

INSTRUCTIONS FOR INCUBATOR MOD. “COSMO & COSMO EVO”

Cosmo represents, in any way, the new incubation frontier as each detail of this appliance has been conceived to ensure excellent performance together with a unique and exclusive design. It results from F.I.E.M. experience, reached and applied on field in years of dedicated research and drilled-down studies on incubation technique.

B E F O R E U S E

Before using the incubator, it is recommended to study the Instruction Manual, especially the technical and safety data aspects, in order to gain an understanding of the components and the potential operation of the machine.

MACHINE UNPACKING

Take the incubator out of its cardboard box and remove the internal components which are secured by the adhesive tape and check that they are intact.

Check the following components are included:

- 1 no. adjustable egg-turning grid;
- 1 no. mesh shelf;
- 1 no. dial hair hygrometer;
- 1 no. °F alcohol thermometer;
- 1 no. Instruction Book;

The incubator is supplied with a single phase electric cable (approx. 2 mt.) with a plug for the electric connection 230V, 50/60 HZ.

On the back of the machine, the data plate gives full details regarding the voltage, power requirements, registration number and production date.

IMPORTANT: Remember to check thermometer is working correctly, examining that there are no breaks in the line of alcohol.

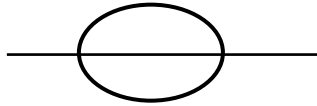
POSITIONING AND PREPARATION

The area where the machine is placed should be well ventilated and dry, at a constant temperature between 17-23 °C. Place the incubator on a flat, level surface and near to an electric socket for easy access.

Use only the electric plugs supplied, with earth connection.

PLEASE NOTE: *The manufacturer declines every responsibility in case of any improper use or improper placement, connection to any unauthorized apparatus or tampering from unauthorized personnel.*

1. Before using the machine, remember to clean it carefully inside and outside, as shown in the relative paragraph.
2. Insert the thermometer into its clip on the left side of the egg turning grid and adjust it so that its bulb is level with the centre line of the eggs.



3. Natural surface humidification is performed by modular basins built into the machine lower valve by an easy-to-use external filling system.
4. *On the new developed EVO Version the LCD electronic control unit can perform the digital reading of humidity expressed in UR% (range 20-90%) and, if connected to an external ultrasound humidifier, it is a super-modern digitally-regulated automatic humidification system.*
5. Insert the dial hair hygrometer into its metal support on the right frontal size.
6. **Synthetic hair hygrometer regeneration:** in order to enable an exact humidity reading it's important at each incubation start to regenerate the dial hair hygrometer. A simple regeneration is possible by storing the device several hours in wet atmosphere for instance in bath rooms, wash houses or in the open air on humid foggy days or faster **by wrapping the device in a wet towel for about ½ hour**. After this time the hygrometer must indicate a relative humidity of max. 95 – 98%. Deviations can be corrected by turning the adjusting screw with a small screw driver. The adjusting screw is visible through a small hole in the back of the housing.

Once the machine has reached the working temperature place the eggs lying on the wire mesh in horizontal position, between the rods of the adjustable egg-turning grid.

When partially loaded of eggs check them to be closely positioned in the middle of the turning grid to get the best possible movement of the same by proper egg weight distribution on the turning grid.

To accommodate eggs of different sizes the Cosmo's removable turning grid is supplied with dividers which the user can position to suit their eggs.

ATTENTION: the correct working temperature for Cosmo model is fixed to 99,7°F (corresponding to 37,7°C)

USE AND CALIBRATION

Plug the incubator into the electric power and allow the machine to run at the correct temperature before setting the eggs.

The analogue thermostat (LCD for the EVO version - see instructions for the calibration on the next paragraph) , placed on the top valve, has been set-up by the factory and indicates when the machine is working (the led power results lighted). The continuous or intermittent lighting of the led – ON – points out the heating activation.

Check that the set temperature on the thermostat dial agrees with the reading on the alcohol thermometer inside the incubator. If necessary, adjust the set temperature slightly by using a screwdriver in the central white screw on the thermostat box until the thermometer reads 99,7°F. It's important to check the temperature on the thermometer in the incubator.

IMPORTANT : if all instrument setting attempts result useless, do not remove absolutely the thermostat from its place to effect any improper or not authorized operation, just contact the builder for a possible reparation or substitution.

