

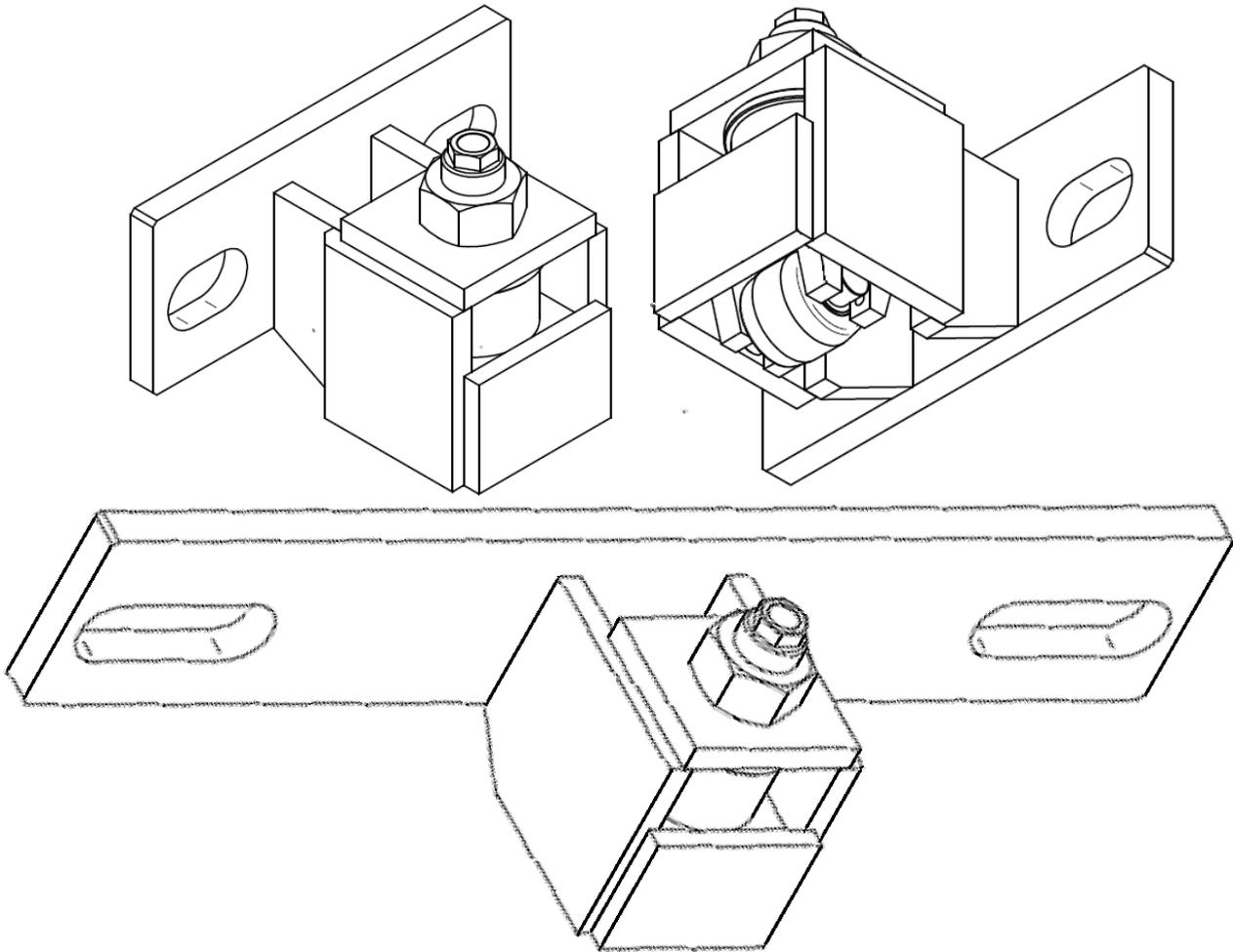


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# EKOSLIDE

## Instruction Manual



## **Ekoslide: Installation and Adjustment**

**ENSURING THE SMOOTH MOVEMENT OF SWITCHES  
WITHOUT THE NEED FOR TIE PLATE LUBRICATION**

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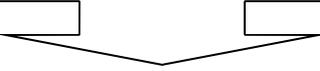
## Step 1: Pre-Requisites

### Getting Started:

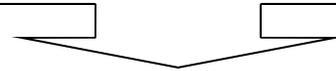
1. For anyone new to Ekoslide, be sure this instruction manual is thoroughly reviewed before any first-time installation.
2. Review the tool list below and arrange for the relevant tools to be available on-site.
3. Examine one of the Ekoslides before starting installation in order to get a “feel” for the product. See Page 10.
4. Note that all Ekoslides have elongated holes to allow for more flexibility in bolt spacing and placement.
5. Note the info on bolts on Pages 5 & 6. For cotter pins, longer bolts or thinner washers may be required.
6. Make sure you use the correct number of Ekoslides per switch. For a shorter switch (#8), use four Ekoslides. For medium length (#15), use six. For longer (#20), use eight. See Page 4.

