

IWTM
water by design

PROTECTOR P10 MANUAL



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DESCRIPTION & FEATURES

WHAT IS PROTECTOR P10?

Protector P10 is a model from our WWTM

Protector™ range, a unique side stream filtration device that engineers the system water to a non-corrosive state.

It provides corrosion protection in both new and existing heating and cooling systems, by removing sludge, particles, oxygen and other corrosive products. Therefore the system is maintained in the best possible way, by constantly filtering and engineering the water using electrochemistry and anode technology. The result is that its cleaning and engineering the water at the same time.

NEXT GENERATION OF ELECTROCHEMISTRY

The units provide faster clean-up of old systems and quicker compliance with pre commissioning targets on new systems due to the higher flow rates through the reaction tank (cathode) and the inbuilt ss micron filter that enables finer filtration. The unscreened larger anodes last longer and release the magnesium hydroxide quicker for faster pH control. Compliance with VDI 2035 is still obtained as the anodes sit inside the ss micron filter to capture the magnesium residue when the anodes expire.

- Protector is an "all in one solution"
- Controls the three key parameters of VDI 2035 ; pH, conductivity & dissolved oxygen.
- Creates a hostile environment for bacteria
- Keeps the water clean in closed circulation systems and removes all particles and impurities

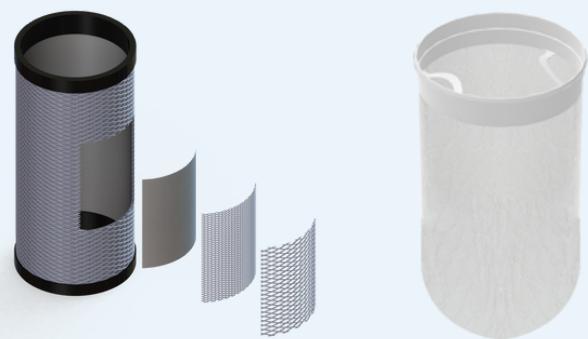
PARTICLE FILTRATION

Protector P10 comes as standard with a robust ss micron filter, which is 40 micron nominal. The stainless steel AISI 316, 40µm filter, has a large surface which gives a long operating time before cleaning and thus less flushing and refilling.

Optional bag filters are also available, with a filter degree down to 1 µm.

Please note: The 40 micron stainless steel filter supplied with the Protector as standard although robust in its manufacturing is a consumable item.

It's life expectancy is dependent on the harsh environment it has to deal with when being used to clean existing systems and therefore is not covered by any warranty. On a new system it is possible that the filter can last for many years, but on clean-up project it may only last for a few months.



2-Layer Stainless Steel Filter

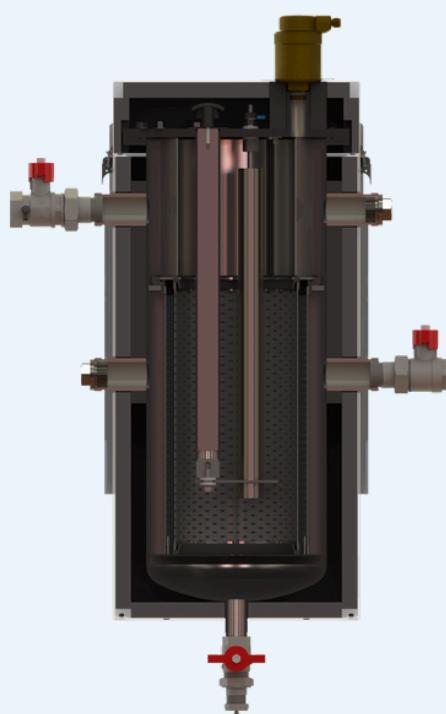
Our Filter is provided as standard with two layers of stainless steel mesh and can have up to three layers for specialised applications.

Bag Filter

DESCRIPTION & FEATURES

NEODYMIUM MAGNETS

The Protector P10 comes with one long, dry, powerful magnet. These are mounted in the centre of the ss micron filter and in front of the sacrificial anodes so that magnetite is captured and not deposited on the anodes, also preventing the ss micron filter basket from clogging up with magnetite. This provides longer service intervals as well as increased operational life and better function. When the magnets are lifted out, all magnetite will be released and can be drained out.



SACRIFICIAL ANODES

Magnesium anodes that provide anodic water treatment and lower the fluid's conductivity.

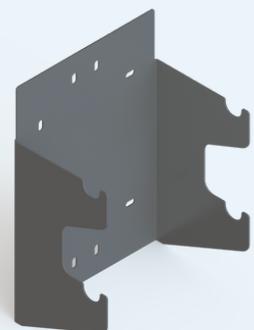
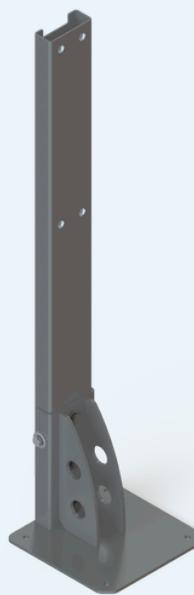
The anodes also scavenge oxygen and regulate the pH level.

For longer life expectancy, the anodes are encapsulated by a stainless steel micron filter, removing the need for individual anode screens.

WALL OR FLOOR FIXING SYSTEMS

The Protector P10 can easily be installed on the wall. The compact wall mounting bracket allows the unit to be fixed on the wall to save space in situations where space is important and limited. The system is included as a standard feature in the Protector P10.

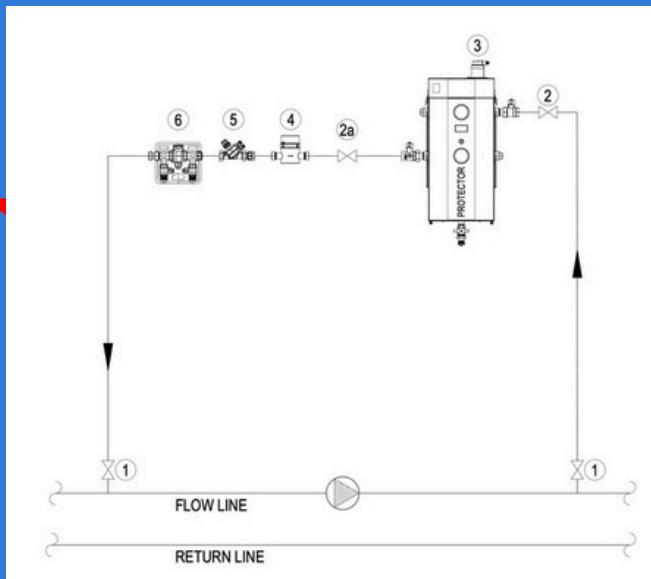
The wall fixing bracket and nuts are completely in stainless steel, very robust and resistant.



