



## JOINING MULLION ASSEMBLY INSTRUCTIONS FOR 2-WAY, 3-WAY AND 4-WAY JOINTS FOR 350 SERIES WINDOW WITH BLOCK FRAME

*Be sure to thoroughly read and understand all the steps before beginning the mullion assembly process. It is recommended this process be completed by a construction professional.*

### YOU WILL NEED TO SUPPLY:

- Pella® SmartFlash™ foil backed butyl window and door flashing tape or equivalent
- High quality exterior grade polyurethane or silicone sealant (1 tubes per window)
- Isopropyl Alcohol

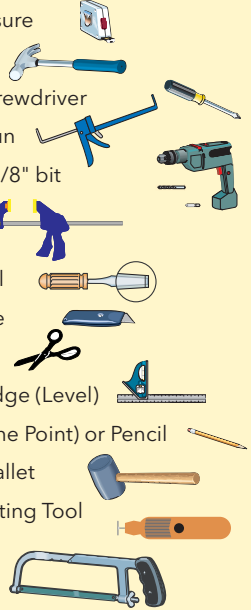


### MULLION KIT, PARTS INCLUDED:

- (1) 1/2" or 1" Aluminum Mullion Reinforcement bar with foam tape applied
- (2) End clips
- (2) 1/2" or 1" Vinyl mullion covers
- (2) 1/2" Foam backer plugs
- (2) 1" Foam backer plugs
- (16) #10 x 3/8" Flat Head screws
- OPTIONAL: (2) 14 gauge x 4" Stainless steel mullion reinforcements

### TOOLS REQUIRED:

- Tape measure
- Hammer
- Phillips Screwdriver
- Sealant Gun
- Drill with 1/8" bit
- Clamps
- 1/4" Chisel
- Utility knife
- Scissors
- Straight Edge (Level)
- Marker (Fine Point) or Pencil
- Rubber Mallet
- Rotary Cutting Tool
- Hacksaw



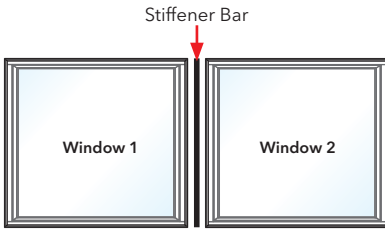
### REMEMBER TO USE APPROPRIATE PERSONAL PROTECTIVE EQUIPMENT

# 1 PREPARE THE WINDOWS

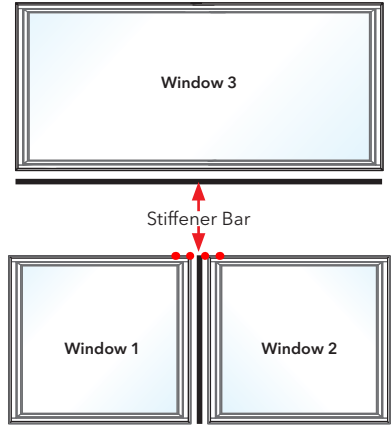
- Remove the packing material from the windows.** Inspect product; DO NOT mull or install damaged windows.
- Lay out the windows on a flat surface with exterior side up** in the intended mullion assembly position(s). Place a mark on the jamb on the sides to be combined.
- Make sure any fixed windows are in the correct orientation** by matching alignment of glazing beads (exterior glazing stops). The horizontal glazing beads run through to the corners.
- 4-Way Joints Only:** Select equal window frame widths + or - 1/32" (no more than 1/16" difference) for center sub-assemblies. (Example: 4-Way Joint (with 6 windows) units #5 and #6 (see next page), it is critical they be the same width.

