

STORM SHARK

ADVANCED HYDRODYNAMIC VORTEX SEPARATOR

Operating Manual & Instructions for

PCC - Pre-cast Concrete Chamber Installation



turtle enviro
DRAINNOVATION



ATTENTION:

Important notes, please read
this document carefully
before commencement of
your STORMSHARK
installation



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General Information

This Manual should be completed and a copy left with the owner of the STORMSHARK unit. The information below should be completed by the installer of the STORMSHARK or from the Construction Company or Management Company, who will be responsible for the plant once it is installed.

Location of the plant

Name of the site

Address

Postcode

Telephone

Email

Operator of the plant

Company / Municipality

Address

Postcode

Responsible Person

Telephone

Email

Construction Company

Company / Municipality

Address

Postcode

Responsible Person

Telephone

Email

Design Details

Type of connected area

Installation Date

Commissioning Date

No. of STORMSHARKS

Product Description

All 8 sizes of the STORMSHARK have the same operational components.

1. Inlet
2. Deflector plate
3. Flow breakers
4. Sludge trap
5. Balancing weir
6. Outlet



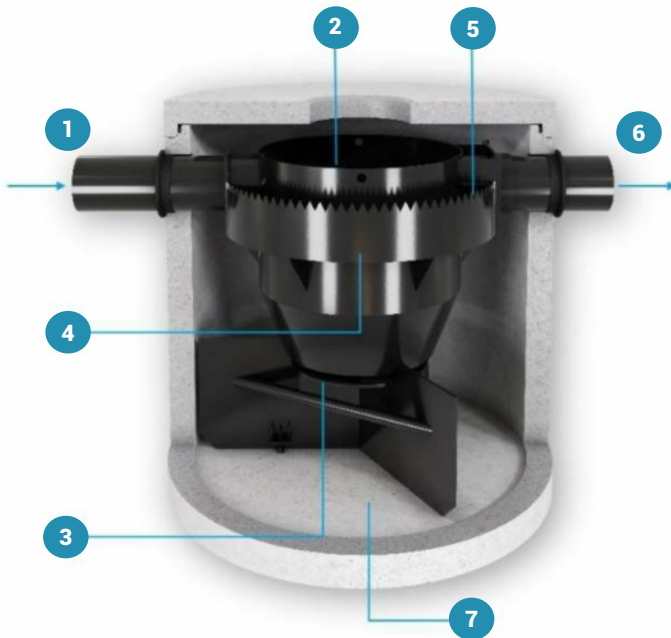
The STORMSHARK must only be handled and lifted by competent persons. Avoid any concentrated point loading. Unloading, storage and transport at site are the responsibility of the Purchaser.

Backfill and excavation works are by others, in accordance with site designs, site ground conditions and legal requirements.

If you are in any doubt as to the function, applicability or safety of the device as supplied at site, you must seek Professional Advice from your supplier and/or a Professional Engineer.

The water quality flow rates and hydraulic peak capacity for the site would have been fully designed.

