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e-news

News & Events for Poultry Producers from

ChickMaster

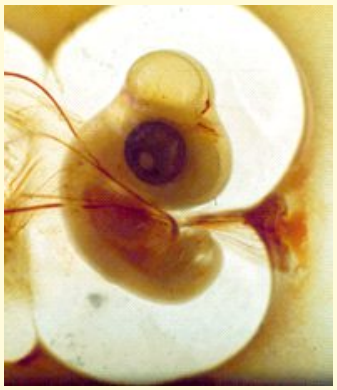
Embryonic Development of the Chick

Dr. Michael J. Wineland, Professor, Poultry Science

The following article is the second of a series based on a recent presentation by Dr. Wineland at the ChickMaster Avida Academy.

As the embryo begins the second week of incubation it appears with a relatively large head compared to the remainder of the body because the nervous system is one of the first organs to develop. Additionally, if you look closely you will see that the limb buds are evident. The embryo is surrounded by a clear fluid fill sac called the amnion (another extra-embryonic membrane).

The amnion has a number of purposes, most importantly to protect the embryo from shock and the amniotic fluid possesses some antibacterial properties. This amniotic fluid is swallowed by the developing embryo during the latter part of incubation. Also you will notice that two vascular systems have formed, the first is called the yolk sac membrane and the second is called the chorio-allantoic membrane (CAM). The chorio-allantoic membrane is composed of the chorion which comes off the head fold (similar to the amnion) and the allantois which comes off the hind gut. When the chorion and allantois touch each other along the inner surface of



A six-day-old embryo within the amnion, floating in amniotic fluid.

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Rock Control Introduced at EuroTier

After more than a year of detailed testing and development, ChickMaster unveiled its latest and best new technology for incubation control at the EuroTier in Hanover, Germany. Keeping with our musical theme, the new **ROCK** is going to shake things up. We had tremendous interest from all our visitors at the EuroTier that saw a different way to truly control the setter and hatcher environments to optimize hatch results and chick quality, while lowering energy costs.

The ROCK is a modular control with two temperature sensors in each section of no more than six trolleys reading the air temperature supplying the eggs in the setter and chicks in the hatcher and then measuring it as it returns to the fan. The returning temperature is the correct reading of the total egg mass or hatched chicks.

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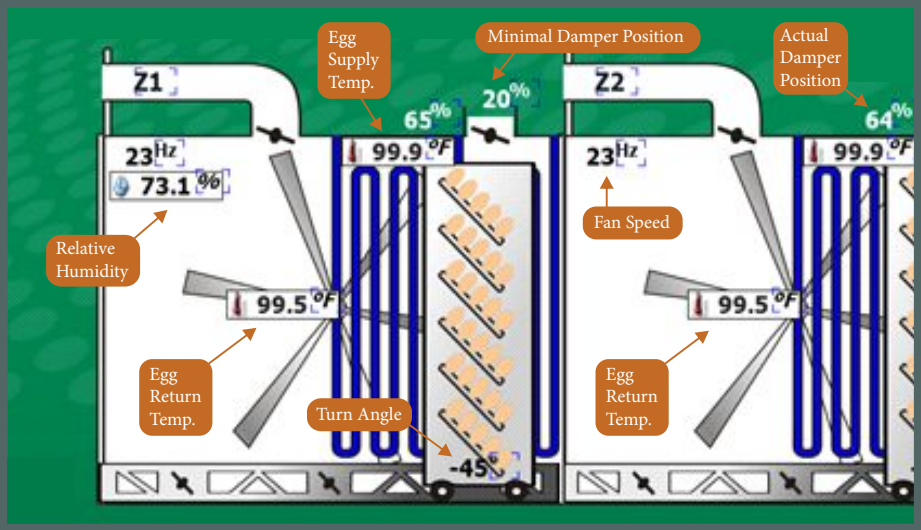
New Rock Features for Each Zone



(Embryonic Development of the Chick - Continued from page 1)

the inner-shell membrane a complex vascular structure develops known as the chorio-allantoic membrane (CAM). The CAM becomes the primary respiratory surface for the developing embryo. Oxygen which enters through the pores of the eggshell will be picked up by the blood passing through the CAM and carried to the embryo. Additionally, the carbon dioxide produced by the growing embryo will be carried from the embryo to the inner surface of the eggshell by way of these blood vessels. This carbon dioxide will then diffuse from the interior surface of the eggshell through the pores to outside the egg.

