

Installation Procedure

Last Updated: April 2024



Bridge Expansion Joint System (BEJS)

Watertight Joint System for Bridges and Roads

The following installation procedure is very important and must be fully understood prior to beginning any work. To ensure proper installation and performance of expansion joint system the following actions must be completed by the installing contractor. **Failure to do so will affect product warranty.**

- 1) Carefully read and understand installation procedure. Contact WBA's Technical Service Department at (800) 677-4922 for product assistance.
- 2) Inspect all shipments and materials for missing or damaged components and hardware. Contact Customer Service at (800) 677-4922 with WBA's order number and invoice for prompt assistance.
- 3) Inspect substrate or adjacent construction for acceptance before beginning work. Report unacceptable construction to the project manager for scheduled repair work.

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- 4) Review WBA shop drawings for project specific detailed information if Engineering services were purchased at time of order.

Health & Safety

During the installation of any Watson Bowman Acme product, appropriate personal protective items should be worn at all times, including but not limited to the following:

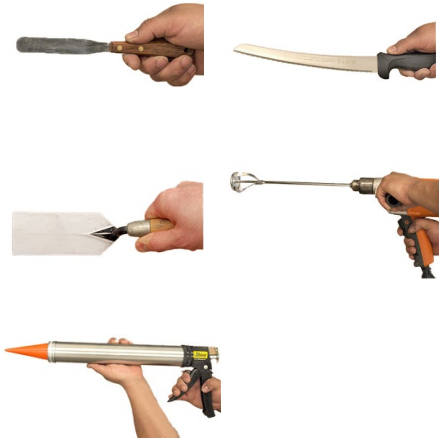
- Proper work clothing
- Safety glasses
- Safety boots
- Gloves
- Hard hat



Local rules and regulations regarding safe work environments and health should be followed.

Recommended Equipment & Material Storage

- High torque / low-speed power drill (1/2-inch / 13mm chuck)
- Jiffy mixer paddles (1 1/2-inch / 40mm)
- Serrated edge knives (8-inch / 200mm or longer)
- Caulk gun (10.3-oz cartridge & 20-oz sausage guns)
- Chemical-resistant gloves
- Margin trowels (2-inch / 50mm wide)
- Acetone (or effective solvent), lint-free rags, & clean paint bucket



Cold Days – Store materials, off the floor, inside at above 60°F. The foam will recover slower when cold and faster when warm.

Hot Days – Keep sealant out of direct sun when temperatures greater than 80°F.

Storage – The application of heat can accelerate expansion rate of material

Repair Spalled Joint Faces/ Refill Old Blockouts

IMPORTANT: Ensure that no oxidation (rusting) occurs before the epoxy is applied. For Substrate Prep - Consult Watson Bowman Acme.

Temperature Matters!

- Store away from the elements such as rain, snow and extreme temperatures.

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- You want the material to be as big or just slightly bigger than the joint gap width when you put it in. This way it will sit snug at the right level and hold its own weight.
- When it's HOT (above 80°F) the foam expands quickly. You want to store it in the shade or in an air conditioned vehicle.
- When it's COLD (below 60°F) the expansion rate is slower. You want to store it in the sun or in a heated vehicle, AND you may want to open a few sticks ahead of installing the epoxy to start the foam expansion.

DO NOT REMOVE outer plastic packaging until you read & understand the rest of these instructions.

- Precondition material to around 70°F. In cooler conditions (40-60°F), remove from packaging (shrink-wrap and hardboard) prior to install.
- In warmer temperatures (above 60°F) keep in packaging until ready to install.

Installation

Substrate Surface Prep

Watson Bowman Acme recommends sandblasting of concrete or metal substrates to a CSP (surface profile) of 3-6. Use compressed air to clean debris and sand from the joint opening.

1

Solvent Wipe Joint Face

Wipe joint faces with solvent-dampened, lint-free rags to remove all dust and contaminants. Dry all wet surfaces. **DO NOT** use a flame to dry substrate--this will leave carbon residue on the substrate and cause bond-failure. Let air dry or use a heat lance to dry joint faces.

