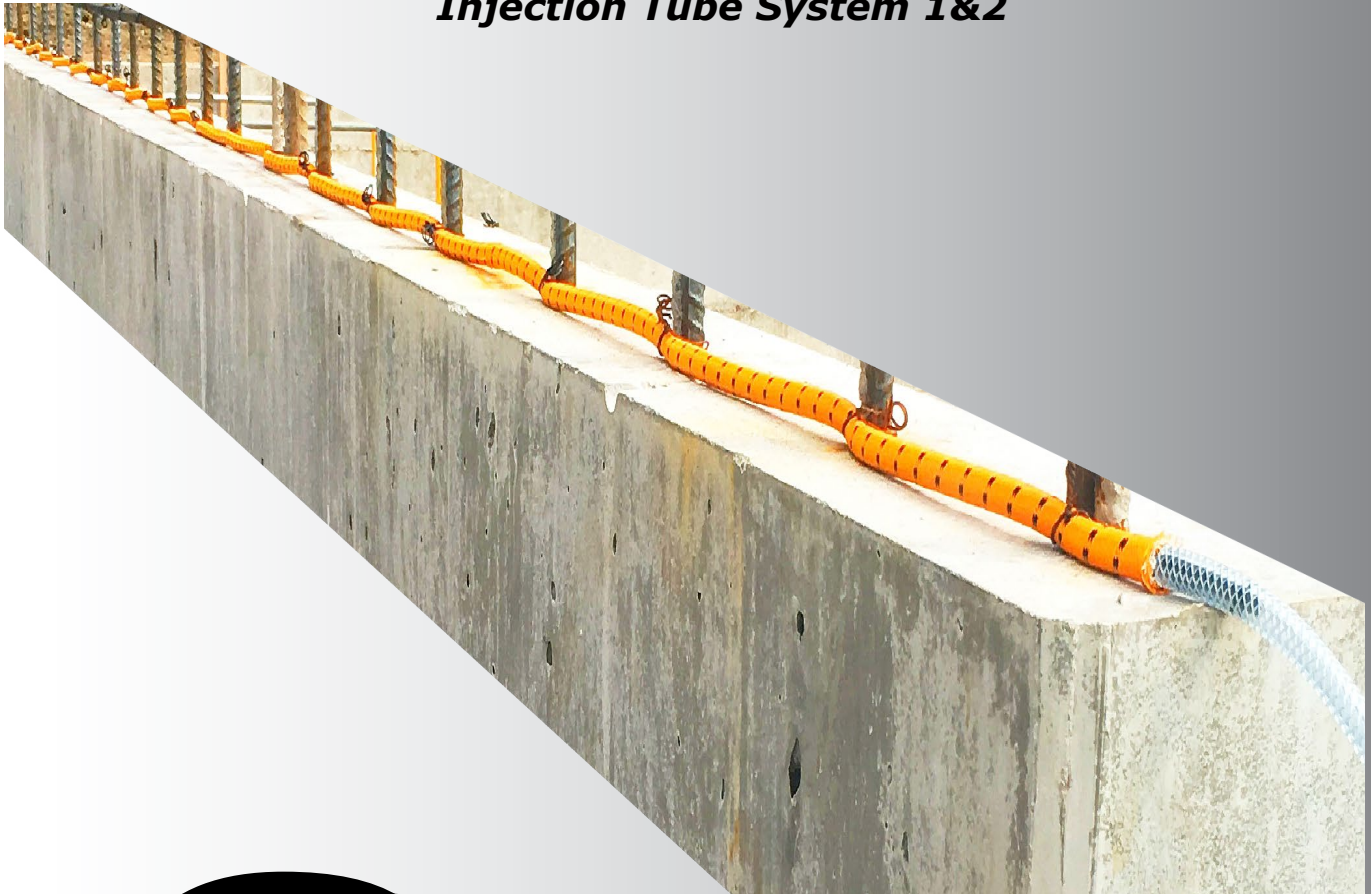


SB InjectTube

Injection Tube System 1&2



SealBoss® **Injection Tube System**



Advantages

- Waterproofing of cold joints
- Injection of resin when leakage occurs or as preventive measure after total curing of the concrete
- Injection of joints in different sections possible
- Easy installation with no damage to the concrete
- Re-injectable & double hose abilities
- Competitively priced
- Very flexible tube system
- Composed of durable materials
- Free of metal
- Re-Injectable*

SB InjectTube 1 (1 Membrane)

The SealBoss® InjectTube 1 for all SealBoss injection foams, gels and resins. Equipped with perforated PVC inner tube with holes, constructed to withstand pressures of freshly placed concrete. Covered by one woven membrane to protect the inner tube from the entry of cement particles (filter, membrane one) and abrasive effects of the concrete aggregates (protector, membrane two).

