## REVERSE OSMOSIS SYSTEM

# ARO TRIPLEX

AQUA INDUSTRIAL GROUP

FILTRATION - DOSING - DETERGENT & HYGIENE - POOL EQUIPMENT

CE

# DECLARATION OF CONFORMITY

| | |
|---|---|
| Company: | **AQUA S.p.A.** |
| Address: | **Via T. Crotti, 1 - 42018 - San Martino in Rio (RE)** |

Hereby declares that the products named:

**• ARO TRIPLEX**

Responds to the principal features of the following European Directives:

- **2014/30/CE of 26/02/2014** - *Harmonization of the laws of the Member States relating to electromagnetic compatibility – EMC Directive*
- **2014/35/CE of 26/02/2014** - *Harmonization of the laws of the Member States relating to the making available on the market of electrical equipment designed for use within certain voltage limits – Low Voltage Directive*
- **2011/65/UE of 08/06/2011 with subsequent update 2015/863 of 31/03/2015** – *ROHS III Directives*
- **2012/19/UE of 04/07/2012** - *WEEE Directives for electrical and electronic waste*

This declaration is issued under the responsibility of Aqua S.p.A.

San Martino in Rio (RE) - 08 settembre 2020

Davide Vezzani
Certification Manager - Aqua S.p.A.

Davide Vezzani

AQUA S.p.A.
Società soggetta a direzione e coordinamento di Finanza Cooperativa S.p.a. - Cap. Soc. n. 10.067.488.00 Sottoscritto e Versato
S. Martino in Rio - 42018 - Reggio Emilia - ITALY - Sede legale: Via Crotti, 1 - Sede operativa: Via Bernella, 3 - Dati Fisc. e PIVA 02020440350 - Reg. Imprese di RE 02020440350
Tel. +39.0522.596506 - Fax +39.0522.646160 - www.aqua.it - e-mail: aqua@aqua.it

TÜV

# Use and Maintenance Manual

## INDEX


1 – SAFETY ..... 4

2 – REGULATIONS..... 4

3 – WHAT IS REVERSE OSMOSIS ..... 5

4 – TECHNICAL FEATURES ..... 5

5 – PACKAGE CONTENT AND STOCKING INSTRUCTIONS..... 7

6 – INSTRUCTIONS FOR A REGULAR FUNCTIONING ..... 7

7 – INSTALLATION PROCEDURE ..... 8

8 – DEVICE STARTING ..... 10

9 – MAINTENANCE ..... 10

10 - WARRANTY..... 11

11 – SERVICE RECORD TABLE ..... 12

## 1 – SAFETY

This section is for ARO TRIPLEX
This product's electrical safety is granted only when connected to a power plant supplied with a proper grounding system and a differential switch in compliance with the law. The verification of this fundamental safety requirement is compulsory. In case of doubt request for assistance of a qualified technician, or consult your nearest authorized dealer.

The use of **ARO TRIPLEX**, as well as any other device powered by electricity, involves the observance of fundamental safety norms:

- do not touch the osmotic device with wet hands or feet;
- do not plug or unplug the device with wet hands;
- do not pull the power supply cable to unplug the device;
- do not leave the osmotic device exposed to weather elements.
- do not allow unattended children to use the osmotic device;
- before carrying out any maintenance or cleaning operation, unplug the osmotic device from the power supply;
- in case of break or bad functioning, turn off the osmotic device and do not tamper it. For any intervention call an authorized technician; in case of substitution of osmotic system's spare parts for maintenance or for breaks by a non authorized technician, ensure that the spare parts are in compliance with the law.
- whenever the power supply cable gets damaged it must be substituted by the manufacturer or in any case by a qualified person (Y type connection fuse)

The manufacturer declines any responsibility for possible incorrect info on this instruction manual attributable to printing or transcription errors.

The manufacturers holds also the right to apply to the osmotic device all the modifications, useful or necessary, without compromising the fundamental characteristics of the device itself.

**WARNING**: Do not install **ARO** on plants with water considered bacteriological unsafe or which origin and characteristics are unknown.

