

RAYJOINT[®] WATERSTOP

CENTRALLY & EXTERNALLY
PLACED PVC WATERSTOPS

CENTRALLY PLACED

PLAIN WEB
CENTRE BULB

EXTERNALLY PLACED

EXTERNAL PLAIN WEB
EXTERNAL CENTRE BULB

RAYJOINT WATERSTOP IS A SPECIALLY FORMULATED POLYVINYL CHLORIDE (PVC) COMPOUND MANUFACTURED FROM VIRGIN MATERIALS THAT FULFILLS ALL PROPERTIES DESIRABLE FOR A WATERSTOP.

THE MATERIAL IS TOUGH, FLEXIBLE, RESILIENT, CHEMICALLY INERT, IS NOT AFFECTED BY WEATHERING, LOW TEMPERATURES, OR CONSTANT IMMERSION IN WATER. IT WILL WITHSTAND ROUGH TREATMENT DURING INSTALLATION, YET IS RELATIVELY EASY TO INSTALL AND SPLICE.

RAYJOINT WATERSTOP, IS UNAFFECTED BY CONCRETE ADDITIVES AND MOST WATER SOLUTIONS OF ORGANIC CHEMICALS.

RAYJOINT WATERSTOP, HAS THE ABILITY TO ACCOMMODATE JOINT MOVEMENTS, YET PREVENTS WATER MOVEMENT THROUGH THE JOINT.

USES

RAYJOINT WATERSTOP, IS DESIGNED FOR USE IN ANY CONCRETE STRUCTURE WHICH CONTAINS JOINTS AND IS SUBJECTED TO A HYDROSTATIC LOAD ON ONE FACE OF THE STRUCTURE.

IT PREVENTS WATER MOVEMENT THROUGH CONCRETE JOINTS IN WATER RESERVOIRS LOCKS, CANALS, SEWAGE TREATMENT PLANTS, BRIDGES, STADIUMS, BASEMENTS, FLOOR SLABS, PARKING, GARAGES AND SIMILAR STRUCTURES.

COLOR : GREY, BLUE, BLACK.

CENTRALLY PLACED RAYJOINT WATERSTOPS

THE CENTRALLY PLACED WATERSTOP CONCEPT, GIVES A GUARANTEE AGAINST WATER LEAKS ACROSS ALL JOINTS IN CONCRETE STRUCTURES BY FOLLOWING THE EXACT SHAPE OF ADJACENT CONCRETE COMPONENTS. RAYJOINT CENTRALLY PLACED WATERSTOPS ARE MAINLY SUITABLE FOR USE IN WATER RETAINING AND WATER EXCLUDING STRUCTURES, HAVING THE CAPABILITIES OF HOLDING OUT AGAINST WATER PRESSURE FROM BOTH INTERNAL OR EXTERNAL FACE.

CENTRALLY PLACED RAYJOINT WATERSTOPS ARE AVAILABLE IN 2 TYPES:

PLAIN WEB



PLAIN WEB RAYJOINT PVC
WATERSTOPS FOR USE IN
CONSTRUCTION & CONTRACTION JOINTS

CENTRE BULB



CENTRE BULB RAYJOINT PVC
WATERSTOPS FOR USE IN
EXPANSION & CONTRACTION JOINTS

EXTERNALLY PLACED RAYJOINT WATERSTOPS

THE EXTERNALLY PLACED WATERSTOP CONCEPT IS DESIGNED FOR USE IN BASEMENTS, FOUNDATIONS, FLOOR SLABS, PARKINGS, GARAGES CONSTRUCTIONS IN BOTH VERTICAL AND HORIZONTAL JOINTS.

AS THE CENTRALLY PLACED RAYJOINT WATERSTOPS, THE EXTERNALLY PLACED WATERSTOPS COMPRISE A NAILING OUTSIDE RIM FOR SAFE FIXING TO FORMWORK (MOULD).

