Water purification and treatment equipment manufacturer and wholesale distributor

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# **MECHANIC GUIDE**

# INDUSTRIAL IRON AND MANGANESE REMOVER EQUIPMENTS WITH DIFFERENT CATALYTIC CHARGES

With BIRM filter media	With Pyrolox Advantage filter media	With GreenSand filter media
BlueSoft 1035BT	BlueSoft 1035PA	BlueSoft 1054GT /GTS
BlueSoft 1054BT	BlueSoft 1054PA	BlueSoft 1354GT /GTS
BlueSoft 1354BT	BlueSoft 1354PA	BlueSoft 1465GT /GTS
BlueSoft 1465BT	BlueSoft 1465PA	BlueSoft 1665GT /GTS
BlueSoft 1665BT	BlueSoft 1665PA	BlueSoft 1865GT /GTS
BlueSoft 1865BT	BlueSoft 1865PA	BlueSoft 2162GT /GTS
BlueSoft 2162BT	BlueSoft 2162PA	BlueSoft 2472GT
BlueSoft 2472BT	BlueSoft 2472PA	BlueSoft 3072GT
BlueSoft 3072BT	BlueSoft 3072PA	BlueSoft 3672GT
BlueSoft 3672BT	BlueSoft 3672PA	BlueSoft 4272GT
BlueSoft 4272BT	BlueSoft 4272PA	BlueSoft 4872GT
BlueSoft 4872BT	BlueSoft 4872PA	

Before using the equipment, please read the whole guide carefully!

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#### 1. DEFINITION AND FUNCTION

- 1.1. The equipment 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 if its physiological value. The equipment to remove iron stops iron and manganese deposit. Removing iron and manganes thrives on the fact that by using the oxygen dissolved in water, the equipment transforms the dissolved iron compounds into undissolvable iron compounds by means of the special filtrating charge.

#### 2. TECHNICAL PARAMETERS

#### Iron remover with Birm charge

Part number	Birm liter	Control valve/ Connection	Flow m³/h	Surface to filter m2	Backwash volume	Weight kg	Size (mm) H x W x L
BlueSoft 1035BT/56	24	RX-56F-MHF 1"	0.4-0.8	0.05	1.5 m³/h	37	1250 x 270 x 270
BlueSoft 1054BT/67	43	RX-67C-DTF 1"	0.5-1.0	0.05	1.5 m³/h	59	1600 x 270 x 270
BlueSoft 1354BT/67	71	RX-67C-DTF 1"	0.8-1.6	0.08	2.4 m³/h	83	1610 x 350 x 350
BlueSoft 1465BT/67	85	RX-67C-DTF 1"	1.0-2.0	0.1	3.0 m³/h	110	1890 x 370 x 370
BlueSoft 1665BT/67	114	RX-67C-DTF 1"	1.3-2.6	0.13	3.9 m³/h	140	1920 x 420 x 420
BlueSoft 1865BT/75	170	RX-75A-DTF 2"	1.8-3.6	0.18	5.4 m³/h	180	1940 x 500 x 500
BlueSoft 2162BT/75	198	RX-75A-DTF 2"	2.2-4.4	0.22	6.6 m³/h	250	1980 x 560 x 560
BlueSoft 2472BT/75	255	RX-75A-DTF 2"	2.8-5.6	0.28	8.4m³/h	330	2170 x 620 x 620

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BlueSoft 3072BT/111	396	RX-111A-DTF 2"	4.4-8.8	0.44	12,0 m³/h	560	2490 x 770 x 770
BlueSoft 3672BT/111	566	RX-111A-DTF 2"	6.4-12.8	0.64	16,0 m³/h	860	2700 x 940 x 940
BlueSoft 4272BT/111	792	RX-111A-DTF 2"	8.8-17.6	0.88	22,0 m³/h	1170	2700 x 1200 x 1200
BlueSoft 4872BT/111	991	RX-111A-DTF 2"	11.2-22.4	1.12	28,0 m³/h	1540	2700 x 1400 x 1400