The inside lighting of the machine is by an incandescent lamp activated by the switch placed on the control panel; remember to switch off the light while the machine is in operation.

In order to activate the automatic turning of eggs ensure that the peg on the turner motor is inserted into the metal stirrup connected to the egg grid.

Remember to turn the eggs twice per days, morning and evening, by the key on metal turning grids, if the machine were supplied with manual egg-turner.

Remind that on the hatching period (last two days) it will be necessary to stop the automatic turning of eggs simply disconnecting the egg grid metal stirrup by the turner motor metal peg. It's not necessary to remove the full egg grid by the machine.

FIEM LCD CONTROL PANEL

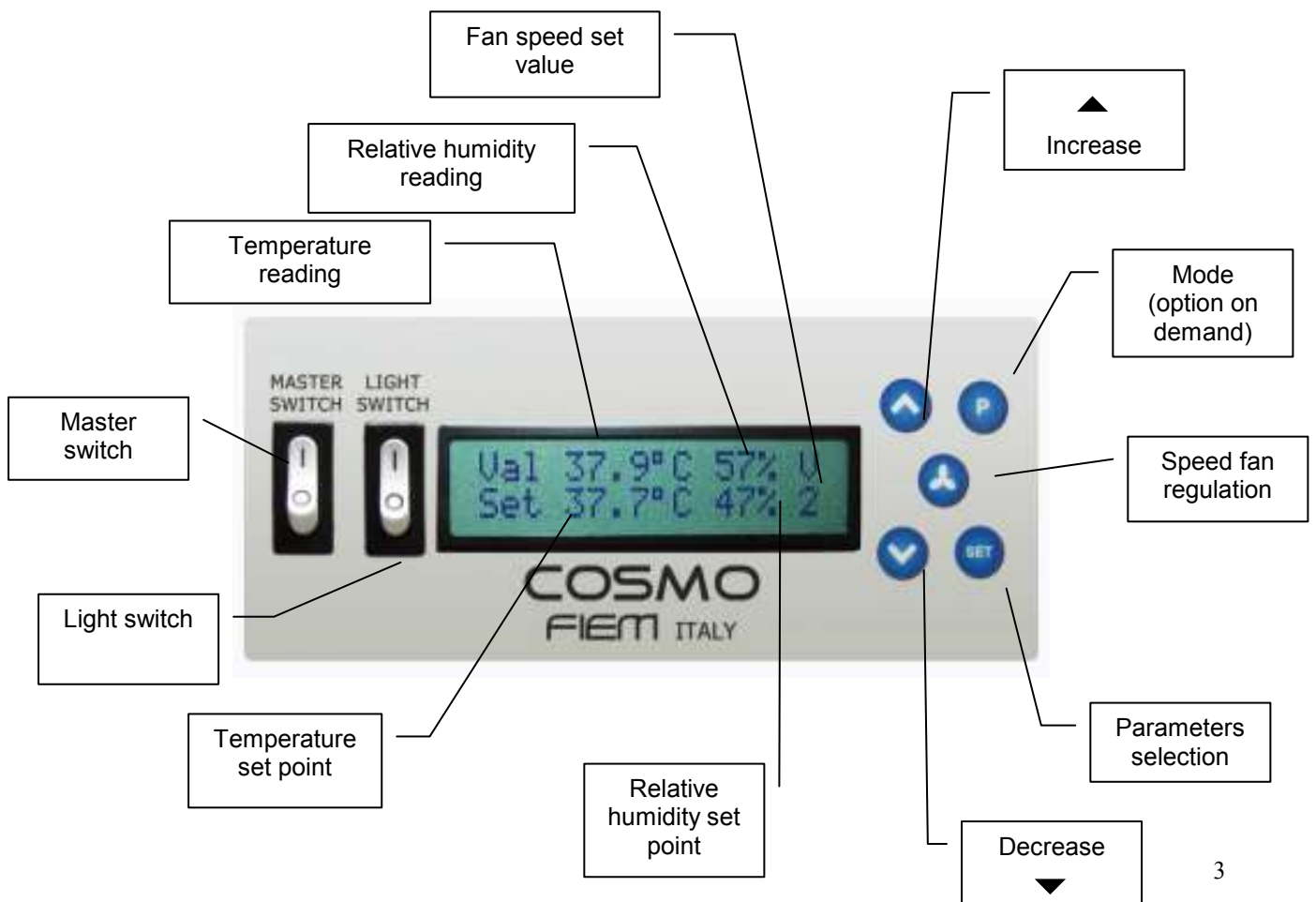
The new FIEM LCD control system provide a range of useful and easy-to-use extra features like temperature and humidity control by proportional, integrative and derivate system (PID) and temperature alarms.

