

**ENCAPSULATION COLLARS  
FOR UNDER-PRESSURE  
PIPE REPAIR**



# ENCAPSULATION COLLARS UNDER-PRESSURE REPAIR OF PIPE SOCKETS AND WALLS

Encapsulation collars are used for safe and permanent repair of all types of pipes and pipe connections while the pipeline is under pressure. Hydro-Cos has developed a wide range of universal and dedicated collars for the repair of pipe sockets and pipe walls, and can also offer completely customised solutions for any leak.



## Renowned solutions

Hydro-Cos was established about thirty years ago in Apulia in Southern Italy, and specialises in manufacturing pipeline fittings. The Apulia region has always faced water problems because of its hydrogeologic characteristics, as soil permeability causes scarcity of surface water and consequently huge problems for agriculture.

Hydro-Cos is a small family-owned business with strong dedication to help solve this problem. The company delivers high-quality repair collars for water loss prevention and has achieved deep know-how and a strong

reputation within standard encapsulation collars and tailormade solutions to stop any leak.

In 2020, Hydro-Cos became a member of the AVK Group, as its range of encapsulation collars and other fittings perfectly complements the AVK product range.

## Product design

The standard encapsulation collars are made of fabricated carbon steel with fusion bonded epoxy coating, and the coating as well as the rubber seals in contact with water are WRAS approved.

They are designed with flange outlet suitable for hot tapping and drainage of water, and air vent for the release of air as the last step of the installation. Lifting eyes are integrated in the reinforcing plates.

In addition to the substantial standard range of up to DN2000, the collars can be delivered with stainless steel body and/or stainless steel fasteners, for higher pressure ratings, up to DN3000, and even in a customised design.





**Hydro Stop series 8001/0, PN16**  
Socket encapsulation collar, DN250-2000



**Hydro Stop series 8001/2**  
Pipe encapsulation collar, DN300-2000



**Hydro Fast series 8002/0**  
Socket encapsulation collar, DN300-2000



**Hydro Fast series 8002/2**  
Pipe encapsulation collar, DN300-2000



**Hydro Smart series 8003/0**  
Socket encapsulation collar, DN80-250

### Hydro Stop universal collars

Hydro Stop universal encapsulation collars are wide tolerance collars suitable for connecting pipes of different pipe materials, and they are available in variants designed for pipe socket repair as well as for pipe wall repair.

- Hydro Stop **socket** encapsulation collars with shaped body accommodate and seal any kind of pipe socket, including joints connecting two pipes of different materials and remnants of previous repairs.
- Hydro Stop **pipe** encapsulation collars with straight body accommodate and seal leakage on pipe walls. They are lighter than the socket collars.

Both types offer 30 mm tolerance on the outside pipe diameter up to DN450 and 40 mm from DN500. The wide tolerance gives great flexibility, if the pipe OD has not been measured correctly, and a safe installation even in case of oval or damaged pipes. They allow for angular deflection of up to  $\pm 4^\circ$  before or after installation.

### Hydro Fast dedicated collars

Hydro Fast encapsulation collars have a tolerance of up to 10 mm on the outside pipe diameter and are dedicated to a specific pipe material. Variants are available for all pipe materials and for both pipe socket repair and pipe wall repair.

- Hydro Fast **socket** encapsulation collars with shaped body accommodate and seal pipe sockets connecting two pipes of the same material.
- Hydro Fast **pipe** encapsulation collars with straight body accommodate and seal slightly misaligned breaks on pipe walls.

