



HYDRAULICS



HIDROSTANK

HIDROSTANK was founded in 1996 as a result of the determination to offer innovative solutions to improve the performance of Civil Works as well as attempting to optimise the management of purification networks.

In addition to dedicating themselves to the manufacture of reinforced polypropylene modular channel boxes, HIDROSTANK specialises in the design, manufacture, supply and installation of diverse hydraulic equipment for purification networks.

Flow regulation valves

Storm tank and sewerage cleaning systems

Self-cleaning grates

Deodorization equipment

Non-return valve

During this time HIDROSTANK has cooperated closely with the Administration (regional governments, confederations, associations, town halls, etc.) engineering companies and construction groups carrying out technical consultancy work and supplying hydraulic equipment for storm tanks, overflow sections and such like.

The broad experience gained by our Technical Office has made HIDROSTANK a reference point in the sector, as demonstrated by our decisive participation in large scale projects (burying of the M30 in Madrid, Santander Bay, sewage treatment of Lugo,) and our continued presence at the main trade fairs: SMAGUA, IFAT.

HIDROSTANK aims to continue firmly committed to innovation and the incorporation of systems and products which adequately resolve the traditional problems in channelling and purification, presenting two differentiated lines of business:



CHANNELLING

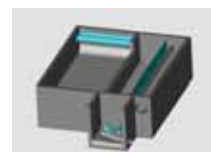


HYDRAULICS



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# STORM TANKS

(STORM TANKS / OVERFLOW SECTIONS / DRAT)



The discharges of unitary and separating systems are an important problem at the present time in the world of purification.

Storm tanks are elements in the purification network aimed at adjusting the flow caused by periods of rainwater and/or avoiding uncontrollable downfalls on the receptor media (rivers, sea).

## Unitary system

In this system, the wastewater and rainwater are channelled through a single pipe to the purifying plant.

The first stage of the rainfall is when most of the contamination is concentrated (first flush). For this reason it is essential to retain this water and channel it to the purifying plant. If the rainfall continues, the excess water is released directly into the flow, having already diluted the contamination of the water in the storm tank.

## Separative system

Here, the waste water and rain water are channelled through two different pipelines to the purifying plant and to the receptor media, respectively.

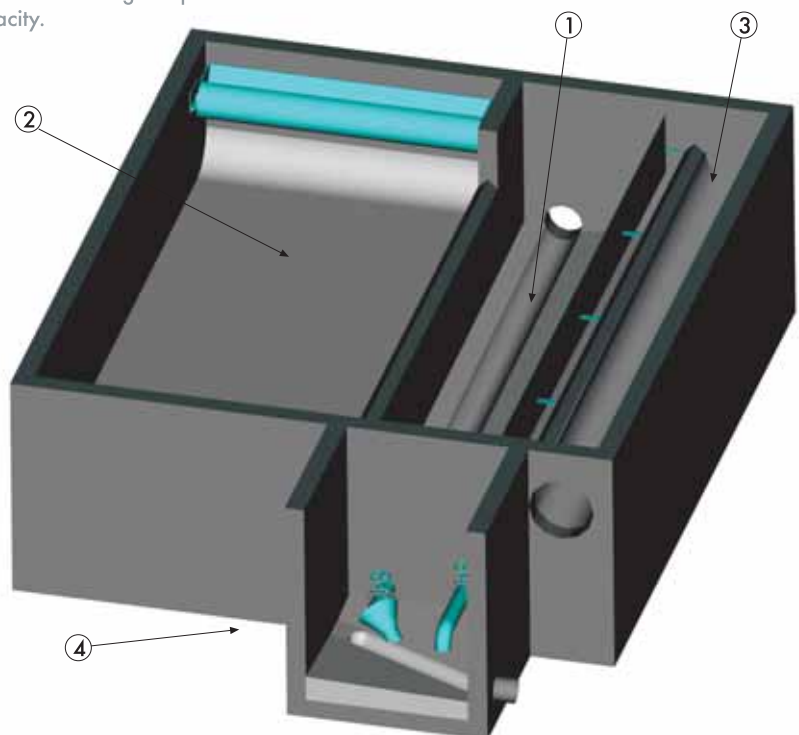
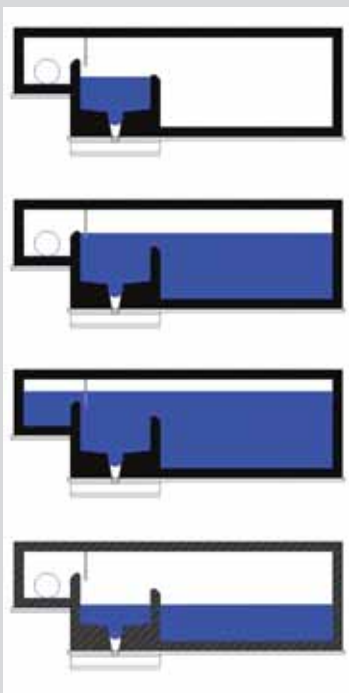
The tanks in these systems have two applications

