

INTEWA

INTEWA PRODUCTS



RAINMASTER Eco

Installation and user manual

WATER, WE 'RE IN OUR ELEMENT

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1. Introduction and scope of application

Congratulations on purchasing your **RAINMASTER Eco (RM Eco)**.

The *RM Eco* is specially designed for rainwater and greywater harvesting in single family dwellings. Optimised for the water requirements of small families, and using diaphragm pump technology, the *RM Eco* is the first rainwater module to offer up to 70 % lower power consumption when compared to conventional rainwater modules.

The RM Eco is compatible with the following combinations:

Toilet / Urinal:

You can connect up to three toilets and one urinal.

Note:

The maximum installation height for toilets and washing machines, above the RM Eco control unit, is 6 m. The filling time of toilet cisterns increases with the simultaneous flushing of 2 or more toilets. If a urinal is used in parallel to other toilets, then the flow pressure may not always be sufficient.



Washing machine:

You can connect up to two washing machines.

Note:

If more than one washing machine is connected, or at the same time for example, the garden is being watered, then depending on the type of washing machine used, your supply may be interrupted if the water does not fill fast enough. In that case, you may have to start the washing machine time-shifted.



Garden / Cleaning:

For small watering and cleaning tasks, a garden tap can be connected.

From this, the following garden consumers may be supplied:

- a 20 m garden hose with spray nozzle, or
- a small lawn sprinkler - up to 2bar (29psi) / 500 l/h RM Eco10
- a small lawn sprinkler - up to 2bar (29psi) / 800 l/h RM Eco 14
- a high pressure cleaner - up to 500 l/h RM Eco 10 or up to 800 l/h RM Eco 14

Note:

- A drip irrigation system needs a special dimensioning in combination with a pressure vessel.



1.1 Modes of operation

Automatic mode

In Automatic mode, the diaphragm pump carries rainwater from the tank into the home and onto respective applications (e.g. toilets etc.). If the tank is empty, this is then detected by the float switch in the tank which instructs the electronic 3/2-way motorised ball valve to change to the mains water mode. The suction line is then blocked and the required mains water is taken from the built-in supplemental supply container within the *RM Eco*. When the rainwater tank is refilled back with rainwater, the float switch detects this and the electronic 3/2-way motorised ball valve switches back to the rainwater intake setting.

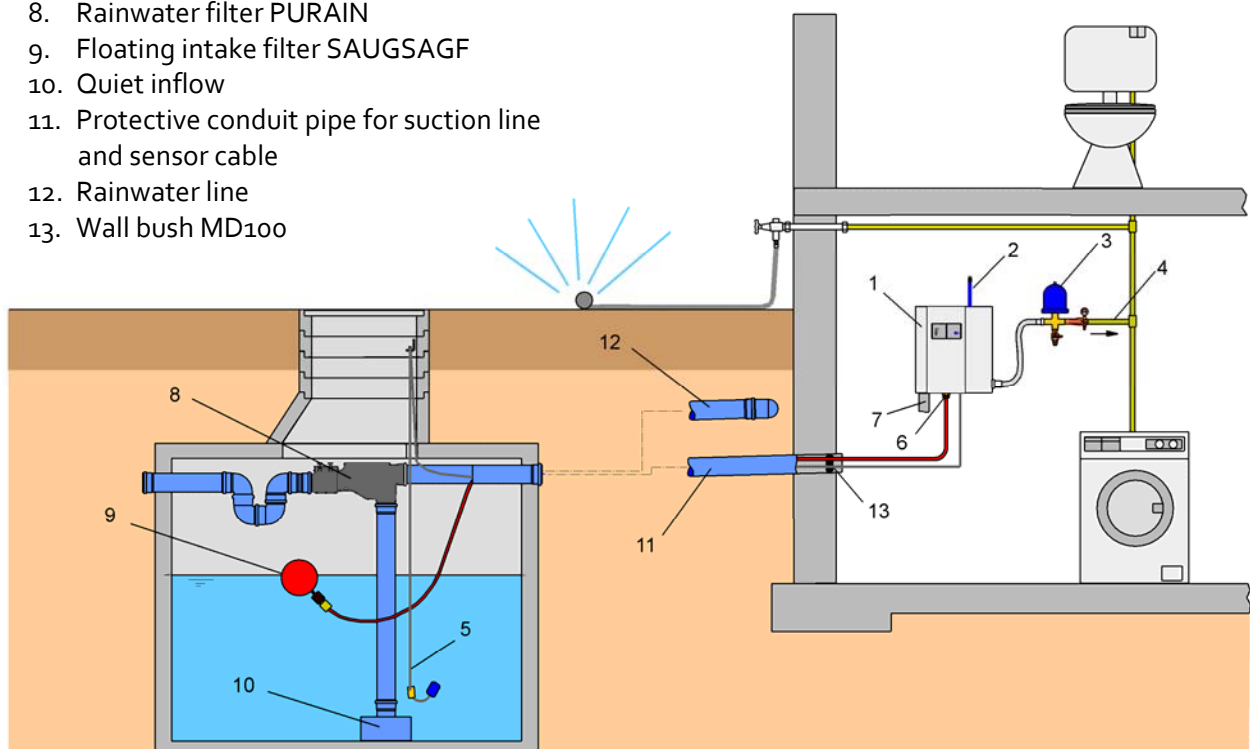
Maintenance mode

In Maintenance mode, the 3/2-way ball valve switches permanently to mains water mode, where the consumer is continuously supplied from the supplemental supply container.

In both modes, the power on and off of the diaphragm pump is done by means of the built-in pressure switch. The anti-dry running protection of the diaphragm pump, and the stagnation protection of the supplemental water supply (the regular refreshing of water in the supplemental supply) are automatically controlled by the unit's built-in electronics.

Optionally fill level status indicator (RM Eco-FS) or an external charging pump (RM Eco-LP) for boosting water intake can be connected to the board.

1. Rainwater module RAINMASTER Eco
2. Mains water connection
3. Pressure line set with expansion tank
4. Pressure line to consumers
5. Float switch
6. Suction line
7. Emergency overflow
8. Rainwater filter PURAIN
9. Floating intake filter SAUGSAGF
10. Quiet inflow
11. Protective conduit pipe for suction line and sensor cable
12. Rainwater line
13. Wall bush MD100



An example of a rainwater harvesting system with external storage

2. Safety instructions



The live components have to be installed only by a qualified electrician. In case of failure of the electronic device, the product has to be repaired by a qualified electrician before being operated again. There is a risk of electric shock!

The outlet circuit used for the device has to be secured through a circuit breaker protected (16 A in several countries). If unavailable, an FI switch with maximum operating current of 30 mA has to be connected.



These installation and operating guidelines have to be read carefully before installing the product. The instructions mentioned have to be followed strictly. Modifications to the product are not permitted, otherwise the warranty becomes void.

- The following points have to be strictly observed during the installation and operation:
- Check the product before installation for any visible defects. If defects are present, then the product must not be installed. Damaged products can be dangerous.
- Installations at the fresh water pipeline system have to be only performed by a qualified installation firm.
- A floor drain has to be provided near the installation site, which can collect inadvertent water discharge (such as with pump defect, pipe breakage etc.) and prevent water damage inside the building. The brickwork behind the water-carrying system must be protected from water (such as with water-resistant paint).
- Make sure that the existing emergency overflows are connected and adequately sized.
- Remove the mains plug if you will be away for more than 24 hours. Lock the fresh water line at the inlet of the device if you will be away for more than 24 hours
- All products must be regularly inspected to maintain proper condition. The minimum inspection interval is mentioned in the maintenance manual.
- Electric devices may be hazardous for children. Therefore children always have to be kept away from the product. Do not let children play with the product.
- Do not install the water-carrying products in locations where the temperature may drop below 0 °C.
- Do not install any electric products in flood-prone areas.
- The operator is responsible for adherence of the safety and installation guidelines.

