



PHARMAQ
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User Manual **MICRO-MATIC® Single**

For veterinary use only
0.025ml – 0.05ml – 0.1ml




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IMPORTANT SAFETY HINTS

 Syringe is operated with a needle. Always use needle guard to avoid self-injection!

1. Transport and Storage

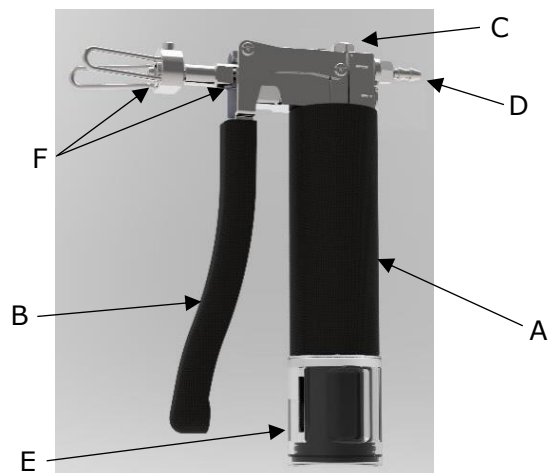
Protect the injector against external forces during transport and always inspect it for damage before use. The MICRO-MATIC® syringe should be kept in its original packaging when not in use, and it should not be stored in direct sunlight or in wet and moist conditions. Always let it dry off properly after cleaning and prior to re-assembly.

2. General information

The MICRO-MATIC® is designed for injection of a fixed dose volume of water- or oil-based fish vaccines. It is available in three fixed dosages: 0.025ml, 0.05ml, and 0.1ml.

The syringe consists of the following parts:

- A) Handle
- B) Lever / Trigger
- C) Venting screw
- D) Tubing attachment
- E) Mechanical counter (6 digits)
- F) Luer-Lock with needle guard



The ergonomic and user-friendly design and the high-strength materials which are used during production assure comfortable handling as well as a long service life for your MICRO-MATIC®.

It is essential that the syringe is cleaned and disinfected after each use. Please follow the recommendations for cleaning and maintenance provided in this manual.

3. Contents of the packaging

- a) MICRO-MATIC® syringe
- b) Needle Guard
- c) Spare part set (gaskets, springs, valves, screws)
- d) User manual (please download at www.pharmaq.com)

4. Calibration of the MICRO-MATIC®

The MICRO-MATIC® syringe has a fixed dose volume. To adapt the syringe to environmental factors (e.g. temperature or altitude) and the viscosity of the administered product you can calibrate the dosing quantity within approx. $\pm 10\%$ (see under point 5). This step needs to be done only once, provided that the syringe is used in the same environment and with the same product for the entire period of use.

Calibration needs to take place before using the syringe for the first time. It is normally done with the vaccine to be used during vaccination.

5. Preparing the MICRO-MATIC® for use

I. CONNECTING THE VACCINE TUBE

1. Connect the spike set to the vaccine bag and fill the tube with vaccine.
2. Fix the tube onto the tubing attachment (for tubes with inner diameter 4-4.5 mm).
3. Put the vaccine bag on a higher situated place than the syringe to guarantee proper flow / suction of the vaccine, but not higher than 0.8 m above the syringe.
4. If using a bottle, you need to have some form of venting to avoid a vacuum forming inside the bottle.

II. PRIMING THE SYRINGE

1. Push lever so that the vaccine enters the syringe.
2. Unscrew venting screw (C).
3. Squeeze the vaccine bag and the lever and push the vaccine into the piston bay.
4. Leave the air venting screw open until the vaccine spills out of the opening of the venting screw.
5. Re-insert and tighten the venting screw firmly.
6. Position the syringe with the needle facing upwards and push the lever until vaccine appears from the needle.
7. Press the lever two, three times to check for leaks.

TROUBLE SHOOTING 1:

If a vaccine droplet "**grows**" at the tip of the needle, **after** the lever has been pressed and released, it is a sign of air in the system (a small droplet remaining at the tip of the needle after "free air injection" is normal and will under normal use be deposited inside the fish).

How to remove the air:

A: Remove the needle and unscrew the front part of the syringe (Luer-Lock attachment).

B: Position the syringe pointing upward.

C: Flood the socket by filling vaccine from a syringe containing vaccine from the dose calibration test (see picture below). Pay attention to the front valve and gasket in the bottom of the socket and ensure it is in place. (see picture below)

D: Attach the front part of the syringe to the vaccine flooded socket and tighten firmly. Attach the needle and needle guard to Luer-Lock

E: Point the syringe upwards and pump vaccine through the syringe pulling the lever and check whether system is working, without growing vaccine droplets.



The picture shows the socket after removal of the front part (Luer-lock) of the syringe. Vaccine is filled into the socket in order to remove air from the system and prevent dripping.

