

Euro-Clear Kft.

Water purification and treatment equipment manufacturer and wholesale distributor
Tel: +36 96 544-240 • E-mail: contact@euro-clear.eu • Web: www.euro-clear.eu

MECHANIC GUIDE

ARSENIC REMOVAL EQUIPMENT WITH EVERZIT MEDIA

BlueSoft 1044-AS

BlueSoft 1354-AS

BlueSoft 1465-AS

Before using the device, please read carefully the whole guide for use and handling.

Euro-Clear Kft.

Water purification and treatment equipment manufacturer and wholesale distributor

Tel: +36 96 544-240 • E-mail: contact@euro-clear.eu • Web: www.euro-clear.eu

TABLE OF CONTENTS

1. Definition and function of the device.
2. Technical parameters of the device.
3. Main parts of the device.
4. The way the device works.
5. Installation and setting up of the device.
6. Instruction about handling.
7. Process of measuring water hardness.
8. Warranty, guarantee.

Data sheet for setting up

Warranty document

Quality Certificate

Euro-Clear Kft.

Water purification and treatment equipment manufacturer and wholesale distributor
Tel: +36 96 544-240 • E-mail: contact@euro-clear.eu • Web: www.euro-clear.eu

1. DEFINITION AND FUNCTION OF THE DEVICES

1.1. The device is a column filled with a special filtrating material of excellent quality, which transforms the iron ions (Fe^{++}) and manganese ions (Mn^{+}) dissolved in the water to be treated to Fe^{+++} and Mn^{++} compounds which cannot be dissolved in water. The residual that gets separated this way is held back on its surface. This residual can be easily washed by counterflow.

1.2. During its natural circulation, water dissolves numerous natural and artificial material. As iron is one of the elements which can be found the most frequently in minerals and in the soil, you can find dissolved iron in some extent in most of the natural waters. The presence of the dissolved iron in water causes different problems while using up water. So, for example, even in case of a concentration of 0,2 ppm Fe and 0,05 ppm Mn, there will be some deposit and discoloration on objects, which, apart from damages related to corrosion, will cause important esthetic damages as well. What is more, in case of a bit higher concentration, apart from the above mentioned damages, water will taste metallic, so the water will lose some of its physiological value. The device to remove iron stops iron and manganese deposit. Removing iron and manganese thrives on the fact that by using the oxygen dissolved in water, the device transforms the dissolved iron compounds into undissolvable iron compounds by means of the special filtrating charge.

Part number	GEH liter	Valve / Connection	Flow m ³ /h	Surface to filter m ²	Backwash volume	Weight kg	Size (mm) H x W x L
BlueSoft 1044AS-RX	30	RX-67C-DTF 1"	0.7-1.5	0.05	0.9m ³ /h	43	1340 x 270 x 300
BlueSoft 1354AS-RX	60	RX-67C-DTF 1"	1.2-2.0	0.08	1.6m ³ /h	79	1610 x 340 x 340
BlueSoft 1465AS-RX	90	RX-67C-DTF 1"	1.5-2.5	0.1	2.2m ³ /h	99	1890 x 370 x 370

2. TECHNICAL PARAMETERS OF THE DEVICES

Min. pressure during operation	: 2,5	bars
Max. pressure during operation	: 6	bars
Min. temperature during operation	: 4	C°
Max. temperature during operation	: 25	C°
Electrical connection	: 230 V, 50 Hz	

You always have to let an expert decide the size of the iron and manganese remover. Depending on the quality of the raw water, the removal of the iron and manganese and the operation parameters of the devices can change a lot compared to the parameters given above.

3. THE MAIN PARTS OF THE DEVICE

The iron and manganese remover mainly consists of the following parts:

3.1. Tank to filter

It is meant to store the catalytic charge. The columns are PE pressure tanks developed especially for treating water with polyethylene padding. Outside they have epoxy resin coat rolled by fibre.

Their features are that they last long, have little weight and resist to chemicals and corrosion.