2

Start With U-90 Installation (If applicable)

Changes in plane, either up or down, are easily accomplished with the use of factory-fabricated Universal-90's. If you ordered factory-fabricated transitions start with these and then move on to connecting the straight lengths (see page 4 for detailed instructions).

3

Mix Epoxy Adhesive

Supplied Epoxy adhesive may be used in the 40 Degree F to 95 Degree F temperature range. Using a trowel, transfer the entire contents of Part B (hardener) into the contents of Part A (base). Mix the material thoroughly (3 minutes) with a drill and mixing paddle. Scrape the walls and bottom of the container to ensure uniform and complete mixing. Ensure that a uniform gray color with no black or white streaks is obtained. **IMPORTANT: DO NOT** thin the epoxy

4

Apply Epoxy to Substrate Walls

Ensure that the mixed epoxy adhesive is applied to both substrate walls before the pot life has expired (10 – 30 minutes depending on the ambient temperature). Using a trowel, apply 1/16-inch (1.5mm) thick coat to the substrate walls down the full depth of the BEJS foam.



WARNING: Epoxy will harden more quickly when left in the pot. Apply it onto the joint faces as soon as possible.
IMPORTANT: The epoxy must still be uncured when installing foam into the joint-gap. If the epoxy cures before installing the BEJS foam then reapply new epoxy. If work is interrupted for more than 2 hours after initial cure then grind the old epoxy and apply new wet epoxy.

5

Open Plastic Packaging

Sticks are held under compression by hardboard and plastic wrapping. When ready to install, slit the plastic wrapping by cutting on the hardboard, discard hardboard and inner release line

WARNING: Do not cut along sealant coating face as this may compromise the watertight seal.



6

Wipe Release Agent Off Sealant Facing

For packaging and production reasons, the sealant facing is coated in the factory with a release agent. Prior to installation, this agent must be wiped off in order for the injected sealants bands to adhere to the sealant facing and to avoid contamination of the substrate at this point. Lightly, quickly and thoroughly wipe the cured sealant facing with a lint-free rag made damp with water.

7

Install First BEJS Foam Length into Joint

Before installing, ensure the epoxy on the joint face has not cured. Feed BEJS foam into the joint. The material should fit snugly and must be eased into the joint with steady, firm pressure. Leave the end of the foam length exposed above the deck surface to facilitate join for the next length. When installed, the top of the bellows must be recessed 3/4-inch (20mm) below the deck surface edge is chamfered, measure from the bottom of the chamfer.

NOTE: BEJS-PED is recessed 1/4-inch (6mm) when installed in a sidewalk/walkway surface.



8

Apply Silicone to Bellow Face

On the face of the stick of foam, apply liquid sealant by tracing along the precured silicone bellows.

NOTE: Spreading the silicone at this point is not required/recommended.



9

Install Next Stick Length of Foam

Grab the next stick length and push the face of the foam firmly against the previously installed sticks exposed end. Next press the far end of the foam stick into the joint creating a slight "bridge". Working your way towards the join, start squeezing and pressing the foam into the joint opening working your way towards the adjoining stick. Once most of the stick is installed, push the protruding stick at the join into the joint opening and tool off the excess silicone. Repeat this step for each new stick.



10**Measure, Cut and Install Final Section**

This is the last section of the joint that needs to be installed. This could be the end of a bridge deck, OR to close the gap between the last full length stick and a previously installed factory transition. Measure the length needed and add an extra 3/8-inch (10mm). Cut the length using your serrated knife.

TIP: If the knife is sticking, spray the blade with water.

Apply silicone to both joining foam ends (see Step 8). Install the foam stick ends first, then push down on the middle of the stick and work your way towards both joins.

11**Solvent Wipe Joint to Prepare for Silicone Injection Bands**

Using lint-free rags and solvent, thoroughly wipe the cured silicone face and surrounding joint to remove any excess epoxy and residual manufacturing release agent (from Step 6).

12**Inject Silicone Sealant Bands**

BEFORE the epoxy cures, force the tip of the silicone-gun cone between the substrate and BEJS foam. Inject a 3/4-inch (20mm) deep silicone sealant band between the foam, cured silicone facing and the joint-face.