3. Scope of delivery

RAINMASTER Eco module

wall mounting material and
installation and operating manual



standard accessory A
(mains water connection):



standard accessory B
(pressure line set):

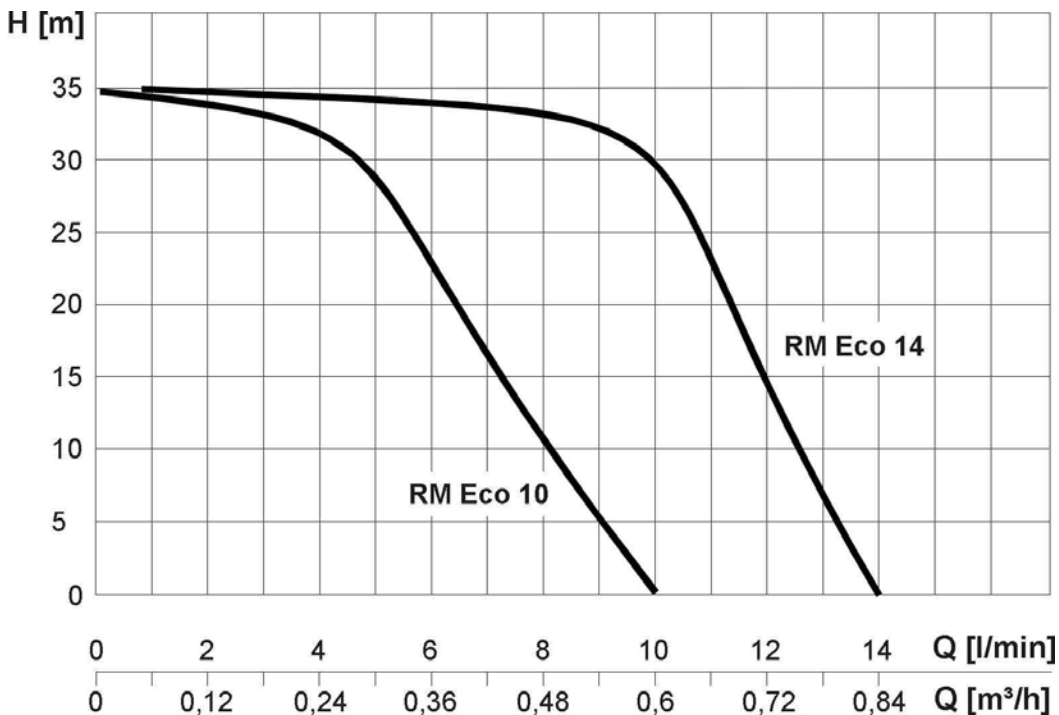


standard accessory C
(float switch):

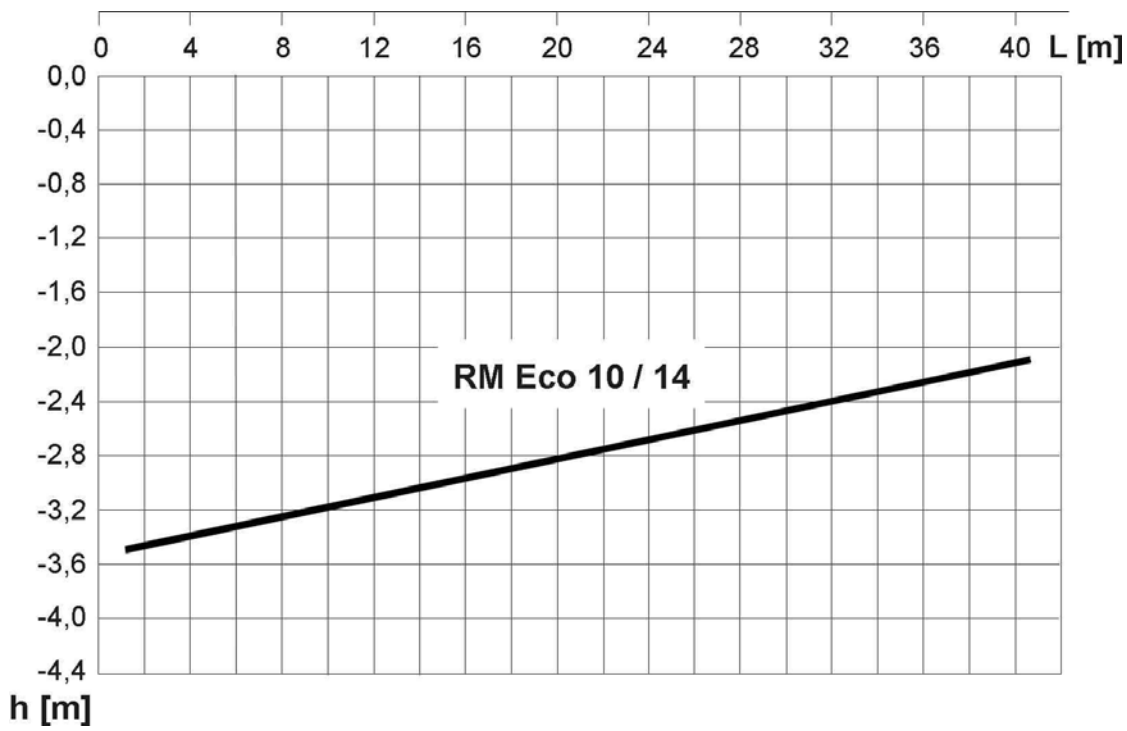


4. Technical Data

	RM Eco 10	RM Eco 14
Dimensions (H x W x D):	398 x 353 x 200 mm /	398 x 353 x 200 mm /
Weight:	8 kg	9 kg
Switchable power supply input:	110-230 V AC / 50-60 Hz	110-230 V AC / 50-60 Hz
Switchable power supply output:	24 V DC +- 5%	24 V DC +- 5%
Basic controller input:	22-28 V DC	22-28 V DC
Power intake:	90 W	130 W
Max. operating pressure:	3,5 bar / 50 psi	3,5 bar / 50 psi
Max. Volume flow rate:	10 l/min / 2.64gpm	14 l/min / 3.7 gpm
Intake height (self-priming):	see intake diagram	see intake diagram
Pump start-up pressure:	approx. 2.4 bar / 34 psi	approx. 2.4 bar / 34 psi
Noise level:	approx. 48 dbA	approx. 58 dbA
Permitted mains water preliminary pressure:	2.5 - 6 bar / 36 – 87 psi	2.5 - 6 bar / 36 – 87 psi
Max. height between pump and consumer:	10 m	10 m
Connector mains water (BSP):	1/2" female	1/2" female
Connector pressure side (BSP):	3/4" female, union nut	3/4" female, union nut
Connector intake (BSP):	3/4" male	3/4" male
Connector emergency overflow supplemental supply container:	DN50 / Ø55mm	DN50 / Ø55mm
Protection class:	IP 44	IP 44
Float switch:		
Cable length x cross section:	15 m x Ø8 mm	15 m x Ø8 mm
Protection class:	IP68	IP68