When wall space is not available, the Protector P10 can be fixed with the floor mount bracket as an alternative.

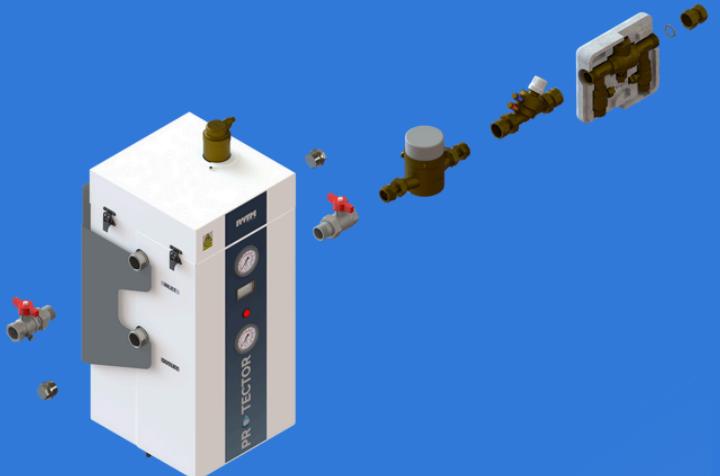
INSTALLATION

SIDE STREAM INSTALLATION USING EXISTING PUMP



Protector P10 is to be mounted in a “bypass” installation over an existing circulation pump. (Separate circulation pump can be used if needed.)

- Pressure side on pump should be to the inlet on Protector P10 unit.
- Suction side on pump should be to the outlet on the Protector P10 unit.



INSTALLING CONNECTIONS

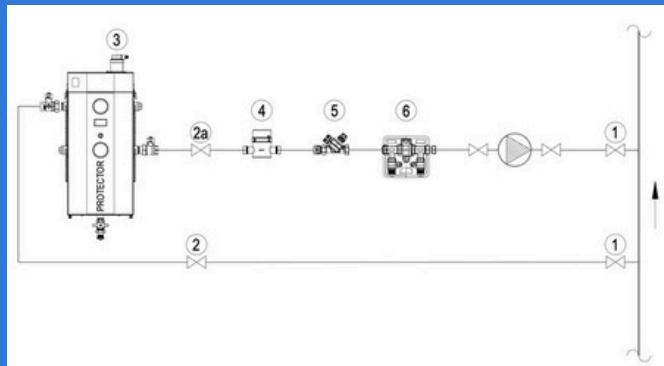
2 pc 1" Female Connections (inlet / outlet) 2 pc 1" Plugs (for connections not in use.) 2 pc 1" Ball Valves (inlet valve with test point) 2 pc 1" Plugs 1 pc 1" Flowmeter 1 pc 1" PICV 1pc 4 Port By-pass Valve 1 pc 1/2" Air Vent 1 pc 1" Drain Valve

Ensure that 600mm clearance is left above the Protector AAV.

Ensure that 600mm clearance is left in front.

INSTALLATION

SIDE STREAM INSTALLATION USING OWN PUMP



KEY

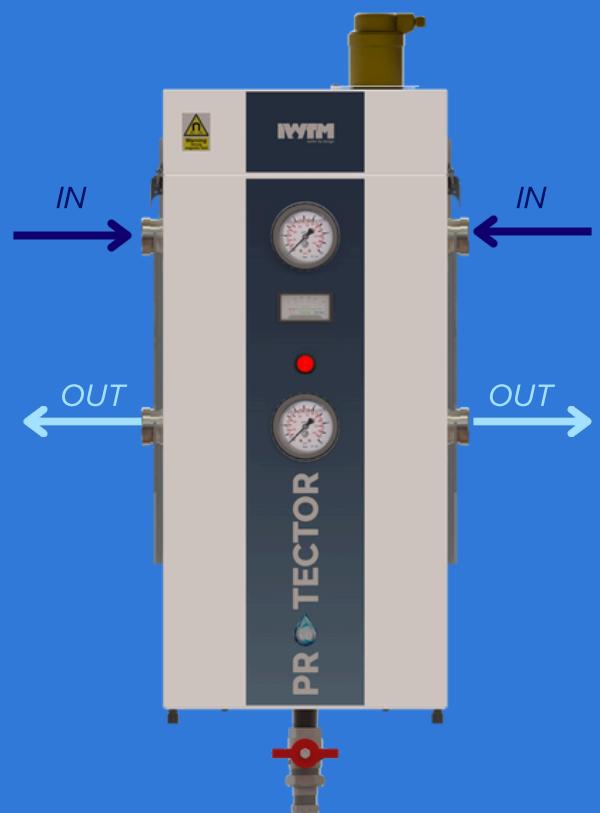
- 1. CLIENT IV's NOT SUPPLIED
- 2. DRAIN COCK LEVER IV MALE & FEMALE
- 2a. LEVER IV MALE & FEMALE
- 3. AAV
- 4. MECHANICAL WATER METER
- 5. FLOW REGULATOR
- 6. FLUSHING BY-PASS

CONNECTIONS

Can be connected:

- IN from either left or right. (only on the top)
- OUT from left or right. (only on the bottom)

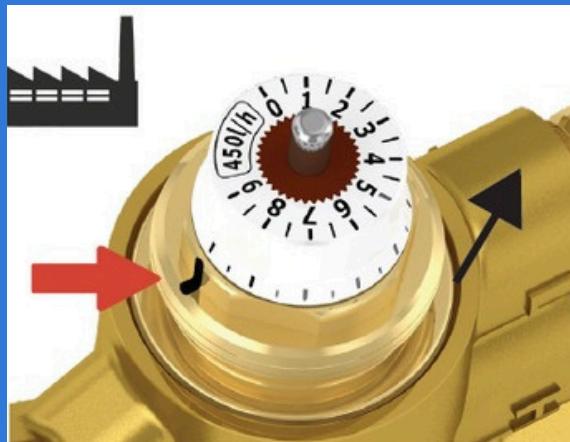
-Connections not in use, to be plugged.
(1" female threads)



