TIKIPLAN WS

Centrally and Externally Placed PVC Water stops

DESCRIPTION

TIKIPLAN WS is centrally and externally placed PVC Waterstops extruded from high-grade PVC compound available in wide range of profiles and sizes to provide a complete sealing network for expansion and contraction/construction joints in water retaining and water excluding in-situ concrete structures.

Pre-fabricated intersection / junction pieces are made available to meet application requirements.

ADVANTAGES

- Reinforced eyeleted fixing flanges on centrally placed profiles for positive location in joints prevents collapse of profile during concrete placing.
- Simple on-site butt-welding.
- Four valve sealing system on all profiles.

USES

TIKIPLAN WS is used to prevent the passage of water through expansion/ contraction/ construction joints in the following typical concrete structures.

- Canals, dams and reservoir
- Tunnels and culverts
- Liquid containment structures and tanks
- Slabs on ground and retaining walls
- Water and sewerage treatment plants
- All cast in-situ water retaining or water excluded concrete structures.

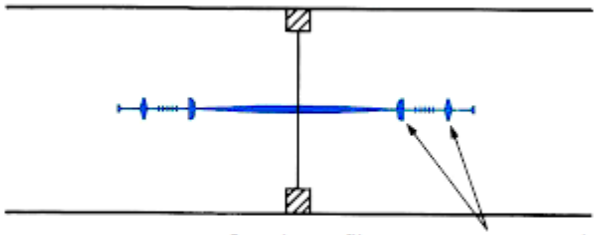
DESIGN CONSIDERATIONS

PVC Water stops were originally designed as simple dumbbell profiles that worked on the valve sealing action of the opening joint putting the waterstop in tension, thus sealing the water path.

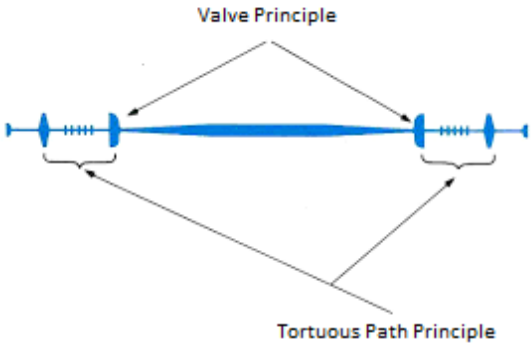
Simple waterstop profiles based on dumbells are cast in to the edges of adjacent concrete panels which act as baffles. In the event of joints opening as drying shrinkage or other movement occurs, the edge bulbs of the profile act as anchors. These induce tensions across the waterstop resulting in a sealing effect at the inner faces of the edge.

Later designs included multi ribs and fins, in what is known as the tortuous path principal of an extended potential water track created by the ribs and fins.

Profiles with a more complex cross section have a much greater surface area. They present a much greater resistance and more difficult path for water to seep around the section.



Complex profiles creates tortuous path

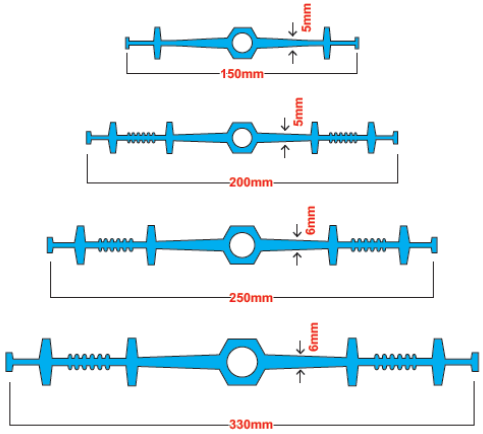


TIKIPLAN WS combines all the accepted and proven principals of PVC Waterstop in four valve and tortuous path design, together with reinforced eyeleted fixing flanges on all centrally placed profiles plus grout check fins on all construction / contraction joint profiles.

