

Hydraloop Home, Garden & Pool

User & installation manual



Contents

1. Introduction	3
2. Product definition	4
3. Transportation	5
4. Installation considerations	5
5. Plumbing	7
6. Initial starting up of Hydraloop unit	16
7. Period of 'non activity'	18
8. Electric power cut	18
9. Mains water backup	18
10. System malfunction	19
11. Explanation of LED lighting	19
12. Warranty	21
13. Frequently Asked Questions	21
14. Limitations	23
15. Certification	24
16. Specifications	26

1. Introduction

Hydraloop Systems B.V. offers a range of products which can be used for recycling domestic greywater. With the use of these products home-owners can save 45% of their mains water by recycling up to 85% of their mains water consumption. With a Hydraloop installed, a 4-person family can also save up to the equivalent of ± 600 kWh/year in energy and reduce up 476 kg/year CO₂ emission or 6,3% of total in-house CO₂ emission. Hydraloop's recycled water is clean, clear, safe, disinfected and certified.

With a Hydraloop unit installed up to 95% of shower and bath water can be recycled. Greywater from the washing machine is only allowed to enter the Hydraloop unit in combination with the additional Hydraloop washing machine recycle option. If the washing machine recycle option is installed, an additional 50% of the washing machine water can be recycled.

- The definition of mains water is water provided by mains, city water or tap water supply.
- Note: Hydraloop units can only accept greywater from shower, bath and optionally the washing machine and cannot accept greywater from hand basins, dishwashers or the kitchen sink and it is not allowed to feed the Hydraloop unit with water from these sources.
- This document describes the operational functionality of the units and specific information regarding design guidelines and installation. Instructions for architects and contractors are covered by separate documents provided by Hydraloop Systems B.V..

In countries with cooler climates energy can be saved by the Hydraloop unit in autumn, winter and spring, when the unit is installed inside the house, in three ways:

- Shower and bath water entering the Hydraloop unit still has a temperature of ± 32 degrees C. The Hydraloop unit radiates the remainder of this warmth until it is reduced to ambient temperature.
- The washing machine uses Hydraloop's recycled water which is at ambient temperature of ± 20 degrees C. Mains water has a temperature between 8-12 degrees C and to heat this to 40 degrees C uses more energy than to heat Hydraloop's recycled water from 20 to 40 degrees C.
- With a Hydraloop unit toilets do not import cold mains water after flushing - with a temperature of between 8-12 degrees C inside the house - but use recycled water with an ambient temperature of ± 20 degrees C.

The total energy saving for a 4-person family is the equivalent of ± 600 kWh/year. The Hydraloop itself uses ± 200 kWh/year so the net energy saving is ± 400 kWh/year.

2. Product definition

The Hydraloop product range:

- Hydraloop H300 Garden or Pool
 - water recycling from shower and bath water with 1 valve controlled outlet to pump recycled water to either a (rain)water tank in the garden or to top up the (swimming)pool.
- Hydraloop H300 Home
 - water recycling from shower and bath water with 2 water outlets. 1 outlet to feed the toilet cisterns and a second one for feeding the washing machine. The unique Hydraloop water sensor technology* offers the washing machine to use recycled water for the first 2 cycles and will switch to backup water for the 3rd cycle and 4th cycle if applicable).
- Optional garden/pool outlet
 - adding this third outlet to the Hydraloop Home unit to pump recycled water to either a (rain)water tank in the garden or to top up the (swimming)pool.
- Optional washing machine recycle option*
 - depending on the chosen washing machine program \pm 50% of the washing machine water is recycled back into the Hydraloop unit via its own sanitary lift pump

* Patents pending

Greywater from bath and shower enters the Hydraloop unit via gravity or via a sanitary lift pump* if the unit is based on the same level as the bathroom. The distribution centre of the Hydraloop unit pumps its recycled water to multiple toilets. It can distribute recycled water to 4 toilets with a maximum height of 11m above the Hydraloop unit.

**We recommend a DAB Novabox or Genix VT030. It is important that the pressure tube from the lift pump is 32mm to avoid excessive flow of water entering the Hydraloop unit.*

Note: Make sure you mount the special white floater arm that comes with the Novabox and Genix VT sanitary lift pump, so that the stand-by water level in the sanitary lift pump is at low level (<https://dabpumps.com/en>).

The washing machine water recycle option consists of additional sensors and software to monitor when the washing machine is taking water from the Hydraloop unit. A washing machine program takes water between 3 - 5 times, depending on the washing machine program. Water from the first two washing cycles from the washing machine can be very dirty. Therefore the Hydraloop unit equipped with the extra washing machine recycle option will not accept these first batches of greywater for recycling. The Hydraloop unit controls the lift pump that lifts the washing machine water into the Hydraloop and switches the lift pump temporarily off. The first two cycles of greywater will bypass the Hydraloop system directly to the sewer. When the washing machine takes water for the third washing cycle, the system senses this and will switch the lift pump back on. Greywater from the washing machine from the third, fourth and fifth cycle (depending on which washing machine program is chosen) will all be pumped back into the Hydraloop unit and will be recycled.

All the above is done fully automatic by the Hydraloop unit and works with any consumer washing machine brand.

Limitations: Maximum 60 degrees C washing program is allowed. >60 degrees C washing program is not allowed as it can seriously damage the Hydraloop unit and its sanitary lift pump.

Note: Only a Hydraloop unit equipped with an additional washing machine recycle option has the hardware and software to receive and treat greywater from the washing machine.

3. Transportation

The Hydraloop unit will be transported to your location mounted and strapped onto a transportation plate, wrapped in protective foil and mounted onto a pallet. When moving the Hydraloop unit it is important to **always** keep it in an upright, vertical position. Bringing the Hydraloop unit into a horizontal position may cause damage to its internal components and seals. It is very important to handle the Hydraloop with great care and to leave the protective foil on until it is placed at its final installation position.

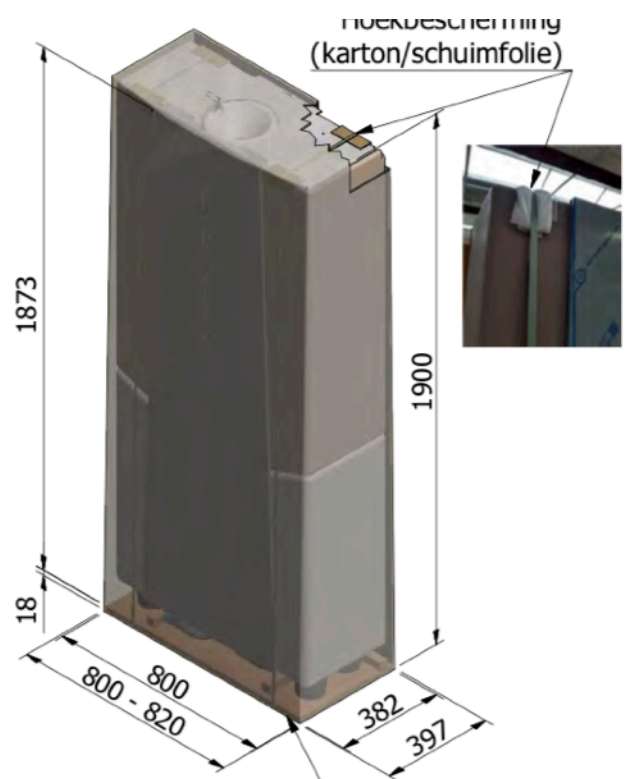
After it is removed from the wooden pallet leave it strapped on the transportation plate and the unit can be moved with a 2-wheel trolley. Only when it is near its final position then remove the foil and carefully lift the unit from the plate and place it at its final position.

4. Installation considerations

Hydraloop units can be installed in many different locations in or around the house but are not allowed to be positioned in direct sunlight. It is not allowed to install the unit outside the house when it isn't covered from rain or direct sunlight and temperatures should stay within the limits of +14 and +35 degrees C.

The initial startup of the Hydraloop unit can only be done with an active local wifi network. We strongly recommend - in case of new build - not to install and start up the Hydraloop unit during the building process but only after the house is fully ready and all works are finished. At all times please avoid that building dirt, chemicals or sand can enter into the Hydraloop unit as it will damage the Hydraloop unit.

