MR Hei-Tec / MR Hei-Tec [ ]

MR Hei-Mix D

Betriebsanleitung

Instruction Manual

Mode d’Emploi

Instrucciones de Empleo

Instruzioni per l’uso

SUMMARY

E

SCOPE OF DELIVERY

Product	Quantity	P/N 230 V / 50/60 Hz	P/N 115 V / 60 Hz
Hei-Tec or	1	505-30000-00	505-30000-01
Hei-Tec [ ] or	1	505-34000-00	505-34000-01
Hei-Mix D	1	505-01000-00	505-01000-01
Instruction manual	1	01-005-004-57	01-005-004-57
AC power cord	1	14-007-003-81	14-007-003-89

GENERAL INFORMATION

Read the instruction manual with care and ensure that all users read it with care prior to using the instrument.

Please store the instruction manual in a place easily accessible to every user.

A EURO AC plug (DIN 49441 CEE 7/VII 10/ 16 A 250 V) is standard on all instruments.
For North America, instruments feature standard US plugs (NEMA Pub. No. WDI.1961 ASA C 73.1 . 1961 page 8 15A 125V).

When operating the instrument in countries with different AC plug systems, use an approved adapter or have a qualified electrician replace the AC plug with an approved model suitable for the country of operation.

The instrument is earthed as supplied. When replacing the original AC plug, ensure that the earth conductor is connected to the new plug.

SAFETY INFORMATION

Please comply with all safety and accident-prevention regulations applicable to laboratory work.

Use great caution when working with flammable substances. Observe the relevant safety data sheets.

When connecting the instrument to an AC power outlet, ensure that your local supply voltage matches that indicated on the instrument's rating plate.

Turn the rocker switch off when not using the instrument and before disconnecting it from its AC power outlet.

Repairs may only be performed by technicians authorised by Heidolph Instrumente.

Use great caution when working in the vicinity of highly flammable or explosive substances.
The instrument is not explosion-proof.

Always connect the instrument to an earthed AC power outlet.

Caution! Hazard of serious burns when running with hotplate over 50 °C.

Avoid contact with the hotplate, heating bath and liquid.

<u>Caution!</u>
When heating flammable substances, ensure that the nominal temperature of the hotplate is at least 25 °C lower than the substance's flashpoint.

<u>Caution!</u>
Beware of the effect of the magnetic field on cardiac pacemakers and data media.

Ensure that the instrument is standing on a solid surface.

INTENDED USE

The *Hei-Tec* is a magnetic stirrer featuring a hotplate function. It is designed for use in chemical and biological laboratories of industrial enterprises, universities, schools and pharmacies.

The instrument is designed to heat substances to a specified temperature and/or mix them through the action of a magnetically linked stirring rod in a vessel.

To ensure maximum service life, observe the specified ambient conditions (temperature and humidity) and ensure that the instrument is not exposed to a corrosive atmosphere.

SET-UP

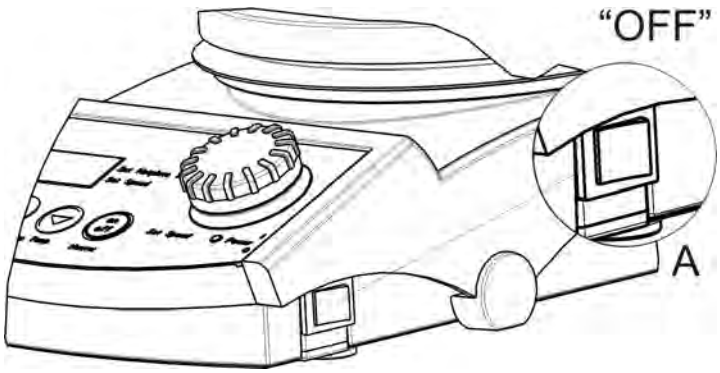
1 Unpacking

Unpack the instrument with care. Inspect for damage and report such damage or missing parts to your supplier right away.

