## 1. MANUAL

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INTRODUCTION
This booklet describes the user and maintenance instructions for Mirafeed Feeder.
The user is expected to read carefully the entire manual and to ensure that all information in it is fully understood.

ACQUA&CO shall not accept any direct and indirect liability resulting from negligence and failure to comply with the rules described in this booklet. Moreover, it shall not be liable for any damage caused to people, animals or things by an incorrect installation and/or improper use of the equipment. When purchasing the equipment, make sure that it is complete and intact. Any complaints should be submitted in writing within 8 (eight) days from receipt of the equipment. Its use is conditional to compliance with the local legislation provisions.

1.1 WARRANTY
ACQUA&CO warrants its machines for a period of 12 (twelve) months from the delivery date of the material. Within the above period, ACQUA&CO commits itself to provide spare parts free of charge for those components declared defective in material and workmanship at its sole discretion. Excluding any liability for direct or indirect damage, this warranty is deemed to be limited to material defects (electrical parts excluded) and shall no longer be valid if the returned parts are found to be disassembled, tampered or repaired outside the factory. The returned material, even if under warranty, must be shipped with prepaid freight.
The warranty shall not cover the following:
- Any failure caused by the user’s negligence.
- Any failure to comply with requirements and limitations specified in this manual.
- Previous repairs carried out by unauthorised staff.
- Previous repairs carried out with non original ACQUA&CO spare parts.
- Consumables

1.2 REQUEST FOR TECHNICAL SUPPORT
In order to request more detailed information or to solve any problem encountered that is not addressed in this manual, please contact our CUSTOMER CARE DEPARTMENT:

<table>
<thead>
<tr>
<th>ACQUA&amp;CO</th>
<th>INNOVAQUA SPAIN</th>
</tr>
</thead>
<tbody>
<tr>
<td>Via Augera 5/a42023 Cadelbosco Sopra (Reggio Emilia) Italy</td>
<td></td>
</tr>
<tr>
<td>Tel. +39 0522 918701-2-3 R.A</td>
<td></td>
</tr>
<tr>
<td>Fax +39 0522 918790</td>
<td></td>
</tr>
<tr>
<td>E-mail: <a href="mailto:info@acquaeco.com">info@acquaeco.com</a></td>
<td></td>
</tr>
<tr>
<td><a href="http://www.acquaeco.com">www.acquaeco.com</a></td>
<td></td>
</tr>
<tr>
<td>Cañada del Río 48 - 41740 Lebrija (Sevilla) ESPAÑA</td>
<td></td>
</tr>
<tr>
<td>Tel: +34 955970798</td>
<td></td>
</tr>
<tr>
<td>Fax: +34 955971303</td>
<td></td>
</tr>
<tr>
<td>E-mail: innovaquainnovaqua.com</td>
<td></td>
</tr>
<tr>
<td><a href="http://www.innovaqua.com">www.innovaqua.com</a></td>
<td></td>
</tr>
</tbody>
</table>
1.3 FINALIDAD Y USO PREVISTO / CAMPO DE APLICACION
1.3 INTENDED PURPOSE AND USE / FIELD OF APPLICATION

This is a precision Feeder for fish farms, therefore it is especially suitable for fish laboratories, veterinary centres and any facility where there is the need to dispense feed to fish, shrimps or other fish species with the utmost precision.

In particular, Mirafeed is conceived and designed to offer the most accurate feed dosage in a specified period, from feed powder to max 9mm pellet, provided that a suitable disc is used. Moreover, surfaces that can be fouled by water splashes and dirtiness produced during the feeding phase have been reduced and optimized. A set of discs with heights and holes of increasing size allows Mirafeed to follow all the growing phases: larval, hatchery, pre-fattening, fattening and adult size. Fish can be also fed with larger pellet although with less accuracy.

The device may be used for food and non-food solid substances in powder or grains. Such use should be checked on a case by case basis.

Due to its construction, the machine is rigidly secured to the fish tanks' walls or suspended above them. It can also be placed on a water surface using a floating structure, provided that the device is kept fully out of water and outside the reach of waves.

The estimated service life is 10 years due to its structure, provided that bolt corrosion is checked annually. It is recommended to perform maintenance on motors once per year.

