



eleXion

IoniX MINI FS

Filling station installation instructions



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1. Overview.

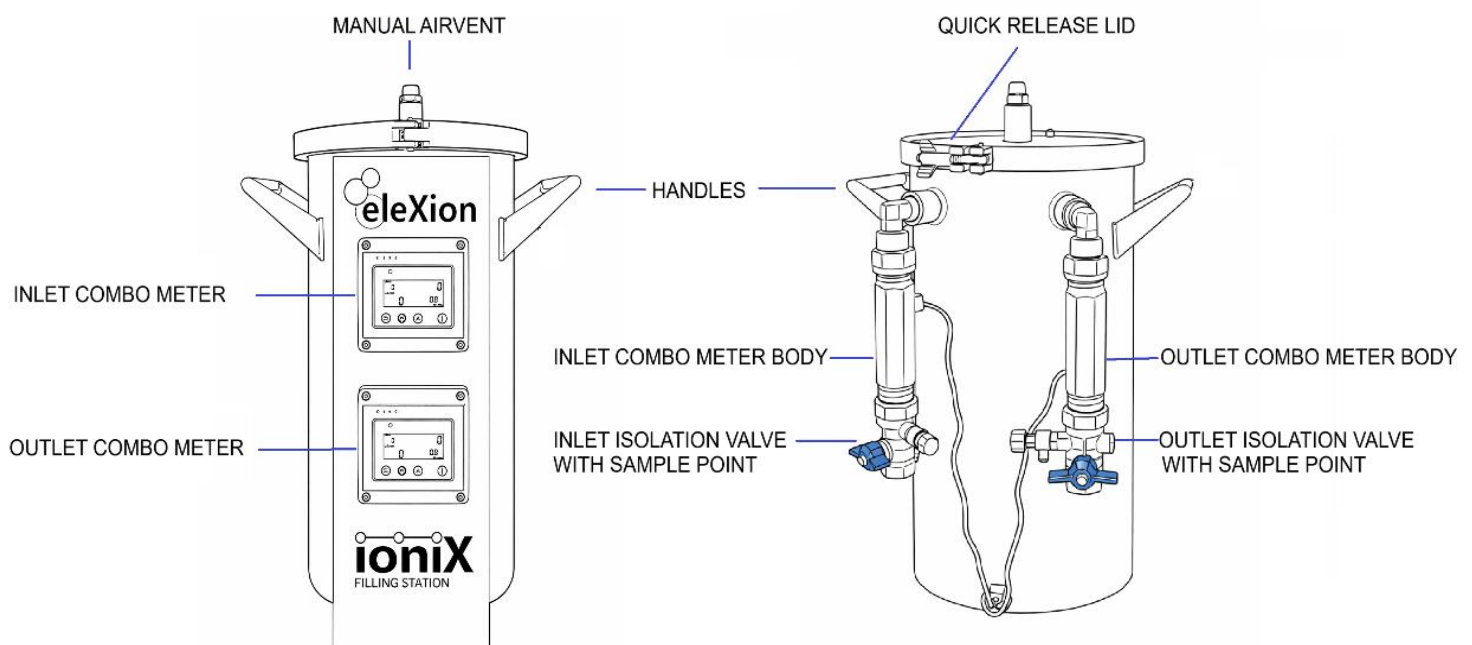
ioniX Mini filling stations from eleXion are an industry leading range of mobile ion exchange resin vessels designed for technical water treatment applications.

System top up water and circulation water can be treated to known chemical free guidelines such as VDI 2035.

Each filling station is supplied with a combined electrical conductivity and water meter, which allows for real time monitoring of the outlet conductivity and system fill volume.

ioniX Mini filling stations are supplied with two state of the art combination meters which give real time readings of the electrical conductivity, flow rate and total volume conditioned of both the inlet and outlet water supplies, local to the ioniX Mini FS unit.

2. System identification.



3. General safety information.

The IoniX Mini FS range of filling devices should only be installed and operated in accordance with this instruction manual and should only be operated by suitably trained personnel.

Each filling station is manufactured from high grade 316 stainless steel.

Only the supplied Xi+ resin, valves, sensors and electrical conductivity meter should be used when operating the IoniX Mini FS.

The IoniX Mini FS lid has been manufactured to withstand pressures of up to 6 bar, with the supplied gasket being designed to withstand temperatures of up to 90 degrees with a long service life. All filling stations are pressure tested at the factory to ensure they are compliant with the information in this manual.

All filling stations are pressure tested at the factory to ensure they are compliant with the information in this manual. Testing of each unit is compliant with PED 2014/68/EU.

The lid must be secured as per the instructions found within this manual, failure to do so may result in water leakage, which could potentially result in property damage, any property damage as a result of leakage due to incorrectly securing of the lid or accompanying accessories are not covered by the products liability insurance.

A pressure test of the filling station and associated equipment should be confirmed before use and being left to operate unattended.

The devices should never be exposed to higher temperatures or pressures than listed in the below technical data.

IoniX Mini FS should only be operated on a solid, stable and level platform, capable of supporting the weight of the unit when in operation.

IoniX Mini FS can be operated under high temperatures and pressures, precautions should take place when handling or servicing the filling station.

