TOOLS, ACCESSORIES, MATERIALS & HOW TO USE THEM

Clothing: One thing must be made perfectly clear, polyurethane can be very messy! Once you get it on your clothes it will never come out. So, whatever clothing you are wearing on the first day you grout will from that day forward be your grouting clothes. Long sleeves and pants are recommended as polyurethane does not like to come off of your skin either!

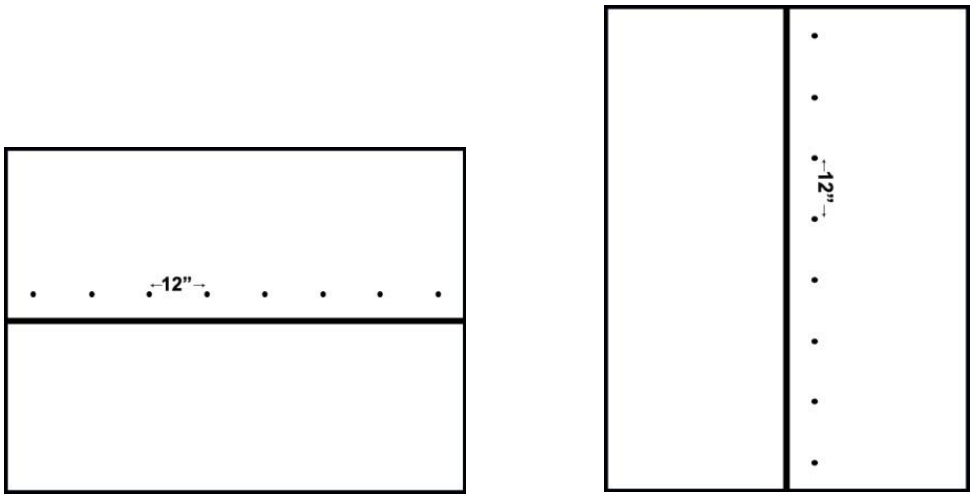
Personal Protective Equipment: it goes without saying that the appropriate PPE must be worn. This includes safety goggles, gloves and hard hat, if required. A side benefit to wearing a hard hat is that a cap light may be used, making it much easier to see what you are doing in places that are often wet and dark.

Drills and Drilling: This is the most crucial part of the whole grouting process. If you don't intersect the leak-path, you will not fix the leak

What Kind of Drill do I need? A hammer drill is required. It can be electric or cordless but needs to be able to handle a relatively long (up to 36") 5/8" bit. Below is an example of what we use.

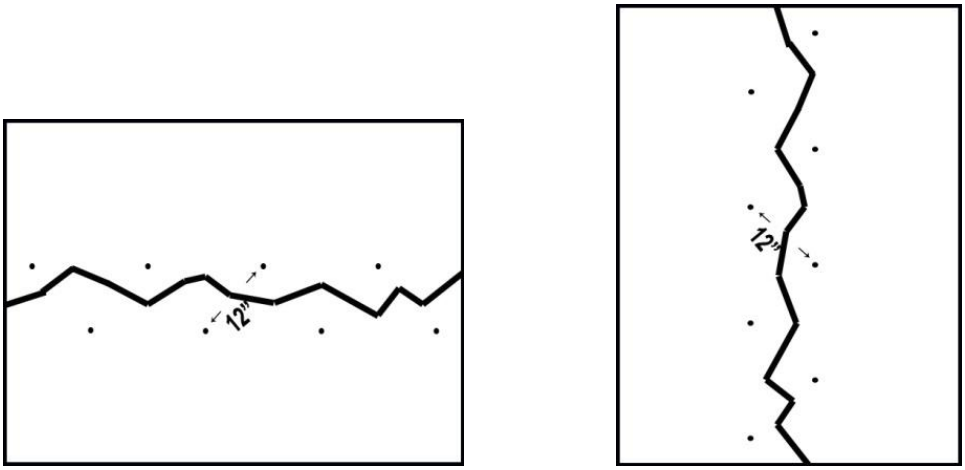
What is the best way to intersect the leak path? The ideal place to intersect the leak path is about halfway back through the thickness of the wall (more or less). This way, when the grout is injected it will flow to fill the entire path from front to back.

The easiest way to hit that spot is to “Step Off” the crack about half the thickness of your substrate and drill at a 45° angle. For example, an 8” thick wall with a leaky joint should be drilled about 4” off the joint at a 45° angle. See the below diagrams of drilling patterns for the various types of leaks you may encounter.



