

# MasterSeal<sup>®</sup> 940

## Internally and externally placed PVC Waterstops

### DESCRIPTION

**MasterSeal 940** is a range of internally placed and externally placed PVC Waterstops extruded from high grade PVC compound.

### TYPICAL APPLICATIONS

**MasterSeal 940** is designed to provide a complete sealing network for expansion and contraction / construction joints in water retaining and water excluding in-situ concrete structures. The profiles are supplied in straight lengths to be butt jointed on site. The use of **MasterSeal 940** prevents the passage of water through expansion / contraction / construction joints in the following typical structures:

- Canals / culverts
- Water tanks
- Reservoirs
- Dams
- Sewerage Treatment Plants
- Liquid retaining vessels
- All cast in-situ concrete structures to retain or exclude water

### ADVANTAGES

- Complete range of profiles and sizes to suit all construction requirements
- Reinforced eyeleted fixing flanges on internally 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
- Premoulded intersection/ junction pieces available

### DESIGN CONSIDERATIONS

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

**MasterSeal 940** 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 internally placed profiles plus grout check fins on all construction / contraction joint profiles.

### PACKAGING

#### Standard Profiles

150 mm, 200 mm and 250 mm - 15 m rolls  
 320 mm - 10 m rolls

#### Special Profiles

X 250 mm - 10 m rolls  
 E 200 mm - 10 m rolls  
 L 76 mm x 76 mm - 3 m rolls

#### Special Size (made-to-order):

IEJ 350 mm - 10 m rolls  
 ICJ 350 mm - 10 m rolls

### STANDARDS

ASTM D412 (Tensile / Elongation)  
 Complies to BS 6920 Part 1

### TYPICAL PROPERTIES\*





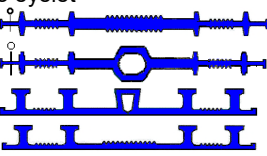

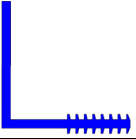
Form	Extruded PVC
Solids content	100%
Colour	Blue
Tensile strength	15 N/mm <sup>2</sup>
Elongation at break	>300%

### PROFILES

Internally placed **MasterSeal 940** 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.

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## MasterSeal 940 – Internal / External - Construction / Expansion Joints

Application	Name	Description	Illustration
Internal Expansion Joints	<b>MasterSeal 940 IEJ</b>	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.	 o eyelet
Internal Construction / Contraction Joints	<b>MasterSeal 940 ICJ</b>	Plain web sections for construction / contraction joints, also with reinforced eyeleted flanges and grout check fins to prevent grout loss from formwork.	 o eyelet
External Expansion Joints	<b>MasterSeal 940 EEJ</b>	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	
External Construction / Contraction Joints	<b>MasterSeal 940 ECJ</b>	Sections are plain web incorporating grout check fins to prevent grout loss at formwork	
Special Profile Internal / External Construction / Expansion Joints	<b>MasterSeal 940 250 ICJ/X</b> <b>250 IEJ/X</b> <b>250 EEJ/X</b> <b>250 ECJ/X</b>	Are 10 mm thick web profiles for applications where there is high water pressure or head of water in excess of 70 m. Both profiles include reinforced eyeleted fixing flanges	 o eyelet
Special Profile Construction / Contraction Joints	<b>MasterSeal 940 200M ICJ/E</b>	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. Includes an eyeleted flange	 o eyelet
Special Profile Construction / Contraction Joints	<b>MasterSeal 940L ICJ 76 mm x 76 mm</b>	L-Shaped flanged construction joint sealing waterstops to connect old and new poured concrete	
<b>IEJ, ICJ available in standard sizes of 150 mm, 200 mm, 250 mm, 320 mm and special size of 350 mm (made-to-order)</b>			
<b>EEJ, ECJ available in standard sizes of 150 mm, 200 mm &amp; 250 mm</b>			

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## Intersection Pieces

Standard factory produced welded and moulded intersections are available for all **MasterSeal 940** profiles as detailed below.