## 2 – REGULATIONS

Our osmotic devices are built in compliance with the active general norms and with the following European directives:

- n° **2004/108/CE** " e s.m.i.
- n° **2006/95/CE** "DBT Low Voltage Directive" e s.m.i.
- n° **2011/65/UE** , **2012/19/UE** "direttive RoHs e WEEE" e s.m.i.

## 3 – WHAT IS REVERSE OSMOSIS

**Osmosis is a natural phenomenon for which poor in mineral salts solution passes through a semi permeable membrane to dilute a salt mineral richer water.**
Applying an opposite pressure this procedure is reversed and REVERSE OSMOSIS is achieved: actually pushing a high mineral salt's concentration solution against a special membrane, the result will be PURE WATER. As a matter of fact, the membrane, for it's structure and properties, retains almost all the solved salts, heavy metals, polluting elements, bacteria and virus, allowing the water to pass by in all its genuine purity.
REVERSE OSMOSIS is definitely the safer and prevalent water purification system in the world; the advantages, with a basic reliability of the process, are represented by an easy installation, low exercise costs ant total absence of need for chemical products.

**ARO** systems can remove from the water all the impurities and polluting agents harmful to health. The resulting pure water represents the ideal solution for domestic, food & beverage use, since it's exclusive filtration system forms a safety barrier against the various polluting agents that could be present in water mains.
**ARO** systems reverse osmosis depuration system is made with the highest quality level components. Commonly manufactured for professional uses, this product has been studied and designed for domestic applications.