### **Basic Ekoslide Steps**

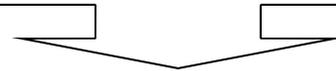
**Planning**  
(Pages 3 - 4)



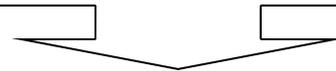
**Measuring**  
(Pages 5 - 7)



**Installation**  
(Page 8)



**Adjustment**  
(Page 9)



**Finished!**

### Recommended Tools for Installation

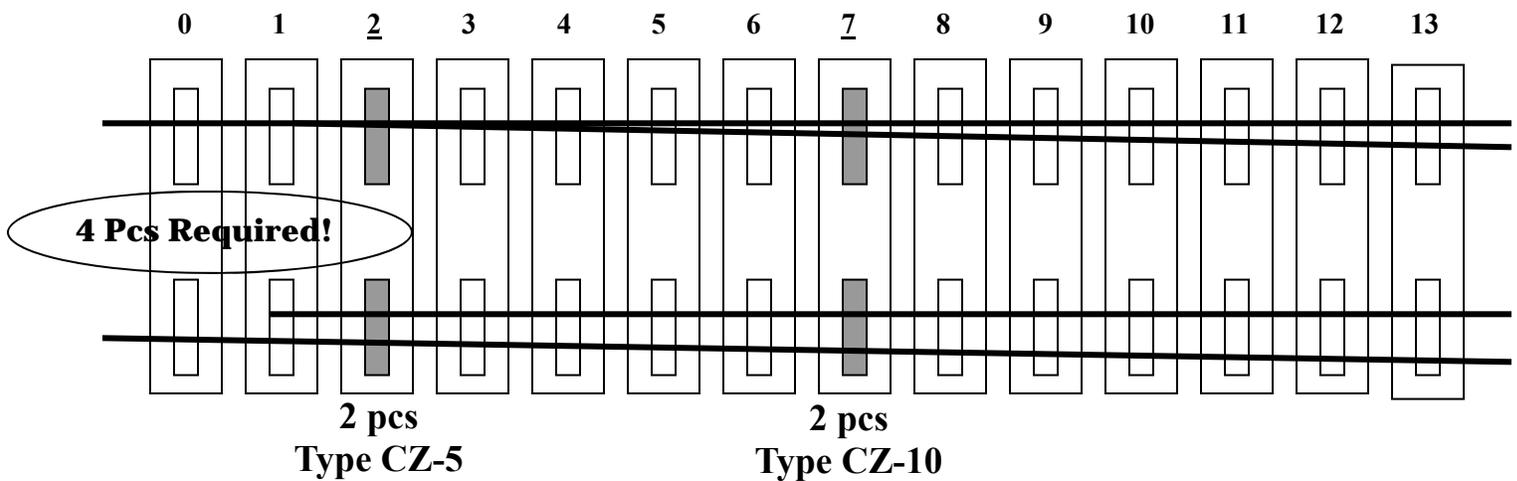
Often, the entire Ekoslide install can be done with only wrenches. However, the following tools are recommended to make installation the quickest and easiest:

- Wrenches (sized for your nut/bolt sets)
- Ekoslide Yellow Adjustment Gauge (included in every Ekoslide box)
- Impact (Makes install faster & easier)
- Switch Broom (for cleaning tie plates)
- Pliers (for cotter pins)
- Rail Jack (for inserting longer bolts)
- Track Wrench (for leverage if needed)
- Spike Lifter (if spike removal is needed)
- Pick and Saw/Torch (For rivet removal if needed)
- Tape Measure

