

## Introduction

This installation method utilizes expansion strips, panel reinforcing and panel anchors. You'll also use glass block mortar and Kreuz Spacers to produce clean, consistent 1/4" joints and a traditional grid look.

## 1. General Information

- The installation recommendations presented here are for interior or exterior residential panels.
- Panel Size Limitations  
4" - Interior (250 sq. ft. max.) and Exterior (144 sq. ft. max.).  
3" - Interior (150 sq. ft. max.) and Exterior (85 sq. ft. max.).
- All glass block panels are non-load bearing, so adequate provisions must be made for support of construction around the panel.

## 2. Tools Required

- Margin trowel, mortar pan, polyfoam brush, sponge, wire cutters, tin snips, screwdriver, caulking gun, utility knife, metal file, measuring tape, 3/8" to 1/2" striking tool and a minimum two foot level.

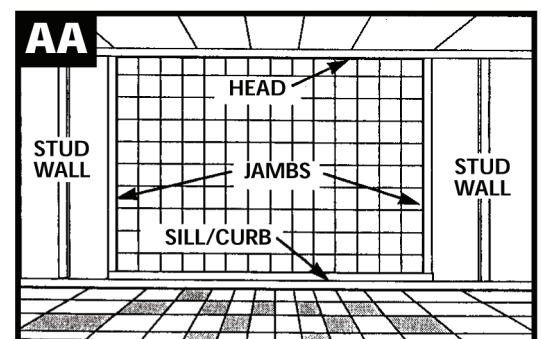
## 3. Materials Required

### Materials Required Include:

- Glass Blocks
- Kreuz Spacers which support, align and speed installation.
- Kreuz Expansion Strips allow for expansion at jambs and head and are available in 24" lengths.
- Kreuz Panel Reinforcing is installed in every other horizontal course and adds strength to panels larger than 25 sq. ft. Sold in controlled 12" lengths (plastic) or 48" lengths (wire).
- Kreuz Panel Anchors are installed every other course along the jambs and the head and anchor the panel to the surrounding framework.
- #12 stainless steel or zinc-plated, one inch, pan head screws (use four screws per anchor).
- Mortar: Glass Block white premixed mortar, or you can mix your own using white portland cement, powdered hydrated lime and white sand.
- White silicone sealant for around the perimeter of the panel on both sides.

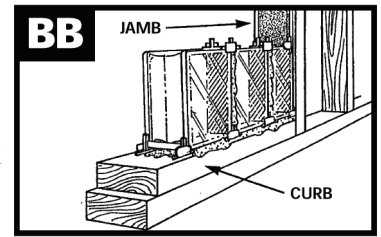
## 4. Preparation

- Prepare the rough opening where the panel will be located (Illus. AA). To determine the width of your rough opening, multiply the number of glass blocks horizontally, times the nominal width of the glass block, and to that sum, add 1/2".

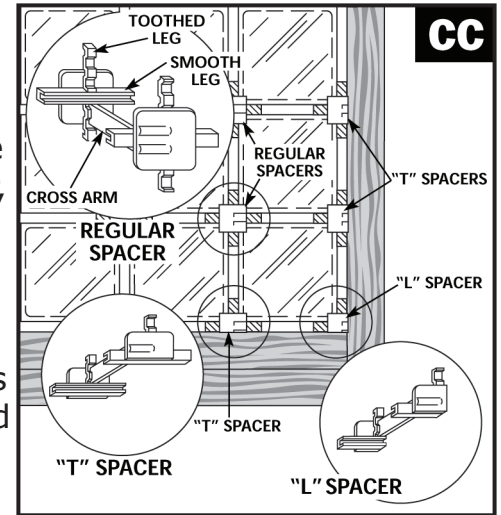


To determine the height of your rough opening, multiply the number of glass block vertically, times the nominal height of the glass block, and to that sum, also add 1/2".

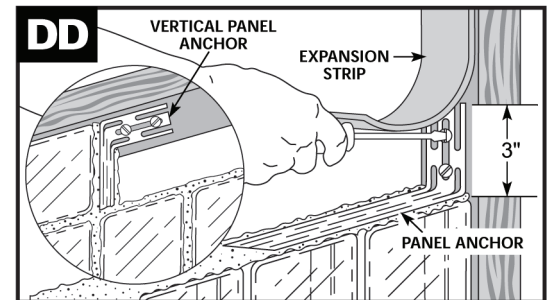
- We recommend that you make a curb base as wide as the glass block being used (Illus. BB). This will help protect the bottom course of blocks from damage (vacuum cleaners, mops, ect.).