2 Setting up the instrument

Place the instrument on a solid, horizontal surface. Keep the area around the instrument clear of other items.

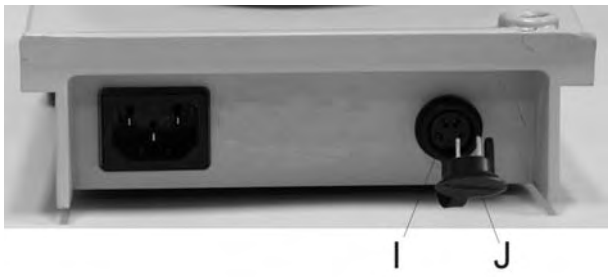
3 Electrical connection



Before connecting the instrument to an AC power outlet, ensure that the rocker switch (A) is set to “0”.

Plug the AC power cord into its socket (H) on the rear panel. Connect the power cord to an AC power outlet.

4 Connecting a *Hei-Con* temperature controller (not *Hei-Mix D*)



The *Hei-Con* and *Hei-Con*-G permits the temperature of the medium to be controlled in addition to that of the hotplate.

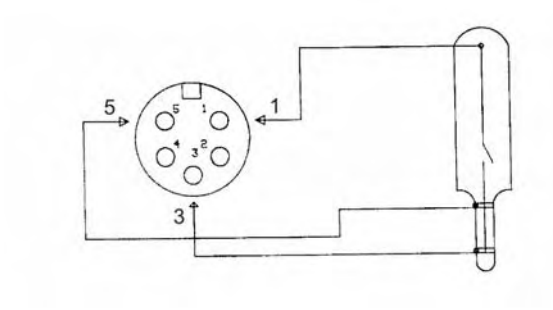
Connect the *Hei-Con* to the socket (I) on the rear panel of the instrument. For more information, please refer to the instruction manual of the *Hei-Con*.

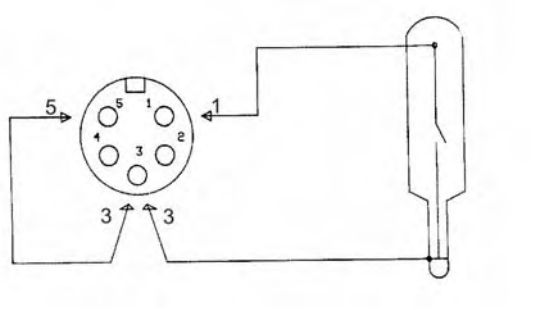
Rule of thumb:
Set the temperature of the hotplate around 20–30 °C higher than the desired set temperature on the *Hei-Con*. This will compensate for the loss of heat between the hotplate and the medium.

5 Connecting a contact thermometer in accordance with DIN 12878 (not *Hei-Mix D*)

Contact thermometers permit the temperature of the medium to be controlled in addition to that of the hotplate.

Note:
We recommend the use of a safety contact thermometer when using the instrument with a contact thermometer.



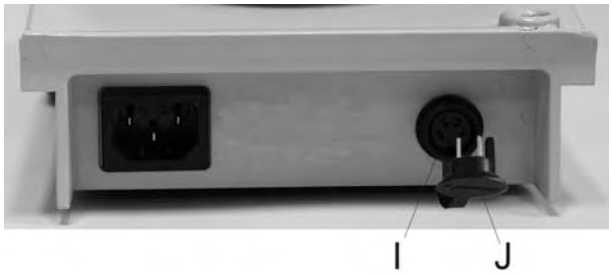


Pin assignment for safety contact thermometer in accordance with DIN 12878

Connect a 4-pin diode plug conforming to DIN 41524 to the contact thermometer. Refer to the drawing for the pin assignment.

Pin assignment for contact thermometer without safety features

When using a contact thermometer without glass breakage safety features, bridge pins 5 and 3.



Connect the contact thermometer to the socket (I) on the rear panel of the instrument. Remove the jumper plug (J).

