

ACE GUARD PVC WATERSTOPS

INTERNAL AND EXTERNAL
FLEXIBLE PVC WATERSTOPS

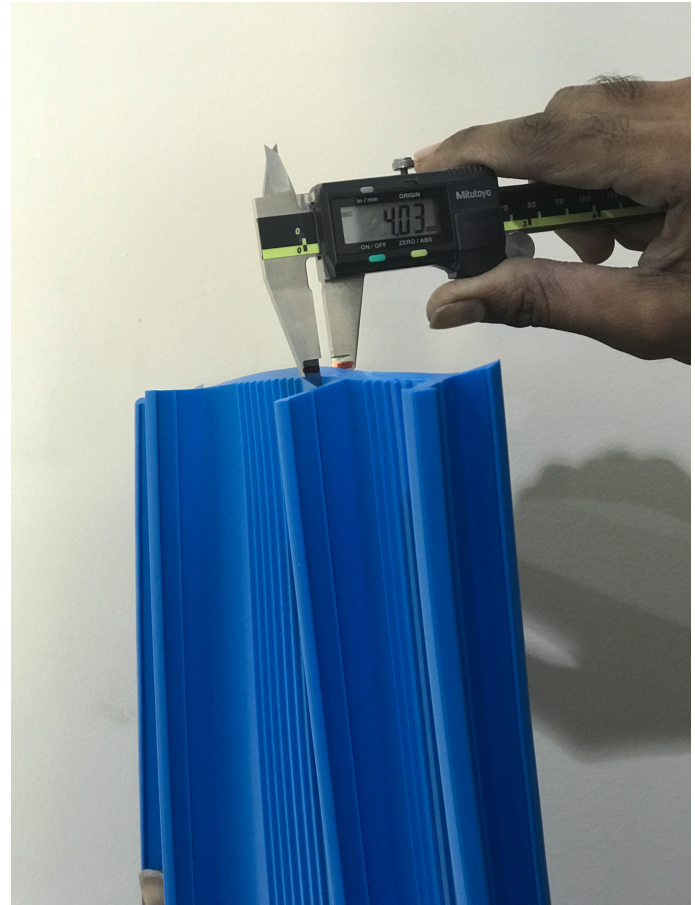
ACE INDUSTRIES FZC



PRODUCT DESCRIPTION

Aceguard leads the way in high technology waterstops and comply with international standards. Our waterstops are supplied as straight lengths. We also supply factory fabricated junction pieces to simplify layouts and site joining.

Aceguard PVC Waterstops are extruded using the best quality of raw materials in accordance with BS658. The design is such that it allows the easy flow of concrete given that Aceguard PVC profiles are extremely flexible and have an elongation of >300%. Our waterstops have been installed in many projects across the Middle East region achieving assured long term performance even in extreme conditions, resulting in prevention of unwanted water penetration in concrete structures.



CHARACTERISTICS

- High tensile strength & elongation.
- Unique design. Specific ribbed profile for effective water sealing performance.
- Brass eyelets on edge flanges for tying with steel reinforcements (Internal profiles).
- Heat weldable.
- Non toxic. Suitable for use in contact with potable water.
- Prefabricated intersections.
- Excellent chemical resistance.
- Non-staining. Will not discolor concrete or produce electrolytic action.