SB InjectTube 2 (2 Membranes)

The SealBoss® InjectTube 2 for all SealBoss injection foams, gels and resins. Equipped with perforated PVC inner tube with holes, constructed to withstand pressures of freshly placed concrete. Covered by two woven membranes to protect the inner tube from the entry of cement particles (filter, membrane one) and abrasive effects of the concrete aggregates (protector, membrane two).

*Re-Injection

The SealBoss® InjectTubes offer re-injection capability when used with an acrylate gel such as SealBoss® 2400. The acrylate gel properties permit the tube to be flushed with simple clean water after injection as long as the product has not cured. SealBoss® InjectTube 1 is favoured if re-injection is desired as the tube has one membrane. When done correctly, the initial injection of the tube should be sufficient and should not require re-injection. Re-injection and use of acrylate gels with injection tube are only recommended in certain specific applications and should be backed by a qualified engineer/specifier.

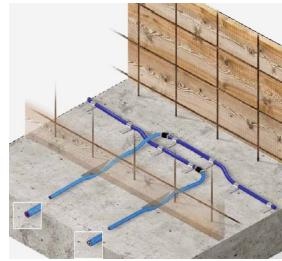
Applications

The SealBoss® Injection Tube System is designed for use in concrete structures which contain joints where a hydrostatic load on the face of the structure is expected. After injection it reliably prevents water seepage through concrete joints in structures such as parking garages, stadiums, subways, tunnels, swimming pools, water reservoirs, locks, canals, dams, sewage treatment plants, water tanks and others.

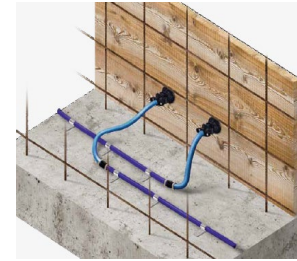
Introduction

The SealBoss® Injection Tube System is an efficient and easy to install system to create water tight cold joints.

A well-known characteristic of concrete is shrinkage while curing. Stress caused during this time and temperature changes provoke the development of small cracks and fissures. Several design and reinforcement techniques help to control this effect, but cannot control them completely. Fine cracks of sometimes less than 0.1 mm are inevitable. These cracks are considered normal and generally do not cause any problems. However,



InjectTube 1
using Inject Sleeve



InjectTube 1
using Inject Nail Packer



InjectTube 2 using Inject Sleeve

at cold joints, the tendency to form larger cracks cannot be reduced. Since old and new concrete do not bond together homogeneously and do not form a monolithic concrete body, stress cracks concentrate mainly in these areas. They easily conduct water and may cause severe damage.

The SealBoss® Injection Tube System for sealing cold joints utilizes the natural tendency of concrete to form cracks. A special tube system is installed at the joint where leaks are most likely to occur. The system allows resin injection directly into the joint through a protected porous tube after completion of the structure. The resin penetrates through the perforation of the tube and fills the cracks and voids of the cold joint area thereby sealing the structure.

To be effective, the system must have certain properties. The tube must be sturdy enough to withstand the high pressure of placed concrete and it must resist concrete slurry penetration. On the other hand the injection resin must be able to penetrate the hose at a moderate injection pressure. The installation and injection process must be suitable for construction sites. The SealBoss® Inject Tube System is designed to meet these requirements.

Before pouring the new concrete the tube shall be attached to the existing surface as tight as possible and usually towards the middle of the future cold joint using suitable clips or by attaching it to the existing rebars. It is crucial that the hose is tightly fixed in the center of the joint area so that it can neither move nor lift during the concrete placement. Six to twelve inches between clips are typically recommended. The hose must be placed in a manner that it will not touch the outside surface of the structure at any point. To allow sufficient injection pressures, the maximum length of injection tube should not exceed 30 feet.



Inject Sleeves have to be attached to both ends of the Inject Tube prior to installation. The Inject Sleeves are solid and cannot be penetrated by the resin. Two thirds of the sleeves must be poured into the concrete to allow a successful injection procedure. The injection screws attach to the sleeves prior to injection. For detailed information, please refer to our product data sheet.

