Instructions manual for the artificial egg hatch

Incubators REAL 49 Series Semi Automatic

REAL 49 SEMI AUTOMATIC 		

1 - Warnings for safe utilisation

When using electrical appliances, it is always required to adhere to some basic safety precautions. The following must also be read in its entirety:

1. Use the appliance only with electrical system features complying with the label affixed on the appliance and with this manual.
2. Do not touch hot surfaces (there is a resistor in the appliance). Wait for at least 10 minutes even after switching off in the event you should need to access hot parts for cleaning or maintenance.
3. Do not place the appliance near sources of heat.
4. Keep away from the reach of children.
5. Do not leave the appliance unattended for long periods of time when it is connected to the power mains.
6. To prevent electrocution, do not immerse the appliance in water or other liquids.
7. Detach the plug from the power socket when the appliance is not in use and/or prior to opening (lifting the cover plate) and cleaning.
8. Do not use the appliance with damaged cables or plugs, or if it has been dropped or damaged in some way. Consign the appliance to the nearest authorised service centre requesting check, or repair.
9. Use of accessories not recommended or not sold by the manufacturer is forbidden.
10. Do not use the appliance outdoors and do not move the appliance when in operation.
11. The appliance can be used by children older than 8 years of age and persons with reduced physical or mental capacity, or without experience or the necessary knowledge, as long as supervised by an adult or after they have received instructions related to safe appliance use and understand the dangers related to it. Cleaning and maintenance operations by user must not be carried out by unsupervised children.
12. Always begin utilisation by preliminarily checking the condition of external cables then plug the appliance in the power socket. To disconnect the unit unplug it from the socket.
13. During use, place the appliance on a horizontal, stable and well aerated surface, at a height of 500 mm from the floor.
14. Children must be supervised to ensure they do not play with the appliance.
15. Do not cover internal and external parts to prevent seriously damaging operation of the product.
16. The power supply cable must be positioned and protected in such a way that it can neither be accessed by pets nor damaged by them.
17. The power supply cable must be placed so that the plug can be easily accessible to disconnect the device from the mains.
18. To unplug the appliance, hold the plug directly and extract it from the wall outlet.
19. Any modifications to this product, not expressly authorised by the manufacturer, may involve deterioration of the safety and forfeiture of the warranty on its use by the user.
20. STORE THESE INSTRUCTIONS WITH CARE.

Warning symbols used on the product and in this manual

Symbol	Description
	Obligation not to cover the appliance during operation
	Presence of live parts with consequent electrical hazard
	Presence of hot surfaces, fire hazard
	Obligation to read the operating instructions before using the product

Contents

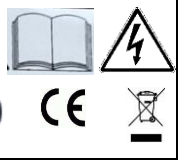
2 - Identification plate

The equipment is fitted with an identification plate showing the equipment's identification details and the main technical specifications.

PLATE FACSIMILE

MODEL REAL INCUBATOR

Year XXX Code RXX
Serial number XXXX
Weight XXXXX
Maximum power XXXX
Voltage 230 V 50/60 Hz IP 24
Made in Italy



3 - Declaration of conformity

EU Declaration of conformity

The undersigned Andrea Borotto, as legal representative of the company BOROTTO® headquartered in Via Papa Giovanni Paolo II, 7 37060 Buttapietra (VR) Italy VAT No 03787910235

DECLARES

That the product as per label shown below:

Is intended for the use: incubator for animal eggs, specifically: hen, pheasant, turkey, guinea fowl, quail, grey partridge, partridge, goose, Muscovy/common/wild duck, peacock, rock partridge, pigeon, Virginia quail, exotic birds and birds of prey.

The following declaration of conformity is released under the exclusive responsibility of the manufacturer. And it conforms to the following directives:

- **Directive 2014/35/EU known as Low Voltage Directive.**
- **Directive 2014/30/EU known as "Electromagnetic compatibility Directive".**
- **Directive 2011/65/EC ROHS II**

The products are made in compliance with the following standards:

- **Standard CEI EN 60335-1:2012 Safety of electrical appliances for household use and similar – Safety – Part 1: General Regulations.**
- **Standard CEI EN 60335-2-71:2005 + A1:2007 Safety of electrical appliances for household use and similar – Part 2: Special regulations for electrical heating appliances for animal husbandry.**
- **Standard EN 55014-1:2006 + A1:2009+A2:2011**
- **Standard EN 61000-3-2:2015**
- **Standard EN 61000-3-3:2014**
- **Standard EN 55014-2:1997 + A1 :2001 + A2:2008**

The person responsible for the technical dossier and

Legal Representative

Buttapietra – VR - Italy 01/05/2017

BOROTTO ANDREA

Attention, prior to performing any operation, carefully read the instructions manual.

4 - Presentation of the manual

This manual contains instructions regarding installation, maintenance and use of all models of REAL series egg incubators.
The manual consists of various sections, each one of which deals with a series of topics, divided into chapters and paragraphs. The general index lists all the topics dealt with by the entire manual.
This manual is intended for users of the equipment, and concerns its technical life after its production and sale.
In the event it should be subsequently be transferred to third parties for any reason (sale, loan for use, or any other reason), the incubator must be delivered complete with all the documentation.
Electronic format copy of this instructions manual can be downloaded from the site www.tradgardsteknik.se or can be requested writing to the e-mail address info@tradgardsteknik.se specifying the product and manual revision.

The manufacturer declares that the information contained herein is consistent with the technical and safety specifications of the egg incubator the manual refers to.

NOTE: The **REAL 49 PLUS** version is made with a special engineering polymer in high HEAT-RESISTANT ABS, which makes the machine solid and sturdy. The material is also provided with a special **BIOMASTER®** silver-based ion antimicrobial additive to destroy bacterial flora that may develop inside the incubator.
Two “DUST STOP” antimicrobial closing caps are also fitted to close the water filling nozzles.