3.2. Charge to remove iron

It is meant to put into effect the device's basic chemical processes on the charge bed.

Due to its chemical activity, Iron (III) hydroxide oxide $\text{FeO}(\text{OH})$ is ideally suitable to bind arsenic and other heavy metals in water.

However, the technical application of this universal adsorbent failed in the past due to the fact that iron oxide is usually only available as a paste so that the complicated handling procedure prevented its use in filter columns.

Today, a special process allows the production of iron hydroxide in a granular shape. Moreover, different grain sizes can be produced by grinding and sieving thus leading to many new different fields of application for iron (III) hydroxide.

Due to this important point, various fields of application for the chemical compound EVERZIT® As are arising.

3.2.1. Features of the charge of EVERZIT filter media

Type	: EVERZIT
Color	: reddish brown
Density	: 1,91 g/cm ³
Grain size	: 0,5 – 2,0 mm / 2,0 – 4,0 mm

Technical prerequisites for EVERZIT filled adsorber units

Granular iron hydroxide is used in fixed bed adsorber equipment to remove arsenic and other toxic and undesirable elements. An essential prerequisite for the effective removal of toxic substances is the uniform flow of the adsorber bed. Even flow of the adsorber bed can be ensured by design measures on the adsorber and by rinsing the adsorber at a maximum frequency of 4 weeks.

Design measures required for proper adsorber equipment:

- Installation with nozzle bottom and filter nozzles or nozzle groups
- Installation of a support layer with a height of 200-300 mm. A filter gravel with a particle size of 2.0 to 3.15 mm must be used. The gap width of the filter nozzles must be adjusted to this size.
- Raw water must be dispensed evenly on a distributor or funnel or with a comparable design.
- The adsorber must be rinsable with water. The rinsing water must be introduced to achieve a rinsing water speed of at least 26 m/h and the sludge must be drained. The sizing of the sludge water line must be scaled for this.
- For equipment with multiple absorbers, all absorbers must be flushed separately.

Euro-Clear Kft.

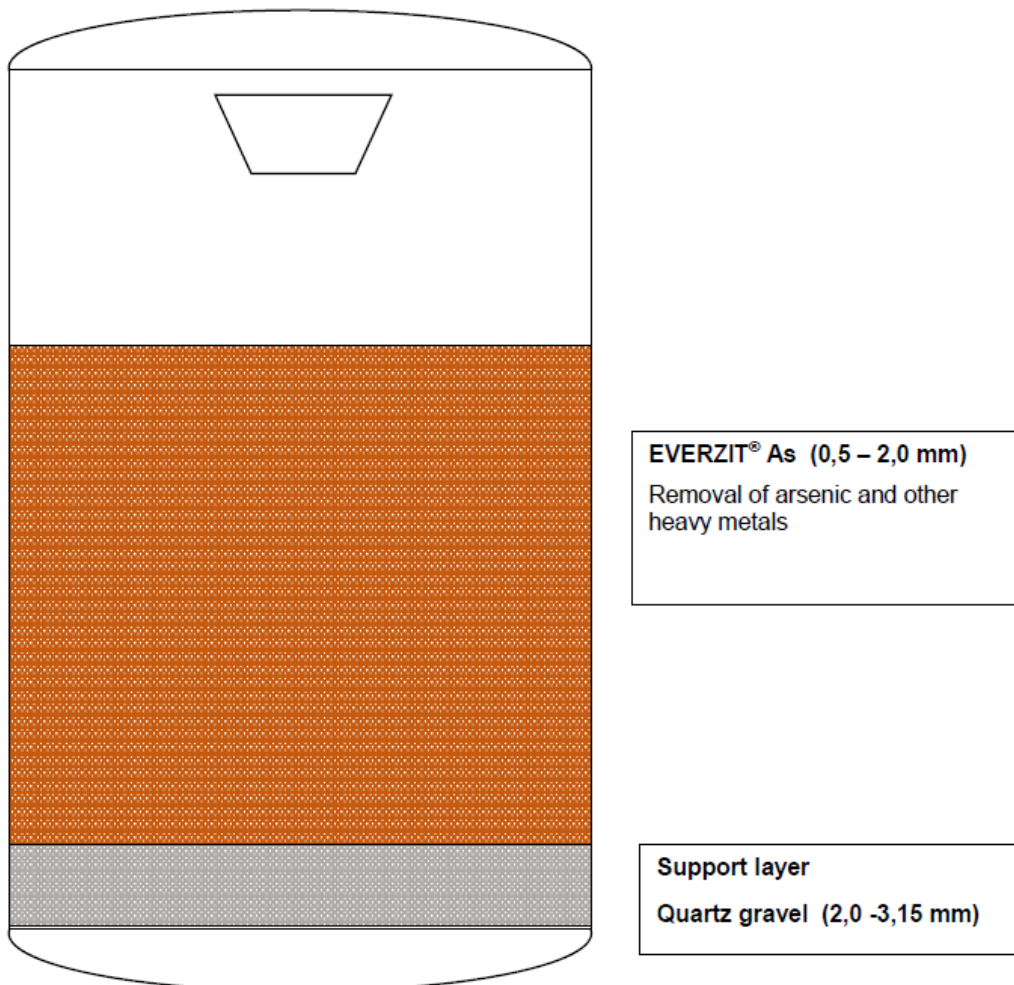
Water purification and treatment equipment manufacturer and wholesale distributor