EXTERNAL PLAIN WEB



EXTERNAL PLAIN WEB RAYJOINT PVC WATERSTOPS FOR USE IN CONSTRUCTION & CONTRACTION JOINTS

EXTERNAL CENTER BULB



EXTERNAL CENTRE BULB RAYJOINT PVC WATERSTOPS FOR USE IN EXPANSION & CONTRACTION JOINTS

WHICH WATERSTOP FOR WHICH PURPOSE?

RAYJOINT CENTRALLY PLACED AND EXTERNALLY PLACED WATERSTOPS ARE DESIGNED FOR USE IN THE MAJORITY OF BUILDING SITUATIONS, WHERE WATERSTOPS ARE DEMANDED BEING RESISTANT TO CONCRETE ADDITIVES, AND MOST WATER RESOLUTIONS OF ORGANIC CHEMICALS.

RAYJOINT WATERSTOPS, HAVE PROVED THEIR TECHNICAL ADVANTAGES AND RESISTANCE TO LONG TERM EFFECTS OVER MANY YEARS.

RAYJOINT WATERSTOPS, COMPLY TO THE TECHNICAL DATA HEREAFTER.

CENTRALLY PLACED WATERSTOPS

THEY ARE SPECIALLY DESIGNED TO PREVENT THE PASSAGE OF WATER THROUGH THE JOINT FROM EITHER FACE BECAUSE OF THEIR LOCATION WAY IN THE SLAB OR WALL THICKNESS ACROSS THE JOINTS IN THE CONCRETE STRUCTURE.

THEY ARE ALSO SPECIFICALLY DESIGNED FOR WATER RETAINING STRUCTURES, FOR WALLS AND SLABS WHERE A DIFFERENCE OF PRESSURE MAY OCCUR SUCH AS "RESERVOIR WALLS".

THEY EQUALLY SUIT FOR JOINTS IN SUSPENDED SLABS, GROUND FLOOR SLABS, VERTICAL AND LIFT JOINTS.

EXTERNALLY PLACED RAYJOINT WATERSTOPS

THEIR MAIN PROPERTY IS TO BE EASY TO INSTALL IN BASEMENT AND FOUNDATION CONSTRUCTION IN ORDER TO BE FIRMLY SUPPORTED AGAINST BACK PRESSURE SUCH AS IN WATER EXCLUDING STRUCTURE.

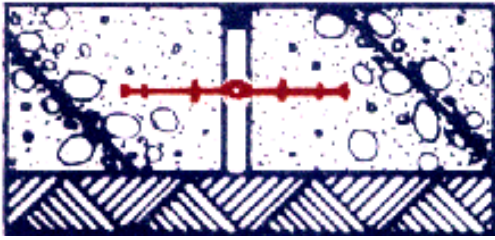
CHOICE OF WATERSTOP'S SIZE

IN ORDER TO CHOOSE THE APPROPRIATE WIDTH OF RAYJOINT WATERSTOP, CONCRETE THICKNESS, POSITION OF REINFORCEMENT AND AGGREGATE SIZE AND PLASTICIZERS USED ARE CONCERNED IT IS ESSENTIAL THAT CONCRETE IS PROPERLY ENVELOPING IT.

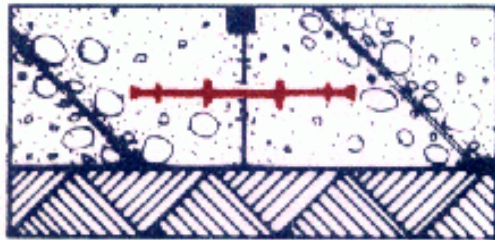
AS A GENERAL RULE, THE CONCRETE'S THICKNESS SHOULD BE EQUAL OR BIGGER THAN THE RAYJOINT CENTRALLY FIXED WATERSTOP'S WIDTH.