PREMISE:

These instructions help acquiring familiarity with the incubator. Carefully reading these instructions results in high hatching yield, therefore this manual must not only be followed to the letter but seriously complied with! Neglecting or overlooking even one instruction only will make a difference in hatching! Egg selection is therefore recommended: ***the secret of high hatching yield lies exactly in obtaining compliant eggs.***

	**Danger: Should the fan not work, immediately unplug the appliance and contact the service.**

NOTE: demonstrative photos equivalent for all models of the REAL series

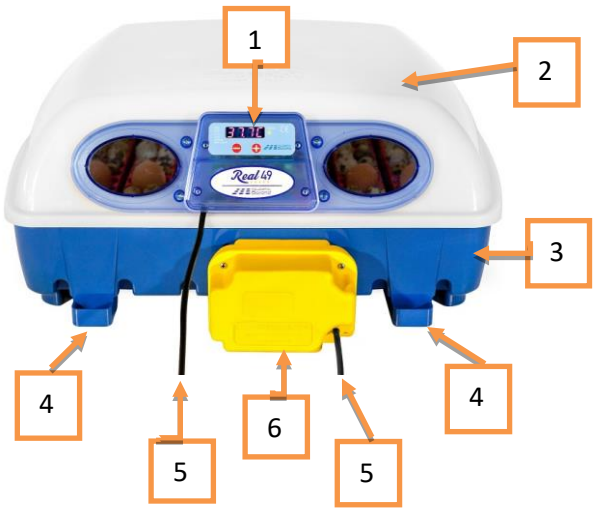


FIG.1

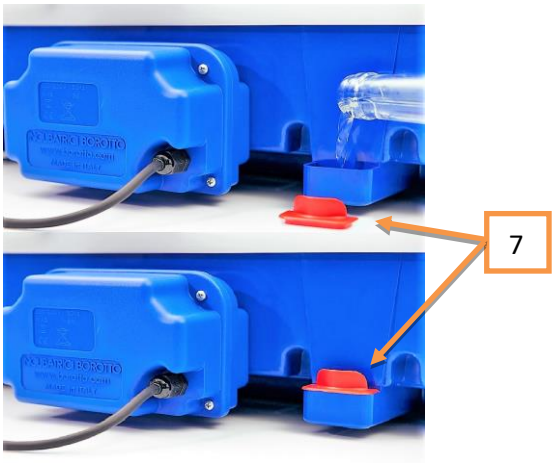


FIG.2

FIG.3

FIG.4

FIG.5

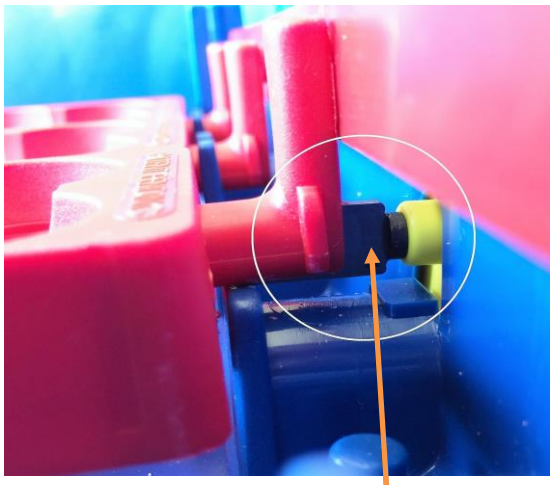


FIG.6

KEY

1	Control panel
2	Incubator cover plate
3	Incubator base
4	Tray filling nozzles
5	Electrical cable
6	Automatic egg turning unit **(accessory: may be supplied already installed according to the required model)**
7	DUST STOP antimicrobial closing caps **(only supplied with REAL 49 PLUS)**
8	Element joint rod
9	Egg tray element
10	Bottom grate to be only used at hatching (last 3 days)
11	Temperature control buttons
12	Digital display
13	Resistor on LED
14	The steel tab of the egg turning device must be inserted properly into the slot of the eggs support

5 - Technical features and specifications

Incubator model	REAL series		
Type of eggs to be incubated	hen, pheasant, turkey, guinea fowl, quail, grey partridge, partridge, goose, Muscovy/common/wild duck, peacock, rock partridge, pigeon, Virginia quail, exotic birds and birds of prey.		
Rated Voltage and Frequency	Single phase, 230 Volt CE - 50/60 Hz		
Maximum power	50W Real 12	100W Real 24	150W Real 49
Average consumption	30W Real 12	50W Real 24	70W Real 49
Noise	A-weighted noise pressure level emitted from the device below 70dB(A)		
Display	Digital temperature control with decimal point		
Ventilation	Turbine		
Thermostat	Microcomputer with PID management. With tolerance of +/-0.1°C		
Range	Temperature modifiable from Min. 30°C to Max. 40°C		
Humidity in the incubator	45-55% with water in one tray 60-65% with water in both trays		
Dimensions and weight of Real12	32x36x26 cm – Weight: 2.92 Kg		
Dimensions and weight of Real24	50x38x26 cm – Weight: 3.85 Kg		
Dimensions and weight of Real49	58x57x25 cm – Weight: 5.50 Kg - (6.8 Kg for REAL 49 PLUS)		
Capacity of Real 49	49 eggs placed in the cell device or 196 small-sized eggs (such as quail eggs)		
Capacity of Real 24	24 eggs placed in the cell device or 96 small-sized eggs (such as quail eggs)		
Capacity of Real 12	12 eggs placed in the cell device or 48 small-sized eggs (such as quail eggs)		

6 - General information

The REAL series incubator has been designed for hatching chicks of hen, pheasant, guinea fowl, quail, grey partridge, grouse, ducks (Muscovy/ common/wild duck, goose, etc.), peacock, turkey, rock partridge, pigeon, Virginia quail, exotic birds and birds of prey.