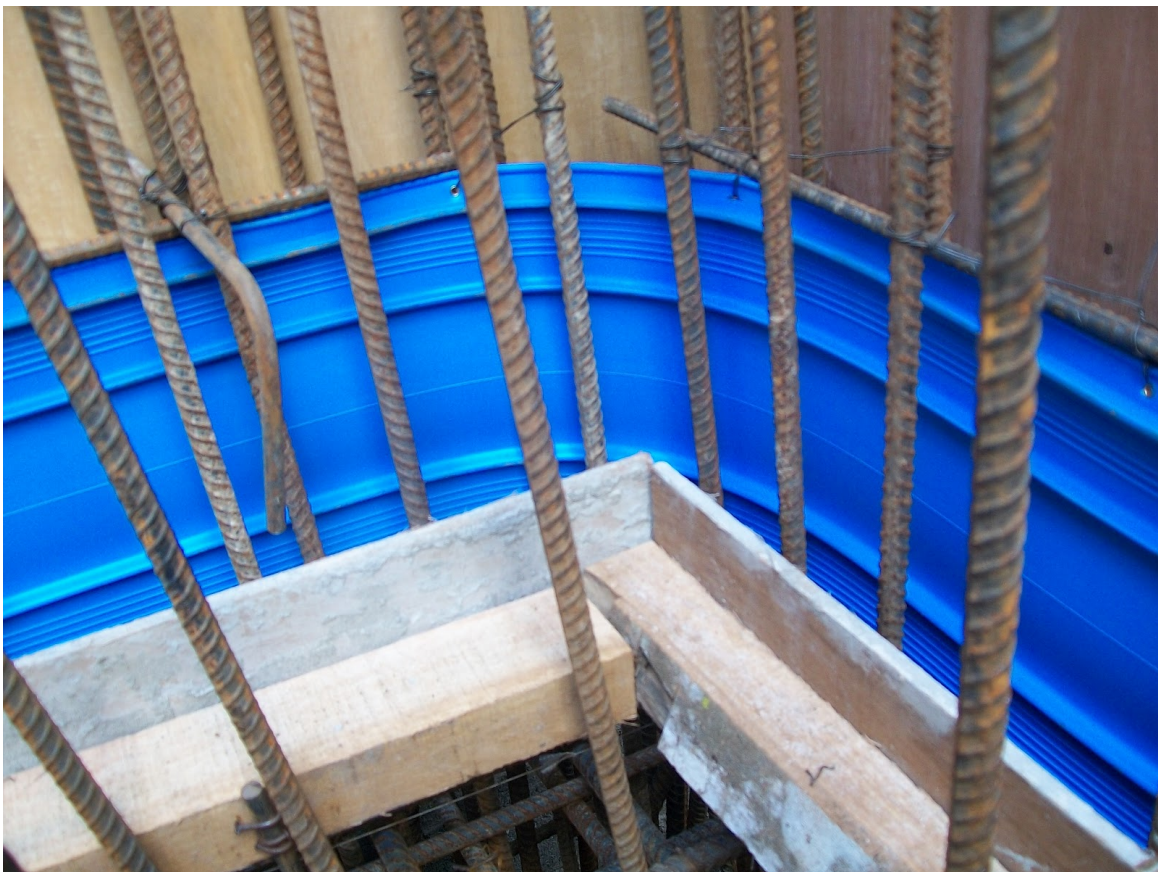
UNDERSTANDING WATERSTOPS

A waterstop is a material embedded in the concrete, with the singular purpose to obstruct the passage of water through the joint. Joints formed between adjacent concrete pours and where mechanical elements penetrate the concrete are the most likely points of water ingress into below-grade concrete structures. To prevent this from occurring, waterstops are commonly specified and installed at every joint in the concrete below-grade.

A waterstop installed in concrete joints is an important component of an overall waterproofing design to protect below-grade portions of a concrete structure. These products' use in construction joints (*i.e.* 'cold joints') is a good design practice for building foundations, with or without a positive-side waterproofing membrane. In other words, the waterstop can be a belt-and-suspenders approach to provide a dry structure for the occupants and owner.

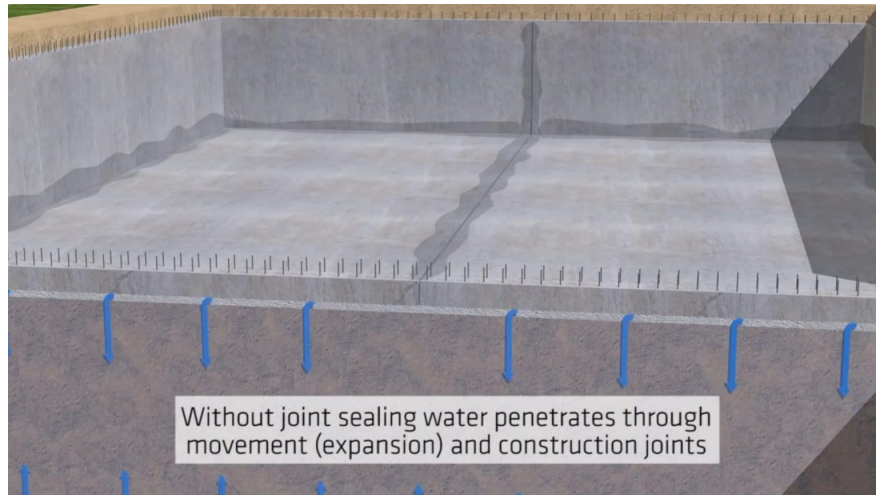
Below-grade structures present conditions making water seepage very likely, which is present under intermittent or constant hydrostatic pressure, can infiltrate through the concrete joints. Therefore, waterstops are used as part of the overall waterproofing protection on a variety of concrete structures including:

- basement walls and slabs;
- subway, vehicle, and pedestrian tunnels;
- parking structures;
- water and sewage treatment facilities; and
- canals, locks, and dams.