Onsite risk assessments and appropriate PPE should be worn before working on any eleXion system.

IoniX Mini FS should never be worked on until the filling station is hydraulically isolated from the mains supply and/or system pipework, the pressure drained from the vessel and once the filling station is at a temperature where it is safe to handle.

Di water produced is intended only for technical use and not human consumption.

Personal injury and property damage resulting from the failure to comply with these instructions are not covered by the Product Liability. The manufacturer also assumes no liability for any other damage caused by the failure to comply with these instructions.

Please read these instructions carefully before using the device. For your own safety and others, it is essential to follow the safety instructions in this instruction manual.

You must always adhere to the relevant local safety regulations and water regulations.

It is the installers/operators responsibility to comply with the local regulations that apply to them and to keep to up to date with the latest regulations.

4. Application:

ioniX filling stations from eleXion have been specially designed for the use in both heating and cooling systems, allowing them to become compliant with “chemical free guidelines” and in line with many of the world’s leading HVAC manufactures technical instructions and their requirements for water treatment.

Compatible guidelines:

- VDI 2035
- SWKI BT 102-01
- ÖNORM 5195-1
- EN12828
- DIN50930
- BSRIA BG50
- CIBSE CP1

ioniX filling stations are designed to be used with ion exchange resins for the complete desalination of the fill water or softening of the fill water, depending on application.

When used with Xi+ resin (our in house mixed bed ion exchange resin), the Di water produced will be suitably conditioned for use in both heating and cooling systems.

Caution should be taken with third party resins, as they may not be suitable for use in HVAC systems.

Other technical applications and industries can also utilise the Di water produced from ioniX filling stations.

5. Product data sheet.

IONIX MINI mobile filling station	
Design code	PED2014/68/EU
Maximum operating pressure	6 bar
Test pressure	10 bar
Maximum operating temperature	90 degrees
Capacity	12.5 litres
Weight empty	13.5 kg.
Weight fill	22.5 kg.
Maximum flow rate	<20 lpm
Estimated capacity limit @ 300 µS/cm	1,662
Estimated capacity limit @ 600 µS/cm	837
Connection sizes inlet/outlet	¾"
Air vent connection	½"
Combo meter ES099 Power supply	AA Alkaline batteries (3)
Combo meter flow rate	3-100 lpm

6. Estimated capacity limits.

To estimate the total volume of water that can be conditioned with an ioniX filling station using Xi+ resin the following estimates can be applied.

Xi+ resin treated volume based on inlet feed electrical conductivity (1 litre of resin)				
Cond	TDS	TDS	Conversion Factor	OBR
µS/cm	mg/l or ppm	meq/l as CaCO ₃		BV*
10	5	0.10	400	4000
50	25	0.50	400	800
100	50	1.00	400	400
150	75	1.50	400	267
200	100	2.00	400	200
250	125	2.50	400	160
300	150	3.00	400	133
350	175	3.50	400	114
400	200	4.00	400	100
450	225	4.50	400	89
500	250	5.00	400	80
550	275	5.50	400	73
600	300	6.00	400	67
650	325	6.50	400	62
700	350	7.00	400	57
750	375	7.50	400	53
800	400	8.00	400	50

*BV = L/L means volume of treated water per litre of resin.

- To calculate ioniX Mini FS (BV x 12.5)

Example: the local tap water has an electrical conductivity of 400 µS/cm.

Using the ioniX Mini filling station it is possible to treat 1250 litres of water (12.5 x BV 100).

A critical factor is knowing the incoming conductivity supply of the raw water supply or the electrical conductivity of the circulating water if completing inline conditioning.

It is always preferable to have completed an onsite analysis of the fill or circulation water. However, if this is not available you can search the local water supplier's website to find their latest reports for the area in question. Please note, this is only useful information for initial filling and not inline circulation where contamination could affect the estimated capacity of Xi+ resin.

If the water supplier's details are unknown, you can visit www.water.org.uk/customers/find-your-supplier where you will be able to identify the local water supplier (providing they are not supplied privately).

The above calculations are an estimation tool only; these figures are based on natural water while performing treatment at the recommended flow rates. Chemically treated water or water which contains undesirable solids will have a negative effect on resin output.

7. Combo meters.

IoniX Mini filling stations are supplied with two combined electrical conductivity and flow rate meters.

One meter is fitted to the inlet of the filling station, which monitors the incoming electrical conductivity, current flow rate and total volume (litres) which pass through the filling station.

The second meter is fitted to the outlet of the filling station, which measures the outgoing electrical conductivity, current flow rate and total volume (litres) of water which has been conditioned via the IoniX Mini FS.

The combo meters are powered via 3 x AA alkaline batteries.



To replace the batteries, simply unscrew the 4 machine screws so the meter head can be removed from the panel.

Carefully remove the meter connection

Then unscrew the 4 small screws holding the back plate of the meter.

You will then be able to access the battery compartment.