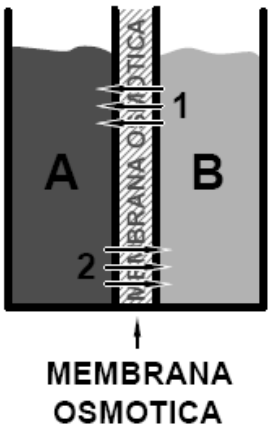



Fig. 1

1 - OSMOSI NATURALE
2 - OSMOSI INVERSA

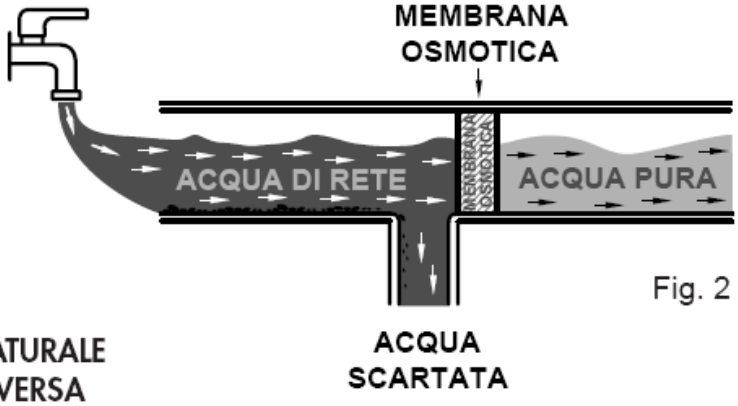


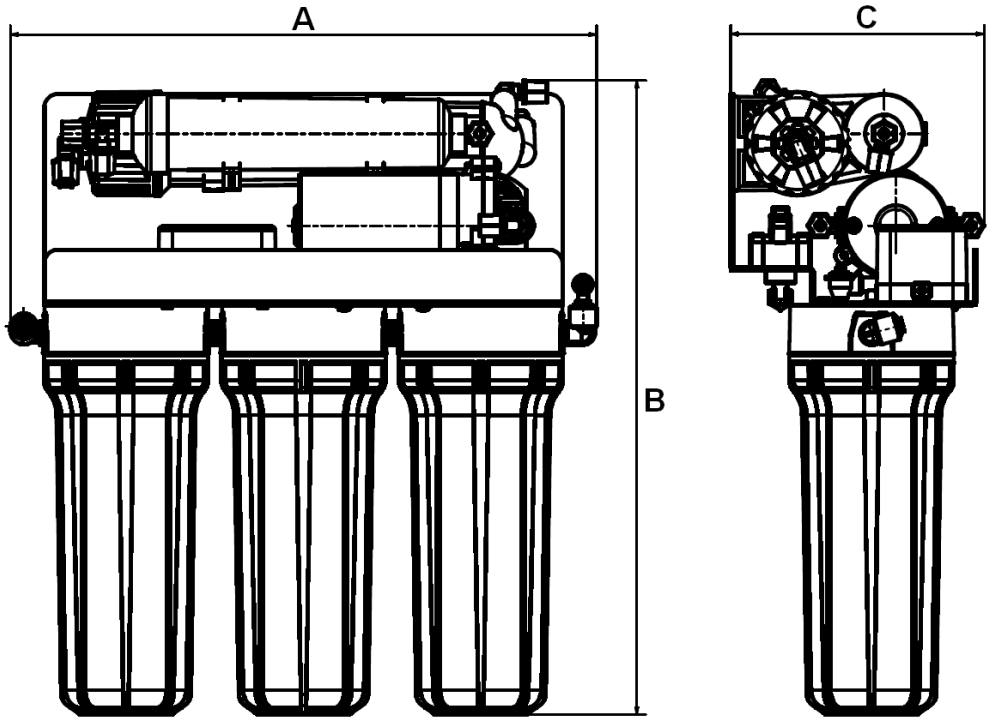

Fig. 2

## 4 – TECHNICAL FEATURES

### General Description

Bad tastes, smells and turbidity are often the alarm that indicates the presence of dangerous polluting agents in the water supply system. For example, insecticides, sulphates, cleaning products, substances coming from corroded pipe lines, algae, viruses, and bacteria, are all harmful for adult's and children's health and consumption.
Other than that, many polluting agents are not immediately perceptible and visible by man without a deep analysis. To radically remove polluting agents from waters for civil and industrial purposes, reverse osmosis system model **ARO** offers the most effective method to obtain good and pure water, a possession becoming day by day more precious. Reverse osmosis system is made of a pre-treating system composed of a sediment filter 5 µm, a filter with activated carbon and a second sediment filter 1 µm; then comes a BOOSTER pump activated by a 24VDC motor. The reverse osmosis membrane is held in a special vessel fully made in Polypropylene for food & beverage use.

The osmotic system ARO has the following dimensions:




**ARO TRIPLEX (A X B X C) = 420 X 430 X 180**

**TANK (Diameter x H) = Ø28 x 36**

**Power: The device absorbs about 22W from the power supply line (only ARO TRIPLEX PLUS)**

**Technical Data**
Composed Thin Film membrane
Water nominal production 190 l/day (50 usGPD) with 20°C (68 F°) water temperature and (TDS) 300 ppm salt level.
Water Pressure range: 0,5-3 bar (7,25-43,5 PSI)
Max. salt level: (TDS) 1000 ppm
Treats water with or without chlorine
Max. permitted chlorine (CL2) 1,5 ppm
Water temperature 5 - 35 °C (41F° - 95F°)

**Materials:**
• Pre-filter housing and membrane vessels are made of high density polypropylene.
• Pre-treatment cartridge contains certified vegetal active carbon.
• Connection hoses and fittings are in Polypropylene
• Membranes are made with high reacting polyamide, a water treatment specific product

**Environmental conditions and working limits**

- Min. environmental temperature: 5°C (41F°)
- Max. environmental temperature: 50°C (131F°)
- Min. water temperature: 5°C (41F°)
- Max. water temperature: 35°C (95F°)
- Max. relative moisture: 95%

## 5 – PACKAGE CONTENT AND STOCKING INSTRUCTIONS

**ARO** system consists of a device complete with pre-filters, motor driven pump, osmotic membrane, carbon active post-filter, 12 l (3,20 USG) storage tank, 2 pressure gauge, faucet, connection hoses and fittings. The packed device has to be stored in a dry environment (without condensation or humidity), protected from climatic agents. It has to be understood that, although correctly packed, the device has to be considered and handled as fragile material. At the moment of receiving the product, it is necessary to open the packaging and check the systems integrity. In case of breaks or damage, immediately advise the transport company and local authorized dealer.