# 1 PREPARE THE WINDOWS (CONTINUED)

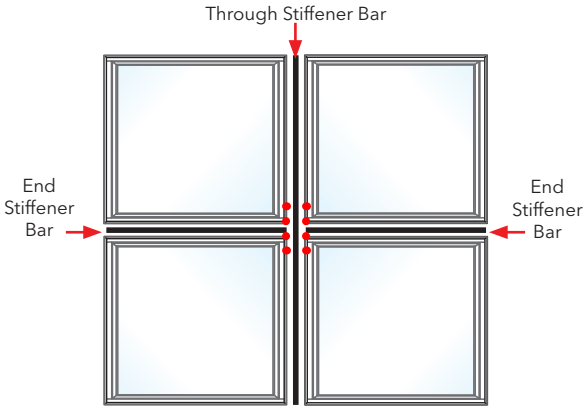
## 2-Way Joint



## 3-Way Joint

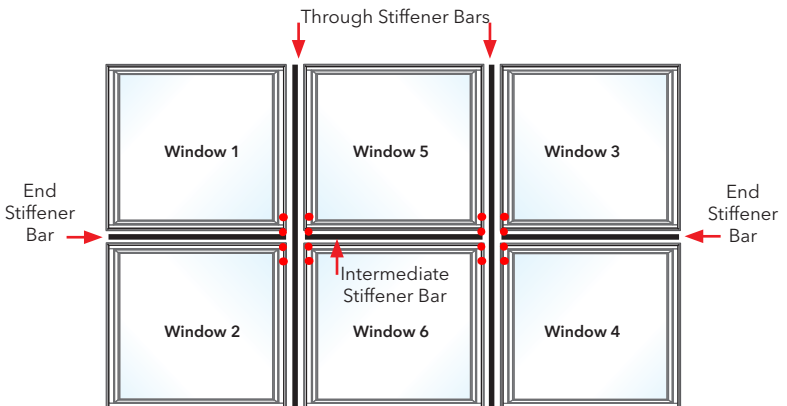


## 4-Way Joint



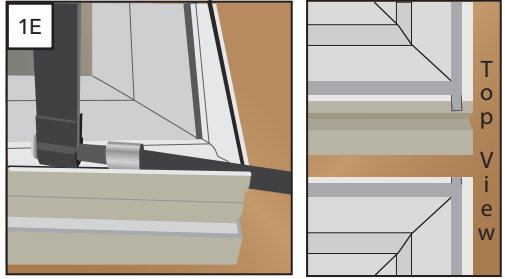
•••• = Notch cut out of accessory grooves for mullion cover installation.

## 4-Way Joint (6-Windows)



# 1 PREPARE THE WINDOWS (CONTINUED)

- E. **3-Way and 4-Way Joints only:** Use a hacksaw to cut a notch out of the exterior accessory grooves on the sides of the windows to be mullied. These notches run parallel to the stiffener bar and will allow the mullion covers to be installed in step 3H.



- F. **Turn all units over so the interior side is up.** Make sure to place them in the correct orientation for the combination assembly.

- G. **3-Way and 4-Way Joints only:** Use a hacksaw to cut a notch out of the interior accessory grooves on the sides of the windows to be mullied. These notches run parallel to the stiffener bar and will allow the mullion covers to be installed in step 2L.



- H. **Clean out recessed slots for all windows to be mullied** to provide clearance for through bar end splice installation using a hacksaw or chisel.

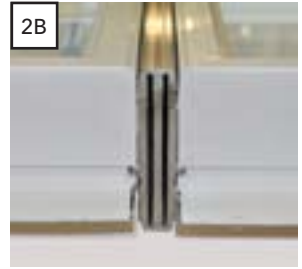


- K. **If not using a kit with parts pre-cut to length,** cut the stiffener bars and mullion covers as follows:

Through Stiffener Bar(s) = Overall Mull Length - 3/4" Intermediate and End Stiffener Bar(s) = Mull length - 3/4" Steel Reinforcement bar(s) = Mull length - 6"		Key: FW-Frame Width CW-Combination Width FH-Frame Height CH-Combination Height	
MULL COVERS:	2-WAY JOINTS	3 WAY JOINTS	4-WAY JOINTS
Block Frame (Interior and Exterior)	<ul style="list-style-type: none"> <li>Vertical Through Cover = FH - 7/16"</li> <li>Horizontal Through Cover = FW - 7/16:</li> </ul>	<ul style="list-style-type: none"> <li>Horizontal Through Cover = CW - 7/16"</li> <li>Vertical End Cover = FH - 17/32"</li> </ul>	<ul style="list-style-type: none"> <li>Vertical Through Cover = CH - 7/16"</li> <li>Horizontal End Cover = FW - 17/32"</li> <li>Horizontal Intermediate Cover = FW - 19/32"</li> </ul>