**NOT continuous operation**: it is cyclically timed at least every hour.

This industrial-type machine should be installed in a technical area that is suitably identified by signs and not accessible to the public, adjacent to duly fenced fish tanks/basins/lakes (also outdoors), where unauthorised people are not allowed and access is restricted to specialised operators. If used in public areas, a suitable protection must be installed since the device contains a moving internal part.
Examples of APPLICATIONS FOR MIRAFEED

Installation: MIRAFEED must be installed directly over the fish tank or the basin in which feed is to be dosed.

Hopper come into different sizes to suit the feed size and the amount of feed to be dispensed.
2 OPERATORS’ SAFETY REQUIREMENT

The following rules must be read carefully and become an essential part of the daily practice for the operation and maintenance of the equipment to prevent any type of personal accident and/or damage to property.

2.1 Description of Symbols

The machine is provided with a few plates showing the following symbols that indicate any dangers found on the machine:

1. Read carefully the contents of this booklet before operating the machine.
2. Symbol for general danger. When indicated, it shows a potential danger.
4. Symbol for electrical danger. If indicated, it shows the presence of voltage.
5. Sign of prohibition.
6. Wear safety gloves.

2.2 GENERAL SAFETY RULES

When using electrical equipment and tools it is necessary to adopt suitable safety precautions to reduce the risk of fire, electrical shock and personal injury. Therefore, before using this equipment, read carefully and learn by heart the following safety regulations. After reading it, keep this booklet carefully for future reference. The Manufacturing Company does not accept any liability resulting from failure to comply with any safety and accident prevention regulations as described in this booklet.

- Before starting to work, make sure that the machine is perfectly intact. Any part that is found defective, damaged or broken must be repaired or replaced by qualified and authorised personnel. Repairing or having parts repaired by staff that is not authorised by the Manufacturing Company will void the warranty and make equipment unsafe and potentially dangerous.
- If the Feeder is accidentally dropped, check its integrity.
- **CAUTION: in case of doubt as to the safety of the machine, do not use it.**
- Do not use the Feeder for purposes other than those provided for and to perform works that it could not reasonably withstand.
- Any type of check, control, cleaning, maintenance, changeover and replacement of parts must be carried out after shutting down the machine and isolating its connections.
- All repairs must be performed by personnel authorised by the Manufacturing Company.
- The Feeder must not be moved using its power supply cable.
- Regularly check the integrity of the cable. Replace the cable if it is not intact. This operation should be carried out by qualified and authorised personnel.
- Protect the cable from high temperatures, lubricants and sharp edges. Moreover, prevent it from twisting and forming knots.
- It is absolutely prohibited to allow children and/or any unauthorised, not qualified and/or people with health problems to use the Feeder.
- Do not tamper and/or try to remove the Feeder's guards.
- Do not operate the machine other than as described in this booklet.

2.3 WARNINGS

1) Before starting the machine assembly operations, make sure the working area is clean and orderly, use compliant and suitable material and equipment wearing safety gloves and shoes.
2) For your own safety, our machines must always be suitably protected from electrical failures by specific control panels or protection switches (differential, thermal-magnetic, etc.).
3) Always make sure that a switch or a socket has been installed near the machine to disconnect it during maintenance.
4) Our machines are covered by warranty only if they are OPERATED INTERMITTENTLY, driven by a suitable timer, if regular maintenance operations are carried out, and if deposits and anything else may affect its correct operation are removed.

Electrical danger
The machine is installed in a dry place, although in potential contact with humidity; it is designed to be supplied with a low 24V AC voltage therefore, theoretically, it should not pose any serious health risks.
Such condition only applies if the power supply system is well designed and provided that any upstream failure cannot cause a downstream danger.

Work station
The machine is also suitable for outdoor installation. Pay attention to any extreme conditions that are likely to cause service life and safety limitations. If necessary, provide a suitable sunlight and weather proof cover and adequate lighting to perform any operation and maintenance.

Shearing risk – RESIDUAL RISK
The machine is accessible for maintenance purposes and when it is necessary to fill the tank with feed. A perforated disc is constantly rotating for dosing the feed to be dispensed.
No guards are provided here, because the applied force is low and any guard would hinder the essential cleaning needs of the device.
DO NOT PUT YOUR FINGERS AND HANDS INTO THE TANK OR IN THE LOWER COMPARTMENT.
DO NOT PLACE ANYTHING IN THE TANK OTHER THAN FEED OR OTHER SUBSTANCES FOR WHICH IT HAS BEEN DESIGNED AND SOLD.