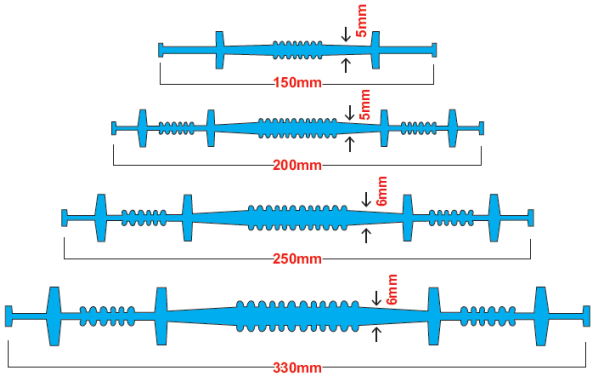
PROFILES

Centrally placed **TIKIPLAN WS** profiles provide a barrier across all joints in-situ concrete structures by casting the section centrally into the edges of adjacent concrete components. Used in most water retaining and water excluding structures, they are capable of withstanding water pressure from either the internal or external face.

TIKIPLAN WS-IEJ (INTERNAL EXPANSION JOINTS):
Expansion bulb sections principally for expansion joints but can be used for construction/ contraction joints. With reinforced eyeleted fixing flanges for wiring the waterstop to surrounding rebar.



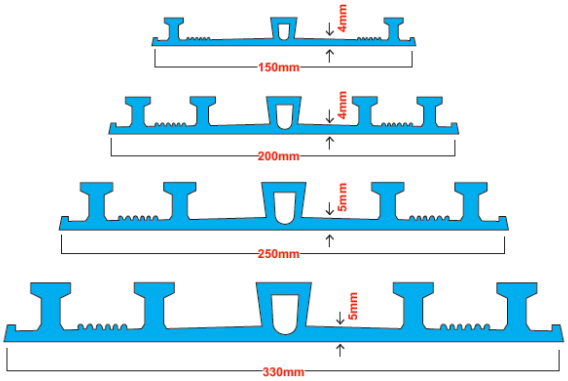
TIKIPLAN WS-ICJ (INTERNAL CONSTRUCTION / CONTRACTION JOINTS:
Plain web sections for construction/ contraction joints, also with reinforced eyeleted flanges and grout check fins to prevent grout loss from formwork.



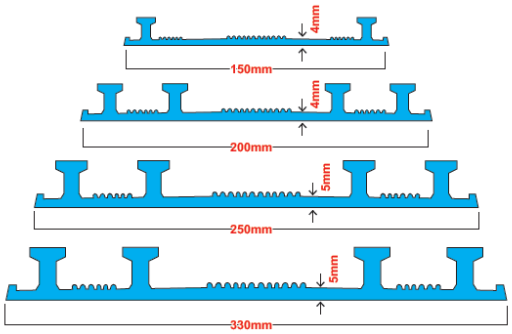
Externally placed **TIKIPLAN WS** profiles are principally designed for basement, foundation and floor slab applications in both vertical and horizontal joints.

Each externally placed section incorporates a reinforced railing flange for fixing to the formwork or blinding concrete. The four valves allow good concrete compaction and very secure anchorage into concrete.

TIKIPLAN WS-EEJ (EXTERNAL EXPANSION JOINTS): Sections have a flat top, wedged expansion box for positive anchorage and good seating of joint fillers. EEJ sections can also be used in construction / contraction joints. The bottom web in the expansion box is thinned to cater for excessive subsidence or seismic movement should it occur.

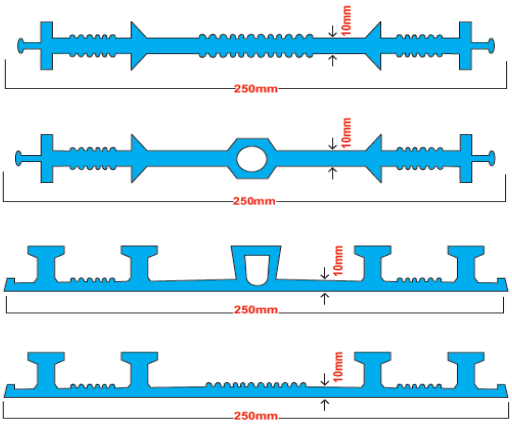


TIKIPLAN WS-ECJ (EXTERNAL CONSTRUCTION / CONTRACTION JOINTS): Sections are plain web incorporating grout check fins to prevent grout loss at formwork.



TIKIPLAN WS-XHD

It has 10mm thick web profiles with 24mm valve heights, for applications where there is high water pressure or head of water in excess of 70 meters. Both profiles include reinforced eyeleted fixing flanges and are compatible with 250 ECJ/ EEJ profiles in an integral network.