USE OF WATERSTOPS

PVC waterstops are designed for use in water retaining and water excluding structures where a positive seal is required. Embedded in concrete, PVC waterstops span the joint to form a continuous, watertight diaphragm that prevents the passage of liquid through the joint. The waterstop must be properly selected and installed to accommodate joint expansion, contraction, and other longitudinal and transverse movements. In addition to these considerations, the waterstop must also be resistant to any liquids to which the waterstop may be exposed.



AREAS OF APPLICATION

Areas of Application:

Water excluding structures:

- Basement areas
- Underground car parks
- Tunnels
- Retaining walls
- Suspended slabs
- Below ground slabs
- Roof slabs

Water retaining structures:

- Water tanks
- Bund walls
- Sewage treatment plants Reservoirs
- Dams and spillways

TYPES OF WATERSTOPS AND DESIGNS

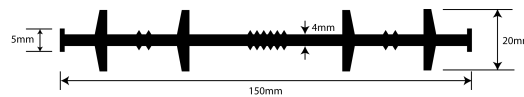
Aceguard Types & Applications:

Construction Joints: They are of two types based on application:

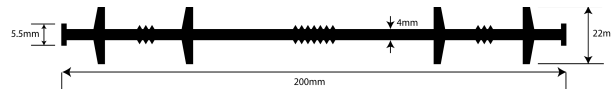
Internal Construction joint (ICJ) waterstops: These waterstops are placed in the centre of the concrete construction joints. Since this type of waterstop is embedded into the concrete they are designed and incorporated with fins and multiple solid-core ribs along the two lengthwise edges. These fins interlocks the waterstop in the concrete thus providing a superior mechanical bond with the concrete. The ribs are designed with particular angle which anchors with the concrete and further reinforces the mechanical bond.

Our ICJ Ranges:

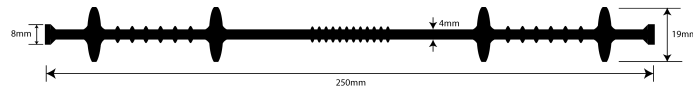
ICJ 150mmx4mmx15m:



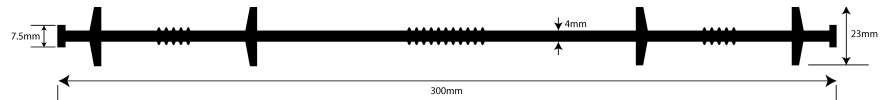
ICJ 200mmx4mmx15m:



ICJ 250mmx4mmx15m:



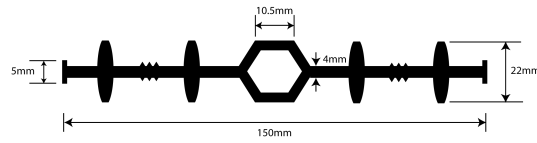
ICJ 300mmx4mmx15m:



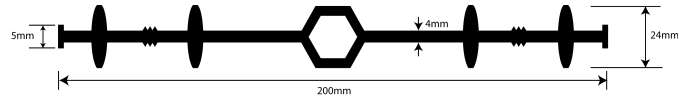
Internal Expansion Joint (IEJ) waterstops: These waterstops are placed in the centre/internal section of the concrete expansion joint. This waterstop has a central hollow bulb which is designed to allow the cyclical and differential movement in both lateral and transverse direction without excessively stretching the material.

Our IEJ Ranges:

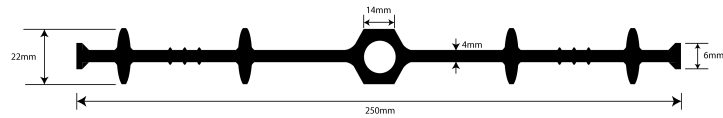
IEJ 150mmx4mmx15m:



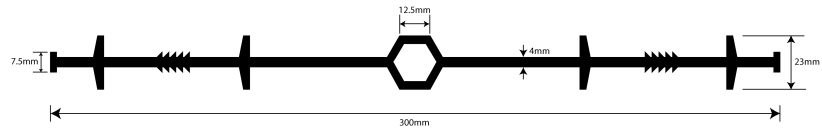
IEJ 200mmx4mmx15m:



IEJ 250mmx4mmx15m:



IEJ 300mmx4mmx15m:

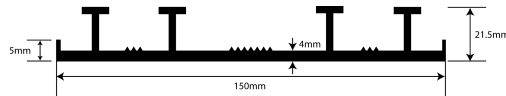


Expansion Joints: They too are divided into two types based on application namely:

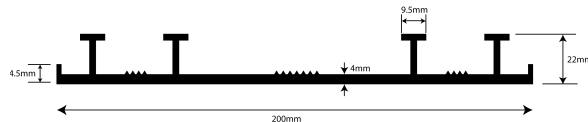
External Construction Joints (ECJ) Waterstops: These waterstops are used at joints of slab on grade or walls that gets backfilled on vertical walls. The profile of this waterstop is flat with multiple ribs and fins along its flanges for better mechanical bond or interlock in the concrete.

