



BUILDING TRUST



INSTALL DATA SHEET

SJS – Seismic Joint System

Do not install this material until all members of your crew have read and understand these instructions. If you do not understand any part of these instructions CALL Sika EMSEAL at 1-800-526-8365

This product can only fulfill its design function if it has been correctly selected and correctly installed. This means that joint width (after allowance for concrete shrinkage), total joint movement and expected loads must have been considered and accounted for.

These installation instructions are generic and may need adapting to suit specific project requirements and unique conditions.
[Consult Sika Emseal](#) if necessary.

The [SJS System](#) is a sealant bellows/coverplate system that is anchored to the joint faces of structural expansion joint gaps between flat, level adjacent slabs. Installation will bring the top surface of the SJS proud of the finished deck level by the thickness of the coverplate or slightly recessed where this installation option has been specified, selected, and properly executed.

Installation Options

The SJS System from Sika Emseal can be installed in several ways as selected by the designer or owner:

- Surface mounted on top of concrete deck (no recess, no blockout).
- Surface mounted on top of [Emcrete](#) elastomeric nosing material in [blockouts](#) on each side of the joint.
- Recessed on top of Emcrete elastomeric nosing material in blockouts on each side of the joint.

These installation instructions will discuss the installation of the SJS System assuming that all concrete prep and blockout work including the placement of the Emcrete elastomeric nosing has already been done.

It is important that you and all members of your crew read and understand this entire installation manual before proceeding with installation.

INSTALLATION IMAGES UPDATE: Current hanger bars are designed with a 90° upturn for easier hand turning and the upper spline channel is silicone-filled. This can be best seen in the page 2 unboxed product photo.

Transition/Termination Options and Installation

As with any expansion joint system, there are many options for treating the way joints end, [transition](#) to other joint systems, and are installed at jogs, turns, changes in plane, etc., in the deck.

It is critical to ensuring watertightness that these conditions be addressed in accordance with details provided by the designer and based on Emseal approved [details](#) and installation methods. Termination and transition details must be disclosed to Emseal at time of material ordering so that they can be accommodated in special transition pieces of the SJS System to be supplied.

These installation instructions will cover the installation of the SJS System in straight runs with reference to generic transition and termination sequencing.

Identification of Size

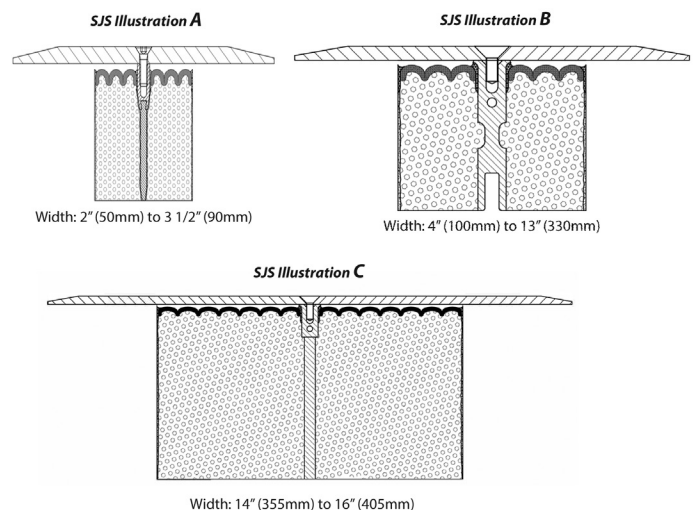
SJS is available in standard sizes from 2-inch (50mm) up to 16-inch (405mm).

