

# Working with waterstops

## **Legal notice**

This document does not replace any guidelines or standards.

The correct application may vary according to local conditions. Therefore no guarantee can be given.

Basically the standard DIN 18197 “Sealing of joints in concrete with waterstops“ is valid for planning, dimensioning, treatment, processing and installation of waterstops.

## **Storage at construction site**

The supplied waterstop should be carefully unloaded and immediately checked for completeness and integrity. This also applies to shapes and dimensions. To avoid dirtiness and damage the supplied waterstops have to be stored in a protected location, out of construction site paths, on flat storage areas, on pallets or storage wood.

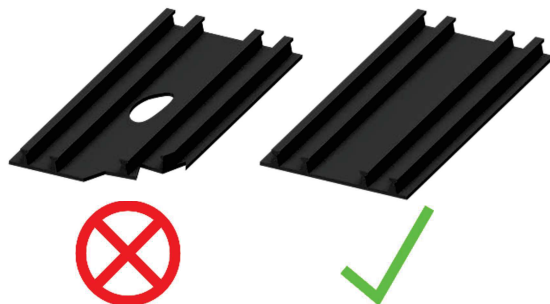
In summer, waterstops must be stored in cool and dry locations and protected from direct sunlight (eg by covering them).

In winter, waterstops must be stored in firm and dry locations. At ambient temperatures  $< +5^{\circ}\text{C}$  the waterstops should be stored at least 24 hours prior to processing in heated rooms (for ease of machining and installation).

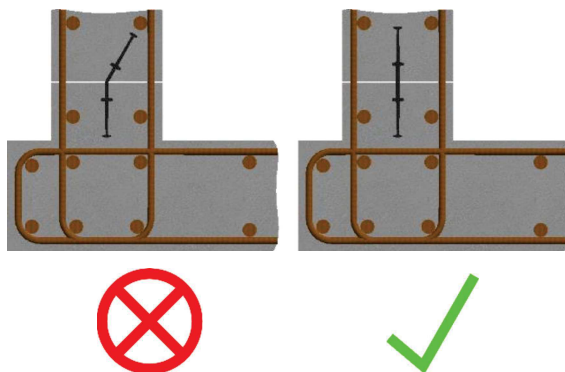
## **Transport at construction site**

We recommend transport on pallets. At high outside temperatures, joint tapes must be transported stress-free and laid out at the installation site.

# Working with waterstops



cleanliness and intactness



Installation in stable position

## Installation and mounting

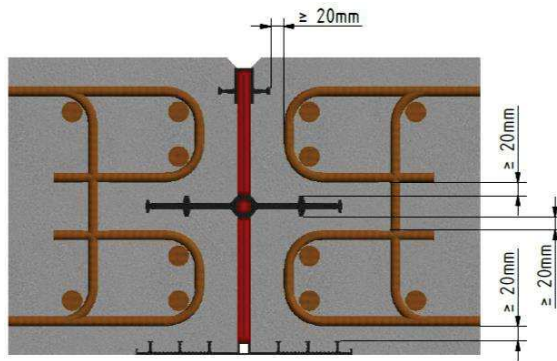
Waterstops may only be installed if they have any deformation or damage that could impair their function.

Waterstops must be installed free of wrinkles and warping. Storage or transport related deformations at external waterstops made of PVC-P or elastomer (e.g., wrinkles and warping of the stop anchor) have to be removed by stretching on a level surface and heat treatment.

Waterstops may only be installed with a fabric-temperature above 0°C and weathering conditions without harmful effects on the production of the sealing system.

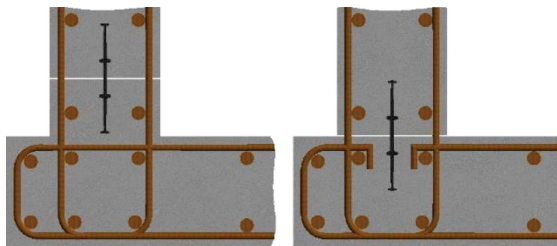
Waterstops must be installed in their planned position and symmetrically to the joint axis. They must also be fastened in a way that their position cannot change during concreting.