The concrete should set for as long as necessary to allow shrinkage. Polyurethane grout is then injected by attaching a packer and pumping grout into the tube. Electrical or hand pumps may be used for the resin injection. To ensure that the tube is filled, resin shall be pumped until it emerges from the other end of the hose at the packer, which is then plugged with a zerk fitting. The resin shall be pumped slowly and steadily. High pressure forces the resin out of the hose and into the fine cracks and voids. Injection shall be continued until resin emerges from the joint. Typically the applied pressure should not exceed 1500 psi. It is recommended to make several injections while the resin is still workable. The typical working time is 20 minutes at 68°F. The concrete temperature and presence of water will effect this time. The cured product will permanently seal against penetrating water.

When used appropriately, the SealBoss® Injection Tube System is the most convenient and effective way to seal construction joints. The non-invasive application through the pre-installed system minimizes the risk of damage. Compared to the injection method through mechanical packers that have to be installed by drilling holes into the concrete, the System reduces the amount of labor and material drastically.

Some inject tubes may be re-injected under certain limited conditions. Please contact our technical support staff for further information.

Assembly

Cut the Inject Tube to required length (maximum 30 feet). In order to prepare the tube for resin injection at a later date, each section must have one PVC Inject Sleeve attached to each end. PVC Inject Sleeves are installed by pulling the end with the larger diameter as far as possible over each end of the Inject Tube. Inject Screws with zerk fittings can be attached to the sleeves now or at a later time prior to injection by screwing them clockwise into the sleeve opening. Proper length of tube is now ready for installation.

Installation

The Injection Tube, with the adapted end sleeves, is to be fastened directly to the concrete surface or to existing rebar in a fashion that the tube has continuous contact with the surface. Sweep concrete to remove any material that may interfere with direct contact between the Tube and the surface. Position the Tube as required and use clips or rebar and wire to keep the Tube in place. Clips may be nailed or glued with epoxy a maximum of 12" apart or as necessary to maintain consistent contact of the Tube with the concrete. Tension on the Tube must be sufficient as not to allow Tube to shift during concrete pour. Note: Continuous contact between Inject Tube and surface is essential for the system to work. Thorough preparation is the key to successful results.

If continuous lengths of cold joint are in excess of 30 feet (10 meters), two or more sections of Inject Tube have to be installed. Adjacent Injection Tube segments shall overlap 12 inches in tight contact to ensure continuous resin injection.

PVC Inject Sleeves shall be bent in a ninety degree angle before exiting the face of the concrete. The black colored connection piece must be embedded a minimum of 2" inside concrete face to allow high injection pressures without any failure to the connection. End piece shall protrude past concrete face 1" - 3" to allow access for future resin injection. After stripping forms, PVC Inject Sleeves must remain clearly visible in order not to complicate or prohibit injection.

Injection

Inject Screws shall be attached to the Inject sleeves prior to injection. The quick release zerk coupler allows for easy connection to the pressure grout line. The injection with polyurethane grout shall be done after the concrete is cured and all the cold joints are set. Injection pressures may range between 10 to 1000 psi.

In case of water infiltration into the tube it might be useful to leave the distant end open for drainage purposes. Grout shall be injected under low pressure until it leaks out from the distant end of the tube thereby replacing the water. Immediately the opening should be closed with an Inject Screw and the injection process should continue. It is desired to see material penetrating from the cold joint as the injecting process progresses. Continued penetration of material from the injection end of the tube to the far end is a good indicator for complete injection but will not always be achieved. Reason may be extremely tight sections in the cold joint or sections of materials adhesion where resins cannot penetrate. In any case material consumption and injection pressures should be closely monitored as an indicator for material flow, injection progress and injection success.

The material to be injected can be of foaming and non-foaming nature. Foaming materials should not foam too fast to allow for full penetration through the tube and cold joint. The amount of accelerator added should be determined prior to any injection attempts. Most cold joints show minimal seepage and a fast setting foam may not be advised! Good results have also been achieved with non-foaming flexible LV resins.

Consumption of injection grout is determined by two factors. One: product consumption to fill the tube. This amount is very low at a rate of approximately one quart of material per 150 feet of tube. Two: Consumption to seal cold joint / joint. Thickness of the structure and joint width determine the amount of product needed. Altogether the total consumption of product in inject tube injection is similar to grout use by injection with packers.

Please do not hesitate to call your SealBoss® technical support line for help with the choice of the right material or any questions you might have with the installation of the SealBoss® Injection Tube System.



INJECT SCREW



Nail Packer



Part 1: General

1.01 Scope

Under this section the Contractor shall furnish and install permeable grout tubes where required to prevent leakage through construction joint.

1.02 Work Included

Cleaning concrete surface.
Installation of permeable grout tubes.
Injection of permeable grout tubes with sealing materials.

1.03 Product Data

Submit product data in accordance with Section 03151.
Comply with instructions for storage, shelf life and handling.