The following accessories are available for use with a contact thermometer or a *Hei-Con*:

X: Holder for thermometer or temperature sensor (order no.:509-67000-00)

Y: Holder rod (order no.:509-81000-00)

Z: *Hei-Con* (order no.:509-88000-00) or *Hei-Con*-G (order no.:509-88100-00)

6 Using a heating bath

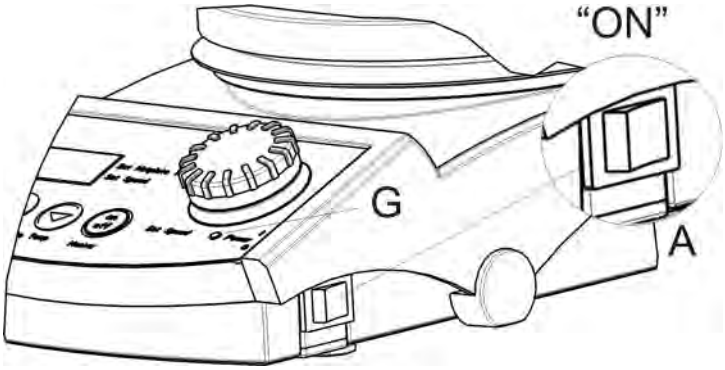
When using the instrument with a heating bath (see Accessories), ensure that the positioning rim on the heating bath is fitted securely over the hotplate.

When using the 4l heating bath, a special temperature sensor holder rod for 4l heating baths (order no. 509-97000-00) may be attached as shown (W).

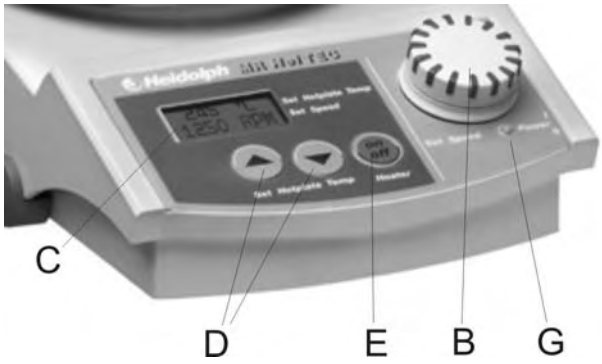
OPERATION

1 Switching the instrument on

Turn on the instrument's power using the rocker switch (A) on the right side of the housing. The green Power LED (G) on the front panel will light. The instrument is now in standby mode, with the heater and motor inactive.



2 Setting the stirring speed



Set the desired speed with the control knob (B). The set speed is shown on the display (C).

The stirrer will start and automatically maintain this speed.

Note:
When reducing the speed to "0", the speed will initially remain at 100 rpm.
Turn the knob to the left again to switch the stirring function off.

3 Heating without external temperature controller (not *Hei-Mix D*)

The display (C) indicates the set temperature for the hotplate. Use the buttons (D) to adjust the hotplate temperature between room temperature and 300 °C. Press the **Heater ON/OFF** button (E) to start the heater function. A lit green frame around the button (E) indicates that the heating function is enabled.

The heating function is indicated by a flashing heating symbol on the display (C).

Note:
The jumper plug (J) must be in place. The instrument will not heat otherwise.

Notes on setting the hotplate temperature:

The contents of the mixing vessel will always have a lower temperature than the set hotplate temperature due to differences in heat conductivity of various mixing vessels, the volume of material to be heated, and heat loss due to radiation.

As a rule of thumb, the hotplate temperature should be 1.5 to 4 times that of the desired temperature of the medium.

The value should be increased according to the specific heat capacity, volume and desired temperature of the medium.

Note

Note on heating time:
Higher hotplate temperatures will result in a shorter heat-up period.

4 Heating with *Hei-Con* temperature controller or contact thermometer (not *Hei-Mix D*)

Connect the contact thermometer as described in “Set-up”. Set the *Hei-Con* or contact thermometer to the desired temperature. Next, set the hotplate temperature as described in Section 3.

