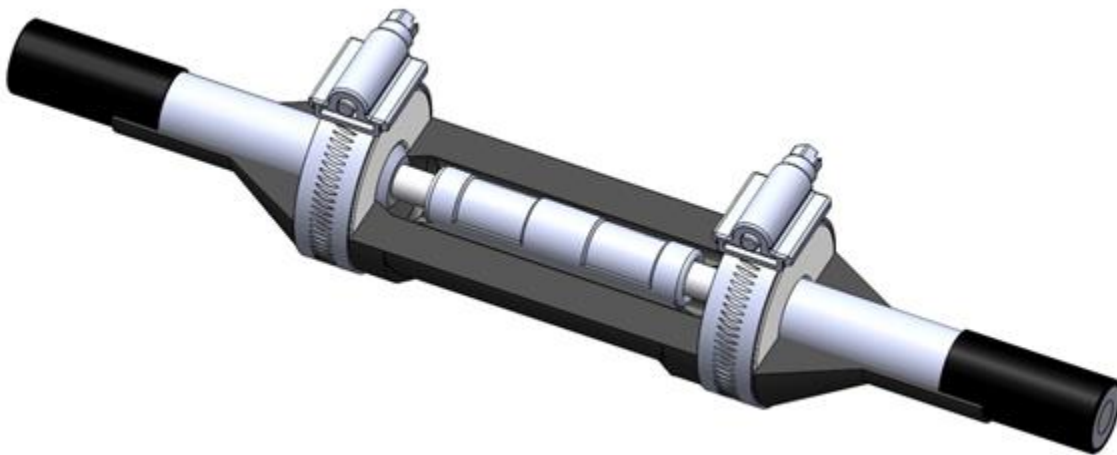


## Rejuvenation Instructions

### #531 – 200A Splices – UPR



#### This NRI covers the following:

- How to use 200amp pre-molded splices for injection.
- How to install and re-inforce a splice for injection.
- How to size the preferred splice housings to match the cable system.

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**WARNING:** It is dangerous working around energized high-voltage systems, pressurized systems, and chemicals. Always work in accordance to the Novinium Field Operations Safety Handbook (FOSH) or other local governing safety standards.

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## Introduction

### 1. Applications.

- 200amp splices are used for small diameter cables only.

### 2. Pressure rating.

Size	New and/or Reinforced Splices	Unreinforced (Old) Splices
#2awg and smaller	30psi	<25psi*
#1, 1/0 and 2/0	25psi	<20psi*
3/0 and larger	20psi	<15psi*

**Table 1:** Pressure ratings.

- \*Pressure rating of an existing and unreinforced splice is determined on a case by case basis.
- The pressures provided are typically based on field experience and are intended to help the technician know where to start the pressure test.

### 3. Limitations

- All splices must be pressure tested before injection to test for leaks.
  - If a splice leak is not detected during the pressure test, the injection fluids can carry conductive contaminants across the insulating interface between the cable and splice body. These contaminants can cause the splice to fail.
- All splices must be flow tested prior to injection to test for blockages.
- Splices that are identified as “blocked” through the flow test must be replaced, or the cable must be abandoned.
  - Attempts to slide a pre-molded splice body and clear the blockage will contaminate the insulating interface and cause the splice to fail.

#### 4. Required equipment.

Installing New Splices	Reinforcing Existing Splices
<ul style="list-style-type: none"> <li>● Splice housing and connector.</li> <li>● Reinforcement method:               <ul style="list-style-type: none"> <li>○ House clamps</li> <li>○ Zip ties</li> <li>○ Heat-shrink sleeve</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>● Reinforcement method:</li> <li>● House clamps</li> <li>● Zip ties</li> <li>● Heat-shrink sleeve</li> </ul>

**Table 2:** Required equipment.

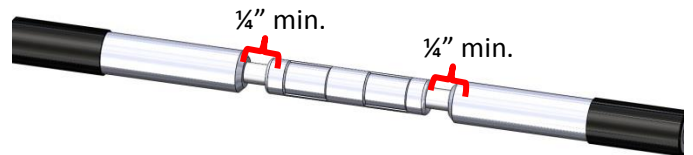
## Installing 200A Splices

It is always preferred to install a new splice housing to ensure proper craftwork and reinforcement than to simply add reinforcement to an existing splice. When this is not possible, proceed directly to Step 3 to re-inforce the splice for the injection.

The instructions included with the splice from the manufacturer must be followed. Also adhere to the following steps to improve the splice’s injection capability.

### 1. Prepare the cable.

- a. Follow the manufacturer's instructions to prepare the cable.
- b. Add enough length to the insulation cut-back to create a 1/4" gap between the connector and the insulation after crimping.
- c. Lightly lubricate the cable’s insulation prior to pushing the splice onto the first cable. Do not apply grease to the inside of the splice body as this may accumulate in the gap and block flow.

