

SPACER APPLICATION: KEY POINTS FOR HIGH QUALITY IG UNITS

- Application of spacer should be in clean and indoor area.
- Glass washing machine, hot press machine and spacer application table should be in the same working area
- Clean indoor space should be sufficient to stock the spacer.
- The indoor area temperature should be between 20 °C and 27 °C.
- Appropriate spacer temperature is mandatory for application quality.
- At the end of the day, the remaining spacer should be placed in the aluminum foil package and taped again.
- The water temperature of the glass washing machine should be between 50 °C and 60 °C.
 - Never add detergent, glass cleaning liquid or similar chemicals to the washing water.
 - Please be sure that glass is clean and dry after washing. Especially the corner sections should be considered.
- Spacer application tool should be adjusted to make light pressure on spacer
 - Spacer must be affixed 2-3 mm inside from the glass edge
 - Spacer should be applied 90 ° to the glass surface, not sloping.
 - The spacer should be cut straight at the end point to ensure sealing.
- Spacer end point must be cut not longer than the glass length
 - After the spacer is adhered to the first glass, the alignment pins on the table must be lifted and the second glass must be processed with the help of 90° pins.
 - Properly processed glass should be placed on the press machine with its pointed corner forward.
 - The temperature of the glass surface should be between 45 °C and 50 °C when the ready IG unit is removed from the press.
 - The conveyor speed must be adjusted according to above temperatures. This detail is very important.
 - The outgoing IG unit must be pressed straight against the spacer with the help of the teflon piece.
 - The sealing area must be tightly pressed by hand and controlled.
- Pressed IG units should be stacked on 90° angle shelves. This angle is also very important during transportation.
 - During installation IG unit in the window frame, the sealed corner must be on the top.
 - Never place the spacer boxes on their side, pay attention to the markings and warnings on the box.
 - Spacer shelf life is 2 years if keeping under suitable conditions.

SHORT TEST TO CONTROL SPACER QUALITY

- 20CM x 20CM size double glass should be produced and kept for 2 hours.
- Take a piece of ice from the refrigerator freezer, soak the surface of the glass and keep the flat edge of the ice piece on the glass for 3 minutes.
- After 3 minutes, glass should be washed again and checked for condensation.
- If there is fogging, the spacer cannot be used

Manual Spacer Application: Step by step

Point spacer should be handled on the inside/outside surfaces, taking care not to contaminate or mar the bond surface (the edges of the spacer that will bond to the glass surface). Bond line contamination or deformation may result in areas of seal weakness due to incomplete wet-out of the glass by the sealant during compression.

When beginning the application, ensure that the Spacer is cut squarely, as shown to the right in Figure 1.

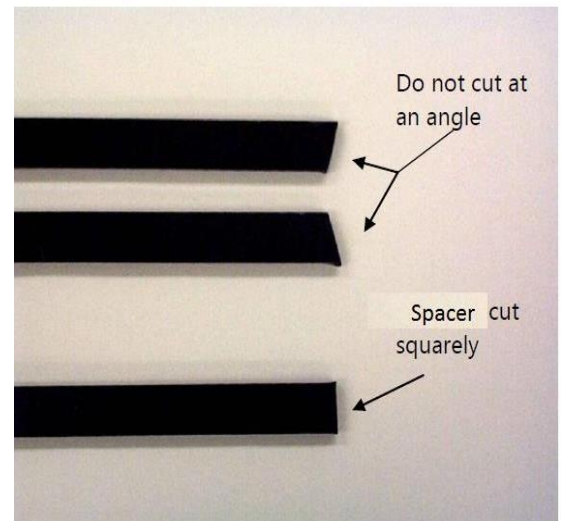


Figure 1:

