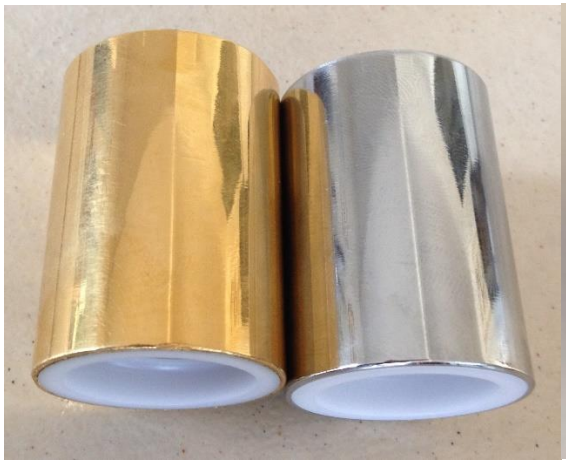
Installation of an In-line MEA Water Conditioner

Introduction

MEA (magnetic, energised and activated) water conditioning devices produce an indefinite or permanent negative charge in water and this is the natural state of water in pristine, flowing water systems. The unique MEA water conditioners were designed and manufactured in Australia by Resonate Research Pty Ltd (trading as **Phión**). The devices require **NO** maintenance once installed and will perform indefinitely. Any device that fails to perform to our specification can be replaced or returned with a refund.

Information about the science, measurements and testing results in the production of negatively charged water with the MEA water conditioning devices is detailed at http://www.meawater.com.au. This includes the health values of negatively charged water for soil, plants (food), animals and humans. Examples of the domestic Water Conditioning devices are illustrated below:

The *Apollo*: Bottle top devices (chrome and gold: 24 carats coated) and 2 bottles



The *Iris*: Under sink, sprinkler and shower unit (chrome)

The image below illustrates how to attach the ***Iris*** devices to a shower, an under-sink hose and a sprinkler.


Inline devices: ranging from ½", ¾", 1", 1 and ¼" and 2" for the inner copper pipe.

A ¾" device end fitting.

The devices are available in the following diameter dimensions and general applications:

1. Bottle top device (***Apollo***) is a screw-on attachment for in-door or household conditioning of water, wine, juices, milk and any other liquids of a similar water volume or viscosity. The device is fitted with neodymium magnets.
2. Under sink, shower or sprinkler devices **(*Iris***): Half inch (1/2") inner copper barrel with a ¾" male end fitting. The device is fitted with neodymium magnets. See images on page 2 for connection applications.
3. Inline device (***Rhea***): Half inch (½") inner bore (copper) with a ¾" male end fitting (see image on page 2) for portable or fitted hose or pipe applications. This device is mostly used on a

½" copper pipe connection to most urban houses, hot water systems, air conditioning units, garden hoses for watering the lawn, flower and vegetable gardens, and other plants. Also, this device is suitable for filling water containers for animal and human use. The device is fitted with ferrite magnets.

4. Inline device (***Athena***): Three quarter inch (¾") inner bore (copper) with a 1" male end fitting (see device image on page 2) for a 1" or 1 and ¼" plastic pipe or hose. This device is mostly used for domestic and light industrial water supply systems as an inline device. The device is fitted with ferrite magnets.
5. Inline device (***Proteus***): One inch (1") inner bore (copper) with 1 and ¼" male fitting for a 1 and ¼" pipe. This device is mainly used for light agriculture and industrial applications. The device is fitted with ferrite magnets.
6. Inline device (***Orion***): One and a quarter inch (1 ¼") inner bore (copper) with 1 and ½" male end fitting. This device is mostly used in agricultural or industrial applications and fixed inline to a 1 and ¼"and up to 2" pipes. The device is fitted with ferrite magnets.
7. Inline device (***Zeus***): Two inch (2") inner bore (copper) with 2" brass, male end fittings. This device is mostly used in agricultural or industrial applications and fixed inline to 2"and up to 3" pipes. The device is fitted with ferrite magnets.