PROPERTIES

Property	Values
Colour	Blue / White / Black
Tensile Strength	≥14 mPa
% Elongation at Break	≥300
Shore A Hardness	75 to 85
Toxicity in Potable Water	None
IEJ/EEJ Expansion	15mm
IEJ/EEJ Transverse Shear	25mm
Alkali Resistance	Pass
Hydrocarbon Resistance	Pass
Cold bend at 25^0C	Pass

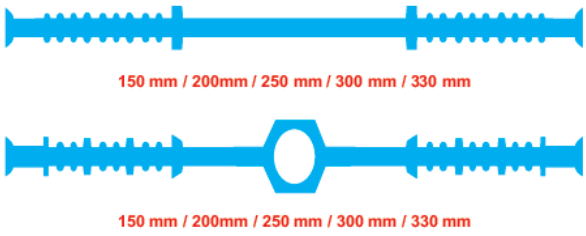
STANDARD

- BS 2782
- ASTM D 638 : 91 (Tensile/ Elongation)
- US Corps of Engineers CRD-C572-74
- (Alkali Resistance)
- BS 6920 (Toxicity)
- IS 15058 : 2002

SPECIAL PROFILES

TIKIPLAN WS-150/200/250 ICJ/IEJ-FG

It is an economic construction/ contraction joint profile specifically for use in kicker and contraction joints in small structures such as water tanks, cast in-situ manholes, channels etc., where there are no expansion joints and wall or slab thicknesses do not exceed 200mm. It includes an eyeleted flange.



WATERSTOP SELECTION

TIKIPLAN WS are designed for use within the performance parameters indicated in properties table.

Centrally placed profiles (ICJ & IEJ) are usually located midway in the slab or wall thickness across the joints in concrete structures. They will equally prevent the passage of water through the joint from either face.

They are particularly suited to water retaining structures and in walls and slabs where pressure differential may occur such as in reservoir walls. They are equally appropriate for joints in suspended slabs, vertical wall joints and lift joints.

Externally placed profiles (ECJ & EEJ) are of particular advantage for their ease of installation in basement and foundation applications in situations where they are firmly supported against back pressure, i.e. in water retaining structures (base slab) where they are placed on the blinding concrete.

SIZE OF WATERSTOP

The choice of width of profile is mainly governed by slab/ wall thickness, position of reinforcing steel and aggregate size. As a general rule, the 250mm width profiles are appropriate for slab/ wall thickness over 250mm, allowing good compaction and width of barrier to water penetration. For concrete members less than 250 mm the use of a smaller profile approximating to the actual slab or wall thickness will be appropriate.

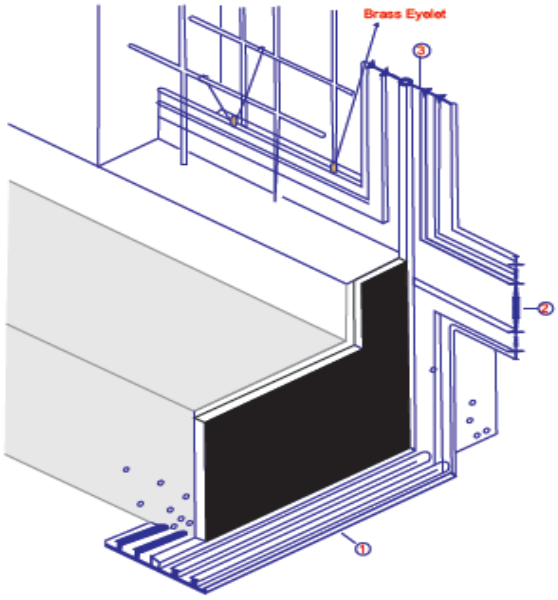
INSTALLATION

TIKIPLAN WS-ICJ & IEJ profiles must be installed so they are securely held in the correct position whilst the concrete is poured. The concrete must be fully and properly compacted around the waterstops Where reinforcement is present, an adequate clearance must be left between this and all waterstops to permit proper compaction of the concrete.