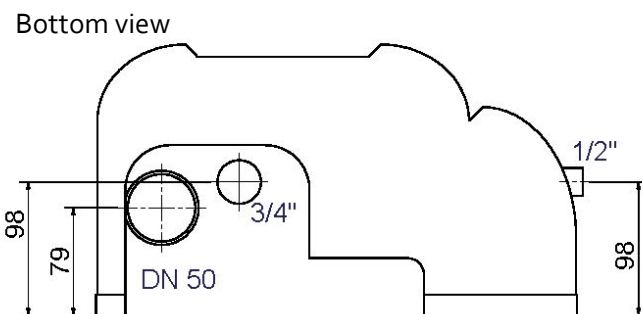
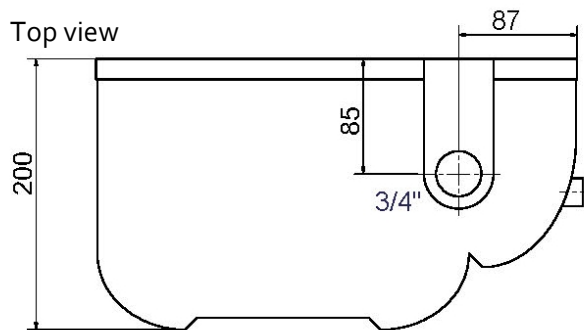
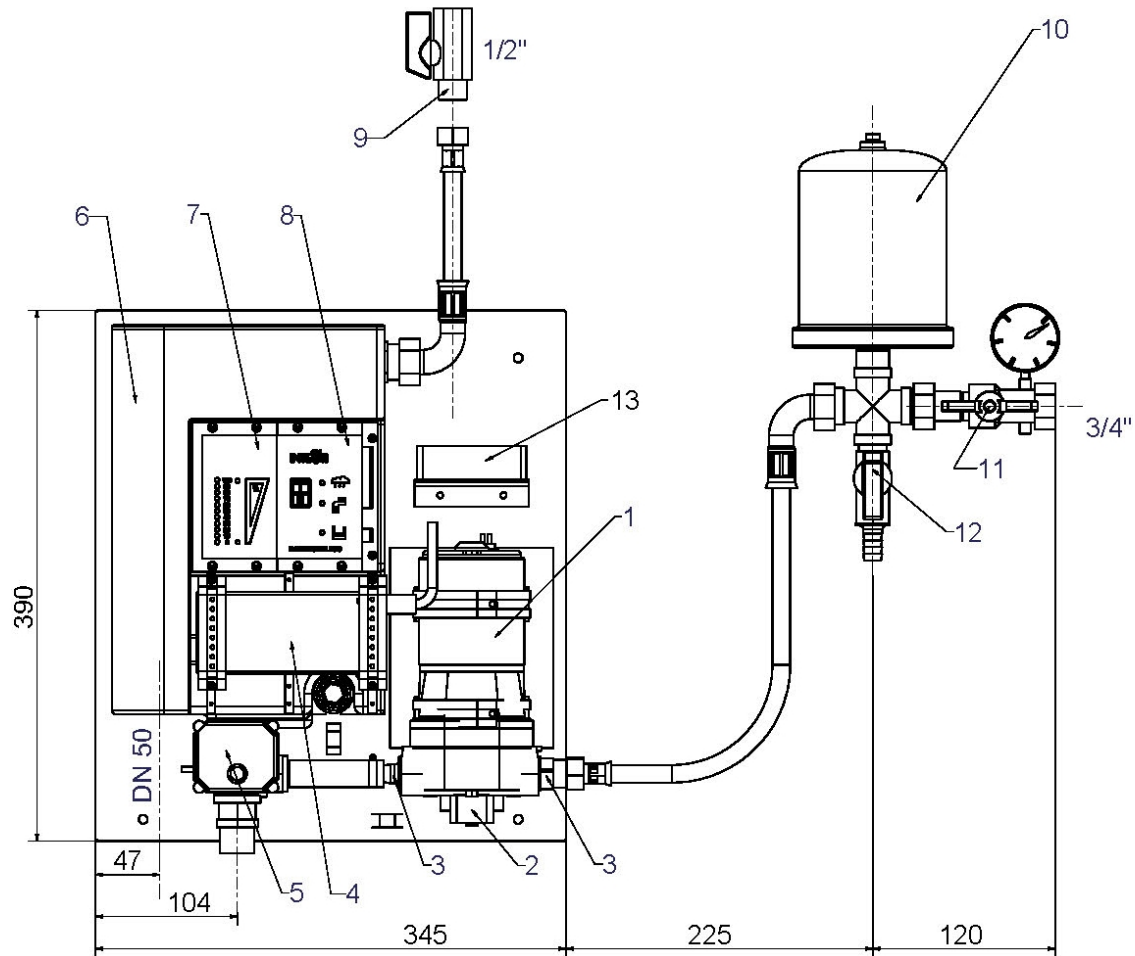


Performance curve of RM Eco 10 / 14



Performance curve of the intake of RM Eco 10 and RM Eco 14

4.1 Device overview and dimensions



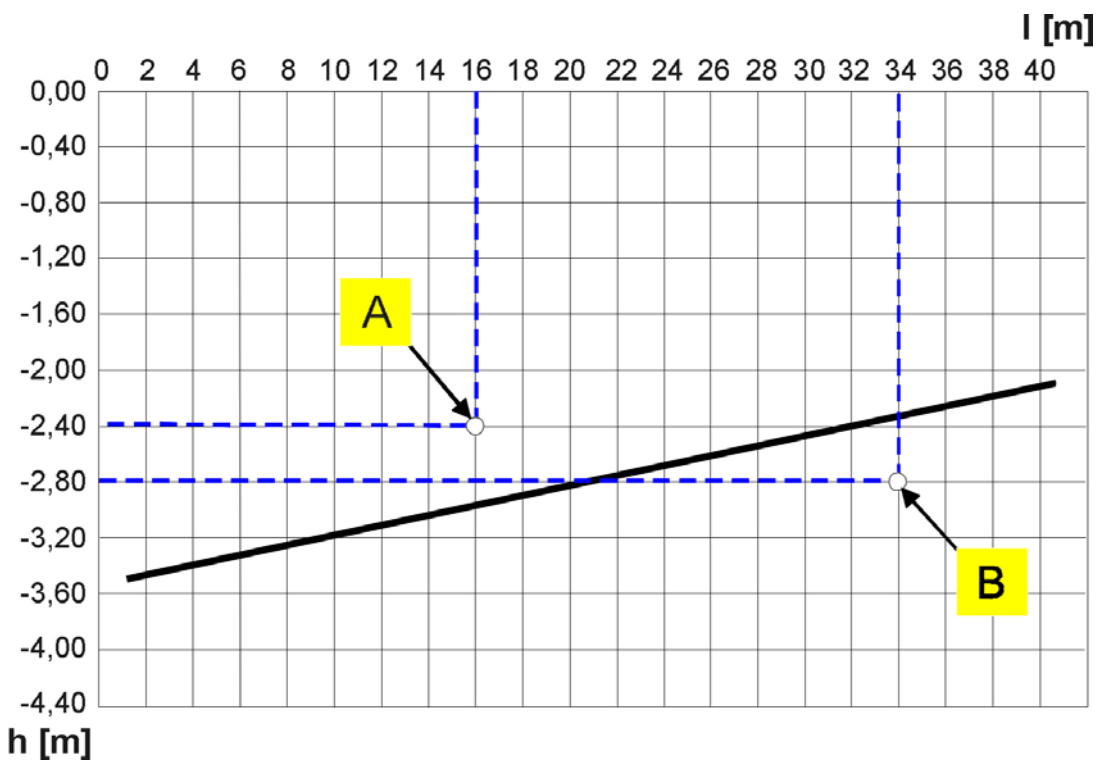
1. Diaphragm pump
2. Pressure switch
3. Line fitting
4. Switchable power supply
5. 3/2-way motorised ball valve, intake connector (3/4" male)
6. Supplemental supply container with overflow connector DN50 (Ø55mm male)
7. Place holder for fill status indicator RM Eco-FS (optional)
8. Basic controller
9. Stopcock for mains water (1/2" female)
10. Expansion tank
11. Pressure shut-off valve (3/4" female)
12. Vent cock
13. Fan

4.2. Dimensioning of the intake line

In practice, the pump automatically starts intake due to decrease in pressure (pipe friction, intake level) only in a certain range. In this operating range, it evacuates the air from the pump independent of the suction line (for example, with initial startup operation). The intake characteristic line indicates the dependence of intake length on the intake level. The determined value is above the represented intake line in the diagram. If the intake point is below the intake performance line, then a charging pump (optional accessory RM Eco-LP) is used to ensure the intake process proceeds reliably and with sufficient safety.

Note: The charging pump boosts the water intake pressure, so that an intake level of up to 3 m high can be attained. This means that, the performance curve moves 3 m (9.8 ft) parallel towards down.

Sample dimensions:



Example A:

Length of suction pipe: = 16 m

Intake level: = -2,40 m (Height between deepest suction point and pump)

→ o.k. since above the characteristic curve

Example B:

Length of suction pipe: = 34 m

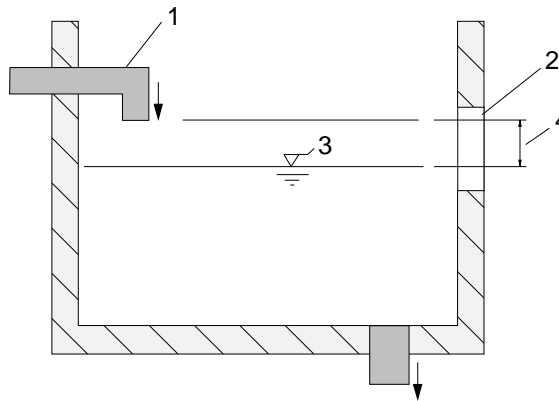
Intake level: = -2,80 m (Height between deepest suction point and pump)

→ not o.k. since below the characteristic curve

→ RM Eco-LP (Art.-No. 22 00 97) charging pump is required

4.3 Standards, Directives, tests

The *RM Eco* meets the DIN 1989-4 "Components for Control and Supplemental Supply" standard for rainwater harvesting systems. The DVGW mark of approval confirms the presence of the mandatory "air gap" (as per DIN EN1717) for secure separation of processed water from the mains water line, which is integrated into the *RM Eco*.



1. Mains water inlet
2. Emergency overflow
3. Max. possible water level
4. Air gap = secure separation of mains water and processed water

Mains water supplemental supply device, Type AB as per DIN EN 1717

The power is supplied via a TÜV GS-certified switchable power supply. All components of the *RM Eco* are run on 24 V DC low voltage technology.

The above mentioned device corresponds with the basic safety and health requirements of the EC directives for machines. Any modification of the device not coordinated by INTEWA will void the warranty.