## 6 – INSTRUCTIONS FOR A REGULAR FUNCTIONING

- Make sure that no hot water can reach inside the device (35°C max) (95F° max)
- Make sure that the device never works with water lower than 5°C (41F°) or in ice exposed areas.
- Water supply pressure must not exceed 3 bars (43,5PSI) or be less than 0,5 bars (7,25 PSI). With min. flow rate 100 l/h (0,44 usGPM) for pressures higher than 3 bars (43,5 PSI) or in case of water hammer a pressure regulator is necessary.
- Never start the device in absence of water. That would irreparably damage the pump and system.
- In case of continuous duty it's possible that the electric pump thermal sensor stops the pump in case of overheating, until it cools again.
- For a perfect preservation, membranes are kept in a bacteria-static liquid, do not therefore utilize the first water supplied by a new plant or by a plant which membrane has been freshly substituted, let it flow for about 30 minutes.
- Flow some water in all cases after every pause: it will be of higher quality than that stored in the osmotic membrane.
- Make sure that the TDS of the water supply is less than 2000 mg/l.
- Pre-filter has to be used for wells, tanks and surface waters.
- Drinkable water must not contain iron.
- Installations, modifications, interventions or repairs must be carried out by authorized personnel.
- Make sure that power supply voltage is the same of the device's requirements.

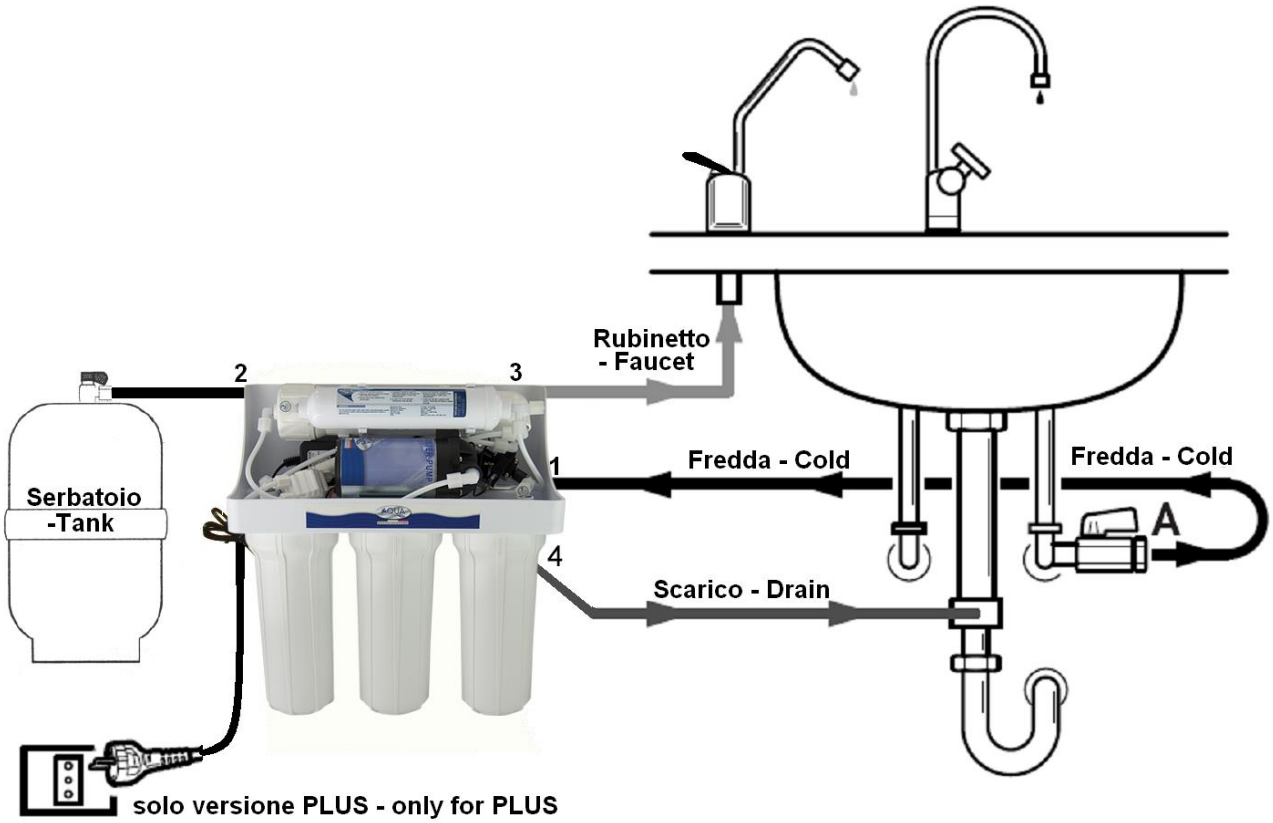
**Warranty is void if above mentioned norms are not followed and abided.**