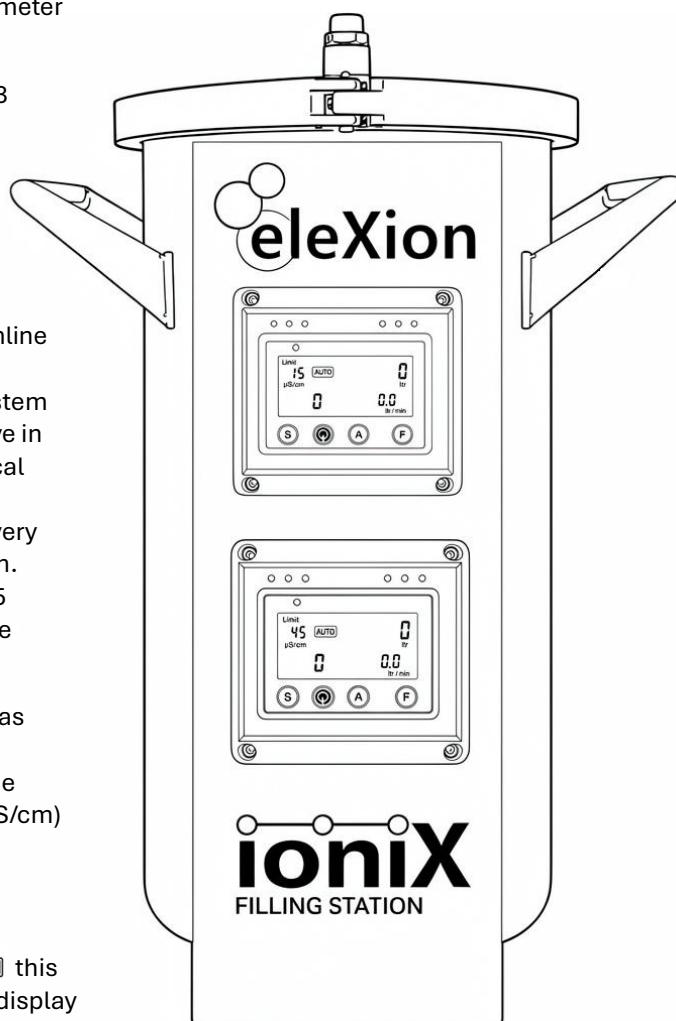
Insert the batteries and then reassemble the meter and screw securely ensuring the black rubber gasket is correctly located in the recess.

8. Setting the combo meters.

Visual display of inlet & outlet meters, indicating correctly set meters.

The screen must display the AUTO symbol.

1. Turn the meter on using the  button , press and hold for 3 seconds.
2. The unit must be set to read uS/cm, should the device read PPM, a single short press of the  button will switch between the two possible readings.
3. To set the meter to AUTO press and hold the  button for 3 seconds, the red led will illuminate, release the  button and then press again for one short press, AUTO will now appear on the screen.
4. To set the conductivity limit press the  button, the limit counter will change, it is recommended that the inlet meter is set to 45 and the outlet meter is set to 15.
5. To reset the limit values, hold down the  button for 3 seconds.
6. To reset the total volume meter, hold down the  button for 3 seconds, the total volume calculator will then reset.
7. The inlet meter alarm will beep until the threshold is reached, this is particularly useful when completing inline conditioning. When ioniX Mini FS is used to condition existing system water via recirculation method the system water will likely be higher than what we want to achieve in the system, as the water quality improves, the electrical conductivity reading will be reduced.
The system takes an electrical conductivity reading every time 10 litres of water passes through the filling station.
Once the system reaches the desired set point (eg <45 uS/cm) the audible alarm stops beeping, indicating the system condition process is complete.
8. The outlet meter alarm will only beep once the resin has expired. The system takes an electrical conductivity reading every time 10 litres of water passes through the filling station. Once the threshold has exceeded (15 uS/cm) the alarm will be activated and a audible beep will be heard, this indicates the resin is spent and requires replacing.
9. Replacing the batteries, when the screen displays  this indicates the batteries needs replacing. Unscrew the display screen from the ioniX Mini FS using a suitable Allen key, then remove the protective back cover of the meter display using a suitable Phillips screwdriver. Replace the AA batteries (3) using only alkaline batteries.
10. It is possible for the meter to record in both litres and gallons.
To switch between the two, with the batteries removed press and hold down the  button, insert the final battery, when you hear the audible “beep” release the  button and the screen will now show “gal/min”.



9. Pre operation safety checklist.

Before connecting the ioniX Mini FS to any system, the following checks should be undertaken by the onsite engineer.

IoniX mobile filling station	
Safety check list	
Ensure the ioniX Mini FS is in good condition.	
Check all seals and gaskets are in a good condition.	
Ensure the lid clamp, bolt, metal washer and wing nut are in a good condition.	
Check the operating pressure of the system does not exceed the maximum operating pressure or temperature of the filter.	
Check all accessories (hoses/connections) are also within the correct operating temperature and pressure range for the system.	
Check the combo meter connections/cables are in a good condition with no visible damage.	
Ensure the filter is used on a flat stable surface.	
Ensure all hoses are long enough and not over stretched.	
Ensure while in operation the filter and hoses will not become a danger or hazard to the operator or members of the public.	

10. Securing the ioniX Mini FS lid.

It is essential for the safe operation of the ioniX Mini FS that the lid is secured correctly.

Failure to correctly secure the lid and gasket will result in leakage and potentially property damage.

