



**English**

## **Operating Manual for HEKA Incubators**



### Series Turbo-ECO

**HEKA-Turbo 84**

**HEKA-Turbo 126**

**HEKA-Turbo 168**

**HEKA-Turbo 216**

**HEKA-Turbo 288**

**HEKA-Turbo 432**

**HEKA-Turbo 84+S**

**HEKA-Turbo 126+S**

**HEKA-Turbo 168+S**

**HEKA-Turbo 90/S**

**HEKA-Turbo 135/S**

**HEKA-Turbo 180/S**

**HEKA-Turbo 270/S**

**HEKA-Turbo 360/S**

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## Preface

The purpose of this manual is to get acquainted with the incubator and learn how to use it.

The operating manual contains important information for the safe, economic, and correct operation of the incubator. Compliance with this manual helps to avoid dangers, minimise repair costs and downtimes, and increase the reliability and life span of the machine.

The operating manual is suitable for adding environmental protection regulations to the instructions on the basis of existing national accident prevention regulations.

The operating manual must always be kept at the place of deployment of the incubator. All individuals who are authorised to work with the incubator must read and observe the operating manual. This includes instructions in the following areas:

- Operation
- Troubleshooting
- Care and maintenance
- Transport

The operator shall ensure that only authorised persons work with the incubator. The operator shall check the incubator for externally visible damage and defects on a daily basis. Moreover, he shall promptly report any changes that impair the safety. This also includes changes in the operating behaviour. The incubator may only be operated if its condition is flawless.

As a matter of principle, safety equipment shall not be removed or disabled.

Should it be necessary to remove safety equipment during preparation, repair, or maintenance, the safety equipment shall be reinstalled immediately upon completion of the maintenance or repair work.

The manufacturer does not assume any liability for damages resulting from unauthorised modification of the incubator.

All safety information and warnings on the incubator must be observed.

In addition to the information in the operating manual, the generally applicable safety and accident prevention regulations shall also be complied with.

## Structure of the Safety Precautions

All safety precautions have a uniform structure:



Pictogram (indicates the type of danger)

**Caution!** (indicates the severity of the danger)

Information (describes the danger and how it can be avoided)

Pictogram	Signal word		
		Meaning	Consequences of non-observance
 General danger	<b>Danger!</b>	Imminent danger to persons	Death or severe injury
	<b>Warning!</b>	Possible, very dangerous situation for persons	Death or severe injury
 Dangerous electric voltage	<b>Caution!</b>	Possible, dangerous situation for persons	Slight injury
	<b>Attention!</b>	Possible damage to property	Damage to the device
		Useful information or tip	

## Other Notes in the Operating Manual

### **Caution!** Danger of injury from hot surface!



Warning pointing to a danger of injury to the operator from hot surfaces.



Please read and observe the operating manual.



Disconnect the power plug before opening the device.

## General Safety Precautions!

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### Caution!



Non-observance of the following safety precautions can result in bodily injury or damage to the incubator.

Apart from the notes listed below, please also observe the general safety and accident prevention regulations.

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### Read the operating manual!

Start using the incubator only after reading the associated operating manual.

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- Do not operate the incubator on the ground. The minimum distance from the ground should be 50 cm!
- Do not use the incubator outdoors.
- Do not place the incubator in direct sunlight (counts also for storage and transport).
- Before connecting the incubator, compare the voltage of the power supply with the voltage on the rating label.
- In accordance with the intended use, the incubator may only be used to incubate eggs.
- Never operate the incubator if any part(s) are damaged, if it does not function properly, or if you suspect damage.
- Defective power cords may only be replaced by the manufacturer, his customer service, or a similarly qualified person.
- Maintenance work may only be done by duly instructed personnel.
- Repair work and special maintenance work may only be done by authorised personnel (manufacturer personnel) or duly instructed personnel.
- Work on the electrical equipment may only be done by qualified electricians and persons instructed in electrical engineering (see DIN VDE 0105).
- Working on live parts and equipment is not permitted.
- Conversion or modification of the incubator is not permitted.

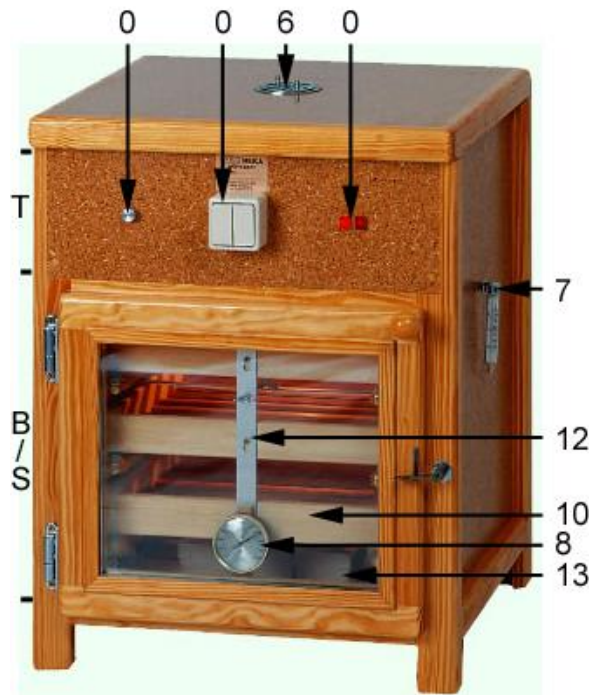
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# 1 Description - Incubator with Electronic Control

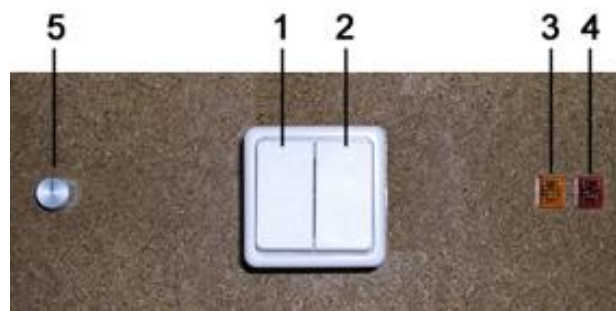
HEKA incubators consist of a two-compartment housing:  
 The upper part contains the "technology" (distribution, control, fan, and heater), and the lower part the incubation or hatching chamber with trays.