Semi-automatic version incubator: it is fitted with a semi automatic system to tilt eggs, operated from the outside via a lever connected to the cell device located in the base of the incubator.

Automatic version incubator (with automatic egg turning motor): it is equipped with an automatic system to tilt the eggs actuated from the outside via a motor that performs a complete cycle in 1 hour.

The heat required for incubation is generated by an electrical resistor controlled by a latest-generation digital PID microcomputer control that makes it possible to regulate in a constant and precise manner the average internal temperature, setting it with the buttons on the control panel.

Ventilation takes place by means of a turbine fan that distributes the warm and humid air evenly.

The natural surface humidification takes place thanks to the water contained in the trays stamped on the bottom of the incubator, which are filled via the two outer nozzles - a convenient system so the incubator does not require opening any longer.

7 - Transport and handling instructions

TRANSPORTING THE INCUBATOR

The device can be easily transported and does not pose any special risks regarding its handling.
REAL incubators packaged individually can be manually transported by one person.

PACKAGE

The Real incubator package ensures correct transport with regard to safety and integrity of the device and all its components.

Depending on the delivery method of the end customer, the package comprises 1 or 2 cardboard boxes, Nylon packaging and protections and polystyrene.
A sturdy outer box and nylon packaging also protect the incubator if it is stored for long periods.

Beware of humidity
Handle with care

TRANSPORT

ATTENTION: the entire package must be kept for any machine movements.

OPENING THE PACKAGE

To remove the machine:

1) Open the box carefully without damaging it
2) Remove all protective devices from the incubator
3) Check that the package contents include:

- Incubator base
- 2 “DUST STOP” antimicrobial caps to close the water filling nozzles. **(ONLY SUPPLIED WITH REAL 49 PLUS)**
- Base hatching grid
- Egg tray
- Complete incubator cover
- Automatic egg turning unit (if purchased)
- User manual and purchase receipt

HANDLING THE INCUBATOR

Take the incubator from the package and place it directly on a horizontal surface higher than 500mm. Since its weight varies from 2.45 Kg to 6.80 Kg (depending on the model), this operation can be carried out by one person. **ATTENTION**: the incubator must be lifted from the base only. Do not lift the incubator by applying force on the clamps, lever, or similar.

8 - Selection and preservation of the eggs for incubation

It is recommended to incubate eggs from one's own farm or neighbouring breeders. Eggs that have travelled for kilometres with couriers will normally have less than 50% hatching, due to factors of travel stress, vibration, temperature changes, embryos that have died from asphyxiation, because eggs that are closed inside packaging do not breathe!

If you have actually taken eggs that have travelled, let them rest on an egg platform for at least 24 hours with the tip downwards before incubating them.

Choose eggs from parents that are well developed, well fed and healthy.

MANDATORY: The parents must not be inbred (no brothers must be crossbred; the males must always come from another farm), as they would result in eggs containing weak embryos destined to die in the process of hatching (the chick grows, but remains trapped inside the egg as it is weak and does not have the strength to break the shell to hatch), nature is very selective and does not allow vulnerable creatures to be born!

The breeders must be sexually mature, and the males must be present in the right proportions with respect to females, adhere to the information given in the following table:

	PROPORTION BETWEEN			AGE AT SEXUAL MATURITY	
Species	**Male**	**and**	**Female**	**Male**	**Female**
Hen	1		6	6/8 months	6/8 months
Pheasant	1		4	6/7 months	6/7 months
Duck	1		4	8 months	4 months
Goose	1		4	8 months	7 months
Guinea fowl	1		2	8/10 months	8/10 months
Partridge	1		1	10/12 months	10/12 months
Quail	1		3	60 days	50 days
Turkey	1		8	7 months	7 months

Remember breeders lose most of their fertility after 3 years of age.

CHOICE OF THE EGGS

EGGS SUITABLE FOR INCUBATION

Good quality eggs

EGGS WITH LOW HATCHING PERCENTAGE

Rough shell

White (not genetically) and fragile shell

Small egg

Slightly dirty egg

Oblong egg

EGGS TO BE SCRAPPED

Soiled egg

Blood on the shell

Faecal material on the shell

Yolk on the shell

Slight crack

Broken

Pierced

Misshapen

Thin shell

Coarse shell

Very dirty

The embryo begins developing before incubation and, therefore, it needs proper care, otherwise there will be a decrease in the hatching percentage.

Below are some rules that will be helpful in obtaining suitable eggs for incubation:

1. Collect the eggs at least 5 times a day to prevent environmental contamination. **Never incubate eggs that have been at a temperature lower than 5°C or higher than 24°C. Over this figure the germinating cell starts developing in an abnormal way, it still develops when incubated but the chick will die during hatching!** NEVER store the eggs in the refrigerator.
2. Do not incubate eggs dirty with faecal material, as during incubation the temperature and humidity would lead to the establishment of a bacterial flora that would contaminate all the eggs, causing infections to the embryos and resulting in chick death during hatching. The eggs must not have blood stains.
   Do not wash the eggs for any reason, at the most you may dry brush them with an abrasive sponge.
3. Store the eggs in a cool room with a temperature between 14°C and 16°C and humidity approximately 65-75%.
4. ***Store the eggs in the egg trays with the tip downwards.***
5. The eggs are suited to incubation from the second to the sixth/seventh day after laying. Incubating eggs older than 8 days significantly reduces the hatching percentage, up to almost zero in the event of eggs stored longer than 15 days!
6. Choose eggs of normal shape (they must not be elongated, spherical, undulated or with any other malformation).
7. The egg shell must not be cracked, broken, creased, soft, thin or with bluish spots (old eggs).
8. Allow cold eggs (from storage temperature) to slowly reach room temperature before placing them in the incubator. Suddenly going from 12°C to 38°C would cause condensate on the shell which would lead to a reduction in hatchings.
9. **During incubation DO NOT add eggs at a later time!**