Inspect the rubber seal before attempting to secure the lid. If the seal is damaged or worn it must be replaced. Using worn seals or having resin beads on the surface of either the lid, lid seat or gasket will compromise the integrity of the seal causing the lid to leak.

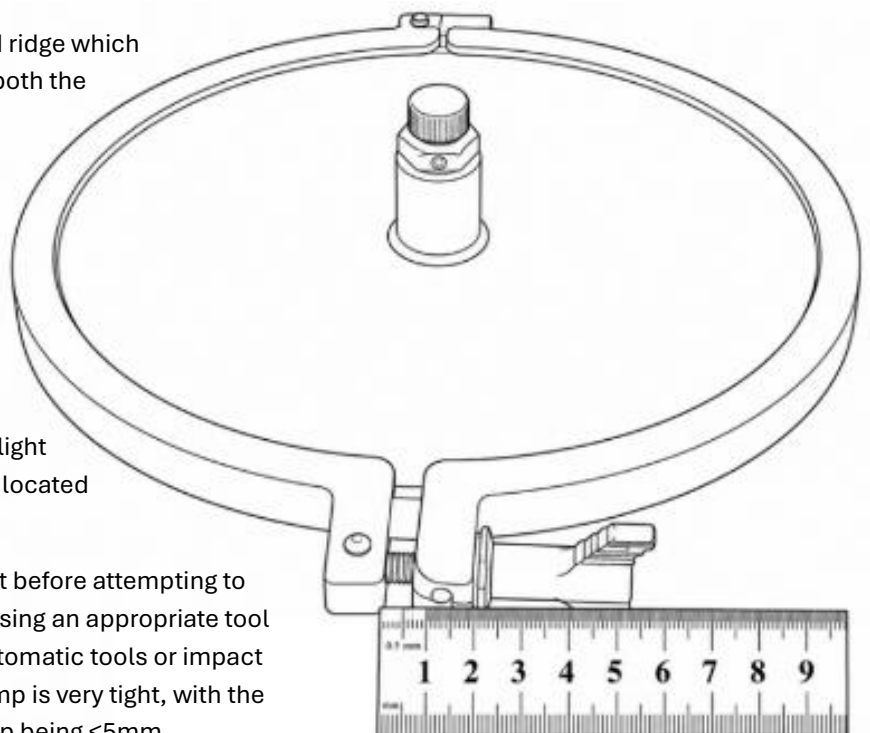
The supplied rubber seal incorporates a raised ridge which must be located within the groove supplied on both the removable lid and the filling station.

The ridge secures the rubber seal in place making it lock into position.

It is essential the raised ridge of the seal is located correctly within the groove supplied on the lid and filling station, failure to do so may result in the lid leaking.

The lid should sit flat on to the rubber seal, a slight twist of the lid will confirm if the rubber seal is located correctly, the seal should not protrude the lid.

Ensure the lid is firmly secured and is very tight before attempting to fill the unit. The lid clamp should be secured using an appropriate tool such as a spanner or pipe grips, do not use automatic tools or impact drivers. The lid must be closed so that the clamp is very tight, with the gap between the two end surfaces of the clamp being <5mm.



11. Connecting the ioniX Mini FS to the mains water supply.

ioniX Mini FS have been designed to completely fill new installations and refill existing systems (after drain downs or during loss of water through routine maintenance).

The ioniX Mini FS will need to be connected to an appropriate water supply, please check local building and water regulations to find out what level of back flow maybe required.

Depending on the use of the filling station and how its connected to heating/chilled systems a suitable backflow protection valve maybe required.

It is advisable that a minimum CAT 3 protection (double check valve) is used during operation.

The use of a CAT 5 back flow protection device (RPZ valve) maybe a requirement, please consult the local water supplier & current building regulations prior to use.

12. Initial system filling.

ioniX Mini FS can be temporarily installed on to the system using appropriate pressure rated hoses.

The filling station can temporarily be installed in between the quick fill filling loop or to any appropriate connection on the system.