Tel: +36 96 544-240 • E-mail: contact@euro-clear.eu • Web: www.euro-clear.eu

The starting up of the adsorber unit consists of the following operations:

- 1.) Intake of EVERZIT granular iron hydroxide
- 2.) Flushing during installation
- 3.) Disinfection after installation
- 4.) Flushing before operation

These operations should always be performed when replacing the adsorber material. Disinfection after installation and the associated pre-operation rinsing must be carried out if the equipment is intended for the preparation of drinking water or for the production of water intended for use with increased hygiene requirements. The operations according to points 3 and 4 may be omitted in all other cases and the EVERZIT adsorber unit can be put into operation after rinsing during installation.



3.3. Blocked valve to regenerate

It is meant to make sure that the mechanical operational processes of the device are completed in a programmed, regulated way.

Its parameters are given in the annex.

4. OPERATION OF THE DEVICE

4.1. TYPES OF IRON THAT CAN OCCUR

Iron can be found in three forms in the nature (Fe; Fe⁺⁺; Fe⁺⁺⁺). Manganese can have 2 forms in the nature (Mn⁺; Mn⁺⁺). You can find it in most of volcanic stones, usually in sandstone, in different kinds of clay, and, in smaller extent, it is also part of carbonate stones. It is important to know in which forms the iron and manganese to remove can be found, so that you can apply the most economical iron and/or manganese remover system.

4.2. DESCRIPTION OF THE OPERATION, ITS THEORETICAL BASES

The charges of the removers are usually natural minerals, their main component is the manganese dioxide. They have been used for more than 75 years in water treatment. Catalytic filtering materials to remove iron reduce the water's iron, manganese and hydrogen sulphide content. They function as a catalyst and remain unchanged.

The iron removers' charges work as follows: H₂S, iron and manganese oxidize and get stuck on the filtering material. The filtering material can get cleaned by a simple backwash. You do not need to dose any chemical, so nothing is going into the drinking water. The iron removers' charges have a big capacity even when the pollution has got low concentration.

In order to ensure the adequate bed expansion and long life, it is very important to backwash the iron removers' filter properly as the density is quite big.