Each installation will have its own circumstances but ideally a Hydraloop system should be located so that water flows into the Hydraloop system by gravity. For example placing

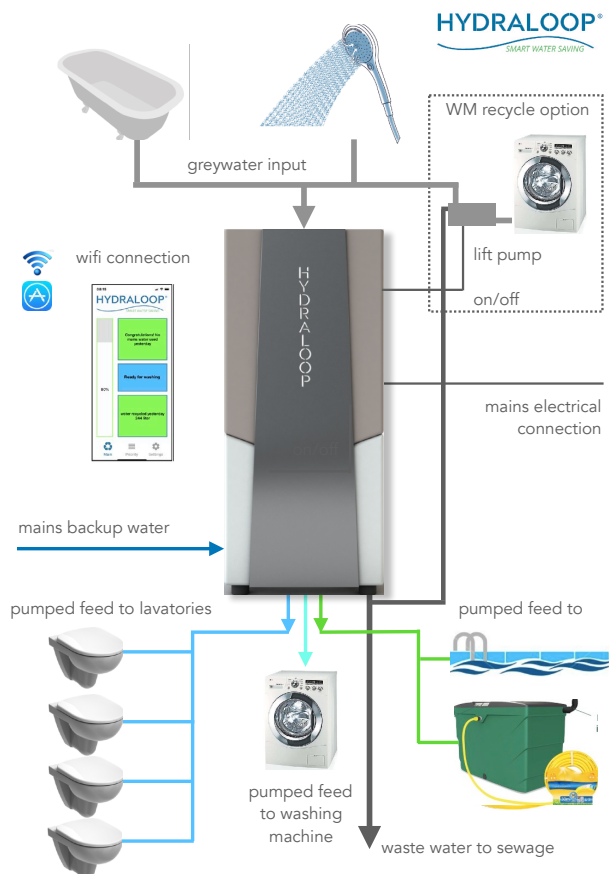


a Hydraloop system on the ground floor with a greywater gravity feed from the bath/shower from the first floor. If the Hydraloop system is on the same level as the shower/bath an appropriate* lift pump has to be installed to lift the water from the shower/bath up into the Hydraloop system.

*We recommend a DAB Novabox or Genix VT030. It is important that the pressure tube from the lift pump is 32mm to avoid excessive flow of water entering the Hydraloop unit.

If a Hydraloop unit is installed with the extra washing machine recycle option, the ideal place for installation would be close to the washing machine, so that the washing machine lift pump can be placed next or close to the washing machine. If the washing machine is placed on the same floor as the Hydraloop but in another room, the lift pump can be installed close to the washing machine and the greywater is lifted up, and from there flows into the Hydraloop unit.

Note: It is not allowed to combine one lift pump for both the washing machine recycle option and the shower/bath water.



The lift pump must be placed so that it is easily accessible for maintenance. A 230 volt wire with ground connection should be installed from the Hydraloop unit to the washing machine lift pump so the lift pump will receive power supply from the Hydraloop unit and can be switched on/off.

Note: It is very important that the washing machine lift pump is installed 'in line' with the sewer, in such a way that the waste water can go to the sewer via the overflow in the lift pump, in case the lift pump is switched off by the Hydraloop unit. The washing machine lift pump is controlled by the software of the Hydraloop unit. The unit will fully automatically temporarily switch the lift pump off so it will not receive the waste water from the first two washing cycles. In this case the bypass within the lift pump will release the waste water to flow directly to the sewer.

The recycled water output from the Hydraloop system can feed up to 4 toilets. It is advisable to integrate an expansion vessel somewhere in the the line that feeds the lavatories. A second Hydraloop outflow valve feeds the washing machine. The Hydraloop unit can have a third valve controlled water output which can supply recycled water to the garden or pool.