Note on heating time:

Higher hotplate temperatures will result in a shorter heat-up period. Large differences between the hotplate temperature setting and the selected nominal temperature of the *Hei-Con* temperature controller or contact thermometer will result in temperature fluctuations. If such fluctuation is not desirable, set the hotplate to a lower temperature. This will lead to a longer heat-up period.

CLEANING AND MAINTENANCE

Use a cloth dampened with mild soapy water to clean the housing and the surface of the instrument.

Note
Do not use chlorine bleach or other chlorine-based cleaning products, abrasive cleanser, ammonia, steel wool or cleaning products with metallic components under any circumstances. These will damage the finish of the instrument.

The instrument is maintenance-free. Should repairs become necessary, please contact an authorised Heidolph Instruments repair technician. Please contact your Heidolph Instruments dealer or a Heidolph Instruments representation for more information (see page 30).

Caution
Unplug the AC power cord before opening the housing.

TRANSPORT AND STORAGE

Prior to transport

Switch the instrument off and unplug the AC power cord.

Transport and storage

1. Place the instrument and its parts in its original packaging or another suitable container to protect it during transport. Close the packaging with adhesive tape.
2. Store the instrument in a dry environment.

Caution
Do not subject the instrument to mechanical shocks or vibration while transporting it.

DISPOSAL

Please dispose of used instruments and defective components at your local recycling collection point.
Prior to disposal, sort according to materials: metal, glass, plastic, etc.
Also be sure to dispose of the packaging material in an environmentally-friendly manner.

TROUBLESHOOTING

1. Power LED (G) not lit: check power supply and AC power cord
2. No stirring function (magnetic stirrers only):
   – Stirring vessel does not contain a magnetic stirring rod
   – Speed control knob (B) set to “0”
3. No heating function:
   – Jumper plug (J) not plugged
   – *Hei-Con* or contact thermometer not plugged
   – *Hei-Con* or contact thermometer defective (sensor breakage)
   – Hotplate temperature limiter actuated (let hotplate cool)
4. Temperature set on contact thermometer or *Hei-Con* is not reached by medium: hotplate temperature too low.

REPLACEMENT PARTS AND ACCESSORIES

Accessories (optional)

Product	P/N
Temperature controller, *Hei-Con*	509-88000-00
Temperature controller, *Hei-Con*-G	509-88100-00
Heating bath, 1l - for oil up to 250 °C	504-93000-00
Heating bath, 1l, PTFE coated - for water up to 100 °C	504-93100-00
Heating bath, 2l - for oil up to 250 °C	504-92000-00
Heating bath, 2l, PTFE coated - for water up to 100 °C	504-92100-00
Heating bath, 4l - for oil up to 250 °C	504-91000-00
Heating bath, 4l, PTFE coated - for water up to 100 °C	504-91100-00
Concave block adapter for 1l round-bottom flasks	504-94000-00
Holder rod, stainless steel 1.4305 (V2A)	509-81000-00
Holder rod, stainless steel 1.4305 (V2A) (for 4l heating bath)	509-97000-00
Temperature sensor holder	509-67000-00
Magnetic stirring rod set (3 rods), cylindrical with PTFE coating	509-56000-00
silicone protective cover MR-Hei	23-07-06-05-59
Heating bath liquid, RT – 240 °C	515-31000-00
DrySyn MULTI complete set, 3 x 25/50/100ml inserts	505-91900-00
DrySyn MULTI-M complete set, 3 x 100/250ml inserts	505-92600-00
DrySyn triple clamp for MULTI	505-91090-00
DrySyn triple clamp for MULTI-M	505-92090-00

