

Top waterstops manufactured in Finland are used for sealing the joints of waterproof concrete structures. The PVC waterstops are manufactured from raw material as required by the Finnish standard SFS 3919.

**Applications**

Top waterstops are used to seal expansion and construction joints in concrete structures.

**Material**

Top waterstops are made from a grade of PVC plastic that meets the requirements of the Finnish SFS 3919 standard. The material is approved for contact with drinking water.

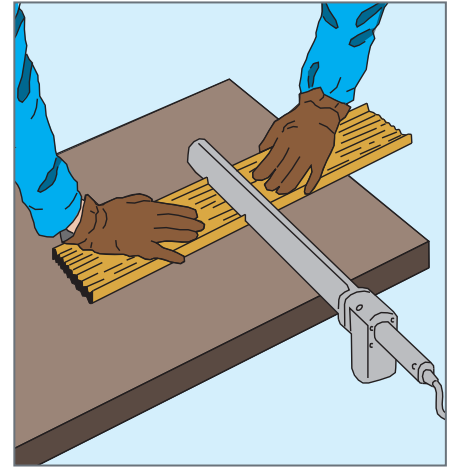
**Extending the waterstops**

The waterstops can be extended by using a splicing iron to heat the ends to 180-200°C, which melts the PVC. The ends can then be pressed together, after which the joint must be allowed to cool.

**Tensile strength**

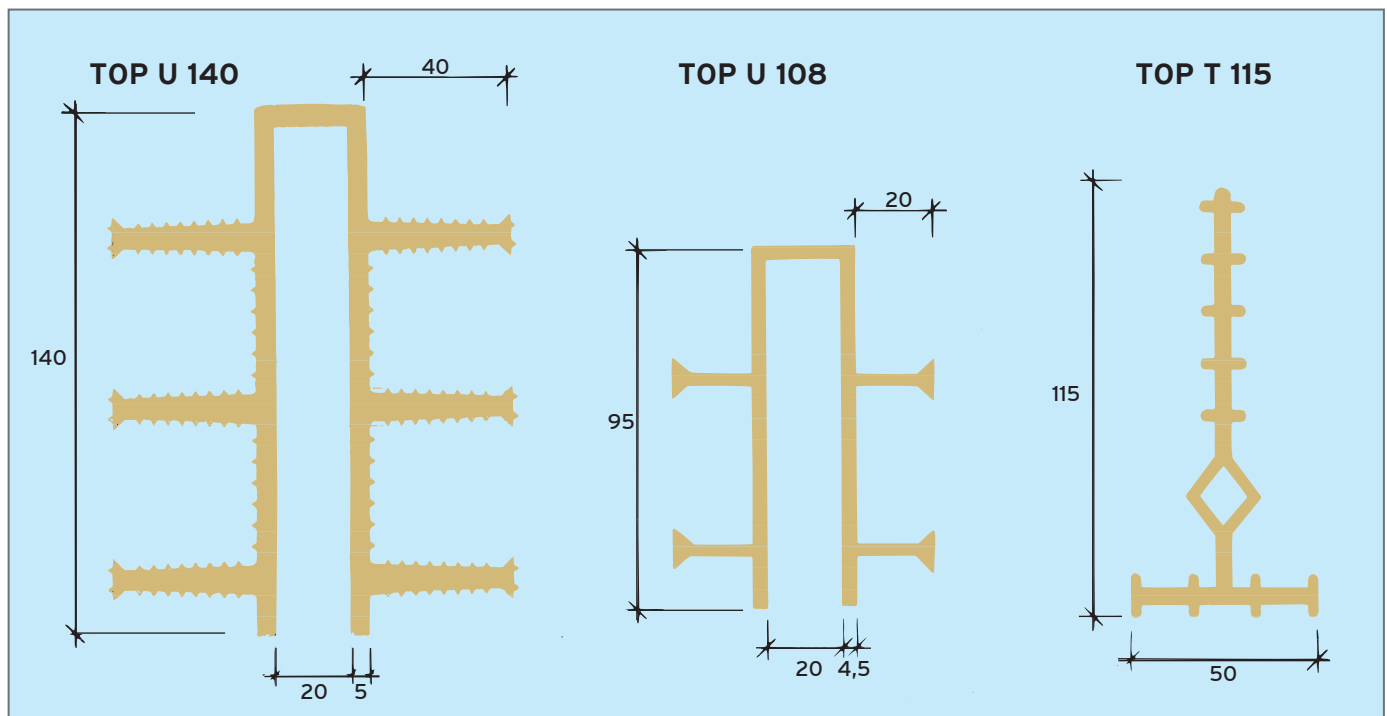
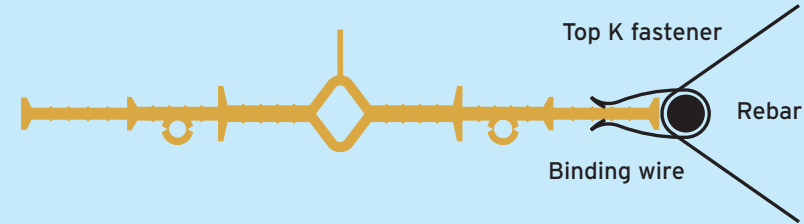
The test conducted by the Technical Research Centre of Finland tested the tensile strength and ultimate elongation of the Top waterstops and their resistance to alkali. The test examined the strips Top 6 and Top 8. The results are an average of six tests.