Working Principles

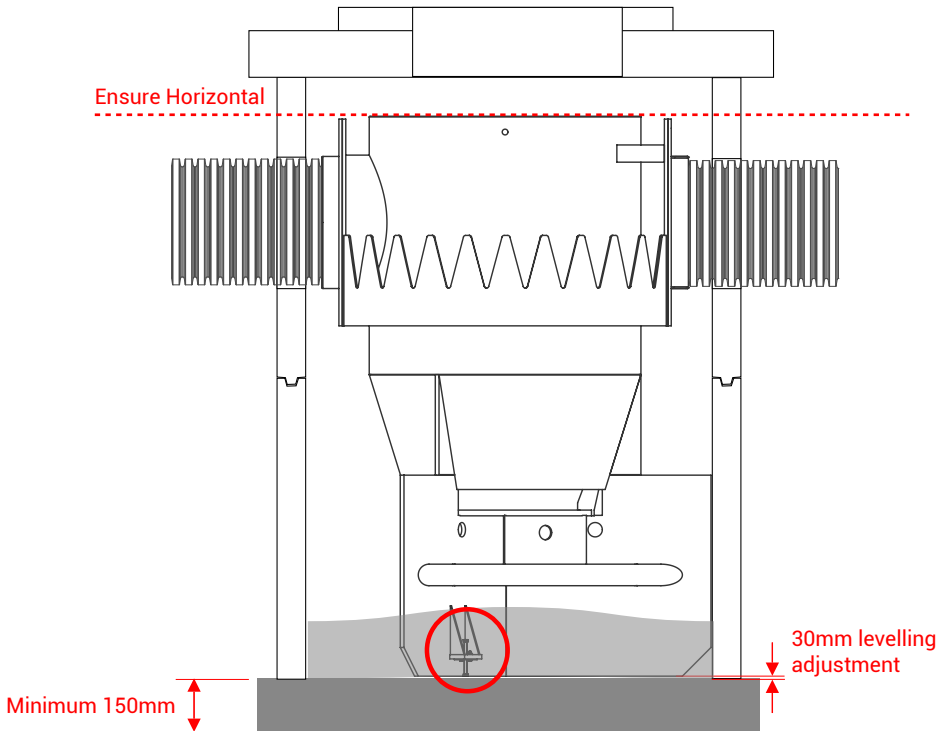


1. Incoming stormwater is deflected into a radial flow pattern.
2. Vortex flow ensures solids settle to the sludge chamber, floatable's are retained at surface.
3. Solids pass down into the sludge chamber below the treatment chamber. Remobilisation of the retained solids is not possible, flow baffles prevent this.
4. Cleaned water flows up the outer chamber in an even flow distribution.
5. Water flows over the toothed balancing weir to the annular flow channel surrounding the treatment chamber.
6. Clean stormwater passes to the outlet to discharge to the water environment.
7. Retained solids are easily removed by vacuum hose, once the retention safety grill* is lifted using the lifting chain supplied and fitted within the unit.

* The SSK750 models do not have the retention grill.

Installation requirements

For STORMSHARK models SSK1200, SSK1500, SSK1800, SSK2000, SSK2500 and SSK3000 installed into PCC Pre-cast concrete chambers of \varnothing 1200 mm - \varnothing 3000 mm



1. The installed product **MUST** be absolutely horizontal in its final position
2. The STORMSHARK unit may be delivered on 30mm high adjustable feet; if so, the inlet and outlet openings must be 30 mm higher to allow any adjustments to be made.
3. The chamber base or pad, should be minimum 150mm concrete or compacted sand, dependant on ground conditions and prevailing water table.
4. Please note that the STORMSHARK unit should be filled at the base with 100mm of concrete after installation within a concrete chamber, to stabilise the flow breaker plates. If using other chamber materials than concrete then consult your supplier.

Installation of a STORMSHARK

Application:

The STORMSHARK can be described as a an Advanced Hydrodynamic Separator or as a Vortex Particle Separator. It is intended to be used for the treatment of contaminated stormwater runoff from roofs, traffic areas and other contaminant generating areas (e.g. commercial sites, industrial sites, airports, harbours).

Important instructions: Please note!



The STORMSHARK insert must be protected against contamination and construction debris and physical damage during installation!



1. Excavate the chamber pit, whilst supporting the wall according to legal requirements and ground conditions.

Install a horizontal, 150mm thick support compacted sand or concrete pad.

***If in doubt you must consult a professional engineer.**



2. Place the chamber and check the horizontal positioning safely. Align the inlet opening to the correct position to suit the site layout. Maintain compliance with all site safety rules.

Installation of a STORMSHARK (continued)



3. Install the STORMSHARK insert within the chamber, so that the inlet and outlet are aligned correctly for the chamber and/or site drainage layout.