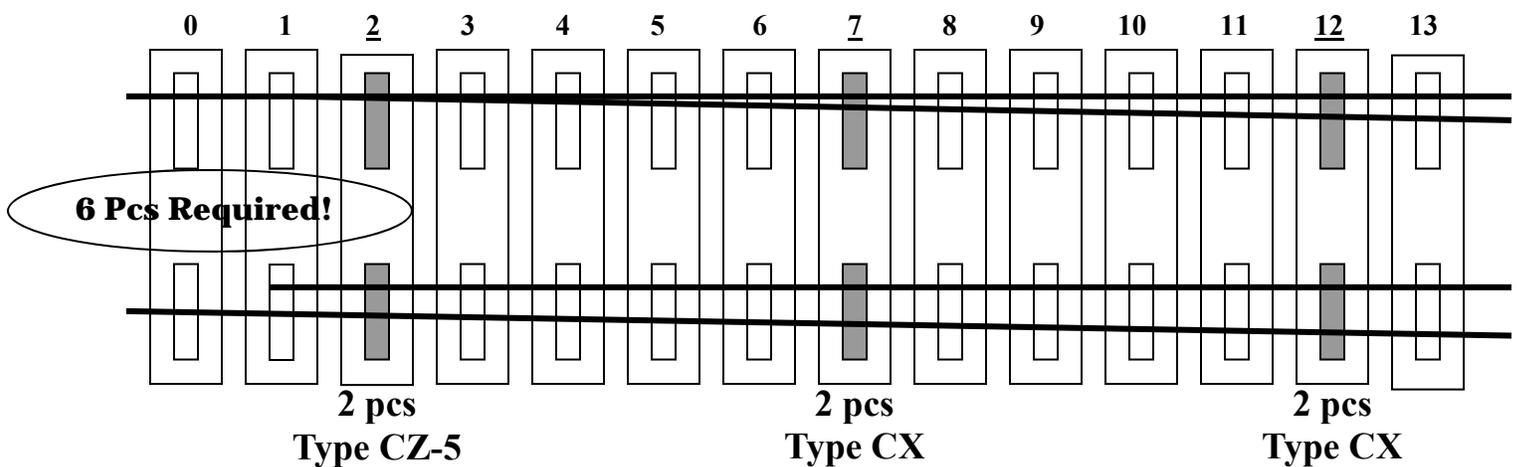
## Step 2: Location

- 1) A minimum of four Ekoslides (two per side) are required per switch.
- 2) There is flexibility of location for existing switches. In contrast, the correct layout for new switches is usually pre-determined. Check with your local engineering.
- 3) The first set of Ekoslides should be closer to the point, and the other sets should be 4-6 ties away from the previous set of Ekoslides. See examples below.

### Samples of #8, #9, #10, #11 Switches (Ekoslides in shaded blocks below) (examples only - actual types/locations could vary)



### Samples of #14, #15, #16 Switches (Ekoslides in shaded blocks below) (examples only - actual types/locations could vary)



### Note: What about a #20 Switch???

Plan for 8 rollers. Similar as the #15 above plus an extra set around the 16th tie.

**Helpful Hint! Remember the “4 & 4” Rule!** Put the first Ekoslides set before the 4th tie and the next set at least 4 ties away (but never up to 8 ties away).

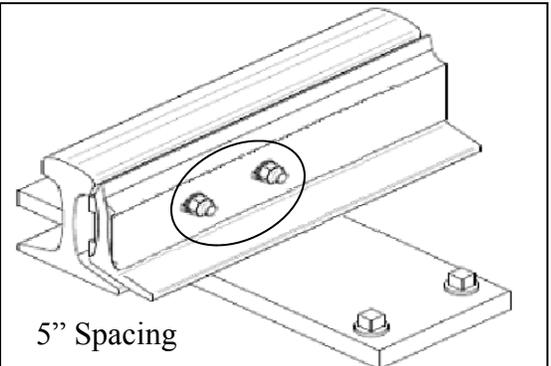
**Step 3: Measurements**

**BOLT SPACING and Other Measurements**

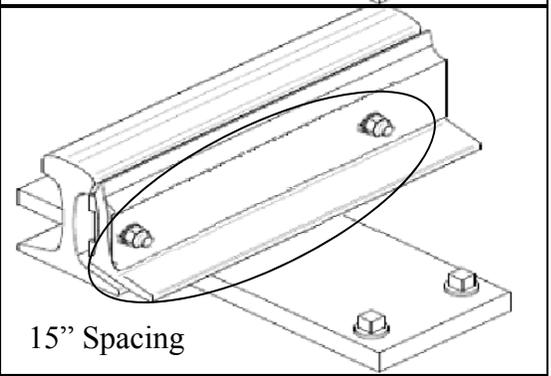
**1) Bolt Spacing (on Switch Point)**

Measure distance between the bolts over the tie plate. How many inches apart???

- **Bolt Spacing Approximately 5"**
  - Range: 4 3/4" to 5 3/4" apart
  - Plan for CX (or CZ-5 → see page 6)
- **Bolt Spacing Approximately 10"**
  - Range: 8" - 11 7/8" apart
  - Plan for CZ-10
- **Bolt Spacing Approximately 15"**
  - Range: 12 3/4" to 16 3/4" apart
  - Plan for CZ-15



5" Spacing



15" Spacing

**Helpful Hint! Location (Page 4) & Bolt Spacing (above) are the only measurements required to choose Ekoslide Quantity and Types.**

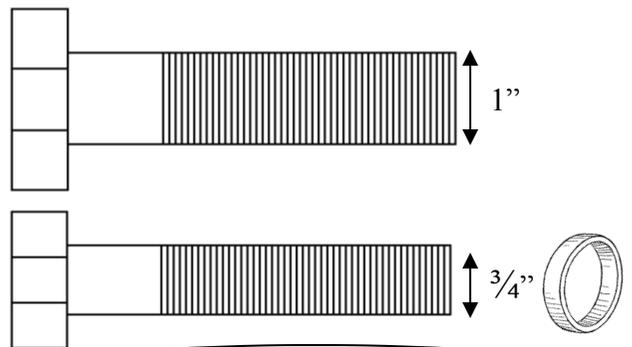
**2) Bolt Diameter and Sleeves**

Bolt holes on Ekoslides are for common bolt diameters, including 1", 7/8", 3/4", and 5/8". Sleeves included (for Ekoslide bolt holes) for 3/4" & 5/8".