## Incubator



- B/S Incubation or hatching chamber
- T "Technology compartment"
- 0 Control elements
- 6 Air vent
- 7 Incubation thermometer
- 8 Hygrometer
- 10 Incubation or hatching tray
- 12 Turning mechanism (optional)
- 13 Water basin

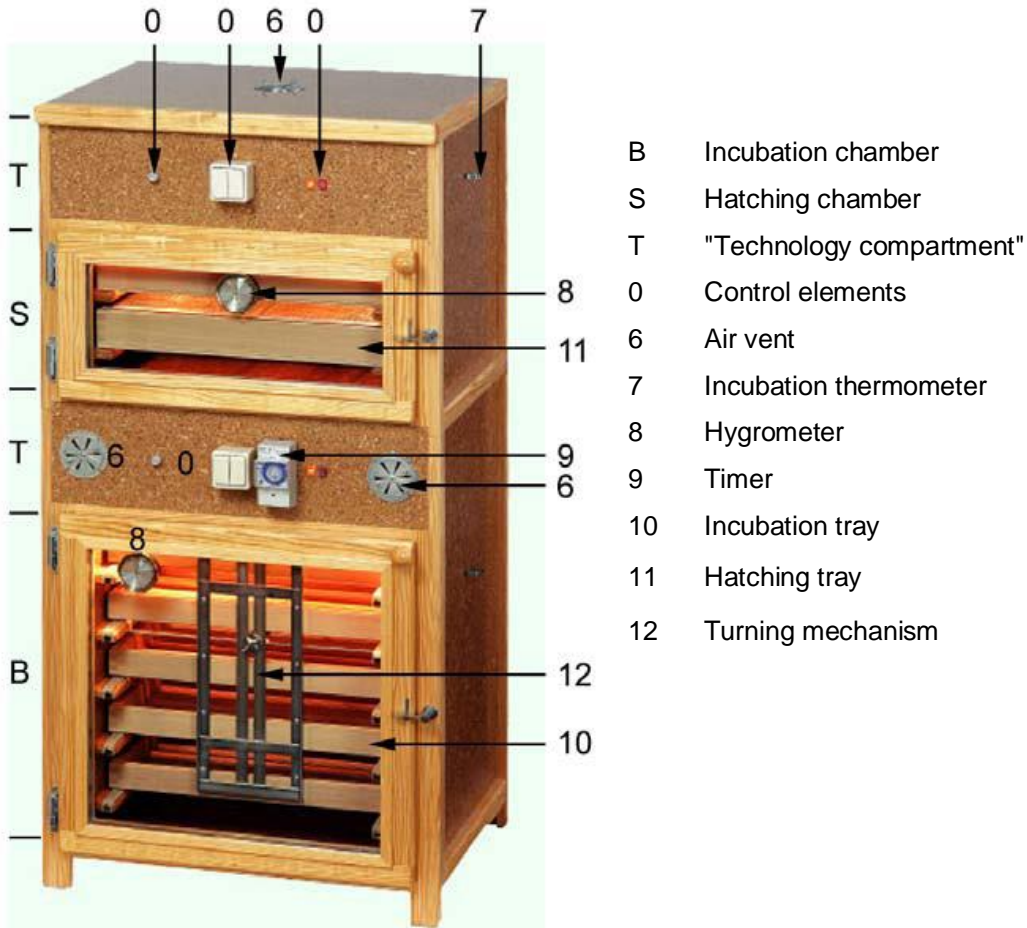
## Control elements (0)



- 1 Power on
- 2 Interior light on
- 3 Indicator yellow = device is on
- 4 Indicator red = heater is on
- 5 Temperature control

In HEKA incubators with separate hatching chamber, the hatching chamber is located at the top (with associated "technology compartment"), and the incubation chamber at the bottom (with associated "technology compartment").

### Incubators with Separate Hatching Chamber



In HEKA incubators with automatic turning, the motor is located at the back of the device.



## 1 a Description - Incubator with Process Control and Digital Display

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### Incubator



- B/S Incubation or hatching chamber
- T "Technology compartment"
- 0 Control elements
- 4 Air vent
- 1 Hygrometer
- 2 Incubation or hatching tray
- 3 Turning mechanism (optional)

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### Control Elements 1



- 1 Display: heater
- 2 Display: alarm
- 3 Display: device in operation
- 4 Display: turning in operation
- 5 "Light" on/off
- 6 "Device" on/off
- 7 "Automatic turning" on/off
- 8 Digital display: temperature
- 9 Sensor cable



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### Control Elements 2



1. Value up or next in program
2. Value down or back in program
3. Without function
4. Set or save
5. Display: actual incubation temperature
6. Target value - preselected incubation temperature

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In HEKA incubators with automatic turning, the motor is located at the back of the device.

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### Control Elements 2



- 2 housing for turning motor
- 1 Device cable

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## 2 Setup and Connection

Set up the incubator at least 50 cm above the ground; do not set it up outdoors, in direct sunlight or next to a heating. A power supply (230 V / 50 Hz) must be available at the installation site. The incubator must not be connected to an offgrid-inverter, which are used in autonomous power-supply like solar-electricity-power-supply

The ideal ambient temperature is 10°C - 20°C. However, smooth function is also guaranteed at an ambient temperature of 0°C - 28°C (with air-cooling up to 32°C, with water-cooling up to 40°C).

After setting up the device, check the incubation chamber and remove any items such as the thermometer and other accessories that were ordered and stored in the incubation chamber during transport. After removing all foreign items from the incubation chamber, you can connect the device to the mains.

### 3 Switching on - Incubator with Electronic Control

Use the switch (1) to switch the device on —> the yellow indicator (3) and the fan starts running. The indicator (4) lights up when the heater starts working. Use the knob (5) to adjust the temperature. The mark on the knob should point straight up, as this position is more or less suitable for the incubation temperature. The incubation temperature is reached after about 30 - 60 minutes, depending on the ambient temperature, and the red indicator (4) goes off. During this time, you can check the accuracy of the incubation thermometer.