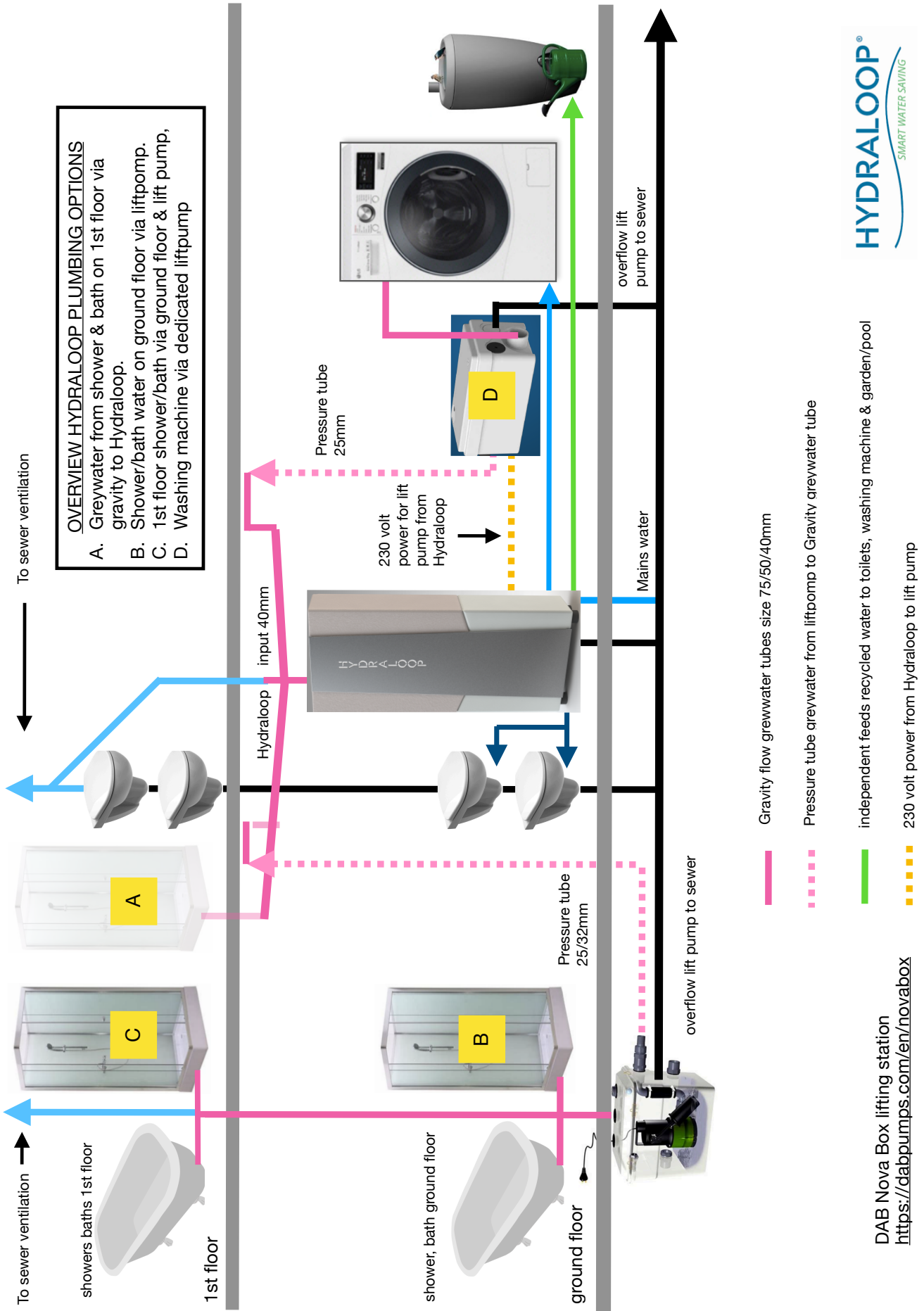
5. Plumbing, basic rules

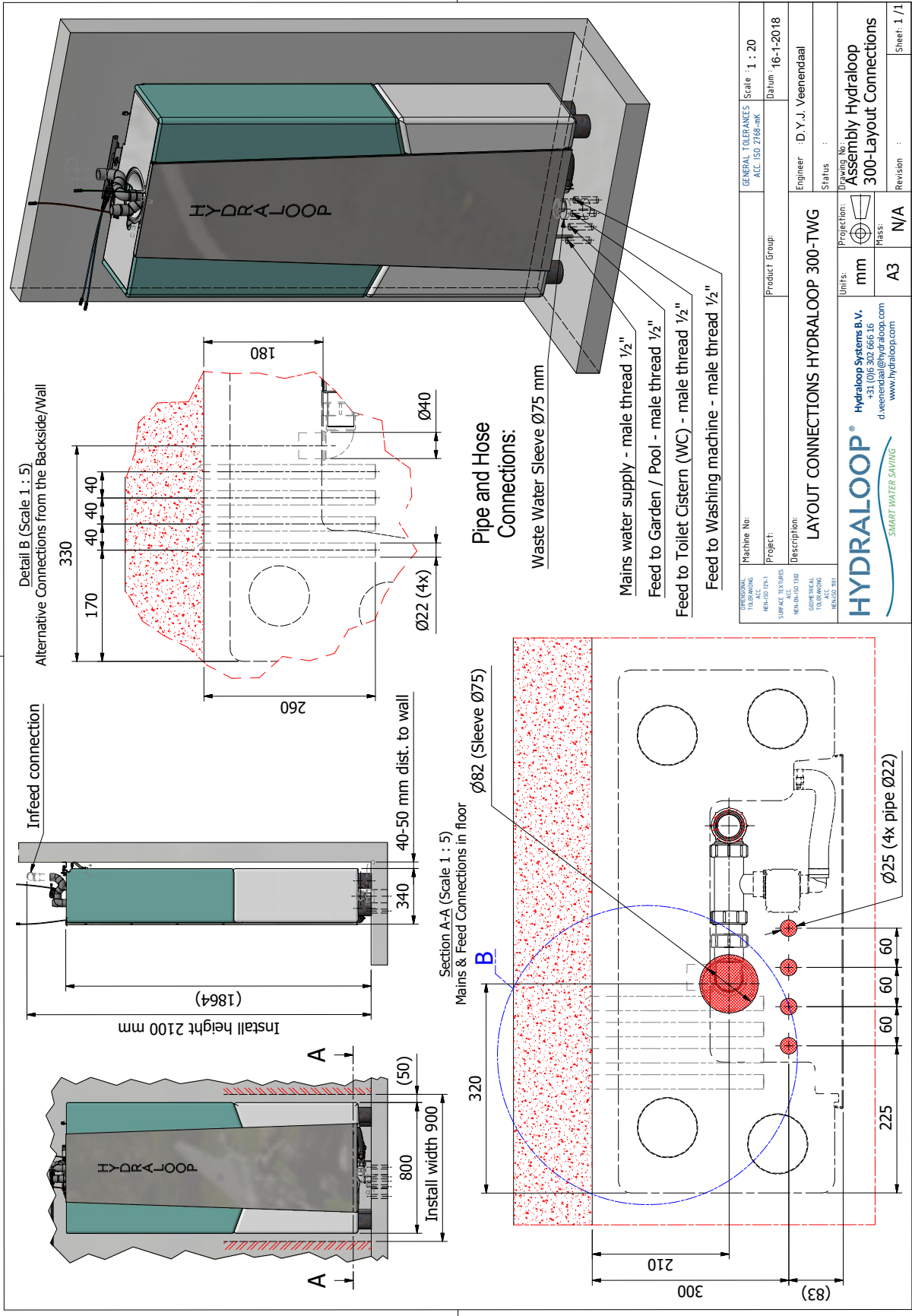
- Use **shower & bath water** as source water and optionally washing machine water in case a Hydraloop washing machine recycle option is installed. **No washbasins, kitchen sinks & dishwasher may be connected!**
- **Before connecting the back up mains water** supply to the Hydraloop unit, **first let this water run for some time to flush sand and dirt** out of the mains water tube before connecting it to the Hydraloop unit. If sand or dirt enters the Hydraloop unit this will damage the the internal pump and valves.
- Connect all incoming greywater pipes into a single 75/50/40mm pipe into the 40mm inlet on the top of the Hydraloop unit.
- On the low side of the Hydraloop, for connecting the recycled and treated water:
 - use the left hand ½" flex hose and connect to the tube that feeds all toilets
 - use the right hand ½" flex hose and connect to the washing machine, and
 - In case of a Hydraloop Pool/Garden, use the single ½" flex hose and connect to the tube that feeds the garden rainwater tank or feeds the pool
- **Label everything.** Use color coded pipe or warning labels on the pipe to designate that the pipes are running recycled water
- Hydraloop has a built in overflow facility
- Install appropriate **overflow** at the sanitary liftpumps to avoid flooding the systems
- Standard plumbing practice should be performed. The 75/50/40 mm greywater feed tube from the shower/bath **needs to have proper ventilation** to support shower water flowing without airlocks to the Hydraloop unit. Also sewer venting is necessary to ensure proper functioning of the Hydraloop unit.
- With the washing machine recycle option installed, the wastewater tube from the washing machine needs to be fed into the Hydraloop system **via** its sanitary liftpump. Even in the event the washing machine is installed on a floor above the Hydraloop unit, the water still needs to be fed via the liftpump - controlled by the Hydraloop unit - with an overflow to the sewer. The sanitary liftpump receives 230 volt grounded current from the Hydraloop unit and is switched on/off by the Hydraloop unit. The overflow is used to discharge the first 2 washing cycles to the sewer when the liftpump is switched off.

Overview of Hydraloop plumbing options (see drawing on next page)

- **A.** Greywater flows by gravity from shower & bath on 1st floor to the Hydraloop unit on the ground floor.
- **B.** Greywater is lifted up using a liftpump* from shower & bath on ground floor to the Hydraloop unit on the ground floor.
**We recommend a DAB Novabox or Genix VT030. It is important that the pressure tube from the lift pump is 32mm to avoid excessive flow of water entering the Hydraloop unit.*
- **C.** Greywater flows by gravity from shower & bath on 1st floor to the liftpump on ground floor to the liftpump, and is then lifted up into the Hydraloop system.
- **D.** Shows how the washing machine should be connected via its dedicated liftpump that is delivered when opting for the extra washing machine recycle option with your Hydraloop unit. The dedicated washing machine liftpump is powered and controlled by the Hydraloop unit.

Note; assure that appropriate venting is installed as shown on the drawings.





OPERATIONAL TOLERANCES ACC.	Machine No.	GENERAL TOLERANCES ACC. ISO 2768-mk	Scale	1 : 20
REVISIONS	Project:	Product Group:	Date:	16-1-2018
DATE	DESCRIPTION	DESCRIPTION	ENGINEER	D.Y.J. Veenendaal
DATE	DESCRIPTION	DESCRIPTION	STATUS	
DATE	DESCRIPTION	DESCRIPTION	DRAWING No.	Assembly Hydraloop 300-Layout Connections
DATE	DESCRIPTION	DESCRIPTION	Units:	mm
DATE	DESCRIPTION	DESCRIPTION	Mass:	N/A
DATE	DESCRIPTION	DESCRIPTION	Revision:	1 / 1
DATE	DESCRIPTION	DESCRIPTION	Sheet:	1 / 1

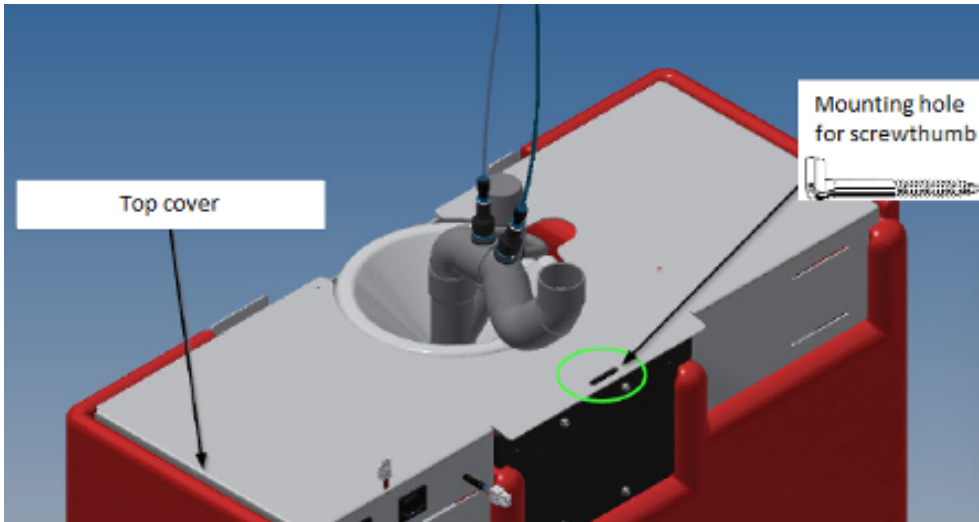
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Installation and plumbing details

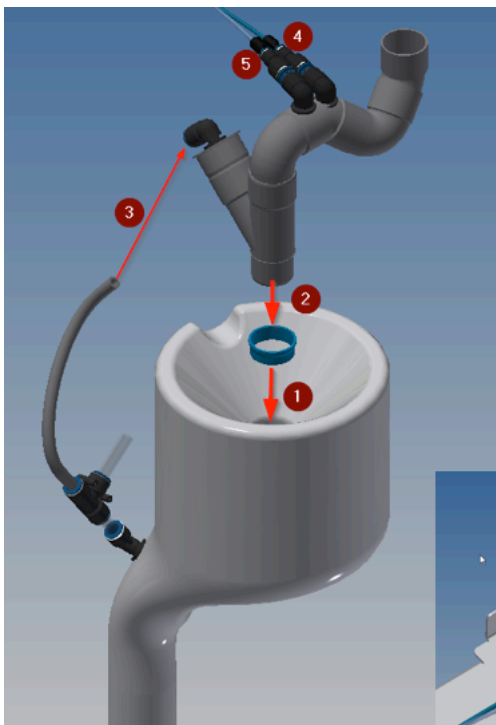
Remove the stainless steel front plate, using for example a large screwdriver, on the low side of the front plate to lift the stainless plate up. The plate is holding its position due to its shape so once it comes upwards it will be free to remove. Perform this with care.