- **Bolt Diameter = 3/4" OR 5/8"**
  - Use included sleeves
- **Bolt Diameter = 1" OR 7/8"**
  - No sleeves required



Sleeve



If sleeves needed, insert in Ekoslide bolt holes

**3) Bolt Length:** The back plates of Ekoslide are 1/2" or 5/8" thick (depending on type), which means they require an extra 1/2" or 5/8" of bolt length. In many cases, bolts are already long enough. If not, longer bolts (up to 1/2" or 5/8") or thinner washers may be required. See Page 6 for back plate thickness of each type.

**4) Hexagon Nuts (for the Bolts):** Hexagon nuts are highly recommended for the installation as they provide more space for sockets and wrenches than square nuts.

## Step 4: Ekoslide Types

### Determined by LOCATION and BOLT SPACING

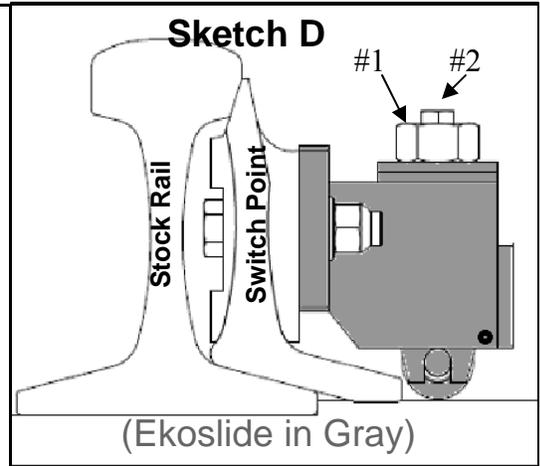
Based on the recommended quantity (Page 4) and bolt spacing (Page 5), choose the Ekoslide Types most appropriate for your switch. The four basic Ekoslide Types are listed below:

	<p><b>EKOSLIDE Type “CX” and Type “CZ-5”</b></p> <ul style="list-style-type: none"> <li>• Holes =&gt; 1 5/8” Wide, 5 1/4” Apart (center to center)</li> <li>• Slotted Holes for 4 3/4” to 5 3/4” Bolt Spacing</li> <li>• Back Plate Thickness =&gt; 1/2”</li> <li>• Bolts =&gt; 1” Diameter (or 3/4” with sleeves)</li> </ul> <p><b>What is the difference between CX and CZ-5?</b>            CX is used most often and is the <u>default</u> type (made for ABR drillings 2 5/8” and over). CZ-5 is an exception type made for low-bolt elevations (under 2 1/2” ABR drillings). CZ-5 is used for UP/BN/KCS “common standard” turnouts but <u>ONLY</u> at the first location. Starting in 2016, CZ-5 is GREEN in color.</p>
	<p><b>EKOSLIDE Type “CZ-10”</b></p> <ul style="list-style-type: none"> <li>• Holes =&gt; 3 1/4” Wide, 10” Apart (center to center)</li> <li>• Slotted Holes for 8” to 11 7/8” Bolt Spacing</li> <li>• Back Plate Thickness =&gt; 1/2”</li> <li>• Bolts =&gt; 1” Diameter (or 3/4” with sleeves)</li> <li>• Ekoslide color is gray in drawing</li> </ul>
	<p><b>EKOSLIDE Type “CZ-15”</b></p> <ul style="list-style-type: none"> <li>• Holes =&gt; 3 1/4” Wide, 14 3/4” Apart (center to center)</li> <li>• Slotted Holes for 12 3/4” to 16 3/4” Bolt Spacing</li> <li>• Back Plate Thickness =&gt; 5/8”</li> <li>• Bolts =&gt; 1” Diameter (or 3/4” with sleeves)</li> <li>• Ekoslide color is gray in drawing</li> </ul>