INSTALLATION

INSTALLATION & COMMISSIONING INSTRUCTIONS - PETTINAROLI VALVE

- Close the outlet valve.
- Keeping outlet closed whilst opening the inlet valve.
- Open the automatic air vent.
- Fill the Protector unit once the automatic air vent has dispensed all of the air.
- Open the outlet valve so water flows through the Protector.
- Check the water meter is rotating.
- Set PIC valve as below:



- Remove the handwheel. default setting: position 9

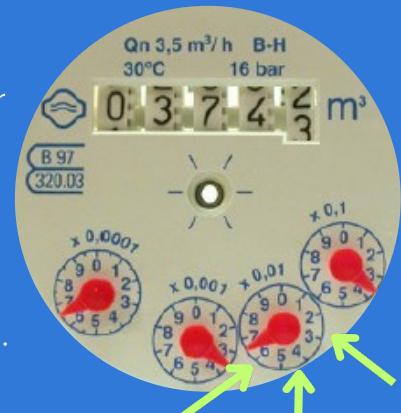


- Turn the selector to the target position to set the flow rate, the settings should be:

Setting 2.5 for 10l/min for the P10

Once you have set this up check the flow rate on the water meter corresponds to required settings on the PICV:

by reading the 0.01 cubic meter dial (=10 litres) , which corresponds to litres per minute.



For example it should take 1 minute for the red arrow to read 1 if the setting on the PICV is 2.5 for 10 litres a minute.



- Re-assemble the hand wheel cap with a $\frac{3}{4}$ " turn to protect the spindle – do not turn more than this or you will push the spindle down and effect the flow rate.