TROUBLE SHOOTING 2:

You are not able to calibrate correct dose. Vaccine is filled up in the calibration syringe, but the dose is partly pulled back after retracting the lever. This is normally due to either an incorrect positioning of the valve components or dirt / particles preventing the valves to close properly.

Inspecting and cleaning the valves:

A: Remove the needle and unscrew the front part of the syringe (Luer-Lock attachment)

B: Remove and clean the valve components (spring and rubber plug) in the front part, by use of soap water and paper towels. The valve can be seen on the above picture in the middle of the white area.

C: Clean the front valve socket with soap water and paper towels.

D: Do the same procedures with the back valve placed at the vaccine inlet.

E: Repeat the priming procedure.

F: Calibrate and start vaccinating.

III. ATTACHING THE NEEDLE

1. Insert needle onto the Luer-Lock fitting and secure the needle clockwise.
2. Remove protective cover (if using single use needles).
3. Fix needle guard onto the Luer-Lock attachment to prevent self-injection.

IV. CALIBRATION

1. Only necessary when initiating a new vaccination session.
2. Measure the vaccine dose per stroke.
3. Use a 1 ml disposable syringe and attach it to the Luer Lock (without the needle) by using 1 cm of a vaccine tube (see picture below). Fill to zero in the syringe and test the dose size by injecting a known number of doses into the disposable syringe and check if the outcome is in accordance with the desired dose volume.



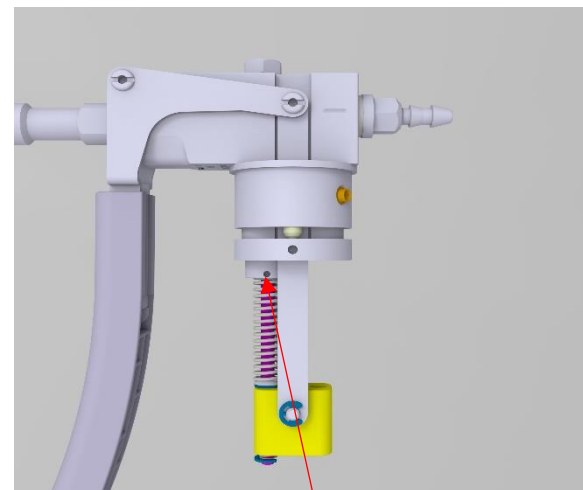
4. If the preconfigured dosing matches your requirements, no further action is required.

If adjustment is necessary, please proceed with the next step.

5. Turn the handle clockwise and take it off.


6. Take a pointed object and stick it into the marked holes on the calibration screws. Start turning the screws clockwise to decrease or counterclockwise to increase the calibrated dosing.

7. Measure the new product outcome adjust dosing described above until you have the desired dosing.



V. APPLICATION

1. Push the lever and release it to apply the dose.
2. If the syringe does not draw in vaccine, the valves will have to be cleaned or changed.
3. If there are air bubbles in the tube, the priming procedure (II.) must be repeated until no more air bubbles can be seen in the tube. Excessive shaking of the vaccine just prior to vaccination should be avoided (can lead to air bubbles in the syringe). Vaccines should always be temperate **before** they are gently shaken and squeezed to homogeneity.

 It is recommended to lubricate all gaskets with sterile mineral oil after use!

6. Cleaning and Maintenance of the MICRO-MATIC®

For internal and external cleaning, a mixture of common detergent (pH ≤ 5) and clean, warm and demineralized water should be used. Additionally, or as an alternative to the detergent, a little isopropanol (max. 70% conc.) can be added to the mixture for disinfection purposes.

For external cleaning wash and flush the device carefully with the described mixture. For internal cleaning it is recommended to completely disassemble the syringe and to clean all parts with the described mixture.

After finishing the above described cleaning procedure, it is important to flush the syringe with clean, warm and demineralized water to get all remains out of the syringe. Externally, the syringe should also be flushed only with clean, warm water.

Dry the device after cleaning with a clean cloth and pump it dry by operating the lever. We recommend conserving the MICRO-MATIC ® with sterile mineral oil after cleaning.