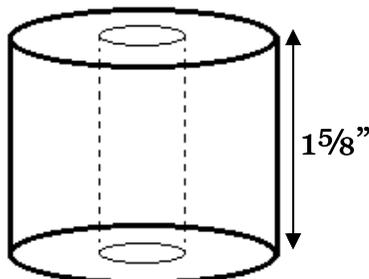
# Step 5: Checking Ekoslide Height

**(Ignore this page if NO height issues exist)**

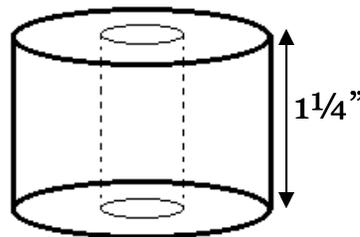
1. In most cases, Ekoslides have the correct height by default. The Ekoslides are pre-adjusted for the most common bolt heights in North America.
2. To check, reverse the Ekoslides all the way out of adjustment if they are not already. Simply loosen the top nut (#1 in Sketch D) and turn adjustment bolt (#2 in Sketch D) all the way counter-clockwise.
3. Line up the bolt holes on the Ekoslides to ensure that their bolt holes line up at the same height as the bolt holes on the switch point, as the bolts must go thru the switch point holes and the Ekoslide holes.
4. If the height is OK, continue with Step 5 (Attaching the Ekoslides) on the next page. Otherwise, continue with the Elastomer information listed below.
5. The “Elastomer” is the red bushing inside the roller that serves as the spring mechanism. Check the Elastomer size. There are three Elastomer variations:
  - “Regular” Elastomer => 1 5/8” Height
  - “Short” Elastomer => 1 1/4” Height
  - “Split” Elastomer => Allows for Either 1 5/8” or 1 1/4” Height
6. The Regular Elastomer will accommodate most installations.
7. The Short Elastomer is commonly required for installations on the first tie plate, as many standards call for the bolts over the first tie to be lower. (Though possible to be needed for other applications, it is uncommon.)
8. The Split Elastomer is in testing and will replace the Regular & Short Elastomers starting in 2012. It comes in two pieces, so the user can stack the pieces or remove the thinner part as needed to convert between the heights of “Regular” & “Short” Elastomers. See diagrams below.



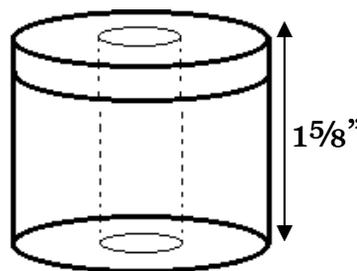
**REGULAR ELASTOMER**



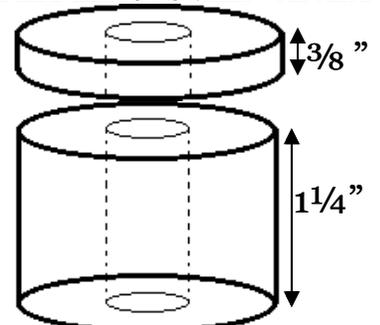
**SHORT ELASTOMER**



**SPLIT ELASTOMER - TOGETHER**



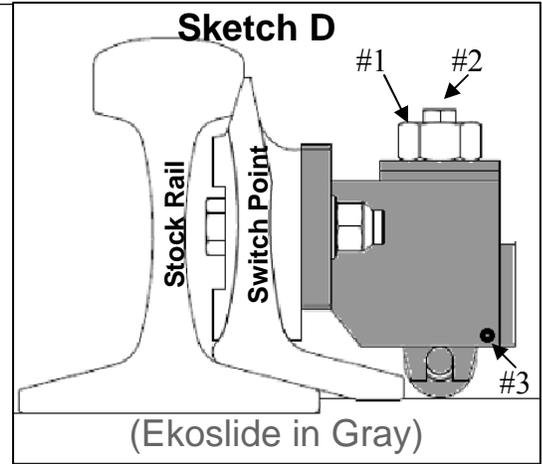
**SPLIT ELASTOMER - APART**



## Step 6: Attaching the Ekoslides

### The Basic Installation:

1. Clean any build-up off the tie plates using a switch broom. Only the tie plates identified for the rollers need to be cleaned off (unless build-up is enough to impede switch movement).
2. Ekoslides **MUST** be installed on **BOTH** sides of the switch point (see “Location” diagrams on Page 2) using the correct number of pieces.
3. Install on the side of the switch in open position, starting from the front. Throw switch and repeat on other side (now open side) of switch.
4. Remove the existing bolts (or rivets) from the holes on the switch point being used for Ekoslide installation.
5. Back the Ekoslides all the way out of adjustment if they are not already. Simply loosen the top nut (#1 in Sketch D) and turn adjustment bolt (#2 in Sketch D) all the way counter-clockwise.
6. Mount the Ekoslides by inserting a bolt in each of the two existing holes in the switch point and then securing with a washer and nut. (See Note below.)
7. Ensure that the Ekoslides are level with the switch point as they are tightened into place. If they are not balanced, roller wear will be greatly increased.
8. If final Ekoslide adjustment is being done now, leave the top nuts (#1 in Sketch D) loose until after adjustment (as described on the following page). If adjustment will be at a LATER date, be sure top nuts are tightened down.
9. To allow for maximum adjustment in the future, remove the plastic security pin (#3 in Sketch D) by tapping the side of the pin that has a star-lock washer. This step is not required but advised, especially for ABR drilling exceeding 3”.