TRÄDGARD RECOMMENDS: If eggs are bought from amateurs, make sure the breeding farms are registered and comply with animal health regulations in force, which means they have the breeding code issued by their relative local health authorities and are accredited to it for serological tests made with regular frequency. This is the only way to have eggs from breeders that undergo a specific vaccination program defined by a competent veterinarian and in accordance with the local checklist on farming and the size of shelters. Availability of first-class genetic material, which is obtained after strict selection and breed adaptation, enables better size and productivity of animals as well as reduces the risk of incubating eggs with high bacterial contamination or diseases and thus resulting in poor hatching results (due to premature death of the embryo in the egg before birth).

9 - Preparation and commissioning of the incubator

During transportation, pay attention not to cause collisions and/or damage to the incubator. Always position flat, avoiding crushing and/or breakage.

For successful hatching, it is recommended to keep the incubator in residential premises, not in sheds, porches or garages. The room temperature should ideally be between 20°C and 25°C and have no air drafts. The suitable room must be well aerated and comfortable. Ensure the incubator is not exposed to direct sun rays or placed close to direct heat sources such as radiators, stoves, fireplaces, boilers etc. Relative humidity must be between 50% and 75%.

ATTENTION: DO NOT USE THE INCUBATOR IN ROOMS WITH TEMPERATURES BELOW 20°C OR HIGHER THAN 25°C!

Do not use or store the incubator in rooms where are chemicals, poisons, toxic or flammable substances, even at low concentrations, as they adversely affect embryo development. Do not use the incubator where there is a danger of water or other substances being sprayed.

9.1 - Use

MANDATORY: SANITISE THE INCUBATOR BEFORE STARTING THE INCUBATION PROCESS: refer to Chapter 15

Place the incubator on a flat table higher than 500 mm from the floor.

Do not place other objects between the product and the plane, for example tablecloths or covers.

Remove the cover plate and lay it next to the incubator.

Remove the bottom plastic hatching grate, which is not used at the moment (it is only used in hatching, i.e. for the last 3 days). **NEVER LEAVE IT IN THE INCUBATOR DURING THE INCUBATION PERIOD!**

Ensure the egg supports are well positioned in their seats and that (in the automatic version) **the steel tab of the egg turning motor is properly inserted in the slot of the egg support, i.e. the plastic of the egg support must be inserted onto the steel tab (14-Fig. 6).**

Fill one of the nozzles at the outer base of the incubator (either one) with drinking water, pouring the water slowly (4-Fig. 1).

REAL 49 PLUS VERSION ONLY: Use the 2 “DUST STOP” antimicrobial caps to close the 2 water filling nozzles (7-Fig.2). **NOTE: THESE 2 CAPS MUST NEVER BE REMOVED DURING INCUBATION. THEY MUST ONLY BE REMOVED FOR THE TIME REQUIRED TO FILL WATER AND MUST BE CLOSED AGAIN!**

Replace the cover plate, ensuring the rim of the incubator's upper part perfectly meshes with the duct in the cover plate base.

Plug the cover plate plug in a power socket. Ventilation will start immediately, the internal temperature will then be displayed and the yellow LED will switch on (13-Fig. 5). The LED will remain on for about 20-40 minutes, until the set temperature is reached, then it will begin flashing. Set the temperature at 37.7°C (ideal temperature for all bird species).

To set the temperature, use the (+) and (-) buttons on the upper control panel (1-Fig. 1). Press one of the two buttons to access the program (the letter “P” will appear next to the degrees). Keep pressing until the desired temperature is obtained. Once the temperature has been set, wait for it to be stored. Wait a few seconds for the current internal temperature and the letter “C” to be displayed.

NOTE: leave the incubator on while empty for minimum 2-3 hours before putting any eggs in order to stabilise the temperature and humidity (the incubator must operate without any egg).

After ensuring the incubator works properly, remove the cover plate and lay it next to the incubator. **Gently place the eggs in the cells with the tip downwards.** Close the incubator again.

For the semi automatic incubator:

At least 4 times a day change the tilt of the eggs placed in the cell device by means of the lever located at the front of the incubator. Tilt the lever alternatively to the right or left, stopping it in the position corresponding to 10 o'clock or 2 o'clock. Never leave the lever (and consequently the eggs) in vertical position (12 o'clock). Move the lever gently to prevent any shocks to the eggs.

For the automatic incubator (with egg turning motor):

Plug the egg turning motor plug in a power socket. The egg turning motor will then start turning.

NOTE: the egg turning motor moves the eggs constantly by tilting them from right to left and vice-versa. This movement is NOT visible since the motor turns very slowly like the hands of a clock, and completes a cycle from right to left (or vice-versa) in 1 hour. The egg turning motor can thus deceive you into thinking it is not turning. But in fact, it is working correctly and there is no need to worry that is has stopped.

The incubation cycle now starts. It is advisable to mark the day on a calendar and follow the instructions of the table below.

Check the water level on a daily basis, and top it up with clean drinking water using the suitable filling nozzles. The water level, which may be seen in the filling nozzle, coincides with the internal level in the tray. Humidity is generated by the water surface extension not its quantity, therefore the moisture content in the incubator will always be the same, whether the water level in the tray is minimum, half or full!