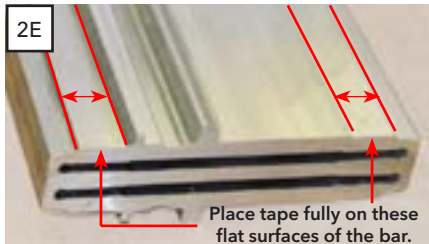
# 2 INTERIOR 2-WAY MULLION ASSEMBLY, PLUS 3-WAY AND 4-WAY MULLION SUB-ASSEMBLY

- A. **Clean the sides of all the windows** to be mullioned to which the stiffener bar(s) will be applied. Wipe the frame jambs down with Isopropyl Alcohol to remove dirt or debris.
- B. **Dry fit all the applicable stiffener bars between the windows to be mullioned.** Make sure the windows fully contact the stiffener bar. Along the length of the windows at the mullion joint. If not, remove stiffener bar and inspect the frames. Remove material as needed and test fit again. If using a mullion kit with tape applied stiffener bars included, proceed to step 2F.



## If using lineal length Stiffener Bars:

- C. **Cut all needed stiffener bars** to length at frame dimension - 3/4".
- D. **Clean both sides of the stiffener.** Wipe the bar and frame jambs down to remove any dirt or debris with a paper towel or cloth and Isopropyl Alcohol.
- E. **Apply two strips of adhesive tape** on the flat surfaces as shown to each side of the stiffener bar. Make sure the tape is applied the full length of the bar. Be sure to press the tape to the surface of the bar along the length of the bar to ensure good adhesive contact.

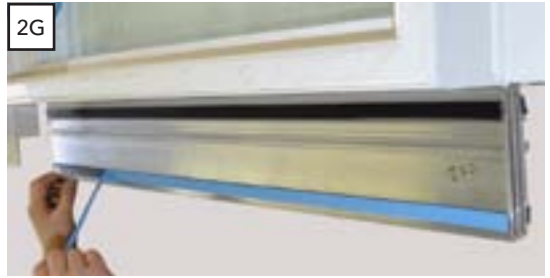


- F. **Place a mark 3/8"** from the end of jamb on one of the windows to mark the correct location of where to apply the stiffener bar.



## 2 INTERIOR 2-WAY MULLION ASSEMBLY, PLUS 3-WAY AND 4-WAY MULLION SUB-ASSEMBLY (CONTINUED)

- G. Remove the release paper from the two strips of tape on one side of the bar.



- H. Install stiffener bar to first window. With the exposed tape toward the window, align one end of the bar with the mark on the frame and attach the bar to the window. Press bar firmly against the window.



- I. Align the second window with the first and remove the tape release paper from the other side of the bar.



## 2 INTERIOR 2-WAY MULLION ASSEMBLY, PLUS 3-WAY AND 4-WAY MULLION SUB-ASSEMBLY (CONTINUED)

- J. Use a straight edge to ensure window alignment and install the second window to the first window and the stiffener bar.

**Note: If assembling 3-Way or 4-Way combination, it is critical the sides where the other unit(s) will be mullied is straight and the edges of the units are aligned.**



**Note: Clamps should be used to help draw the mullion joint together and ensure adequate tape adhesion.**



- K. Repeat 2G- 2J on Window 3 & Window 4 (and other sub-assemblies as needed).

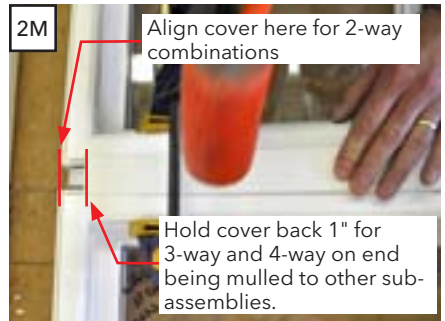


# 2 INTERIOR 2-WAY MULLION ASSEMBLY, PLUS 3-WAY AND 4-WAY MULLION SUB-ASSEMBLY (CONTINUED)

- L. **Notch the legs** (if needed) at each end of all the mullion covers (interior and exterior) at a 45° angle as shown.