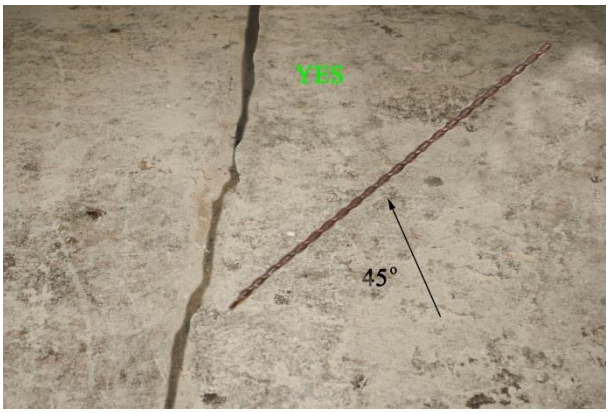
The above drawings depict uniform cracks such as cold joints or pre-cast joints

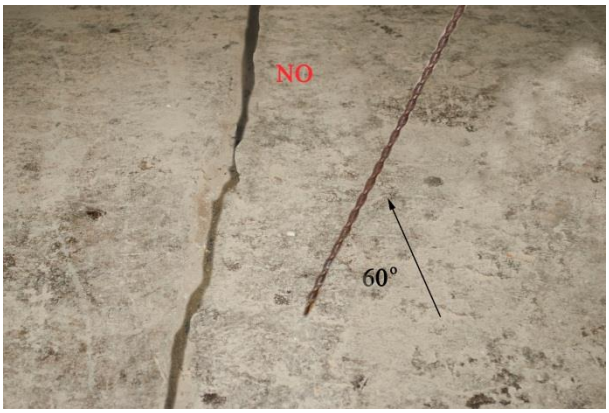
- If crack is non-uniform it must be stitched



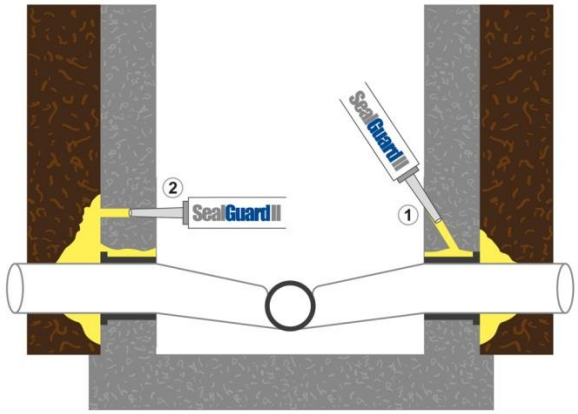
Note how injection holes are drilled on either side of the crack

A word about 45° Angles – One of the most common problems we hear about involves an inability to intersect the leak path and introduce grout. The customer swears they are drilling at a 45° angle, but, as I can personally attest, they rarely are. As you can see there is a big difference between a true 45° angle and what many "feel" is a 45° angle. Just a little too steep and you will miss the leak path and go right out the back of the substrate. A 45° angle is much shallower than most people think, so keep that in mind as you drill.





Is there ever a time where I do not have to intercept the leak path? As a matter of fact there is. In a situation where there is a Strong water flow into a structure, it is sometimes a good idea to breach the structure wall with your injection hole and allow the water to pull the reacting urethane (usually SealGuard II) into the leak. The flow must be strong or it won't pull it ino before reaction. This is very common in manhole lateral boots. See the diagram below for examples of drilling into the leak path and also breaching the structure to fix a high volume leak.



1 shows a hole drilled to intersect the leak path

2 demonstrates how to breach the structure and allow the w water to pull the SealGuard II into the leak

A word about Rebar – If, in the process of drilling your injection holes you hit a piece of rebar, you are most likely out of luck. The only thing you can do is shift your position and try again, sorry!

Chinking with Burlap / Oakum / Backer Rod – In many cases, it is necessary to use some sort of medium for either slowing the leak down so the grout doesn't wash out or else to create confinement and prevent grout from running out of the front of the crack. Three common materials used for this are **Burlap** (same as they use for feed bags), **Dry Oakum Rope**, which will expand when wet and can also be separated to fit into various size cracks and **Backer Rod**, which is a sort of spongy, flexible rod that works well in this application, and is available in various sizes. The process of chinking is simple, just start at one end of the crack and force your chinking material of choice into the crack with a putty knife, screwdriver or other implement. The idea isn't to stop all the water, just slow it down enough to give the grout time to react.

Burlap (L) Oakum (R)

Garden Sprayer and Water – These inexpensive, easy to operate sprayers are a very useful grouting accessory. They are good for rinsing the injection site of the drill dust and loose debris, as well as ensuring that there is water present in the crack to be injected, a must when using HyperFlex. In wider cracks, the sprayer will tell you if your injection hole has met the leak path as water will come out of the face of the crack.

Other Bits and Pieces:

- Wooden Dowel Rod – A 3/8" wooden dowel can be tapped into the hole drilled to inject HyperFlex in a 300ml tube, after the HyperFlex has been injected. It will promote confinement and in turn provide a better seal.
- Scraper / Plastic Sheeting (Garbage bags) – Grouting is Messy! Having all the right supplies on hand will make clean-up much easier.

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