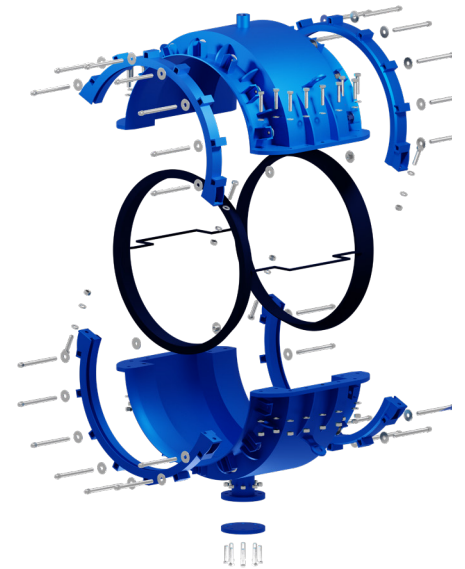
The lightweight compact design is ideal for fragile pipes and limited space on site, and they allow for angular deflection of up to  $\pm 6^\circ$  before or after installation offering great flexibility.

### Hydro Smart dedicated socket collars for small pipe diameters

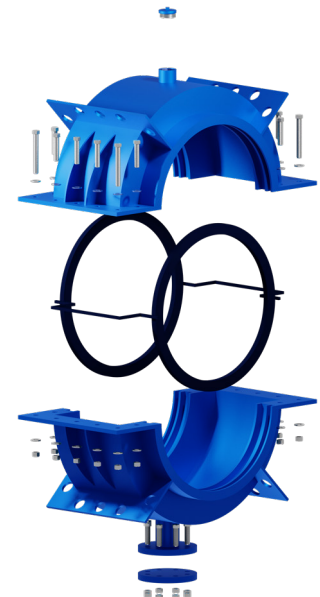
Hydro Smart socket encapsulation collars have a shaped body designed to accommodate pipe sockets connecting two pipes of the same material. They can be installed by one operator, which is advantageous where space is limited.

They do not have the flanged outlet, but otherwise they are quite similar to Hydro Fast collars.

### Hydro Stop



### Hydro Fast





# REPAIR OF EIGHT LEAKS ON THE ADDUTTORE SINNI DN3000 PIPELINE

## CASE STORY

Hydro Stop socket encapsulation collars used for repairing eight leaks on the largest pipeline in southern Italy.

In 2017, E.I.P.L.I. planned the repair of several leaks on the largest and most important pipeline in southern Italy: Adduttore Sinni. It is a DN3000 steel pipeline that supplies fresh water to Apulia and Lucania, serving about 4.5 million people. It goes from the Sinni dam to the western area of the Taranto district covering a distance of about 133 km.

### **Eight critical leaks – eight customised Hydro Stop socket encapsulation collars**

There were many leaks on the old joints, so it was essential to plan the repair without causing water stoppage on this important water distribution line. In fact, E.I.P.L.I.'s technicians had identified eight critical leaks on the pipeline that needed particular attention and they asked us to perform inspections on these leaks in order to provide a specific solution for each of them.

Basically, the DN3000 flanges that connected the pipes, as well as the expansion joints, were worn out and had started to leak severely. Considering the large population potentially involved in disruption of water supplies, the only possible way to perform any repair was by using our Hydro Stop socket encapsulation collar.

For the eight big leaks, we designed eight different variants of Hydro Stop collars, capable of working not only as encapsulation and repair collars, but also as expansion joints: we offered a product capable of fulfilling two different purposes.

### **Challenging installation conditions**

Seven days after the first inspection of the pipeline, the first Hydro Stop was installed on the location where the most severe leak had been detected. In the following months, seven additional socket encapsulation collars were manufactured and installed on the remaining severe leaks in order to reduce water losses on the 133 km pipeline.

Often, we had to face severe conditions during installation. The most challenging installation was performed in the Montescaglioso district, where the pipeline crossed hillside. This special circumstance caused a pressure increase from the average of 10 to 16 bar up to a peak of 24 bar; a very high pressure for such a large pipeline! Stopping this leak was a real challenge, and we therefore decided to oversize the collar to ensure the highest possible reliability over time.

E.I.P.L.I. management was stunned by the flexibility and reliability of our Hydro Stop, and to date, these DN3000 collars are the largest socket encapsulating collars ever installed.



# PREVENTIVE REPAIR OF SOCKET JOINTS ON DN1200 PIPELINE

## CASE STORY



Hydro Fast socket encapsulation collars used to protect two socket joints on a concrete pipe in Beirut City in Lebanon.