- Kreuz Spacers are sold in bags of 25. Roughly, you'll need 50% more spacers than the number of glass blocks being used. Where glass blocks meet each other, spacers are used as supplied (Illus. CC). Where glass block meets the curb and jamb, spacers are modified using tin snips. "L" spacers are used at the two bottom corners of the panel (Illus. CC). To create this spacer, clip off the two upper toothed legs and two of the smooth legs and modify tabs as shown (Illus. CC). File off any burrs on the spacer so that it will sit flat. You will require only two of these "L" spacers for your project. "T" spacers go between all the perimeter blocks, at the curb and jambs except at the four corners of the panel. To create the "T" spacer, remove the upper toothed legs only and modify the tabs as shown (Illus. CC). Be sure to file off any cutting burrs. It's a good idea to prepare a supply of "T" spacers before you start, so that your panel construction can continue without interruption. At this point, you may want to construct your panel dry (without mortar) to ensure that your block fits the opening and you have an adequate supply of prepared spacers.



- Panel anchors will be installed at every other joint along both jambs and the head in order to tie the panel into the frame (anchors will be embedded into the mortar joint). Do not install panel anchors on the sill. They should be bent to produce both a short and a long arm (Illus. DD). Screw the short arms of the anchors to the jambs and head (Illus. DD). Use our screws per anchor. If you are attaching to tile or masonry, plastic screw anchors should be used. Panel anchors are installed as required during construction. Do not install in advance of use.



- Use the appropriate width expansion strip, based on block width. The length should also cover the anchor short arm. Strips are installed between anchors for the full length of the jamb and head (Illus. DD).

## Mortar Preparation

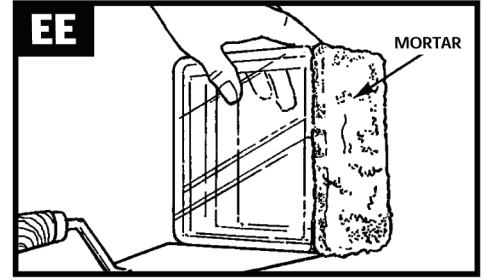
### WHITE PREMIXED GLASS BLOCK MORTAR

The following gives an idea of the number of block that can be installed per 50 pound bag of mortar:

Block Sizes (Nominal)	4" x 8"	6" x 6"	6" x 8"	8" x 8"	8" x 8"
*No. of 4" Thick	34	34	30	26	18
*No. of 3" Thick	42	42	36	32	N/A

\*based on 1/4" mortar joints

- Follow instructions on the premix mortar bag. Be sure to read and understand all precautions outlined by the mortar manufacturer. Freshly mixed mortar may cause skin irritation. **Avoid direct contact where possible and wash exposed skin areas promptly with water. If any gets into eyes, rinse immediately with water and seek prompt medical attention.** Mixed mortar should be a consistency that will allow it to stick to the edge of the glass block when the block is turned 90°. It's best to test the mortar on the block (Illus. EE), and add water or mortar to the mix as needed.

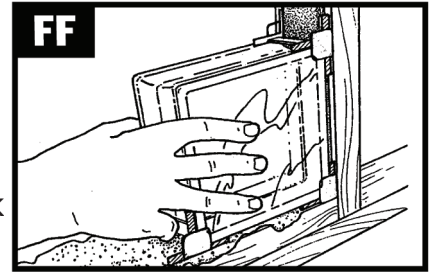


**NOTE:** Preparing mortar is an important step. If you have ever laid brick or concrete block, be aware that **glass block are nonabsorbent** and, accordingly, the mortar must be much less moist. The consistency should be spreadable, but not dry to the point of separating or crumbling. When mixed to its proper consistency, mortar should stick to the edges of the block when it's turned on edge. Mix what you think you'll use in about an hour.

## 5. Laying the First Course

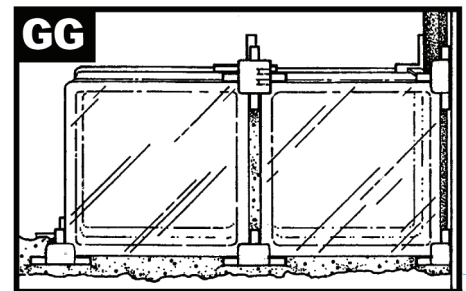
- Using the trowel apply approximately a 1/2" mortar bed to the curb or floor.

- Without applying any mortar to the first block, place an "L" spacer at the lower outside corner of the block so that the cross arm will be at the bottom, between the glass block and the curb (Illus. FF). Place a "T" spacer at the other lower corner of the block with the spacer cross arm up (Illus. FF). Slip a 16" long piece of trimmed expansion strip between the block and the jamb, and push the block firmly into place (Illus. FF).



- Slip a "T" spacer between the block and the jamb so that the cross arm is on top of the block.

- Take a second block and apply 3/8" to 1/2" of mortar to the vertical edge that will contact the preceding block. Position the second block using a "T" spacer on the bottom and a "REGULAR" spacer at the top between the two blocks (with the cross arm down between the blocks). Push the two blocks together (Illus. GG). Follow this procedure for all remaining block in the first course except for the last block. This last block is installed similar to the first block.