DATA & MEASUREMENTS

PROTECTOR P10 DATA

System Volume: - Max: 10m³ - Heating
7m³ - Cooling

Flow: 10 l/min

Empty Weight: KG

Full Weight: KG

Shipping Weight: Kg

Design Pressure - PN10

Options - PN25 operating pressure to order

Max Temperature - 95°C

Volume of Unit - 20L

Design Code - PED 2014/68/EU

Connection - 1" female thread / BSPP

MATERIALS

Filter House: Stainless steel AISI 304

Filter Element: Stainless steel AISI 316L

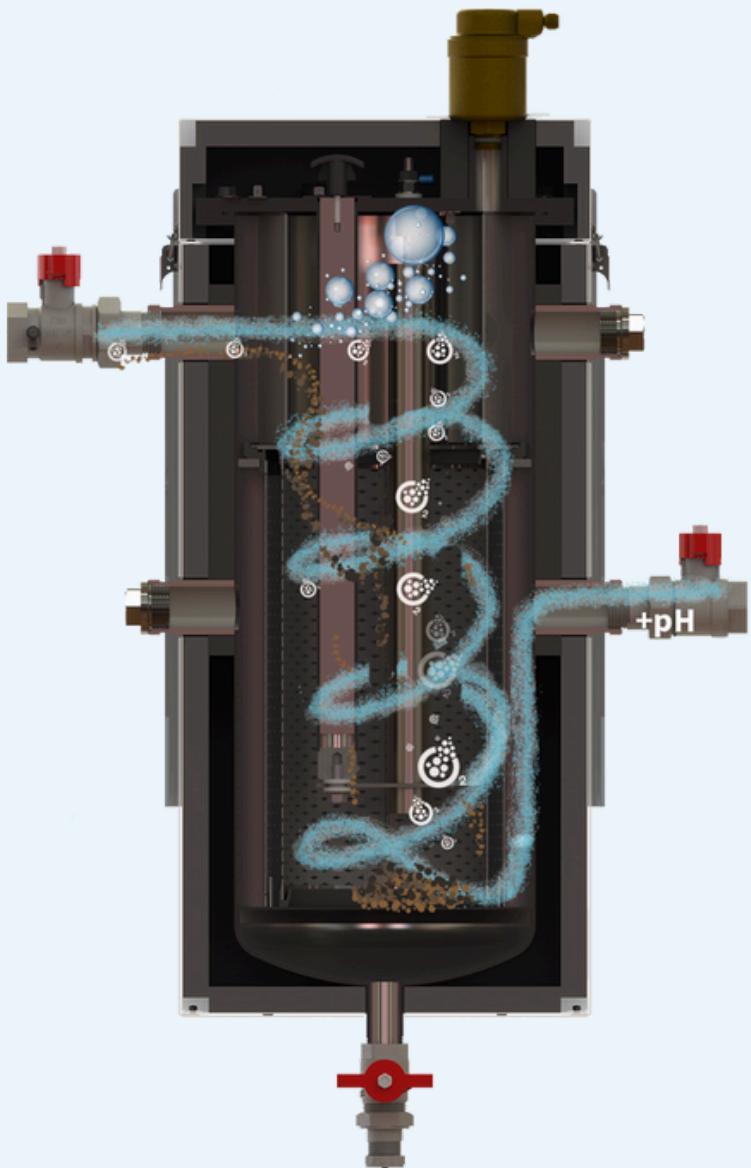
O ring EPDM: EPDM

Insulation/Cladding: PE Foam / Carbon Steel

Anodes: Magnesium

Magnet: Neodymium

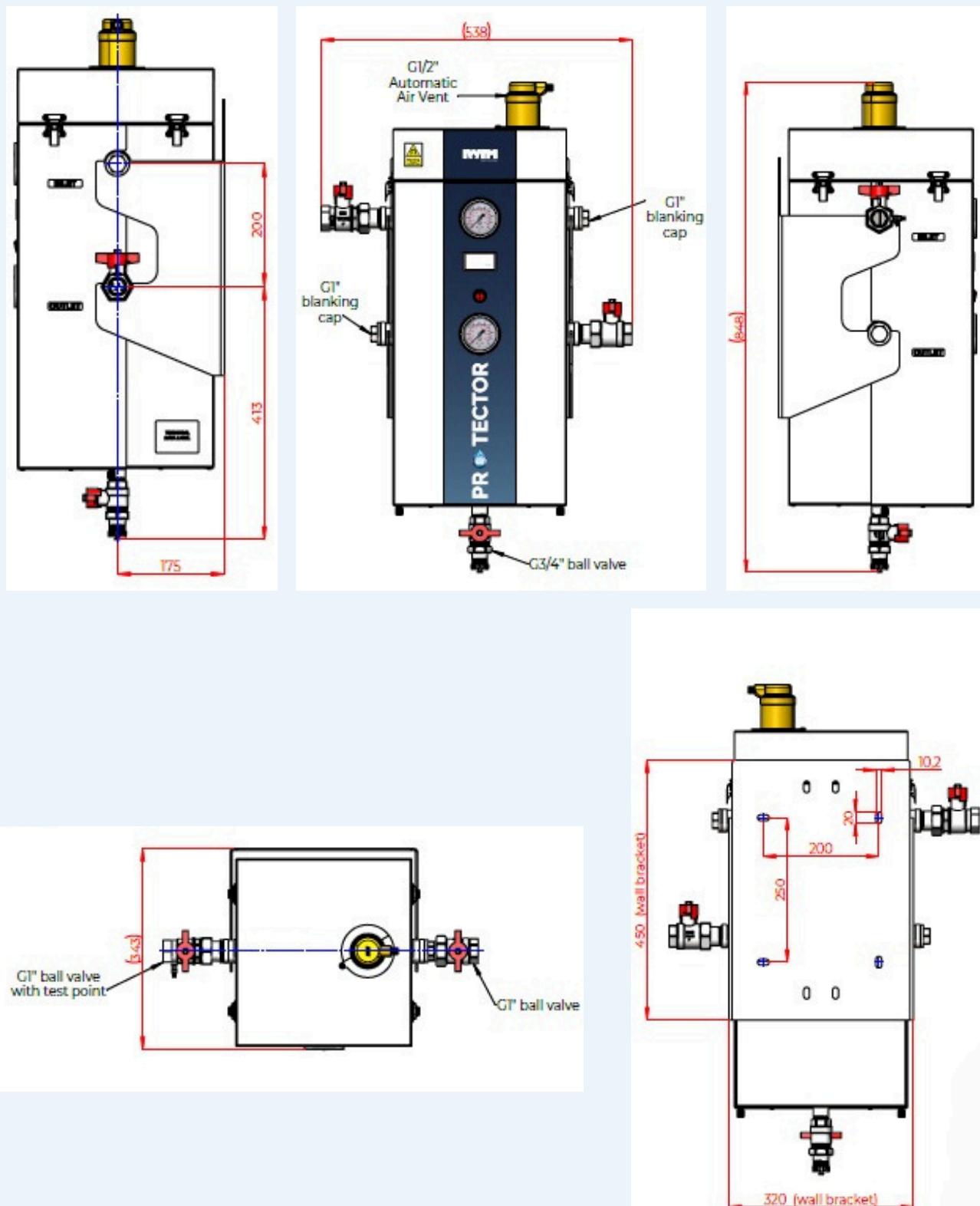
Surface Finishing: Powder Coated



Note: Talk to us for systems that operate at higher pressures or higher temperatures.

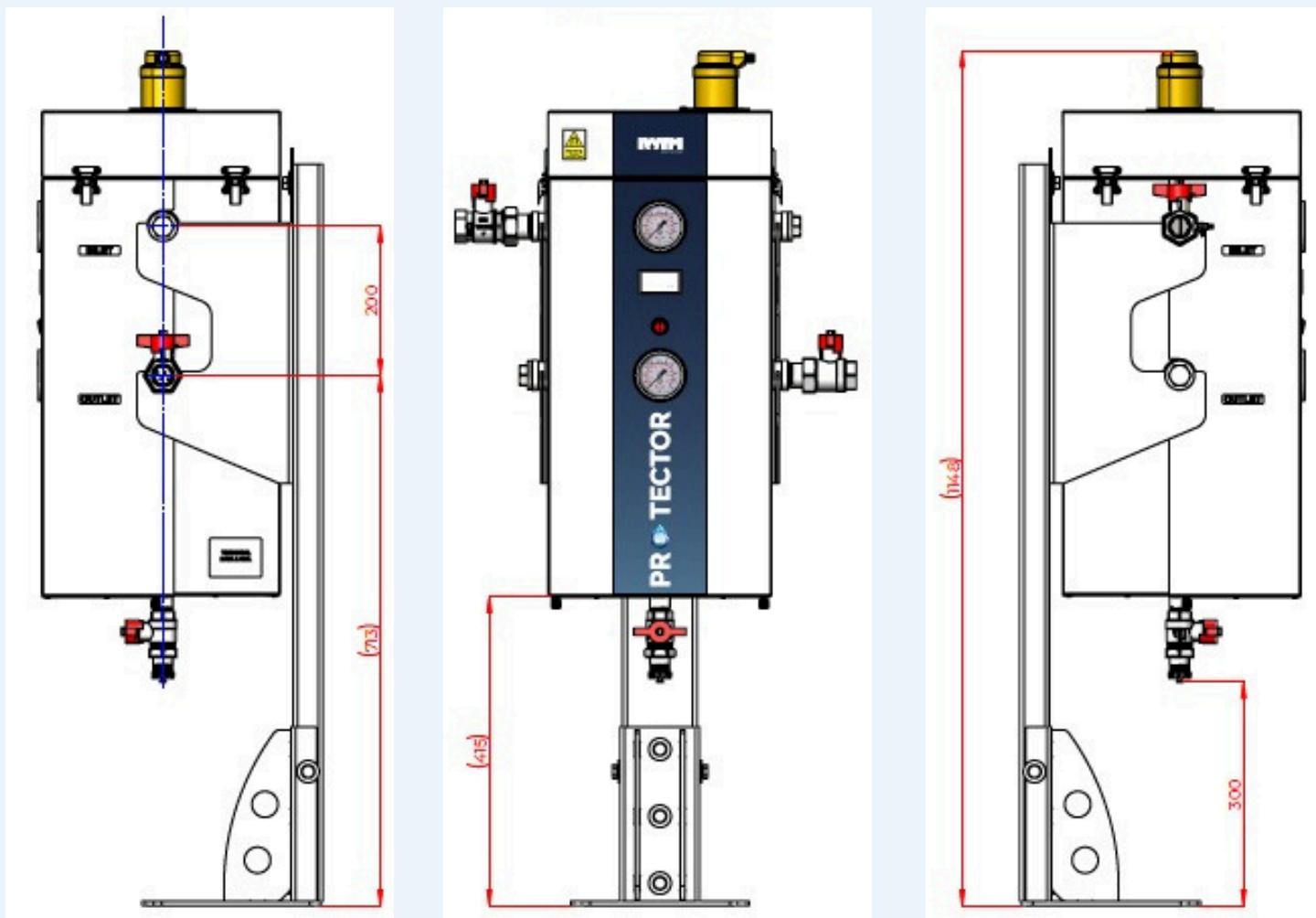
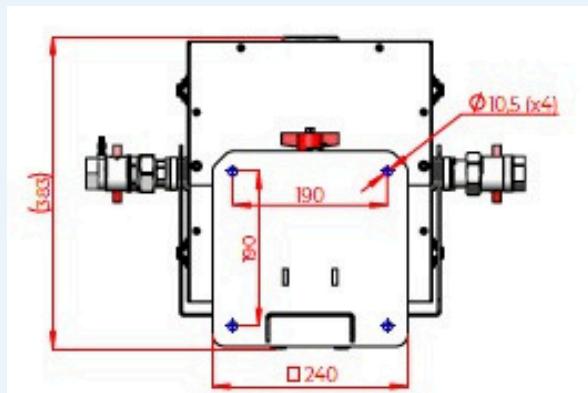
DATA & MEASUREMENTS