## 7 – INSTALLATION PROCEDURE

### Installation Instructions

**ARO** system is a simple and compact osmotic device and is designed to allow a fast installation under the kitchen sink. Before proceeding with the installation, verify the availability of room enough for a comfortable extraction of the spare parts and for maintenance, nonetheless to host the storage tank. Verify the presence of a power supply nearby. The osmotic device is designed to be installed in an hygienically appropriate and freeze protected area. Before proceeding with installation consider the necessary room for hydraulic connections.

### Installation exampe

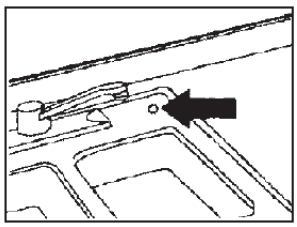
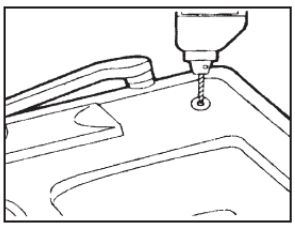
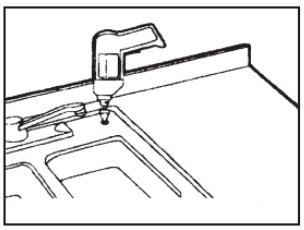
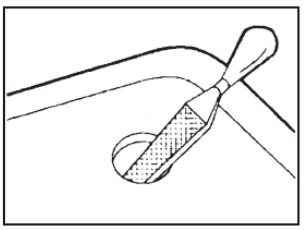
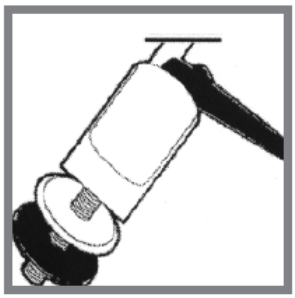
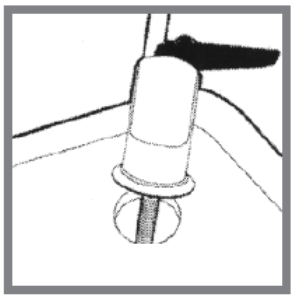
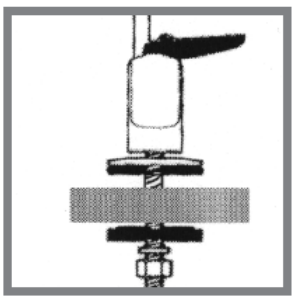
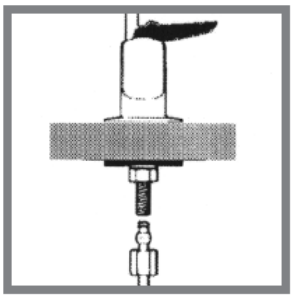



**Hydraulic Connection:**
Set up hydraulic connections following the instructions written on the device.

- **1 To Inlet** to be connected to the water supply inlet
- **2 To Tank** to be connected to the storage tank
- **3 To Faucet** to be connected to the treated water supply faucet
- **4 To Drain** to be connected to the waste water drain.

