

# ROTATING BROODFRAME BEEHIVE

the tool of safe beekeeping  
production



Partner for a successful beekeeping





# LESS

WORK

# SAFER

PRODUCTION

# BETTER

HONEY QUALITY

The rotating brood-frame beehive is a standing beehive with the possibility of treatment from the back and from the top. The special design results in completely separate brood and honey chambers. In the bottom part – the brood chamber- there are 9 pieces of circular one-piece molded frames with 40 cm diameter, 12,56 dm comb surface on both sides. The circular frames can be turned around their central axis. The honey supers are standing on top above the queen excluder, with plastic molded honey frames inside the supers. Under the top there is a feeder with an escape chamber.



Rotation is achieved by a 12 V electronically controlled battery. The rotating broodframe beehive won the Hungarian Quality Product Award in 2005, and each hive has a unique production number. The beehive is recommended for use in apiaries by The National Institute of Hungarian Beekeepers and The Research Institute for Animal Breeding and Nutrition.



The rotating broodframe beehive can be used either in small, large, settled and migratory apiaries. In newly established apiaries it reduces the risk of the entrepreneur. In bigger apiaries it is recommended to keep them in containers, which helps migration and enables an easier movement to blooming pastures.

The rotating broodframe beehive provides a new technology to beekeeping, which, compared to traditional beehives, enables a more effective and profitable production with less work, higher veterinary safety, production will become safer and calculable.

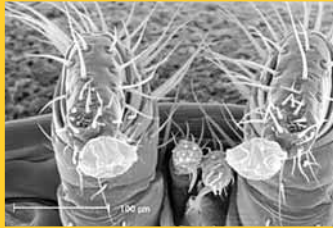


# Why do we need to rotate the frames?



Varroa mite

1:20 000



Mite's nasal organ

1:40 000

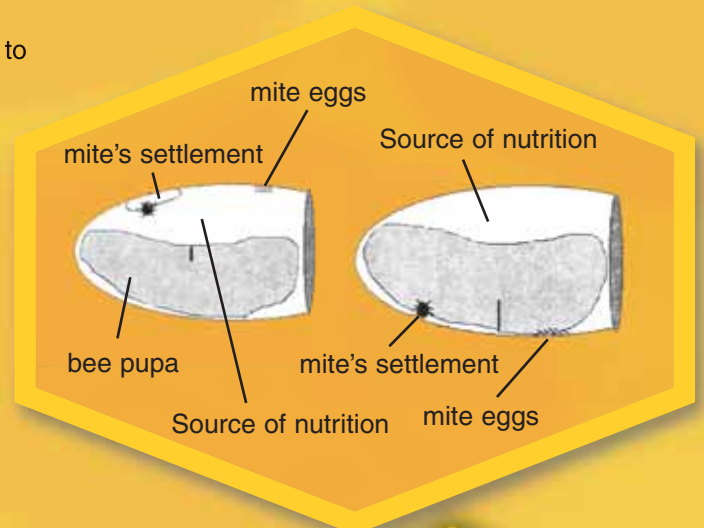
Only the female mites survive winter, when there is no breeding. Although they have a sperm storing organ, it is less developed than the queen bee's, and the sperms, which remained from mating in late autumn shall die. Reproduction of mites begins together with the breeding of bees in early springtime, but from the first eggs only males will hatch, who will mate with the female inside the capped broodcell, and the fertilized female will emerge from the cell together with the young bee.

They feed on the haemolymph of adult bees for 2-3 days or more in order to become capable of reproduction again. When they are ready for reproduction, they search a 5-day old larva before its' cell is capped. Mites are blind, and find the 5-day old moulded larvae by their smell. They immerse themselves into the brood food eating it, and stick out their leg, which has breathing organ on them. After the cells are capped, the larvae quickly run out of food, and spin cocoons. This is when the mites start a procedure. First they determine their location by sticking their feces on the top cell wall.

This is their start point, and they lay the eggs here. After laying a pile of feces, they go for nutrition. They cannot pierce through the larva's flexible skin with their stinging-sucking mouth organ, so they have to chew a small hole, which usually takes a few hours. After their first feeding they return to the start point, and rest. They eat periodically, and lay their first egg on the cell ceiling in 8-16 hours after the first meal. This usually takes place by the end of the first day of the cell being capped. The egg is stuck to the cellwall with a mucous material.