Hydraloop Mounting Scheme



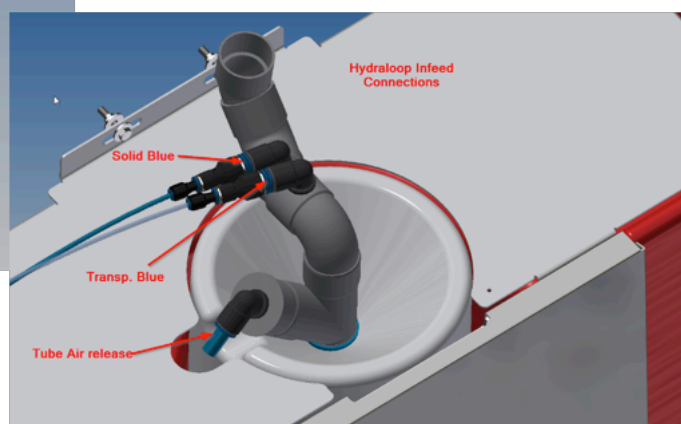
Hook the mounting hole of the Hydraloop top plate onto the screwthumb, which you should plug into the wall, so the Hydraloop is secured.

Hydraloop waste water system installation



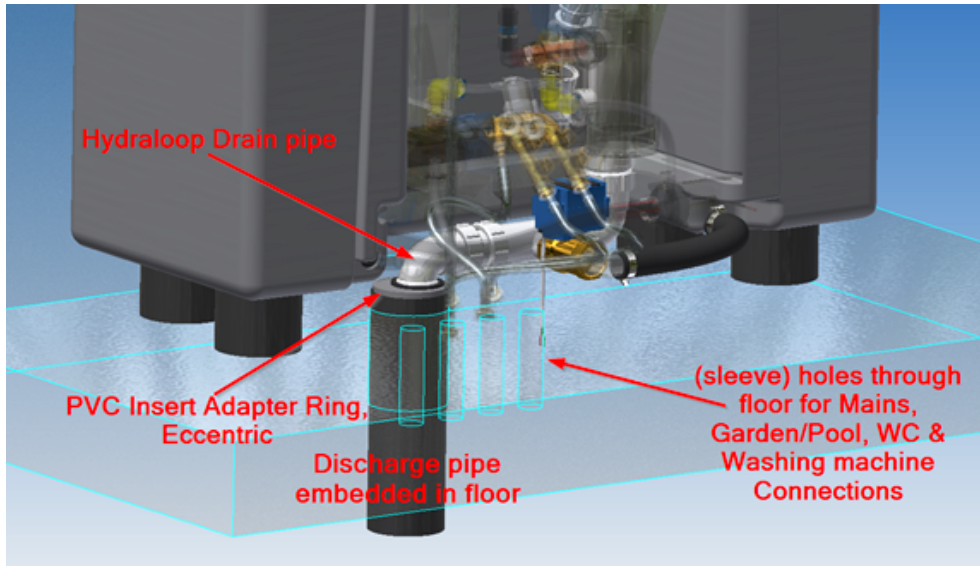
Hydraloop Inlet Scheme & Incoming Water Sensor

1. Place the blue sealing ring first in the top lid infeed channel
2. Install the infeed tube system into the sealing ring with a minimal amount of grease (Vaseline) applied on the Y-tube end
3. Connect the air release tube in the push-in fitting on the branch of the Y-tube
4. Connect the solid blue pressure sensor, near the 45° bend
5. Connect the transparent pressure sensor, near the 90° bend



A common installation situation is executed with the drain / discharge pipe below

the Hydraloop unit connecting the wastewater outflow to the sewer with core sleeves trough the floor:



The connection between the inlet wastewater pipe and the (PVC) drain or discharge pipe is established with the application of an eccentric 75m adapter ring in combination with a 50/40mm reducing rubber sealing sleeve (not delivered with the Hydraloop system). The bend at the end of the Hydraloop Drain System is inserted into the rubber sealing sleeve.

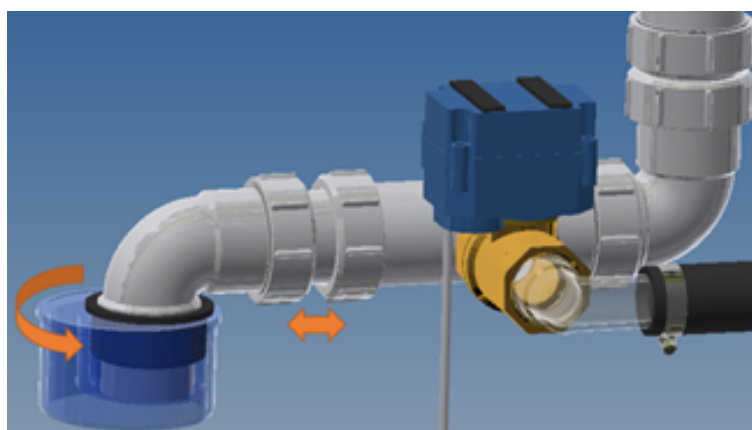


PVC Insert Adapter Ring, eccentric



Rubber sleeve

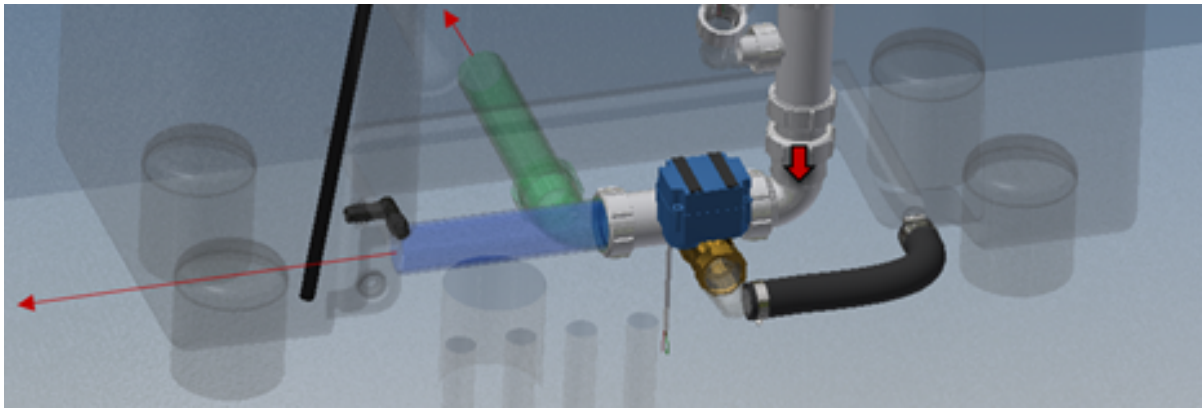
A limited amount of misalignment can be compensated by rotating the 75m eccentric adapter ring before glueing it in the 82m tube and/or adjusting the length of the tube between the bend and the T part.



Rotate & adjust

There is enough space to extend the Drain System with a 40 mm tube and guide it between the system and the floor by replacing the bend with an extension tube or to mount the bend directly into the Tee and orient it horizontally, for instance, towards the wall behind the Hydraloop or whatever configuration is desired with

custom fittings. For this, the horizontal drain pipe section can be lowered approx. 6 – 10 mm at the bend connecting the vertical section to be able to pass underneath the tank.