When switched on the control system displays for some seconds the software version.

The electronic control unit with backlit LCD will show at the same time the operating temperature & humidity set up by the user along with the effective values of temperature and relative humidity measured by the probes.

Ventilation intensity is fully and digitally adjustable according to the different incubation phases.

DESCRIPTION:





In case of any error on temperature or humidity reading two asterisks (**) will appear on the display.

The electronic instrument has two setting parameters menus ; the first one allows the user to adjust the main functions where possible and the technical one allows the instrument configuration.

User menu

The operating temperature of the PID system, the high temperature alarm limit and the relative humidity can be easily adjusted entering into the user menu by pressing the **SET** key.

It's possible to view all parameters by pressing the **SET** key and to change the setting, by pressing the keys "INCREASE"  e "DECREASE"  and confirming with SET.

If no keys are pressed for 25 seconds or longer, the electronic instrument will go out automatically from program menu.

User menu parameters list

- **Unit Measur temp** [°C,°F] (default °C)

Celsius / Fahrenheit degrees instrument setting

- **Incubation temp.** (default 30.0)

This parameter determines the operating temperature during incubation period. The range of possible temperature setting values is limited by the parameters "Inc.temp.min." and "Inc.temp.max." shown in the technical menu.

- **Alarm temperatur** (default 40.0)

When the maximum temperature limit set up by the user in this parameter is reached, the emergency relay will be switched on in order to warn temperature abnormalities.



This output will remain active until the temperature drops below the set value – "Ist.temp.allarm."

The range of possible temperature setting values is limited by the parameters "Temp.alarm.min." and "Temp.alarm.max." shown in the technical menu.

- **Incubation humid** (default 40)



This parameter allows relative humidity settings during incubation period. The range of possible humidity setting values is limited by the parameters "Min.humidity" and "Max.humidity" shown in the technical menu.



Speed fan regulation

Press the "Fan" key to enter the fan speed set up page, choose the set value 1,2 or 3 by the keys  and  and confirm by pressing again the "Fan" key.

Speed 1= lower fan speed suggested for breeding live animals in the first week of life.
Speed 2= medium fan speed suggested for hatching period (last 2 days)
Speed 3= maximum speed suggested during incubation period

Technical menu

Pressing simultaneously both keys  +  , you will access the “Technical menu”.

To view a set value press the “ **SET** key and, if required, change it by using the keys  and  and memorize by “**set**”.

The electronic instrument will automatically exit the programming menu if no keys are pressed for longer than 25 Sec.

Technical menu parameters list

- **Unit Misura temp** [°C,°F] (default °C)
Celsius / Fahrenheit degrees instrument setting
- **Inc. temp. min.** [5,0 .. 75,0] (default 25.0)
Used to limit the minimum acceptable temperature value in the “incubation parameter” on the User Menu
- **Inc. temp. max.** [5,0 .. 75,0] (default 40.0)
Used to limit the maximum acceptable temperature value in the “incubation” parameter” on the User Menu
- **Alarm temp. min.** [5,0 .. 75,0] (default 30.0)
Used to limit the minimum acceptable value in the parameter “alarm temperature” on the User Menu
- **Alarm temp. max.** [5,0 .. 75,0] (default 40.0)
Used to limit the maximum acceptable value in the parameter “alarm temperature” on the User Menu
- **Alarm temp.hyst.** [0,1 .. 5,0] (default 0.1)
Used to set up with the maximum accuracy the alarm temperature hysteresis
- **Calib temp.probe** [-3,0 .. +3,0] (default 0.0)
Used to calibrate the temperature value detected by the probe
- **Humidity minimum** [10 .. 90] (default 40)
Used to limit the minimum acceptable value in the parameter “incubation humidity” on the User Menu
- **Humidity maximum** [10 .. 99] (default 80)
Used to limit the maximum acceptable value in the parameter “incubation humidity” on the User Menu
- **Humidity hyst.** [1 .. 20] (default 1)