FOR CONCRETE SLABS HAVING A THICKNESS LESS THAN 250MM, A SMALLER SECTION SIMILAR TO THE SLAB THICKNESS WILL BE MORE ADEQUATE.

POSITIONING

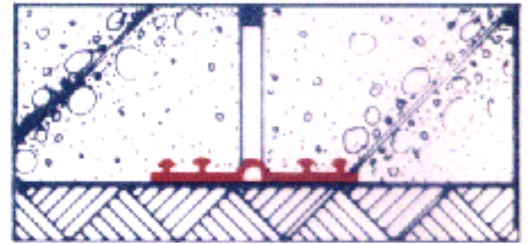


CB

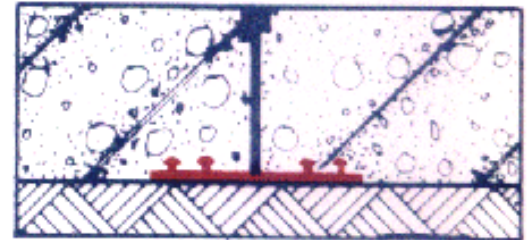


PW

CENTRALLY PLACED RAYJOINT
PVC WATERSTOPS WATERSTOPS



ECB



EPW

EXTERNALLY PLACED RAYJOINT
PVC WATERSTOPS WATERSTOPS

TECHNICAL SPECIFICATIONS

THICKNESS TABLE (MM)

TYPE \ WIDTH	PW	CB	EPW	ECB
150	3.0	3.0	3.0	3.0
200	3.0	3.0	3.0	3.0
250	4.0	4.0	4.0	4.0

BULB SIZE (MM)

TYPE \ WIDTH	CB	ECB
150	15.0	15.0
200	20.0	20.0
250	25.0	25.0

TECHNICAL DATA

PROPERTY	NOMINAL VALUES
SPECIFIC GRAVITY @ 20°C	ISO 2781 1.38 g/cm ³
WATER ABSORPTION	BS 2782/502A 0.08%
TENSILE STRENGTH	ASTM D412-87 METHOD A 2318 PSI
ULTIMATE ELONGATION	ASTM D412-87A 285%
HARDNESS SHORE A/10	72 ± 3
STIFFNESS IN FLEXTURE	920 PSI
TEAR RESISTANCE	ASTM D624-86 METHOD A 558 LB/IN
MODULUS OF ELASTICITY	800 PSI
LOW TEMPERATURE BRITTLINESS	ASTM D746-79 AT -26°C PASSED
COLD BEND ¼" MANDREL AT -10°C	PASSED
LOW TEMPERATURE IMPACT AT -20°C	PASSED
24 HOURS	0.082%
48 HOURS	0.320%

SPLICING

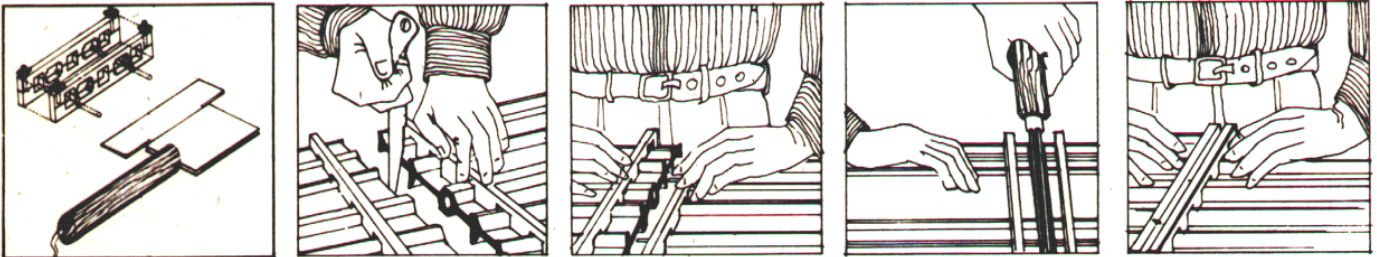
RAYJOINT PVC WATERSTOP, MAY BE BUTT-SPLICED ON THE JOB, WITH AN ELECTRICAL SPLICING IRON. NO SKILLED LABOUR IS REQUIRED. CRIMPING, SHAPING, BRAZING OR VULCANIZING ARE NOT NECESSARY.