4. This slide shows which orifice is the STORMSHARKS inlet. This is the inlet pipe deflector plate on the inside of the treatment chamber.



5. Position the STORMSHARKS insert in the chamber so that the inlet and outlet are approximately aligned with the opening.



6. Make sure that the sides of the STORMSHARK unit are evenly spaced from the chamber walls around the whole of the unit. This optimises performance. It also facilitates the assembly of the stability anchors

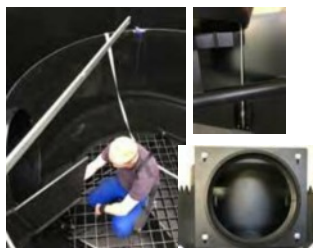


7. Once the unit is centralized, undo the screws of the Lifting Bar and remove them and the Bar itself.

Installation of a STORMSHARK (continued)



8. The STORMSHARK insert now has to be aligned with the concrete chamber holes (where pre-drilled, or where drilled at site). The insertion of the grommet seal is necessary. If in doubt consult your chamber supplier



9. To align, use the adjustment options with the adjustable feet and the adjustable fitting plate for the pipework.

*Rocker pipes to inlet and outlet are always recommended, particularly where ground settlement might arise.



10. Make good the pipe connections. Ensure that the seals are coated with sufficient lubricant (not containing oil). To connect, push the pipes from the outside through the seal of the chamber wall and the seal of the STORMSHARK insert.



11. Check the overall horizontal alignment of the STORMSHARK insert again and adjust, as described in point 9. Check there is no undue strain on both inlet and outlet pipes.



12. Now insert the fixing anti-buoyancy anchors through the wall of the STORMSHARK unit. Fasten them with the supplied threaded bar and bolt to the chamber wall using the fixing plates supplied.

Installation of a STORMSHARK (continued)

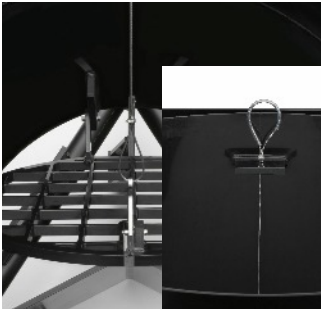


13. Secure the STORMSHARK unit to the wall anchors by locking the two nuts supplied. Cross check that the distance between the chamber wall and the balancing weir is evenly spaced all around the unit, i.e. that the unit is centred within the chamber.

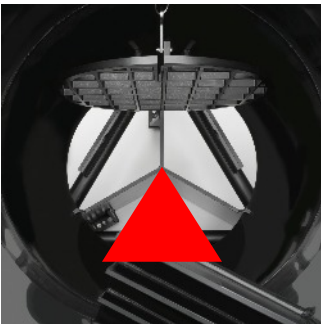


14. After completing the installation, make one final audit of these check points again:

1. Seating and position of the pipes in the seals
horizontality of the STORMSHARK insert
2. Central positioning of the unit, i.e.that the width between toothed balancing weir and the chamber wall is constant
3. Fixing anchors firmly locked and attached to the wall



15. Maintenance lifting cable must be extended to the appropriate length to suit the depth of chamber.



Please Note: As a further precaution, we recommend filling the base of the chamber with 100mm of concrete to prevent buoyancy, to enhance protection and stability of the unit overall at both high and excessive flow rates. This can be access via the rubbish/debris grid

Operating and maintenance instructions:

Due to the solids and pollutants in stormwater runoff, stormwater treatment systems must be checked and cleaned at regular intervals. The following Notes provide guidance for the typical work necessary or associated with the effective operation of a STORMSHARK:

Annual maintenance:

At intervals between 6 months and 3 years, the sludge trap must be emptied as site conditions or local regulations or site specific contracts require. The amount of sludge depends on the local stormwater conditions and will vary between sites.

For stormwater runoff with untypically low or high solids loads, these periods may vary. This can be observed and determined for a Programmed Maintenance Schedule, after the first few years of operation.