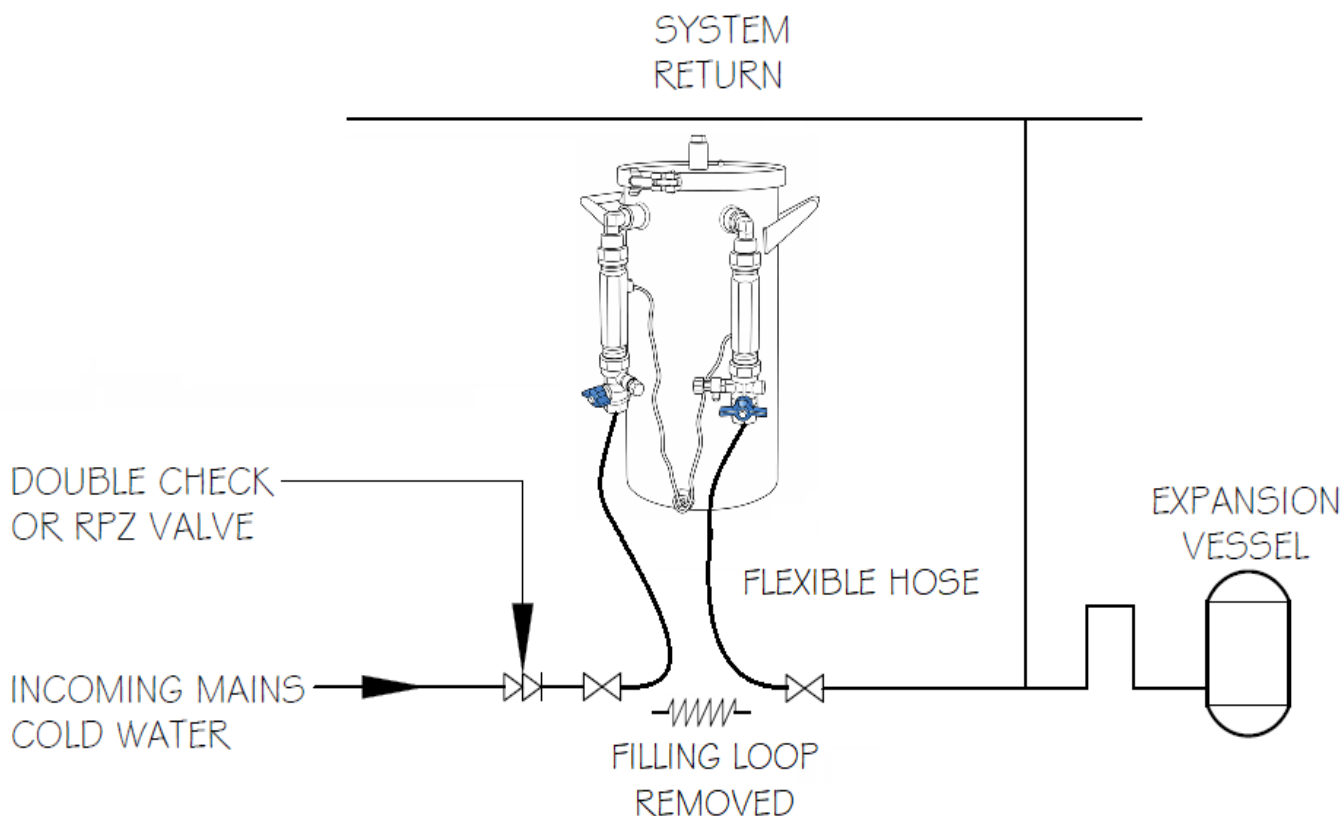
Filling the system at its lowest point is the preferred method, as this helps assist with removal of air during the filling process.

After filling the system, it is advisable to keep a record of the total system volume, the combo meter supplied will detail total litres treated.

During the filling process, never use the ioniX Mini FS once the resin has expired and the setpoint of 15 uS/cm has been breached. This could potentially cause a drop in the pH of the fill water.

Once the system has been filled and vented, start to circulate the water within the system to further continue removing possible trapped air from within the system.

13. Initial system fill, connection example.



14. Filling procedure.

Before using the ioniX Mini FS, complete the pre operation safety checklist.

1. Identify the ideal connection points for both the supply/mains water and connections to the system.
2. Assess backflow hazard and consult with local water supplier to identify appropriate back flow prevention device.
3. Locate the ioniX Mini FS on a flat and stable ground, the filling station and hoses can be subject to high temperatures and pressures, ensure the complete setup is located in a safe location where no personal harm or interference from members of the public can take place.
4. Before filling the system ensure both inlet and outlet combination meters have been zeroed, are correctly set (set to auto) and both meters have the electrical conductivity limits set.

Please refer to section 8 of the manual.

5. Using suitably pressure and temperature rated hoses, connect the ioniX Mini FS to the incoming water supply and the connection point on the system.

Please refer to schematics in section 13 for examples.

6. With the ioniX Mini FS being hydraulically connected to the incoming water supply, slowly open the water supply isolation valve and then slowly open the inlet isolation valve locally at the ioniX Mini FS. Check for leaks, in the event of a leak quickly turn off the water supply and depressurise the device.
7. Once the ioniX mobile FS has been filled, vented and undergone a pressure test (including hydraulic connections to the system), the system can start to be filled.
8. Fully open the inlet valve and outlet valve to start filling.
9. Always respect the flow rate at the outlet of the ioniX filling station, failure to do so will result in inefficient water conditioning where minerals/salts slip through the resin bed.
10. Using the supplied combo meter, you can measure the flow rate through the filling station. If the flow rate is too high simply close the inlet valve until the desired flow rate is achieved.
11. Once the system reaches the required system pressure and has been fully vented, it is now time to hydraulically isolate the ioniX Mini FS from the system both locally and externally.
12. IoniX Mini FS should be left onsite until the system has undergone a successful pressure test, the system has been fully vented, cleaned/filtered and no more alterations are made onsite to the hydraulics. The ioniX Mini FS should only be removed from site once the systems has passed practical completion.
13. Record the data displayed at the outlet conductivity meter and keep within the site records for future use, It is recommended to keep note of total system water volume, as well as system the pH, electrical conductivity and total hardness of the circulation water upon completion of system commissioning, giving the system ample time to circulate.