Used to set up with the maximum accuracy the humidity regulation hysteresis

- **Cal.humid. probe** [-5 .. +5] (default 0)

Used to calibrate the humidity value detected by the probe

- **Language** [0 .. 1] (default 0)

Used to select the languages shown on the display (Italian / English)

- **Type of fan** [1 .. 4] (default 1)

Used to set up the fan motor type controlled by the instrument

- **Buzzer Mode** [0 .. 2] (default 2)

Used to set up the buzzer operating mode.

- 0 = Buzzer off
- 1 = Buzzer on when pressing keys
- 2 = Buzzer on when pressing keys and in case of high temperature alarm

HUMIDITY

Natural surface humidification is performed by modular basins built into the machine lower valve by an easy-to-use external filling system.

On the new developed EVO Version the LCD electronic control unit can perform the digital reading of humidity expressed in UR% (range 20-90%) and, if connected to an external ultrasound humidifier, it is a super-modern digitally-regulated automatic humidification system.

It is important to understand that there can be no hard and fast rule for the amount of water required in an incubator as the following variables come into play:

- Ambient humidity in the room (affected by the weather and your local environment).
- The species of the eggs
- The porosity of the eggshells (can vary from egg to egg)
- The time of year (warm weather usually means high ambient humidity and eggs laid towards the end of the season tend to be more porous)

Requirement for water in the incubator can be monitored by either weighing the eggs (an egg should lose 13-15% of its weight during incubation) or by candling (the air space should be approx. 1/3 of the egg by the time it is due to hatch).

On subsequent hatches you may wish to increase or decrease the amount of water, depending on your findings with your first hatch. **If in doubt, it is better to add too little water than too much – more eggs are lost through too high humidity than any other single factor!** Remember, the depth of water makes no difference to the humidity levels in the incubator; it's the surface area which counts!

LOAD EGGS STORED NOT MORE THAN 7- 8 DAYS AND NOT LESS THAN 3 DAYS FROM LYING. BEFORE INCUBATION, THE EGGS MUST BE STORED IN A LOCATION WITH TEMPERATURE BETWEEN 14 – 16 °C.

In order to regulate the humidity level inside the machine it is important to remind that enlarging the water surface humidity % increases and contrarily reducing the water surface area humidity decreases.

APPROX. HUMIDITY VALUES WHEN OPERATING AT 37.7°C (100°F) DRY BULB TEMPERATURE		
TYPE	INCUBATION	HATCHING
HEN LIGHT BREED(LAYER)	82°F = 47%	88°F = 62%
HEN HEAVY BREED (BROILER)	84°F = 52%	88°F = 62%
PHEASANT - PARTRIDGE – QUAIL- RED LEG PARTRIDGE	78-80°F = 38-43%	86-88°F = 56-62%
TURKEY – GUINEA FOWL	82-84°F = 47-52%	88°F = 62%
GOOSE - DUCK (MALLARD,PEKIN, KHAKI CAMPBELL, WILD)	78-80°F = 38-43%	88°F = 62%
OSTRICK (CAMELUS)	70-74°F = 25-30%	78-80°F = 38-43%

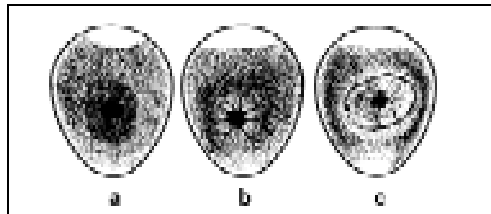
EGG-CANDLING

At 8th - 10th day of incubation, it is advisable to candle the eggs in order to eliminate those which are infertile; this operation must be done in a dark room. By observing the inside of a developing, fertile egg, using a suitable candling lamp, it is possible to determine the embryo development which looks like a small reddish shape, composed of the heart and small arteries which are radiating from it (Fig. b). If the egg is moved lightly, it is possible to see clearly the rhythmic oscillations of the embryo.