The allantois itself is fluid filled and is the repository for the excretions of the embryonic kidney, as well as serving as a reservoir for water that helps the embryo maintain proper body moisture.

The CAM should be completely developed by about 12 days of incubation, if it is not completely formed it is usually indicative of improper turning or elevated temperatures up to that point.

By day 11-13, the body of the embryo has assumed more normal proportions compared to the head, while up to this time the head was proportionately larger. The yolk has become bi-lobed and the embryo will now orientate its body to the long axis of the egg. Up to this time the embryo was pretty much laying across the top of the yolk. Beginning at this time is the transport of the albumen nutrients located in the bottom of the egg up to the amnion by way of a tube called the sero-amniotic duct. The albumen nutrients (composed of protein and carbohydrates) should be fully transported to the amnion by day 18 so that it can be swallowed by the embryo. If not completely transported it can indicate incorrect incubation and you may see chicks with matted down or a plug of albumen in the bottom of the unhatched egg where the embryo is greater than 18 days.

Around day 14 the embryo is entering the plateau stage of oxygen consumption where the maximum amount of oxygen that can diffuse through the pores of the eggshell has been attained. The embryo is thus entering a state of becoming slightly hypoxic and may have to use energy sources that do not require oxygen. It is extremely important during this time that the embryo has access to sufficient oxygen, so the incubator and setter hallways must be capable to provide this.

The third part of this article will be published in the next E-news and pertain to the final days of development.

(Rock Control Introduced at EuroTier - Continued from page 1)

What the ROCK does is control the differential between air in and air out so that the incubator will remain stable and balanced. Utilizing modulating variable frequency drives on the fan and adjustable positioning cooling valves, the ROCK automatically varies fan speeds and the flow of cold water to keep temperature uniformity. Rock avoids overshooting with PID controls that results in a more stable environment and less cycling of heating and cooling functions.

The results have been tremendous with significant lower energy consumption and improved hatchability and chick quality.

Controlling the temperatures and humidity from beginning to end, ROCK does not require a forced hatch process to stress the chicks, but rather an even start and finish to get superior chick quality with a tight hatch window that prepares the chick for the journey forward from hatch to the farms. ROCK controls are available on Avida Symphony model setters and hatchers. The center panel contains all the components for easy access and maintenance. A new 7 inch (17.8cm) touch screen makes it simple to navigate. Of course, it connects to a Maestro Control System to give the user a complete view of all functions throughout the hatchery.

Come to the IPPE in Atlanta and VIV Bangkok to get a closer look, or speak to your ChickMaster sales representative to learn more about how the ROCK will lead your hatchery to be a *Hatchery in Harmony*. Long live ROCK!

ChickMaster Modernizes Fabrication Department

ChickMaster has invested in the future of its manufacturing capabilities in Medina, OH by installing a new **Amada AE-2510NT turret press**. The new press replaces an older turret press that had served the company for more than 25 years. The turret press punches and forms parts from sheet metal like cabinet doors, electrical boxes, and trim caps used in the construction of the incubators and hatchers that ChickMaster markets around the globe. The turret press will create parts from galvanized steel, aluminum, stainless steel and PVC. It will simplify the process of making parts for new equipment and replacements. The simpler process will also shorten run and lead times for critical components.

This is the first major investment in capital machinery for the factory in some time, but as a critical part of the process we are excited about all the opportunities that the new turret press will give to us in our goal to be a supplier of high quality incubation and ventilation systems.