Embrional development begins inside the egg, and in 24-30 hours, it will become a six-legged larva. The hatched larvae will feed from the hole the female chewed out. The male mites will become adult in 6-7 days, and females in 8 days. The young adults will mate inside capped cells. Male mites and immature female mites die after the bee emerges from the cell. Worker bee cells are usually capped for 12 days. The number of mites duplicates during this time, which means that one or two daughters will be able to mature, and leave the cell. The strategy of Lajos Kónya attacks in multiple ways during this short period.

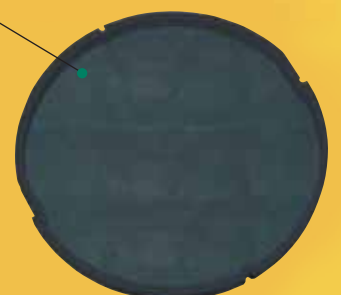
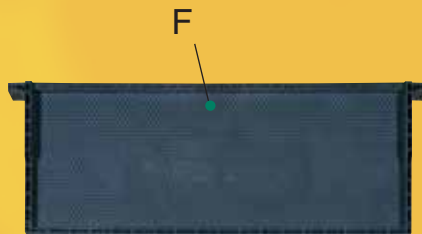
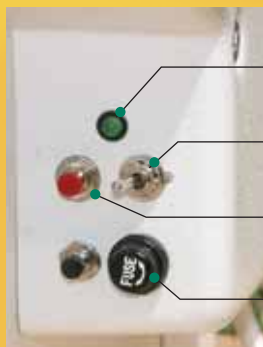
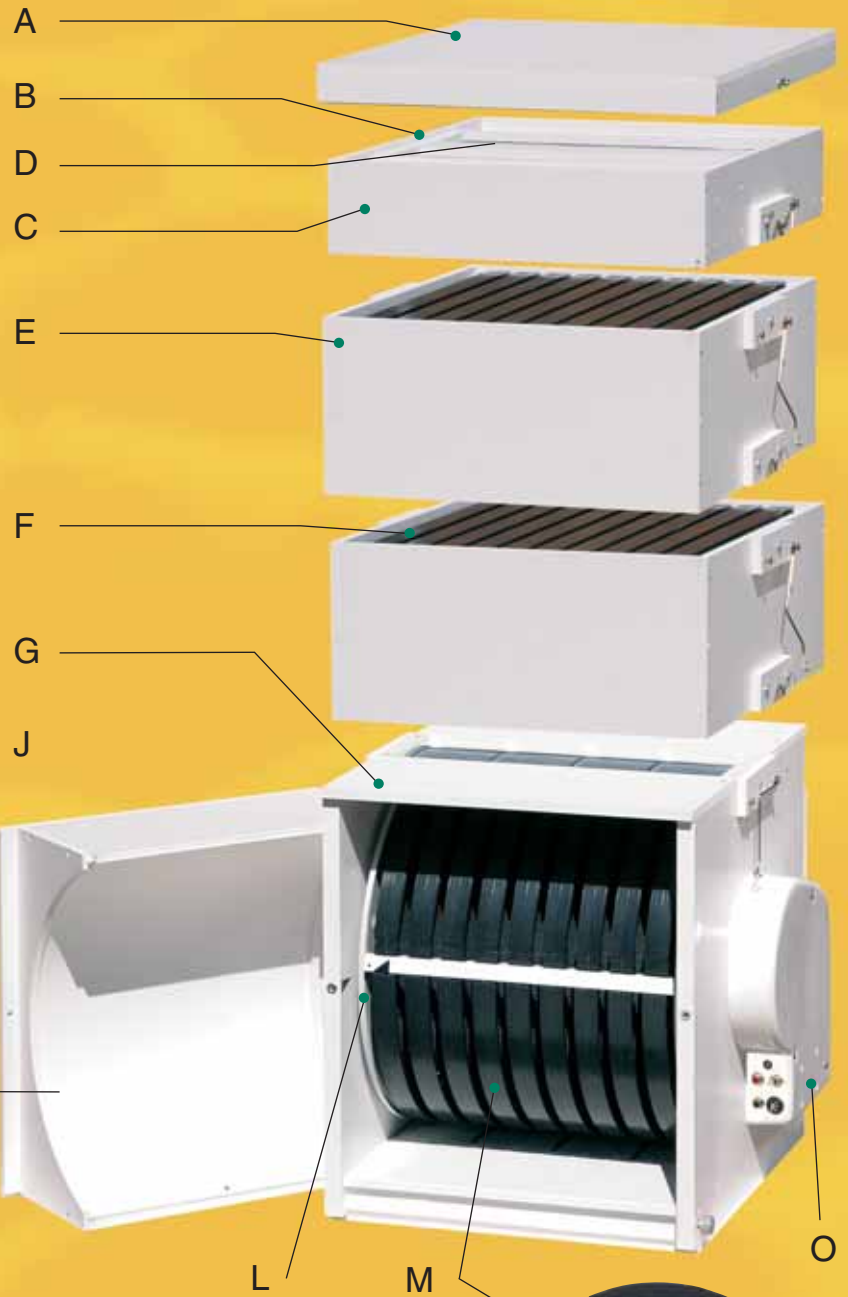
The head of the mite larva develops at the bottom of the egg due to gravitation. In case the frame is in an upside down position at this stage, the mite larva cannot hatch from the egg, because by the cellwall there is a thick mucous layer around the egg. The location of the feces pile changes with the rotation, the female will try to restore the original status, but it lasts long, which shortens the reproductional period even more. The hatched offsprings will die soon, as they cannot find the hole on the pupa. Mites will not have a chance to mature properly, and will not be able to survive after the cell cap is opened, as they lack of a solid chitin cover. The number of mature mites will decrease due to natural fall.