# Working with waterstops



concrete cover

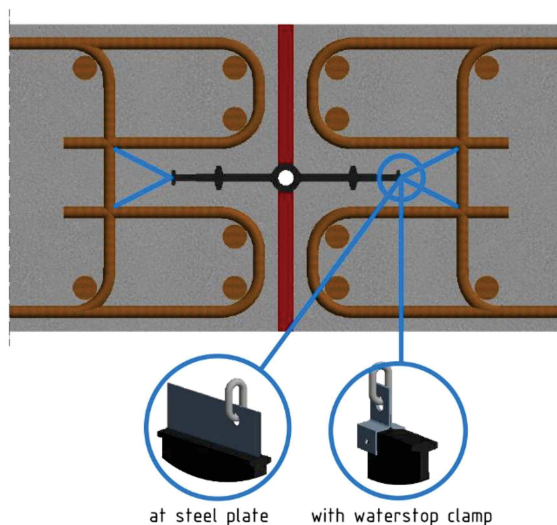
The distance between waterstop and reinforcement ( $\geq 20$  mm) has also to be ensured during subsequent concreting.



- with upturn beam
- without upturn beam
- reinforcement interrupted

construction waterstop base / wall

Internal construction waterstops in the area base / wall can be installed with or without upturn beam. If there is no upturn beam, the upper reinforcement must be interrupted.

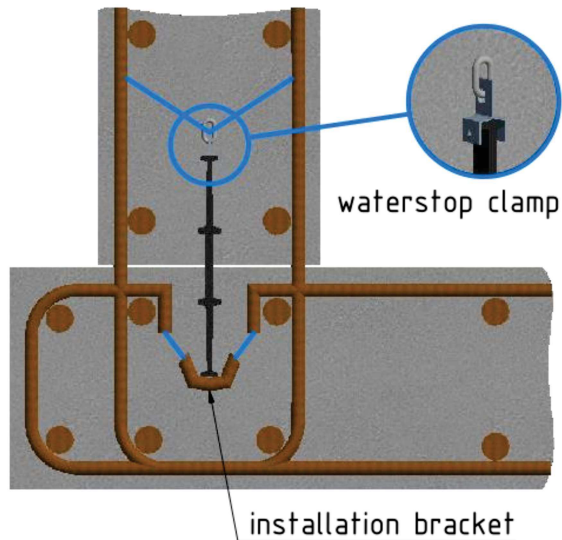


fastening of waterstops

Internal waterstops are anchored to the reinforcement.

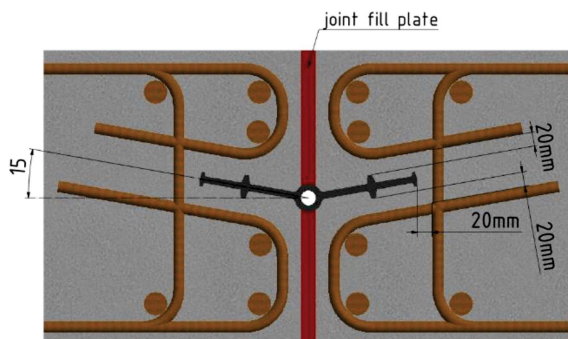
The waterstops are fastened to the edge anchors with waterstop clamps or, in the case of waterstops with steel plates (FMS, FS), at the edge perforation of the steel plates at intervals of not more than 25 cm.

# Working with waterstops



installation with installation bracket

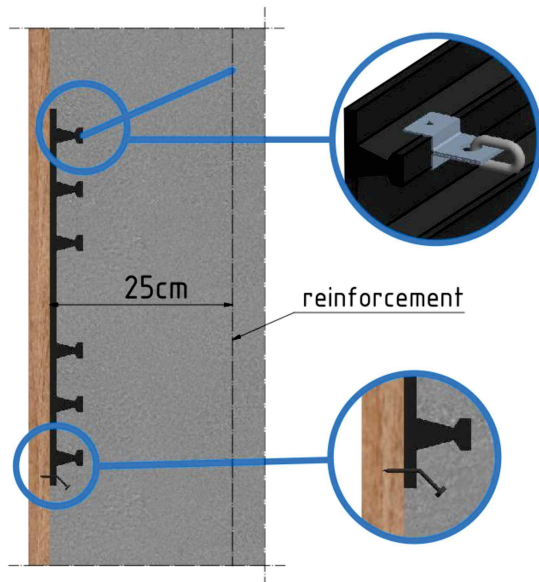
Internal construction waterstops can be installed by means of an installation bracket. For this purpose, installation brackets are installed and fastened to the reinforcement in a distance of each 25 cm, the waterstop is adjusted and fastened at the top end with waterstop clamps also in a distance of each 25 cm.



setting angle at base and ceiling

To avoid voids in the concrete, the internal waterstops at base and ceiling have to be installed V-shaped with an up-angle of  $\geq 15^\circ$ .