Our ECJ Ranges:

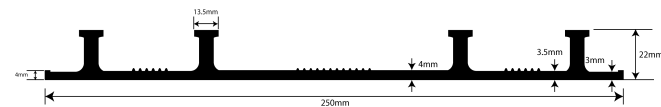
ECJ 150mmx4mmx15m:



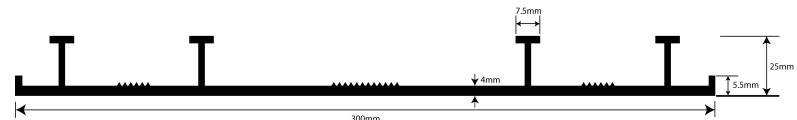
ECJ 200mmx4mmx15m:



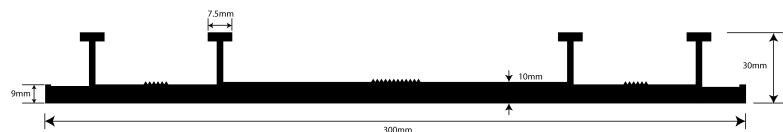
ECJ 250mmx4mmx15m:



ECJ 300mmx4mmx15m:



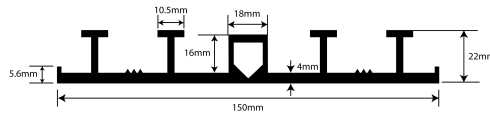
ECJ 300mmx10mmx15m:



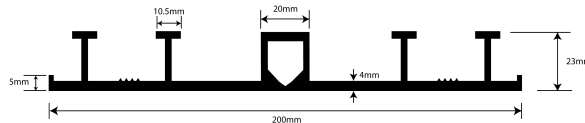
External Expansion Joints (EEJ) Waterstops: These waterstops are used in concrete expansion or isolation joints. These are designed with centre bulb with a tear web. This type of waterstop is used where large movements are expected. Tear web keeps concrete out of the bulb during concrete placement. Upon joint movement, the thin tear web ruptures allowing substantial mechanical deformation of center bulb without stressing the material.

Our EEJ Ranges:

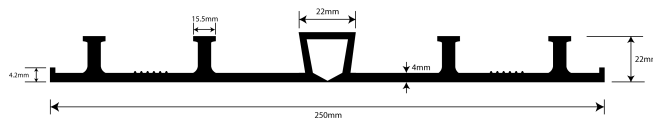
EEJ 150mmx4mmx15m:



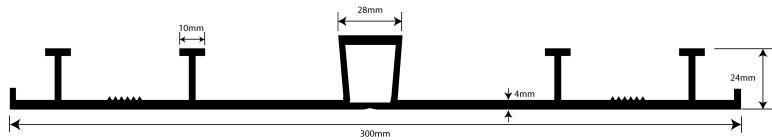
EEJ 200mmx4mmx15m:



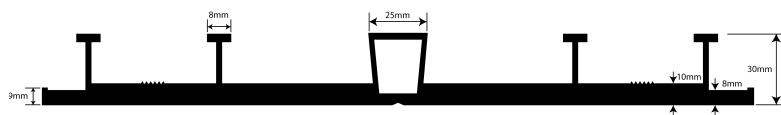
EEJ 250mmx4mmx15m:



EEJ 300mmx4mmx15m:

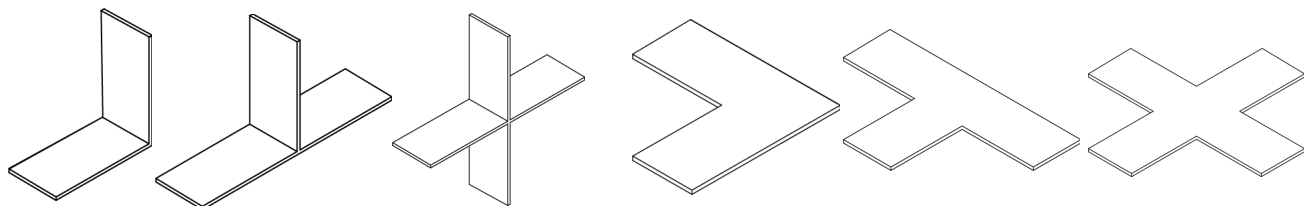


EEJ 300mmx10mmx15m:



FACTORY FABRICATED JOINTS

Factory fabricated transitions and intersections are recommended to be used at the sites to simplify the joining process. The below depicted fabrications are the most common ones inventoried by Ace Industries and available to meet the constructions schedules. Furthermore we can also provide customized fabrications to suit varied applications, if required.