Application	Product Names	Illustrations	
Horizontal – flat miters	<b>MasterSeal 942 IEJ</b> <b>MasterSeal 942 EEJ</b> <b>MasterSeal 942 ICJ</b> <b>MasterSeal 942 ECJ</b>		
Vertical – edge miters	<b>MasterSeal 942 IEJ V</b> <b>MasterSeal 942 EEJ V</b> <b>MasterSeal 942 ICJ V</b> <b>MasterSeal 942 ECJ V</b>		
Horizontal – flat 3way section	<b>MasterSeal 943 IEJ</b> <b>MasterSeal 943 EEJ</b> <b>MasterSeal 943 ICJ</b> <b>MasterSeal 943 ECJ</b>		
Vertical - 3way section	<b>MasterSeal 943 IEJ V</b> <b>MasterSeal 943 EEJ V</b> <b>MasterSeal 943 ICJ V</b> <b>MasterSeal 943 ECJ V</b>		
Horizontal - flat 4way joint	<b>MasterSeal 944 IEJ</b> <b>MasterSeal 944 EEJ</b> <b>MasterSeal 944 ICJ</b> <b>MasterSeal 944 ECJ</b>		
Vertical - 4way section	<b>MasterSeal 944 IEJ V</b> <b>MasterSeal 944 ICJ V</b>		

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## WATERSTOP SELECTION

**MasterSeal 940** PVC Waterstops are designed for use within the performance parameters indicated under the headings Profiles and Typical Properties.

Internally placed profiles

**(MasterSeal 940 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

**(MasterSeal 940 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.

Externally placed **MasterSeal 940** 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 the concrete.

## SIZE OF WATERSTOP

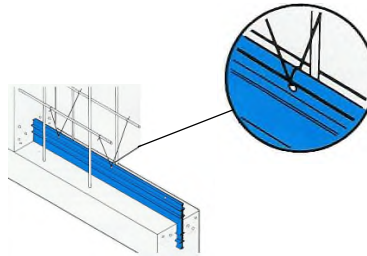
The choice of width of profile is mainly governed by slab / wall thickness, position of reinforcing steel and aggregate size. As a general rule, the 250 mm width profiles are appropriate for slab / wall thickness over 250 mm, allowing good compaction and width of barrier to water penetration. For concrete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

## INSTALLATION

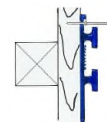
**MasterSeal 940 ICJ & IEJ** profiles must be installed so they are securely held in the correct position whilst the concrete is poured. The concrete must be fully and properly compacted around the waterstops (the use of Master Builders Solutions Rheodynamic admixtures to produce self compacting concrete is of great advantage to avoid voids or porous areas after concrete placing). Where reinforcement is present, an adequate clearance must be left between this and all waterstops to permit proper compaction of the concrete.

The eyelets in the reinforced flanges of the **MasterSeal 940 ICJ & 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 detail below.



**MasterSeal 940 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 as shown below.



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## EQUIPMENT

Heat welding equipment is required 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.

220-volt electric heater blades are recommended for use with all jigs.

## SITE JOINTING INSTRUCTIONS

Reliable jointing of **MasterSeal 940** waterstops can be carried out rapidly onsite with appropriate heat welding equipment.

## HEAT WELDING OF 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 or a suitable Xylene thinner 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 10 mm that will be taken up by melting when calculating the length of waterstop required.

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

Position the heater blade on the bars between the jigs 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 molten PVC approximately 3 mm 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 molten ends by sliding the jig together and exerting pressure. Approximately 20 seconds to allow the molten PVC to fuse completely. Switch off the heater blade. While it is still hot, clean thoroughly 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. When cold, test it by flexing the waterstop several times.

## QUALITY AND CARE

All products originating from Master Builders Solutions Dubai, UAE facility are manufactured under a management system independently certified to conform to the requirements of the quality, environmental and occupational health & safety standards ISO 9001 and ISO 14001.

\* Properties listed are based on laboratory controlled tests.

® = Registered trademark of the MBCC Group in many countries.

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## NOTE

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