### Iron remover with Pyrolox charge

Part number	Pyrolox Advantage liter	Control valve/	Flow m³/h	Surface to filter m2	Backwash volume	Weight kg	Size (mm) H x W x L
BlueSoft 1035PA/56	13,6 (1 bag)	RX-56F-MHF 1"	0.4-0.8	0.05	1,75 m³/h	75	1250 x 270 x 270
BlueSoft 1054PA/67	20,4 (1,5 bag)	RX-67C-DTF 1"	0.5-1.0	0.05	1,75 m³/h	88	1600 x 270 x 270
BlueSoft 1354PA/67	34 (2,5 bag)	RX-67C-DTF 1"	0.8-1.6	0.08	2.8 m³/h	140	1610 x 350 x 350
BlueSoft 1465PA/67	40,8 (3 bag)	RX-67C-DTF 1"	1.0-2.0	0.1	3,5 m³/h	170	1890 x 370 x 370
BlueSoft 1665PA/67	54,4 (4 bag)	RX-67C-DTF 1"	1.3-2.6	0.13	4,55 m³/h	210	1930 x 420 x 420
BlueSoft 1865PA/75	68 (5 bag)	RX-75A-DTF 2"	1.8-3.6	0.18	6,3 m³/h	280	1980 x 500 x 500
BlueSoft 2162PA/75	81,6 (6 bag)	RX-75A-DTF 2"	2.2-4.4	0.22	7,7m³/h	380	2080 x 560 x 560
BlueSoft 2472PA/75	108,8 (8 bag)	RX-75A-DTF 2"	2.8-5.6	0.28	9,8 m³/h	500	2170 x 620 x 620
BlueSoft 3072PA/111	176,8 (13 bag)	RX-111A- DTF 2"	4.4-8.8	0.44	15.4 m³/h	820	2490 x 700 x 700
BlueSoft 3672PA/111	244,8 (18 bag)	RX-111A- DTF 2"	6.4- 12.8	0.64	22.4 m³/h	1240	2500 x 940 x 940
BlueSoft 4272PA/112	353,6 (26 bag)	RX-112SM- DTF 2,5"	8,8- 17,6	0,88	30,8 m³/h	1680	2530 x 1210 x 1070
BlueSoft 4872PA/112	435,2 (32 bag)	RX-112SM- DTF 2,5"	11,2- 22,4	1,12	39,2 m³/h	2270	2530 x 1210 x 1070

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#### Iron remover with Green sand charge

Part number	Green sand liter	Control valve/ Connection	Flow m³/h	Surface to filter m2	Backwash volume	Volume of the tank to solve	Weight kg	Size (mm) H x W x L
BlueSoft 1054GTS/63	43	RX-63A-DTS 1"	0.5-1.0	0.05	1.5 m³/h	25 Liter	90	1600 x 270 x 500
BlueSoft 1354GTS/63	71	RX-63A-DTS 1"	0.8-1.6	0.08	2.4 m³/h	25 Liter	140	1610 x 350 x 580
BlueSoft 1465GTS/74	85	RX-74A-DTS 2"	1.0-2.0	0.1	3.0 m³/h	25 Liter	170	1890 x 370 x 600
BlueSoft 1665GTS/74	114	RX-74A-DTS 2"	1.3-2.6	0.13	3,9 m³/h	130 Liter	220	1920 x 420 x 790
BlueSoft 1865GTS/74	156	RX-74A-DTS 2"	1.8-3.6	0.18	5.4 m³/h	130 Liter	280	1980 x 500 x 870
BlueSoft 2162GTS/99	198	RX-99A-DVS 2"	2.2-4.4	0.22	6,6 m³/h	130 Liter	390	1980 x 560 x 930
BlueSoft 1054GT/67	43	RX-67C-DTF 1"	0.5-1.0	0.05	1.5 m³/h	continuous regeneration	88	1600 x 270 x 270
BlueSoft 1354GT/67	71	RX-67C-DTF 1"	0.8-1.6	0.08	2.4 m³/h	continuous regeneration	140	1610 x 340 x 340
BlueSoft 1465GT/67	85	RX-67C-DTF 1"	1.0-2.0	0.1	3.0 m³/h	continuous regeneration	170	1890 x 370 x 370
BlueSoft 1665GT/67	114	RX-67C-DTF 1"	1.3-2.6	0.13	3,9 m³/h	continuous regeneration	210	1920 x 420 x 420
BlueSoft 1865GT/75	156	RX-75A-DTF 2"	1.8-3.6	0.18	5.4 m³/h	continuous regeneration	280	1980 x 490 x 490
BlueSoft 2162GT/75	198	RX-75A-DTF 2"	2.2-4.4	0.22	6,6 m³/h	continuous regeneration	380	1980 x 530 x 530
BlueSoft 2472GT/75	256	RX-75A-DTF 2"	2.8-5.6	0.28	8,4m³/h	continuous regeneration	500	2170 x 620 x 620
BlueSoft 3072GT/111	398	RX-111A- DTF 2"	4.4-8.8	0.44	13,2m³/h	continuous regeneration	820	2490 x 770 x 770
BlueSoft 3672GT/111	568	RX-111A- DTF 2"	6.4-12.8	0.64	19,2m³/h	continuous regeneration	1240	2500 x 940 x 940
BlueSoft 4272GT/111	795	RX-111A- DTF 2"	8.8-17.6	0.88	26,4m³/h	continuous regeneration	1680	2530 x 1070 x 1070
BlueSoft 4872GT/112	1008	RX-112SM- DTF 2,5"	11,2- 22,4	1,12	33,6m³/h	continuous regeneration	2270	2530 x 1210 x 1210

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Min. pressure during operation: 2,5barsMax. pressure during operation: 6barsMin. temperature during operation: 4C°Max. temperature during operation: 25C°

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.