Water supply pressure has to be lower than 3 bars (43,5PSI) and possibly higher than 0.5 bars (7,25PSI).

**Faucet connection:**
Install the faucet by drilling an adequate hole in the kitchen sink and installing it with the supplied accessories.

**Power connection (only for PLUS model)**
Insert the plug in a 230 v – 50hz grounded (earthed) power supply.

## 8 – DEVICE STARTING

After hoses and plug are connected, open the water flow and slowly put the system under pressure, checking for eventual leaks. **In case of leaks on fittings add PTFE tape (Teflon).** Open the faucet and let the water flow in order to remove the air.

**WARNING:** Do not start the device without having first opened the water flow. Dry pump working may cause irreparable damages.

Wait 3 hours untill the tank is completly filled, than discharge all the water inside the tank. DO NOT USE THE FIRST WATER PRODUCED.
After this procedure ARO system is ready for use

## 9 – MAINTENANCE

The system is completely automatic and needs little maintenance. The only essential operations are the substitution of filtering elements and the systems sterilization.

**Maintenance frequence**

| Type | Use | Average life |
|---|---|---|
| **First stage** | **Sediment cartridge 5 µm** | **3 months** |
| **Second stage** | **CARBON BLOCK cartridge** | **3-6 months** |
| **Third stage** | **Sediment cartridge 1 µm** | **3 months** |
| **Fouth stage** | **RO membrane 50GPD** | **2-3 years** |
| **Fifth stage** | **CARBON in line cartridge** | **1 year** |

**Membrane substitution procedure**
Proceed as follows:
- Turn off power supply
- Unplug hoses connected to the membrane's holding vessels, remove vessel's head and remove the membrane. The exit of the water from the vessel during the operation is unavoidable.
- Put a bin or container under the system to collect the fluids outgoing fluids.
- Insert the new membrane, check the correct positioning of the o-ring and carefully screw the membrane vessel's head.
- Do not stress in order not to damage the system.
- Reconnect the hoses to the vessel.
- Carefully check for water leakages.
- To restart the osmotic device follow the instructions in section 3 (device starting) and 4 (sanitize)
- Check beneath for possible water traces.

**Sanitize**

Once in a while and in all cases, with every cartridge substitution it is suggested to carry out the sanitization of the hydraulic circuit and system. For the sanitizing the system, a disinfecting solution can be used. It is otherwise possible to use a hypochlorite solution to be dosed in amounts of about 1-2 ppm. Free chlorine value can be easily detected with chlorine measurers on sale.

Said operation can be carried out periodically based on authorized personnel's suggestions.

After every sanitization it is recommended to let water flow abundantly from the system, until total elimination of the sanitizing solution. Water with 0.2 ppm of chlorine residual is anyway completely drinkable and potable.

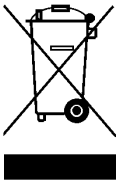
**WARNING:** Chlorine might give problems in waters for particular industrial uses or in aquariums. Chlorine damages membranes and carbon cartridges, do not leave membranes in contact with chlorine if not for the time required by sanitization.

**Inactivity**

For brief periods (less than 2 weeks): no particular warnings are to be considered if not to let the first litres of water flow.

For long periods (more than 2 weeks): close the inlet water line, switch off the pump (PLUS model), remove all the water inside the tank. Then re-open inlet water line, switch on the pump and proceed with **device starting**.

**Environmental protection information**



In compliance with art. 13 DL 151 dated. 25/07/2005 (directives 2002/95/CE, 2002/96/CE,2003/108/CE) please be aware that:

Electrical and electronic devices are not to be considered domestic waste

It is compulsory by law for the users to return said devices at the end of their life to appropriate disposal gathering centres. Barred waste can symbol on the product, manual and packing indicates the product as subject to this norm. Unlicensed disposing of the product by the user brings to the applications of administrative fines as per DL n° 151 dd 25/07/2005. By recycling, reutilizing and other utilize procedures of obsolete devices we help environmental protection.