**Helpful Hint!** The installation does NOT need to be completed all at once, so traffic does NOT have to be stopped. However, it is important to keep each Ekoslide out of adjustment until all Ekoslides have been attached. See Step 5 above.

### **Note: Cotter Pins and Lock Nuts**

The use of cotter pins or lock nuts is recommended for the bolts used to mount the Ekoslides (referring to Step 6 above). Follow the required practices of your company for securing your installation bolts.

## Step 7: Adjustment

### Check EKOSLIDE adjustment:

(a) At the time of installation

(b) After tamping

(c) After switch maintenance (e.g. switch stand change)

(d) Quarterly to semi-annually (depending on use)

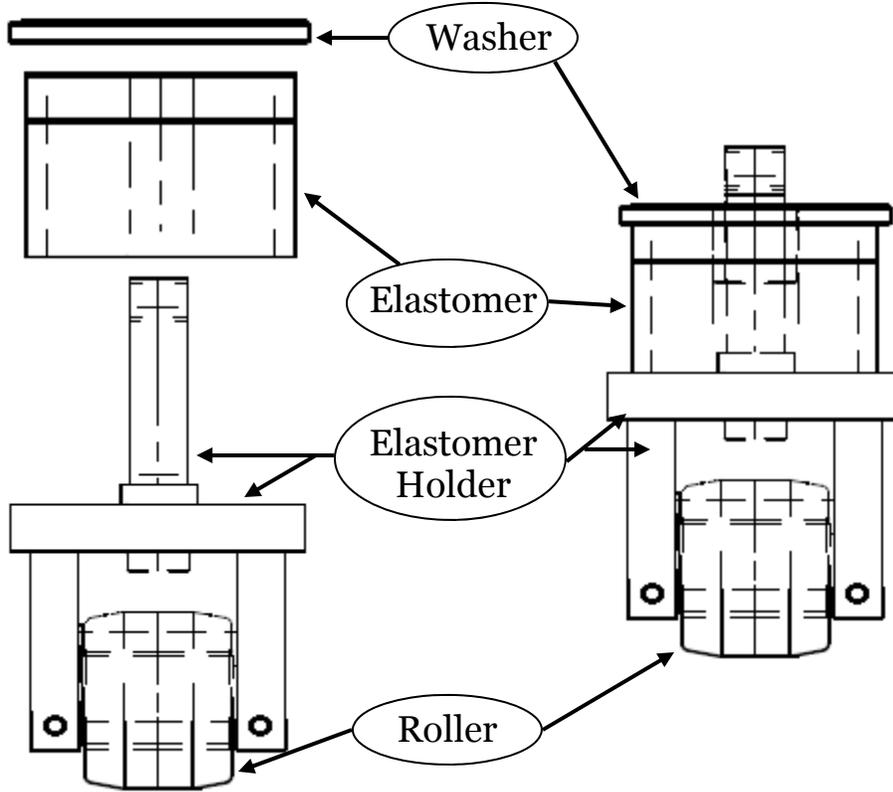
**Helpful Hint!**  
**Adjustment Videos on the Web:**  
[www.youtube.com/ekoslide](http://www.youtube.com/ekoslide)

- 1) Installation of EKOSLIDE is done on the side of the switch in the open position.  
Adjustment of EKOSLIDE is performed on the side of the switch in the closed position, **starting from the front of the switch to the back.**
- 2) Remove the top nut (36mm = 1<sup>3</sup>/<sub>8</sub>"") of the EKOSLIDE (#1 in Sketch D below) in order to have access to the adjustment bolt (#2 in Sketch D below).
- 3) Turn the adjustment bolt (#2 in Sketch D below) clockwise with a wrench (17mm = 11<sup>1</sup>/<sub>16</sub>"") or Allen key (size 8 = 5<sup>1</sup>/<sub>16</sub>"") to lift the switch point 2mm off the tie plate. Measure using the yellow gauge (#4 in Sketch E below) shown in Detail A below. (1 gauge step = 1 mm)
- 4) If all ties are not level, you may already have 2mm clearance over a particular tie plate. If so, turn adjustment bolt until it is applying pressure and lifting 1mm above starting height.
- 5) Throw switch. Repeat Steps 3 & 4 on the other side (newly closed side) of the switch.
- 6) After adjusting all EKOSLIDES, ensure that the front rollers are still at 2mm height and not more. The front *could* have been lifted over 2mm when the back of switch was adjusted.
- 7) Ensure there is no friction between the tie plates and switch tongue when throwing the switch. This includes ALL tie plates with and without the rollers.
  - Too Little Height: Height may not be 2mm across entire switch, so ensure switch point is not rubbing on any of the plates. If so, increase the height of the roller nearest that plate.
  - Too Much Height: Conversely, it is OK if there is more height than 2mm on a tie plate without rollers, as long as the tie plates with rollers have the proper adjustment.
- 8) Check adjustment after throwing switch back and forth two or more times to verify.
- 9) Finally, put the top nut (#1 in Sketch D below) back in place and tighten.