Choosing a device

Generally, the choice of what device to install in-line on a pipe depends on the desired effect of treatment. For example, the Orion, 1 and ¼" device is considerably more powerful than the Athena, ¾" device, and the Zeus 2" device is considerably more powerful than the Orion, 1 and ¼" device. In this respect, the outcome (water charge or voltage value) is a function of the magnetic capacity to generate and hold a negative charge in water. That is, it might be expected that a ¾" device will generate a negative charge of say -440 mV and a 2" device will create a charge of -880 mV. This voltage is held indefinitely (and often increase with time) in the water, even during long periods of storage. Generally, the larger the flow and pressure through the pipe, the larger the device required.

The testing of these devices has shown that there is negligible or possibly no resistance in the device to water flow. Therefore, a ¾" device can be attached to a pipe with a diameter up to 1 and ¼" with little or no loss of water flow volume and pressure. There is also test evidence to show that water pressure increases at the outlet point when the device is employed.

Device dimensions: Inside Diameters (ID)

Device Name Inside diameter: ID (inches)	**Length mm**	**Weight**	**Outside Diameter mm**	**Thread size BSP**	**Minimal voltage (-) mV**
Bottle top ½" Apollo	50	130 gm	37	¾" (female)	-110 >
Under- sink/shower/tap/ sprinkler ½" Iris	60	214 gm	50	¾" (male and female ends)	-150 >
½" Rhea	245	1.2 Kg	50	¾" (male)	-250>
¾" Athena	400	3.3 Kg	60	1" (male)	-350>
1" Proteus	475	8.00 Kg	90	1 & ¼" (male)	-400>
1 & ¼" Orion	570	9.40 Kg	95	1 & ½" (male)	- 450>
2" Zeus	800	15.50 Kg	111	Reduced from 2 ¼" to 2" (male)	-550>

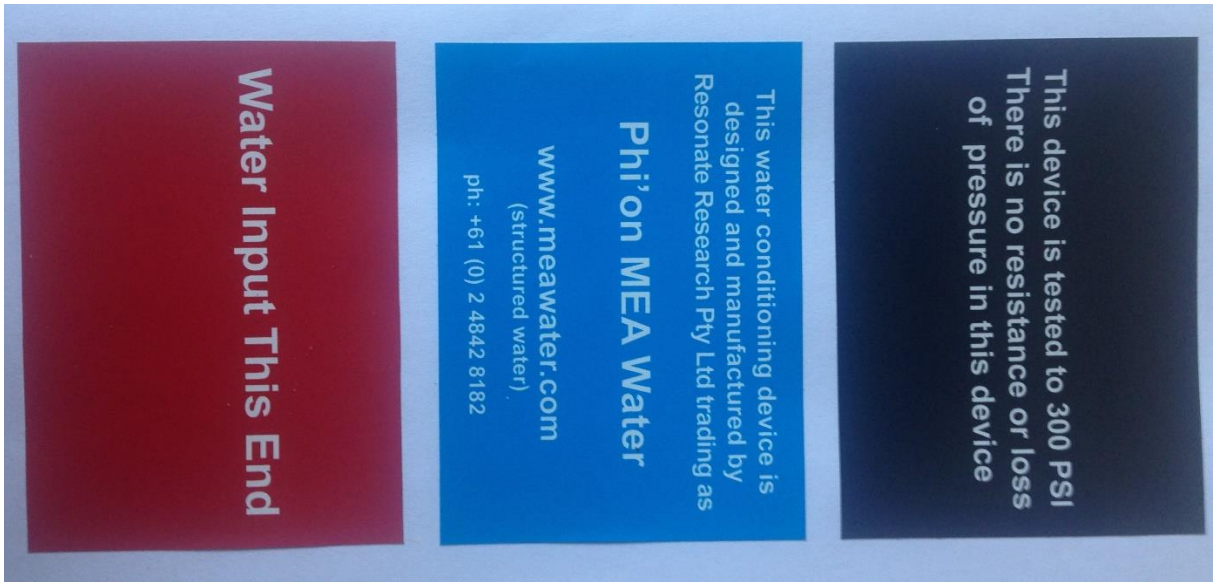
Note: all end threads are BSP (British Stand Pipe). Some countries (eg. USA) use a NPT (National Pipe Thread) and therefore a conversion fitting (from BSP to NPT) would have to be used for pipe connection. Phi'on can supply these conversion fittings, if required.