#### **Attention**

Until the incubator has reached and holds the correct, set temperature precisely, do not put eggs into the incubator !

#### **Checking the temperature**

Temperature has been checked and calibrated in our factory. Nevertheless, for total safety checking the temperature might be reasonable (thermometer could have been damaged on transport).

To do this, immerse the incubation thermometer (7) and a calibrated clinical thermometer in a water tank with a temperature of about 38°C. Should you notice any deviation between the two thermometers, the difference must be added to or deducted from the incubation thermometer display. The incubation thermometer will work properly even if this needs to be done.

#### **Checking the humidity**

Also the hygrometer (1) has been checked in our factory. To check, that there had not been a damage on transport, run the incubator without water. If the hygrometer is working properly, you must note, that the humidity falls with raising temperature up to a value of 30-50% (depending on the room, where it is placed, weather conditions and time of the year).

But be aware, that there is no gauged value for humidity – hygrometers of one type can have variations of 3-5% - hygrometers of different types even much more. All our information about the humidity required for the incubation (presented in the section "Humidity") base on the hygrometers, which we have installed and checked.

### 3a Switching on - Incubator with Process Control and Digital Display

#### See Control Elements 1

- Use the centre switch (6) to switch the device on.
- The indicator (3) lights up.
- The digital display (8) shows two temperatures.
- The display (1) is illuminated.

The **green** figure in the display indicates the **pre-selected** temperature. The **red** display shows the **actual** temperature.

About 30 to 60 minutes after switching the device on, the pre-selected temperature will be reached.



For various reasons, e.g. due to relocation, the device may heat up beyond the selected temperature (up to 1°C). You do not need to worry about this. After about 30 minutes, the "learning" control will have identified the correct interval and keep the incubation temperature steady.

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#### Attention

Until the incubator has reached and hold the correct, set temperature precisely, do not put eggs into the incubator !

#### Checking the temperature

Temperature has been checked and calibrated in our factory. Nevertheless, for total safety checking the temperature might be reasonable. The best way to check the temperature is to take an incubating-thermometer. For measuring the temperature precisely on 0,1°C it is necessary to run the incubator long enough (at least 2h; until not only the air, but also the cabin has warmed up) and the lead of your check-up-thermometer must be in the air (at least 2cm away from any object like the bars of the trays).

#### Checking the humidity

Also the hygrometer (1) has been checked in our factory. To check, that there had not been a damage on transport, run the incubator without water. If the hygrometer is working properly, you must note, that the humidity falls with raising temperature up to a value of 30-50% (depending on the room, where it is placed, weather conditions and time of the year).

But be aware, that there is no gauged value for humidity – hygrometers of one type can have variations of 3-5% - hygrometers of different types even much more. All our information about the humidity required for the incubation (presented in the section "Humidity") base on the hygrometers, which we have installed and checked.

## 4 Settings - Incubator with Electronic Control

### 4.1 Setting the Temperature

First, insert the checked thermometer in the holder and opening at the right side of the housing (7) of the incubator. Proceed with utmost care, as the thermometer is very fragile.

Before you start with the fine adjustment, you should wait several hours (one night, if possible) until the incubation trays and all parts of the device are fully heated.

Afterwards, you can start with the fine adjustment. This is done with the knob (5), the indicator (4), and the thermometer (7).

Turn the knob (5) to the right to increase the temperature; the red indicator (4) will light up. To reduce the temperature, turn the knob to the left.

Turn the adjustment knob carefully: a movement of 1 mm will increase or reduce the temperature by 1/10.



Generally, we recommend a temperature of 37,8°C. For incubating bantam, quails or pheasants (partly also duck and geese) we recommend 37,5-37,6°C - for raptors, parrots and parakeet a temperature of 37,0-37,2°C. If different (poultry-)eggs are incubated together, you should set a temperature of 37,7-37,8°C. Ostriches, rheas and nandus are an exception with much less temperature.

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### 4.2 Double Thermostat (optional)

The dual thermostat serves the additional protection of the temperature. When starting to use the incubator, adjust this thermostat as follows:

First, set the incubation temperature of 37.8°C with the electronic control (see above). As soon as the temperature is reached, adjust the additional membrane control while the red indicator is illuminated.

To do this, turn the double-thermostat-knob (right exterior side of the device) to the right until you hear a faint click.

To check whether the setting is correct, try to set the electronic control higher than previously.

You will notice that this is not possible, as the device is now controlled by the membrane control. To allow the electronic system to take care of the control, turn the metal rod one full revolution to the left.

In the event of failure of the electronic control, the membrane thermostat starts automatically, without any downtimes or interruptions. This can be seen from fluctuations of about 4/10°C in the device. Moreover, the membrane switch makes a faint clicking sound when actuated.

## 4a Settings - Incubator with Processor Control and Dig. Display

### 4.1a Setting the Temperature

(See Control Elements 2)

At our factory, the temperature is set to 37.8°C; this value appears as the "target temperature" in green digits in the display. To change the temperature, press the keys (1) or (2) on the control panel. The pre-selected temperature can be increased with (1) and reduced with (2).

- Keep the key (1) or (2) pressed for approximately 3 seconds.
- "SP" appears in the red display, and a dot starts flashing behind the green digit.

You can now change the temperature by pressing (1) or (2). After setting the desired values, these will automatically be adopted **without pressing any other key**.



Generally, we recommend a temperature of 37,8°C. For incubating bantam, quails or pheasants (partly also ducks and geese) we recommend 37,5-37,6°C - for raptors, parrots and parakeet a temperature of 37,0-37,2°C. If different (poultry-)eggs are incubated together, you should set a temperature of 37,7-37,8°C. Ostriches, rheas and nandus are an exception with much less temperature.

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### 4.2a Setting the Double Thermostat Temperature

- Keep the "SET" key pressed for approximately 30 seconds.
- "AL 1" appears in the red display.
- Briefly press set "SET" key two times again.
- "Cool" appears in the red display.
- The green digit shows the preselected double thermostat temperature.