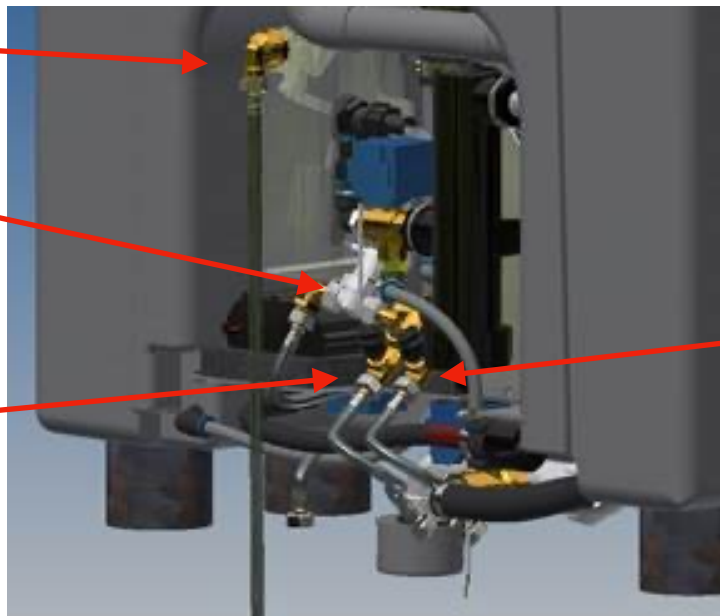


Slightly lower the drain pipe and extend

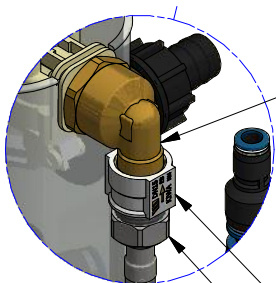
Mains water

Connection to garden/pool

Connection to toilets



Connection to washing machine



AK Muller float valve

Important!

In some countries an EB non return valve is mandatory to be installed on the float valve additional to the air gap back flow protection. Please check if a Watts Ocean NN non return valve art number 2300151165 is fixed between the float valve and the flexible tube that is connected to the mains water supply. If not installed the mains water connection does not comply with the Kiwa certification.

Plumbing connections

Input

Greywater into Hydraloop	40mm connections
Mains water	1/2 inch male thread, minimum water flow 20 liters p/m at 2 bar

Output

Waste water to sewer	40mm connection to sewer Sewer connection 85 to 50mm with rubber manchet underneath the Hydraloop system (see drawing) or behind the Hydraloop system into the floor or wall
Recycled water to toilet	1/2 inch male thread prepare plumbing underneath or behind Hydraloop system. Connect with flexible tube
Recycled water to w. machine	1/2 inch male thread prepare plumbing underneath or behind Hydraloop system. Connect with flexible tube
Recycled water to garden/pool	1/2 inch male thread prepare plumbing underneath or behind Hydraloop system. Connect with flexible tube

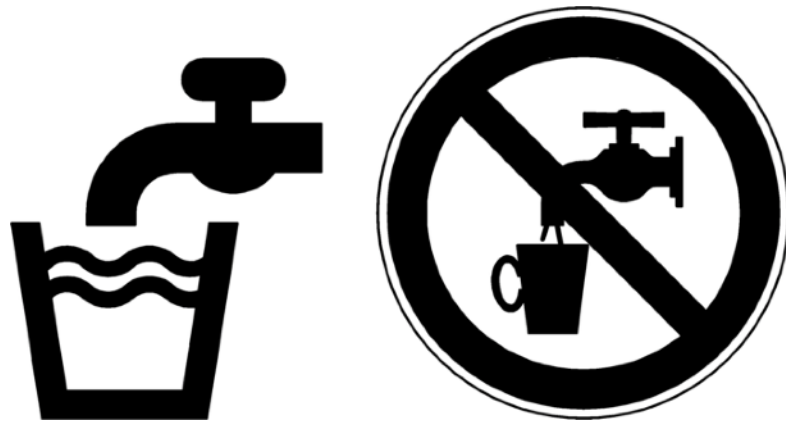
Differentiation and identification

Differentiation and identification through labelling and marking provides users and maintenance staff with suitable information to ensure safe operation of the greywater treatment and potable water distribution system.

To prohibit misuse it is recommended that all non-potable water taps shall be equipped with a safety device (e. g. detachable lever).

All pipework (both collection and distribution), fittings and points of use for non-potable water systems shall be marked and labelled to prevent accidental consumption or cross-connection between the potable and non-potable water and cross-connection between the different collection pipework:

- Draw-off points for non-potable water shall be identified with the words "Non-potable water" or by a prohibition sign as shown below.

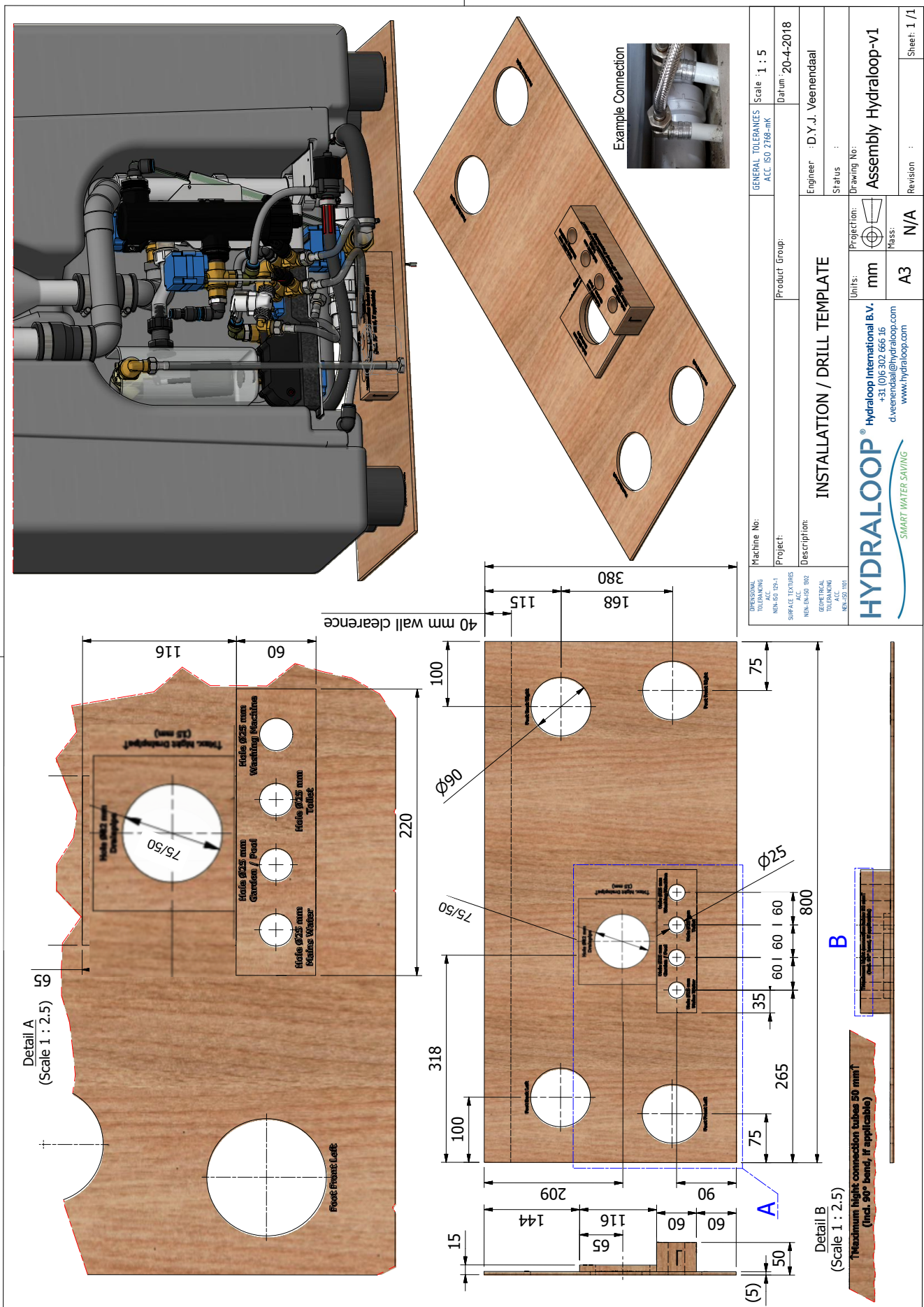


Sign "Potable water" (left) and prohibition sign "Non-potable water" (right) according to EN 806-2

- the pipes of the non-potable water distribution systems shall be clearly identifiable; this can be ensured by different colour pipes from potable water pipes or by an identification band with the pipe;
- close to the drinking water mains valve, a sign with a notice of the existence of a non-potable water system, shall be installed.