ATTENTION: do not cover the incubator with blankets for any reason nor close it in a box thinking this will lead to energy savings! The incubator is designed to exchange the air inside it through the two windows (slightly detached from the cover plate to let air through): if the embryo does not breathe, it will die by asphyxia!

SUGGESTION: change the position of the eggs every 5 days, moving those in the centre of the incubator with those on the sides (this is to ensure better even hatching).

TRÄDGARD **RECOMMENDS:** to permanently control the level of humidity and automatic input of water in the machine, you can use the automatic SIRIO humidifier, which is manufactured and distributed by trädgard® and available from the incubator sales outlets or from the website: www.tradgardsteknik.se

9.2 - Information regarding correct incubation: **all poultry eggs**

Suggested temperature at the start of incubation: 37.7°C
Suggested temperature during the last 3 days before hatching: 37.2°C
Refer to the following table to obtain successful incubation:

Species	Incubation time	For correct humidity at the start of incubation	Do not turn the eggs after	For correct humidity during the last 3 days before hatching
Hen	21 days	Fill 1 water tray	Day 18	**Also fill the second tray with water. Also pour 2 or 3 glasses of water at the bottom of the incubator.**
Pheasant	25 days	Fill 1 water tray	Day 22	
Quail	17 days	Fill 1 water tray	Day 14	
Guinea fowl	26-28 days	Fill 1 water tray	Day 23	
Turkey	28 days	Fill 1 water tray	Day 25	
Grey partridge - Partridge - Rock partridge	25 days	Fill 1 water tray	Day 22	
Peacock	28 days	Fill 1 water tray	Day 25	
Quail	23-23 days	Fill 1 water tray	Day 20	
Goose	30 days	Fill 1 water tray	Day 27	
Swan goose	34 days	Fill 1 water tray	Day 31	
Domestic duck	28 days	Fill 1 water tray	Day 25	
Muscovy duck	35 days	Fill 1 water tray	Day 32	

SUMMARY

INCUBATION: During incubation maintain temperature at 37.7°C and fill only one water tray.
HATCHING: In the last 3 days before expected hatching, the eggs must not be turned any longer. They must be laid on the hatching grid and humidity must be increased by filling the second tray as well pouring 2 or 3 glasses of water at the bottom of the incubator. Then set the temperature to 37.2°C.

The incubation days table is indicative, it is recommended to leave the incubator on 2 or 3 days longer over the deadline, to allow laggards to hatch.

9.3 - Incubation of palmiped eggs (goose, duck, etc.)

From the tenth day of incubation to the last three days before hatching, open the incubator once a day and let the eggs cool down for 15⁄20 minutes. Before repositioning the cover plate spray a thin layer of water (ATTENTION: NEVER MOISTEN THE EGGS WHEN THEY ARE STILL WARM, WAIT FOR THEM TO COOL DOWN). The appliance must be unplugged during this operation.

9.4 - Information regarding correct incubation: **eggs of all exotic birds**

Temperature to maintain during incubation: 37.0°C
Temperature to maintain in the last 3 days before hatching: 36.5°C
Refer to the following table by keeping in mind that incubation varies according to the species. For detailed information regarding special species, consult the relative texts.

PARROTS	Incubation time	Incubation humidity	HATCHING (last 3 days)
Amazon species	24-29 days	Fill 1 water tray	**Also fill the second tray with water. Also pour 2 or 3 glasses of water at the bottom of the incubator.** **Do not turn the eggs in the last three days before hatching.**
Ara	26-28 days	Fill 1 water tray	
Macaw	26-28 days	Fill 1 water tray	
Lovebirds	22-24 days	Fill 1 water tray	
African grey parrots	28 days	Fill 1 water tray	
Eclectus parrots	28 days	Fill 1 water tray	

SUMMARY

INCUBATION: During incubation, maintain temperature at 37.0°C and fill only one water tray.
HATCHING: In the last 3 days before expected hatching, the eggs must not be turned any longer. They must be laid on the hatching grid and humidity must be increased by filling the second tray as well pouring 2 or 3 glasses of water at the bottom of the incubator. Then set the temperature to 36.5°C.

The incubation days table is indicative, it is recommended to leave the incubator on for 2 or 3 days more than the indicated deadline to allow laggards to hatch.

10 - Periodic egg inspection during incubation (candling)

Candling is a complicated and delicate operation that may result in errors as eliminating fecundated eggs. Since it is optional, we advise not to perform it if one has no experience and to proceed with incubation. Otherwise, the incubated eggs may be periodically inspected by candling. This operation must be performed in a dark room using the egg candler, which is available on the website www.tradgardsteknik.se , following the table below:

Species	1st inspection	2nd inspection	3rd inspection
Hen	at 8 days	at 11 days	at 18 days
Pheasant	at 8 days	at 12 days	at 20 days
Guinea fowl	at 8 days	at 13 days	at 23 days
Turkey	at 8 days	at 13 days	at 25 days
Grey Partridge / partridge	at 8 days	at 12 days	at 20 days
Peacock	at 9 days	at 14 days	at 25 days
Goose	at 9 days	at 15 days	at 27 days
Mallard and wild duck	at 9 days	at 13 days	at 24 days
Muscovy duck	at 10 days	at 15 days	at 30 days

Extract the eggs from the incubator one by one and check them immediately. The egg may remain outside the incubator for 2 minutes at most. With a little experience, and using the suitable instrument, the eggs may be inspected without extracting them from the incubator. In that case, open the incubator and place the candler onto each egg. The light beam lets you see the embryo. Never turn or shake the eggs with violence as this would cause the blood vessels to break and result in embryo death.