**WARNING!** CE mark validity is subordinated to product's conditions and it's related installation, use and maintenance conditions reported on the manual. Any unauthorized modification voids the CE mark.

## 10 - WARRANTY

Reverse osmosis device model **ARO** is warranted for a period of 24 months, consumption materials (filters, membranes) and pump not included.

Warranty valid on components presenting noticeable manufacturing flaws and is applicable to parts and labour only if device is returned, pre-paid, to the authorized maintenance service centre.

Once repair works are carried out, the device will be sent back to the owner ex works and cash on delivery for works out of warranty.

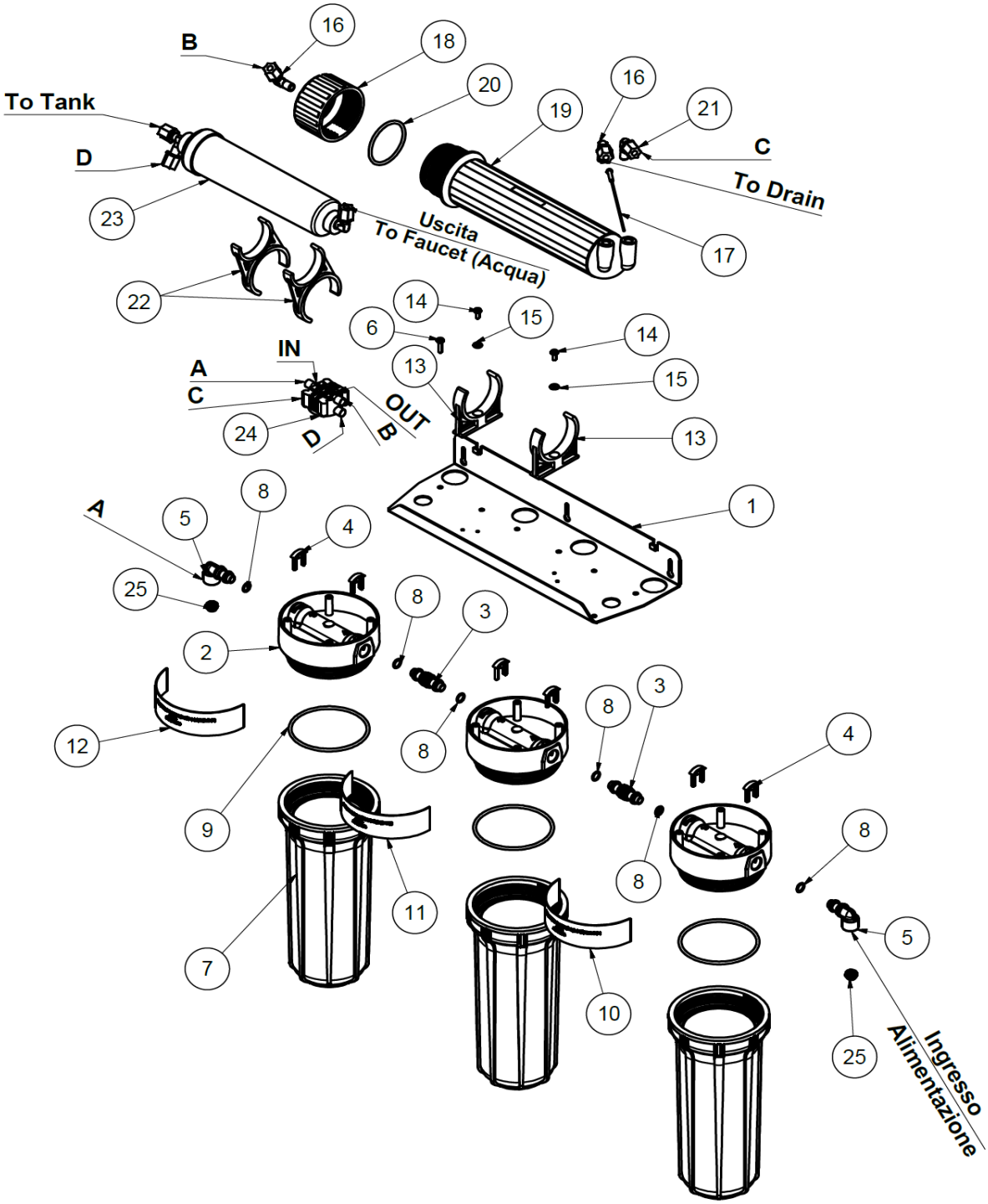
Maintenance service centre is the only one authorized to carry out operations on the device and to determinate if warranty norms have been violated. Maintenance service centre is not responsible of possible damages derived by the use of it's devices, whatever their nature is.