On the contrary, an infertile egg appears completely transparent (clear), with a slight darkening where the yolk is. (a).

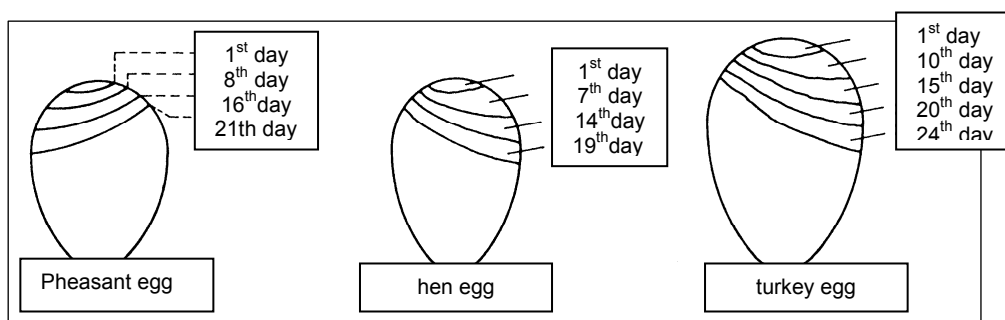
If during the candling operation, you find some eggs with a reddish spot stuck or attached to the shell, or a central spot surrounded by one or more concentric hoops, or something nebulous crossing the inside; then in this case, the embryos are either false or dead, and must be taken out of the incubator to prevent them contaminating other eggs with bacteria by infection or explosion

- a) Infertile egg
- b) Egg with normally developing embryo
- c) Egg with dead embryo at 5th - 6th day of incubation



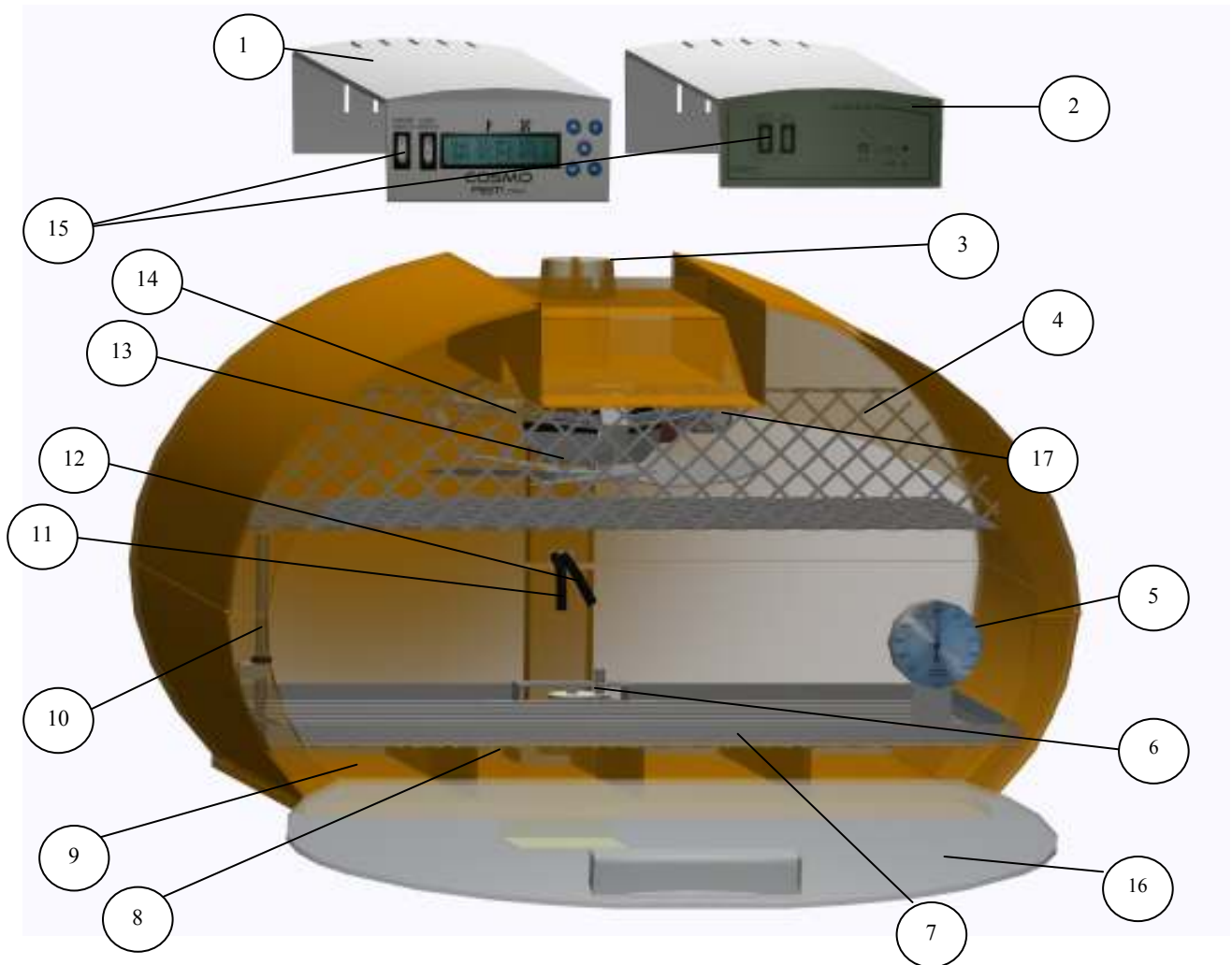
Periodic candling during embryonic development is necessary to ensure the best hatching results. Using a good candling lamp, it is possible to check the growth of the air-space. The pictures shown herewith show the air-space growth as related to hen, turkey, and pheasant eggs. If the air space measurements appear similar to those shown in the picture, it means that the embryo is developing correctly, and that the amount of humidity supplied in the machine is right.