1st Inspection: start of the incubation: It is usually difficult to see the embryo because it is encased in the yolk: blood vessels are visible near the air cell and on the tip. If the egg has not been fecundated the inside will be uniform, without any blood vessels and the yolk will be in the middle. In that case scrap the egg. It is likely that in this stage the inside of eggs with a thick or brown shell cannot be seen well: these will be checked in the second inspection.

2nd Inspection: development of the embryo: The mesh of blood vessels is normally visible in the tip of the egg and the embryo will appear as a dark spot. If the blood vessels are not visible this means that the embryo is dead.

3rd Inspection: embryo check: The embryo normally occupies the entire egg, therefore the blood vessels should no longer be visible. The air cell is large, If the embryo does not occupy the entire space, blood vessels are visible, the air cell is small and the white has not been used up, this means that the embryo is underdeveloped and the egg must be scrapped.

11 - Chick hatching

The operation described below is very critical and must be done quickly, it is recommended to be assisted by another person to speed up the operation so the eggs do not get excessively cold.

For the semi automatic incubator:

A. In the last 3 days before the expected hatching, extract the metal lever located at the front of the incubator.
B. Follow the table below from letter B onwards.

For the automatic incubator (with egg turning motor)

A. In the last 3 days before the expected hatching stop the egg turning motor by unplugging it from the power socket, possibly when the eggs are still in vertical position.
B. Remove the eggs from the cells and gently place them on a blanket.
C. Remove the egg cells.
D. Pour 2 or 3 glasses of water at the bottom of the incubator.
E. Place the plastic grate in the base of the incubator paying attention to ensure the two tabs of the grate cover the 2 communicating water ducts to prevent the chicks from falling in and drowning.
F. Distribute the eggs on top and close the cover plate again.
G. Fill the second tray with water.
H. If poultry eggs have been incubated, set the temperature at 37.2°C. Or 36.5°C if exotic eggs have been incubated.

VERY IMPORTANT: **During hatching (in the last 3 days) NEVER open the incubator!**

Opening the incubator continuously out of curiosity in the last 3 days to see the chicks hatch will result in the chick inside the egg dying!

Lifting the cover uselessly disperses the accumulated CO2 and humidity and would thus require more time to bring it back to the required values. At most, open the machine once daily to remove the chicks already hatched, and once they are completely dry, close it immediately. The newly hatched chicks must be kept inside the incubator for approximately 12 hours. They can stay inside up to 3 days without drinking or eating and not suffering.

12 - First days of life

Place the chicks in an environment that assures the necessary heat and light, with no air drafts, where they can be fed and watered.

SUGGESTIONS: you can use a 50x50 cm cardboard box. Cover the bottom with newspaper, which must be changed every day. Otherwise you may use the complete weaning pen or artificial hen available on the website www.tradgardsteknik.se

For heating, hank a reflector with infra-red lamp at about 20-25 cm from the ground. Adjust the temperature by changing the height of the reflector. The box must be large enough to contain a water pan and one for the feed.

12.1 - Benefits of the infra-red lamp

Infra-red lamps not only serve to warm the chick, but act in depth, on the tissues and muscles, fixing calcium in the bones and supporting the expansion of the blood and lymph vessels, thus improving blood circulation and, consequently, the nutrition of cells. This promotes healthy growth of the chick which will also be more resistant to disease. The reflectors (used to convey heat) and infra-red lamps are available on the website: www.tradgardsteknik.se

12.2 - Nutrition

Chicks usually start eating and drinking from the second/third day of life. Place in the box/pen: a drinker and a feeder with chick feed. We suggest scattering some feed also on the newspaper. Feeder and drinker are available on the website www.tradgardsteknik.se

If other drinker are used, ensure the pan is not higher than 3-4 cm otherwise the chicks will risk getting wet or drowning. To prevent that, place pebbles on the bottom, which will also attract the chick to the drinking water.

13 - Problems that may be encountered during incubation

PROBLEM	POSSIBLE CAUSE	SUGGESTION
Clear eggs. There are no blood vessels (through candling)	Non-fecundated eggs due to too many or too few males, old or infertile	Only use young, zestful and unrelated males and not exceeding 3 years of age
Blood rings visible in candling	Egg storage was too long before incubation	Do not store the eggs longer than 7 days
	The temperature in the egg storage room was too high or low	Ensure the temperature in the egg storage room is between 14°C and 18°C
	Inadequate egg care before incubation	Check proper egg storage
	Low egg collection frequency	Collect the eggs more often throughout the day
Many dead embryos or chicks that die before pipping	Breeders are inbred	The breeders must not be related **(the male MUST NOT be the female's brother)**
	Old eggs	Store the eggs for 7 days at most
	Aged parents	The parents must not be older than 3 years
	Nutritional deficiencies	Feed parents with adequate feed (use parents feed)
	Eggs have travelled long distances	Incubate local eggs
	Incorrect humidity during incubation	Comply with the information provided on filling the water trays
	The incubator has been opened several times during hatching	Open once a day at most to remove properly dry chicks
	The incubator has been operating in excessively hot or cold premises	Ensure the room temperature is between 20°C and 25°C
	Bacterial contamination from a dirty incubator	**Remove scale and disinfect the incubator before use, refer to Chapter 15** Ensure the eggs are properly clean
	Eggs with high bacterial contamination	**READ CHAPTER 8, section regarding "TRÄDGARD RECOMMENDS"**
	Other causes	**ADHERE TO CHAPTERS 8 and 9 – 9.2 – 9.3 – 9.4 – 11 – 14 -14.1**
The eggs explode	The eggs are dirty	Incubate clean eggs
Chicks with lower limb malformations	Incorrect humidity during incubation	Adhere to the information provided regarding humidity management in table 9.3.
	Inbred breeders	The parents must not be related

14 - Diagnosis regarding widespread chick death during hatching

Obtaining poor hatching results is always frustrating, especially once the embryo develops but the chick does not manage to survive and dies, in most cases, in the last 3 days prior to hatching (technically called: late embryo mortality).