In most cases, dissolved iron in water is usually Fe⁺⁺. If there is oxygen, in adequate conditions Fe⁺⁺ can easily get transformed into Fe⁺⁺⁺. (Fe(OH)₃) This is iron-hydroxide, which gets separated in the form of flaky, red-brown residual and it gets dissolved in water in a very low extent. Dissolved manganese in water can usually be found in Mn⁺ condition. If there is oxygen, in adequate conditions, Mn⁺ can quickly get transformed into Mn⁺⁺. (Mn(OH)₂). This is manganese-hydroxide, which gets separated in the form of flaky, blackish-brown residual and gets dissolved in water in a very low extent. The charge is manganese dioxide on a silicon-dioxide carrier and it is the catalyzer of the oxidation process. The whole system can be considered as an oxidizing filter. The manganese dioxide catalyzer increases the reaction speed between the dissolved oxygen and the Fe⁺⁺ or the Mn⁺, and it filters out the generated residual. During the filtration process, the charge bed gets saturated with iron residual and after that it needs to be backwashed.

4.3. MECHANICAL OPERATION OF THE DEVICE

While the device is operating, the mechanical operation of the blocked valve ensures the automatic performance of the water production and regeneration processes.

4.3.1. WATER PRODUCTION

During water production, the water gets into the column through the upper filter and it flows through the charge to remove iron from up to down while the divalent iron ions get oxidized and filtrated. The iron free water gets out of the device through the lower filter.

4.3.2. BACKWASH

During backwash the water gets into the column through the lower filter and it flows through the charge from down to up. Meanwhile, the filtrating charge gets stirred up and the iron residual gets removed. The water for backwash gets out into the channel through the drain.

4.3.3. DOWNFLOW WASHING

During the downflow washing the water gets into the upper filter into the column to store charge and it flows through the charge from up to down. It goes into the channel through the drain. During the downflow washing the recompression of the filtrating charge that has been stirred up is done.

4.4. DETAILED DESCRIPTION OF THE OPERATION CONTROL

The automatic blocked valve is solely time controlled during the operation and all the other working processes. There is an electronic clock for metering time. Apart from metering time, this clock gets the mechanism of the blocked valve to work. The control unit has been programmed during production, the time for backwash is 2 o'clock at night. The backwash lasts for ~20 minutes. The frequency of backwash can be programmed between 1-99 days, depending on the system's needs.

5. INSTALLATION AND SETTING-UP OF THE DEVICE

5.1. CONDITIONS OF INSTALLATION:

A room with flat, horizontal and hard flooring is needed for the installation of the device. The flooring and the direct surroundings of the device must resist to the corrosive effect of the brine. The device must be installed in a room the temperature of which is between +5°C to +40°C. The temperature of the raw water to be treated must not exceed +30 °C. The device must not be installed in a strongly damp or dusty room. It must be protected from frost, radiant heat and ultraviolet radiance.

Euro-Clear Kft.

Water purification and treatment equipment manufacturer and wholesale distributor

Tel: +36 96 544-240 • E-mail: contact@euro-clear.eu • Web: www.euro-clear.eu

Near the device, sewage connection and 230 V 50 Hz grounded, electric socket must be provided. In order to diminish risks, we advise to install the device into a room provided with floor drainage.

Below water pressure of 2,5 bars, proper regeneration is not guaranteed, so in this case we advise to build in a device to increase pressure.

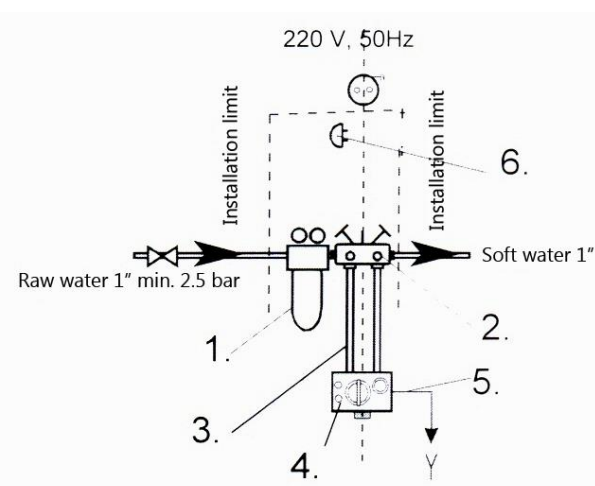
In case the water pressure from the water system exceeds 6 bars, a device to decrease pressure has to be fixed in front of the device.