In 2018, we received a request from Beirut Water Authority, who wanted to secure two socket joints on the DN1200 concrete pipeline that supplies fresh water to Beirut City.

This pipeline crosses the new Jal ed dib overpass, and the pillars of the new flyover were to be built next to the joints, so it was necessary to protect them from possible damage caused by the construction of the pillars. In fact, Beirut Water Authority wanted encapsulation collars for preventive repair of the socket joints.

### Hydro Fast socket encapsulation collars did the job

Because of lack of space on site, a solution with a very short overall length was needed, since the maximum length was restricted to 600 mm. Therefore, we offered our Hydro Fast socket encapsulation collars, as they have no flanges, and the overall length could therefore be reduced to 530 mm.

### Three weeks delivery time

The two repair collars were manufactured in 10 days and delivered in about three weeks including transportation. The contractor had asked us to supervise the installation, so we sent two fitters to Beirut to help the local workers. After two working days, both collars were installed, and no inconvenience had occurred during installation.

The head engineer from Beirut Water Authority was really pleased with the solution and our service. According to him, Hydro Fast socket encapsulation collars are "the best compromise between dependability and cost savings".



# REPAIR OF SOCKET JOINT ON DN900 PIPELINE

## CASE STORY



Hydro Fast socket encapsulation collar used for repairing a leaking socket joint on old and fragile concrete pipeline located in Puglia in southern Italy.



In April 2019, the Technical Department of Acquedotto Pugliese S.p.A. asked us to arrange a technical inspection of the Sifone Lecce pipeline. It was necessary to find a solution to repair a severe leak in the socket connection of the concrete pipe.

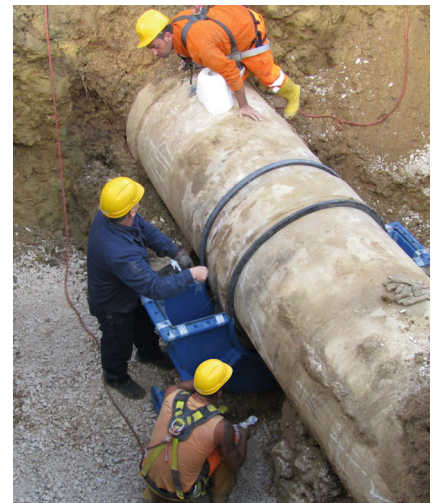
The pipe was very old, and some cracks had appeared on its anchor blocks. The anchor blocks were moulded directly on the pipe, so water leaked from the cracks as if it leaked directly from the pipe wall itself.