	+23 °C - 35 °C	
Tensile strength (N/mm <sup>2</sup> )	16	40
Ultimate elongation (%)	271	157



**Top waterstops fastening**

The Top waterstops are fastened from the edges With the Top K fastener, the fastening interval is approx. 300 mm



## Top waterstops

Type	Width	Thickness mm
TOP 4	100	4,0
TOP 6	150	4,5
TOP 8	190	4,0

Type	Width	Thickness mm
TOP 10	240	5,0
TOP 13	320	5,0

Type	Width	Thickness mm
TOP 8	200	4,0
TOP PL 10	240	5,0

Type	Width	Thickness mm
TOP PL 11	250	5,0

### Top In 9 injection waterstop for construction and expansion joints

Width 210 mm  
Thickness 5 mm

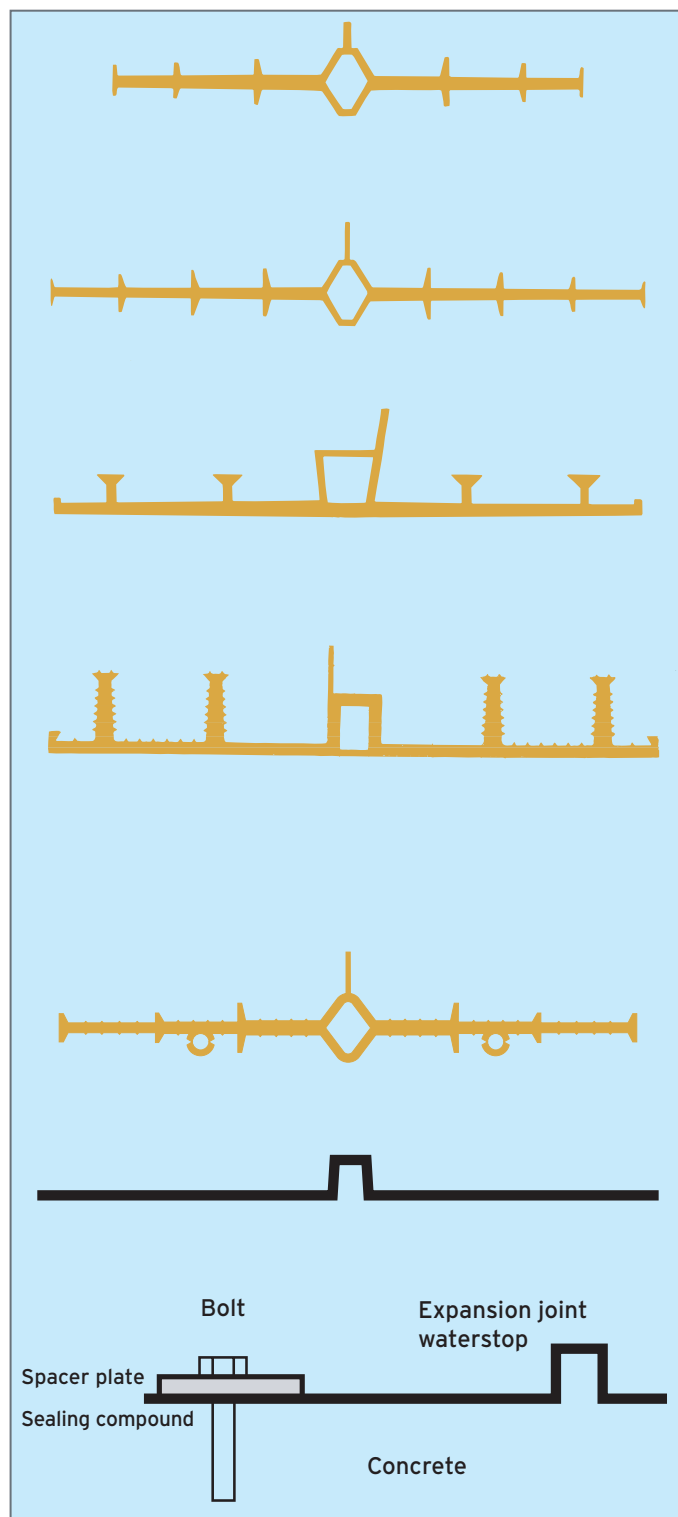
TOP IN 9 can be injected with micro concrete at low pressure. The feed hose is attached to the injection hose with a bushing. At least 100 mm of the hose must be inside the concrete.