SPECIFICATIONS

	MR Hei-Mix D	***MR Hei-Tec***	***MR Hei-Tec*[ ]**
Hotplate material	V2A	Silumin ceramic	enamelled Silumin (white)
Plate dimensions	Ø145mm	Ø145mm	132mm x 132mm
Heater control	-	electronic	
Heater rating	-	800W (*)	
Hotplate temperature range	-	20 – 300 °C	
Medium temperature range	-	up to 250 °C	
Accuracy of temperature adjustment	-	+/- 1K	
Sensor connection	-	*EKT Hei-Con*	
Control accuracy, medium with sensor	-	+/- 1K	
Control accuracy, hotplate	-	+/- 5K	
Speed in rpm	100 - 1,400	100 - 1,400	
Speed accuracy	+/- 2%	+/- 2%	
Max. stirring quantity (water)	20l	20l	
Digital display	yes	yes	
Power consumption	20W	820W(**)	
Safety circuit (hotplate)	-	50 °C over hotplate temperature	
Permissible ambient temperature	0 – 40 °C		
Permissible relative humidity	80%		
Weight	2.6 kg		
Dimensions (d x w x h)	277x173x94		
Protection class	IP32		

115V instruments: (*) 600W, (**) 620W

WARRANTY, LIABILITY & COPYRIGHT

Warranty

Heidolph Instruments provides a three-year warranty on the products described here (with the exception of consumable parts), starting from the date of shipping from the manufacturer's warehouse. This warranty covers defects in materials and workmanship.

Transit damage is excluded from this warranty.

To obtain such warranty service, contact Heidolph Instruments (phone: +49 – 9122 - 9920-68) or your local Heidolph Instruments Dealer. If defects in material or workmanship are found, your item will be repaired or replaced at no charge.

Misuse, abuse, neglect or improper installation are not covered by this warranty promise.

Alterations to the present warranty promise need Heidolph Instruments' consent in writing.

Exclusion of liability

Heidolph Instruments cannot be held liable for damage from improper use or misuse. Remedy for consequential damage is excluded.

Copyright

Heidolph Instruments is the copyright holder for all texts and images in this manual.

QUESTIONS, REPAIRS

If any aspect of installation, operation or maintenance remains unanswered in the present manual, please contact us at the following address:

For equipment repairs jobs please call Heidolph Instruments (phone: +49 – 9122 - 9920-68) or your local authorised Heidolph Instruments dealer.

Note:
Please return instruments to the following address only. Returning instruments is subject to prior approval.

Heidolph Instruments GmbH & Co. KG
Vertrieb Labortechnik
Walpersdorfer Str. 12
D-91126 Schwabach, Germany
Tel.: +49 – 9122 - 9920-68
Fax: +49 – 9122 - 9920-65
E-mail: sales@heidolph.de

Note:
If you are based in the United States of America, please contact Heidolph US:

Heidolph Instruments, LLC
Lab Equipment Sales
River Rd.
Cinnaminson, NJ 08077
Phone: 856-829-6160
Fax: 856-829-7639
E-Mail: Heidolph@snip.net

Safety information

When returning instruments for repair that have come in contact with hazardous substances, please:

- provide precise information on the relevant medium
- take protective measures to ensure the safety of our receiving and maintenance personnel
- mark the package as appropriate for hazardous materials

APPLICABLE STANDARDS AND DIRECTIVES

We declare herewith that this product complies with the following standards and directives:

EMC directive (89/336/EEC):

EN 61326: 1997 + A1: 1998 + A2: 2001+ A3: 2003

EN 61000-3-2: 2000

EN 61000-3-3: 1995 + 1997 + A1: 2001

EN 61326: 1997 + A1: 1998 + A2: 2001+ A3: 2003

EN 61000-4-3: 2002 +A1: 2002

EN 61000-4-5: 1995 +A1: 2001

EN 61000-4-6: 1996 +A1: 2001

EN 61000-4-11: 1994 + A1: 2001

Low-voltage directive (73/23/EEC):

EN 61010-1 + EN 61010-2-010

+ EN 61010-2-051

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