It is strictly prohibited to work on the Feeder when the machine is operating.

2.4 IDENTIFICATION PLATE

<table>
<thead>
<tr>
<th>Manufacturer’s address</th>
<th>10 Rated power in hp</th>
</tr>
</thead>
<tbody>
<tr>
<td>Construction year</td>
<td>11 Rated power in Kw</td>
</tr>
<tr>
<td>INTERMITTENT SERVICE</td>
<td>12 Rated frequency</td>
</tr>
<tr>
<td>“CE” conformity marking</td>
<td>13 Condenser capacity on start-up</td>
</tr>
<tr>
<td>Insulation class and level of protection</td>
<td>14 Type of system and nature of the current</td>
</tr>
<tr>
<td>Type of machine (alternate/direct current)</td>
<td>Number of rated revolutions</td>
</tr>
<tr>
<td>Serial number</td>
<td>15 Number of rated revolutions</td>
</tr>
<tr>
<td>Rated voltage</td>
<td>16</td>
</tr>
<tr>
<td>Rated current</td>
<td>17</td>
</tr>
</tbody>
</table>

V 8 A 9 HP 10 kW 11 Hz 12 μF 13 1 14 RPM 15
3 DESCRIPTION

1) 30 litre cover
2) 30 litre hopper
3) 5 litre hopper
4) 5 litre cover
5) Adapter
6) Body
7) Body closure
8) Air connection
9) Lower cover of the motor
10) Cable outlet
11) Feed-mixing rod
12) Disc
13) Spacer (not shown)

A) 0.3 g disc
B) 1.0 g disc
C) 5.0 g disc  → + 1 Spacer
D) 20 g disc  → + 1 Spacer
E) 45 g (unloaded) disc  → + 2 Spacers
### 3.1 MIRA FEED TECHNICAL CHARACTERISTICS

<table>
<thead>
<tr>
<th>MODEL</th>
<th>VOLTAGE FREQUENCY</th>
<th>CURRENT INPUT IN A</th>
<th>RATED POWER W</th>
<th>RPM/1'</th>
<th>WEIGHT * KG</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.03 rpm</td>
<td>24V/50Hz</td>
<td>0.5</td>
<td>10</td>
<td>1.03</td>
<td>1.6</td>
</tr>
<tr>
<td>2.07 rpm</td>
<td>24V/50Hz</td>
<td>0.5</td>
<td>10</td>
<td>2.07</td>
<td>1.6</td>
</tr>
<tr>
<td>2.00 rpm</td>
<td>24V/50Hz</td>
<td>0.5</td>
<td>10</td>
<td>2.00</td>
<td>1.7</td>
</tr>
</tbody>
</table>

* Body only, without tank and feed

<table>
<thead>
<tr>
<th>DISCS</th>
<th>H (cm)</th>
<th>DOSE</th>
<th>no. of DOSES</th>
<th>g/rpm *</th>
<th>g/s</th>
<th>g/minute</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>7</td>
<td>0.3 g</td>
<td>24</td>
<td>7.2</td>
<td>0.2484</td>
<td>14.904</td>
</tr>
<tr>
<td>B</td>
<td>7</td>
<td>1.0 g</td>
<td>16</td>
<td>16</td>
<td>0.552</td>
<td>33.12</td>
</tr>
<tr>
<td>C</td>
<td>27.5</td>
<td>5.0 g</td>
<td>8</td>
<td>40</td>
<td>1.38</td>
<td>82.8</td>
</tr>
<tr>
<td>D</td>
<td>27.5</td>
<td>20 g</td>
<td>4</td>
<td>80</td>
<td>2.76</td>
<td>165.6</td>
</tr>
<tr>
<td>E</td>
<td>48</td>
<td>45 g</td>
<td>4</td>
<td>180</td>
<td>6.21</td>
<td>372.6</td>
</tr>
</tbody>
</table>

** 2.07 rpm motor

** A specific weight of 0.66 kg/dm³ was used as a reference

Note: THE TECHNICAL DATA ABOVE ARE FOR REFERENCE ONLY AND NOT BINDING
3.2 DIMENSIONES TOTALES
3.2 OVERALL DIMENSIONS

3.3 CONDITIONS FOR USE

The Mirafeed Feeder must be used taking the following conditions into account:

- Power supply voltage: 24V AC
- Permitted voltage variation: ±5%
- Protection rating: IP 54
- A sunlight and weather-proof cover should be provided.
- Air temperature: from 5°C to +40°C
- Strictly intermittent service:
  - Maximum working time: 15 minutes
  - Minimum pause time: 30 minutes

Maximum diameter of the pellet: 4 mm per not discharged disc
Maximum diameter of the pellet: 9 mm per discharged disc (45g)
Feed reference density: 0.66 Kg/dm³
Minimum height from water: 20 cm for an indoor fishpond
Minimum height from water: 50 cm for an outdoor fishpond

4 TRANSPORT AND STORAGE

The Feeder device is delivered with its power supply cable inside cardboard boxes suitable for transport and storage. In case of storage, it is recommended to avoid placing heavy material onto the machine to prevent any crushing or damage.

4.1 UNPACKING / PRELIMINARY INSPECTION

Upon receipt, make sure that the delivered goods match those ordered. Ensure that the goods show no damage caused by transport. Any damage detected upon receipt must be documented and notified to the sender within 8 (eight) days from arrival. The cardboard packaging, if not reused for other purposes, must be disposed of in compliance with regulations in force in the place of use.

CAUTION: in case of doubt as to the safety of the machine, do not use it.
4.2 INSTALLATION

Installation must be carried out by qualified and authorised operators only. During installation, comply with all safety provisions issued by relevant bodies in the country of use and resulting from common sense. The machines installed in public places must be identified by suitable signs and fencing.

The Feeder is warranted for intermittent operation only, followed by appropriate pause periods to allow internal motor cooling down.

Suggestions for electrical guards:
The key point for the safety of the electrical system as a whole is protecting it from the main electrical failures due to:
1) Overvoltage and voltage drops
2) Indirect contacts
3) Current surges

4.3 SECURING

The Feeder with a 5 litre hopper is designed to be installed in laboratories or hatcheries with small-sized fish or that need small daily amounts of feed, therefore preferably in indoor and protected spaces. That is why it has been conceived to be placed and screwed in a fixed or rotating metal support, that in turn is mounted to the fish tank wall.

The Feeder with a 30 litre hopper is suitable for installation in farms, i.e. onto large-sized, also outdoor, fishponds. That is why it is conceived to be supported directly by the hopper through a metal ring embracing it, to be secured to a wing-type support, that is in turn anchored to the ground or the fishpond.
**HOPPER**
The 5 litre hopper does not require to be secured if it is installed indoors with adequate protection. If there is the risk of overturning the pipe and content when they are hit unintentionally, the hopper can be secured with a pair of self-threading screws.

*Note: Pay the utmost attention to avoid damaging the very fragile pipe during the perforating operation.*

Since the 30 litre hopper is supposed to carry the motor body, it should be mechanically secured to the body with 4 self-threading screws (included in the supply).

It is recommended to:

- Place the hopper onto the body,
- Drill the body with 3mm diameter bit, using the 4 specially prepared holes on the hopper as a reference.
- Tighten the screws until flush with common sense to avoid tearing the plastic.

**WALL-MOUNTING**
The Feeder must be firmly secured to a wall or anchored in the ground, in a raised position at a suitable distance from water.

The possible securing systems are countless, since there are several types of fishponds and user specific requirements. A few securing systems are provided below:

a) 5 litre hopper - Wing-type mounting to the fish tank
b) 5 litre hopper - Cantilevered mounting to the fish tank with supporting arms. It can also be mounted
   b1) to a vertical wall
   b2) to a horizontal wall
c) 30 litre hopper - Wing-style mounting to the fishpond

d) 30 litre hopper - Wing-style anchoring in the ground
4.4 ELECTRICAL CONNECTION AND COMMISSIONING

NOTE: THE ELECTRICAL CONNECTION OF THE MACHINE MUST BE CARRIED OUT BY SPECIALISED PERSONNEL.
It is up to the installer to perform the connections in compliance with legislation in force in the country of installation.

Make sure that the mains voltage and frequency match the data stated on the motor plate.
Bring a power supply cable compatible with power consumption inside the electrical box.
It is absolutely necessary to install a timer for intermittent operation in the Feeder's control panel that can be set in seconds or at least in minutes.

If the Feeder stops during operation, act with the utmost care and identify the cause of the shutdown.

RESIDUAL RISK: the sudden re-start of the machine can be a source of danger for operators working nearby it.