15. Inline conditioning.

Where an ioniX mini filling station can be utilised to fill new installations, it can also be used to condition pre filled systems &/or rejuvenate existing systems which maybe heavily fouled as a result of corrosion and chemical dosing.

16. What is inline conditioning.

Inline treatment is where a system is initially filled with raw water.

Then, by using the side stream method, the system water is gradually conditioned, reducing the electrical conductivity of the circulating water in line with required parameters and industry guidelines.

This method can be used on new systems where the system has been filled with raw water or on existing fouled systems where incorrect water treatment has resulted in unwanted corrosion deposits, bacteria, biofilms and scale build up.

XI+ mixed bed ion exchange resin is manufactured to remove organic matter only (natural salts and minerals), when using to extract stagnated chemical additives, it will heavily influence the capacity of the resin and its performance.

It is always advisable to reduce the chemical concentration of any system prior to inline conditioning. A site risk assessment should be taken before any raw water flushing, ensuring the system is able to cope with vast amounts of fresh oxygenated water which will enter the system

A system health, age, history and materials should all be assessed before raw water flushing. If there is any concern to the systems infrastructure with a view to severer corrosion, then it is advisable to avoid raw water flushing at all costs.

A prefilter is advisable to prevent any contaminates from entering the resin bed and to protect the resin.

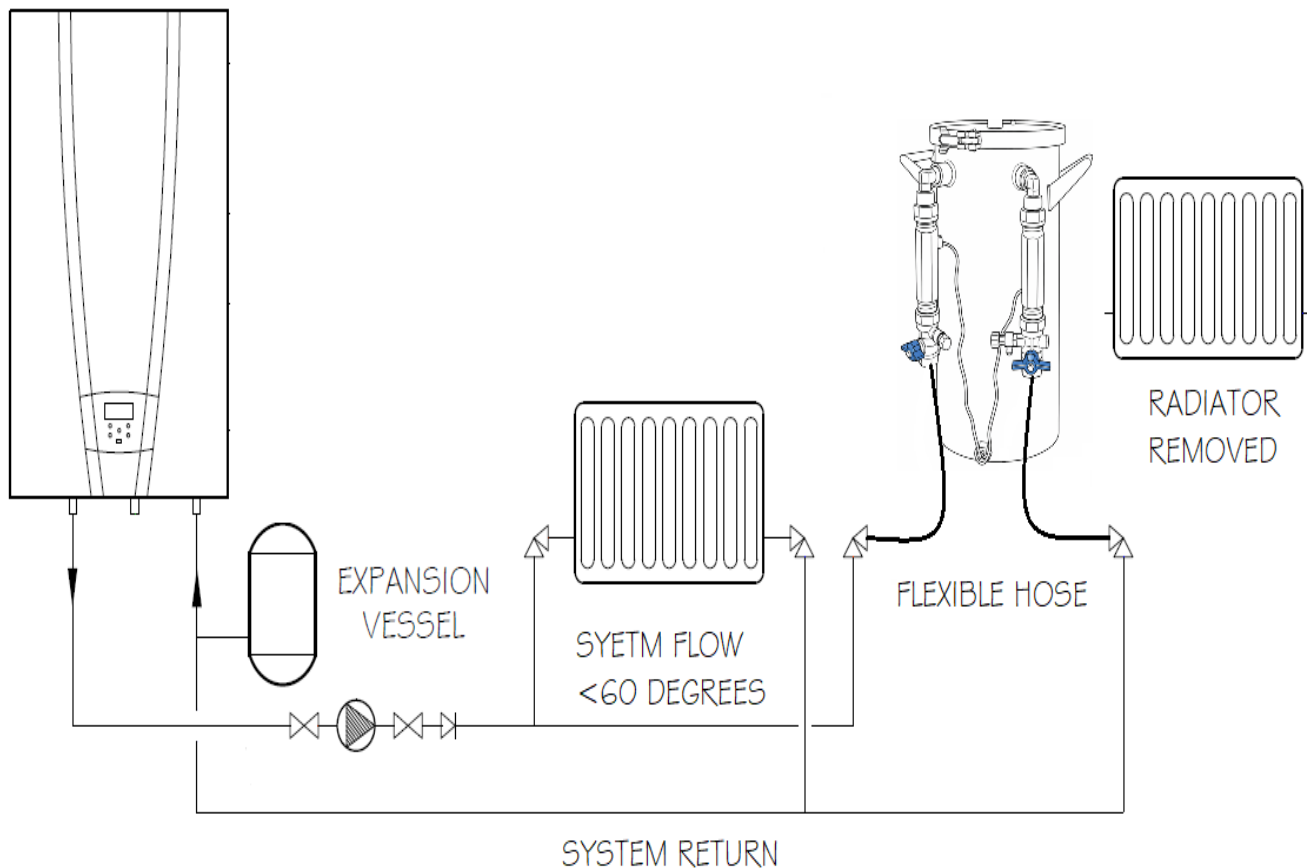
IoniX Mini FS can be used on the vast majority of systems while in operation as they are rated to 90 degrees at 6 bar, however when operating at above 60 degrees the capacity of the resin will be negatively affected.

It would be preferable to reduce the operating temperature of the system to 60 degrees while completing the inline treatment.