This equipment specifically fulfills the requirements of the following EU directives:



EC directives for machines (89/392/EWG) in accordance with 91/368/EWG
EC Low voltage directives (73/23/EWG)
EG Directives for electromagnetic compatibility (89/336/EWG) in accordance with 93/31/EWG

The conformity of the equipment with the above mentioned directives is confirmed by the CE symbol.

Applied harmonized EU standards:

EN 60335-1: 1194/A1/A11/A12/A13/A14, EN 60335-2-41: 1996

Applied standards and technical specifications:

DIN 1988-2, DIN 1989-4, DIN EN1717, DIN EN 13077, BGA KTW

Tests/Monitoring:

Mains water supplemental supply device:
DIN-DVGW mark certified



Mains water supplemental valve:
WRAS mark certified



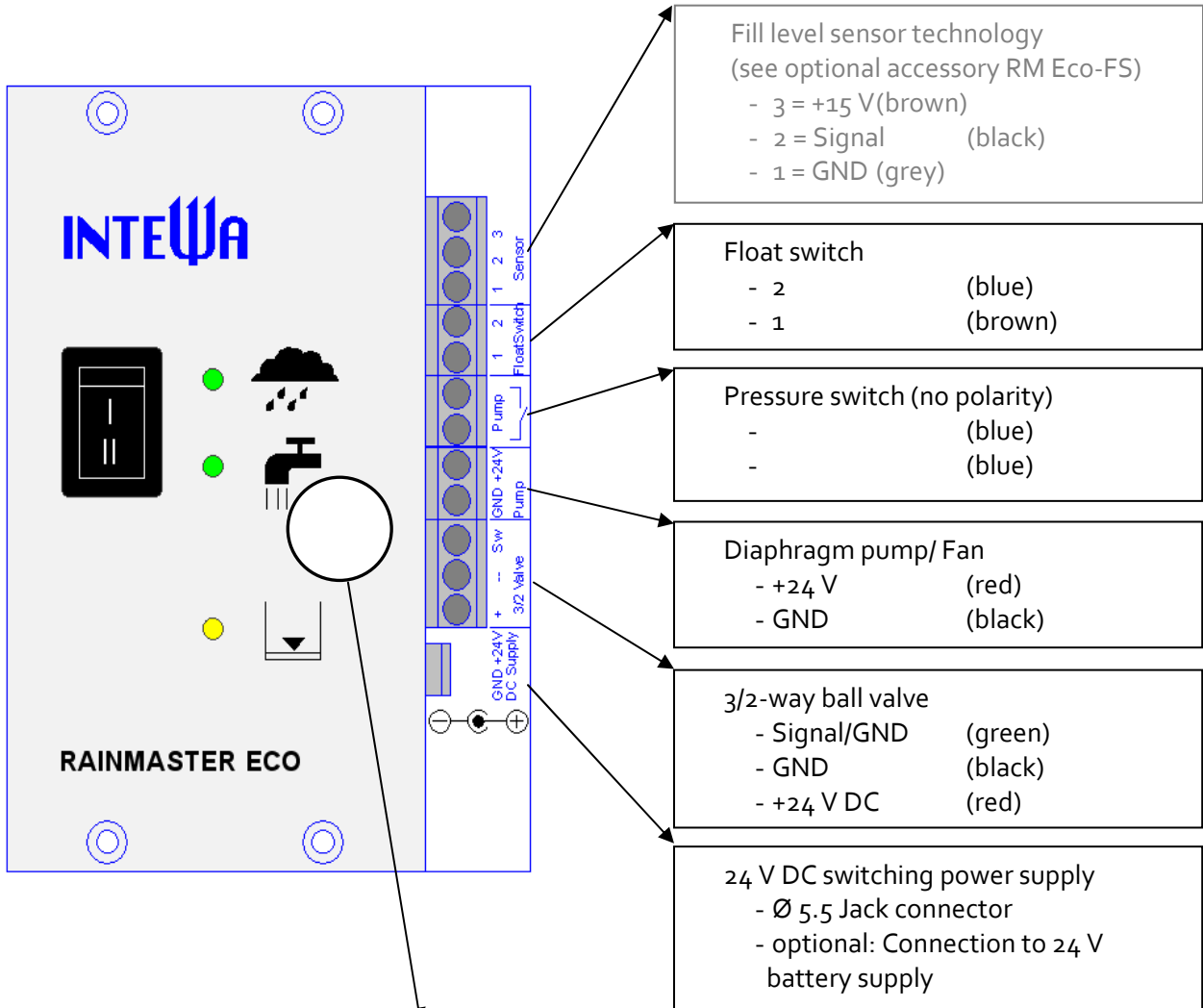
Switchable power supply:
TÜV Rheinland, TÜV GS approved



5. Overview of components

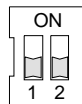
The RM Eco has a modular design. Each component can be separately changed.

5.1 Components of basic controller

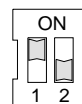


The stagnation protection can be activated via a code switch on the PCB. For this, the front plate must be removed.

- a.) Stagnation protection is deactivated (Factory setting)

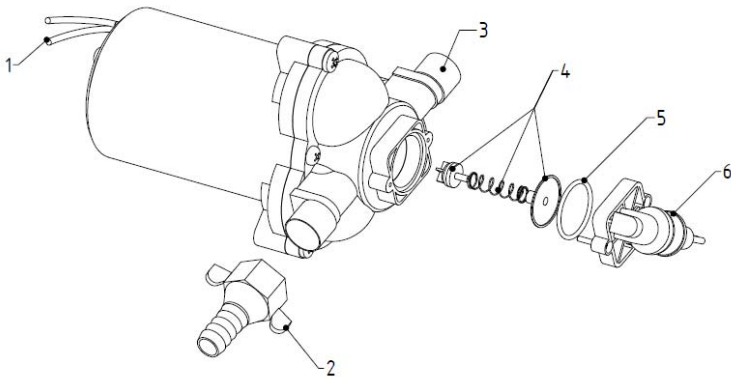


- b.) Stagnation protection is activated
Every two weeks, the supplemental water supply is changed



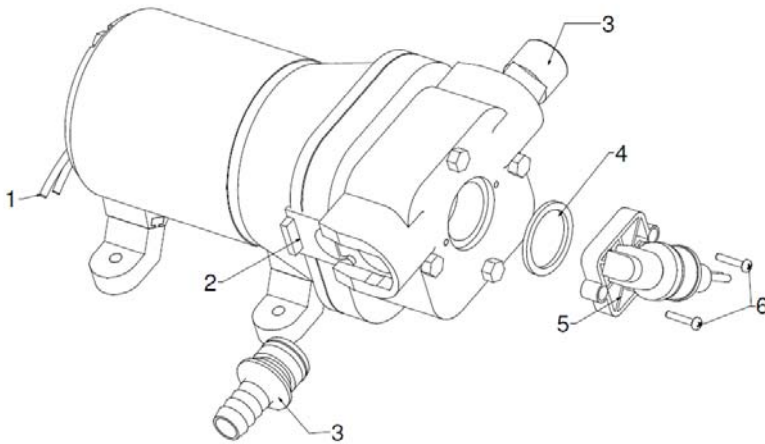
5.2 Components of diaphragm pump

5.2.1 Membranpumpe



1. Supply cable (red/black)
2. Suction connection (union nut/hose)
3. Pressure connection (fix)
4. Non-return-valve
5. O-ring seal
6. Pressure switch with fastener

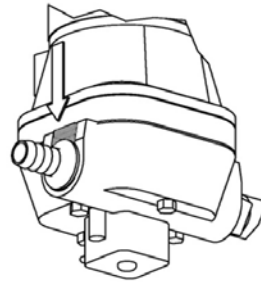
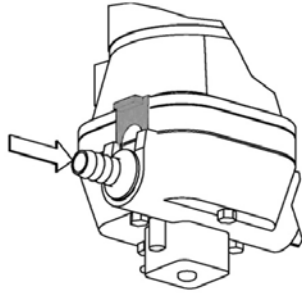
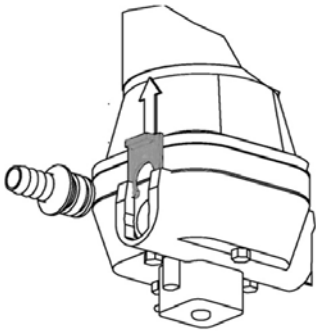
Pump for Rainmaster Eco 10



1. Supply cable
2. Slide lock
3. Line fitting
4. O-ring seal
5. Pressure switch
6. Fastener for pressure switch

Pump for Rainmaster Eco 14

The line fittings on the intake and pressure side of the pump are provided with quick release fasteners. The slide lock must be pulled out for dismantling, than the line fitting can be removed. While mounting, ensure that the seal is assembled only when the slide lock is fully inserted!