Make sure that the Point spacer tail is cut squarely

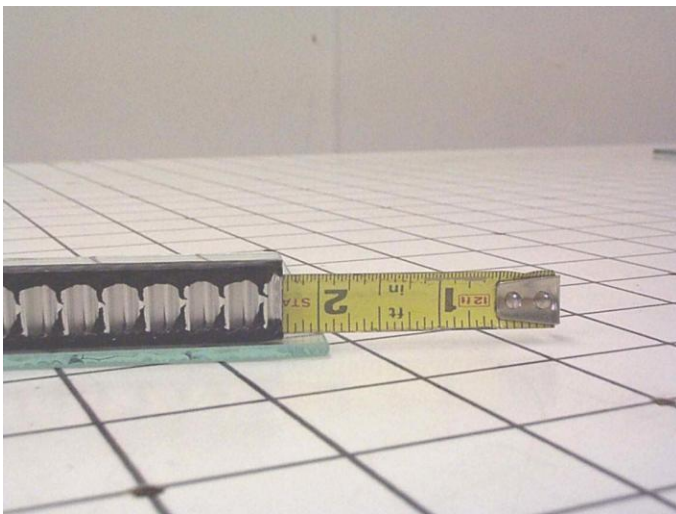
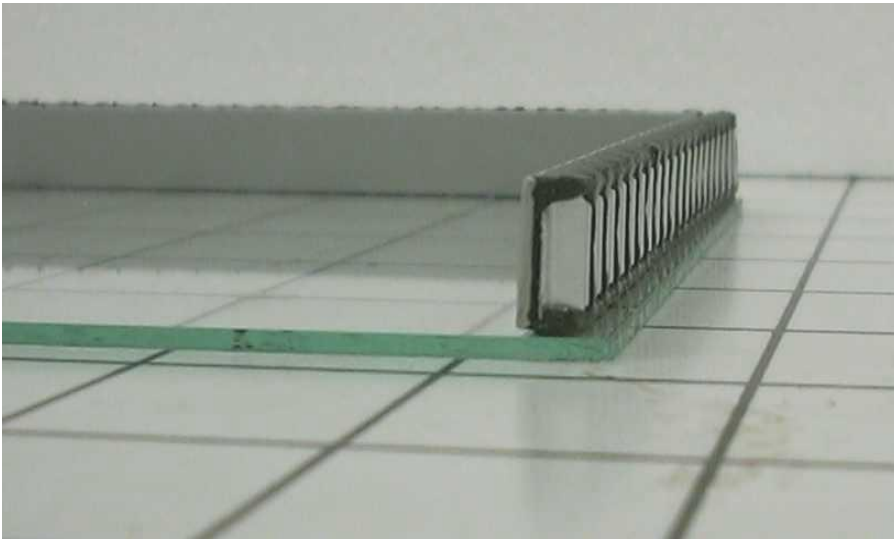


Figure 2: Start point of Spacer application should be 1/4" to 5/16" from glass edge

For air filled units, start the tape application about 1/4" to 5/16" from the edge of glass, as shown in Figure 2. Starting the application too far from the lite edge can hinder the final corner closure, while starting the application too close to the lite edge can reduce the bond-line moisture vapor path.



Lay the Pointspacer about 1/16" in and parallel to the glass edge, or at the inset set by the Flexible Spacer PRO tool. The spacers should be applied 90° to the glass surface, as shown in Figure 3, and checked prior to topping the IG unit. This ensures that the fluted shim will properly maintain the unit's air space.

Figure 3: Ensure that Pointspacer is applied 90° to the glass lite.

To form corners, first tack the Pointspacer firmly onto the glass, just before the corner. Next, bend the spacer back to the corner, as shown in Figure 4.