Installation / drill template

The drawing below can be used to prepare an installation /drilling template so the the plumbing connections can be prepared and checked before the Hydraloop unit arrives and will be placed and installed.



Machine No:	GENERAL TOLERANCES	Scale : 1 : 5
Project:	ACC. ISO 2768-mK	Datum : 20-4-2018
Description:	Product Group:	
Engineer : D.Y.J. Veendaal	INSTALLATION / DRILL TEMPLATE	
Status :		
Projection:	Units:	Mass:
mm	A3	N/A
HYDRALOO® <small>SMART WATER SAVING</small> Hydraloo International B.V. +31 (0)6 302 666 16 d.veendaal@hydraloo.com www.hydraloo.com		
Revision :	Sheet: 1 / 1	

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6. Initial starting up the Hydraloop unit

Before you start, remove the front plate by lifting it up and place it next to the Hydraloop unit. When the Hydraloop unit is installed correctly, and the Hydraloop power switch is switched on, a short startup procedure will start up automatically. The lower tank will fill up with backup water to a minimum amount of water. Thereafter it will distribute water to the toilets in the house. This procedure will take about 2 minutes. After this, please flush each toilet once, after each other.

The Hydraloop unit will now only supply mains water to the house because in this stage it is not yet activated for recycling. In this period the toilets will be flushed using mains water and the washing machine will be fed with mains water. The LED light on the front plate will be green. You can now check the connections to and from the Hydraloop for leaks.

To initialize, setup and start the water recycling of the Hydraloop unit, it has to be connected to the local wifi network. For this you need a laptop, smartphone or tablet.

Wifi setup: After the Hydraloop unit is switched on, it will automatically create a wifi network showing a number (looks like 00:AB:00:AB:11) on the wifi network list on your device. Select that Hydraloop wifi network that shows the long number and enter the password: PASSWORD.

Check if your device is connected to the Hydraloop wifi network. Open an internet browser on your device and enter the URL 192.168.4.1. A page will open. Enter the existing wifi network of your house/building that you want the Hydraloop unit to connect with, and enter the password belonging to this wifi network on the page that is displayed and press 'Submit'. The Hydraloop unit will now connect with this local wifi network.



The image shows a mobile browser interface with a white background. At the top, there is a status bar with the time '10:58', signal strength, and battery level. Below the status bar, the browser address bar shows '192.168.4.1'. The main content area has the heading 'Please login to network'. There are two input fields: the first is labeled 'ssid :' and contains the text 'network name'; the second is labeled 'pass :' and contains the text 'password'. Below these fields is a rounded rectangular button labeled 'Submit'.

Note: Spaces, commas, capitals etc. all should be entered correctly.

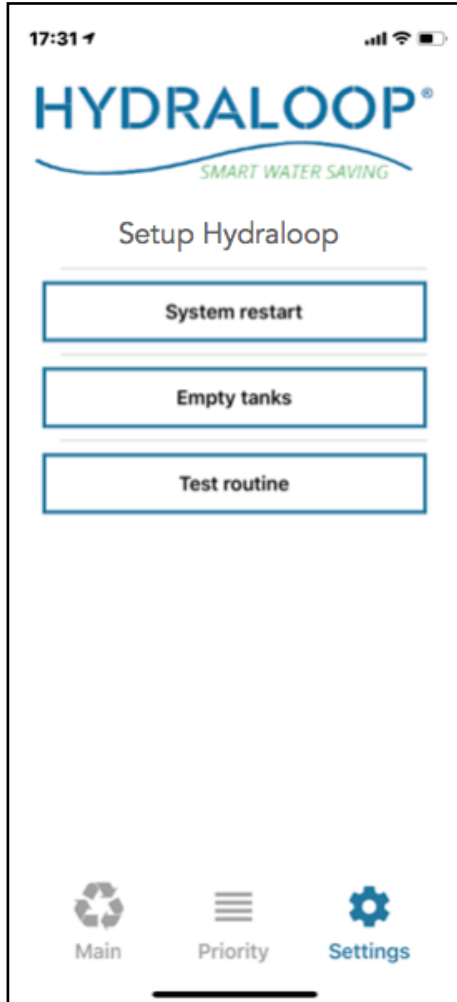
Note: If the wifi network does not have a password leave that field blank.

Scan/enter Hydraloop ID; Download and open the Hydraloop app on the smartphone. Go to 'settings, installation, scan/enter Hydraloop ID'. Enter the serial number of the Hydraloop unit that is printed on a sticker that is attached on the top of the Hydraloop system, or press 'scan barcode' and scan the bar code that is visible on the same sticker that is attached on the top of the Hydraloop unit.

If the information is entered correctly the central server from Hydraloop Systems B.V. will connect to this Hydraloop unit and will perform a brief system check.

Installers Initial Setup; For the initial setup the installer need to press 'Setup Hydraloop' and enter the 'Installers code'. (if you do not have the installers code please contact us.) This will give access to the 'setup' section of the App.

After this, three options are accessible:



System restart: Pushing this button restarts the Hydraloop system.

Empty tanks: Pushing this button opens the waste valves of the Hydraloop system. This might be necessary for maintenance reasons.

To empty the water tanks without App/wifi connection:

- unplug the power plug from the wall socket
- wait until 2 beeps sound
- immediately plug in again, if inserted back in time 1 confirmation* beep will sound
- immediately unplug the power plug again
- after 2 beeps immediately plug it in again.

**If the 1 confirmation bleep did not sound, you have to insert quicker after the 2 beeps. Please repeat procedure so you get 1 beep.*

Test routine: This option starts the Hydraloop test routine. The test routine performs all actions the Hydraloop normally performs for treatment just in about 45 minutes. This test should be performed at installation and after replacement of parts. After this test routine the system is ready for

usage.

It is necessary to do a test routine to check for possible damage caused by transportation of the unit. Open the Hydraloop front plate by shifting it up, you need a larger tool to make a lever to shift the front plate from the floor up and then you can remove it upwards.

After pressing 'test routine' open one of the showers in the house and wait until shower waste water enters the Hydraloop unit. Let it run for about 12 minutes and then close the shower. The test routine takes about 20 minutes in total.

Note: Check the Hydraloop unit for water leaks during the test routine.

If you need assistance call Hydraloop on :+31 88 100 3500.

The Hydraloop system needs \pm 21 days to develop and build up the biological treatment process and to become fully operational. During these first 3 weeks the LED front light will be solid blue glowing white every 6 seconds. The water treatment will start from the very first day however this recycled water will be wasted into the sewer after treatment and mains water will be supplied. After this initial period of \pm 21 days, the Hydraloop unit will automatically switch over to offer recycled water to the toilets, washing machine and/or garden/swimming pool. The Hydraloop unit is now fully operational.

7. Period of 'non activity'

If the Hydraloop unit does not detect any incoming or outgoing water flow for a period of 72 hours, it assumes there is no occupancy of the house and activates the purge valve to empty the recycled water storage tank until \pm 15 liters is left in the tank. The upper processor treatment tank and the upper collector tank will keep the minimum amount of water in standby mode and will continue to aerate this water in intervals so the treatment system is standby for the next incoming water. If the inactive period is longer than 1 month the system will purge this tank as well and the system will go in 'deep' standby mode. As soon as new incoming water enters the Hydraloop system it will 'wake up' immediately and starts working again automatically. However, after a 'deep' standby mode the treatment system needs to be reactivated again, just like at the initial start up at the installation of the Hydraloop unit.

8. Power cut

In case the 230 volt electric power to the system is cut, the Hydraloop unit will not supply water to the toilets and washing machine until power is restored. However, the Hydraloop Electronic Control Unit (ECU) will continue to work on its back-up batteries. If electric power is restored within 1 hour, the Hydraloop unit will automatically start working again as usual. Stored recycled water or mains water will be available immediately. In case the power is restored after more than 1 hour, recycled water in the storage tank and all water in the processor tank and collector tank will be purged to the sewer and the Hydraloop unit will automatically be fully operational again, supplying mains water until new recycled water is available.