To change the double thermostat temperature, use the keys (1) and (2). After setting the desired value with one of the keys, it will automatically be adopted after 10 seconds.



To get a precise regulation of the incubating temperature with the main thermostat, it is necessary to set the double thermostat temperature 0,5-0,7°C above the incubating temperature. We preset 38,5°C, which is recommended at an incubating temperature of 37,8°C.

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### 4.3a Setting the Alarm Temperature

- Keep the "SET" key pressed for approximately 30 seconds.
- "AL 1" appears in the red display.
- The green digit shows the preselected alarm temperature.

To change the alarm temperature, use the keys (1) and (2). After setting the desired value with one of the keys, it will automatically be adopted after 10 seconds.

### 4.4a Changing the Temperature Display from Celsius to Fahrenheit

- Keep the "SET" key pressed for 3 seconds.
- You are in the "AL 1" zone.
- Briefly press the "SET" key once more.

You have reached the zone in which you can toggle between Celsius and Fahrenheit. "C-F" appears in the red display. Press (2) in the control panel to switch the display to "F". To return to "°C", press (1).

## **5 Turning the Eggs – Incubator with Electronic Control**

### **5.1 Semi-automatic Turning**

Eggs can be turned from the first day without any effect on the hatching result. Chicken eggs must be turned from the third day after insertion, and duck and goose eggs from the fourth day. The eggs should be turned at least twice a day; three times would be even better. The eggs should be turned at equal intervals and at the same times (if possible).

In devices with semiautomatic turning, the eggs can be turned by drawing the turning trays out and pushing them back. Use a soft pen to mark the eggs with an "X" on one side and a "0" on the other. In this way, you can monitor the turning process.

### **5.2 Fully-automatic Turning (optional)**

In incubators with automatic turning, the eggs are turned automatically. The eggs are turned for 2 hours in one direction and then for 2 hours in the other direction. This process continues permanently, though the movement is not evident.

The motor for the turning mechanism is located in the housing attached to the back of the device. Please connect the plug of the power cord to the mains. Thus, the automatic mechanism is activated. We recommend activating the automatic mechanism on the day on which the eggs are inserted.

For checking the turning, use a soft pen to mark the eggs with an "X" on one side and a "0" on the other. In this way, you can monitor the turning process. Check the position of the eggs every 2-3 days (at not identical times). If the position of the eggs is exactly the same like when you checked last time, check again 2 hours later. If the position again has not changed, the turning does not work. Take away the wing-nut and the white connector and turn manually like described in chapter 5.1. For solving the problem of the fully-automatic turning, contact us.

If the fully-automatic turning is activated, the turning works continuously very slowly: 12 times a day - one turning within 2 hours.

## **5a Turning the Eggs – Incubator with Processor Control and Dig. Display**

### **5.1a Semi-automatic Turning**

Eggs can be turned from the first day without any effect on the hatching result. Chicken eggs must be turned from the third day after insertion, and duck and goose eggs from the fourth day. The eggs should be turned at least twice a day; three times would be even better. The eggs should be turned at equal intervals and at the same times (if possible).

In devices with semiautomatic turning, the eggs can be turned by drawing the turning trays out and pushing them back. Use a soft pen to mark the eggs with an "X" on one side and a "0" on the other. In this way, you can monitor the turning process.

### **5.2a Fully-automatic Turning (optional)**

In incubators with automatic turning, the eggs are turned automatically. The eggs are turned for 2 hours in one direction and then for 2 hours in the other direction. This process continues permanently, though the movement is not evident.

The motor for the turning mechanism is located in the housing attached to the back of the device. For activating the fully-automatic turning, switch the turning-button (7) to "on". If the fully-automatic turning is activated, the red light (4) is on. We recommend activating the automatic mechanism on the day on which the eggs are inserted.

For checking the turning, use a soft pen to mark the eggs with an "X" on one side and a "0" on the other. In this way, you can monitor the turning process. Check the position of the eggs every 2-3 days (at not identical times). If the position of the eggs is exactly the same like when you checked last time, check again 2 hours later. If the position again has not changed, the turning does not work. Take away the wing-nut and the white connector and turn manually like described in chapter 5.1a. For solving the problem of the fully-automatic turning, contact us.

If the fully-automatic turning is activated, the turning works continuously very slowly: 12 times a day - one turning within 2 hours.

## 6 Adjusting the Humidity

The required humidity can be reached by filling one part of the supplied three-part water basin and placing it in the incubation chamber. After several hours, the hygrometer (8) will show the humidity level reached. If the humidity is too high, open the air vent(s) (6) to reduce it. Remember that it will take several hours until the reaction is visible on the hygrometer.

If the humidity is too low, it can be increased by closing the air vent(s) a bit more (but: never close it completely!).

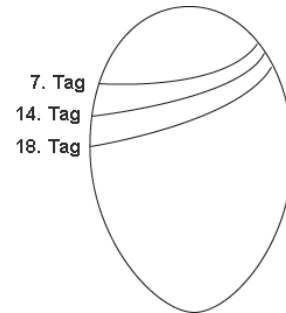
In extremely dry (and/or cold) incubation rooms, it may be necessary to fill more parts of the supplied water basin in order to increase the humidity.

During the hatching stage (last 3 days of incubating), the humidity should be about 20% higher. First two – and then all parts of the supplied three-part water basin should be filled. If the pane of the double-glass should begin to steam up, open the air-vents a bit more.

### 6.1 Incubation Humidity

Apart from the temperature, the incubation humidity plays a significant role for the incubation results. During incubation, every egg must lose weight. The weight loss must amount to at least 15% of the fresh egg. A weight loss of 17% is ideal. You can check this with a special accuracy weighing machine – breeders of very valuable (and thus mostly sensitive, difficult to incubate) animals weigh every single egg every day and adjust the humidity according to the weight-loss to come to 100% hatching success (the higher humidity, the less weight-loss; and vice versa).