If the air space is not developing correctly, it means that it is necessary to change the level of humidity supplied to the machine.¹



¹ It must be noted that when the air-space is smaller than shown in the table, it is necessary to decrease the humidity value; when the air-space is larger than shown in the table, the humidity must be increased.

DESCRIPTION



1	LCD control panel (mod. EVO)	10	Alcohol thermometer (°F)
2	Analogue control panel	11	Temperature sensor
3	Exhaust hole	12	Humidity sensor (mod.EVO)
4	Protection wire-net	13	Fan motor
5	Dial hair hygrometer	14	Silicon heating cable
6	Egg turning motor	15	Main switch & light switch
7	Adjustable egg turning grid	16	Transparent door
8	Wire-net floor	17	Lighting lamp
9	Modular humidification basins		

HELPFUL SUGGESTIONS

- In case of power failure for some hours during the incubation time, place one hot water bottle or similar container into the machine and keep the door closed².
- For waterfowl eggs, after 15 days of incubation, it is suggested that the eggs should be taken out of the incubator and sprayed with tepid water (using a suitable hygienic sprayer) and leave them to cool for about 15 minutes outside the machine. This operation should be repeated every two days, till the penultimate day of incubation.
- It's recommended that the incubator room should be clean and hygienic, in order to obviate any bacteriological infection.
- It should be remembered that during incubation and hatching there is a constant risk of bacterial contamination and the following precautions are therefore recommended:
 - Use of personal protective clothing (i.e.: disposable plastic gloves, protective respiratory mask);
 - Regular cleaning and disinfection of incubation rooms;
 - Careful cleaning of hands before and after the contact with organic parts using antibacterial gel soap.
 - Avoid eating or serving food and drink in the incubation room or during the operation of the machine.

(These suggestions are extremely important in order to afford maximum protection to both eggs and operator)

Egg health and hygiene

To maximise fertility and to avoid contamination during the incubation period, please follow the directions below when collecting eggs:

- Collect the eggs daily to avoid contamination or loss from breakage or damage, caused by hot or cold temperatures (winter and summer periods).
- Clean hands before and after egg collection with anti-bacterial soap.
- LOAD EGGS STORED NOT MORE THAN 7- 8 DAYS AND NOT LESS THAN 3 DAYS FROM LYING.
- BEFORE INCUBATION, THE EGGS MUST BE STORED IN A SPECIFIC EGG-BASKET (IN VERTICAL POSITION WITH THE AIR-SPACE FACED UPWARDS) WITH TEMPERATURE BETWEEN 14 – 16 °C.
- Do not mark the eggs with felt-tip pens – use only pencil

➤ MODEL “COSMO”

POWER SUPPLY	V/Hz	230 / 50
POWER CONSUMPTION	Watt.	185
DIMENSIONS	mm	640 x 530 x 400
NET WEIGHT	Kg	9,5
EGGS CAPACITY	Hen - Mallard	70-72
	Pheasant	96-104
	Partridge - Quail	150-180
	Turkey - Duck	62-64
	Goose	30-36

² The lack of power for an extended time causes more serious damage to eggs which are only a few days into incubation than to those which are more advanced, when the embryo is stronger and more resilient.