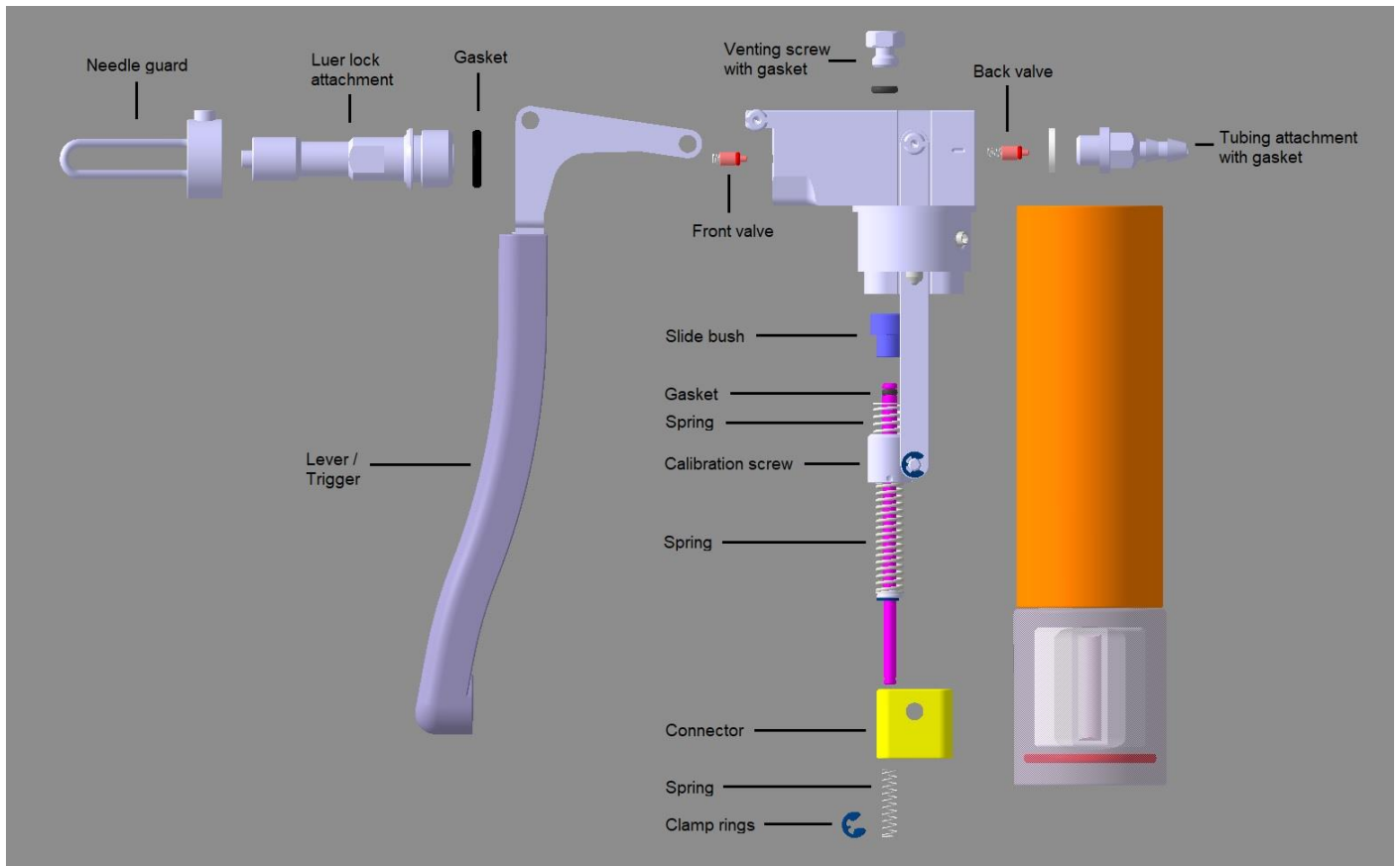
7. Disinfection

It is recommended to disinfect the MICRO-MATIC® and the needle after each vaccination session. For disinfection procedures remove the handle and put the remaining parts of the syringe into a container with water. Boil the syringe without handle / mechanical counter for up to 20 minutes. Ideally, the syringe should be boiled in a disassembled condition. At least the venting screws must be screwed out. After boiling, remove the syringe from the container, wrap a clean cloth around it and pump it dry by operating the lever. We recommend conserving the MICRO-MATIC ® with sterile mineral oil after cleaning.

 Handle incl. counter must not be boiled for disinfection!

8. Dismounting / changing the piston gaskets / cleaning the valves

I. DISMOUNTING



II. CHANGING PISTON GASKETS

1. Remove the handle by turning counter-clockwise.
2. Release calibration screws by turning counter-clockwise.
3. Remove clamp rings at the connecting (yellow) part on the piston rod.
4. Pull piston rod downwards and remove the whole unit (piston, piston rod, connector, springs) from the syringe.
5. Remove old gaskets from the piston and replace with new gaskets from the spare part set.
6. Reassemble in reverse order.

III. CLEANING THE VALVES

1. Front valve
 - Remove Luer-Lock attachment by turning counter-clockwise.
 - Remove sealing ring.
 - Take valve out by pulling gently.
 - Clean and reassemble in reverse order.
2. Back valve
 - Remove tubing attachment by turning counter-clockwise.
 - Take valve out by pulling gently.
 - Clean and reassemble in reverse order.