Fluctuation of pressure higher than $\pm 0,5$ bar is not allowed! Mechanical protective filter must be built in front of the device. It is important that the mechanical protective filter filtrates contamination bigger than 100 microns.

The device does not have any extra protection against water or electricity shortage. If needed, it must be provided while installing.

5.2. CONNECTING THE DEVICE (it is the customer's/owner's job)

It is the customer's task to have the device connected to the water, sewage and electricity systems. The operator of the device and the specialist to complete the installation should both check if the device has been installed as described in the guide for use and handling and if the conditions to diminish risks of damage are given. The setting up of the device can be completed by the partner of the Euro-Clear Hungary Ltd's service that has a partnership contract. Setting up the device only means the setting up of the automatical control valve fulfilling the local conditions.



When fitting, the valid local regulations, general instructions and hygiene regulations must be followed and the technical parameters given above must be respected.

1. Pre-filtering device
2. Montage block or a built by-pass branch
3. Flexible tube pair
4. Control valve of the device
5. Sewage drainage
6. Electrical outlet
7. Gravitation drainage on the floor

The pre-filtering device No. 1 and the montageblock No. 2 are already fitted in when the customer gets them. The montageblock can be replaced by a by-pass branch built from 3 valves. When building in this unit into the pipe, make sure that you connect the raw water onto the filter „1” and the softened water that comes out has to be connected onto the montageblock „2”.

Euro-Clear Kft.

Water purification and treatment equipment manufacturer and wholesale distributor
Tel: +36 96 544-240 • E-mail: contact@euro-clear.eu • Web: www.euro-clear.eu

The device and the montageblock can be connected by the flexible tube pair No. 3. When connecting, pay attention to the flow direction of the water which is marked by the arrows at the montageblock No 2 and the control valve No 4.

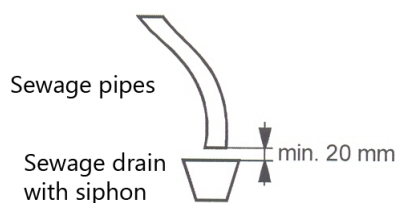
There is a hose outlet on the control valve No 4, which is the drain of the device. The water that comes out has to be led into the sewage canal. This job can be completed by the plastic hose No 5. The hose must be pressure resistant as a simple garden hose breaks after a while and the narrow diameter can stop the completion of the regeneration. The sewage water comes out of the device under pressure, but it must be led by free outlet.

An electric plug underlaid of 230 V, 50 Hz must be built within a distance from the device that allows the completion of the connection of the prong plug number 6 without the electric cable's getting tight.

During backwash, water comes out from the pre-filtering device No 1. It is advised to connect the sewage connection snag into the drain. In this case the sewage water will come out under pressure, too.

The drain of the device has to be connected to the outlet points respecting the rules below.

- Respecting DIN 1988, the tube of the rinsing water and the overflow tube must be fixed at the sewage water connection point, at least at a distance of 20 mm compared to the highest sewage water level, so that the water can get out of the device smoothly.



Euro-Clear Kft.

Water purification and treatment equipment manufacturer and wholesale distributor

Tel: +36 96 544-240 • E-mail: contact@euro-clear.eu • Web: www.euro-clear.eu

5.3.SETTING UP OF THE DEVICE

After the jobs mentioned in point 5.2 have been completed, you have to order the setting up of the machine from Euro-Clear Hungary Ltd at one of the contact details below:

Fax: +3696 / 544-248
Mailing address: 9071 Gönyű, Kossuth L. út 65/A
Email address: sales@euro-clear.eu
Web address: www.euro-clear.eu

After the device has been set up, the copy of the warranty document filled in by the person having completed the setting up has to be sent to the address above in a verifiable way.