With the weight-loss comes along a steadily growing air cell. This can be checked with a candling-lamp to adjust the humidity (if necessary; the less humidity, the bigger the air cell). The air cell must be steadily growing over the complete time of incubating – until shortly before hatching it takes about one-third of the egg.



*Fig.: Optimum size of the air cell in a chicken-egg (incubation-length: 21 days)*

Due to the different characteristics of the eggshell, a different humidity is necessary for various kinds of fowl to come to the right weight-loss and size of the air cell. For example, a chicken egg (at the same humidity) loses weight much more slowly than a waterfowl egg.

The weight-loss even varies for chicken of different types, which means that the eggs normally should be incubated at different humidity levels. The weight loss is also determined by the size of the egg. In practice incubating with different values of humidity mostly is not possible. Thus, we recommend well-proven mean values, which experiential lead to very good hatching-results:

Chicken and bantam eggs	50 – 55 %
Goose eggs	55 – 60 %
Duck eggs	58 – 65 %
Pheasant eggs	45 – 53 %
Quail eggs	48 – 52 %
Ostrich eggs	19 – 23 %
Emu eggs	40 – 45 %
Rhea eggs	52 – 58 %

But please note, that there are also considerably outliers because of the characteristics of the eggshell (e.g. Marans: 40-45%) and/or the climate of their natural habitat (e.g. Crested-partridge 65-70%; Muscovy ducks 50-55%).

For parakeet and parrot eggs general recommendations are not possible, because the required humidity varies extremely. The required humidity depends on the location of their natural breeding areas (humid tropics or dry savanna). For incubating species from very arid/dry habitats normally you need a humidity as low as possible (viz.: no water in the incubator/water basin; air-vent(s) fully open). Only in the hatching stage the humidity is raised as normal.



When you take eggs out of the incubator for weighing or candling and thus you switched on the light – don't forget to switch it off again.

Light should not be switched on (when door closed) longer than 5 minutes.

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## 7 Inserting the Eggs

After setting the correct humidity and temperature values, place the eggs (horizontal or slightly vertical with air cell on top) on the incubation trays in the incubator.

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Handle the hatching eggs with care. Especially hatching eggs whose incubation process has started are very sensitive.

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Please make sure that the eggs are not too old (maximum 10-14 days). If you store the eggs more than 4-5 days: daily turn the eggs, don't store too dry, optimum temperature: 12-15°C.

## 8 Putting the Eggs into the Hatching Trays

3 days before the date of hatching the eggs should be put into the hatching trays or into the hatcher; the eggs must not be turned anymore. Switch off the turning. In the hatching stage all eggs need a higher humidity than in the incubation stage. Humidity should be 20-25% higher than before in the incubation stage (e.g. from 53% to 73-78%). Raising of the humidity should be made in steps. First day 10% more, next day again 10% more – and when the chicks begin to come out of the eggs again some percentage more.



Don't raise the humidity to more than 90% - otherwise there's risk of chicks not drying and having water (condensed) on the bottom of the incubator. When the pane of a double-glass door begins to steam up, reduce the humidity a bit. Only for waterfowl and other eggs, which already needed very high humidity in the stage of incubating, it can be necessary or helpful to have such a high humidity (of 80-90%), that the double-glass pane begins to steam up.

If you use simple hatching trays (without cover), place them central, so that to the door and to the back you just have little space left. Nevertheless, with very agile chicks it can happen, that some hop over the edge of the hatching tray. To avoid risk of drowning in the water basin, cover the water basin with mesh-wire or net – or alternatively use our pedigree-hatching-trays with cover and partitions.

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## 9 Cooling the Eggs

The eggs can be cooled in two different ways. If you do not want to cool all eggs, you only need to take the incubation trays with the eggs to be cooled out of the device. Then close the door of the incubator immediately. If the door will/must be open longer than some seconds, switch off the incubator, while the door is open.

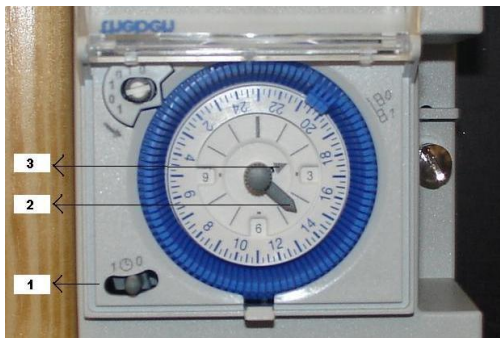
An easier method would be to switch the incubator off for some time and open the door. In this case, all eggs are cooled.

Generally, chicken eggs do not need to be cooled. Wildfowl and waterfowl eggs, however, must be cooled once a day.

Especially when incubating goose eggs, cooling is an important factor that has a decisive effect on the hatching result. The embryo is strengthened by the cooling. We recommend cooling goose eggs once a day from the 11<sup>th</sup> to the 27<sup>th</sup> incubation day (for species with incubation period of 30 days). The cooling time should be at least 30 minutes, though longer cooling phases (up to about 1 hour) are not detrimental.

### 9.1 Cooling Timer (optional)

#### Cooling Timer



- 1 De/Activating the Colling Timer
- 2 Minute Hand
- 3 Hour Hand

Devices equipped with a cooling timer need longer cooling times, i.e. longer times must be set. Goose eggs require about 60-80 minutes.

While cooling, the device remains closed, which slows down the cooling process and results in longer times.

The cooling timer is activated, if switch (1) is on central position (clock symbol).

First set the correct/actual time (not necessary for operation) by turning the minute hand; the hour hand turns automatically with every turning of the minute hand.

To set the cooling times, the blue "tabs" of the timer (cooling timer) for the desired times must be pressed down (inwards), e.g. 13:00-14:00.

## 10 Shutting-down after incubation

When you have had hatching in the incubator and plan to put in eggs shortly, make at least a light maintenance and care according to chapter 11. Take out the water basin(s) and run the incubator without water until the humidity has fallen to that value, which you need for the next incubation stage.

If you don't plan to put in eggs shortly, make maintenance and care like described in chapter 11. Switch-on again the incubator after maintenance and care (without water in the water basins !) and run it until the humidity doesn't fall anymore. Depending on the room, weather conditions and season this will be 30-50%. Thus you avoid, that high humidity (from last hatching or from cleaning) remain in the incubator without possibility to really get it out while storage / until next incubation.