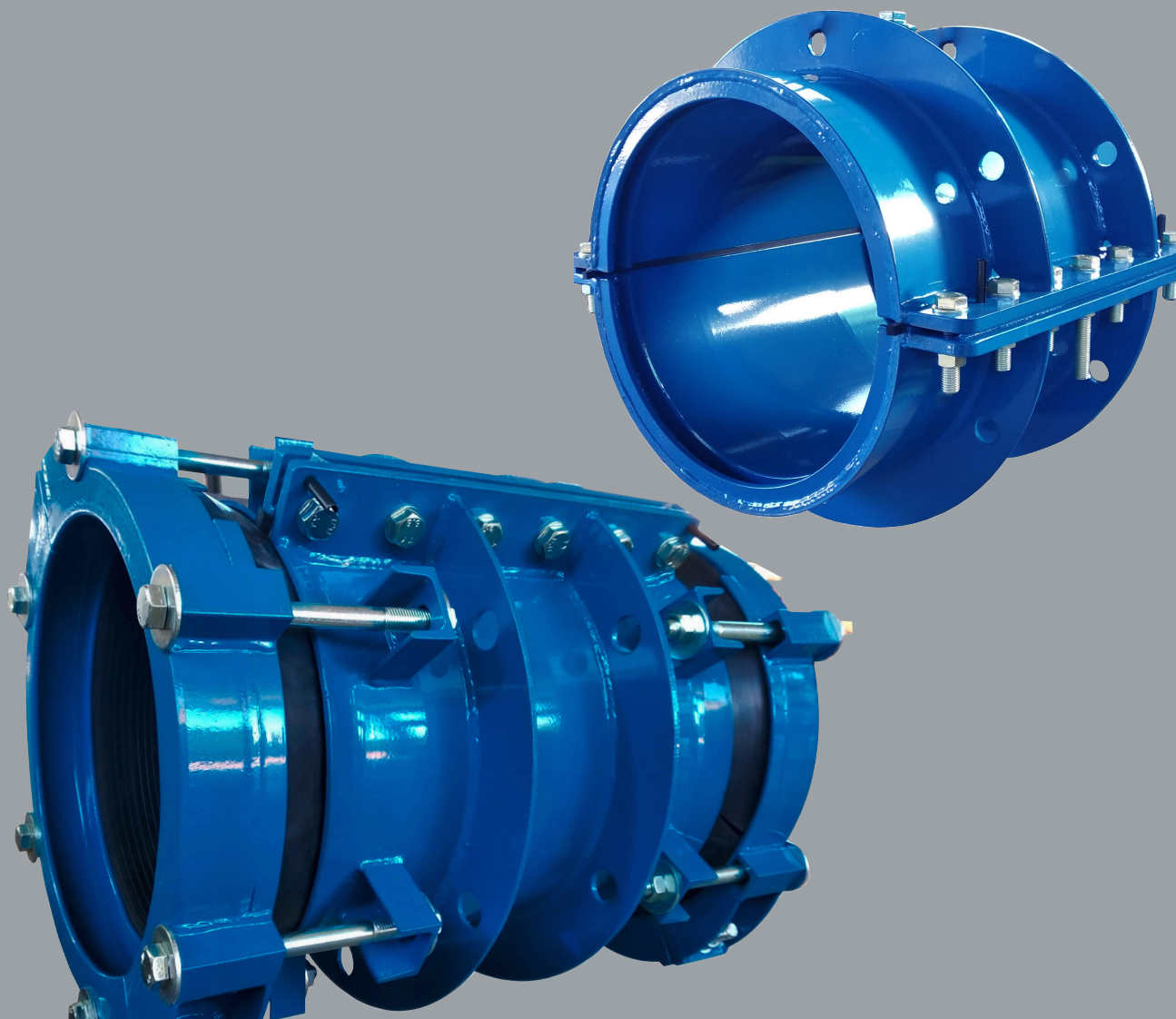
### The fragile pipe called for a light-weight repair collar

We had a situation with two problems; the leak itself and a slow collapse of the pipeline because of continuous enlarging of the cracks on the anchor blocks. Two fitters from Hydro-Cos went to the site to study the situation and take measurements. On the upper part, the concrete joint was only 25 mm high, while on the lower part, the height of the joint including the anchor block exceeded 300 mm.

Considering the fragility of the pipe caused by the serious damage to the anchor block, we proposed our Hydro Fast socket encapsulation collar. Because of its light-weight design it would only cause a minimum amount of stress on the damaged pipe anchor. In order to reduce the vertical extension of the collar, we manufactured a DN100 lower flange spigot in the form of a mouth-of-a flute intersection.

After installation, it was only necessary to place two small support devices under the pipe on each side of the concrete joint, to replace the anchor block now encapsulated in the Hydro Fast collar.





**AVK International A/S**

Bizonvej 1  
Skovby  
8464 Galten  
Denmark

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Tel.: +45 8754 2100  
[www.avkvalves.eu](http://www.avkvalves.eu)

**vatech**  
[www.vatech.dk](http://www.vatech.dk)

Værkstedsvej 15 | 5500 Middelfart | Tel. 64 40 20 60 | [info@vatech.dk](mailto:info@vatech.dk) | [www.vatech.dk](http://www.vatech.dk)

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