The motor contains a perforated disc whose rotation is driven by an internal motor. The motor's power is very low and the resulting danger is extremely reduced.

- NEVER PUT YOUR FINGERS, HANDS, HAIR, CLOTHES OR ANY OTHER OBJECT IN THE TANK OR NEAR THE DISC WHEN THE MOTOR IS RUNNING.
- NEVER PLACE ANYTHING OTHER THAN FEED INTO THE TANK AND NEAR THE DISC WHEN THE MOTOR IS RUNNING.

4.5 REGULAR CHECKS

Before carrying out checks make sure that voltage is disconnected and that unintentional connections are not possible.
It is recommended to regularly check:
- The conditions of cables and cable guides - especially in the attachment points - and of components protecting the electrical motor.
- The disc wear and tear, otherwise performance will be affected.
- The cleaning conditions of the outer casing for hygiene-related reasons
- That filaments or foreign bodies do not prevent the free rotation of the disc
- That the outer part of the motor is free from deposits that can stick to the casing; this will make the machine cool down easier
4.6 DISC REPLACEMENT

Disc replacement is necessary every time a change in the feed amount or dispensing method is required, according to the fish growth and, therefore, to the feed size.

In order to replace discs, loosen the 4 screws of the body, open the Feeder and take the disc out of the shaft. Slide the new disc in the shaft, paying attention to the correct centring of the driving pin. Add any spacers required, according to the chosen disc. Close by tightening the Philips head screws very carefully to prevent plastic from stripping out.
5 MAINTENANCE

All cleaning and checking operations must be strictly carried out after shutting down the machine and isolating the connection with a padlockable switch.

The electrical motor is a synchronous single-phase motor that does not require maintenance as it is equipped with permanently lubricated bearings. As far as repairs are concerned, the replacement of broken parts must be carried out at authorised support centres or by qualified staff. It is recommended to develop a scheduled maintenance plan paced with harvest and downtime.

The use and disposal of electrical components must comply with environmentally-friendly provisions in force in the country of use.

5.1 LONG-TERM STORAGE

If a long downtime of the Feeder is expected, it is advisable to clean it carefully with a sponge and store it in a sheltered indoor area.
If stored in a warehouse, do not place any weight or other boxes on top of its packaging boxes.

5.2 SPARE PARTS

In case of breakages or replacement of spare parts, apply to authorised support centres.
Note: Use original spare parts only.
6 MACHINE SCRAPPING

- If you decide not to use the machine anymore, it is recommended to make it inoperative by removing the electrical power supply cable.
- Always keep it outside the reach of children.
- Since the machine is a special waste, it must be disassembled and the parts of the same material collected for disposal in compliance with legislation in force.
- Do not use any scrapped items as spare parts.

INFORMATION FOR USERS

The symbol of a crossed-out wheeled bin on the equipment or on the package means that any end-of-life product must be disposed of separately from other waste. The separated collection of this end-of-life equipment is arranged and managed by the Manufacturer. The user who wants to throw away this equipment should contact the Manufacturer and use the system adopted by him to ensure the separate collection of the end-of-life equipment. A suitable separate waste collection allowing the unused equipment to be sent for recycling, treatment and compatible environmental disposal contributes to avoid possible negative environmental and health-related effects while favoring the reuse and/or recycling of materials the equipment is made from. Any incorrect disposal of the product by its owner will lead to the enforcement of administrative penalties provided for under the legislation in force.
7 DECLARATION OF CONFORMITY within the meaning of Art. 4 Par. 2 of Directive 2006/42/EC

The Legal Representative of the Company ACQUA&CO with registered office in Via Augera 5/a, CadelboscoSopra (RE) Italy declares on its own sole responsibility that the product:

MIRAFEED Feeder

complies with the requirements of the EEC Directive(s):
2006/42/EC Machinery Directive,
2006/95/EC, Low Voltage Directive,
2004/108/EC Electromagnetic Compatibility Directive,

It is prohibited to commission the machine under this declaration before the system of which it will be part, together with the control panel and all necessary (mechanical and electrical) connections, have been declared compliant with the provisions of the above-mentioned Directives.

Person in charge of the technical documentation:
Mr/Mrs: Engineer Marco Bassi
Of the Company: Acqua&Co S.r.l.

Place: Cadelbosco di Sopra RE
Date: 16/04/2015

Legal Representative
(Giovanni Magnanini):