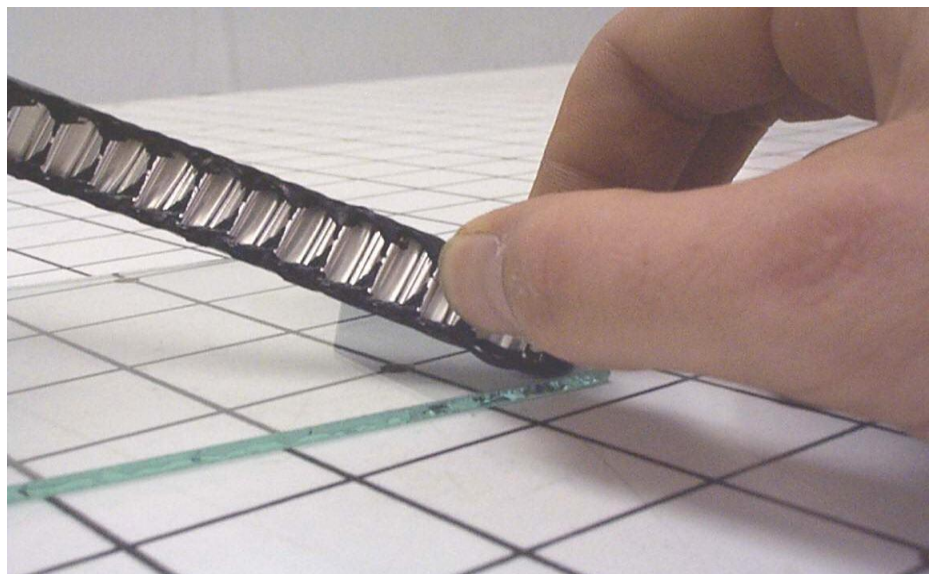


Figure 4

Then, fold the spacer so it points to the opposite corner, and pinch the backside of the Pointspacer to form a sharp corner as shown in Figure 5. Set the spacer firmly on the glass to secure the finished corner.

Continue manual application around the straight sides and corners until the final corner is reached.

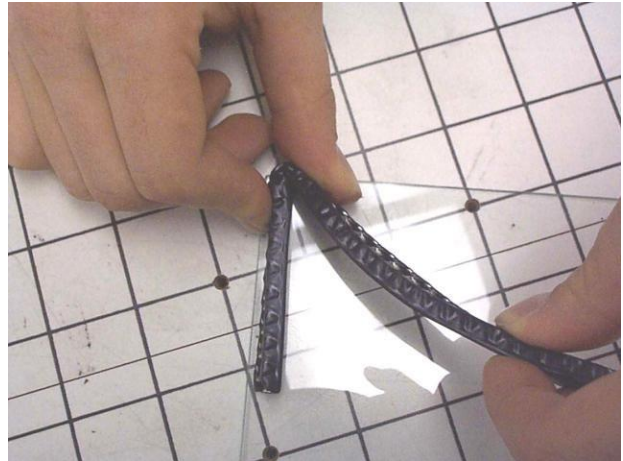
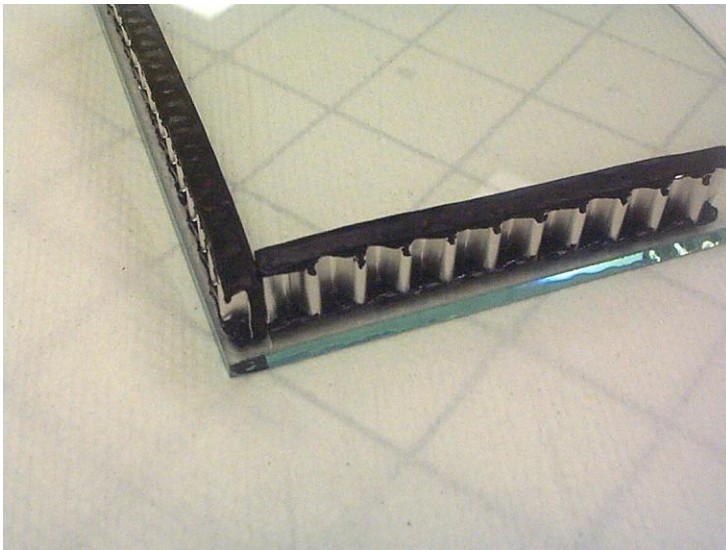


Figure 5



At the final by-pass corner for air-filled units, ensure that there is a minimal-gap ($1/16'' \pm 1/32''$) to minimize bond-line shear during corner closing, as shown in Figure 6. Trim the spacer flush with the glass edge as shown.