Therefore, the length of the inline devices needs to be considered in respect of its placement. There needs to be adequate space within the water pipe line for installation of the device and allowance for a straight run of water before the inlet end and after the outlet end of the device of at least 0.5m, but preferably 1m.

Inline Device Labels

Each inline device will have 3 labels:

1. A red input label that identifies the water input end. The input end has a positive charge and the output end has a negative charge and these charges are identified during testing of the device (see red label in photo below).
2. A blue label in the middle of the device that states the device has been tested to 300 psi (pounds per square inch). By way of comparison most urban (own/city) water pressure is about 110 psi.
3. A black label on the output end states that the device has been invented, designed and manufactured in Australia by Phión. Resonate Research Pty Ltd (a research branch of Phión), has an Innovation Patent (No 2016100017) granted by the Australian Government: IP Australia for the core IP and the claims (ie. the water holds a permanent negative charge) for MEA devices, along with 3 other Innovation Patents.



Installation

All devices (except the bottle top device) are installed in-line within a water supply pipe**. The ½", ¾", 1", 1 and ¼" and 2" in-line devices can be installed below ground or above ground.** The devices are manufactured to be watertight.

The device can be installed by a competent handyman or a plumber. A plumber could install the device in about 15-20 minutes. It is always best to check the proposed location or position for the device before proceeding. For example, it may be difficult to locate the inlet copper pipe for the

supply of water to a house, or there may be space restrictions for connection of the device. Sometimes, professional advice is required before proceeding with the choice or installation of a device. Ideally, this device should be installed at the time of new or upgraded water supply systems.

Once the device is chosen, the main requirement is the selection of the correct connection parts between the device and the pipe. All devices have male end fittings (see photographs on page 2). Device dimensions are on page 3.

Location of the device inline

The location of the device in relation to its final point (s) of application and its position within the line are critical to optimal performance. It is recommended that:

1. Allow at least 1-0.5 metres of straight water flow at the input end of the pipe. The inlet end of the device is marked with a label that identifies the positive (+) end of the device where water must enter.
2. Allow at least 1-0.5 metres of straight flow after the water exits the device at the output end. This space is required to allow the water to complete a vortex cycle and completely finalise or lock-in the negative voltage into the water. **Do not** place a tap on the outlet end or place a T pipe intersection within 0.5 metres of the outlet end.
3. The device should be kept at least 1-3 metres away from electrical motors due to potential electro-magnetic interference by motors close to the device.
4. The device can be installed in horizontal or vertical positions. A horizontal position would be the best option in most cases, if this is practicable.
5. The pipe should be checked for any leakages at the points of connection with the device before any infill of the device underground.

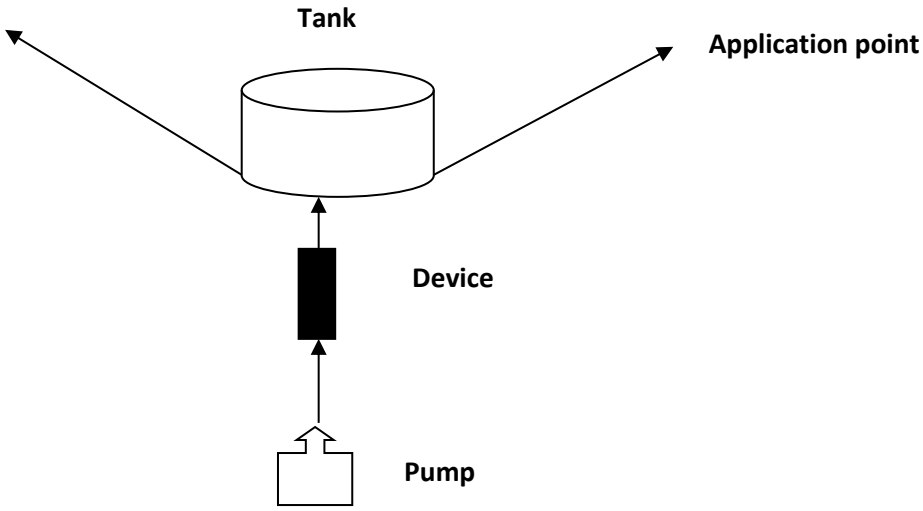
Allow at least 0.5 to 1 m distance of straight water flow before and after the device to ensure vortex activation before the input and finalisation of the negative charge at the output end.