The fee of the setting up jobs gets calculated on the basis of the actual price list.

6. INSTRUCTIONS FOR HANDLING

The device is operated automatically, it does not need a permanent operator or inspection. Before or after a longer (for example 1 week long) outage, start the manual regeneration, cleaning process, and make sure that the device starts its operation under complete capacity.

1./ Check daily

- the iron and manganese content of the incoming water, and note it into the operation diary.

2./ Check daily the pressure of the incoming water on the pressure gauge. In case the pressure decreases by more than 0,5 bars, clean the pre-filter.

3./ Dust the device with a dry cloth every two weeks.

4./The pre-filtering device must be rinsed back depending on the extent of the contamination but at least once a week. It must be done with the sewage water drain tap that you can find on the bottom of the device. Rinsing back must last for at least 15-20 seconds.

5./ Make sure that the device keeps getting 230 V, 50 Hz electricity all the time, for 24 hours and it is under system pressure continuously.

Euro-Clear Kft.

Water purification and treatment equipment manufacturer and wholesale distributor

Tel: +36 96 544-240 • E-mail: contact@euro-clear.eu • Web: www.euro-clear.eu

7.WARRANTY, GUARANTEE

In case of non-performance by the producer, the owner of the device can benefit from all warranty rights in 306-309. § in the Civil Code.

The owner of the device can claim for warranty and guarantee only by showing both the receipt that has been received when buying the device and that proves the payment of the complete price and the warranty document that has been filled in.

Warranty and guarantee do not cover faults that have been caused by the following:

- The product has not been used properly, the instructions of the way of handling, using, installing or maintaining etc. have not been respected
- The operation diary has not been kept
- the necessary corrective maintenance has not been completed, or has not been done by the designated professional servicing company,
- the product's nature has been transformed, changed
- the owner of the device has not completed their liability of reducing risks of damage

Warranty and guarantee claims can be validated only in case the operator of the device sends to the producer both pages of the operation data sheet filled in and signed by the professional mechanic in charge of setting up of the device. It must be sent in a provable way.

Please send back to the address below both pages of the data sheet of setting up that have been filled in and signed:

Euro-Clear Hungary Ltd.

Mailing address: 9071 Gönyű, Kossuth Lajos út 65/A

E-mail: sales@euro-clear.eu

Fax: +36 96 / 544 248

Euro-Clear Kft.

Water purification and treatment equipment manufacturer and wholesale distributor
Tel: +36 96 544-240 • E-mail: contact@euro-clear.eu • Web: www.euro-clear.eu

DATA SHEET FOR SETTING UP

Name of the specialist to complete setting up:

Contact details of the specialist completing the setting up:

- Mailing address:
- Telephone number:
- E-mail address:

Name of the company having sold the device:

Contact details of the company having sold the device

- Mailing address:
- Telephone number:
- E-mail address:

Name of the operator of the device:

Contact details of the operator of the device

- Mailing address:
- Telephone number:
- E-mail address:

Type of the device that has been set up: BlueSoft

Date of setting up:

.....
signature, stamp

Warranty and guarantee are only valid in case the setting up has been completed by Euro-Clear Hungary Ltd or its agent. You can order the setting up of the device at the contact details mentioned below.

Euro-Clear Hungary Ltd.
9071 Gönyű, Kossuth Lajos út 65/A
Tel: +3696/544-240
Fax: +3696/544-248
Mail: sales@euro-clear.eu

Euro-Clear Kft.