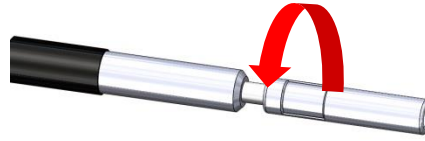


**Figure 1:** Finish the insulation with a smooth and square edge.

### 2. Install the connector and splice housing.

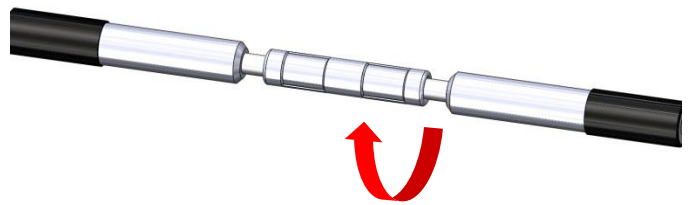
- a. Before crimping the connector onto the conductor, remove most of the corrosion inhibitor from the connector (leave a thin coating).

- b. Crimp the connector onto the first cable and clean any excess corrosion inhibitor from the strands in the gap.
- c. Before crimping the connector onto the second cable, twist the connector about 30° or about twice what is needed to straighten the strands.



**Figure 2:** Install the connector onto the first cable.

- d. Crimp the connector to the second cable and clean any excess inhibitor from the strands.
- e. Twist the connector back to straighten the strands on both sides of the connector. This twisting will open the strands on both sides of the connector and greatly improve the flow path.



**Figure 3:** Install the connector onto the second cable.

- f. Lightly lubricate the cable’s insulation prior to pushing the splice into the final position. Do not apply grease to the inside of the splice body as this may accumulate in the gap and block flow.

### 3. Reinforcement for injection.

All splices that can be accessed must be reinforced with one of the three following methods:

#### Hose Clamps

- a. Place two hi-torque hose clamps on the thick part of the splice near the taper.
- b. Place a third hi-torque hose clamp close to the center of the splice.
- c. Snug all three clamps but do not cause the splice body to deform.



**Figure 4:** Reinforce the splice with three hose clamps.

#### Hose Clamps & Zip Ties

- a. Place two hi-torque hose clamps near the taper as described above.
- b. Use zip ties to reinforce the center of the splice.
- c. Use pliers to pull the zip ties snug but do not deform the splice housing.
- d. The combined width of the zip ties must equal at least ½”.

e. If the zip ties provided with segment tags are used, a minimum of three hose clamps are required.

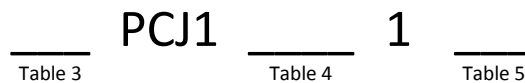
**Heat-Shrink Sleeve**

- Some customers require a heat-shrink sleeve be placed over all pre-molded splices to ensure that the cable and jacket remain sealed against water intrusion.
- In this case, the heat-shrink sleeve may be used to reinforce the splice in place of hose clamps (and zip ties).

**Sizing Instructions**

**1. Standard-length splice housings.**

- The preferred splice housing for URD cables is the Elastimold PCJ1-series, which is available in 15, 25 and 35kV ratings.
- The PCJ1 series splice has a clover-shaped internal cavity for the connector that provides an ample fluid passageway around the connector.
- Other splice housings use different methods for contacting the connector that may restrict or block flow.
- It is always recommended to use the Elastimold PCJ1 series splice when allowed by the customer.
- Use the follow part number key and tables below to size the PJC1 series splice for the cable system.



Voltage	Code
15kV Class	15
25kV Class	25
35kV Class	35

**Table 3:** Voltage class.

Insulation Dia.	15PCJ1-	25PCJ1-	35PCJ1-
.640”-.820”	F		
.760”-.950”	G	G	
.850”-1.050”	H	H	H
.980”-1.180”	J	J	J
1.090”-1.310”		K	K

**Table 4:** Insulation diameter.

Conductor Size	Conductor Strands	
	Compressed	Compact
#2	220	210
#1	230	220
1/0	240	230
2/0	250	240
3/0	260	250
4/0	270	260

**Table 5:** Conductor size.

## 2. Repair-length splice housings.

- Repair-length splice housings that are compatible with injection are available in the 15kV and common sizes of the 25kV and 35kV ranges.
- These splices are made by 3M and can be ordered by referencing the following sizes.

Conductor Size (AWG)	3M Part No. (Insulation Dia.)		
	15kV	25kV	35kV
#2	5411R-CIR-2 (.637"- .900")	5451R-CIR-21A (.870-1.055")	
#1	5411R-CIR-21 (.637"- .900")	5451R-CIR-21A (.870-1.055")	
1/0	5411R-CIR-1/0 (.637"- .900")	5451R-CIR-1/0A (.870-1.055")	5461R-CIR-1/0A (1.000"-1.150")
2/0	5412R-CIR-2/0 (.870"-1.055")		
3/0	5412R-CIR-3/0 (.870"-1.055")		
4/0	5412R-CIR-4/0 (.870"-1.055")		

**Table 6:** Repair-length splice kits.