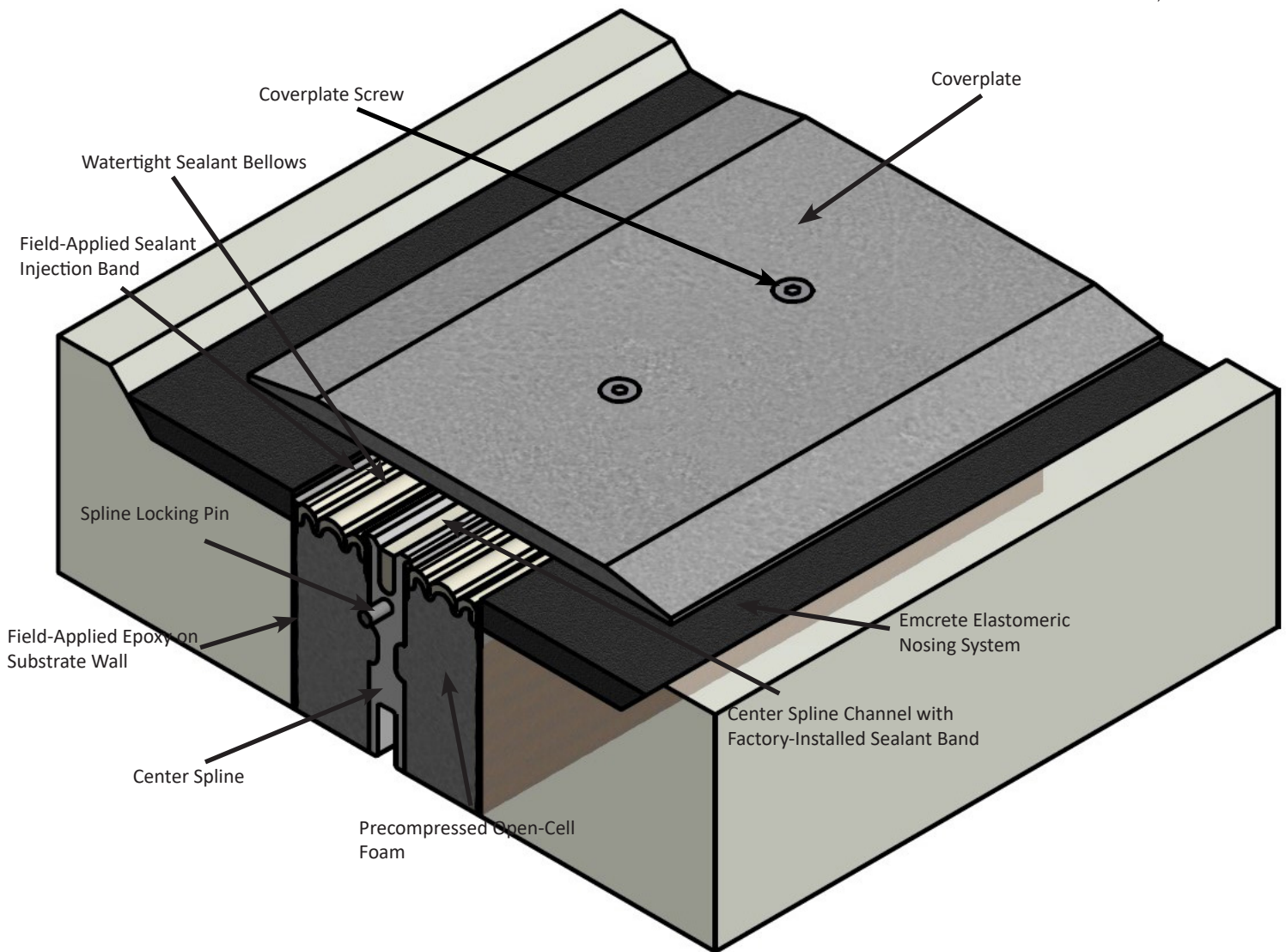
Widths of 2-inch (50 mm) up to 3 1/2" (90 mm) can be seen in **SJS Illustration A.**

Widths of 4" (50mm) up to 13" (330mm) can be seen in **SJS Illustration B.**

Widths of 14" (355mm) up to 16" (405mm) can be seen in **SJS Illustration C.**

IMPORTANT: The smaller size (A) does not have a locking pin. Also the final coverplate torque requirements differ with size (Steps 21 - 23).





The SJS System as supplied - precompressed, shrink-wrapped, with spline pins and installation hanger bars

IMPORTANT: Spline locking pin is not present on smaller width SJS - See illustration A on page 1.

The SJS System installed with Emcrete elastomeric nosing material in blockouts on each side of joint gap.