The brass eyelets in the reinforced flanges of the ICJ and IEJ profiles allow them to be wired to the surrounding reinforcing steel. The eyelets are an integral part of the profiles and being placed outside the outer valves, cannot create a water path around the profile or impair the efficiency in performance in any way. See typical details.

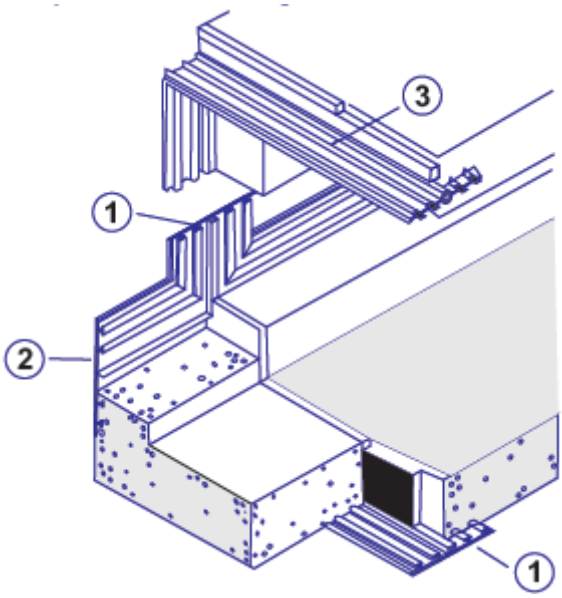
TIKIPLAN WS-ECJ & EEJ profiles when used on ground slab blinding concrete where a permanent, firm and stable support is given, usually require no fixing. The profile is simply laid centrally over the line of the joint to be formed. Fixing to vertical shuttering is simplified by nailing with double headed nails through the outer reinforced flange to provide a firm fixing. See typical details.

EXAMPLE OF WATER RETAINING STRUCTURE



1) **TIKIPLAN WS-EEJ** External Expansion Joint
2) **TIKIPLAN WS-ICJ** Internal Construction Joint
3) **TIKIPLAN WS-IEJ** Internal Expansion Joint

EXAMPLE OF WATER EXCLUDING STRUCTURE



1) **TIKIPLAN WS-EEJ** External Expansion Joint
2) **TIKIPLAN WS-ECJ** External Construction Joint
3) **TIKIPLAN WS-IEJ** Internal Expansion Joint

EQUIPMENT FOR WELDING

Heat welding equipment is available to enable site jointing to be carried out efficiently. Jointing jigs ensure that the mating surfaces of the waterstop are accurately aligned while the heater blade heats the waterstop to the necessary temperature for jointing.

JOINTING JIGS TIKIPLAN WS

150mm EEJ/ ECJ, 200mm EEJ/ ECJ, 250mm EEJ/ ECJ, 150mm IEJ/ ICJ, 200mm IEJ/ ICJ, 250mm IEJ/ ICJ

110 V / 220 Volt Electric Heater Blades for use with all jigs.

SITE JOINTING INSTRUCTIONS

Reliable jointing of **TIKIPLAN WS** PVC waterstops can be carried out rapidly onsite with heat welding equipment. Complete welding kits, comprising simple jigs and electric blades, are available and provide all that is needed to make tough joints between all PVC waterstop sections. When ordering **TIKIPLAN WS** equipment, both type and width of waterstop must be stated.

HEAT WELDING OF TIKIPLAN WS PVC WATERSTOPS:

Make sure that the heater blade is clean, plug it into the correct voltage electricity supply and leave in a safe position to warm up.

Ensure that the ends of the waterstop to be jointed are of the same width and profile, clean them with water and dry them. Clamp them in the correct profile slots of the jig provided and cut both ends off square with a sharp knife, flush with the faces of the jig.

Note: An allowance must be made for waste and for the 5 to 10mm that will be taken up by melting when calculating the length of waterstop required.

Loosen the jig and slide them back so that approximately 10mm of each waterstop end projects and then clamp the jig tightly in position.

Position the heater blade on the bars between the jig and slide them together until the waterstop ends are pressed firmly against the sides of the blade. The PVC should melt without burning or charring. Hold the jig firmly in position until a bead of melted PVC approximately 3mm in diameter appears along either side of the heater blade.

Slide the jig apart a little and remove the heater blade with an upward movement. This will ensure that it takes as little PVC as possible with it.