PROTECTORP10 - WALLMOUNTINGBRACKET



DATA & MEASUREMENTS

PROTECTORP10 - FLOORMOUNTINGBRACKET



MAINTENANCE

MAINTENANCE, CLEANING AND REPLACEMENT OF THE DIAPHRAGM OF PIC VALVE

During valve cleaning operations, use a damp cloth. DO NOT use any detergent or chemical product that may seriously damage or compromise the proper functioning and the reliability of the valve. Maintenance and cleaning of the differential pressure regulator and the control valve must be carried out as per following instructions, after isolating and draining.



Step 1a: completely remove the knob



Step 2: using a 21mm spanner unscrew the headwork.



Step 3: remove the headwork.



Step 4: push down the control valve stem and pull the diaphragm out



Step 5: clean the diaphragm with water and a cloth

MAINTENANCE

MAINTENANCE, CLEANING AND REPLACEMENT OF THE DIAPHRAGM OF PICV VALVE



Step 6: put back the diaphragm. Push it in its seat



Step 7: replace the headwork



Step 8: screw the headwork with 20 Nm torque



Step 9: replace the handwheel.

MAINTENANCE

DRAINING

The Protector P10 unit needs to be drained frequently ; how often is dependent on the water quality.

The higher the starting conductivity level, the more sludge there'll be, resulting in a need for more frequent draining.

This is to flush out the sludge and particles that have been collected in the bottom of the tank, from the magnet trap and the ss micron filter .



The magnet in the Protector P10 comes as a 1 piece magnet. The magnet is inserted on top of the tank, on the flange lid.

- Close the inlet to the Protector P10.
- Pull out the magnet on top of tank.
- Open the drain valve in the bottom of tank and flush until the water is running clear of debris.
- When complete, close the drain valve and put the magnet back in the sleeve.

MAINTENANCE

ANALOGUE GALVANOMETER & PUSH BUTTON

The analogue galvanometer shows the galvanic current in milliamps between the anodes and the cathode (the tank body), with the system water being the medium.

The analogue galvanometer is always in a continuous reading position ; when the switch is pressed, the instrument is short circuited and shows little or no reading. This function is only for testing the analogue meter itself.

Pure water is non conducting, therefore the more impurities and oxygen in the water the more current will flow between the anode and the cathode.

When the water quality improves, the current diminishes and may measure even as low as 0.2 to 0.3 milliamps when the system water is fully passive.

The Protector P10 system is self-regulating, the anode automatically works harder with corrosive water than with water that is no longer reactive.



The needle swing lies between 10% and 100%.

This is the normal operating region. The lower the reading, the less the anode needs to work, and the less impurities are in the system water.



The needle always reads 100%.

The anode is working hard.

If the needle remains in this position for longer than one heating season, the Protector P10 may be undersized for the system.

Action: check the system volume



The needle lies continuously close to the red region ;

the needle still drops

to the minimum reading when you press the test button however, the anode no longer needs to work because the chemical reactions in the water have finished, the anode can no longer work because it is coated in a barrier layer or the anode may be close to expiring and needs replacing.

MAINTENANCE

ANALOGUE GALVANOMETER & PUSH BUTTON

Action: remove the sludge from the Protector P10 and fill with fresh water. Keep the isolation valves closed for a day to hold the more corrosive fresh water inside the Protector P10. After a day, if the operating meter shows a higher reading, everything is operating correctly, and the Protector P10 can be put back into operation. Otherwise, you need to open the lid to inspect the appliance.



The needle drops into the red region within a few weeks.

The anode is spent or coated in a barrier layer or the Protector P10 is isolated from the system and no water is circulating through it.

Action: check circulation or open the appliance and clean or replace the anodes.



The meter continues to show a constant reading over a long period.

The operating meter might be faulty.

Action: press the test button to check the meter (the needle should drop to the left).

If there is no change in the needle position, the meter is probably faulty.



After servicing, if the indicator position is hard left in the red.

If the anode wires are connected wrong, it will create a short circuit and the swing meter will sit in the red zone and will raise up slightly when pressing the test button – to correct this change the two connection wires around on the anode and the earth.

While the Protector P10 is increasing the pH and scavenging oxygen the water gets less aggressive and the current will decrease and stabilise. (normally from 4-15 mA). If some chlorides or sulphates should interfere, resulting in higher conductivity or increased oxygen (feed water), the ampere & output will increase again.

MAINTENANCE

MAGNESIUM ANODES

The filter anodes are in a basket of stainless steel wire mesh called the ss micron filter and do not normally need any cleaning, if however, they are coated in slime from chemical residue or any other debris this can be removed with a suitable scraper to get back to the bare anode surface. Check the anodes for proper functioning (mA instrument).