Installation Equipment & Material Storage

In addition to masonry tools needed to remove joint obstructions or adjust joint width as necessary the following are needed:

For Preparing Concrete and Grinding Concrete & Nosing Material:

- 4-inch angle grinder(s)
- Diamond cup blade(s) for concrete
- Abrasive blade(s) for metal
- “Zek” wheel pads or 20-grit sanding discs for abrading Emseal elastomeric nosing material

For Forming Nosing Material and/or Spall Repair:

- 2-inch Styrofoam extruded polystyrene cut into 6-inch wide strips. (Total quantity 2-times the joint length)
- 2-inch Duct Tape (Total quantity 3-times the joint length) for wrapping the Styrofoam to aide release from nosing material
- “Cherry paper” building felt to mask joint edges (Total quantity 2-times the joint length)

For Cutting and Drilling Aluminum:

- “Sawz-All” (reciprocating saw)
- Metal cutting blades for Sawz All
- Cutting-oil (“3-in-1” or equal)
- Drill – sizes 3/8-inch drill (for drilling new coverplate holes if needed)
- Countersink bits
- Small hand-held metal (fine-toothed) file (for removing metal burrs after cutting)

For Installing and Tooling Liquid Sealant and Sealant Injection Bands:

- Caulk guns to hold 20-oz & 10.3oz sausages/tubes
- Sausage caulk gun nozzles (cones)
- Caulk knives
- Utility knives

For Mixing and Spreading Epoxy Adhesive

- Heavy duty electric, plug-in, low-speed, high-torque drill for mixing thick epoxy
- New, clean, 1 1/2-inch paddles, “jiffy mixers”, for use in electric drill
- Minimum 6 ea – 1 1/2-inch wide by min. 8-inch long margin trowels
- Clean or unused plaster/paint pails to mix epoxy, hold cleaning solvents, etc.

For Removing & Installing, Screws in Hanger Bars and Coverplate

- Hi-Torque, electric Drill-Driver(s) — to remove and reinstall stainless steel screws. Drill-Drivers instead of drills are required to help prevent over-tightening the screws
- Minimum 6 ea – 5/32 or 7/32-inch hex bit socket drill drivers (3/8-inch drive) See Page 1 to identify SJS
- 3/8-inch socket adapters (for use in drills)
- Heavy hammer (3-pound) to tap end of spline to set spline pins at opposite end of stick)
- Long-handled 3/8-inch socket wrench (for final hand tightening of screws)

Other Miscellaneous Tools and Materials

- Levels, 2-foot, 4-foot, and torpedo-level
- 100-foot tape measure
- 1 box of lumber crayons (to mark high spots for grinding)
- Combination square
- Chalk box with chalk
- Flat bar and small pry bar
- Pail of cleaning solvent (Acetone or equal) (depending on the size of the job, less acetone may be adequate)
- Box of clean, dry, lint-free, 100% cotton cloth (not paper) rags
- Shop Vac
- Extension cords
- Generator or reliable electrical source
- High-pressure blowers to clear debris

Cold Days: Store material, off the floor, inside at above 68°F (20°C). It will recover slower when cold and faster when warm.

Very Hot Days: Keep material out of direct sun at temperatures greater than 60°F (15°C) until immediately prior to installation.

Long-Term Storage: Indirect heat can be applied to the material to increase expansion rate if not installed immediately after delivery.

Coverplate Inspection and Storage: Customer is responsible for inspection and proper storage of material upon arrival.

Coverplate metals, when in contact with moisture while in their packaging, may discolor--ensure shipments are kept dry.



1. Remove Bumps/Protrusions from Joint Face

Concrete:

- Remove loose particles and weak concrete to ensure sound concrete substrate. Spalls, chipped edges and uneven surfaces must be repaired using suitable patching material and proper patching geometry and techniques. Joint faces must be parallel. Joints must have unobstructed depth greater than or equal to the full depth of the largest material supplied plus 1/2-inch (6mm).



- Remove all contaminants by sandblasting or grinding to ensure a thoroughly clean and sound substrate for the full sealant depth.

NOTE – DO NOT use a wire wheel — this will polish the substrate and cause bond-failure.

- Dry all wet surfaces.

