG
Schragedhofstraße 35 J
DE-80992 München
GERMANY

Hereby declares that the product

MIX 1 / 6 / 15 / 15 eco

is conform to the appropriate regulations of the EU-guideline of the electromagnetic compatibility (EU-guideline 89/336 EWG) incl. their changes, as well as the corresponding laws for the realization of the guideline into national law.

The declaration is valid under the following conditions:
The ambient conditions being stated in the operation manuals have to be adhered to. This mainly applies to the supply with electric energy.

The following norms/standards were chosen to evaluate the finished products with regard to electromagnetic compatibility:

- EN 50178
- EN 60730-1
- EN 60529
- EN 61000-6-4
- EN 61000-6-2
- EN 61000-3-2
- EN 61000-3-3
- EN 60730-1
- EN 60730-2-8
- EN 60127-1
- EN 60127-2
- EN 60309-1
- EN 60335-2-46
- EN 60742
- EN 60799
- EN 60947-7-1

Muenchen, 01.12.2008

Unterschrift: Michael Fischer (CEO)