Afterwards switch off and unplug the incubator.

## 11 Maintenance and Care

### 11.1 Incubation Chamber of the Incubator



We recommend cleaning the incubator thoroughly and disinfecting it after every major hatch.

After disinfection, the incubator must be ventilated according to the manufacturer's instructions. We recommend waiting a few days before using the incubator again.

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The incubation chamber and the incubation trays must be cleaned and disinfected regularly.

To do this:

- Open the incubator.
- Take the water basin out and remove incubation dust, incubation dirt, and other residue in the water basin.
- Take the incubation trays out.
- Clean and disinfect the incubation chamber and incubation trays (with "Amo-Des" or "Euphagol")
- Re-insert the incubation trays.
- Put in the water basin.

### 11.2 "Technology Compartment" (Incubation or Hatching Device)



Disconnect the power plug before opening the device.

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#### **Caution! Dangerous voltage!**



Before cleaning, disconnect the power plug to make sure no voltage is present.

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Before opening the lid, wait for approximately 10 minutes until the heating elements have cooled off.

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Regularly clean and disinfect the "technology compartment" under the lid:

- Remove the (2 or 4) screws from the lid panel.
- Lift the lid, exerting slight pressure.
- Remove incubation dust, incubation dirt, and residue
- Disinfect the incubator (with "Amo-Des" or "Euphagol")
- Close the lid.
- Re-tighten the screws.

### 11.3 Incubators with Separate Hatching Chamber

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**Attention!** Remove the hatching incubator before cleaning the lower incubator.



- 
- Disconnect the power supply between the pre-incubator and the hatching incubator.
  - Remove the terminal cover (at the back).
  - Remove the 3-wire cable.
  - Remove the (2 or 4) lateral screws in the side panel.
  - Remove incubator
  - Clean and disinfect the hatching incubator and the incubator as described above. Assemble the devices in the reverse order.

### 11.4 Replacing the Power Cord

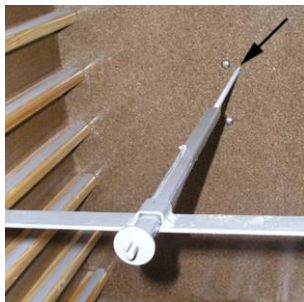
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**Attention!** Defective power cords may only be replaced by the manufacturer, his customer service, or a similarly qualified person.



### 11.5 Turning Mechanism

Turning-Rod of the turning mechanism must be greased 1x per year.



Move the turning rod to the front and then grease the rod (arrow). When moving back again, the grease disperses in the thread.

At incubators with our big 3phase-motor (identifiable, if 6 or more trays are turned by just 1 motor), additionally you have to grease directly at the turner-motor (at the back of the incubator) with a grease gun.

## 12 FAQs – frequently asked questions

- „Why do I have to place the incubator 50cm above the ground ?“  
→ For protection against flooding.
- “The heating-control-lamp is always flashing – is the heating defective ?”  
→ No, the incubator runs/controls exactly like he must for precise regulation.
- “The temperature goes 2-3 times above the set value after I switched on the incubator.”  
→ The incubator is equipped with a learning control; after 2-3 times over- and underheating it precisely holds the set value. Don't put in eggs before the temperature is hold precisely. If the oscillations remain, check the setting of the double thermostat.
- “Water is dropping at the air-vents or the turner-motor-cover.”  
→ This can happen at very high humidity in the incubator or at very low surrounding temperature. This is not bad at all – but placing the incubator in a hotter room (optimum: 15-20°C) would help.

## 13 Disposal



WEEE reg. no.: DE 96968236

The sticker with the crossed out wheeled bin on this product indicates that this product may not be disposed of as domestic waste. To avoid a potential impairment of the environment or human health, this product may not be treated as domestic waste but must be recycled in an eco-friendly manner.

For information concerning the disposal, contact the manufacturer of the product. We will have your product collected by a forwarding agent.

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HEKA-Brutgeräte      Tel: +49 5244 1718  
Langer Schemm 290    Fax: +49 5244 10159  
D-33397 Rietberg • Germany

## 14 CE Declaration of Conformity

The manufacturer HEKA-Brutgeräte  
Address Langer Schemm 290 D-33397 Rietberg, Germany

**hereby declares that the**

Product HEKA incubator Standard  
Models HEKA 1, 2, 3, 5, 6, 7, 9, 11, 12,  
Jumbo XL, Jumbo XXL  
HEKA 10, 15, 30, 40, 70, 80, 90

**is in conformity with the following directives:**

- 98/37/EC Machinery Directive
- 2006/95/EC Low Voltage Directive
- 2004/108/EC EMC Directive

The following standards were used to assess the conformity:

- DIN EN ISO 12 000-1
- DIN EN ISO 12 000-2
- DIN EN 60 204-1
- DIN EN 60 335-1
- DIN EN 60 335-2-71



The conformity of the products with the above-mentioned standards and directives is confirmed with the CE mark.

A handwritten signature in black ink, appearing to read 'Christa Hemel', written in a cursive style.

Rietberg, 20 August 2006

Christa Hemel

## 15 Appendix: Analysis of mistakes at incubation / bad hatching

Normally, 5-10% of the eggs are unfertilized. If less than 70-80% of the remaining chicks hatch, you should analyse the reason(s) to have better success at next hatching. Analysing the symptoms first of all allow the following conclusions (further reading in specialized books), whereof "too high humidity in incubating stage" is the absolutely most frequent mistake.