On the one hand the tanks can be designed to avoid flooding after continuous periods of rainfall (flow lamination). On the other hand, the reality of the separative systems shows that, contrary to their intended purpose, sewage water can be found in the supposed rainwater network. This dysfunction calls for a re-channelling of this sewage water to the sewerage waste network (by use of a vortex) or by dilution in the corresponding tank.

## Elements of a storm tank



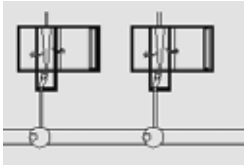
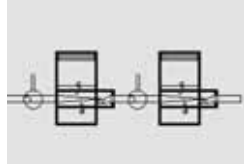

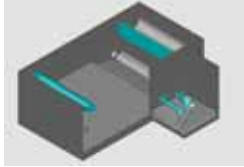
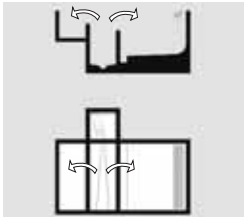
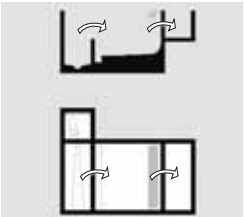


A storm tank can consist of:

- ① Central chamber which leads the sewage water from the entrance to the tank to the exit, through the flow regulating element (collector continuation).
- ② Retention chamber (one or various chambers) where the first stage of the storm water is stored; the central chamber having surpassed the capacity.
- ③ Overflow chamber, where the excess of the storm water is led to the receptor.
- ④ Dry/adjustment chamber, where the flow regulating element is situated.
- ⑤ Control booth which houses the equipment switchboard.



## Classification

The storm tanks can be classified following various criteria.

In terms of their objective:	- Anti DSU 	- Anti flood 
In terms of the location in the sewerage network:	- In parallel 	- In series 
In terms of their topology:	- Off line 	- In line 
In terms of the flow typology:	- First flush 	- Decanting 
In terms of their interior geometry:	- Open 	- Covered 

## Equipment for storm tanks

A series of equipment is installed in each storm tank to optimise the functioning.

- flow regulating valve
- cleaning system
- non return check valves
- self cleaning grates / float
- deflector screen
- control system

Each piece of equipment is specifically designed for the needs of each tank and their dimensioning begins in the project stage of the storm tank as it is necessary to adapt the civil work so that the installation of the tanks is correct and the operation appropriate.

## CLEANING SYSTEMS

It is a basin, sized depending on the geometry of each tank that is positioned at a determined height. To clean the tank, fill with water until it automatically tips over, causing the corresponding drag wave.

Made of stainless steel AISI 304 or AISI 316 it prevents corrosion even in the most aggressive environments.

Manufactured in lengths of up to 10 lineal metres, they must be positioned in parallel in basins whose width is greater than this length. In these cases the tank is divided, using tapered-edge walls creating parallel lanes which break up the action of the waves, obtaining efficiency in the cleaning.

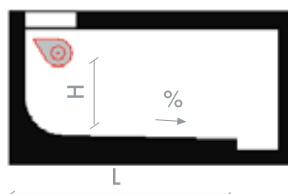
At the end of the chamber to be cleaned, at the lower level, there must be a conduct capable of storing the whole cleaning capacity to prevent dragged sediment from returning to the surface of the chamber again.



The retention produced in the different chambers of a tank end up causing sedimentation in them. The use of cleaning systems avoids the need for manual cleaning of the tank, an action which is both unpleasant and dangerous.