At above 60 degrees degradation of anion resin causes poor silica removal capacity, resulting in the deterioration of the treated water quality.

Hoses supplied with the ioniX Minin FS are rated to 10 bar at 60 degrees.

17. Inline conditioning connection example.



18. Inline conditioning.

1. On completion of the system being filled, fully vented and pressure tested, inline conditioning can take place.
2. Ensure all parts of the system are open, with all pumps and valves operational. Ensure that circulation is achieved throughout the entire system.
3. Locate the ioniX Mini FS on a flat and stable ground.
4. Prior to starting the inline condition process, ensure both inlet and outlet combination meters have been zeroed, are correctly set (set to auto) and both meters have the electrical conductivity limits set.
Please refer to section 8.
5. The filling station and hoses can be subject to high temperatures and pressures, ensure the complete setup is located in a safe location where no personal harm or interference from members of the public can take place.
6. Using suitably pressure and temperature rated hoses, connect the ioniX mobile FS to the system.
Please refer schematics in section 17 for an example of how to connect the ioniX FS to the system.
7. Please take precautions when handling the equipment as it can be subject to high temperatures and pressures.
8. Before opening the device lid, always ensure the system has been isolated from the circulation system (isolate locally at the filling station and where it connects to the system), the filling station is at a safe temperature, the pressure within the vessel has been released.

9. The ideal position for the connection of the ioniX Mini FS is at any flow/return circuit where the system flow temperature does not exceed 60 degrees.
10. Always respect the flow rate at the outlet of the ioniX Mini FS, failure to do may result in inefficient water conditioning where minerals/salts slip through the resin bed.
11. Using the supplied combo meter, you can measure the flow rate through the filling station. If the flow rate is too high, simply close the inlet valve until the desired flow rate is achieved.
12. It is recommended on contaminated systems that a prefilter is utilised to the inlet of the ioniX Mini FS, this will protect the resin from being polluted by foreign matter. It is recommended that a filter no greater than 30 Micron is used on the inlet of the filling station. **NB. The smaller the pre-filter the better protected the resin will be.**
13. Once connected to the system via the hoses, open the isolation valve on the system to allow water to flow up to the local inlet isolation valve at the ioniX Mini FS. Slowly open the inlet valve to the filling station, ensuring there are no leaks.
14. Fill and vent the filling station, slowly open the inlet isolation valve and start to fill and vent the filling station (vent using the air vent on the lid). If the filling station or any of the connections start to leak once pressurised quickly isolate the unit and depressurise the system.
15. Once the ioniX Mini FS has been filled, vented and undergone a pressure test (including hydraulic connections to the system), its now time to start the inline conditioning procedure.
16. The ioniX Mini FS consists of two combo meters, one on the inlet and one on the outlet. Prior to starting the conditioning process ensure the meters have been set correctly. It is advisable that the outlet computer is set to raise an alarm when 15 $\mu\text{S}/\text{cm}$ is exceeded. It is advisable for most applications for the circulation water be in the range of 10-100 $\mu\text{S}/\text{cm}$ and the inlet computer should represent the limit you are trying to achieve (recommended 45 $\mu\text{S}/\text{cm}$).
17. During the process of inline treatment, it is advisable to check all parts of the systems are receiving circulation.
18. Water sampling of the pH and electrical conductivity via onsite testing equipment is advisable. Sample points have been provided on the inlet/outlet isolation valves of the ioniX Mini FS.
19. Depending on the system water quality and system volume, it is possible that during the inline conditioning process that the resin may expire and require replacing, which is indicated by the outlet computer giving an audible “beep” . The filling station will need regular visual checks to ensure the capacity limits are not exceeded. To replace the resin, **please refer to section 19.**
20. Once the required water conditioning parameters have been achieved and meet the recommended guidelines, with the inlet combo meter reading the required electrical conductivity reading (eg. <45 $\mu\text{S}/\text{cm}$), the inlet meter will no longer generate an audible “beep” which indicates the system water has now been fully conditioned. The ioniX Mini FS can be safely disconnected from the system. Ensure that the pressure has been removed from the vessel and if hot the vessel has been allowed to cool before disconnecting.
21. Each ioniX mobile FS comes supplied with a combined flow meter and conductivity meter located in the front of the filling station (combo meter). Take note of the system volume conditioned along with current water samples for your records.

19. Replacing the resin.

1. Before initial use and after the resin has been exhausted (indicated via the outlet computer) the resin will require changing.
2. After replacing the resin, it is always advisable to flush through the resin with raw water. It is not advisable to transfer resin from site to site if the resin has been contaminated following inline treatment of existing heavily fouled systems. It is recommended that prior to using the IoniX Mini FS, if the resin is transferred, please thoroughly flush this through before using.
3. The filling station should be flushed through with a quantity of water corresponding to twice the filter volume before use (24 litres).
4. Before attempting to replace the resin in the IoniX Mini FS complete a risk assessment. The filling station can be subject to high pressures and temperatures which can cause person harm and damage to property.
5. Only attempt to remove the resin from the IoniX Mini FS once the system is at a safe temperature to handle.
6. Ensure the filling station is isolated from the system, closing the inlet and outlet isolation valves locally to the filling station as well as where it connects to the system/incoming water supply.
7. Hoses which are used to connect the filling station to the system/water supply will needed to be removed locally to the filling station before the resin can be replaced.
8. On existing installations and/or after inline treatment the existing resin will need removing (not the case for first time fills).
9. With the IoniX Mini FS being hydraulically disconnected from the system, it is possible to syphon excess water and vessel pressure from the filling station via opening the outlet isolation valve and opening the air vent, ensure the water is discharged into an appropriate drain or bucket.
10. Once the water at the outlet of the filling station stops flowing it is now possible to remove the resin from the filling station. Turn of the isolation valve and open the quick release lid using a suitable spanner.
11. One the lid and securing clamp has been removed, remove the lid gasket and keep safe, it is imperative that the gasket is replaced should it be visually damaged or worn.