Holding charged water permanently inline within the device

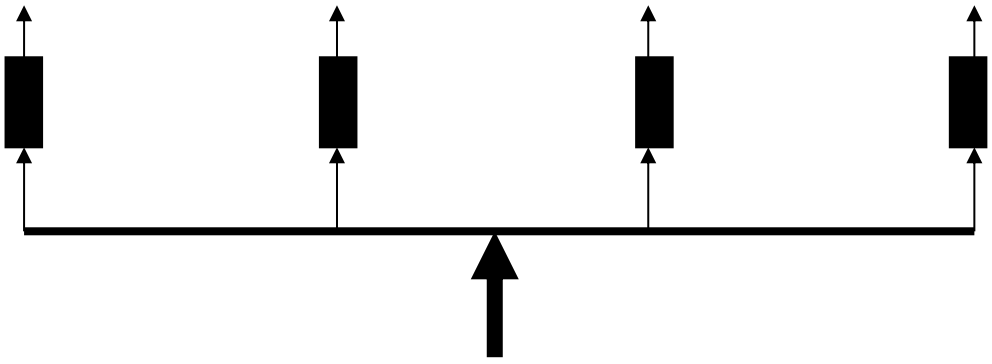
When the device is installed in a pipeline that is under constant pressure (eg. between a pump and a tap) then the device will be constantly holding charged water and will perform at maximum efficiency. However, if this is not the case and the device is installed, for example in a diversion line, that is not under constant pressure and holding water, then **ball valves** may be required at either end of the device as shown on page 6. During operation and when water flow is turned off, firstly close the ball valve at the output point and then at the input point before turning off the pump. The water in the device will then sustain the higher negative charge and it is then portable for connection to another water system.

Installation options for medium to large scale applications

There are several options for installation depending on the type of application and distance the treated or conditioned water travels before use or storage. A typical application is to install the device after it leaves a pumping point or a major distribution point and where the water flow is further diverted through outlets, or to a storage tank for diversion to several application points.



A **manifold** application may be required where large volumes of water are diverted through a pipe system, ie. devices in an array for the irrigation of fruit trees, plantations, water channels, etc.

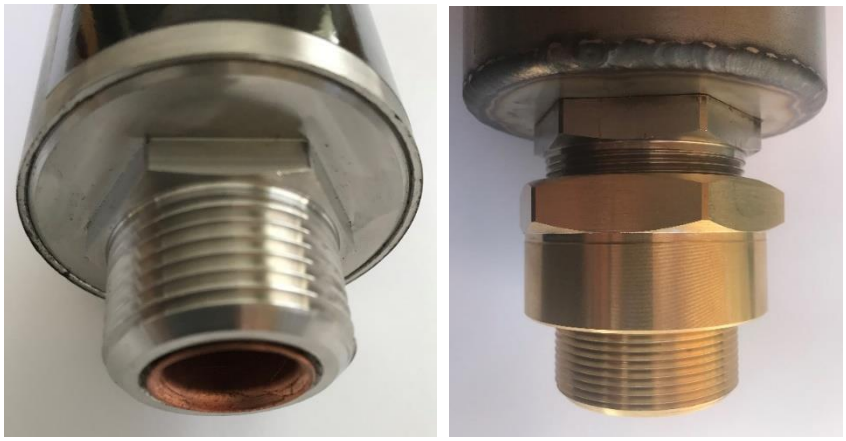


The ½" device (***Rhea***) can be used as an attachment to a tap and hose, as follows:

There are numerous configurations for connecting an inline device to a water system. The necessary connectors or adapters for the device can be obtained from a hardware store. The use of a ball value, in line and at the outlet (black label) end of the device allows for the structured water to be retained within the device and this sustains a higher negative charge for the next water flow. In the diagram above, the ball value has a fitting to allow for the hose to snap on (right of image), however the ball value may not be necessary in some cases .

Connection of a device to a pipe

When the device is buried in the ground, always check the device for leakages at connection points before covering over with soil. Also, mark the location of the device so that it can be either recovered, or not damaged in trenching works.



Always use plumber' s tape to seal a thread. In the case of the 2" unit (right image above) the unit is supplied with a brass end cap that converts the 2 and ¼" thread on the device to a 2" thread and this brass cap needs to be securely taped and tightened before connection to a pipe.

Conditions for performance

1. The device is installed with the water inlet at the end prescribed by the label (**Water input this end**) attached to the device.

2. The device is installed as close as possible to the application (usage) point.
3. Adequate straight water flow of 0.5-1m is provided before and after the device and no taps or T intersections are installed at the immediate outlet end of the device
4. The device is not subjected to close emissions of electro-magnetic energy (eg. pumps)
5. The device is not dropped or damaged in any way before and after installation.
6. The device is tested for leakages at connection points prior to operation
7. Water is always kept within the device when set in-line. Where a device is used in a mobile manner, the full activation (magnetic charge) of water flow within the device can take at least 5 minutes, and possibly longer depending on flow rates or pressure.

Additional notes

1. It may be observed after the installation of these devices that residues (eg. calcium or iron deposits) from inside water pipes will be released or discharged from the outlet end of the device
2. Water will become clearer and softer due to the separation from the treated (structured) water from the organic and other larger fractions (eg. salt, iron, calcium, etc.) that may be held (as colloids) within untreated water.
3. If you require your water to be tested for the negative charge, please send to Phi'on (PO Box 132, Braidwood NSW 2622) and 500ml water sample and the results will be emailed to you at no cost.

Additional technology for attachment to these in-line devices

A range of additional systems can be installed in line with the device. These systems are **not supplied** by Phión as a complete unit with the device:

1. Venturi for pre-treatment (aeration) of the water before the the input end of a device
2. A fertigation system to input biological formulations or nutrients into the water prior to conditioning in the device. See the image on the next page (8) of a venturi and fertigation input system for a suggested configuration.

Other technology options on request to Phión

MEA water inline devices take on a positive and negative end once manufactured. All inline devices are tested by Phi'on to identify the charge at each end, and then the device is labelled, as described above. This involves pumping water through the device to create the charge. The measurement system illustrated below can be built and supplied by Phi'on to a client where the device requires regular measurement or validation (eg. in a commercial bottling plant). The image below is a water device connected to a voltage measurement system.

The measurement system involves a **voltmeter and UCurrent device**. The determination of charge measurement involves attachment of the **positive charge of a UCurrent unit to the water input end** and **negative charge to the water output end**. When a negative charge is achieved in the voltmeter, this **positive end connection** determines the **water input end** of the device. The device may have to be switched in direction to achieve the negative charge in the voltmeter, and therefore a hose connector is on each end of the probe units. The image below shows the full charge measurement system connection to a voltmeter, via a UCurrent device. The input of the UCurrent device is connected to the water device and the output of the UCurrent device is connected to the voltmeter.

The individual components of the inline device voltage measurement system are as follows:

Additional scientific and technical information

Further information is available from a series of papers at:
http://www.meawater.com.au
Other information can be obtained from Robert Gourlay: rob@phion.com.au, or 02-48428182 (Office), 0418 462 443 (Robert)