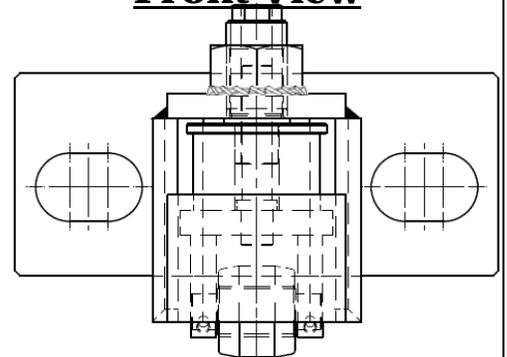
<p><b>The adjustment process only takes 5 - 10 minutes per switch.</b></p> <p><u>For Max Height Adjustment:</u>                  Remove the plastic security pin (#3 in Sketch D) by tapping the side of the pin that has the star-lock washer. This step is not required but advised, especially for ABR drilling exceeding 3". The pin may be left in place if there is no interference.</p>	<p><b>Sketch D</b></p> <p>(Ekoslide in Gray)</p>	<p><b>Detail - Sketch E</b></p>
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**Appendix 1: Parts & Assembly**

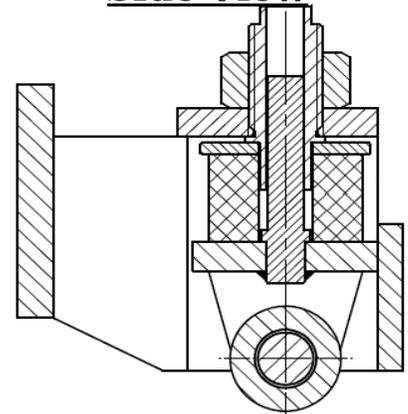
**Spring Pocket Assembly**



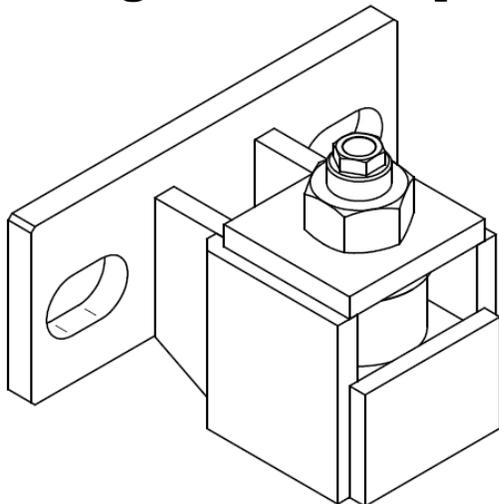
**Assembly in Frame Front View**



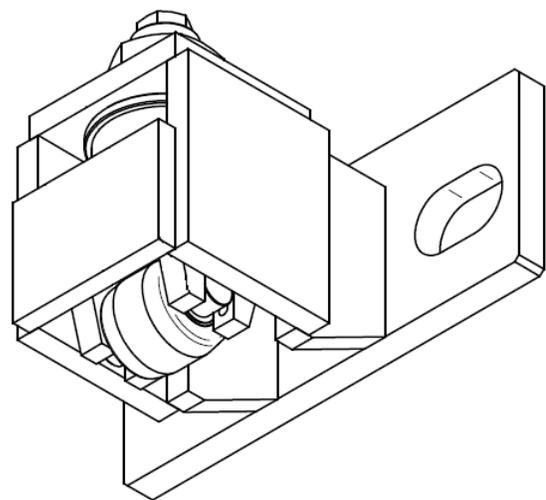
**Assembly in Frame Side View**



**Angled View of Top**



**Angled View of Bottom**



## **Appendix 2: Frequently Asked Questions (FAQ)**

### **1. How long does it take to install Ekoslides?**

A crew with previous Ekoslide experience and the correct tools can perform a complete Ekoslide installation in 1/2 hour to an hour, depending on track conditions. Typically, the older the switch, the longer installation could be.

### **2. Do the Ekoslides require any lubrication?**

No, Ekoslides have a special plastic seal within their roller that serves as the lubricant. No lubricant should be applied to the Ekoslides, and in addition, no lubricant should be put on the tie plates after Ekoslide installation.