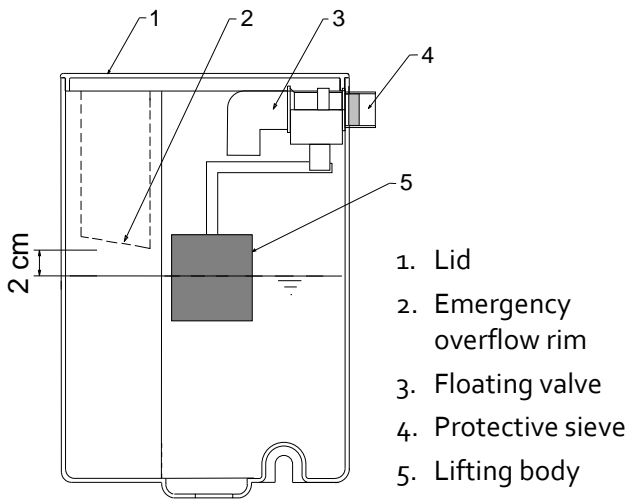


5.2.2 Fan



The fan cools the pump by a uniform air flow. If no continuous operation is provided, the fan can be disconnected electronically. This saves about 6W power. Nevertheless, if the pump is operating continuously (without fan) with high back pressure and the pump is getting too hot, the internal pump temperature sensor will stop the pump. After cooling down the pump starts automatically again.

5.3 Components of the supplemental supply container

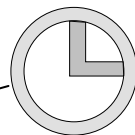
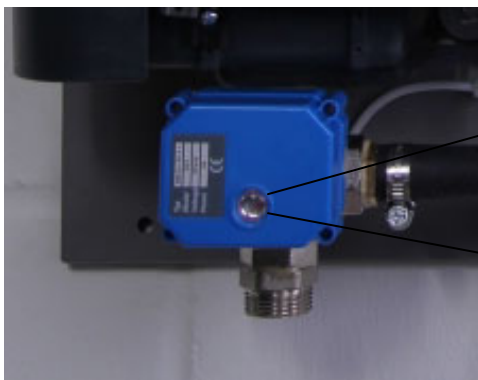


The floating valve keeps the water level constant in the supplemental supply container. The maximum water level should be approx. 2 cm below the overflow rim when the floating valve is closed (backside of the container). The water level can be adjusted by twisting the black lifting body.

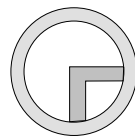
The floating valve incorporates a protective sieve.

5.4 Components of electronic 3/2-way ball valve

The ball valve selects between rainwater intake and mains water intake. The built-in display shows which mode is currently selected.



Position mains water mode
Pump takes water from the supplemental supply container



Position rainwater mode
Pump draws water from the rainwater tank

5.5 Components of the pressure line set

The pressure line set contains an expansion tank, which is necessary to ensure the silent operation of the system. A primary pressure of 2.0 bar is preloaded at manufacture. The expansion tank ensures that the vibration created by the operation of the pump is not transmitted through the piping system.

Procedure for pressure control / maintenance of the primary pressure:

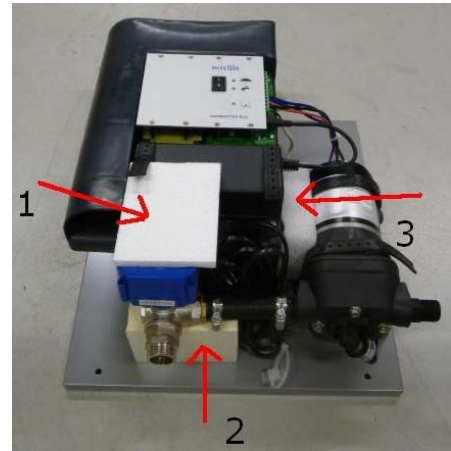
- 1.) Disconnect the mains power to the RM Eco.
- 2.) Close the pressure shut-off valve.
- 3.) Open the vent cock for draining the system pressure to 0 bar.
- 4.) Check the air pressure in the expansion tank with an air pump (with pressure gauge). You can use a bicycle pump or car tyre pump.
Should the primary pressure be too low, use your pump to increase it to the desired pressure.
- 5.) Reconnect the mains power to start the unit again and drain the water, via the vent cock, until bubble free water gushes out.
- 6.) Close the vent cock and open the pressure shut-off valve.

The system is now ready to use.



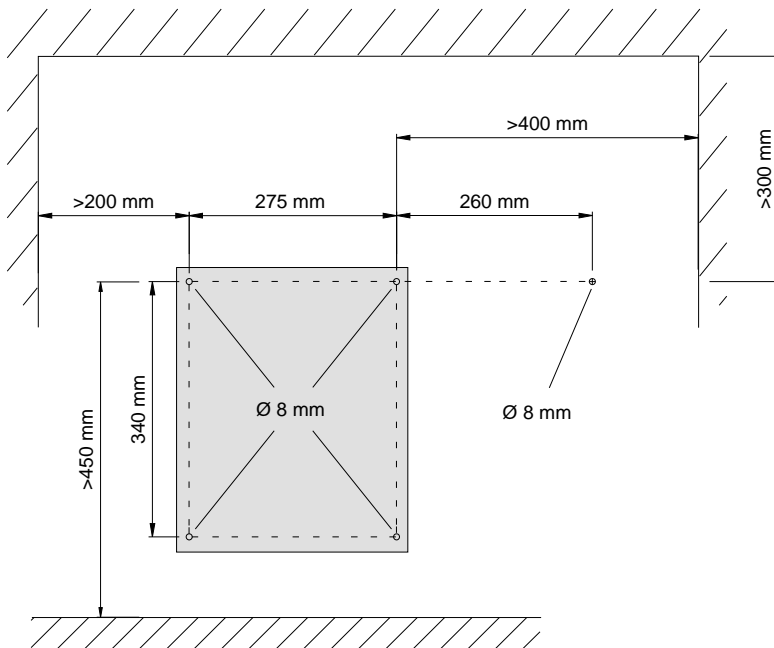
6. Installation instructions for RAINMASTER Eco

The foam and polystyrene parts 1-3 are part of the transport safety and must be removed before installing the RM-Eco.



6.1 Wall mounting

The *RM Eco* is mounted on the wall using the mounting material provided. The lid, bottom and lateral distances indicated should be adhered to when mounting to provide clear maintenance access.



The *RM Eco* is fixed horizontally with of Ø8 mm raw plugs and screws. An additional hole is also drilled 260 mm top and right of the upper mounting holes for connection of the expansion tank mounting bracket.



In order to avoid vibrations, the *RM Eco* must be fixed with all four screws.



6.2 Connection to the mains water line

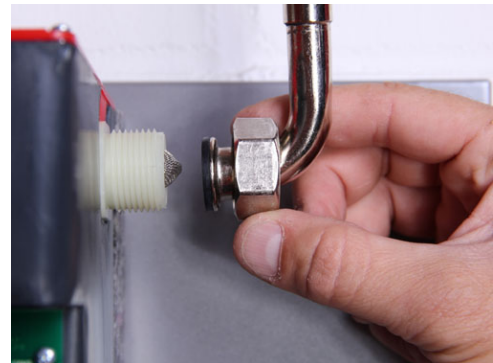
The connection to the mains water line is done with the provided flexible hose with stopcock.

Note:

The flexible hose must not be mounted with tension, since the internal float valve is pressed against the inner wall from here.

All provided flexible hoses have gland screws with flat seals. The rubber seals must be present. Additional sealing material must not be used at gland nuts!

Screw the gland screw into the container connection and carefully tighten with a 30 inch fixed spanner.