There are two types of systems for cleaning the retention chambers.

### TIPPING BUCKET



#### Sizing

The sizing of each cleaner (litres/lineal meter) is calculated in accordance with the length to be cleaned (L), the fall height (H) and the slope of the basin (%), varying from 200 to 2,000 litres/lineal meter (consult other dimensions).



### Functioning

In a normal situation it is in an even position. Once it has been detected that the chamber has emptied, filling proceeds with water from the network (or sewage).



Once the capacity for which it has been sized is reached, its centre of gravity is off balanced and it swings, generating a wave of water that sweeps all the sediment towards the lower part of the deposit to be led to the filter station through the regulating valve.

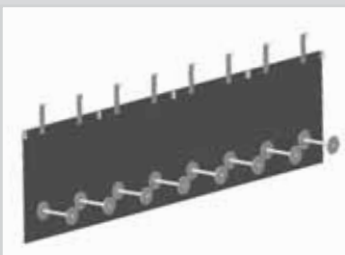


### Supports

The supports of the cleaners can be attached to the back wall, to the upper flagstone or to the lateral walls, depending on the design of the tank. To avoid maintenance, you are recommended to position the cleaner at the highest point of expected water, that is, above the maximum relief level.



## FLOW REGULATION / ANTI FLOAT SYSTEM



### MURAL SLUICE GATES

Mural sluice gates made of stainless steel and made to measure.

There are two types of sluice gates: powered or manual.

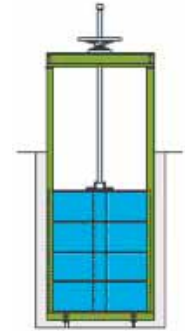
Powered sluice gates can be either:

Hydraulic: which may be

- all or nothing
- discontinued adjustment
- continuous adjustment

Electric:

- all or nothing
- discontinued adjustment
- continuous adjustment



### FLOAT DEFLECTING SCREENS

During rainfall, whenever the retention capacity of a storm or relief tank has been exceeded, the excess water is deposited directly into the river.

The problem might arise when the current drags non biodegradable solid objects (bags, cloth, etc.) which could cause serious pollution problems.

A screen made of stainless steel or of reinforced polypropylene acts as a barrier to prevent floating objects from passing over the relief wall and being dumped into the river.

The materials used make the screens resistant to corrosion and are made to measure for each project.

#### Functioning:

The screen is installed in parallel and in front of the relief wall. It must be positioned in such a way that it allows the water to pass through the bottom towards the chamber while impeding the pass of floating objects, which are trapped in the screen itself.

The distance from the wall varies between 30 and 50 cm., and the distance between the lower part of the deflector and the relief wall is also 30-50 cm.





## NON-RETURN VALVES / MANHOLE STEPS / CONTROL AND FULL-UP CIRCUIT

### SWING TYPE CHECK VALVES

This is an element which enables the water to pass in one direction, while preventing it returning in the opposite direction. Apart from being placed in storm tanks they are often placed at the end of the overflow section to prevent the penetration of what is being received (river water, sea water) in the purification system.



In the tank, it is located on the wall common to the central channel and that of the retention chamber. It prevents water passing from the central chamber to the retention chamber while allowing the flow in the opposite direction, preventing the retention chamber from filling up with water in the event of short rainfall episodes, and their subsequent corresponding cleaning.

The Hidrostant swing-type check valves are available for diameters ranging from 200 mm to 600 mm, although the manufacture of other diameters may be consulted. They may be installed fastened to the wall or using the corresponding through-wall or for embedding or flange-mounting.

### CLAMP VALVE

Non-return clamp valves serve to control backflows of water in water treatment plants, swollen rivers and sea-level rise. They are completely passive to the flow passing through the valve, and require no source of energy, maintenance or manual assistance for their operation.

They replace the swing-type check valves in those applications when large quantities of solids can pass through the valve as the non-return clamp type valves are capable of closing even then a solid is trapped inside.



### UNDERWATER STEPS

Access to manholes, retention tanks, pumping chambers can become a dangerous and unpleasant operation if it is not done with adequate means or if the stairways are not cleaned. The underwater steps which Hidrostant designs and manufactures, allow clean and safe access.