9. Mains water backup

The Hydraloop unit is connected to the local mains water supply via an air gap according to EN13077 and is KIWA certified. In the event there is not enough recycled water available, the system will automatically switch to mains water. As soon as new recycled water is available Hydraloop will automatically switch back to supply recycled water. The LED light behind the Hydraloop logo will be blue indicating the house is running on mains water and turn white indicating recycled water is available again.

10. System malfunction

The Hydraloop is a very reliable system and all critical components are monitored continuously within the Hydraloop server. In the unlikely event a component fails - for example the UV lamp - the Hydraloop unit will automatically switch to mains water and everything in-house will function as usual, but no recycled water will be available as a precaution. The LED light behind the Hydraloop logo will turn orange indicating an abnormal situation, a message is sent to your App and a bleeping noise will sound every minute. Immediately the Hydraloop server will also send a message to the installer warning them of the failure of this system, so they can contact their customer and come to fix the issue.

Warning: Hydraloop is designed for 'normal usage' and is not designed to process solid materials, chemicals, paint residues, hair dye/bleach and disinfectants or any other matter that is unusual for shower/bath and washing machine water. In the event these substances are entered into the Hydraloop unit, the system itself can be damaged and the water treatment can be disturbed. For example: washing out hair dye in the shower is not allowed and should be done in the sink. If hair dye is washed out in the shower, traces of hair dye will remain in the recycled water and will show in the toilet bowl and washing machine.

Note: Hydraloop Systems BV is not liable for any damage if the above or any other abnormal substances are entered into the Hydraloop unit and the unit and/or the washing machine/laundry is therefore damaged.

11. Explanation LED lighting (only with the premium front plate)

The LED lighting behind the Hydraloop logo is installed to deliver status information to the customer and also helps optimize using recycled water instead of mains water.

White LED light: indicates the Hydraloop provides recycled water.

White LED light with a blue glow every few seconds: indicates the Hydraloop provides recycled water to the toilets but there is not enough recycled water for the washing machine. You have the choice to wait until sufficient recycled water is available and the LED light is white again, or you can choose to turn on the washing machine. In this case, besides recycled water also mains water will be used for the washing machine, therefore water savings will be less. The App will tell you if and when you will have enough recycled water for washing.

Blue LED light: indicates the Hydraloop provides mains water (until recycled water becomes available).

Note: At the initial start up, or after a 'deep' standby mode, the Hydraloop unit provides continuous mains water and provides no recycled water because the treatment system is in its start up phase.

Purple LED light: indicates the washing machine mode is active. About 15 minutes after the washing machine is finished the color will change again to white, blue or white with blue glow, depending on the amount of recycled water available. Only after the purple light colour has changed is the Hydraloop unit ready again for another load of washing. Please note that if you wish to do another load of washing after this, you should wait a few minutes so the Hydraloop unit is reset. With the smart phone App you can end the washing machine mode manually. We advise to do 1 load of washing per day, to optimize using recycled water.

Green LED light: indicates the Hydraloop system is in self cleaning mode. You may hear some water running or the pump briefly from time to time. This is normal procedure and is scheduled to happen once a week for a few minutes.

Orange LED light + 2 short sound signals/minute: indicates the UV disinfection lamp is not functioning properly. The Hydraloop unit automatically switches to mains water so that everything in-house functions normally and is safe. Please call your installer to make an appointment to replace the UV lamp.

Note: We recommend to replace the UV lamp at the bi-annual preventative maintenance as a precautionary measure.

Red LED light + 3 short sound signals/minute: indicates the water distribution pump has switched itself off. This happens when water is leaking somewhere in-house, i.e. when a float valve of a toilet does not shut off properly. If water leaks, the water distribution pump switches itself off **after** 15 minutes to avoid wasting water and then checks after 1 hour whether the leak has been resolved/ repaired. When it has been resolved/repaired the water distribution pump will switch on again. The red LED light will turn off and the system will continue to operate as usual.

In the event the mains water to the Hydraloop unit is disconnected, and the system is running on mains water (i.e. there is no/not enough recycled water) and a toilet is flushed or the washing machine is started, the water distribution pump could run dry. Therefore, in this situation, the Hydraloop unit will automatically switch off the water distribution pump after 15 minutes, to prevent the pump being damaged. The system will show the red LED light and give 3 short sound signals per minute. After 1 hour the system will automatically check if water supply is restored. If it hasn't been restored it will recheck every other hour.

No LED light: indicates the Hydraloop unit is switched off or to indicate there is no power supply.

12. Warranty

Hydraloop Systems B.V. provides a 5-year warranty starting on the delivery date on all non-wearing parts, and a 2-year warranty on all other parts except the UV bulb.

13. FAQs.

How does the Hydraloop unit treat the greywater? The Hydraloop unit uses a unique patented water cleaning and disinfection technology. Ordinary systems use filters or membranes to treat the water, which clog and need regular maintenance. The unique patented technology, that is the heart of Hydraloop system removes dirt, soap and other pollution from bath, shower and washing machine water without using a filter or chemicals. The Hydraloop system automatically cleans itself every few weeks without you having to do anything. Because of this, maintenance requirements are low. Water from the shower, bath and washing machine are collected into the system. The treatment system combines 5 technologies to remove dirt, soap and other particles from the water. These technologies are Sedimentation, Flotation, Dissolved Air Flotation, Enforced Skimming and an MBBR (biological treatment with an Aerobic Bioreactor). The 6th technology, which is the final treatment, is disinfection using UV light. The recycled water quality the Hydraloop unit provides is clean, clear, safe (disinfected) and certified.

The recycled water quality Hydraloop offers is on average;

CBDO5 (mg/L)	< 10
TSS (mg/L)	< 10
Turbidity (NTU)	< 5
E. coli (MPN/100mL)	< 14
PH (SU)	6.0 - 9.0

What is greywater? Greywater is lightly contaminated wastewater from the bath, shower and washing machine. It does not include wastewater from the kitchen or toilets and it contains no sewage.

How safe is recycled water from the Hydraloop system? The water quality Hydraloop offers is clean, clear, safe and is certified to meet the water quality values of international standards. Hydraloop is certified by PIA GmbH, the greywater testing laboratory in Germany. PIA is an accredited and notified testing body for the certification of wastewater treatment products. PIA is certified according to DIN EN ISO 9001:2008 and accredited according to the quality standard for laboratories DIN EN ISO 17025:2005. In addition, they have fulfilled ILAC's and other standards: <https://www.pia-gmbh.com/en/> .

Note: The recycled water offered by Hydraloop cannot be used as drinking water.

What can I use Hydraloop's treated and recycled water for? Hydraloop's smart water recycling unit treats greywater to such a high standard that it is safe and suitable to use to flush toilets, irrigate the

garden, use for the washing machine and to top up the swimming pool.

Note: The recycled water offered by Hydraloop cannot be used as drinking water.

Can I prioritise what I wish to utilize my Hydraloop recycled water for? Yes. With the Hydraloop App you decide and prioritize for which purpose you want to use your recycled water. For example you can setup the Hydraloop to first supply recycled water for toilet flushing and washing machine, however in summer you may prioritize to use the recycled Hydraloop water first to irrigate your garden or top up your pool and use mains water to flush the toilets and for the washing machine. All this will be done completely automatically based on the settings you set on your App.

Does the Hydraloop unit make a sound? The Hydraloop unit makes some sound, approximately 44 dB. The sound comes from the air pump and air bubbles that is part of the Dissolved Air Floatation that is used in the cleaning process. Also the pump that pumps water to toilets, washing machine and optionally garden and/or pool makes a slight noise, and is only active when it is required to feed water. The self cleaning of the system also makes some noise and is done once a week.

What does the smartphone App offer? Every Hydraloop unit comes with built-in hardware and software which continuously monitors and controls the system. It is connected to your in-house wifi network. The system works completely automatic, without user intervention, but if you like, you can optimise water saving by checking your App.

Is my personal data used for other purposes? Our central server monitors all Hydraloop units automatically so we can send information to your smartphone App. We do not share this information with anybody, nor third parties nor our partners. We only inform our customers and our partners if necessary about the status of the Hydraloop unit.

What precautions are in place to protect contamination with mains water? Every house needs to have a dual pipe system, which means the recycled water is transported in a separate pipe system from the mains water. Clear notification has to be made that the recycled water is not drinking water.