### **3. What about cold weather? Snow and ice?**

Ekoslides have been installed throughout Northern Europe, Canada, and even Siberia. Ekoslides have more experience in cold weather than any other climate.

### **4. Can Ekoslides be installed in wet applications, such as ports and tunnels?**

Yes, Ekoslides are far superior to traditional lubricants in wet areas and are already being utilized for just this purpose in many places.

### **5. Do I need special tie plates?**

No, the best tie plates for installation are long, flat standard plates. Ekoslides require a flat surface for the movement of their rollers.

### **6. Why don't Ekoslides come up with bolts?**

Ekoslide has many customers, and most have different bolt suppliers and various bolt requirements. It is not possible to pre-package Ekoslides with bolts that meet all customers' requirements. However, agreements with third-party companies have been reached to create bolts kits for certain high-volume customers.

### **7. May I use the existing bolts in the switch?**

Existing bolts can be used for installation if they are long enough. Ekoslides require an extra 1/2" or 5/8" of bolt length. In many cases, bolts are already long enough. If not, longer bolts (up to 1/2" or 5/8") or thinner washers may be required.

### **8. There is a spike in the way of the roller. What do I do?**

Most customers are allowed to remove a spike in order to have the rollers fit, particularly if there is another available spike hole on the plate. Check with your local engineering contact or Ekoslide point person.

### **9. Ekoslides are adjusted properly. Why is the switch is still hard to throw?**

The most likely culprit is the connecting rod near the switch stand (or machine). Ensure that top of the rod is not rubbing against the bottom of the stock rail. If so, the rod may need to be re-adjust slightly to lower it away from the stock rail.

### **10. Won't I hurt the switch by raising the point 2mm?**

No, the Elastomer is a spring which is compressed when the weight of the train hits the switch. The adjustment height drops to zero, and the switch point will rest across all the tie plates when under pressure, just like the switch is designed.

### **11. Will Ekoslide or any parts ever wear out?**

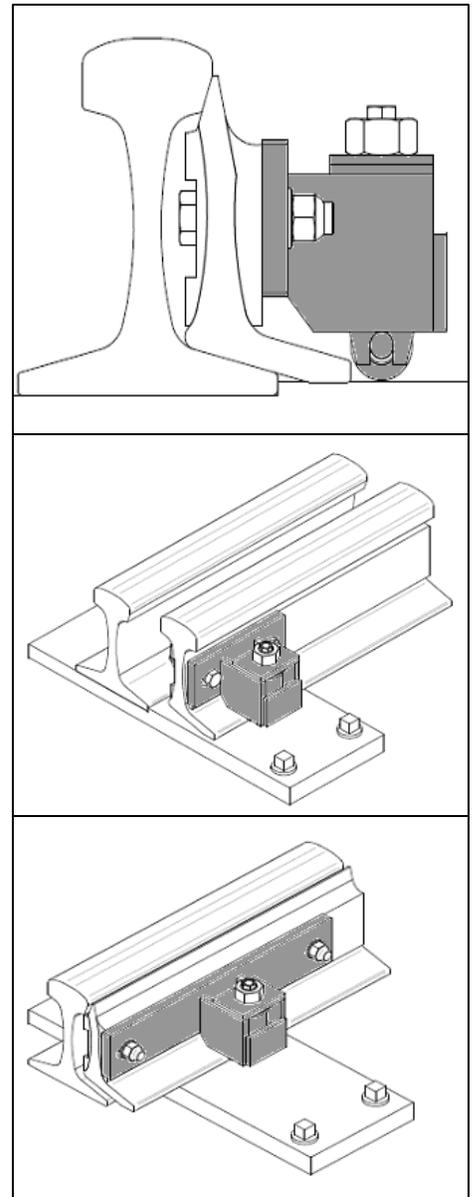
Use the drawings on Page 10 for reference. The roller takes the most pressure and should be the first part checked for wear. The Elastomer and its holder will also wear out after a number of years. The frame will last the lifetime of the unit.

## Why Use Ekoslide?

- Eliminates Need for Lubrication
- Environmentally-Friendly
- Prevents Switch Failure
- Stops Traffic Errors
- Extends the Life of Switch Motors
- Electricity Savings
- Improves Safety (with fires & labor on-track)
- Reduces Risk of Injury (back/workers comp)
- Reliable in ANY Weather or Environment

## Economic Benefits

- Savings on Lubrication
  - Lubricant, Tools, Labor, & Clean-Up
- Savings on Switch Failures
  - Prevents Train Delays & Labor Cost
- Savings on Switch Motors
  - Greatly reduces strain on motors
- Savings on Traffic Errors
  - Speeds up & improves switch throws
- Savings on Electricity
  - Decreases power & related costs



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US Patent: 8,430,364  
PCT Pat: US2012/062076  
EUR Patent: 0700474  
CZ Patent: 279264