Part 2: Products

2.01 Permeable Grout Tubes

Shall be composed of a perforated inner PVC tube, inner filter membrane and an outer protective synthetic membrane or a precision pre-cut PVC tube. The tube shall be permeable for the injected sealing materials and impermeable for cement particles. The tubes shall be equal to Inject Tube System 2000 by SealBoss® Corp.

All materials shall be delivered to the site in undamaged, unopened containers bearing the original labels.

2.02 The Sealing Materials

A. General

The sealing materials shall be an MDI based, solvent-free, hydrophobic polyurethane grout with accelerator system. All materials shall be delivered to the site in undamaged, unopened containers bearing the manufacturer's original labels.

B. Polyurethane Grout & Accelerator

The polyurethane grout shall have the ability to react with water and to expand in volume. The accelerator shall be able to control the reaction time from one minute to one hour. After reaction, the polyurethane grout shall form a flexible closed cell polyurethane foam.

C. Mixing & Handling

Mixing and handling of the chemical grout and the accelerator, which are non-toxic and non-hazardous under normal conditions, shall be in accordance with the recommendations of the manufacturer and all applicable safety codes and shall be performed in such a manner as to minimize hazard to personnel. It is the responsibility of the contractor to provide appropriate protective measures to insure that chemicals or foam produced by said chemicals are under the control of the contractor at all times. Plastic or metal mixing tanks shall be used. Tanks of concrete or wood should not be used.

D. Pumps

Hand operated, air driven, electrical positive displacement and airless pumps can be used. Pressures of 500 to 1500 psi may be adequate.

Part 3: Execution

The permeable grout tubes are required at all formed joints in concrete walls and slabs which separate habitable spaces, machinery and equipment areas from ground water or from water filled tanks, basins, flumes, manholes, etc. It shall also be placed in vertical joints in tank walls and in other joints as shown on the drawings.

3.01 Preparation

Clean concrete surface of dirt, laitance, corrosion, or other contamination prior to installation of the tubes to insure direct contact of tube with concrete surface.

3.02 Installation of Permeable Grout Tube

Tube shall be wired to reinforcing steel on concrete surface (approx. each 10-12 inches).

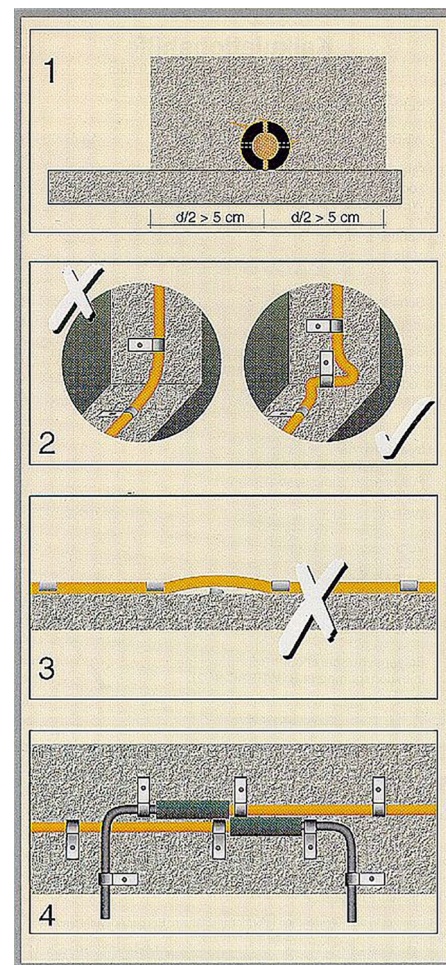
The PVC tube endings will be bent so that they will protrude through or under the form.

Each end of the tube shall cross the next one so that there will be no default in the injected zone.

3.03 Injection of Sealing Materials

After the concrete has cured for xx days the grout tubes shall be injected with a sealing material to fill cold joint and honeycombs.

Start injection at one end of the grout tube. As soon as sealing material appears at other end, close this other end with inject screw and increase pump pressure. Stop injection when sealing material percolates out of cold joint. Patch injection ports with cementitious mortar.