- M. **Install the mullion cover.** Align one end of the cover with the inside edge of the accessory groove and install the cover by inserting the legs of the cover into the accessory grooves of the two windows. If needed, use a rubber mallet to seat the cover, along the length of the mullion joint.



**2-Way Joints:** Tap on the cover end to adjust position of cover as needed.

**3-Way and 4-Way Joints:** Hold the cover back 1" from where the center intersection joint will be to allow for sealant injection in a later step.

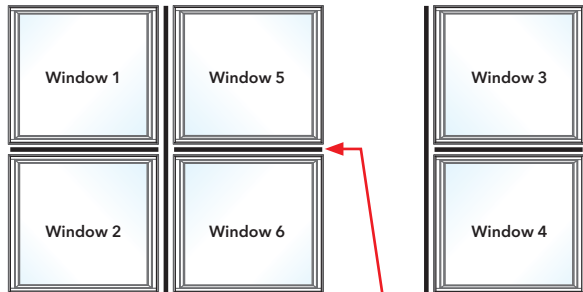
**6 window composites:** do not install the mullion cover between units 5 & 6 unit after Step 3F.



- N. **4-Way Joint**

(6 Window Assemblies only): **If Required** (see ADM Mullion Load Chart) - Insert steel reinforcement plates into the intermediate bar between Window #5 and Window # 6 before attaching the next sub assembly. Repeat 4A - 4J with the next sub-assembly.

## 4-Way Joint (6-Windows)



Insert steel reinforcement plates into the Intermediate bar before attaching last through bar and sub assembly.

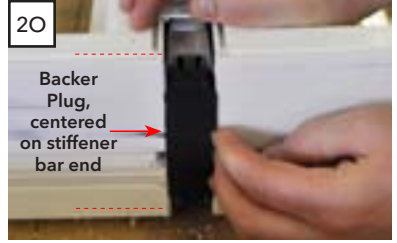
# 2 INTERIOR 2-WAY MULLION ASSEMBLY, PLUS 3-WAY AND 4-WAY MULLION SUB-ASSEMBLY (CONTINUED)

- . Install Backer Plugs centered as needed on the ends of the sub-assembly stiffener bars.

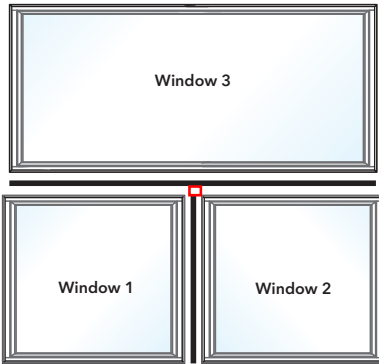
**3-Way Combination:** Install backer plug centered on the end of the stiffener bar of the sub-assembly combination that will be assembled to the other window in the combinations. Inject sealant in 4 places around backer plug as shown. Go to Step 3.

**4-Way Combination:** Install backer plug centered on the end of the stiffener bar of the sub-assembly combination that will be assembled to the other window in the combinations. Inject sealant in 4 places around each backer plug as shown.

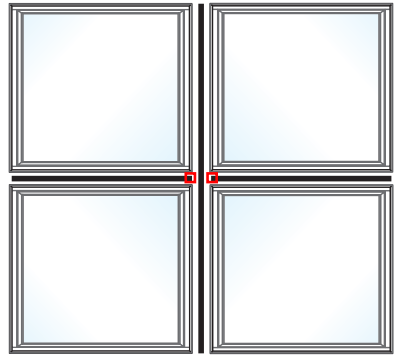
**Note: On 6 Window assemblies center sub-assemblies (Windows #5 and #6) install a backer plug on both ends of the stiffener bar. Inject sealant in 4 places around each backer plug as shown. Go to Step 3.**