THE FOLLOWING FIGURES ILLUSTRATE THE SPLICING METHOD PRODUCING A STRONG WATER-TIGHT BUTT-WELD. ELBOWS, TEES AND CROSSES CAN ALSO BE PRODUCED BY THIS METHOD.

A SPLICING IRON IS THE RECOMMENDED TOOL FOR SPLICING PVC WATERSTOP IN MOST INSTANCES, ALTHOUGH A HOT METAL PLATE IS STILL USABLE WHERE AN ELECTRICAL OUTLET IS NOT AVAILABLE. WHERE THE NUMBER AND TYPE OF WELDS WARRANT IT, THE USE OF A HOT AIR WELDING GUN AND VINYL WELDING ROD IS RECOMMENDED.

COMPLETE RAYJOINT WELDING KITS, COMPRISING RAYJIGS, RAYKNIFE (ELECTRIC BLADE), ARE AVAILABLE ON REQUEST.

WELDING PROCEDURE



BE SURE THAT THE RAYKNIFE IS CLEAN, PLUG IT INTO THE CORRECT VOLTAGE (220 V) ELECTRICITY SUPPLY AND LET IT WARM UP.

BE SURE THAT THE ENDS IF RAYJOINT WATERSTOP, TO BE WELDED ARE IDENTICAL, CLEAN THEM WITH WATER OR A SOLVENT WITHOUT OIL, AND DRY THEM.

CLAMP THE ENDS OF RAYJOINT TO BE WELDED IN THE RAYJIGS AND CUT BOTH ENDS WITH A SHARP CUTTER, FLUSH WITH THE FACES OF THE RAYJIGS.

OPEN THE RAYJIGS AND SLIDE THEM BACK , LEAVING AROUND 10MM OF EACH END APPEARING , CLAMP THE RAYJIGS TIGHTLY IN POSITION , THEN LOCATE THE PROJECTING BARS OF ONE JIG IN THE HOLES OF THE OTHER .

PLACE THE RAYKNIFE ON THE BARS BETWEEN THE JIGS AND SLIDE THEM TOGETHER UNTIL THE RAYJOINT WATERSTOP, ENDS ARE PRESSED FIRMLY AGAINST OF THE RAYKNIFE'S BLADES.

THE RAYJOINT SHOULD MELT WITHOUT BURNING OR CARBONIZING.

HOLD THE RAYJIGS FIRMLY IN POSITION UNTIL MOLTEN PVC BEADS APPEAR ALONG BOTH SIDES OF THE RAYKNIFE.

SLIDE THE RAYJIGS BACK A LITTLE AND REMOVE THE RAYKNIFE UP SO THAT IT TAKES AS LITTLE PVC AS POSSIBLE WITH IT. JOIN THE MOLTEN ENDS OF THE RAYJOINT BY SLIDING THE JIGS TOGETHER BY EXERTING PRESSURE HOLDING THE ENDS FIRMLY TOGETHER FOR AROUND 25 SECONDS TO ALLOW MOLTEN PVC TO FUSE COMPLETELY.

PUT THE RAYKNIFE OFF. AS IT IS STILL HOT, CLEAN WELL THE RAYKNIFE PREPARING IT FOR THE NEXT JOINT WELDING.

WITHOUT BENDING THE RAYJOINT, UNFASTEN THE RAYJIGS AND REMOVE CAREFULLY THE RAYJOINT WATERSTOP.

WHEN THE RAYJOINT BECOMES COLD, TEST IT BY BENDING IT SEVERAL TIMES, IN ORDER TO BE SURE OF THE MELTING PROCEDURE SUCCESS.