# Parts of the rotating broodframe beehive

- |                                     |                                    |                               |
|-------------------------------------|------------------------------------|-------------------------------|
| <b>A</b> Top                        | <b>G</b> Brood chamber             | <b>N</b> Brood chamber door   |
| <b>B</b> Ventilation hole           | <b>H</b> Identification number     | <b>O</b> Motor cover          |
| <b>C</b> Escape chamber with feeder | <b>J</b> Entrance                  | <b>P</b> Electric switch      |
| <b>D</b> Ventilation sieve          | <b>K</b> Hygienic bottom           | <b>Q</b> Electric push button |
| <b>E</b> Honey super                | <b>L</b> Rotating drum             | <b>R</b> LED light            |
| <b>F</b> Plastic honey frame        | <b>M</b> Plastic molded broodframe | <b>S</b> Fuse                 |



# Installing bees

The combs of the beehive are made of plastic. The procedure of stringing and melting foundation is replaced by a simple preparation of the plastic combs. Wax should simply be spread with a roller over the black plastic frame. The wax requires an even heating effect, for which a double-walled pot with water bath is suitable. Even spreading of the wax on both sides of the frames and good foraging (possible supplementary feeding) is the precondition to the bees accepting and building the combs. It is important that the used wax should have a guaranteed quality, for example using the light coloured wax from uncapping. Inspecting the built, reused combs is quick, routine-work, but also a sure guarantee of safe, quality production.

**The optimal time for installing bees in the rotating broodframe beehive may vary from the middle of April to the middle of July with a swept swarm and a freshly impregnated queen. Place the circular frames with wax spread over the surface into the rotating broodframe beehive. Hang the queen's cage with the inseminated queen between the circular frames, and set it so that it can be chewed off. Close the back of the hive, open the exit hole, take away the queen excluder, place the escape chamber on top, insert the colony, then cover it with a light blanket.**

**Do not forget to keep the colony in the basement for at least three days, and keep them feeding, before they are swept. In a short time bees will go down to the queen in the brood.**

**Screw the queen excluder back into its place. Put the feeder with trays into the escape chamber, and feed them continuously with liquid nutrition. Bees will immediately start the construction on the artificial combs. The queen will get out of her cage in 2 days. One week later check the state of the building of the brood, take away the queen cage, and check if the queen is starting to lay eggs. When three quarters of the brood is developed, and foraging is continuous, stop feeding, place a honey chamber with ready combs, and start to rotate the brood. Later you can expand with honey chambers in accordance with the foraging process.**

**Overpopulation is a setback to effective foraging, so take away the redundant population, brood combs, and place them into a new or a nucleus hive, where they will get a new, unmated queen (or queen cell).**





# Inspection of the colony, equilibration, expansion

The first thorough inspection of the colony begins with the continuous flying out of the bees. Thanks to the pastures a significant development and growing intensity of bees will start in the beehive. The queen's presence is indicated by the eggs, her quality is shown by the number of capped broodcombs and the size of the brood. In colonies, which drop behind the average development, queens should be replaced as soon as possible. A systematical switching of queens will guarantee a safe production in the long term.