# Working with waterstops

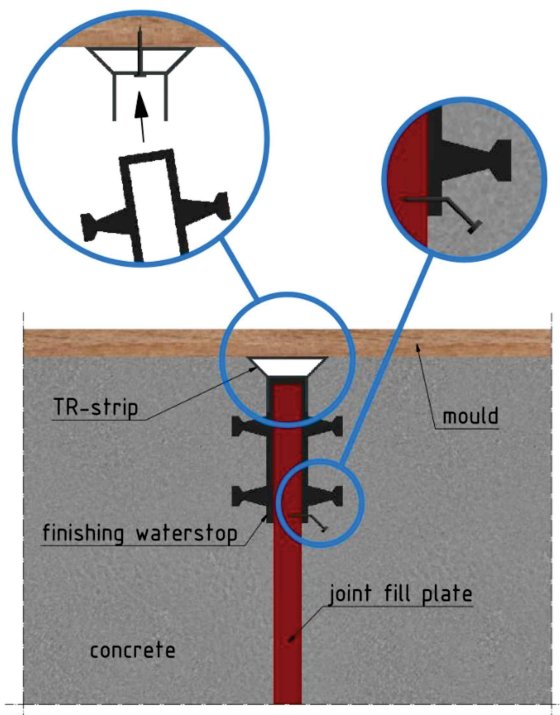


fastening of external waterstops

External waterstops for walls are fastened at side (nail lug) with nails to the reinforcement (hammering depth max 1/3 of the nail length, bend approx. 45 °).

In case of danger of bending a stop anchor (e.g. by incorrectly falling concrete), this stop anchor should be fastened to the reinforcement in a distance of each 25 cm, for example upper stop anchor of the waterstop in the joint of base / wall.

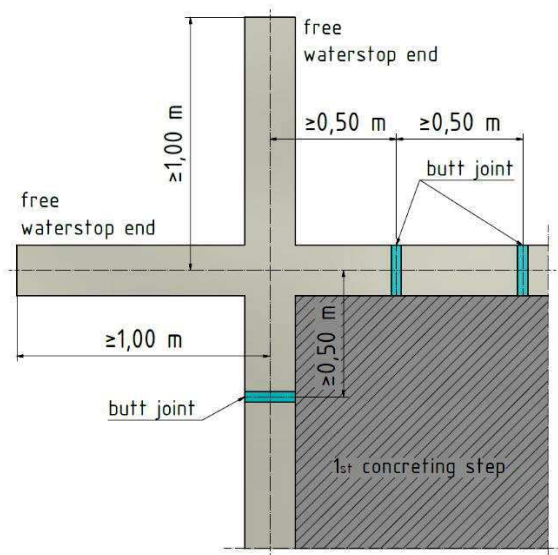
For horizontal installation below the base, external waterstops are fixed on the blinding concrete.



TR-strip as installation device  
installation of finishing waterstops

Finishing waterstops are installed by means of a TR strip. For this purpose, the TR-strip is nailed at the middle area to the reinforcement. Subsequent the finishing waterstop at first is inserted and then fastened with a nail on the nail lug at the reinforcement (hammering depth max 1/3 of the nail length, bend approx. 45 °).

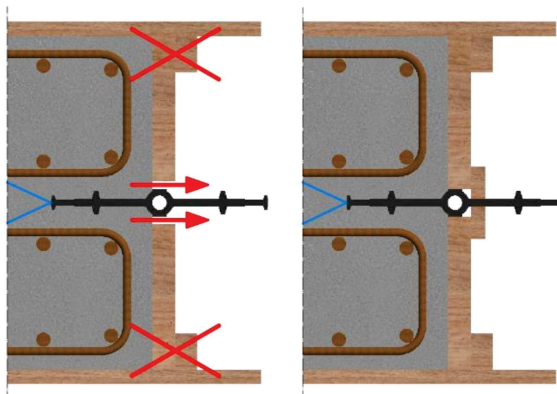
# Working with waterstops



required distances between joint patches

The distance between two joint patches should be at least 0.50m.