The STORMSHARK Chamber is a Confined Space. It is not necessary to enter a STORMSHARK for routine maintenance. Local regulations must be fully observed in the event of planned or unplanned man entry. If in doubt you must consult with a Professional Engineer who can advise you.

Equipment and materials typically required

Suction and flushing vehicle or submersible sludge pump with hoses

Generator when there is no power connection nearby

High-pressure cleaner or flushing lance for connection to the pump

Important Pollution Prevention Notes

The water pumped out of the chamber and the sludge trap may only be discharged into a foul sewer or a combined sewer where local regulations allow. In no case may the water be discharged into a surface water course, a stormwater sewer or a groundwater infiltration system.

If there is no possibility to discharge the water, a mobile water treatment system may be used.

The treated water can be discharged into a receiving water or storm sewer in accordance with local permits and regulations.

Maintenance Instructions

1. First remove the layer of floatables and oils on the water surface. Then lower the water level down to the level of the retention safety grill* by means of the suction hose
2. Remove any coarse debris from the retention safety grill and then pull up the grill using the maintenance lifting cable.
3. Suck the sludge and the solids from the sludge trap chamber. Make sure that you clear each section of the trap. If necessary, rinse with water.
4. Close the grate, check the lock and finally secure close the cover of the system.

*For the SSK1200 models it is preferable to use a 2" or 3" suction hose.

If you are in any doubt you must consult a Professional Engineer or Competent Person to advise you. Your supplier will be able to direct you if they do not provide such a service themselves.

Example Record Sheets

Professional Approval Certificate Example

For the construction or modification of stormwater treatment systems

Project details

Project name

Designation of sedimentation plant

Professional / Expert (Name)

Address

Postcode

Telephone

Email

Contractor

Company (Name)

Address

Postcode

Location of the STORMSHARK

Address

Postcode

- I have installed the
Piping system
Sedimentation plant
New system
Modified the installation checked the install as professional expert

The treated stormwater is/will be discharged into (tick as appropriate):

- a groundwater infiltration system
- receiving surface water
- stormwater sewer
- combined sewer

2. The drainage system complies with the requirements of the valid standards.
3. The pipes, components and components used for the system comply with the relevant product standards.
4. I have received the installation instructions of the manufacturer and installed the system according to these instructions.

The installation has been checked as complying with the valid standards and the general accepted ruled of technology. The design corresponds to the planning documents including the proper

Date/Signature Builder,Expert

Commissioning and Audit Protocol STORMSHARK

Please use this as an example template. Modify to suit local conditions.

Building Project Owner represented by

Specialist Company represented by

No	Feature	Remarks
1.	The STORMSHARK insert was fixed in the chamber by means of fixing anchors.	
2.	The STORMSHARK insert was aligned.	
3.	The uniform distance of the balancing weir to the chamber wall was checked.	
4.	The bottom of the chamber was filled with 100 mm of concrete.	
5.	The Maintenance Lifting Cable is accessible and appropriately secured.	

The instruction for the operation of the plant has been given. The required operating documents and existing operating and maintenance instructions according to the installation were handed over completely.

.....
Signature Contactor

.....
Signature Owner's

Maintenance Record Sheets

Please use this as an example template. Modify to suit local

Maintenance interval	State Remark	Maintenance work	Name and Signature
Date: <i>1st Sept 20</i>		<i>Inspection of the system for visible damage Emptying and cleaning of the sludge trap Grate is closed and locked Maintenance Lifting Cable is accessible and secured</i>	<i>A N Other</i>

Date:			
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Date:			
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Date:			
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Maintenance Record Sheets

Maintenance interval	State Remark	Maintenance work	Name and Signature
Date:			

Date:			
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Date:			
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Date:			
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Maintenance Record Sheets

Maintenance interval	State Remark	Maintenance work	Name and Signature
Date:			

Date:			
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Date:			
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Date:			
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