NOTE – If a flame is used to dry substrates this will leave carbon on the substrate and cause bond-failure. Grind and clean the surfaces to remove carbon.

- Wipe joint faces with solvent-dampened, lint-free rags to remove all concrete dust and contaminants.

Metal:

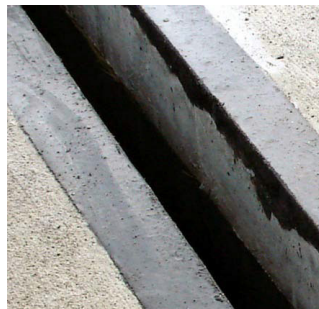
- Sandblast or grind to rough, white metal and solvent-wipe immediately prior to applying SJS epoxy.

IMPORTANT: Ensure that no oxidation (rusting) occurs before the epoxy is applied.

Other Substrates: [Contact Sika Emseal.](#)

2. Prep and Repair any Spalls

NOTE – Repair of spalls is best done using [Emcrete](#) elastomeric nosing material. This material is flowable, self-leveling, and fast curing. If your project involves installing a nosing material as a low-friction, sound reducing, support for the cover plate of the SJS, then spalls can be repaired in a single step along with filling the blockout.



3. Remove Dust/Debris from Joint Face

- Using wire brushes, blower, and solvent wiping remove ALL dust and debris from the joint face.

NOTE – This step is critical to ensure that the epoxy adhesive and sealant bonds properly to the joint faces. Any dust or debris left on the substrates could cause a bond failure.



4. Ensure Level Deck Height and No Obstructions

NOTE – Place coverplate sections across the joint opening. Remember that the joint will close during summer heating. This means that when closed, the cover plate must be free to slide on both sides of the centerline of the joint opening. Any cured lumps, lips, overpours of concrete, will prevent free movement. Grind these off using diamond cup grinders.



5. Ensure deck is even and flat along its length

- Cover plates are supplied in standard 5-foot lengths. In order to be fully supported and to prevent rocking, the deck or nosing surface must be level across the joint for the full length of each plate.
- This is achieved by laying out the cover plates over the joint opening along the entire length of the joint. Then by putting pressure on one edge of a plate, push down on the opposite side.
- If the plate rocks, identify where the high spot(s) are under the plate.
- Lift the plate and mark these spots using a lumber crayon.
- Use a grinder and 'zek' wheel or 20-grit sanding disk to remove the high spot(s).
- Place the cover plate back over the location and repeat the process until the plate lies flat and no rocking can be produced.



NOTE – This leveling process is easily achieved when the Emcrete elastomeric nosing is used. If installed directly onto concrete, this process will require you to grind the concrete using diamond cup grinders.

6. Mask Deck & Mix Epoxy Adhesive

- Using duct tape, tape off the deck on both sides of the joint.

Mix Epoxy:

Epoxy adhesive may be used in the 40°F (5°C) to 95°F (35°C) 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.
- Always mix component B (hardener) into component A (base). Ensure that a uniform gray color with no black or white streaks is obtained.



IMPORTANT: DO NOT thin the epoxy.

Precaution: Wear chemical-resistant gloves and/or barrier hand cream when handling liquid sealant or epoxy. Remove promptly from skin with a commercial hand cleaner before eating or smoking. Avoid inhaling vapors.

7. 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).
- Apply epoxy to substrate walls 1/16-inch (2mm) thick and the depth of the SJS 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 SJS 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.

8. Locate Transition/Termination Pieces

- SJS is typically custom fabricated with transition and termination pieces and accompanied with an approval drawing set.
- Based on the approval drawing, locate and start installation of the foam sections with these transition pieces.

NOTE – Always start the installation of the SJS foam sections with the transition/termination pieces.

9. 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 liner.
- DO NOT CUT ALONG SEALANT COATING FACE AS THIS MAY COMPROMISE THE WATERTIGHT SEAL.



IMPORTANT: Work quickly and deliberately after cutting the shrink-wrap to avoid material expanding beyond a usable size.

10. 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 using a damp rag in order for the injected sealants bands described in Step 17 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.

11. Lower Foam Length into Joint Gap

(If time allows, before inserting foam, let the foam expand to slightly less than the width of the joint opening so that when lowered it fits snugly into the wet epoxy on the joint faces and does not sag below the lip of the blockout.)