In each stage of construction the length of free waterstop ends should be at least 1.00m, so connecting additions can be performed professionally at site.



tight formwork

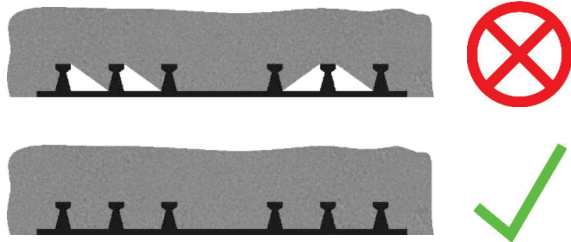
At formwork of the waterstop a dense, stable and unmovable bulkhead formwork has to be ensured. The stop end must be connected tight to the waterstop.

The waterstop must be protected from damage until concreting.



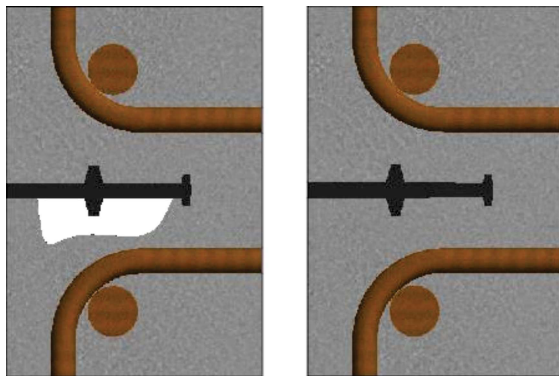
# Working with waterstops

## Concreting



embedding of external waterstops

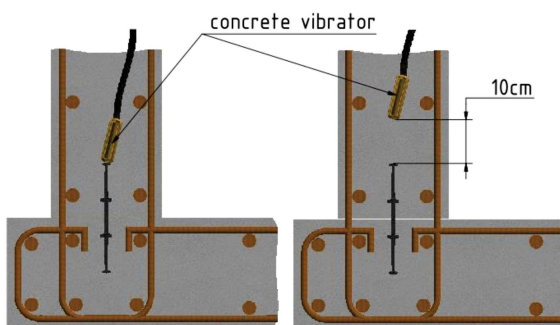
Waterstops must be free of contamination and ice formation when setting in concrete. If necessary, they should be cleaned before concreting (eg removing sawdust, sand, concrete residues, cement slurry, oils, fats, snow, ice, etc.). This is especially true for external waterstops in the base.



void-free embedding

Waterstops must be fully enclosed and concreted free of voids.

It is important to ensure a low drop height and even distribution of the concrete.

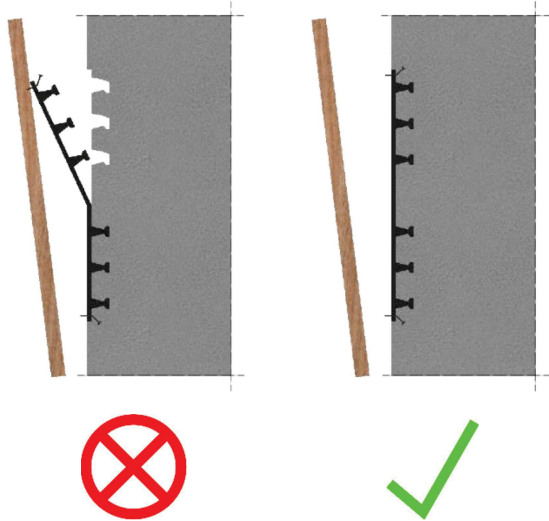


distance concrete vibrator - waterstop

The waterstop and the fastenings must not be touched with the vibrator bottle (distance  $\geq 10$  cm).

For external waterstops it may be advantageous to compress with external vibrators (better compacting of the locking anchor).

# Working with waterstops



stripping of external waterstops

For external waterstops, it is important to ensure that the waterstop is not loosened during stripping. If necessary, the stripping time has to be extended.

After stripping the waterstops in the visible area are to be examined for damage. Any defects must be repaired immediately.