This type of embryo death can be caused for various reasons: in fact, nature is very selective and systematically tends to prevent birth of weak subjects!

First and foremost, it is necessary to emphasise that even before implementing the operation method of the incubator described in this manual, the secret to obtain good hatching lies in starting with suitable eggs, in full compliance of the instructions in this manual.

If the eggs were properly selected, but the results did not meet expectations, we recommend prudence in considering the incubator inappropriate or making a complaint without having previously eliminated the possibility that the embryos or chicks died for other reasons.

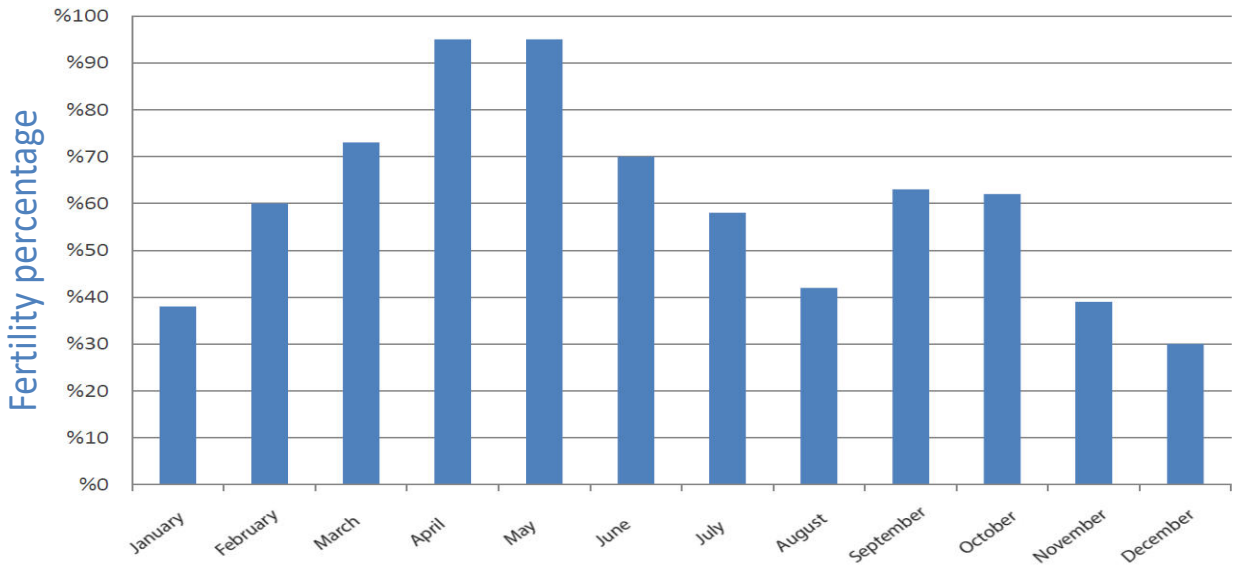
The last and final analysis, which is the only chance to be certain about the cause of death before birth, can be obtained through a report from a laboratory specialised in microbiological analysis, better still a veterinary epidemiology centre, which can also carry out proper autopsy analysis. The causes of failed hatching can be thus ascertained, which, in most cases, are due to: inbreeding, parents malnutrition, embryonic hypotrophy, altered ovogenesis, viral infections or bacterial contamination, more frequently due to: escherichia coli, pseudomonas, mycoplasmosis, staphylococcus, etc.

14.1 – Fertility photoperiod

The month in which you incubate is also important. The average hatching obtained out of season is usually very low, especially considering the decrease in duration of the photoperiod.

Even when candling provides positive fertility results, this does NOT mean that all embryo eggs will hatch. In fact, if certain embryos are not perfect, they will develop just the same in the first stages but will die inside the egg in the late phase of development, and will not hatch.

Below is a table regarding average embryo fertility based on the monthly length of the photoperiod:



Graph regarding average fertility based on the length of the annual photoperiod.

15 - Cleaning and sanitising

PREMISE: *In terms of temperature and humidity, the environmental conditions created inside the machine in order to guarantee the best results during the incubation and hatching phases are also ideal to develop harmful bacteria, such as: Salmonella, Campylobacter, Staphylococcus, Legionella, Escherichia coli, etc.*

The resulting bacterial cross-contamination of embryos and early mortality of the chicks are among the main causes of poor hatching results.

Below is the correct procedure to follow to clean and sanitise the incubator perfectly in order to prevent harmful proliferation of bacteria and to decrease the death rate of chicks in the hatching stage.

Cleaning, sanitising and maintenance operations must be performed with appliance off, unplugged and after a sufficient time to allow hot parts to cool down.
The heating element must be kept clean from dust and any dirt.

Cleaning incubator bottom: at the end of the cycle thoroughly wash the bottom of the incubator with a water softener to remove any scaling left during water evaporation (do not use steel wool or scrapers to remove the scale), rinse thoroughly with water to remove all water softener residues before moving to the sanitising stage in order to avoid chemical reactions.