Manufactured in stainless steel AISI 304 or AISI 316 they guarantee maximum duration in time.



### FULL-UP CIRCUIT

Once the level probe detects the tank is empty it sends a signal to the automata for it to open the electro-valve which enables the filling of the self-balancing cleaner.

A full-up circuit consists of:

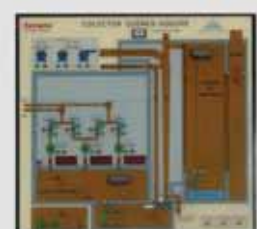
- Electro-valve: installed in a channel box outside the tank or in the control booth to facilitate maintenance work.
- Pipework
- Ball valve



### CONTROL CIRCUIT

Used to control the different equipment (cleaning systems, motorized valves, grates, deodorization, etc. ) which may form part of a storm tank, consists of:

- Water level measurement in the tank by means of equipment installed in the cleaning water channel (buoy, conductive probe, pressure gauge probe, ultrasound level sensor)
- Inductive proximity detector fastened to a small plaque at one end of the cleaner.
- Programmable automata.
- Possible unit for the remote control of the equipment.



## JOINTS AND MANHOLE STEPS

These provide a flexible connection which adapt to the movements of the terrain and help avoid breakages in rigid joints.  
Resistant to acid, alkaline elements, grease, oil. etc.

Available in a wide range of diameters and materials.

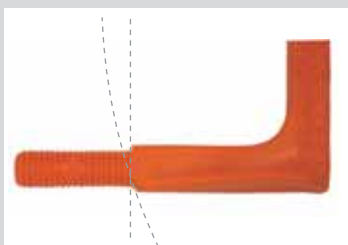


Made of a 12 mm AEH 500 corrugated steel rod, covered with virgin copolymer polypropylene, highly resistant to knocks to avoid breakage of material when putting in place.

Are totally resistant to abrasion and corrosion as the rod covering is submitted to an exhaustive quality control.

The manhole step has antislip grooves and side buffers to prevent falls.

Optional step for straight/curved surfaces.



Tested in accordance with EN 13101:

- vertical load test
- fastener removal test
- shock resistance test
- test of integrity of plastic covering

### JOINTS

#### Internal Seal (Tube-Tube Join)

Especially designed to re-establish watertightness to the joints between tubes, or manhole ring joints, are easily installed inside manholes or concrete tubes.

#### Kor-N-Seal (Tube - Manhole flexible connection).

Enable a flexible joint between the tube and manhole. Consist of EPDM rubber, neoprene or elastomers, which ensure the watertightness without adhesives, or lubricants; and two stainless steel strips.



#### Kor-N-Tee (lateral connections in concrete tubes)

Especially designed for the lateral join to concrete tubes. Made up of an elastic connector and two strips, one extendible inside the main tube and the other embracing the tube which leads into the collector, eliminate the need for sealing or resins thus guaranteeing watertightness.

### MANHOLE STEPS

#### Easy installation:

Once the concrete has set, two holes are drilled in line, with a 25 mm bit, depending on the separation and depth as indicated.

The manhole step is placed into these holes, hammering alternatively on each side until fully inserted.

It is important to drill the holes accurately, otherwise it will be necessary to fill the holes with cement or putty to make sure the step is correctly in place.



REFERENCE	MODEL	A	B	C
P001	BARCELONA -STRAIGHT	100	120	330
P002	STANDARD	80	140	330
P003	BILBAO - STRAIGHT	80	160	330
P004	CURVED 300mm.	80	160	300
P005	CURVED 330mm.	80	160	330

(mm).