13**Tool Excess Silicone**

Using a caulk knife, create a cove-bead by tooling the freshly applied silicone firmly to blend with the substrates and cured bellows facing. This will ensure a proper bond and seamless appearance. At the butt joins, use a caulk knife to remove excess sealant from between the cured bellows. Tool excess silicone that squeezes out of the from the top of the joint when you pressed the sticks together. Blend the sealant into the precured silicone bellows for a professional/clean finish.

IMPORTANT: Silicone left between the wrinkles of the bellows could restrict movement.

Transitions, Ends and Special Conditions

Sequencing: Install factory-fabricated transition and/or termination pieces first. Connect straight run material to in-place terminations and transitions. Note: If installing very long runs of material, to avoid having to work at distant ends of a joint run and in order to prevent epoxy from fully curing, the final factory-fabricated Universal-90 termination can be installed as the second-to-last piece. Cut closing pieces 3/8-inch (10mm) longer than the opening to be joined. Compress material longitudinally to fit.

Universal-90 TRANSITIONS:

- Universal-90's are factory-fabricated transition pieces that facilitate transitioning up and down curbs, parapets and sidewalks easy.
- Unlike straight-run lengths, BOTH sides of Universal-90's are silicone coated so there is no top or bottom. They can be turned over to be used either as an upturn or a downturn.

Universal-90 Installation Sequence:

- Locate and arrange U-90's into the locations that require the transitions.
 - Measure the height of the curb and locate the middle. This is where you will join the upper and lower U-90.
 - Open and cut the vertical leg of the lower U-90 to a length that will terminate at the middle of the curb.
-

Kick-Out Termination:

The Kick-Out Termination is a factory-fabricated termination piece with a built-in drip-edge that directs water runoff away from the bridge structure. This piece is typically installed at the edge of the bridge deck so that the drip-edge section protrudes out beyond the face of the slab.

Install the Kick-Out Termination FIRST, then connect the straight length sections starting with Step 8.

Field-Cut Corners:

When NOT using factory-fabricated transitions, it is possible to create corners in the field. Although, it is highly recommended to utilize factory transitions to ensure watertight connections.

Outside Corners -- "Notch & Bend"

- Notch the back of the foam about 2/3 of the way through at a ~40-degree angle.
- Bend the foam over ensuring the silicone face remains intact.

Inside Corners -- "Notch & Miter"

- Cut the stick of material that will be used for the horizontal section long enough so that the stick of foam is equal to the length of joint PLUS the depth of the foam joint being installed. This will create a "shelf" for the vertical section to sit on.
 - The inside corner must be joined by cutting a keyway in the horizontal section with a matching miter in the vertical section.
 - To cut the keyway, first make a template. The hardboard packing and a handsaw can be used for the template.
 - Using the template and a serrated knife, cut each piece as shown.
 - Install the horizontal section ensuring the keyway is inserted past the vertical face of the joint.
 - Apply a bead of silicone onto the face of the keyway.
 - Install the vertical section mitered end down into the wet silicone on the horizontal section
 - Ensure there is a tight fit and no voids. Tool excess silicone.
-

Flat Corners:

- Cut each piece to be joined 3/8-inch (10mm) longer than the measured length.
- Install one piece so that it runs through the intersecting joint-gap. Firmly push and compress so that a tight fit with no voids in the corner is achieved.
- Firmly butt the intersecting piece into the side of the previously installed section.
Important: Be sure that no epoxy is on the sides or faces of the foam at the butt joints.
- Inject a bead of silicone between the butt joint and end terminations where the material meets the substrates.

- Using a caulk knife, remove any excess sealant and blend into the bellows to preserve the shape of the bellow.
-

Crosses and Tees:

Run one piece of material across the intersection. Coat the silicone bellows end of the intersecting section with liquid sealant.

- Firmly butt the intersection pieces into the sides of the previously installed section.
- Inject a bead of silicone between the butt join and end terminations where the material meets the substrates.
- Using a caulk knife, remove any excess sealant and blend into the bellows to preserve the shape of the bellow.

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