Sanitising incubator bottom: disinfect it with bleach or other similar disinfectant products (the ones used for laundry are fine), then pour about half a glass at the bottom of the incubator with a little water, shake the incubator so that the liquid covers every part of the base including the walls, then rinse as well as possible.
MANDATORY: TO SANITISE THE INCUBATOR BASE ONLY USE BLEACH OR DISINFENTAT BASED ON WATER! IT IS FORBIDDEN TO USE ALCOHOL OR OTHER CHEMICALS.
If you disinfect the inside of the incubator with alcohol or other chemical detergents, when the incubator is used again the residual chemical particles will affect the embryos leading death during hatching.
Do not remove the automatic egg turner from the incubator.
Incubator cover plate cleaning: accurately clean the outside of the cover plate with a soft cloth moistened with alcohol.
Blow the inside of the cover plate with compressed air to remove the down lost by chicks during hatching.
NOTE: SANITISING MUST BE PERFORMED BEFORE INCUBATING
STORAGE: perfectly dry the inside of the incubator, operating it dry for 2⁄3 hours.
Store the incubator in a dry and clean place, away from shocks and changes in temperature.
Do not place any objects on top of the incubator.
No electrical maintenance is to be performed by the user.

16 - Problems that may occurr during use

PROBLEM	POSSIBLE CAUSE	SUGGESTION
The product or its accessory does not switch on	Disconnected cable	Connect the cable
	Damaged cable	Request technical support for the repair
	Other	Request technical support
Required temperature is not reached	Unsuitable room temperature	Move to another room
	Thermostat does not work	Request technical support
	Resistor does not heat	Request technical support
	Damaged product parts that cause heat dispersal	Request technical support
An accessory does not work	Disconnected cable	Connect the cable
	Damaged cable or component	Request technical support for the repair
	Other	Request technical support

Temperature and humidity inside the incubator

Reading temperature and humidity parameters inside an incubator with common thermometers or probe hygrometers does not provide reliable data regarding the actual environmental parameters inside the egg and thus imposed on the embryo.
In fact, the patented air treatment system inside REAL incubators is designed specifically on a studied ventilation variability, which creates precise variations in the temperature and humidity parameters that are suitable and ensure the best hatching results. However, it is highly unlikely that the parameter recorded at a single point corresponds to what is shown on the display. But this is not a defect!
In fact, a turbulence effect is specifically generated inside REAL, which is modified by the constant, slow variation of the egg's inclination. This is where the differences are found in the temperatures recorded from one point to another.
This physiological variation in the temperature was studied in order to get as close as possible to the conditions of the egg during natural brooding. In fact, to stimulate the embryo in its first critical 8 days of brooding, the part of the egg that touches the hen's chest is approximately 40°C, whereas, the temperature of the part of the shell in contact with the underlying hay is approximately 35°C.

Our sophisticated laboratory equipment and calibration during assembly of our incubators (ACCREDIA certification), ensure perfect temperature on the surface and inside the egg, and NOT that of ventilated air!

A very reliable test on the correct temperature to which incubated eggs have been subjected and which can easily be verified by any user is represented by measuring the total time elapsed between putting the eggs into a started machine and the moment of hatching.
The direct correlation between the adequate temperature during the incubation phase and the time taken by the embryo to be born (chick) is scientifically proven.
A hatching duration between 20 and 21 days indicates perfect compliance with the environmental parameters inside the machine.
On the other hand, if the eggs hatch by day 18: the temperature was too high during incubation; if they hatch after 22 days, it was too low.
This is obviously the case if the machine was used as designed, with room temperature between 20 and 25 degrees centigrade.

17 - Disposal

In implementation of Directives 2011/65/EU and 2012/19/EU, LEGISLATIVE DECREE 4 March 2014, n. 27 and LEGISLATIVE DECREE 14 March 2014 , n. 49, relative to the use of hazardous substances in electrical and electronic equipment and the disposal of waste, the symbol of the crossed wheelie bin, shown here, indicates that at the end of its service life the product must be collected separately from other waste.
The user shall therefore deliver the appliance at the end of its service life to the suitable electric and electronic separate waste collection facilities.
Appropriate separate collection for subsequent recycling of the decommissioned appliance, treatment and environmentally compatible disposal contributes to avoiding possible negative effects on the environment and health and promotes the recycling of the materials the appliance consists of.
Unlawful disposal by the user involves the application of the administrative sanctions provided for by the laws in force.
The information related to the correct procedure of available collection systems must be obtained from the Local Waste Disposal Service.

AEE ITALY REGISTRATION NUMBER: IT14080000008557

18 - Warranty / after sale service

(Hereinafter the Manufacturer) grants a 24 month warranty to the product from the date of purchase.
During this period, the Manufacturer undertakes to repair at its expense any defect that might occur during normal operation of the appliance, attributable to manufacture.
Upon requesting servicing under warranty, show this contract complete with date, stamp and signature.
The incubator must be shipped in its original packaging under the customer's responsibility.
If the incubator is in the warranty period and has been used correctly it will be repaired free of charge. It is understood that no reimbursement shall be acknowledged in the event of lack of fault or defect of the product. However, the Manufacturer reserves the right to charge to the customer the expenses incurred for the demand for servicing in warranty in the absence of the prerequisites.
The warranty does not cover damage caused by:

- transport;
- wear, water, dirt;
- use in conditions other than herein specified by the Manufacturer;
- repairs or modifications made by personnel not authorised by the Manufacturer;
- force majeure (earthquakes, floods, fires, etc.).

Only use the incubator for the purpose it is intended for; uses other than indicated in these instructions shall be deemed as hazardous and the Manufacturer disclaims any and all liability for any damage to persons, animals or property arising from failure to comply with this warning.
The Manufacturer shall not be deemed liable, nor shall they grant any servicing under warranty or compensation for negative results due to failure to comply with these instructions, misuse, incorrect installation of the appliance or problems arising from the inadequacy of the electrical installations or other facilities, or arising from environmental, climate or other conditions, or from entrusting the appliance to minors or persons manifestly unsuitable to using or handling the appliance.
No compensation shall be requested from the Manufacturer for indirect damage due to loss of material occurred as a consequence of product defects such as, eggs inserted or to be inserted in the incubator, or further damage to property, persons or animals.

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Date, stamp and signature for the warranty