### **Mostly died in first week:**

Wrong storage of eggs, parental predisposition, virus infection, incubation-temperature much too high/low, no turning, (too long) cooling of eggs

### **Mostly died in second week (without huge loss in first week):**

Huge parental vitamin deficiency, infection in incubator, overheating or undercooling at candling, too high (seldom: too low) humidity at incubation, oxygen deficiency

### **Mostly died in third week before beginning of respiration by lung (without huge loss before):**

All a.m. factors, especially too high or too low humidity in incubation stage

### **Died at hatching, eggshell circular scored:**

Too low humidity at hatching stage

### **Died at hatching, eggshell pierced (central or astride; liquid leaves at pierced point):**

Too high humidity at hatching stage

### **Hatched chicks stick at eggshell:**

Too low humidity (especially at hatching stage)

### **Hatched chicks are clammy:**

Too high humidity at incubation stage

### **Hatched chicks uncleanly cut the cord:**

Too high temperature or oscillations in temperature

### **Hatched chicks with stressed respiration:**

Too high humidity in incubation stage, too less humidity at hatching stage, temperature too high at hatching stage

### **Hatched chicks malformed:**

Temperature too high/low or oscillating, heredity

## 16 Appendix: Incubation Periods

<b>Domesticated Birds:</b>		
Bantam:	19-21 Days	Muscovy Ducks: 35 Days
Chicken:	21 Days	Peacocks (all species): 28 Days
Ducks:	28 Days	Pigeons: 16-18 Days
Geese:	28-35 Days	Turkeys: 28 Days
Guineafowl:	27 Days	
<b>Wild Birds</b>		
Mallards:	25-26 Days	Quails: 23 Days
Partridges:	23 Days	Vulturine Guineafowl: 23-24 Days
Pheasants:	24 Days	
<b>Flightless Birds</b>		
Emu:	57-62 Days	Ostrich: 35-42 Days
Rhea:	35-40 Days	
<b>Pheasants</b>		
Alectoris:	23-26 Days	Great Argus: 25 Days
Amherst's Pheasant:	23 Days	Himalayan Snowcock: 27-28 Days
Arborophila:	20-24 Days	Hume's Pheasant: 27 Days
Barbary Partridge:	25 Days	Junglefowl: 19-21 Days
Black Francolin:	18-19 Days	Koklass Pheasant: 21-23 Days
Blood Pheasant:	28 Days	Lewis's Silver Pheasant: 23 Days
Blue Eared Pheasant:	26-28 Days	Mikado Pheasant: 26-28 Days
Brown Eared Pheasant:	26-27 Days	Monals: 27 Days
Bulwer's Pheasant:	25 Days	Peacock-Pheasants: 21-22 Days
Copper Pheasant:	24-25 Days	Red-legged Partridge: 23-24 Days
Crested Argus:	25 Days	Reeves's Pheasant: 24-25 Days
Crested Fireback:	24-25 Days	Salvadori's Pheasant: 22-25 Days
Crestless Fireback:	24-25 Days	Sand Partridge: 27 Days
Cheer Pheasant:	26 Days	Silver Pheasant: 25 Days
Edward's Pheasant:	21-23 Days	Sri Lankan Junglefowl: 18 Days
Elliot's Pheasant:	25 Days	Swinhoe's Pheasant: 25 Days
Gallopheasants:	23-25 Days	Tragopans: 28 Days
Golden Pheasant:	23 Days	White Eared Pheasant: 24 Days
<b>Quails</b>		
Banded Quail:	21-23 Days	Montezuma Quail: 25-26 Days
Beared Tree Quail:	28 Days	Mountain Quail: 24-25 Days
Brown Quail:	20-22 Days	New Zealand Quail: 21 Days
California Quail:	22-23 Days	Northern Bobwhite: 21 Days
Crested Bobwhite:	22-23 Days	Painted Bush Quail: 16-18 Days
Crested Partridge:	18-20 Days	Rain Quail: 18-19 Days
Harlequin Quail:	14-16 Days	Scaled Quail: 23 Days
Japanese Quail:	18 Days	Spot-Winged Wood-Quail: 18-19 Days
King Quail:	18 Days	Yucatan Bobwhite: 23-24 Days
Long Tailed Quail:	28 Days	

<b>Grouse</b>			
Black Grouse:	26 Days	Ruffed Grouse:	24 Days
Dusky Grouse:	25 Days	Sharp-tailed Grouse:	24-25 Days
Greater Prairie Chicken:	24-25 Days	Spruce Grouse:	21-22 Days
Hazel Grouse:	25 Days	Western Capercaillie:	26-28 Days
Red Grouse:	22 Days	Willow Ptarmigan:	23 Days
Rock Ptarmigan:	20-21 Days		
<b>Swans</b>			
Bewick's Swan:	30 Days	Mute Swan:	37 Days
Black-necked Swan:	36 Days	Trumpeter Swan:	33 Days
Black Swan:	36 Days	Tundra Swan:	36 Days
Coscoroba Swan:	35 Days	Whooper Swan:	36 Days
<b>Geese</b>			
Bar-headed Goose:	28 Days	Hawaiian Goose:	29 Days
Barnacle Goose:	28 Days	Lesser White-fronted Goose:	25 Days
Brant:	22 Days	Pink-footed Goose:	28 Days
Canada Goose:	28 Days	Red-breasted Goose:	25 Days
Emperor Goose:	24 Days	Ross's Goose:	23 Days
Fighting Geese:	28-31 Days	Snow Goose:	25 Days
Greater White-fronted Goose:	26 Days	Taiga Bean Goose:	25-29 Days
Greylag Goose:	28 Days	Toulouse Goose:	30 Days
<b>Anserinae</b>			
Andean Goose:	30 Days	Kelp Goose:	32 Days
Ashy-headed Goose:	30 Days	Orinoco Goose:	30 Days
Blue-Winged Goose:	31 Days	Ruddy-headed Goose:	30 Days
Egyptian Goose:	30 Days	Upland Goose:	30 Days
Freckled Duck:	26-28 Days		
<b>Whistling Ducks</b>			
Black-bellied Whistl. Duck:	28 Days	Spotted Whistling Duck:	31 Days
Fulvous Whistling Duck:	28 Days	Wandering Whistl. Duck:	30 Days
Lesser Whistling Duck:	28 Days	West Indian Whistl. Duck:	30 Days
Plumed Whistling Duck:	30 Days	White-faced Whistl. Duck:	28 Days
<b>Anatidae</b>			
Cape Barren Goose:	30 Days	Ruddy Shelduck:	30 Days
Radjah Shelduck:	30 Days	Shelduck:	30 Days
<b>Perching Ducks</b>			
Australian Wood Duck:	30 Days	Mandarin Duck:	32 Days
Knob-billed Duck:	30 Days	Wood Duck:	32 Days
<b>Eider Ducks</b>			
Common Eider:	24 Days	Spectacled Eider:	24 Days
King Eider:	22 Days	Steller's Eider:	24 Days