Water purification and treatment equipment manufacturer and wholesale distributor

Tel: +36 96 544-240 • E-mail: contact@euro-clear.eu • Web: www.euro-clear.eu

Data sheet for setting up

- Yes
1. Check the mechanical and electricity connections as follows:
 - 1.1. Is a mechanical protection filter built in front of the device?
 - 1.2. Is the pressure of the raw water convenient? (2,5 – 6 bars)
 - 1.3. Are the directions of water flow convenient? (on the montage block, on the device)
 - 1.4. Is the rinsing water outlet of the device connected into the channel?
 - 1.5. Is the electricity input right? (230V, 50HZ)

 2. Program the control head of the filtrating device
 - 2.1. Have the exact date and time been set?
 - 2.2. Setting the time for regeneration
 - 2.2.1. In case the device is time controlled, has the time between the two washings been set up?
If yes, it isdays
 - 2.3. Setting washing times (advanced settings)
 - 2.3.1. Backwash (Backwash) Has the time been set up?
 - 2.3.2. Rinse (Rinse) Has the time been set up?

 3. Starting manual wash, checking operation cycles:
 - 3.1. Backwash (water comes intensively into the channel).
Is everything all right with the operation cycle?
After washing, is the water that comes out into the channel clean?
 - 3.2. Post washing (bigger volume water into the channel)
After washing, is the water that comes out into the channel clean?
 - 3.3. Repeat points 3.1. and 3.2. several times in a row as long as the outcoming water into the channel gets clear.
Has the charge got clean?
How often did you have to repeat points 3.1. and 3.2. ?

 4. After regenerating, check the iron and manganese content of the water that comes out from the device.
Iron content:mg/l
Manganese content:mg/l
- In case the iron content of the water gets checked in laboratory, attach the copy of the measurement report.
5. Train the staff that handle the device.
 6. Filling in the warranty document
 7. Sending back the data sheet of setting up filled in and signed (terms of warranty) to the address below.

Euro-Clear Kft.

Water purification and treatment equipment manufacturer and wholesale distributor
Tel: +36 96 544-240 • E-mail: contact@euro-clear.eu • Web: www.euro-clear.eu

WARRANTY DOCUMENT

Type : BlueSoft

Producer : Euro-Clear Hungary Ltd.

In case the device is properly used, the producer undertakes a warranty of 12 months starting from the setting up, but maximum 18 months starting from the date of issuing the quality certificate. In case the interval between the issuing of the quality certificate and the setting up is longer than 6 months, the warranty of 12 months that starts from the setting up is only possible if the operator of the device orders the setting up from the producer in written. In this case, the producer will send a person to complete the setting up that has a partnership contract of servicing for completing the setting up.

DATE OF SETTING UP:

.....

.....
signature, stamp

Warranty and guarantee are only valid in case the setting up has been completed by Euro-Clear Hungary Ltd. or its agent. You can order the setting up of the device at the details mentioned below.

Euro-Clear Hungary Ltd
9071 Gönyű, Kossuth Lajos út 65/A
Tel: +3696/544-240
Fax: +3696/544-248
sales@euro-clear.eu

Euro-Clear Kft.

Water purification and treatment equipment manufacturer and wholesale distributor
Tel: +36 96 544-240 • E-mail: contact@euro-clear.eu • Web: www.euro-clear.eu

QUALITY CERTIFICATE

1. Quality Certificate issued by: Euro-Clear Hungary Ltd.		2. Producer: Euro-Clear Hungary Ltd.	
3. Punctual name of the product (its function): Automatical iron and manganese remover Type: BlueSoft			
4. Quantity 1	5. Weight and (or) size:	6. Date of production:	
7. Can be sold (used)		8. Identifying product a./ Control head number: b./ ITJ-number: 36-10 c./ Part number: d./ Other identifying details:	
9. Delivery and storage regulations: It can be stored and delivered only in standing position.		10. Wrapping Cardboard.	
11. Features of product (with punctual technical details, measurement results): Volume flow:m3/h Volume of charge :litre Quality and classifying: Convenient!			
12. Method of inspection for checking the quality of the product: During production			
13. Regulations for use and handling: As mentioned in the guide for use and handling			
14. Other details:		15. Signature of the person to issue the quality certificate: Gönyű, 20..... signature, stamp	