### Renovation expansion joint waterstop TOP L 315

Width 315 mm  
Thickness 4 mm

This waterproofing strip is bolted into the surface. Also suitable for corners. TOP L 315 is not approved for contact with foods and drinks.

The thicknesses have been measured next to the centre of the strip.



Meltex's injected products can be used to seal and waterproof gaps and microcracks in concrete structure joints.

Post-injection can be used to seal leaks in seams caused by structural movement or other reasons.

Top Star is a post-injected, multi-chamber injection hose for sealing casting seams.

Top Star is suitable for resins and micro concrete.

The injection hoses for the single-injected Top In 9 expansion joint strip are used to remedy faults in casting seams. Meltex injection hoses and waterstops are manufactured in Finland.

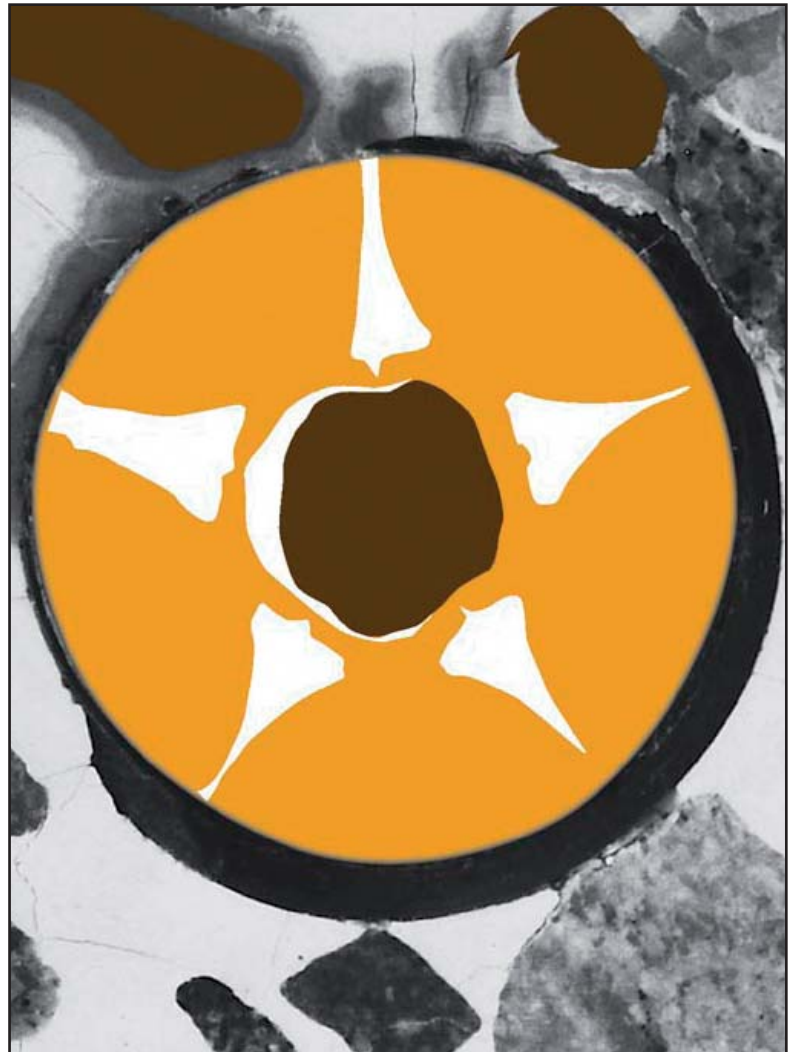
### The operating principle of the Top Star injection hose

The Top Star injection hose comprises an inner hose and surrounding chambers. During concrete pouring, stoppers protect the inner pipe and prevent the concrete from entering the chambers.