12. Rotate Hanger Bars to Hold Joint in Place

- Rotate the hanger bars by turning them so they are perpendicular to the joint length and sitting on the substrate edge holding up the foam from sagging down into the joint.



13. Apply Sealant Bead to SJS Foam Face

- Using a caulk gun, nozzle, and supplied sealant, apply a thick (1/8-inch / 3mm) bead of liquid sealant to the face of the spline, the pin, and onto the foam along and 1/2-inch (12mm) below the sealant bellows.



14. Install Next SJS Foam Length

- Unwrap the next SJS foam length and wipe release agent off sealant facing (see step 10)
- Insert SJS foam into the joint gap and align the spline joining pin and pin receiver. Apply pressure to ensure no voids between the sticks.

NOTE – Smaller widths do NOT have a joining pin (see Illustration A page 1)

NOTE – Some of the sealant tooled to the face should squeeze out between the bellows faces).

- If there is a void between the two SJS foam lengths, use a 3-pound hammer and tap the end of the foam length to ensure a tight join.



15. Tool Joining Sealant Bead

- If necessary, use the caulk gun to apply additional sealant to the join between the two lengths and tool/blend excess from surface and between wrinkles of the bellows.



16. Continue Installing SJS Foam Lengths

- Continue installing the rest of the SJS foam lengths starting with step 9.

NOTE – For long joint runs, ensure the epoxy doesn't fully cure before moving on to the following steps. Sealant injection bands will not be able to be successfully installed if the epoxy cures.



17. Inject Sealant Bands & Tool Excess Sealant

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

NOTE – Rotate hanger bars as you go so you can install a continuous band of sealant.

IMPORTANT: Ensure hanger bars are resting on the deck surface until the epoxy has cured and foam has expanded enough to maintain the correct installation height. If the foam length sags down into the joint, it could compromise the installation of the coverplate.

- Tool the applied sealant firmly to blend with the substrates and cured bellows facing, and to ensure proper bond and seamless appearance.



18. Remove Hanger Bars

- Once the foam can support itself and won't sag, start removing the hanger bars using a drill and supplied hex bit.
- These screws can be saved and used to install the coverplate later on in the installation.



19. Locate & Layout Coverplates

- Locate and layout coverplates next to the joint based on the approval drawings. The standard plate lengths are typically 5-feet (1.5m). Transition and termination custom plates are usually shorter.

20. Place Coverplate Over Installed SJS Foam

- Place the coverplate over the installed SJS foam piece
- Lineup the screw holes in the coverplate with the channel of the spline on the SJS foam.



21. Anchor Coverplate to SJS Foam Spline

- Using a drill-driver and provided hex bit, drive the coverplate screws into the spline channel until tight.

Smaller (*Illustration A*) SJS uses a **5/32" hex bit**.

Larger SJS (*Illustrations B & C*) uses a **7/32" hex bit**.

- Ensure that the spline is drawn up snugly against the underside of the coverplate.

CAUTION – Driving the cover plate screws requires a lot of torque. Be sure to have a firm grip on a supporting handle on the drill. Brace the drill as needed to prevent it from spinning and causing injury.

22. Remove Next Hanger Bar and Continue Installing Coverplates

- Remove next joint hanger bar(s)
- Install coverplate sections until installation is complete with the installation of the final finishing cover plate.

NOTE – Leave approx 2-mm space between each coverplate for thermal contraction and expansion of the plates.



23. Torque Screws to Spec

- It is critical that the top of the spline be pulled up tight to the underside of the coverplates.
- To achieve this, you must use a torque wrench and hand tighten each screw.



* Smaller-width SJS (*Illustration A*) using a 1/4" diameter screw and a 5/32" hex bit socket, torque to 156 in-lbs (13 ft-lbs; 17Nm).

* Larger-width SJS (*Illustrations B & C*) using a 3/8" diameter screw and a 7/32" hex bit socket, torque to 240 in-lbs (20 ft-lbs; 27Nm).

IMPORTANT: Fully and firmly insert the hex driver into the screw. If you don't you will strip the screw head.

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