Quickly joint the melted ends by sliding the jig together and exerting pressure approximately 20 seconds to allow the melted PVC to fuse completely. Switch off the heater blade. While it is still hot, clean with emery paper or a wire brush ready for the next joint. Unclamp the jig and carefully remove the waterstop. Do not flex the joint until it has cooled. The joint is now complete.

INTERSECTION PIECES

Standard factory produced welded intersections are available for all **TIKIPLAN WS** profiles and for TIKIPLAN WS EEJ/ECJ profiles.

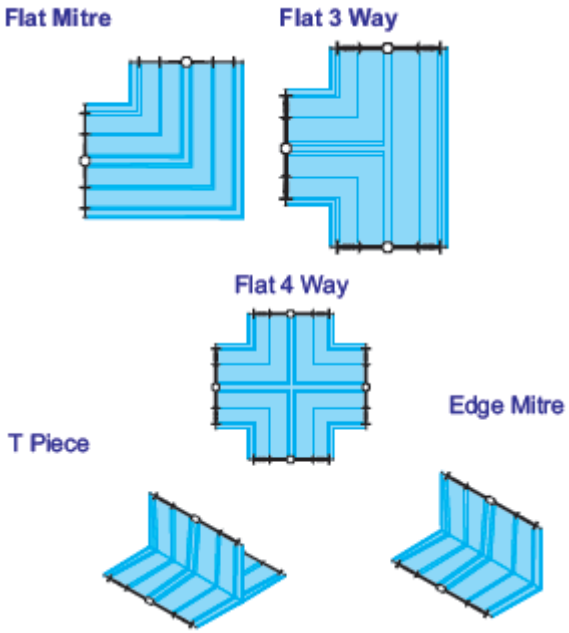
SUPPLY / ESTIMATING

TIKIPLAN WS profiles are supplied in 15 metre rolls. Flat intersections are supplied with a leg length of 250mm from centreline.

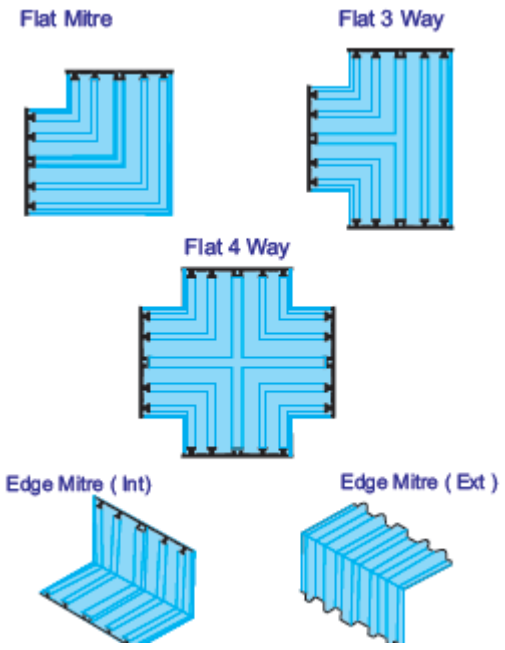
STORAGE

TIKIPLAN WS must be stored above 5°C. Store under the shed & protect from extremes of temperature, heat, and direct sunlight.

INTERSECTIONS FOR ALL PROFILES

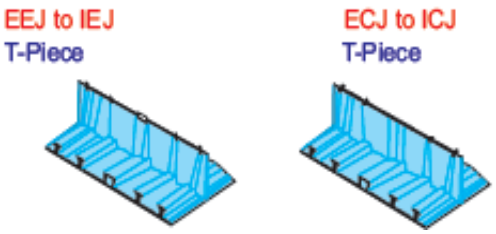


INTERSECTIONS FOR EEJ/ECJ PROFILES



COMPOSITE INTERSECTIONS

These are required when a change from horizontal to vertical occurs in the same type of joint ie from slab expansion to wall expansion joint or slab contraction to wall contraction joint.



If a composite edge mitre is needed, simply cut off one of the horizontal legs.

HEALTH and SAFETY

Edge intersections are supplied with 100mm legs. Hot welding of PVC produces HCL fumes, which in confined spaces may exceed minimum TLV of 5 ppm. Therefore forced ventilation must be provided or a suitable respirator used. In open site applications, no health dangers exists.

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