Vertical L, T, and X

Horizontal L, T and X

APPLICATION INSTRUCTIONS

Fixing internally:

These waterstops are positioned internally and centrally within the concrete where the centerline of the waterstop is aligned with the centre of the joint. Such waterstops function as a watertight diaphragm wall against any water leakage. For a proper placement of the waterstop, split formwork is recommended when installing slab-to-slab, slab-to-wall and wall-to-wall joints. The waterstop is then tied with wires through the eyelets provided at the end flanges, to the reinforcement. This will ensure that the waterstop is firmly held in position and is not misaligned or folded during concrete pour. One half of the waterstop has to be positioned within the first pour and the other half projects into the second pour. A tight fit between the waterstop and form is also necessary to prevent excessive leakage of concrete paste, which could lead to honeycombing of concrete.

Fixing externally:

Externally placed waterstops are installed prior to pouring of concrete. The external expansion joint profile is usually loosely laid on top of the compacted grade or mud-slab. The waterstop can either be nailed or glued into position to avoid displacements during the concrete pour. The external construction joint (ECJ) profile is then glued or nailed on to the vertical shutter. The waterstop is so positioned that only the ribbed side is embedded into the concrete.

Jointing:

A fully continuous water stop network must be formed throughout at bends and additional joints. Factory welded junctions are to be used when jointing with the placed water stops. Field buttsplices shall be welded using an appropriate welding knife of voltage ranging between 220-240V (ideally with thermostatically controlled). The edge of the waterstop shall be cut with a knife to get an even and sharp finish and aligned in a specially designed fixing jig. The edges shall then be positioned in the jig in such fashion that at least 25mm of water stop protrudes from the jig. Place the welding knife in between the two ends, and when the PVC starts melting (>140°C), beads will start to form around the section. Remove the welding knife and press both ends firmly against each other to form a neat buttsplice. Press the joints against each other for sometime till the PVC cools and forms a strong fusion welded joint.

PRECAUTIONS

- Concrete in and around the waterstop has to properly compacted in order to ensure a full contact of the waterstop and seal.
- Surface of the waterstop shall be cleaned off all dirt and cement laitance which can affect the water tight seal within the concrete.
- Clearance between the waterstop and reinforcement should be at least twice that of the maximum size of the aggregate. This will prevent void formation and honeycombing.
- The waterstop should not be punctured to allow a reinforcement to pass through.
- Installed waterstops should be protected from UV. Prolonged exposure will make the waterstop brittle due to oil loss from PVC.

STORAGE AND SHELF LIFE

PVC waterstops have a shelf life of 5 years from the date of manufacture. To maximize shelf life, the product is to be stored in original, unopened and undamaged seal packaging in a dry environment, away from direct sunlight and rain. Storage environment should have minimum temperature between 10°C and maximum of 40°C. Exposure to extreme temperatures or high humidity, damaged packaging and contamination may reduce the shelf life..

HEALTH AND SAFETY

Aceguard is a non-flammable and non-hazardous material. Care should be taken when cutting and welding the joints together at the site. Hydrogen chloride vapors are released during the welding process and therefore the it should done in a properly ventilated working area.

PHYSICAL PROPERTIES

Properties	Values	Test Standards
Width, (mm)	150, 200, 250, 300	
Web Thickness,	4, 10	
Specific Gravity	≥1.35	ASTM D 792
Tensile Strength, (N/mm ²)	≥14	BS 2782
Elongation, (%)	≥300	BS 2782
Shore A Hardness	80±5	ASTM D 2240
BS Softness	40-50	BS 2782
Resistance to Water pressure @5bar	Nil	BS EN 12390
Water Absorption, (%)	<0.2	ASTM D 570
Chemical Resistance	ph 2.5 to 11.5	ASTM D 543
Sustainability with potable water (WRC)	Passes (Non toxic)	BS 6920
Standard Compliance	BS 2571, CRD-C 572-74	

All values given are subject to 5-10% tolerance