**3-Way Joint**

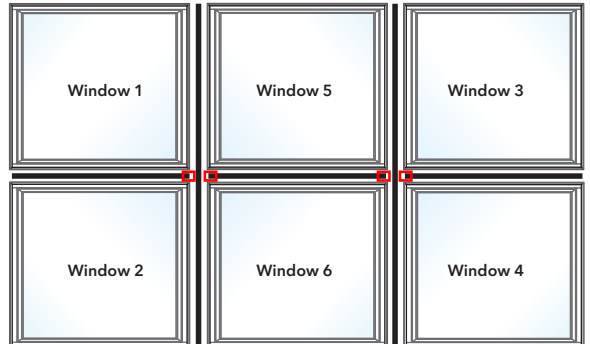


**4-Way Joint**



**4-Way Joint (6-Windows)**

□ = Plug centered on stiffener bar end



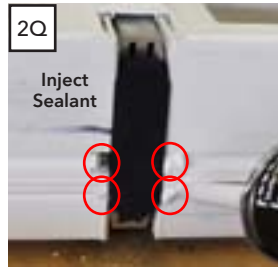


## 2 INTERIOR 2-WAY MULLION ASSEMBLY, PLUS 3-WAY AND 4-WAY MULLION SUB-ASSEMBLY (CONTINUED)

- P. **Test Fit the stiffener through bar.** Place the stiffener through bar along the assemblies to make sure it makes contact along the sides of each assembly. If needed, use a chisel to remove any excess material.



- Q. **Inject sealant in 4 places** around each backer plug as shown.



## 3 3-WAY AND 4-WAY THROUGH BAR ATTACHMENT AND INTERIOR MULLION ASSEMBLY

- A. **Place a mark 3/8"** from the end of jamb on one of the windows to mark the correct location of where to apply the stiffener bar.



- B. **Remove the release paper** from the two strips of tape on one side of the bar.



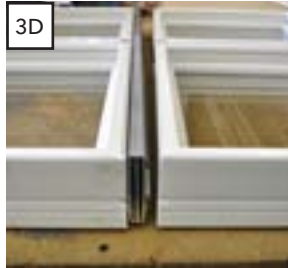
# 3 3-WAY AND 4-WAY THROUGH BAR ATTACHMENT AND INTERIOR MULLION ASSEMBLY (CONTINUED)

- C. **Install stiffener "through" bar to sub-assembly.** With the exposed tape toward the sub-assembly, align one end of the bar with the mark on the frame and attach the bar to the sub-assembly. Press bar firmly against the sub-assembly. Use clamps to help ensure tape adhesion.



Stiffener bar clamped to subassembly

- D. **Remove the tape release paper and Install the window (3-Way) or sub-assembly (4-Way) to the sub assembly with the bar.** Use a straight edge to ensure window alignment.

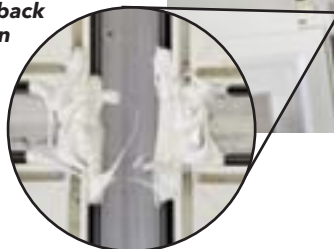


- E. Use clamps to ensure tape adhesion.



- F. **Inject sealant into intersection(s) of the combination.** Inject sealant into the gap between the sub assembly stiffener bar and the through bar. Also inject sealant on each side of the bars at approximately 1/2" in each direction.

**Note: It may be necessary to pull back the intermediate mull covers when injecting into 4-Way joints.**



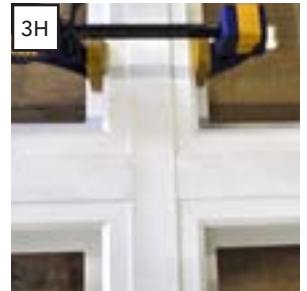
# 3 3-WAY AND 4-WAY THROUGH BAR ATTACHMENT AND INTERIOR MULLION ASSEMBLY (CONTINUED)

- G. **Apply interior through mullion cover(s).** Align one end of the cover with the inside edge of the accessory groove and install the cover by inserting the legs of the cover into the accessory grooves of the two windows. If needed, use a rubber mallet to seat the cover, along the length of the mullion joint.

**Note:** *Position clamps as needed along the length of the cover to help draw the units together and seat the cover in the accessory groove.*



- H. **Align all sub-assembly mullion covers to the through mullion cover.** Use a rubber mallet to tighten the mull covers to the through mullion cover. Seat cover end when complete. Clean off any sealant squeeze-out where the mullion covers meet.