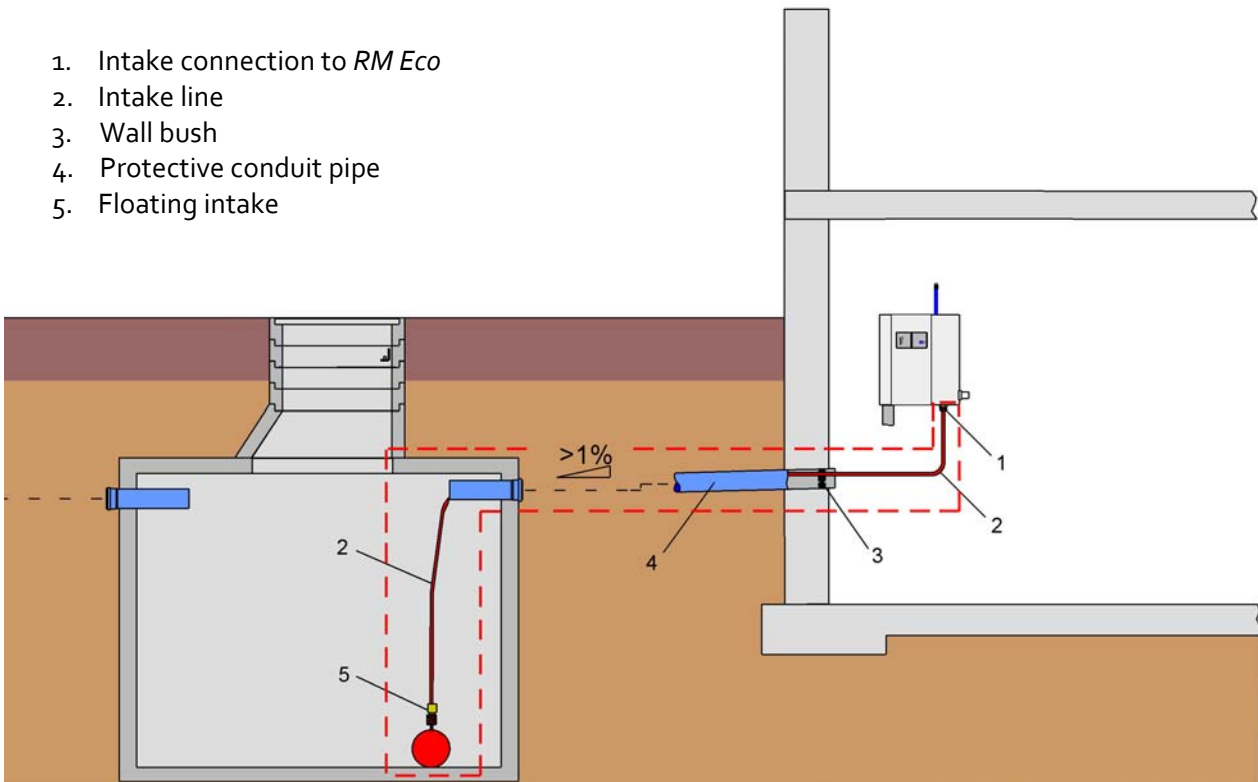
Screw the gland screw on the other end of the flexible pipe into the stopcock mounted in the main water line.



6.3 Installation on the intake side

The installation of the intake requires special attention, since only correct mounting and sealing ensures trouble-free operation of the system. For fault-free functioning, ensure the guidelines concerning intake height and intake length are followed carefully (see Chapter 4.2.).

1. Intake connection to *RM Eco*
2. Intake line
3. Wall bush
4. Protective conduit pipe
5. Floating intake



6.3.1 Installation of a protective conduit pipe

The intake line must be installed in a (e.g. DN100) protective conduit pipe in order to ensure all intake lines and pipes can be accessed freely at any time. In order to avoid water accumulating in the conduit, it must be installed with $> 1\%$ slope back towards the tank.

In general, all lines carried in the protective pipe should pass through a wall bush (for example INTEWA MD100 Article number: 61 00 50), at the house. Through this bush, the intake pipe and the float switch cable are routed and sealed by a pressed rubber plate. This prevents water from outside entering the basement/garage/utility room. The wall bush must be mounted as per instructions so that the intake line is never squeezed (contraction of cross section!).

6.3.2 Layout of the intake line

Only an internally reinforced flexible (resistant against vacuum) hose can be used as the intake line. This means we can use a floating intake in the tank. The internal diameter of the intake line must be at least $\varnothing 13$ mm. The INTEWA intake hose (HORIZON $\frac{1}{2}$ ", Article No. 61 00 16) is designed for this requirement.

In order to avoid potential leaks at connection points, it is strongly recommended that the intake hose (from the intake filter in the tank all the way to the *RM Eco* unit) should be one piece – containing no joins.

Warning instructions:

The internal diameter of the intake hose must be at least $D=13$ mm in order to obtain full volume flow.



No water filter may be used in the intake line, since the gaskets are not designed for underpressure. The underpressure for intakes cannot be built up later and the air enters the intake line.



PVC corrugated hoses are not suitable as rainwater suction lines. Experience has shown that after some time these become brittle and permeable to gas/air. The underpressure for intakes cannot be built up later and the air enters the intake line.



No flexible hoses can be used in the intake region since these soft, internal rubber coated hoses are constricted with underpressure.



The intake hose line must never bend, kink or be constricted in any way.



6.3.3 Intake line connection

The intake line is routed through the wall into the house, and connected to the *RM Eco* without tension.

The gland screw is to be tightened to the *RM Eco* connector only by hand.

As the intake hose should not exert any force on the coupling to the unit, the pipe should be securely fastened to the wall with separate pipe clamps.

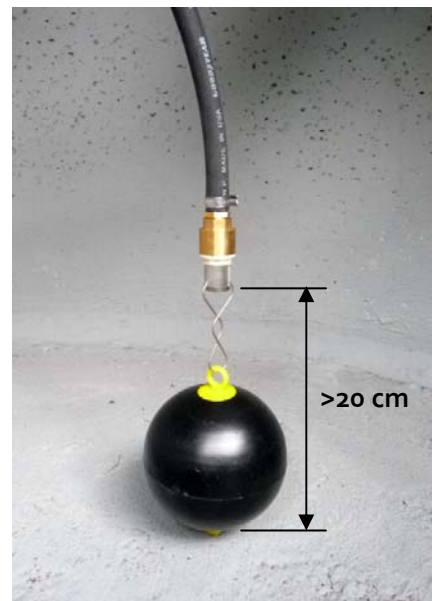


6.3.4 Installation of the floating intake

For best water quality, we recommend the intake line in the tank is installed as a floating intake.

The accessory product SAUGSAGF ½" (Article No. 21 01 33) meets this requirement. The rainwater is drawn from just below the water surface where the water is the cleanest. The integrated non-return valve ensures that water is always present in the suction line. The intake sieve provides additional protection against debris clogging the pump.

If the intake accessory is installed on site, make sure that the intake has a non-return valve, as well as an intake filter. The intake is mounted in such a way, that with the tank being empty, the intake sits at a minimum distance of 20 cm from the bottom of the tank. In this way, the intake of base sediment is safely prevented.



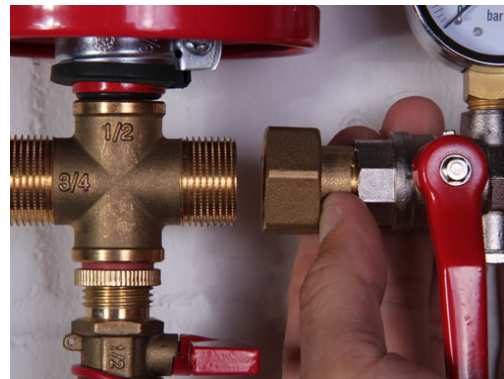
6.4 Installation of the pressure line set

The pressure line set (see scope of delivery) establishes the connection between the pump and pressure line system.

The expansion tank is fixed to the wall with the pipe clamps provided. The vent cock is equipped with a gasket ring so that it can be screwed directly into the T piece without additional gasket.



The pressure shut-off valve, incorporating the pressure gauge, is then connected into the line by screwing the flat sealing gland screw into the expansion tank T-piece.



The flexible hose connects the pump pressure line to the other side of the expansion tank T-piece. These line connections are made with flat sealing gland screws.



Note:

Because of the stronger capacity/flow rate/volume pressure a larger 5-liters expansion vessel is delivered with the RM-Eco 14. This reduces frequent switching on and off of the system in case of low flow by small customers.



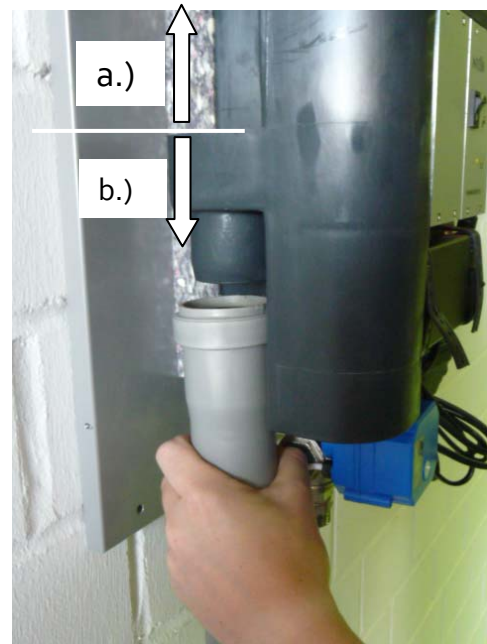
6.5 Connecting the emergency overflow

The *RM Eco* has an emergency overflow line (DN 50) which must be connected to the waste drainage system of the building. The drainage line must be of a size to accommodate a maximum volume flow rate of 20 l/min.

