

Southern Metal & Plastic PVC Waterstops are formulated, compounded and manufactured using only prime resins and all virgin raw materials. Southern Metal & Plastic PVC waterstops meet or exceed the standards of the most stringent specifications, including the U.S. Army Corps of Engineers CRD-C 572-74.

PVC waterstops are for use in concrete joints subjected to hydrostatic pressure. Embedded in concrete, PVC waterstops span the joint to form a continuous, watertight diaphragm that prevents the passage of fluid. The waterstop must be designed and installed properly to accommodate joint expansion, contraction and other lateral and transverse movements. Additionally, the waterstop must also be suitable for the liquids or chemicals to be contained or controlled.

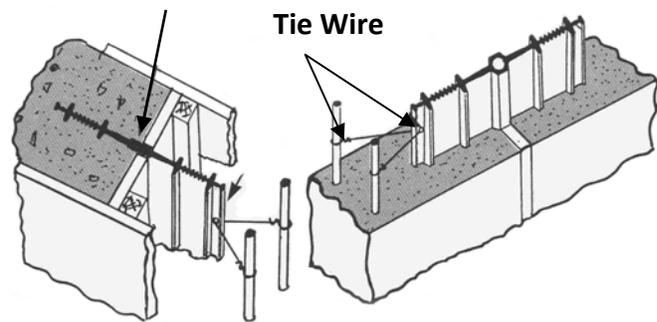
Forming and Positioning Requirements

PVC waterstops are installed prior to the initial concrete pour to ensure proper positioning. Split formwork is generally required for slab-to-slab, slab-to-wall, and wall-to-wall joints where ribbed or dumbbell style waterstops are used. Base seal (externally placed), labyrinth and split style waterstops are installed in a different manner and are addressed in a separate installation guide. Split forms allow half of the waterstop to be positioned inside the first pour with the other half projecting into the second pour. The centerline of the waterstop should be aligned with the center of the joint. Size and style of the waterstop determine permissible variation from the centerline. Contact Southern Metal & Plastic for specific guidelines.



The split form should firmly hold the waterstop in position to prevent misalignment of the waterstop during concrete placement. A tight fit is also necessary to prevent excessive leakage of concrete paste, which could lead to honeycombing of the concrete.

Split Formwork



The exposed flange of the waterstop must also be properly secured prior to concrete placement. This is accomplished with hog rings or factory applied grommets applied to the waterstop at the outermost rib on 12" centers. Tie wire is looped through the hog ring or grommet and tied off to adjacent reinforcement

This adequately secures the waterstop to prevent any displacement or "folding over" of the waterstop during the concrete pour. Never place nails or screws through the body of the waterstop. It is important to note the thicker waterstops are less likely to fold over. Thicker waterstops also reduce the potential for the hog rings or grommets to tear out of the waterstop due to the stresses caused during concrete placement.

Splicing Requirements

Continuity of the waterstop is critical for optimum performance. Poorly constructed fabrications and splices are prime locations for leaks. Lapping of the waterstop should never be permitted. Continuity of the waterstop profile, including ribs, dumbbells and center bulbs is also critical and should be maintained through changes of direction and transitions. Continuity is maintained at these locations by use of mitered welds. Mitered fabrications offer the additional benefit of longer weld lines resulting in stronger welds.



PVC waterstop is easily butt spliced with a Teflon coated, thermostatically controlled splicing iron. The ends of the waterstop must be cut square to form matching edges. Uniformly melt the ends at roughly 380°F using the thermostatically controlled splicing iron. It is important to use an indirect source of heat for this procedure. Direct exposure to a flame will change the chemical composition of the PVC and result in a weak weld. When an 1/8" diameter melt bead develops on each waterstop end, remove the splicing iron and firmly press the two ends together in proper alignment. Hold until the material has fused and cooled. Allow the splice to cool naturally; do not quench. Melt temperature of the splicing iron must be maintained to avoid burning or charring the material. Heating irons have resistance type heating elements and experience diminished performance if a reduced voltage is supplied. Avoid operating with long runs of small gauge extension cords.

Important Precautions

Thoroughly consolidate the concrete around the waterstop to prevent voids or honeycombing next to the waterstop. Pay particular attention to the underside of horizontally placed waterstops. Intimate contact of the concrete and waterstop is necessary for full performance of a waterstop. Voids next to the waterstop can significantly reduce its water stopping ability. Furthermore, maintain adequate clearance between reinforcing steel and the waterstop. Typical clearance should be twice the maximum aggregate size. Inadequate clearance can promote the formation of voids due to aggregate bridging.

It is important to maintain continuity of the entire waterstop system. Splices must be properly completed at all changes of directions, transitions, intersections, and butt joints. Any breach in continuity can be a point of leakage.

Be sure that the PVC waterstop is clean prior to the concrete pour. It is difficult to achieve a quality seal if the waterstop is greasy, dirty, or covered with concrete laitance. Store PVC waterstops under tarps or indoors to avoid direct exposure to sunlight. PVC can suffer UV degradation from the sun. Extended UV exposure will leach the plasticizer from the PVC, reducing its physical properties and causing the PVC to become brittle. Protect installed waterstops from UV if the pour of concrete will be delayed more than 30 days.

Experience has shown that mitered fittings (such as ell's, tee's, and crosses) are difficult to accomplish on site. Fittings require special tooling and custom equipment that can be expensive and difficult to work with in the field. Therefore, factory fabricated fittings are strongly recommended, leaving only straight butt splices for the field. In this way, the owner, engineer, and contractor can be assured of a high quality waterstop system. Splicing irons, fabrications, and accessories are available through Southern Metal's network of distributors.

Unacceptable splicing defects include:

- Tensile strength less than 80 percent of the parent section.
- Misalignment of centerbulb, ribs, and end bulbs greater than 1/16 inch.
- Bond failure at joint deeper than 1/16 inch or 15 percent of material thickness.
- Misalignment which reduces waterstop cross section more than 15 percent.
- Visible porosity in the weld.
- Bubbles or inadequate bonding.
- Visible signs of splice separation when a cooled splice is bent by hand at a sharp angle.
- Charred or burnt material