TOOLS:

- Isolating bolt wet side 17 mm spanner
- Isolating bolt dry side 13 mm spanner
- Flange cover nuts are M8 and require a 13 mm spanner

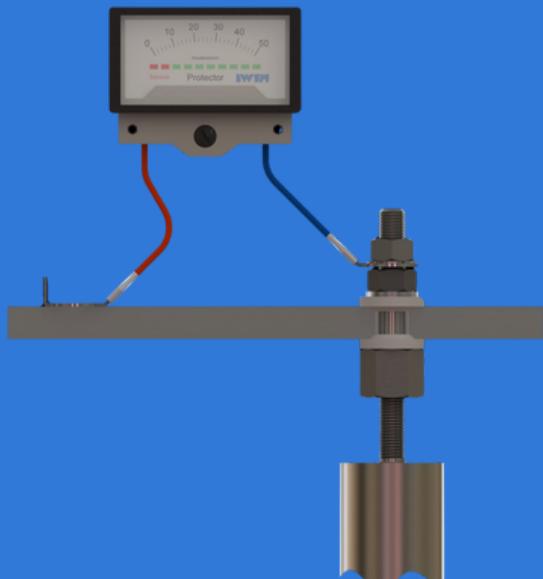
SERVICE

Service on the Protector P10 unit should be done once a year. However, this is also depending upon the quality of the system water.

If there has been an existing problem with sludge, sediments etc. before the Protector P10 installation, we recommend a first service after 3 months of operation. It's also important to take a water sample out of the system, for analysis in a laboratory.

The isolation screw going through the flange has two nylon washers one on each side of the flange. Once opened, they cannot be reused. These washers are not part of the replacement kit.

So please **do not** undo the isolation screw. Make sure not to rotate the bolt while changing the anode. Use a 17mm spanner to hold the isolation bolt securely whilst removing/fitting the anode bolt with a 10mm spanner. This will ensure the isolation screw does not turn. Once the anode has been replaced, use a test meter to check there is no continuity between the anode & the flange. The two isolation washers have two functions 1. To create a watertight seal 2. To electrically isolate the anode from the tank.



MAINTENANCE

SERVICE

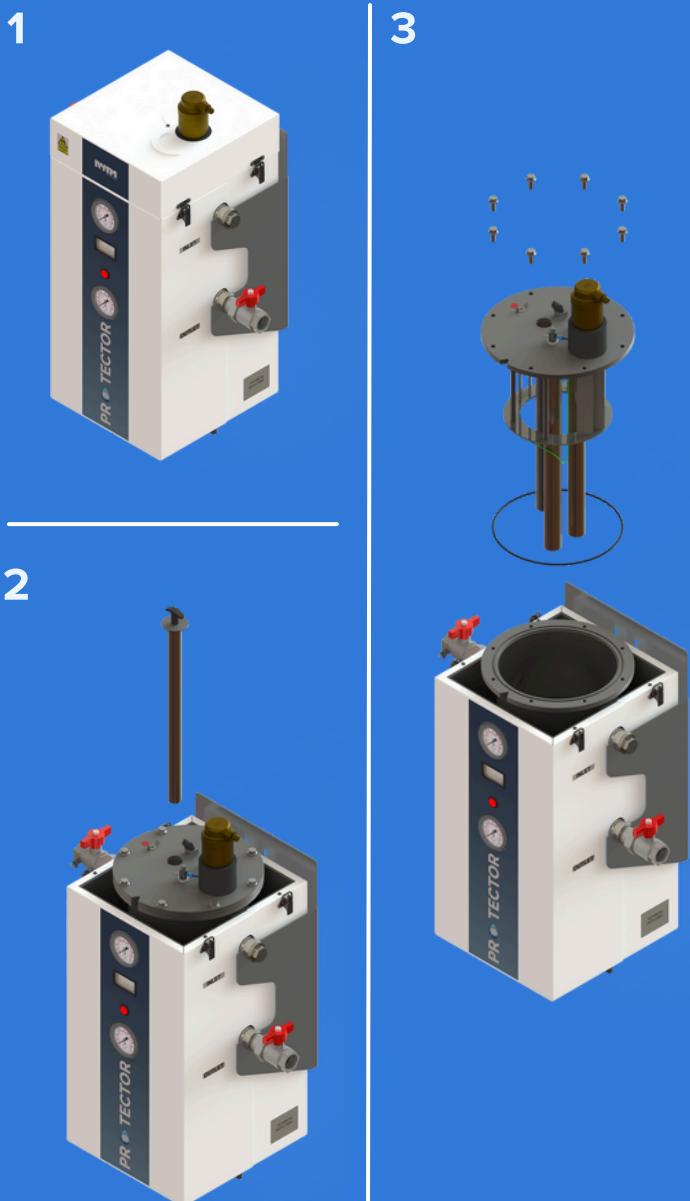
- Close the inlet and outlet ball valves.
- Unscrew the air vent and empty the tank through the drain valve.
- Unscrew the flange lid.
- Carefully lift up the lid, the anodes are attached to the underside.
- Check the anodes and the magnesium rods.
- Flush the anodes, if the magnesium is below 10mm diameter, replace with new ones.
- Take out the ss micron filter and flush / clean.
- Clean the tank inside using a hose or a pressure gun.
- Check all parts belonging to the Protector P10 and clean them if required. (AAV, flowmeter, PICV etc.)

When replacing the anode hold the isolation screw going through the flange and unscrew only the small inner screw at the end of the steel core of the anode. After mounting a new anode, make sure that all screws are tight and that the electrical wiring is properly reinstalled. If there's no indication on the meter, the Protector P10 is not working, so please check the wiring is correct.

TORQUE settings
 Insulation bolt 25Nm
 Flange 25-30 Nm

When done, put everything back in place and fill up the Protector P10 on the inlet. When the air vent stops letting out air, the tank is refilled and you can open the outlet and start the circulation again.

Check that the flowmeter is running.