## 11 – SERVICE RECORD TABLE

| | |
|---|---|
| Model: | Serial Number: |
| Installation date: | |

| DATE | 1st STAGE | 2nd STAGE | 3rd STAGE | MEMBRANE | POST IN LINE | TDS (PPM) | FLOW-RATE |
|---|---|---|---|---|---|---|---|
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

# REVERSE OSMOSIS SYSTEM
# EXPLOSE
# ARO TRIPLEX



| PARTS LIST | | | |
|---|---|---|---|
| N° | CODE | DESCRIPTION | Q.TY |
| 1 | P9020180 | STAINLESS STEEL MOUNTING BRACKET | 1 |
| 2 | A6031330 | 1/4"AQUA WHITE FLAT CAP | 3 |
| 3 | A6012500 | BAYONET COUPLING CONNECTION | 2 |
| 4 | A6012210 | FORK QUICK LOCK | 6 |
| 5 | A6012570 | ELBOW FIT FORK FOR CARTRIDGE JG D.6 | 2 |
| 6 | ADSP6000818 | SCREW M4,2 X 19 UNI 6954 (AF - TCTC) INOX A2 | 12 |
| 7 | A6040060 | BOWL FP2 9" 3/4 (WHITE) | 3 |
| 8 | MG010990 | OR - REF. 109 - NBR | 6 |
| 9 | MG011370 | OR - REF. 4350 - NBRA70 - M.A. 0470 - | 3 |
| 10 | L0100210 | SHINY SILVER PVC STICKER mm.25x120 1 COLOR SILKSCREEN "5 MICRON" | 1 |
| 11 | L0100230 | SHINY SILVER PVC STICKER mm.25x120 1 COLOR SILKSCREEN "CARBON BLOCK" | 1 |
| 12 | L0100220 | SHINY SILVER PVC STICKER mm.25x120 1 COLOR SILKSCREEN "1 MICRON" | 1 |
| 13 | P9020070 | PLASTIC SINGLE MOUNTING CLIPS WHITE FOR MEMBRANE | 2 |
| 14 | ADSP6000736 | SCREW M4 X 10 UNI 7687 (TCTC) INOX A2 | 2 |
| 15 | ADSP6000805 | WASHER D.4 X 10,4 X 1 - INOX A2 | 2 |
| 16 | P9020190 | PLASTIC MALE ELBOW WHITE 1/8" MALE X 1/4" OD TUBE | 2 |
| 17 | P9020100 | LINEAR FLOW RESTRICTOR | 1 |
| 18 | S9010010 | VESSEL CAP | 1 |
| 19 | S9010040 | HOUSING VESSEL 1812 <AQUA SARONNO> WHITE | 1 |
| 20 | MG010260 | OR - REF. 4212 - NBR - | 1 |
| 21 | P9020090 | PLASTIC E-Z ELBOWS WITH CHECK VALVE | 1 |
| 22 | P9020080 | PLASTIC TWIN MOUNTING CLIPS FOR MEMBRANE | 2 |
| 23 | P9020060 | 10" IN-LINE FILTERS (GAC) 1/4 FNPT WHITE T COUPLING | 1 |
| 24 | P9020030 | SHUTOFF VALVE, 1/4" JACO NUT, MAX:125PSI | 1 |
| 25 | A6012770 | SHORT CARTRIDGE JG BLACK PLASTIC 6mm | 2 |

# ARO TRIPLEX