- Take the level and check periodically to ensure that your panel remains level and plumb. In other words, straight, both horizontally and vertically. If you find a problem, adjust the block into place with a rubber mallet before proceeding. While working, take a polyfoam brush to remove excess mortar and fill any voids that exist. Follow this procedure for both sides of your panel.

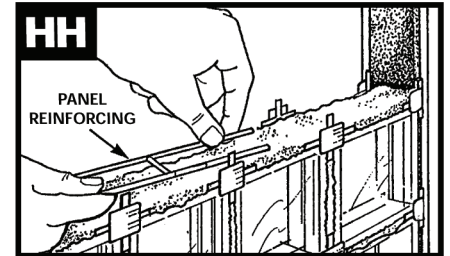
## 6. Laying the Remaining Courses

- Apply a 3/8" to 1/2" mortar bed on top of the first course. Be careful to keep the smooth legs of the spacers free of mortar to ensure that the next course of block will sit flat on the spacers.

- To start your next course, place a block (without mortar) against the jambs using spacers that are already in place from the previous course, for alignment. Place a "T" spacer at the upper corner of this block (against the jamb). Install the remaining block in the same manner

as you did the first course.

- At this point, remove the previously installed "T" spacers at both jambs at the top of the second course. Apply a 3/8" to 1/2" mortar bed on top of this course.
- Install panel anchors at both jambs by completely embedding them in the mortar and fastening them to the jamb using #12 stainless steel or zinc-plated, one-inch, pan head screws. Use four screws per anchor (Illus. DD). If attaching to tile or masonry, plastic screw anchors should be used. Reinsert the "T" spacers previously removed. Additional mortar may need to be applied to cover the anchor.
- Now it's time to install panel reinforcing. Panel reinforcing is always installed in the same horizontal joints as the panel anchors. Lightly press panel reinforcing into the mortar bed along the entire length of the panel so that it is completely embedded in the mortar. Where more than one wire reinforcing strip is needed, overlap them six inches (Illus. HH).

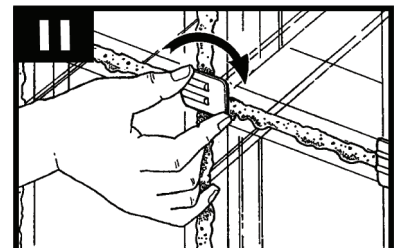


**NOTE: Panel Anchors and Panel Reinforcing are only installed in every second horizontal course of block. However, they are not required on top of the next to last course of block.**

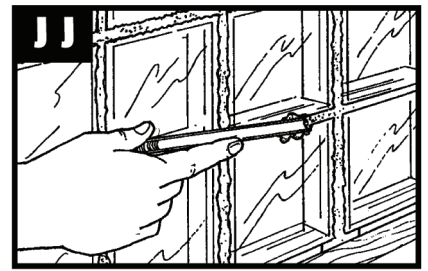
- Proceed with remaining courses as previously described. Remember to install expansion strips along the jambs as you continue.
- As your panel is built, remember to check periodically to ensure that your panel remains level and plumb. In other words, straight, both horizontally and vertically. If you find a problem, adjust the block into place before proceeding. Don't forget to use your polyfoam brush to press squeezed out mortar back into the joints.
- Installing the last course will be different than the previous course in that you will be installing vertical panel anchors. First, twist off the spacer tabs along the top of next to last course on one side of the panel. Then install two blocks, remembering to butter both sides of the second block before installing. Spacers are not required at the top of the panel.
- Install the vertical panel anchor with the long leg facing down (Illus. DD). Completely embed the long leg of the anchor into the vertical mortar joint. Screw the three inch leg of the anchor to the top of the opening. Continue this two block procedure across the final course.
- Install expansion strip across the head. Because the top course meets the expansion strip at the head, no mortar is placed at the top edge of these blocks.
- After installing the final block, be sure to press back into the joints any mortar that has been forced out.

## Finishing/Cleanup

- After allowing the mortar to set up for about one hour, twist off the spacer tabs on both sides of the panel (Illus. II).
- Remove excess mortar from the block faces using a damp sponge. Be sure to rinse the sponge frequently. Try not to let any mortar on the block faces dry or set before attempting to remove it. Don't be concerned about the dry film that remains on the block, it will be cleaned off later. Be sure you don't use abrasive materials for this cleanup, since they scratch the glass surfaces.



- Take the striking tool and run it with moderate pressure over all the joints. It is best to strike all the horizontal joints first, then the vertical joints, so that the pattern is uniform (Illus. JJ). Striking removes excess mortar and compacts it to create a smooth, concave, moisture-proof seal. Again, fill any voids that may appear. When you're done with both sides of the panel, all joints should be completely filled with mortar and you'll have a clean, professional-looking job.



- About two to three hours after striking the joints, and once they are dry, you can use a soft, dry cloth to remove the excess film. A common household plastic scouring pad can also be used to clean any excess film.

- Use a white silicone sealant around the perimeter of the panel on both sides. Where curb was used, you'll want to cover it with trim molding (Illus. KK).