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#### 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.

#### 3.2.1. Features of the charge of Birm iron removers

Type : BIRM
Colour : black
Density : 0,86kg/l
Grain size : 0,6 mm

#### 3.2.2. Features of the charge of Pyrolox iron and manganese removers

Type : Pyrolox
Colour : black
Density : 1,4 kg/l
Grain size : 0.4-0.8 mm

#### 3.2.3. Features of the charge of Green sand iron and manganese removers

Type : Green sand
Colour : grey, black
Density : 1.41 kg/l
Grain size : 0.3-0.35 mm

#### 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.

Parameters are given in the annex.

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#### 4. THE WAY IT WORKS

#### 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 standstone, 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 filtrating materials to remove iron reduce the water's iron, manganese and hydrogene 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 filtrating material. The filtrating 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

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

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#### 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 automatical 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 mechanisme 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.

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.

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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.

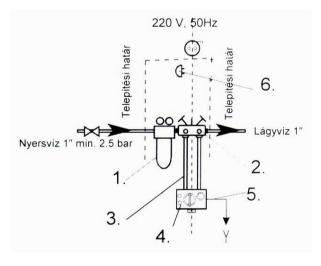
Fluctuation of pressure higher than ±0,5 bar is not allowed! Mechanical protective filter must be built in front of the device. It is important that the mechanical protective filter filtrates contamination bigger than 100 microns.

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 setting up, 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".

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.

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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.



#### **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 Ltd at one of the contact details below:

Mailing address: H-9071 Gönyű, Béke u. 2. E-mail: <a href="mailto:contact@euro-clear.eu">contact@euro-clear.eu</a>
Web: <a href="mailto:www.euro-clear.eu">www.euro-clear.eu</a>

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.

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#### 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./ Clean 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.

#### 7.WARRANTY, GUARANTEE

In case of non-perfomance 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
- Defects, damages and other problems caused by improper transportation and storage of the product.

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 Ltd.

Mailing address: 9071 Gönyű, Béke u. 2.

E-mail: contact@euro-clear.eu

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## DATA SHEET FOR SETTING UP

Name of the specialist to complete setting up:					
Contact details of the sp	pecialist completing the se	etting up:			
<ul> <li>Mailing a</li> </ul>	address:				
<ul> <li>Telephor</li> </ul>	ne number:				
• E-mail a	ddress:				
Name of the company h	naving sold the device:				
Contact details of the co	ompany having sold the d	evice			
<ul> <li>Mailing a</li> </ul>	address:				
<ul> <li>Telephor</li> </ul>	ne number:				
• E-mail a	ddress:				
Name of the operator of the device:					
Contact details of the o	perator of the device				
<ul> <li>Mailing a</li> </ul>	address:				
<ul> <li>Telephor</li> </ul>	ne number:				
• E-mail a	ddress:				
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 Ltd or its agent. You can order the setting up of the device at the contact details mentioned below.

Euro-Clear Ltd. H-9071 Gönyű, Béke u. 2.

Tel: +3696/544-240

email: contact@euro-clear.eu

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Data s	heet fo	<u>r setting up</u>	
1. Chec	1.1. 1.2. 1.3. 1.4. 1.5.	echanical and electricity connections as follows:  Is a mechanical protection filter built in front of the device?  Is the pressure of the raw water convenient? (2,5 – 6 bars)  Are the directions of water flow convenient? (on the montage block, on the devils the rinsing water outlet of the device connected into the channel?  Is the electricity input right? (230V, 50HZ)	Yes
J	2.1. 2.2. 2.2 1.	control head of the filtrating device Have the exact date and time been set? Setting the time for regeneration In case the device is time controlled, has the time between the two washings	□ s been
set up?	If yes, 2.3. 2.3.1.	it is  Setting washing times (advanced settings)  Backwash (Backwash) Has the time been set up?  Rinse (Rinse) Has the time been set up?	days
	ng manu 3.1. 3.2. 3.3. nnel get	Has the charge got clean?	uter into
4. After device.	regener	rating, check the iron and manganese content of the water that comes out from the state of the water that comes out from the state of the water that comes out from the state of the water that comes out from the state of the water that comes out from the state of the water that comes out from the water that water that water that comes out from the water that water tha	/I
In case report.	the iron	content of the water gets checked in laboratory, attach the copy of the measurement	nent
5. Train	the sta	ff that handle the device.	
6. Fillin	g in the	warranty document	

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### WARRANTY DOCUMENT

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.

DATE OF SETTING UP:
signature, stamp

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

Please send us back the warranty document, setting up data sheet completely filled. In other case the warranty is not valid.

Please keep the warranty document, setting up data sheet and quality certificate for administration purposes in the future.

In case of a breakdown or fault, please inform us in written at the e-mail address <a href="mailto:contact@euro-clear.eu">contact@euro-clear.eu</a> about the problem that has occured.

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### **QUALITY CERTIFICATE**