SANEAMIENTO OÑATE (GUIPÚZCOA),  
SANEAMIENTO ESKORATZA (GUIPÚZCOA),  
ALVIADEROS PUERTO DE SANTA MARIA (CÁDIZ),  
SANEAMIENTO LA BASTIDA (ALAVA), LAS ARENAS  
(BILBAO), ESTACIÓN DE BOMBEO RIBADESELLA  
(ASTURIAS), SANEAMIENTO ARETXABALETA  
(GUIPÚZCOA), SANEAMIENTO TRUBIA (ASTURIAS),  
SANEAMIENTO BEASAIN (GUIPÚZCOA),  
ESTACIÓN DE BOMBEO RIBADESELLA (ASTURIAS),  
ALVIADERO SANTA MARIA DEL MAR (ASTURIAS),  
EDAR TUDELA (NAVARRA), ALVIADERO AVILÉS  
(ASTURIAS), ALVIADERO EN AZKOITIA  
(GUIPÚZCOA), SANEAMIENTO SAJA-BESAYA  
(CANTABRIA), SANEAMIENTO INTEGRAL BAHÍA  
DE SANTANDER, EDAR VILLALÓN (VALLADOLID),  
EDAR AGURAIN (ÁLAVA), SANEAMIENTO  
CANGAS DE ONIS (ASTURIAS), EDAR UTRERA  
(SEVILLA), ALVIADERO EL CIEGO (ALAVA),  
SANEAMIENTO ALTO DEBA (GUIPÚZCOA),  
SANEAMIENTO DE FUENTERRABIA (GUIPÚZCOA),  
INTERCEPTOR IBALLONTI (GUIPÚZCOA),  
SANEAMIENTO RIO HUERVA (ZARAGOZA),  
SANEAMIENTO REINOSA (CANTABRIA), TANQUE  
DE TORMENTAS AVILA, SANEAMIENTO VAGUADA  
DE LAS LLAMAS (SANTANDER), SANEAMIENTO  
CABEZÓN DE LA SAL (SANTANDER), DESVÍO  
AGUAS PLUVIALES REGATA ZUBIAURRE AL RIO  
URUMEA (SAN SEBASTIAN), TANQUE DE  
TORMENTAS COLECTOR C2 PAMPLONA, EL PINAR  
DE COSTAJÁN (BURGOS), SANEAMIENTO DE LOS  
PUEBLOS DEL MUNICIPIO DE SANTANDER,  
SANEAMIENTO DEL PAS-PISUEÑA (CANTABRIA),  
ALVIADEROS HINOJEDO, BARREDA Y VIVEDA  
(CANTABRIA), DEPÓSITO DE LAMINACIÓN JOAN  
GAMPER (BARCELONA), SANEAMIENTO DE  
BARRIKA (VIZCAYA), SANEAMIENTO ASTEASU  
(GUIPÚZCOA), BOMBEO EL CUETO (CANTABRIA),  
BOMBEO PRINCIPAL EN POLLENÇA (MALLORCA),  
SANEAMIENTO ORMAIZTEGI (GUIPÚZCOA),  
OBANOS (NAVARRA), MILAGRO (NAVARRA),  
SANEAMIENTO SANTA LUCIA (A CORUÑA),  
TRATAMIENTO DE AGUAS RESIDUALES DE BEIRE-  
PITILLAS (NAVARRA), SANEAMIENTO LIÉBANA  
(CANTABRIA), RIO HUERVA (ZARAGOZA), TANQUE  
DE TORMENTAS DE PUERTOLLANO (CIUDAD REAL),  
TANQUE DE TORMENTAS EN XINZO DE LIMIA  
(ORENSE), CUBILLOS DEL SIL (LEÓN), PTE. SEGOVIA  
- PTE. SAN ISIDRO (SEGOVIA), TRATAMIENTO DE  
AGUAS RESIDUALES DEL BAJO EBRO (NAVARRA),  
TANQUE TORMENTAS SANTURTZI (VIZCAYA),  
URBANIZACIÓN ÁREA 66 EN EL ALISAL  
(CANTABRIA), SANEAMIENTO DE ARRASATE FASE  
2 (GUIPÚZCOA), URBANIZACIÓN EN CADRETE  
(ZARAGOZA), INTERCEPTOR DEL KADAGUA  
TRAMO SUPERIOR (VIZCAYA), COLECTORES DE  
RONDA (MÁLAGA), GUADALAJARA, COLECTORES  
RÍO ARENTEIRO (ORENSE), BARRANCO DE  
SANTOS (TENERIFE), SANEAMIENTO LUGO,

# THANK YOU ALL FOR YOUR TRUST HIDROSTANK

TANQUE TORMENTAS EN EL FERROL (A CORUÑA),  
COLECTOR MARGEN DERECHA ZONA SUR  
(MADRID), TRATAMIENTO DE AGUAS RESIDUALES



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