The position of the backwater level must be taken into consideration while connecting to a drainage system, in order to prevent backflow of drainage water from the open sewer line (design according to the DIN EN 1717) entering the *RM Eco*.

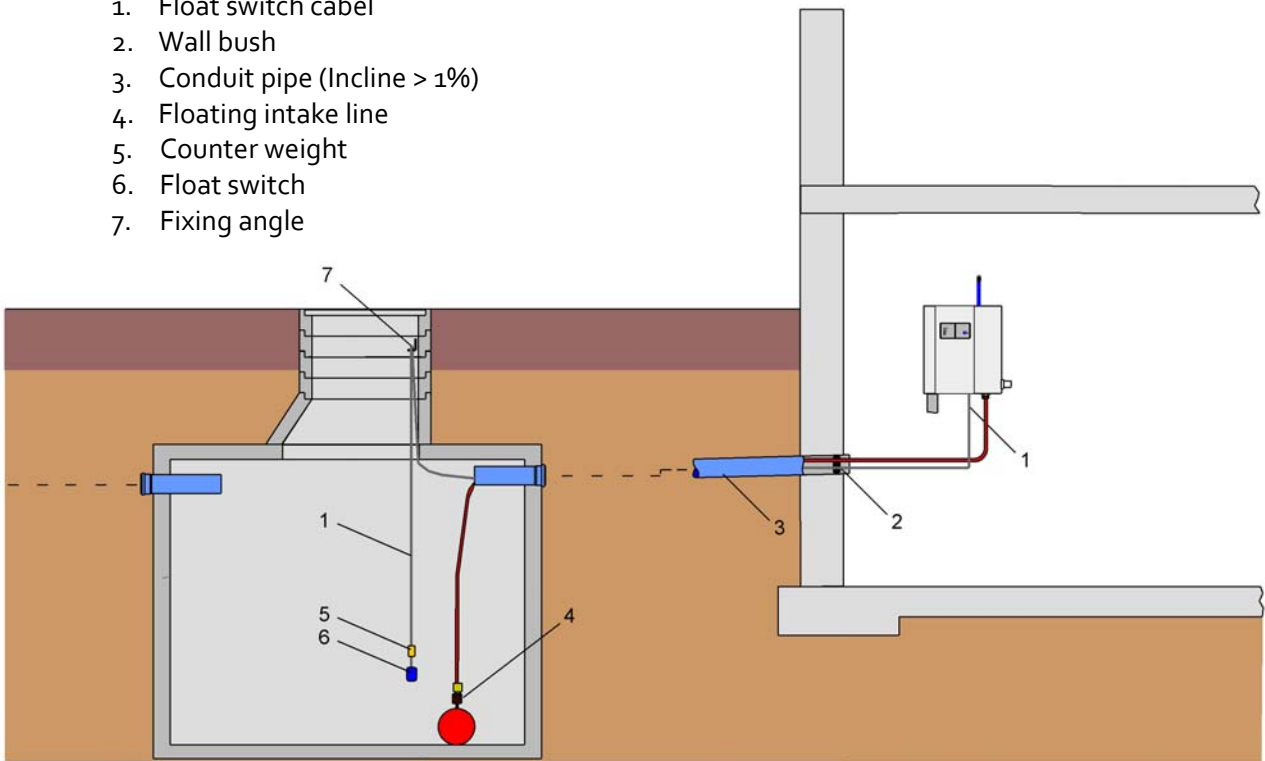
The position of the backwater level determines the type of line:

- a) Backwater level **above** the emergency overflow drainage height of the supplemental supply container:
Connection of the emergency overflow must be done by a lifting system.
- b) Backwater level **below** the emergency overflow drainage height of the supplemental supply container:
Connection of the emergency overflow to a ventilated channel line (DN 50) is done via a siphon.



6.6 Installation and adjustment of the float switch

1. Float switch cable
2. Wall bush
3. Conduit pipe (Incline $> 1\%$)
4. Floating intake line
5. Counter weight
6. Float switch
7. Fixing angle

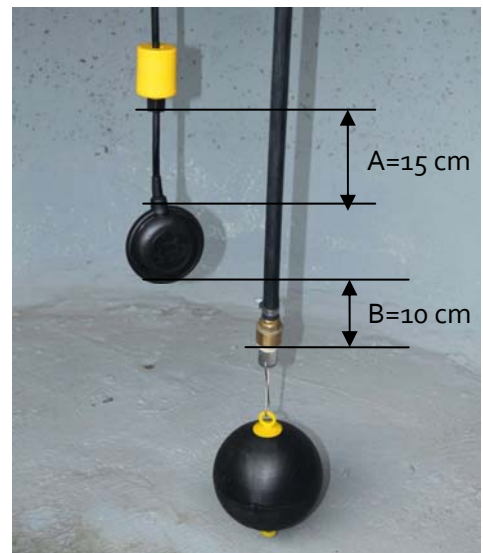


The float switch cable is led to the *RM Eco* via a protective conduit pipe. The fixing point for the float switch cable is installed in an accessible area of the tank opening so that it is possible to access (such as for inspection and maintenance purposes) even with a full tank level. Height can be adjusted by means of the built-in cable gland (fixing angle).



The intake line is installed in such a way that the floating ball just touches the bottom of the empty tank (see Chapter 6.3.4). The float switch counter weight (A) is mounted 15 cm above the float switch. The safety distance between the intake filter and the bottom of the float switch must be at least 10 cm (B), allowing the float switch enough cable length for free movement.

The float switch is electrically connected to the base controller (see Section 5.1).



7. Start up and use

7.1 Start-up in mains water mode

1. Check that all lines are connected.

Select maintenance mode = **Switch position II.**

Open the mains water line stopcock so that the supplemental supply container is filled with water.



2. Close the pressure shut-off valve.



3. Open the air vent (hold a bucket of water under the air vent) and start the pump by plugging in the mains power.

Let the water run from the air vent into the water bucket until there is no more sign of bubbles (a clear stream).



4. Close the air vent.



5. Open the pressure shut-off valve and release the air from the (house) line (e.g. by pressing the toilet flush several times).

Close the pressure shut off valve. The pump will automatically switch off when the maximum system pressure is reached.



7.2 Start-up in rainwater mode

The rainwater mode can only operate if there is sufficient water in the rainwater cistern. The tank display does not light up then.

1.) Select automatic mode = **Switch position I**



2.) Close the pressure shut-off valve.



3.) Open the air vent (hold a bucket of water under the air vent) and start the pump by plugging in the mains power. The motorised ball valve will move into the "rainwater" intake position. Let the water run from the air vent into the water bucket until there is no more sign of bubbles (a clear stream), so that all the air is removed from the suction line.



4.) Close the air vent.



5.) Open the pressure shut-off valve and release the air from the (house) line (e.g. by pressing the toilet flush several times). Close the pressure shut off valve (house line). The pump will automatically switch off when the maximum system pressure is reached.

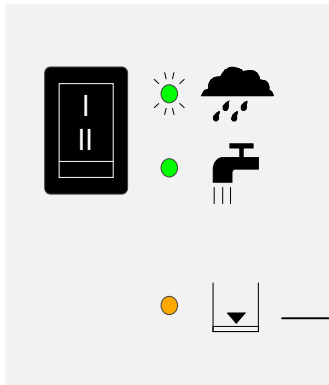


7.3 Modes of operation and display

7.3.1 Automatic mode (Switch position I)

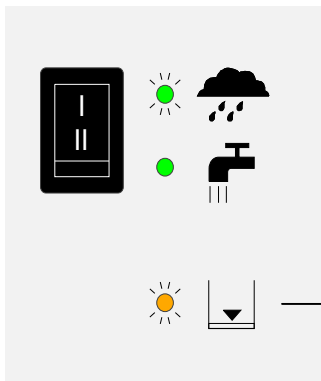
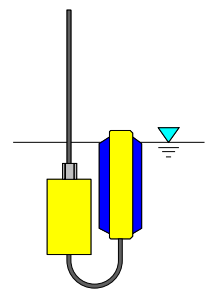
Automatic mode is the normal operating mode, and is selected by **Switch position I**. This is indicated by the upper LED. In this mode, the unit automatically switches from rain water to mains water, if the float switch detects the rainwater tank is empty.