# 4 INSTALL MULLION END CLIPS

- A. **Install steel reinforcement bar(s)** in the through mullion joint(s) and sub assembly stiffener bar(s). If the mullion assembly application requires steel reinforcement bars, insert into the slot(s) of the stiffener bar.



- B. **Install the foam plug on the end of the stiffener bar.** Remove the release paper and place the plug on the end of the stiffener bar. Align the closed end of the plug with interior face of the windows which will leave a gap toward the exterior face of the windows.



- C. **Insert end clip into the right slot on 1" stiffener bar as shown.** If needed, a mallet may be used to tap in place.



**Note: If the clip will not seat flush to the window frames, it may be necessary to remove excess material and re-install.**



## 4 INSTALL MULLION END CLIPS (CONTINUED)

- D. Install eight (8) 3/8" flathead screws in the end clip. DO NOT use screws longer than 3/8".

**NOTE: DO NOT over-tighten screws.**

- E. Repeat 4B- 4D on the end of all other mullion joint(s).



## 5 EXTERIOR MULLION COVER AND FINAL ADJUSTMENTS

- A. Turn combination over so the exterior side is up. Use care to make sure the products are held together as they are turned over.

**Note: On larger combinations, extra bracing or bar clamps may be needed to make sure the tape along the joints is not stressed.**

- B. Inject sealant into intersection(s) of the combination. Inject sealant into the gap between the sub assembly stiffener bar and the through bar. Also inject sealant on each side of the bars at approximately 1/2" in each direction.



# 5 EXTERIOR MULLION COVER AND FINAL ADJUSTMENTS (CONTINUED)

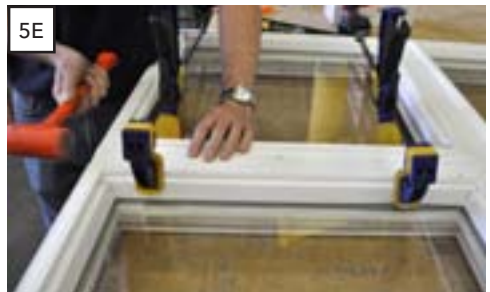
- C. Apply clamps along the through mullion joint(s) to ensure tape adhesion.
- D. Install exterior through mullion cover(s). Align one end of the cover with the inside edge of the accessory groove and install the cover by inserting the legs of the cover into the accessory grooves of the two windows. If needed, use a rubber mallet to seat the cover, along the length of the mullion joint.

**Note: Position clamps as needed along the length of the cover to help draw the units together and seat the cover in the accessory groove.**

- E. Install remaining exterior mullion cover(s). Install the cover by inserting the legs of the cover into the accessory grooves of the two windows. If needed, use a rubber mallet to seat the cover, along the length of the mullion joint. Use a rubber mallet to tighten the mullion covers to the through mullion cover. Seat cover end when complete. Use clamps as needed to help draw the units together.

**NOTE: Perform Steps 5F - 5H on all mullion joint end joints.**

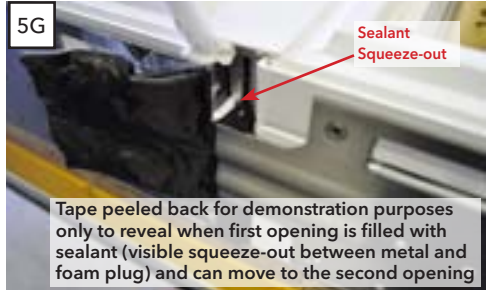
- F. Apply a 6" piece of Pella flashing tape centered over end clip as shown.





# 5 EXTERIOR MULLION COVER AND FINAL ADJUSTMENTS (CONTINUED)

G. **Inject sealant** between the flashing tape and the stiffener bar. Be sure to completely fill both openings with sealant. Fill the left opening first, followed by the second (right) opening.