12. It is recommended that a woven bag (supplied with Xi+ resin) is inserted into a bucket (to provided support). Using the handles provided lift and pour the resin into the woven bag.
13. Visually inspect the inside of the filling station, ensure all the resin has been removed, rinse out if required.
14. Secure the woven bag tightly and allow excess water to drain through the bag over a suitable drain. The woven bag which contains the resin can now be disposed of via local waste bin.



15. Open the vacuumed packed, ion exchange resin Xi+ and carefully pour into the IoniX Mini FS.
16. Inspect the rubber gasket/seal and reinstate before closing the lid, if the rubber is damaged or worn, please replace.
17. Ensure no resin has fallen on to seal/gasket of lid.
18. Ensure the lid is firmly secured and is very tight before attempting to fill the unit.
19. Please refer to **section 10** of this manual for instructions on how to secure the lid and gasket.
20. Once the filling station has been filled and the lid secured, the hoses can be reconnected. Ensure the inlet and outlet hoses are connected correctly with the flow going through the inlet connection of the device and the return hose being connected to the outlet of the device.
21. Slowly open the inlet valve to the filling station allowing the system to pressurise.
22. Slowly open the air vent connection located on the lid of the IoniX Minin FS, once this has stopped venting close the air vent.
23. Then fully open the inlet isolation valve and slowly start to open the outlet isolation valve.
24. Check all connections are watertight.
25. Take note of the water meter fill rate and log for future diagnostics.

20. Replacement parts list.

Image	Description	Part number
	Conductivity meter (Battery)	
	Manual air vent	
	3/4" isolation valve With sample point	
	Gasket seal	
	Lid clamp	
	Sample point	
	Nozzle	

21. Water treatment log.

Site:					
Service date	Water meter reading	Fill volume since last service visit	Conductivity meter reading	Resin replaced Y/N	Resin expected to last until next service visit Y/N

Site:					
Service date	Water meter reading	Fill volume since last service visit	Conductivity meter reading	Resin replaced Y/N	Resin expected to last until next service visit Y/N

Site:					
Service date	Water meter reading	Fill volume since last service visit	Conductivity meter reading	Resin replaced Y/N	Resin expected to last until next service visit Y/N

Site:					
Service date	Water meter reading	Fill volume since last service visit	Conductivity meter reading	Resin replaced Y/N	Resin expected to last until next service visit Y/N

22. Practice (SEP) Statement.

Pressure Equipment Directive (PED) 2014/68/EU:

Sound Engineering Practice (SEP) Statement:

The pressure vessels supplied by eleXion water treatment Ltd are designed and manufactured for use within sealed heating and water treatment systems containing water (Group 2 fluid) with the following maximum operating conditions:

Maximum allowable pressure (PS): 10 bar
Maximum operating temperature: 95 °C
Maximum vessel volume: 300 litres

The vessels contain non-hazardous water-based fluid classified as a Group 2 liquid under the Pressure Equipment Directive 2014/68/EU.

In accordance with Article 4 and the classification tables of Directive 2014/68/EU, vessels containing Group 2 liquids are only subject to categorised conformity assessment and CE marking requirements where the applicable pressure and volume thresholds are exceeded.

For the equipment supplied:

PS = 10 bar

V = 300 litres

PS × V = 3000 bar – litres

The equipment does not exceed the applicable threshold limits for categorised pressure equipment under PED 2014/68/EU for vessels containing Group 2 liquids.

Accordingly, the vessels fall within the scope of:

Article 4(3) – Sound Engineering Practice (SEP) and therefore:

- are not subject to PED Categories I, II, III, or IV,
- do not require involvement of a Notified Body,
- and are not required to bear the CE marking in respect of PED 2014/68/EU.

The equipment is nevertheless designed and manufactured in accordance with recognised Sound Engineering Practice applicable within the European Union, including appropriate consideration of:

- material suitability
- pressure containment integrity
- weld quality
- hydrostatic pressure testing
- temperature and pressure design limits
- and safe operation within intended service conditions.

Hydrostatic pressure testing is conducted at an appropriate test pressure exceeding maximum allowable operating pressure.

This statement applies solely to conformity assessment under PED 2014/68/EU and does not remove obligations arising under any other applicable legislation, directives, or national regulations.

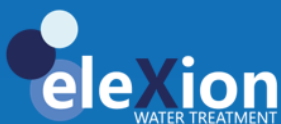
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