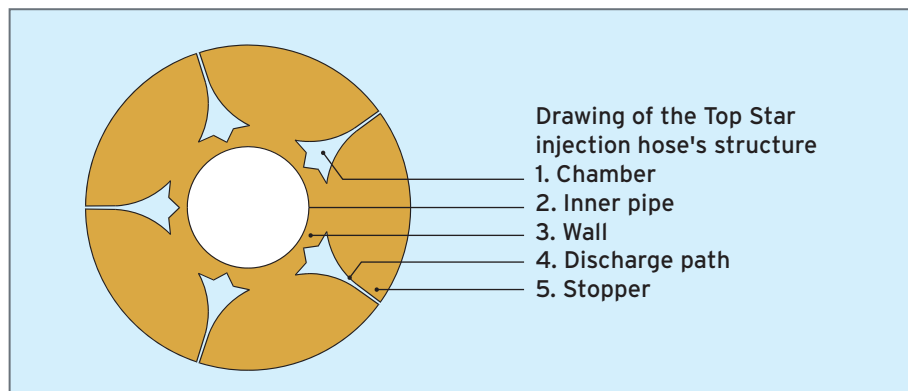
The injected material is pumped into the hose. If a section of a chamber is blocked, the inner pipe bursts through the chamber wall next to the blockage thereby ensuring the functionality of the chamber.

There can be multiple discharge points, which means that the chambers can discharge material into the concrete structure throughout the length of the hose.

For post-injection, the inner pipe of the Top Star hose can be drained with pressurised air or water, for example.



The cross section of the test piece shows the injection hose in operation. The light grey material is the micro concrete that was used in the initial injection. The brown material is the resin that was used in the post-injection.



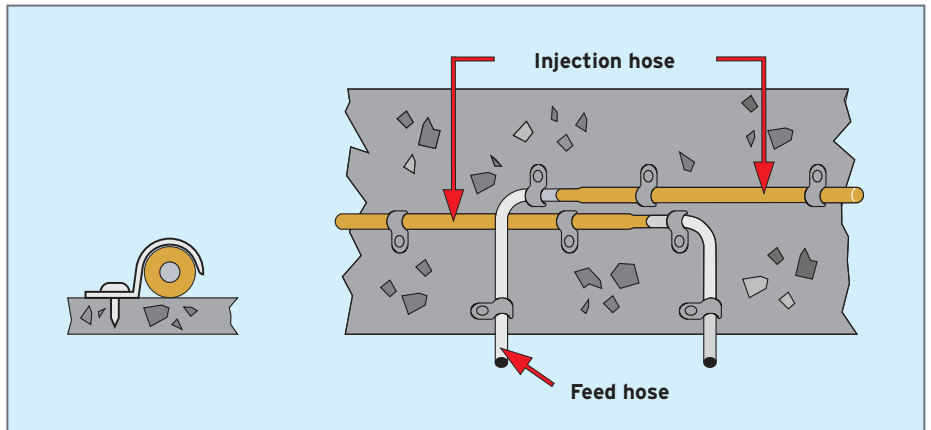
## Usage of the Top Star injection hose

In favourable conditions, the maximum length for the Top Star injection hose is 12 m. In demanding conditions, where gaps may remain in the concrete due to dense reinforcement or some other reason, shorter hoses must be used for a good result. To ensure that post-injection is possible, the hoses should be no longer than five metres. The same lengths are used in the vertical joints of basic and joint structures.

Normally, the injection hose is installed in the centre of the wall, as shown in the drawing. If necessary, more than one hose can be used.

The surface of the concrete must be cleared of loose stones and debris before the hose is installed. The injection hose must not float on the concrete that is being poured, as this will prevent the injected material from entering the intended joints.

It is recommended to prepare a groove for the injection hose to prevent lateral stress. Do not attach the hose to the re-bars.



Fastening injection and feed hoses

### Study results

The functional testing of the Top Star injection hose was conducted by IVO Technology Centre. The testing examined the functionality of the Top Star injection hose when injecting concrete into gravel foundations and sealing the construction joints of concrete structures with resin.

The testing indicated that the micro concrete injection filled the empty space in the gravel foundation almost entirely and left very little penetration room for the epoxy resin during post-injection.

**Study report:**  
IVO Technology Centre  
TECH-G315-386

## Top In 9 injection waterstop for construction and expansion joints

The single-injected Top In 9 waterstop is used in concrete structures to ensure waterproofing. The waterstop's two injection channels are positioned below where it is usually difficult to ensure flawless casting.

Top In 9 can be used to inject micro concrete at low pressure. The feed hose is attached to the injection hose with a bushing. At least 100 mm of the hose must be in the concrete.

### Splicing the Top In 9 waterstop

Cut the ends of the waterstops to the correct angle with a circular saw, for example. Splice the waterstops by melting them together. The temperature of the splicing iron must be +180-200 °C. Place the splicing iron between the ends of the waterstops and press the waterstops against the splicing iron until the plastic melts. Then, remove the splicing iron and press the ends together.