MAINTENANCE

PARTICLE FILTER

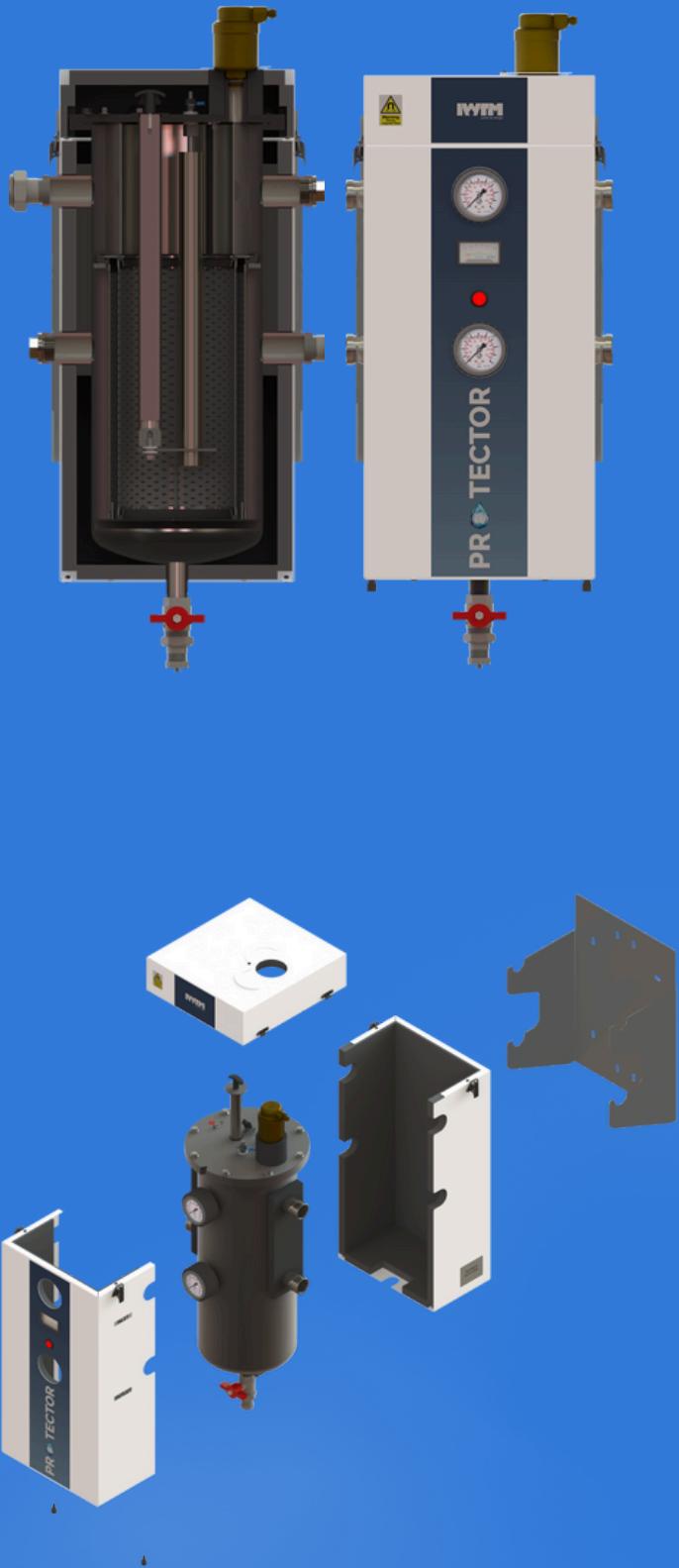
Inside the Protector P10 unit is installed a ss micron filter, to catch and remove all sediments and particles.

- Lift the ss micron filter out
- Clean the ss micron filter with a water hose.
- Make sure all particles are removed from the ss micron filter .

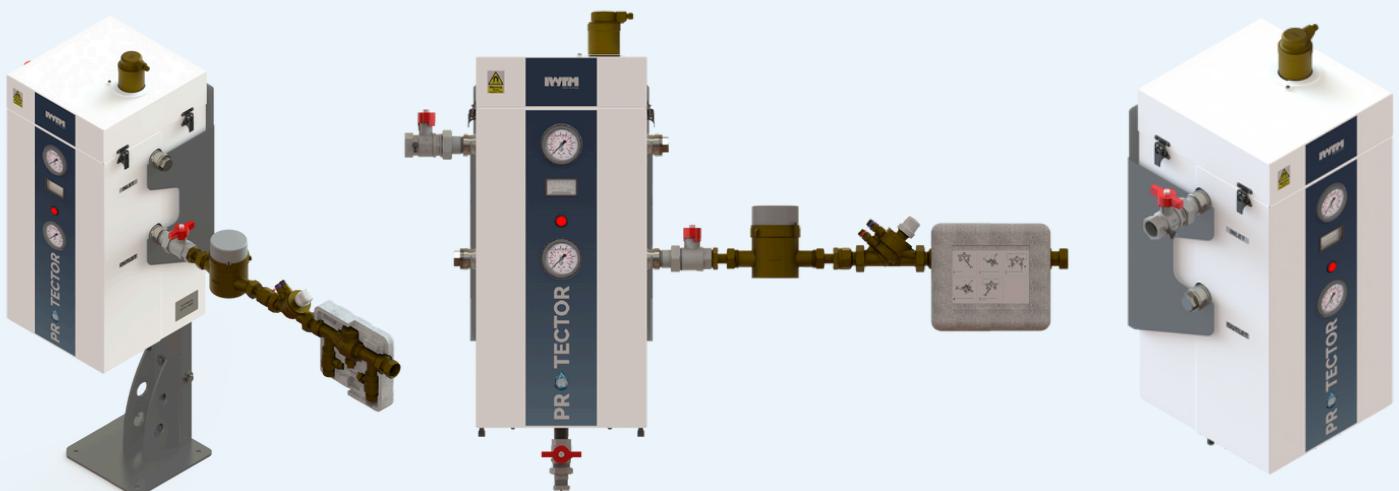
When done gently replace the ss micron filter.