INCUBATION PERIOD OF THE DIFFERENT SPECIES			
SPECIE	DAYS	SPECIE	DAYS
HEN	21	PEKIN DUCK	27-28
QUAIL	16-17	WILD DUCK	25-26
TURKEY	28	BARBARY DUCK	34-35
GUINEA FOWL	26	RED LEG	23-24
PARTRIDGE	23-24	PHEASANT	24-25
GOOSE	30	BOB WHITE	22-23

C A R E A N D M A I N T E N A N C E

In order to achieve the best operation and longest life of the machine, follow the following precautions:

- do not expose the machine to outdoor elements
- do not place machine in hot, wet or cold rooms;
- avoid bad handling during moving that can cause breakages inside the machine and affect its working;
- disconnect the power plug before cleaning the machine;
- Do not accidentally pull out the power cable when moving the machine.

IMPORTANT: take out the plug from the socket by holding the plug and not the power cable; use only a mains power socket or surge-protected extension lead.

- for cleaning and disinfection please follow the advice as follows :

HOW TO CLEAN THE INCUBATOR:

For a good hygiene during the incubation, it is recommended to clean the machine before and after its use;

Use a wet cloth on the machine with a light disinfectant; do not use solvents that can damage the machine cabinet;

Clean the base of the machine with a normal domestic detergent.

ADVICE: after cleaning the machine, please keep it working without eggs & water for at least two hours (with the door semi-closed), in order to dry the humidity which has accumulated during the incubation period... This will ensure the correct machine operation for the next use.

INSTRUCTIONS FOR LIGHT BULB REPLACEMENT:

- a) Buy small bulb only (pear shape) of 15W with an E14 screw fitting;
- b) **Remember to switch off the machine and disconnect the power cable from the current socket and leave the lamp cooling in order to avoid any scalding;**
- c) Use a star screwdriver and unscrew the screw;
- d) Take out the wire mesh on the bottom of the machine;
- e) Unscrew the broken lamp in anti-clockwise direction (be careful with those exploded or broken);
- f) insert the new lamp, screwing it carefully in clockwise direction;
- g) Put the mesh back again inside, screwing carefully the screw.

WARRANTY

Each part of the machine has been fully tested by the manufacturer before delivery or shipping.

The manufacturer's guarantee does not include damage caused by improper transport and does not include damage to the electrical and electronic systems caused by incorrect connection to the power supply.

The guarantee includes repairs or replacement of all the parts that are found to be defective in the 24 months (12 months by the manufacturer + 12 months by the seller) following the delivery of the machine to the customer and applies when the customer informs the manufacturer, no later than the eighth day from when the fault occurred.

This Guarantee refers to possible defects in workmanship and it is excluded in any case of improper use, improper placement and connection or in any case of tampering from unauthorized personnel.

The guarantee includes all technical telephone support, but the customer is liable for all shipping costs for sending all defective parts to be replaced to FIEM and all technical call-out costs.

The guarantee does not include any compensation for any downtime of the machine or damages incurred during use.

Only staff authorised by the manufacturer must be allowed to carry out repairs under the guarantee; if this clause is not adhered to, the guarantee will cease to apply.


STANDARDS OF REFERENCE

This product conforms to the essential Electromagnetic and safety requirements foreseen by the following directives:

- 2004/108/CE del 15 Dicembre 2004
- 2006/95/CE del 12 Dicembre 2006

As projected in conformity to the prescriptions of the following Harmonized Rules:

EN 55014-1: 2006
EN 55014-2: 1997+A1:2001
EN 61000-3-2: 2006
EN 61000-3-3: 1995+A1:2001+A2: 2005
EN 60335-2-71:2003+A1:2007

Conformity to the above requirements is attested by  marking on the product;

The  mark was introduced in 1995.