Pollos el Bucanero Finishes the Next Phase of Expansion

The Colombian company, Pollos el Bucanero, is a recognized leader in the poultry industry. In their hatchery located in Ginebra in the Cauca Valley region, Bucanero has recently completed its next phase of growth with ChickMaster Avida setters, model A18T and hatcher AH192. The plant was built a number of years ago with multi-stage

setters, but they took the decision to expand with single-stage setters. The relationship with ChickMaster and our sales representative in Colombia, Guma Ltda., has been a key element in the success of the expansions and commitment to continue with Avida systems.

The Hatchery Manager, Hernan Echeverry told us;

"It is a relationship in which we feel that ChickMaster and Guma are suppliers, and even more so, our strategic partners to expand the hatchery while taking advantage of new technology."

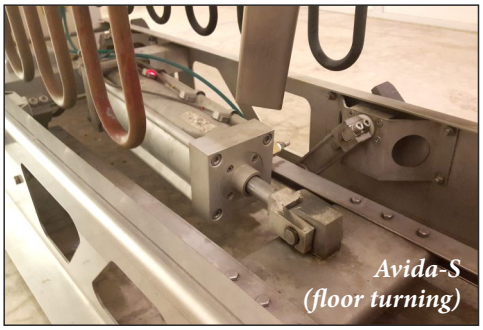
In addition to using ChickMaster incubators, the ventilation system also was part of the package including Zeus controls for the latest rooms completed. The combination of managing the room environments with an incubator designed with uniform temperatures allows Bucanero to work and obtain excellent results. "Our results over our history are continually improving year after year in hatchability", stated Hernan. "We have obtained consistency in managing the plant that is reflected in the hatch results and chick quality at the farms."

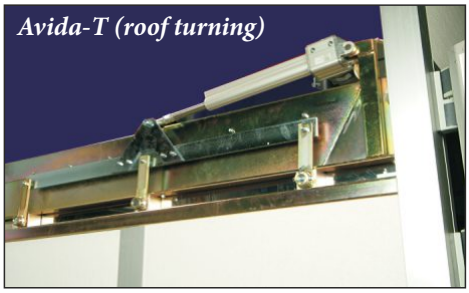
With the good management lead by Hernan and the support given by the ChickMaster team in Colombia and others from our Medina operations, it is very pleasing to see the success and growth of Bucanero. We hope to continue participating in their objective of being the Colombian company most recognized for its quality products and its ability to maintain a *Hatchery in Harmony*.

CM Parts Corner: Keep Your Eggs Turning Properly

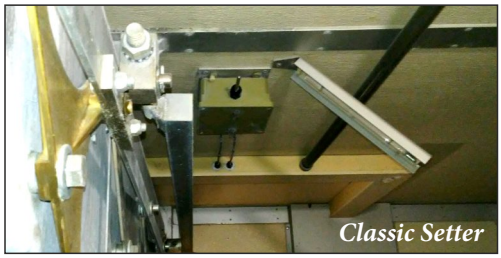
Egg turning is an essential part of the incubation process. Getting proper and even turning angles of minimum 40 degrees requires good maintenance of the turning systems in your setters. In Avida-T models, the turning cams should be looked at for wear on the trolley contact points and the bolts that hold the system together. On the S-turning system, look at the actuator connection and trolley connectors for any wear in making good contact with the trolley when put into position. A fault in any of these parts will prevent the turning system from operating.

On the Classic, the Pitman bar is the center of the turning function. If the bar or bolts are worn, the bar will not be parallel to the beam in its fully extended and turned position. In all machines, turning can be adjusted if the angles are off the 45 degrees, but at some point, these parts need replacing to ensure proper turn angles and the best quality chicks out of your incubators.





External view showing easy access to the heavy duty actuator
Actuator link plate **(DC1642)** Link bar **(724D-97-4827)**



Pitman bar only - 26.5" **(611D-01-4630)** 54" **(611D-02-4630)**
Pitman Connector Kit - includes two Pitman bars and two front connector bars with speed nuts and cotter pins **(601D-11-4551)**

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