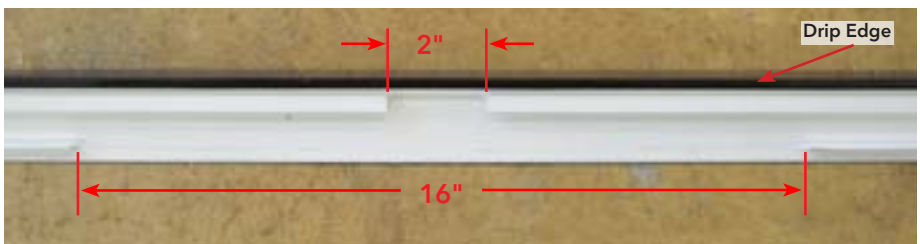
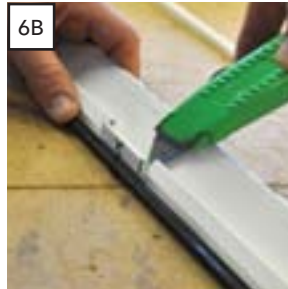


# 6 HEAD DRIP INSTALLATION

- A. **Align the head drip next to the combination head** and mark the head drip legs at each mullion joint to identify the section of the legs to be trimmed. The leg closest to the drip edge is cut to fit over the mullion joint. The other leg is cut to allow the head drip to fit over the end clip plate. Also mark to trim off  $\frac{1}{4}$ " of the legs on each end of the head drip



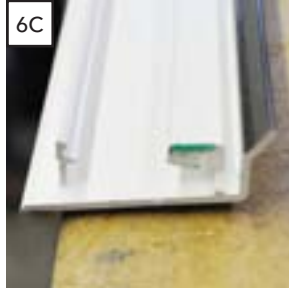
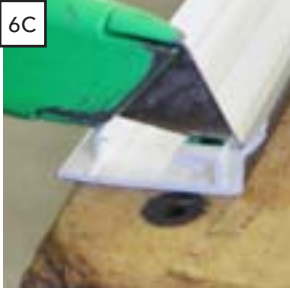
- B. **Use a sharp utility knife to cut and score each leg at the marked locations.** The marked location near the drip edge will be approximately 2" wide and the other marked location for over the end clip will be approximately 16" wide. Bend each cut and scored portion of leg over and remove.



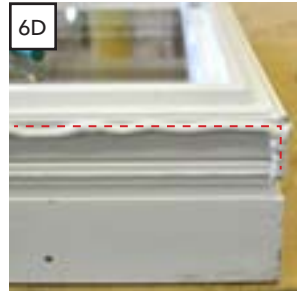
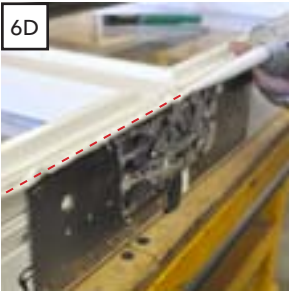
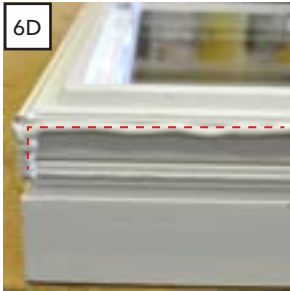


# 6 HEAD DRIP INSTALLATION (CONTINUED)

C. Use a sharp utility knife to cut  $\frac{1}{4}$ " from the legs on each end of the head drip. This will allow for clearance at the ends of the accessory groove and frame.



D. Apply sealant where the head drip will be installed along the edge of the combination and on each end as shown.

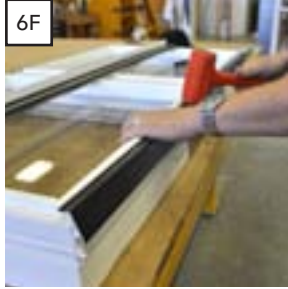


E. Align the head drip on the head of the combination, making sure the drip ends are flush with the combination.

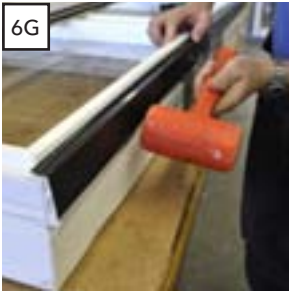


# 6 HEAD DRIP INSTALLATION (CONTINUED)

F. Tap the head drip into the accessory groove working along the length of the head drip.



G. Tap the side of the head drip into the frame groove working along the length of the head drip.



H. Place a piece of Pella® SmartFlash™ tape approximately 16" long over the head drip and onto the end clip.



**Refer to the 350 Series Combination Assemblies installation instructions to install this combination.**