Can I drink Hydraloop's recycled water? No, you are not allowed to use the Hydraloop recycled water for drinking. Treated greywater is not suitable for drinking. It also shouldn't be used for showering or food preparation or cooking. Hydraloop's recycled water is disinfected so the water is safe to use for toilet flushing, washing machine and garden or pool.

What happens if Hydraloop's recycled water is finished? In case you have used up all of the recycled water, the system automatically switches to mains water. As soon as new recycled water becomes available the Hydraloop system will automatically switch back to provide recycled water.

What happens whilst I am on holiday? In case the Hydraloop system detects no activity in the house it will switch over to 'standby mode'. When activity is detected again the system automatically returns into normal operation.

How often do I need to do maintenance? One of Hydraloop's benefits is that it doesn't have any filters, so it doesn't clog or need filter changing. The Hydraloop system has many safety system checks, 24 hours a day. All important components within the Hydraloop system are monitored and in case of abnormal behavior of a part, the system automatically switches to mains water and sends a caution message to you and your installer. We recommend to have an annual preventative maintenance done by an installer.

Can I use a water softener? There is no problem using a water softener if you have a Hydraloop unit installed, however you have to reduce the amount of soap you use in the shower and washing machine with $\pm 75\%$. Soft water creates a lot of foam and using too much soap may have an effect on the Hydraloop unit.

Can I dye my hair and rinse it out under the shower. No. You cannot rinse out your hair dye with shower water that will enter the Hydraloop unit. This will damage the Hydraloop treatment system. It is very well possible that the dye will enter your toilet system when flushing or enters the washing machine causing damage.

Why can the waste water from the hand basins not be recycled. The Hydraloop water treatment process takes about 5 hours and starts from the last time water has entered the Hydraloop unit. So, every time hand basin water would enter the Hydraloop, the treatment process would restart only for a few liters of water, and would delay the availability of recycled water. However, if two or more Hydraloop units are installed in Cascade arrangement, hand basins can be connected because the treatment process is divided and spread out over several Hydraloop units.

Why is it not allowed to feed the dishwasher, kitchen sink and kitchenette water into the Hydraloop? Waste water from these sources contains too much grease, and therefore is not suitable for the Hydraloop treatment.

14. Limitations

The Hydraloop unit that is equipped with the washing machine water recycle option can also receive washing machine water. The maximum washing machine temperature is 60 degrees Celsius. Using higher temperatures than 60 degrees Celsius can damage the Hydraloop unit and lift pump.

Hair dye entering the Hydraloop is not allowed. Hydraloop Systems B.V. is not responsible for damage caused by products such as hair dye, paints and bleach and can only accept shower, bath and washing machine water with normal products such as shampoo, body wash, conditioner, toothpaste, shaving cream and washing powder and softener.

It is **not allowed to use your shower and bath as a toilet**. It is not a problem when some urine enters the unit, however this may only happen incidentally, not frequently. Any solids cannot be accepted by the Hydraloop unit.

Cleaning the shower and bath with aggressive cleaning products containing bleach - i.e. Glorix - is not allowed. Doing so may damage the functioning of Hydraloop's biological treatment system and may also effect its seals. If this happens by accident, you have to set the Hydraloop to mains water with the smartphone App and contact your installer. We recommend using environmental friendly cleaning products, but at least cleaning products without bleach.

The operating temperature of Hydraloop is between a minimum temperature of 14 degrees Celsius and a maximum temperature of 35 degrees Celsius. The Hydraloop unit must be protected from direct sunlight onto the unit.

Do you still have some questions unanswered? We're here to help! Please don't hesitate to contact us with your questions and send your e-mail to info@hydraloop.com.

Note:

- **Hydraloop can only accept greywater from the shower & bath. Product warranty will be void if greywater from other sources such as the washing machine*, kitchen / bathroom sink or dishwasher is fed to the Hydraloop system. (*unless you have opted for the extra washing machine recycle option)**
- **Hydraloop units equipped with the optional washing machine water recycle option can also recycle about 50% of the washing machine water.**

15. Certification

Hydraloop water recycle products are certified. The certification confirms that the reuse water quality offered by the Hydraloop meets the water quality requirements of the most stringent international standards. Hydraloop is certified by PIA, the greywater testing laboratory in Germany. PIA GmbH is an accredited and notified testing body for the certification of wastewater treatment products. PIA is certified according to DIN EN ISO 9001:2008 and accredited according to the quality standard for laboratories DIN EN ISO 17025:2005. In addition, they have fulfilled ILAC's and other standards: <https://www.pia-gmbh.com/en/>

Hydraloop water recycle products are tested and certified by the international certification authority KIWA.



Testing Certificate

Hydraloop International b.v.
Agora 4, 8934 CJ Leeuwarden, Netherland

Hydraloop
Greywater Treatment System with UV Disinfection
Test report – 201806_GW_PIA_Hydraloop International_V02

5 weeks inhouse test of the Hydraloop system with nominal loading		
Hydraulic Daily Flow	200 L/d	
Dosage	40 L/dosage	
Test was carried out with synthetic greywater (bathing + laundry source waters)		
Average Effluent Values	Turbidity	3 NTU
	CBOD	9 mg/L
	TSS	2 mg/L
	E.Coli	< 1 cfu/100mL
Energy consumption	0,55 kWh/d	

Performance tested by:

PIA – Prüfinstitut für Abwassertechnik GmbH
(PIA GmbH)
Hergenrather Weg 30
52074 Aachen



November 2018



Safety certificate K102335/01

Issued 2020-01-01
Replaces
Page 1 of 3

Water recycling system

STATEMENT BY KIWA
With this Safety certificate, issued in accordance with the Kiwa Regulations for Certification, Kiwa declares that legitimate confidence exists that the products supplied by

Hydraloop International B.V.

comply with the technical specifications as laid down in this safety certificate and are marked with the Kiwa safety mark as specified in this safety certificate are, on delivery, relied upon to comply with Kiwa evaluation guideline

BRL-K14011/01 "Aspects of technical water supply protection for appliances with a contamination risk" dated 2019-06-27,

wherein the requirements of

EN 1717: 2000 "Protection against pollution of potable water in water installations and general requirements of devices to prevent pollution by backflow".

are applied for analysing the risk of contamination by backflow and for selecting the appropriate backflow prevention unit(s).

Ronald Karel
Kiwa

Publication of this certificate is allowed.
Advice: consult www.kiwa.nl in order to ensure that this certificate is still valid.

CERTIFICATE

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16. Specifications

Dimensions

80cm wide x 34cm deep x185 cm high*

*please note that with the incoming water pipes, you will need at least 210 cm height where you will install your Hydraloop unit.

Backup water (mains or rain water) connections

Flow minimal 20 liters per minute, pressure minimal 2 bar

Voltage

110/220 volt, 24 volt internal

20 Watts during treatment

Expected power consumption ± 200 kWh/year

Average expected recycled water quality

(if installed in line with required specifications and subject to limitation as mentioned in article 14)

CBDO5 (mg/L) < 10

TSS (mg/L) < 10

Turbidity (NTU) < 5

E. coli (MPN/100mL) < 14

PH (SU) 6.0 - 9.0

Noise level

± 44 db

Plumbing connections

Hydraloop Garden / Pool

greywater from shower & bath into Hydraloop unit

1 outlet:

- Hydraloop recycled water from Hydraloop unit to garden water tank or pool

mains water to Hydraloop unit for backup

Hydraloop waste water and over flow to sewage

Hydraloop Home

greywater from shower & bath into Hydraloop unit

2 outlets:

- Hydraloop recycled water from Hydraloop unit to toilets

- Hydraloop recycled water from Hydraloop unit to washing machine

mains water to Hydraloop unit for backup

Hydraloop waste water and over flow to sewage

Hydraloop Home with washing machine recycle option

greywater from shower & bath into Hydraloop unit

washing machine waste water (as of third cycle) fed into Hydraloop unit via its own lift pump

2 outlets:

- Hydraloop recycled water from Hydraloop unit to toilets

- Hydraloop recycled water from Hydraloop unit to washing machine

mains water to Hydraloop unit for backup

Hydraloop waste water and over flow to sewage

Hydraloop Home with garden / pool outlet option

greywater from shower & bath into Hydraloop unit

3 outlets:

- Hydraloop recycled water from Hydraloop unit to toilets
- Hydraloop recycled water from Hydraloop unit to washing machine
- Hydraloop recycled water from Hydraloop unit to garden water tank or pool

mains water to Hydraloop unit for backup

Hydraloop waste water and over flow to sewage

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