<b>Teals</b>			
Baikal Teal:	24-28 Days	Grey Teal:	25 Days
Blue-winged Teal:	24 Days	Hottentot Teal:	24 Days
Brazilian Teal:	25 Days	Marbled Duck:	25 Days
Bronze-winged Duck:	30-31 Days	Puna Teal:	26 Days
Brown Teal:	28 Days	Red-billed Teal:	25-28 Days
Cape Teal:	25 Days	Ringed Teal:	24-28 Days
Chestnut Teal:	26 Days	Sharp-winged Teal:	24 Days
Cinnamon Teal:	24 Days	Silver Teal:	25 Days
Garganey:	24 Days	Yellow-billed Teal:	24 Days
Green-winged Teal:	24 Days		
<b>Shovelers</b>			
Australian Shoveler:	24 Days	Nordic Shoveler:	25 Days
Cape Shoveler:	26 Days	Red Shoveler:	25 Days
New Zealand Shoveler:	26 Days	Shoveler:	26 Days
<b>Wigeons</b>			
American Wigeon:	24 Days	Falcated Duck:	25 Days
Chiloé Wigeon:	26 Days	Gadwall:	26 Days
Eurasian Wigeon:	25 Days		
<b>Oxyurinae</b>			
Masked Duck:	24 Days	White-backed Duck:	26 Days
Ruddy Duck:	24 Days		
<b>Mergansers</b>			
Goosander:	30 Days	Red-breasted Merganser:	30 Days
Hooded Merganser:	28 Days	Smew:	28 Days
<b>Goldeneyes</b>			
American Goldeneye:	28 Days	Eurasian Goldeneye:	28 Days
Bufflehead:	22 Days	Barrow's Goldeneye:	30 Days
<b>Pintails</b>			
Chilean Pintail:	25 Days	White-cheeked Pintail:	25 Days
Northern Pintail:	22-23 Days	Yellow-billed Pintail:	25-26 Days
<b>Mallards</b>			
African Black Duck:	28-30 Days	Mottled Duck:	26 Days
American Black Duck:	26 Days	Pacific Black Duck:	26 Days
Hawaiian Duck:	26 Days	Philippine Duck:	26 Days
Indian Spot-billed Duck:	26 Days	White Pekin:	28 Days
Laysan Duck:	26 Days	Yellow-billed Duck:	27 Days
Mallard:	26 Days		

<b>Pochards</b>		
Baer's Pochard:	27 Days	Red-crested Pochard: 27 Days
Canvasback:	26 Days	Redhead: 28 Days
Common Pochard:	27 Days	Ring-necked Duck: 23-26 Days
Ferruginous Duck:	26 Days	Rosy-billed Pochard: 28 Days
Greater Scaup:	24-28 Days	Southern Pochard: 26 Days
New-Zealand Scaup:	26 Days	Tufted Duck: 25 Days
<b>Scoters</b>		
Common Scoter:	28 Days	Long-tailed Duck: 23 Days
Harlequin Duck:	30 Days	Velvet Scoter: 28 Days
<b>Doves</b>		
Collared Dove:	14 Days	Galápagos Dove: 16 Days
Common Ground Dove:	12-14 Days	Gallicolumba: 15 Days
Common Wood Pigeon:	15 Days	Laughing Dove: 13 Days
Crested Pigeons:	17-19 Days	Mourning Dove: 15 Days
Diamond Dove:	13 Days	Namaqua Dove: 14-15 Days
Domestic Pigeon:	17 Days	Rock Dove: 17 Days
Eurasian Collared Dove:	16 Days	Western Crowned Pigeon: 28 Days
European Turtle Dove:	14 Days	
<b>Parrots / Parakeets / Oscine Birds</b>		
Amazonas Parrots:	24-29 Days	Major Mitchell's Cockatoo: 27 Days
Black-Capped Lory:	23-26 Days	Medium Parrots: 18-20 Days
Blue-and-yellow Macaw:	28 Days	Red-tailed Black Cockatoo: 28 Days
Blue Eyed Cockatoo:	28 Days	Red-vented Cockatoo: 28 Days
Blue-winged Macaw:	24-26 Days	Salmon-crested Cockatoo: 30 Days
Budgerigar:	18 Days	Scarlet-chested Parrot: 18 Days
Citron-crested Cockatoo:	24 Days	Solomon Island Parrot: 28-30 Days
Domestic Canary:	13 Days	Sulphur-crested Cockatoo: 30 Days
Galah:	23 Days	Sun parakeet: 26 Days
Gang-gang Cockatoo:	25-27 Days	Tanimbar Corella: 28 Days
Grey Parrot:	26-30 Days	Western Corella: 23-24 Days
Hyacinth Macaw:	24-29 Days	White Cockatoo: 28-30 Days
Large Parrots:	23-25 Days	Yellow-crested Cockatoo: 24 Days
Little Corella:	29 Days	Yellow-naped Amazon: 25-27 Days
Long-billed Corella:	29 Days	Yellow-tailed Black Cock.: 29 Days
Macaws:	26-28 Days	
<b>Birds of Prey / Owls</b>		
Amur Falcon:	28-30 Days	Gyrfalcon: 30-32 Days
Barn Owl:	32 Days	Northern Goshawk: 35-37 Days
Black Kite:	32 Days	Peregrine Falcon: 34 Days
Common Kestrel:	30 Days	Red Kite: 35 Days
Eurasian Eagle-owl:	33 Days	Tawny Owl: 32 Days
Eurasian Pygmy Owl:	28-30 Days	

**No responsibility is taken for the correctness of this information!  
You are welcome to tell us corrections and additions!**