It is opportune to underline the following actions that can prejudice the conformity and moreover the product characteristics:

- incorrect electricity supply;
- incorrect installation or incorrect /improper use or not conforming to the instructions reported in the instruction book supplied with machine;
- replacement of its components with those not approved or adopted by the manufacturer, or replacement effected by unauthorized technical service.
- WARNING: THIS EQUIPMENT MUST BE EARTHED
- ATTENZIONE: QUESTA UNITA' DEVE ESSERE CONNESSA A TERRA
- ATTENTION: CETTE UNITE' DOIT ETRE MISE' A LA TERRE
- ACHTUNG: DIESES GERAT MUSS EINEN ERDUNGSANSCHLUSS HABEN.
- ATENCION: ESTE EQUIPO DEBE ESTAR CONECTADO A UNA TOMA DE TIERRA.
- APPARATET MA KUN TILKOPLES JORDET STIKKONTACT. APPARATEN SKALL ANSLUTAS TILL JORDAT NATUKKAT. LAITE ON LITTETAVA SUKO-RASIAAN.

**DECLARATION OF CONFORMITY
of the attachment II, part. 1 section A of DL/17/2010/CE**

Manufactured in the EU for:	Incubatrici F.I.E.M. S.n.c. di Tina Luccini & C. Via G.Galilei, 3 – 22070 Guanzate (Como) Italy
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D E C L A R E S T H A T

THE MACHINE	Incubator
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MODEL	Cosmo - Cosmo EVO
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SERIAL NUMBER	
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**IS MANUFACTURED AND SOLD IN CONFORMITY TO THE ESSENTIAL
REQUIREMENTS OF HEALTH AND SAFETY
of D.M. 17 of 17 January 2010 – Attachement I (implementation of the Machinery Directive
2006/42/EC)**

The metallic **CE** plate fixed on the machine is an integral part of the same;
all serial numbers, and product specifications are detailed on the plate.

THE FOLLOWING HARMONIZED RULES HAVE BEEN UTILIZED FOR THE CORRECT
IMPLEMENTATION OF THE ESSENTIAL REQUIREMENTS OF HEALTH AND SAFETY OF
THE ATTACHEMENT I.

EN ISO 12100-1
EN ISO 12100-2

EN ISO 14121,
EN ISO 13857

CE

Guanzate (Co)

The Declarer

TROUBLE SHOOTING CHECK LIST

Before asking for a technical assistance service, please follow this list to try to solve most common problems:

PROBLEM	CAUSE	SOLUTION
The machine does not work	Lack of power	Check the plug
	Plug disconnected	Put the plug into the socket
	Master switch "0/I" on position "0"	Position the switch on "I"
	Thermal fuse burnt	Replace the thermal fuse
	Any of the above points	Contact the assistance service
Working temperature not sufficient	Heating element not correctly working	Contact the manufacturer
	Thermostat not calibrated	See instruction for calibration
	Thermostat faulty or not working	Contact the manufacturer
	Door open or incorrectly closed	Close the door
Egg-turner device not working properly	Egg-turner motor broken	Contact the manufacturer
	Egg turning grid not connected to the egg turning motor metal peg	Connection the turning grid metal stirrup to the peg of the egg turning motor
Forced ventilation not sufficient	Fan not working ³	Contact the manufacturer
Interior lighting not working	Switch on "0" position	Place the switch on "I" position
	Lamp burnt	Replace the lamp as shown in the instructions
Dial hair hygrometer not working properly	Dial hair hygrometer improperly calibrated	Follow the instructions regarding synthetic hair hygrometer regeneration contained on the "positioning & preparation" paragraph.

Whichever reparation attempt not included on above mentioned form is severely forbidden. Contact always the manufacturer or the authorized technical assistance in your country.

Fiem s.n.c. di Tina Luccini & C.

Ph : 0039 (0)31 976672

Fax : 0039 (0)31 899163

fiem@fiem.it - www.fiem.it

³ Correct working of the fan should be checked visually, faulty operation of the fan could compromise incubation results.

WIRING DIAGRAM