Two operating modes can be used according to the two positions of the float switch, both of which are indicated by the lower LED:



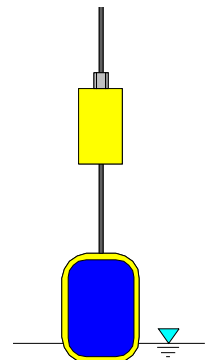
Automatic mode
„Rainwater mode“

→ Rainwater mode, if this light is OFF it indicates that the Rainwater Tank is full



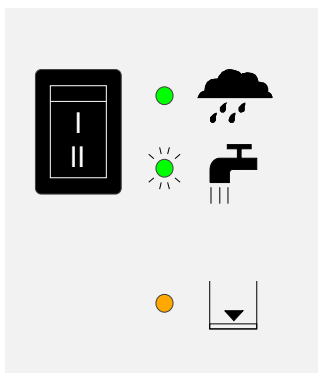
Automatic mode
„Mains water mode“

→ Mains water mode, if this light is ON it indicates that the Rainwater Tank is empty



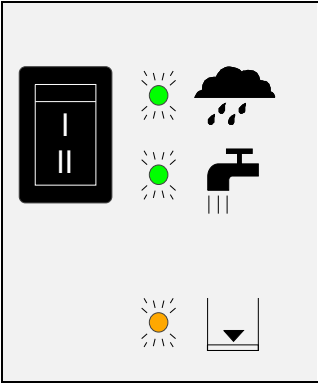
7.3.2 Maintenance mode (Switch position II)

The maintenance mode is selected by **Switch position II**. This mode is selected only when maintenance is to be performed in the tank. The *RM Eco* then operates in continuous mains water mode independent of the float switch.



Maintenance mode
„Mains water mode“

8. Trouble shooting in case of problems

Description of error	Cause	Solution
<p>The pump is not starting and all LEDs are flashing</p> 	<p>The pump has shut down after running Non Stop (exceed of 2 operating hours) due to:</p> <p>a) Anti-dry running protection</p> <ul style="list-style-type: none"> - Air in intake line, as float switch has not registered an empty tank and did not switch to mains water mode - Air in intake line because of a leakage <p>b) Continuous use by connected consumer</p>	<p>a)</p> <ul style="list-style-type: none"> - Check the functioning and position of the float switch (see chapter 6.3.4). After this restart - Seal connection points and the intake line and restart <p>b) Avoid continuous use of more than two hours</p>
<p>Restart from an Emergency Stop:</p> <ul style="list-style-type: none"> - RESET by pulling out the mains plug for at least 5 seconds until all the LEDs have gone out. - Plug in the mains plug. <p>(Should there no longer be water in the line and/or no pressure is built-up, then air has entered the intake line. The air must be evacuated from the air vent as described in chapter 7.2.</p>		

Description of error	Cause	Solution
Pump does not start and no LED is shining	a) No power	a) Check mains supply
Pump does not start but LED display is o.k.	<p>a) Temperature protection switch, pump is overloaded due to continuous use or pulsating working modus</p> <p>b) Defective pressure sensor</p> <p>c) Carbon brushes have worn out or are defective</p>	<p>a) The pump will automatically restart if motor is cooled. Find out the reason for overload and fix it</p> <p>b) Change pressure sensor</p> <p>c) Change pump</p>
Pump does not turn off	<p>a) Power- off pressure is not obtained (< 3 bar) because of air in the system</p> <p>b) Power- off pressure has exceeded (> 6,0 bar/90psi) as pressure switch is defective</p>	<p>a) Evacuate air from the pipeline system (see Chapter 7.2</p> <p>b) Exchange pressure switch.</p>
Pump is clocking	<p>a) non-sealed leaky consumer</p> <p>b) too light water flow</p>	<p>a) Remove leakage</p> <p>b) Check consumer</p>

Description of error	Cause	Solution
Pump clicks and the green LED light flashes ON/OFF regularly	The power consumption of the pump is too high (protection switching of the power supply is activated), because a) the pressure switch is defective (pressure > 6 bar/gopsi) b) Pumping motor is blocked	a) Change pressure switch (see chapter 5.2) b) Change pump
Pump does not attain the maximum pressure of 3 Bar	a) Air in the system	a) Evacuate air from the line system (see chapter 7.2)
In Rainwater mode, the flow rate is too low or pump does not feed any water	a) The intake filter is clogged b) The intake hose is bent c) The suction line or the lines are not sealed d) no switchover to mains water since float switch is incorrectly positioned or is defective	a) Clean intake filter b) Check intake line c) Check intake line and connections d) Check the functioning and position of the float switch (see chapter 6.3.4), then restart
In mains water mode, the flow rate is too low or the pump does not feed any water	a) Not enough or no water in the units supplemental supply tank b) 3/2-way ball valve does not switch over to mains water mode	a) Check primary pressure of mains water, clean filter sieve in the entry of supplemental supply valve (see chapter 5.4) b) Change 3/2-Way ball valve
System does not automatically switch from rainwater to mains water and vice versa.	a) Float switch is not correctly positioned b) Float switch is defective c) 3/2-Way ball valve does not switch over in spite of the float switch signal	a) Check the functioning and position of the float switch (see Chapter 6.3.4), then restart or change float switch b) Change float switch c) Change 3/2-way ball valve
The pumping noise can be heard even from a far distance from the equipment	a) Silencer is not working in the expansion tank	a) Reset the expansion tank's primary pressure to 2.0 bar (see Chapter 5.5)

9. Maintenance

Maintenance of the system is limited to:

- the annual check of primary pressure in the expansion tank (see Chapter 5.5).
- every six months, the intake filter is to be cleaned in the rainwater tank.

10. Spare parts

Description of article	Figure no. (see page 5)	Order name
Diaphragm pump RM Eco 10, inclusive pressure switch	[1]+[2]	RM ECO P10
Diaphragm pump RM Eco 14, inclusive pressure switch	[1]+[2]	RM ECO P14
Pressure switch	[2]	RM ECO PD
Line fitting set (Intake side / Pressure side)	[3]	RM ECO TS
Switching power supply 24 VDC, 4 A for RM Eco 10	[4]	RM ECO N10
Switching power supply 24 VDC, 5,6 A for RM Eco 14	[4]	RM ECO N14
3/2-way ball valve	[5]	RM ECO KH
Supplemental supply container	[6]	RM ECO B
Floating valve for supplemental supply container	[3] s. p. 11	RM ECO NSP
Basic controller	[8]	RM ECO BPL
Expansion tank RM Eco 10 (1 litre)	[10]	RM ECO AG1
Expansion tank RM Eco 14 (5 litre)	[10]	RM ECO AG5
Float switch 15m,		RM ECO SCHW15

11. Optional accessories

RM ECO-FS, Art. No.: 220090

The RAINMASTER ECO-FS is a separate fill level indicator for installation in the *RM Eco* unit. By using this, you will always have the fill status of the tank in view.

The RM-ECO-FS contains the display module, the sensor system and the control line for the tank. The display module is simply installed in place of the blank panel on the front cover of the *RM Eco*. The connection to the *RM Eco* main board is done via a ribbon cable.



RM ECO-LP, Art. No.: 220097

The RAINMASTER Eco-LP is a separate charging pump for boosting the water intake line pressure from higher intake depths or longer intake lengths.

The RM ECO-LP contains the submersible pump the intake filter, no-return valve and the floating ball. The connection to the *RM Eco* main board is done via a ribbon cable.



12. Guarantee

INTEWA GmbH guarantees this unit for 24 months from the date of purchase. Kindly keep the sales receipt as proof of this date.

Within the guarantee period, INTEWA GmbH reserves the right to either repair or replace faulty parts at its own discretion.

The warranty does not cover any damage due to improper use, wear and tear, or intervention by third parties. The warranty does not cover any defects which may only minutely affect the value or usability of the device.

13. Contact / Device number

For customers in Germany:

For any queries, ordering of spare parts, as well as in case of service, kindly contact INTEWA GmbH directly, quoting your product's model and identification numbers and the purchase invoice details, at:

INTEWA GmbH
Jülicher Straße 336
52070 Aachen

Tel.: 0049-241-96605-0
Fax: 0049-241-96605-10
Email: info@intewa.de
Internet: www.intewa.de

For customers in other countries:

For any queries, ordering of spare parts, as well as in case of service, kindly contact your installer or the authorised importer, quoting your product's model and identification numbers, and the purchase invoice details.

Your RAINMASTER Eco's identification number is displayed on the right hand top side of the back mounting plate. The unit's main housing must be removed to see this.