SealBoss®

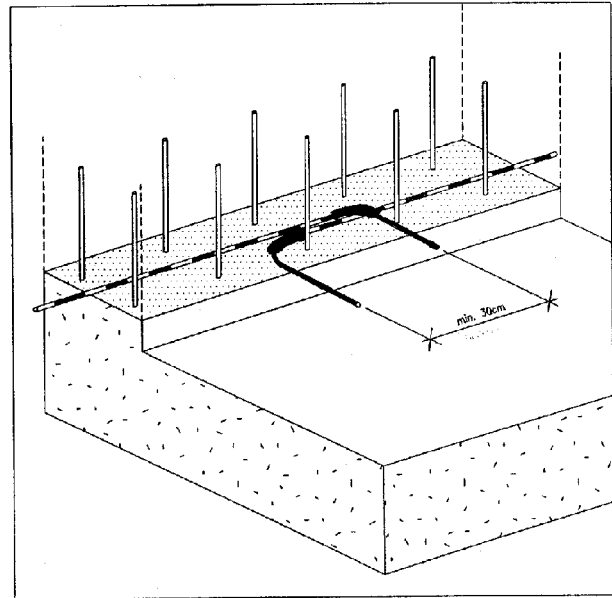
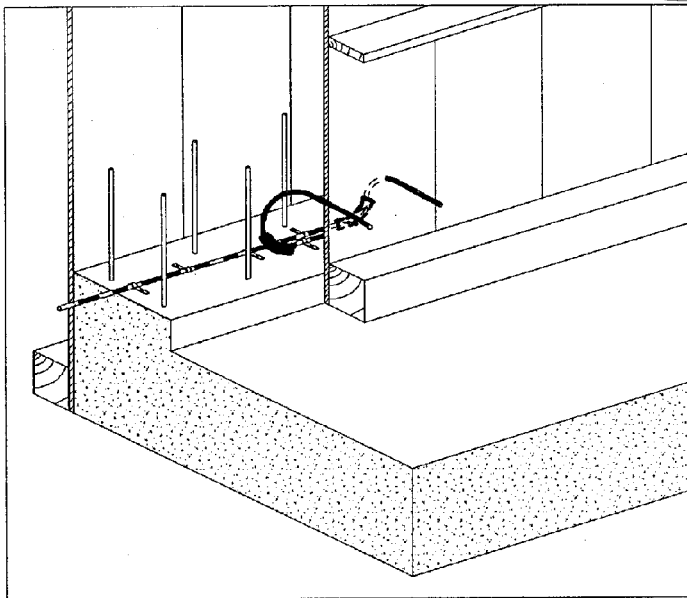
Injection Tube System Injection Hose System

SB InjectTube 1 & SB InjectTube 2



Product Data Sheet

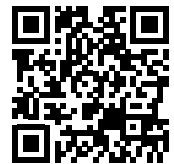
Grout Injection Tube System
For Water Tight Cold Joints



SB-InjectTube 2

SB-InjectTube 1

SealBoss® Injection Tube System



Limited Warranty Policy and Disclaimer for Products Supplied and/or Distributed by SealBoss Corp.: SealBoss Corp. Products are for Professional Use. All recommendations, statements and technical data herein are based on tests we believe to be reliable and correct, but accuracy and completeness of said tests are not guaranteed and are not to be construed as a warranty either expressed or implied. User shall rely on his or her own information and tests to determine suitability of the product for the intended use and user assumes all risk and liability resulting from his or her use of the product. Nothing contained in any supplied materials relieves the user of the obligation to read and follow the warnings and instruction for each product as set forth in the current Technical Data Sheet, product label and Safety Data Sheet prior to product use. SealBoss Corp. warrants supplied / distributed products to be free of manufacturing defects. Seller's and manufacturer's sole responsibility shall be to replace that portion of the product of the manufacturer which proves to be defective. There are no other warranties by SealBoss Corp. of any nature whatsoever expressed or implied, including any warranty of merchantability or fitness for a particular purpose in connection with this product. SealBoss Corp. shall not be liable for damages of any sort, including remote or consequential damages resulting from any claimed breach of any warranty whether expressed or implied. SealBoss Corp. shall not be responsible for use of this product in a manner to infringe on any patent or any other intellectual property rights held by others. In addition, no warranty or guarantee is being issued with respect to appearance, color, fading, chalking, staining, shrinkage, peeling, UV damage, excessive temperature exposure, normal wear and tear or improper application by the applicator. Damage caused by abuse, neglect and lack of proper maintenance, acts of nature and / or physical movement of the substrate or structural defects are also excluded from the limited warranty. SealBoss Corp. reserves the right to conduct performance tests on any material claimed to be defective prior to any repairs by owner, general contractor, or applicator. Neither seller nor manufacturer shall be liable to the buyer or any third person for any injury, loss or damage directly or indirectly resulting from use of or inability to use the product. Recommendations and statements other than those contained in a written agreement signed by an officer of the manufacturer shall not be binding upon the manufacturer or seller. SealBoss Corp. reserves the right to change the properties of products without notice.

Revised 201801