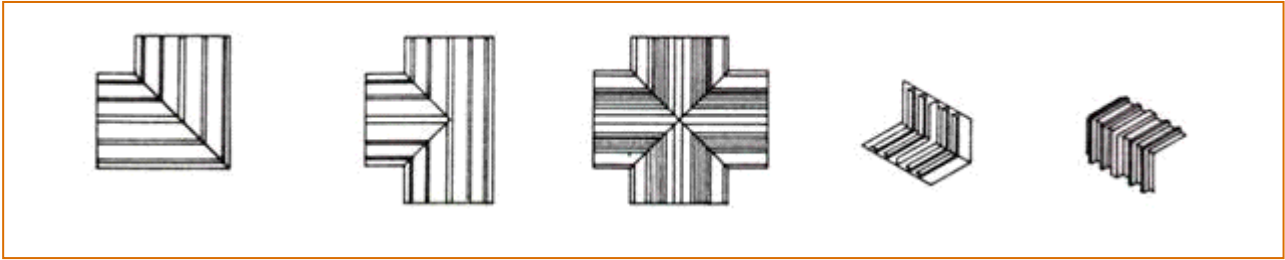
P.S. WHERE AN ELECTRICAL OUTLET IS NOT AVAILABLE, THE USE OF A HOT METAL BLADE IS POSSIBLE, PROVIDED THIS BLADE IS HEATED WITH A CLEAN FLAME.

WHEN THE REQUIRED TEMPERATURE IS REACHED, THE RAYJOINT WILL MELT EASILY WHEN TOUCHED AGAINST THE BLADE.

KEEP ATTENTION TO THE BLADE'S TEMPERATURE, IF IT IS TOO HOT, THE LEVAJOINT WILL CARBONIZE.

INTERSECTION PIECES

MANY KINDS OF INTERSECTION PIECES MAY BE PREPARED, HEREFOLLOW SOME FORMS



TECHNICAL DATA

RAYJOINT WATERSTOP IS UNAFFECTED BY ALKALIES, ACIDS, OXIDATION, SEWERAGE AND MOST WATER SOLUTIONS OF ORGANIC CHEMICALS.

IT IS EXTREMELY RESISTANT TO ABRASION, CORROSION AND AGING.

ALL TECHNICAL DATA ARE SUBJECT TO $\pm 5\%$.

WE CAN SUPPLY ANY FORM OF EXTERNAL AND INTERNAL USE WATERSTOPS ACCORDING TO CUSTOMER'S REQUEST.

HEALTH & SAFETY

HOT WELD SITE JOINTING OF PVC RAYJOINT WATERSTOPS RESULTS IN THE LIBERATION OF HYDROCHLORIC ACID FUMES. THEREFORE, GOOD VENTILATION MUST BE PROVIDED OR A SUITABLE RESPIRATOR USED IN CLOSED PLACES.

IN OPEN PLACES, SUCH PRECAUTIONS ARE NOT NECESSARY AS NO DANGER TO HEALTH EXISTS.

PRECAUTIONS

AVOID DRIVE NAILS THROUGH CENTER OF WATERSTOP WHEN FORMING.

NEVER LAP WATERSTOP. ALL JOINTS MUST BE SEALED WITH A HEAT SEALING METHOD.

AVOID EMBEDDING CENTER BULB IN CONCRETE. IT MUST BE POSITIONED IN THE CENTER OF THE JOINT TO INSURE FREEDOM OF MOVEMENT AND PROPER EXPANSION.



Bauchrieh - Industrial City - Saffar Building
P.O.Box 11-9737 - Beirut - LEBANON

Phone Office : 00 961 1 690594 – 3 264868

Phone Factory: 00 961 1 690594 – 3 260989

Fax : 00 961 1 690594 - 560452

E.Mail: info@barakeh.com

[Http://www.barakeh.com](http://www.barakeh.com)