(AISI 316 with
40µm stainless
steel micron filter)

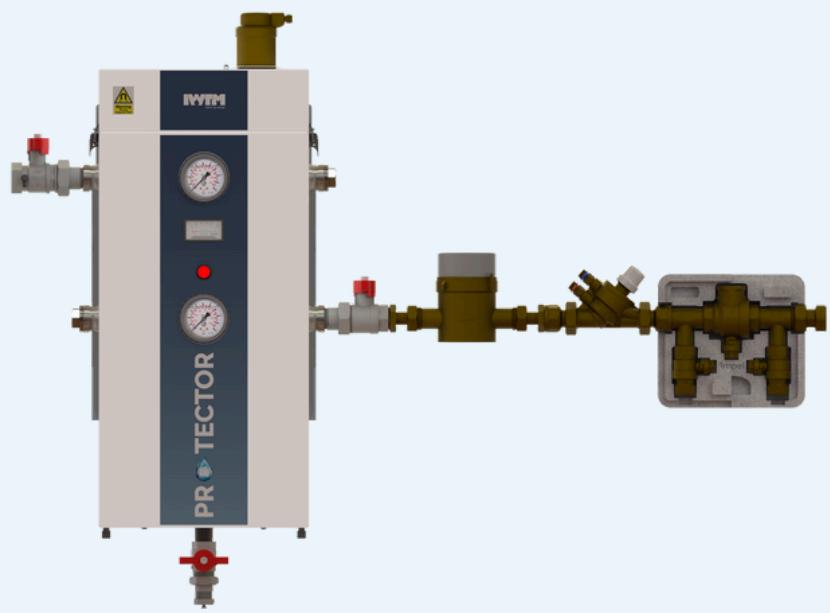
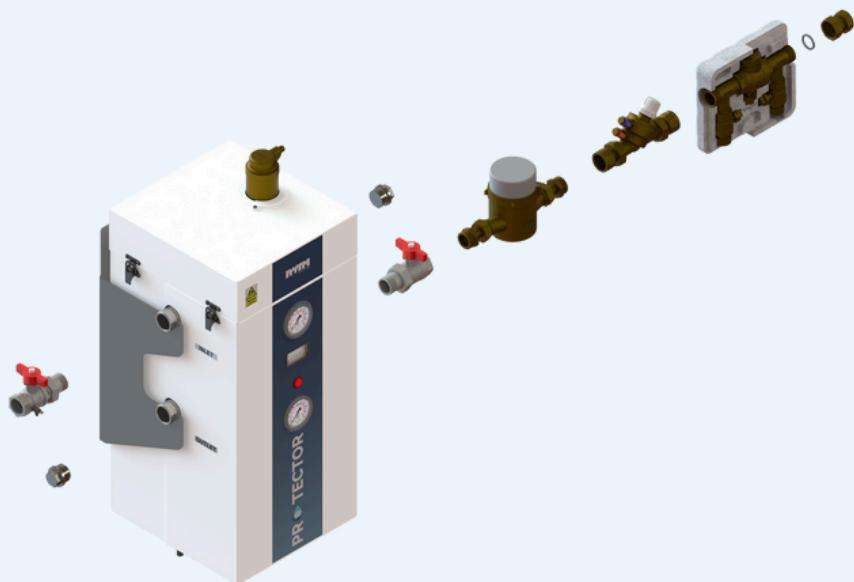


Part No.	Description
Protector - Complete Units	
170012	PROTECTOR P10_1" F WITH UK VALVE KIT_ **V2
170021	P10-07_Floor stand
Protector - Bag Filters	
210001	FELT BAG PES SIZE O1 Ø 178 x L 419 mm 1µm
210002	FELT BAG PES SIZE O1 Ø 178 x L 419 mm 5µm
210003	FELT BAG PES SIZE O1 Ø 178 x L 419 mm 10µm
210004	FELT BAG PES SIZE O1 Ø 178 x L 419 mm 25µm
Protector - Stainless Steel Strainers	
170155	STAINLESS STEEL FILTER P10, 40 MICRON
Protector - Spare Parts	
210110	HOUSING GASKET Ø219.1 (EPDM)
210114	BAG HOLDER GASKET (EPDM)
101564	A N O DE SET NO MESH - P10
170125/502130	AIR VENT
170126	ANALOG INDICATOR
F_00150	EPDM O-ring Ø228.19 x 3.53 mm
F_00214	WATER METER 6.3 MC/H DN25



VALVE KIT

The Protector P10 is supplied with the following valve kit which is packed inside the main Protector P10 box.



WARRANTY CONNDITIONS

The stainless steel tank assembly for IWTM Protector™ units, including the Protector and ProFill, and the marine units, models T50/T100/T260/T500/T800 and T1000, is guaranteed for a period of 25 years against rusting through. This warranty is subject to the following conditions:

Protector/Industrial unit warranties will only be validated if the system is installed, in line with manufacturers recommendations, with an appropriate ProFill demineralising device ensuring that all manual or automatic make up and refill water is demineralised in accordance with VDI2035.

Periodic maintenance must be undertaken at least every 12 months in accordance with our manuals, proven to have been carried out by a specialist service company with clear, documented evidence.

This 25-year warranty only extends to the main tank and not to any supplied accessories, meters, AAV's, anodes, filters, etc. The warranty provides for a replacement unit only and not for labour or any other costs associated with the replacement of the equipment.

PLEASE SEE OUR FULL TERMS AND CONDITIONS ON YOUR QUOTATION FOR FURTHER DETAILS

SERVICE JOURNAL

Installer:

Project:

Date of installation:

Device No:

Drain Interval:

Service Interval:



Founded in 1992, IWTM have been working with chemical free water treatment using electrochemistry for over 30 years and have offices in Norway, UK, Finland, Sweden, Canada, USA and a worldwide presence in the Marine sector.

We have developed models specifically suited to the higher demands of the marine industry operating at higher pressures and higher temperatures. The marine products are provided worldwide on the world's largest cruise ships working with the leading operators in this sector.

Having secured DNV approval in 2003, we are still the only chemical free water treatment manufacturer to have this certification and approval. DNV is a globally leading quality assurance and risk management company operating in more than 100 countries.

The IWTM Protector™ is our most recently developed product. The Protector range is now available to our land-based customers.

Version 12: November 2025 In line with continued product development we reserve the right to make any changes to this document without any given notice.

PROTECTOR



**LETTER OF COMPLIANCE
CLEAN MARITIME
MACHINERY AND COMPONENTS**

COMPLIANCE LETTER NO. 1

This is to certify that the

Water Treatment Units

with type designations

15, 25, 50, 75, 100, 260, 500, 800 and 1000L

Manufactured by

International Water Treatment Maritime AS

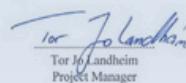
SLEMMESTAD, Norway

is found to comply with

Det Norske Veritas' Standards for Certification 2.17 (new), Standard for CLEAN Maritime Machinery and Components

HØVIK
June 4th 2003


For Morten Ostby
Project Responsible


Tor Jø Landheim
Project Manager

DET NORSKE VERITAS

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