In apiaries with containers in case of large differences in the population of colonies it is extremely important to even up these populations, because of the limited space and for the sake of safe production. The super of the strong colonies is full of bees, while weak colonies have nearly empty supers. The two supers should be switched. We put a frame with screen between the brood of the weak colony and the super full of bees. The combs in the honey chamber should include at least 1 kg honey. Otherwise the bees should be fed with syrup in the feeder. The screen can be removed after 3 days, and the bees will peacefully unite. The super of the weak colony can be placed on top of the strong brood chamber without a screen.

In the time of the development the brood is getting too small for the colony, so we put on the first honey super, and fix the queen excluder. We place 4 molded frames with artificial comb between the built-out frames. We remove 2 pieces of old, dark brown brood combs, and replace them with molded frames or with frames and wax comb. Later you can expand with honey chambers in accordance with the foraging process and the development of the colony. It is important to keep the temperature at an even level, as the cooling of the brood may lead to secondary diseases, like broodchalk.

During the honey production season it is recommended to operate the beehive with two supers. Always the bottom super is filled first, and it can be prepared for extracting. This is done when the upper super combs are also half-full. We place the upper super on the brood chamber, and the spare empty one on top. This cycle will ensure that the spun honey is always mature. We can remove the honey supers with the escape chamber, but it is also possible with a brush or blower. Honey harvest does not require any professional knowledge, a well-trained worker in the appropriate suit can perform it.





# Setting of rotation

After putting the first super in its place, the beehive has to be set to rotating mode. A green LED light indicates that the beehive is operable. Setting the switch to the left, the beehive will be in setting mode. Then by pressing and releasing the red button, the drum can be turned to an „opening” position, and we can remove or place brood combs inside the drum.

Press and release the red button again, so the rotating drum will be at a „Start” position. Now the cells of the combs will be pointing upwards. The button needs to be pressed for 1-2 seconds, until the green light is off.

After setting the drum to a start position, set the switch to the right, and the beehive will be at a rotating mode. The brood rotates once by 60 degrees in every 6 hours. The brood rotates 240 degrees during one day, and the complete rotation of 360 degrees will be performed in 36 hours.

Rotation does not disturb the bee colony. It makes them reorganize the brood daily, which is normally the beekeeper's job. They take apart the remaining honey wreath, and carry it to the supers or the two side combs. The broodcombs will only include brood cells except for the two side combs with honey and pollen. Never remove these, as they are the reserves of the colony for the collection-free period. It is important that the fixing rod is fixed properly, otherwise if it falls out it can damage the inside of the brood, and smash the bees.

**Electric power is provided by a 12V battery; the condition of which should be checked regularly. If the voltage drops below 11,8 V, the battery needs to be charged. Check the electrolyte level of the batteries once a week, and, if necessary, fill with distilled water. Always keep the pole clips clean.**



# Advantages of the rotating broodframe beehive

- The rotating broodframe beehive provides a new beekeeping technology, resulting in a more effective production
- Ensures more profitable production with less work
- Higher veterinary safety and more secure yield compared to traditional apiaries
- Production will become safer and more calculable

## In case of using wooden beehives:

- Complete separation of the broodcells and the honey of the supers
- Bees cannot limit the queen's egg-laying
- Brood frames will include broodcells all over their surface
- Rotating movement acts as swarm-prevention in the colony's life
- Results in the development of stronger colonies
- Less time required for brood inspection
- Brood inspection can be achieved without moving the supers
- Rotation disturbs the mites in their development, worsening their circumstances of nutrition, reducing Varroa mite population
- There is no need to buy wax, which reduces the risk of chemical residuals



## Further advantages of the plastic beehive:

- Top and bottom exit possibility
- Adjustable ventilation with high efficacy
- Made of rigid foamed PVC board
- It has a non-breathing material, which is moisture-proof, and does not warp
- Low ingress of heat, heat-preserving feature
- Light side-walls, small-weight beehive
- Long useful life

Quality assurance system based on ISO 9002 standards. An EC Declaration of Conformity is issued for the beehive, CE marking is provided, certifying that it complies with the basic health and security regulations stated in EU directives. We provide an 18 month quality and return warranty period. The rotating broodframe beehive can be used either in small, large, settled and migratory apiaries. In newly established apiaries it reduces the risk of the entrepreneur. In bigger apiaries, it is recommended to keep them in containers, which helps migration and enables an easier movement to blooming pastures.



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