NOTE – JOINING TWO TAPES TOGETHER:
When joining two tapes together on a unit, always make the joints at a corner. For odd shapes start at the sharpest corner to ensure a complete fourth corner seal.

Figure 6: Ensure that there is a minimal-gap ($1/16'' \pm 1/32''$) at the final by-pass corner of air-filled units to minimize bond-line shear during corner closing.

Cut the spacer flush with the glass edge.

Odd-Shaped Units



Always start spacer application at the sharpest corner of an odd-shaped unit, as shown in Figure 7.

To seal a sharp pointed corner unit, pinch the corner from both sides as shown in Figure 8, ensuring that the hair line interface voids are eliminated. Fill in the point of glass with the extra mastic to help prevent glass-handling damage.

Figure 7: Start application at the sharpest corner of an odd-shaped unit.



Figure 8: Pinch the corner to seal the unit

Use of PRO v HAND Tool for POINTSPACER Application

PRO HAND Tool Setup

PIVOT PIN – The pivot pin is the long pin wrapped in a silicone sheath at the head of the Spacer PRO HAND tool that facilitates corner forming. The pivot pin is held firmly in place by the pivot pin-retaining bracket. Ensure that this bracket locks to the head of the pivot pin at the notch. The pivot pin will rotate freely when installed properly.

PRESSURE WHEEL ADJUSTMENT – The pressure wheel is adjusted with a spring loaded bolt mechanism. This adjustment allows different airspace thickness of Spacer to be used on the same PRO tool with only minor tool adjustments. The pressure wheel should be adjusted to give approximately 1/32" compression of the Spacer in a static position. This will impart enough downward pressure during application to place and tack down the spacer without marring the Pointspacer bonding surfaces.

GLASS THICKNESS ADJUSTMENT – This adjustment will set the height of the pivot pin and vertical guide wheel so it is 1/16" to 1/8" above the surface of the glass as shown in Figure 10. This adjustment is done with two thumb-tight bolts that attach the head and handle of Spacer PRO base.

NOTE: This adjustment should be done with the air float of the application table on and the glass attached to the suction cup.

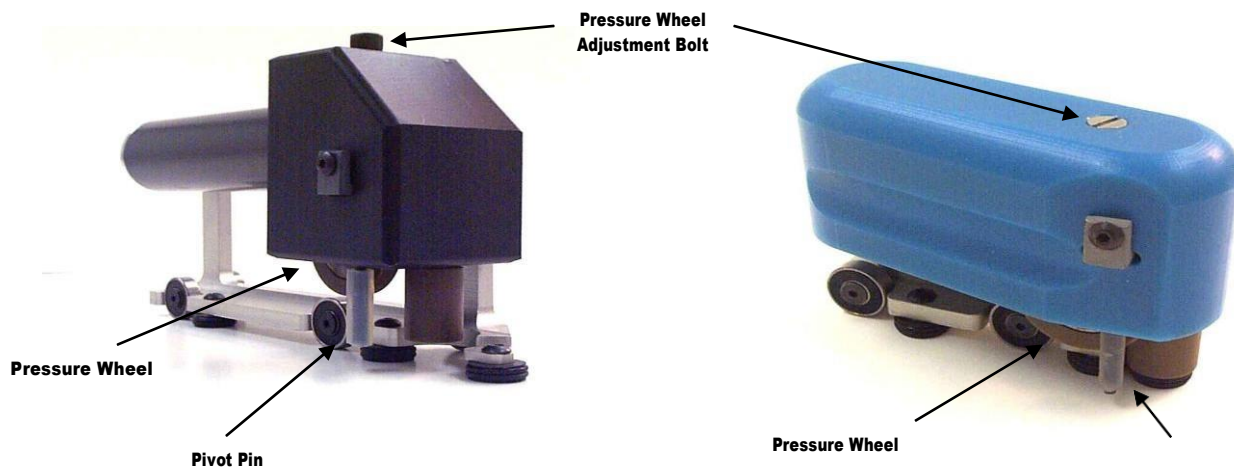


Figure 9: Flexible Spacer PRO and PRO V Hand Tools

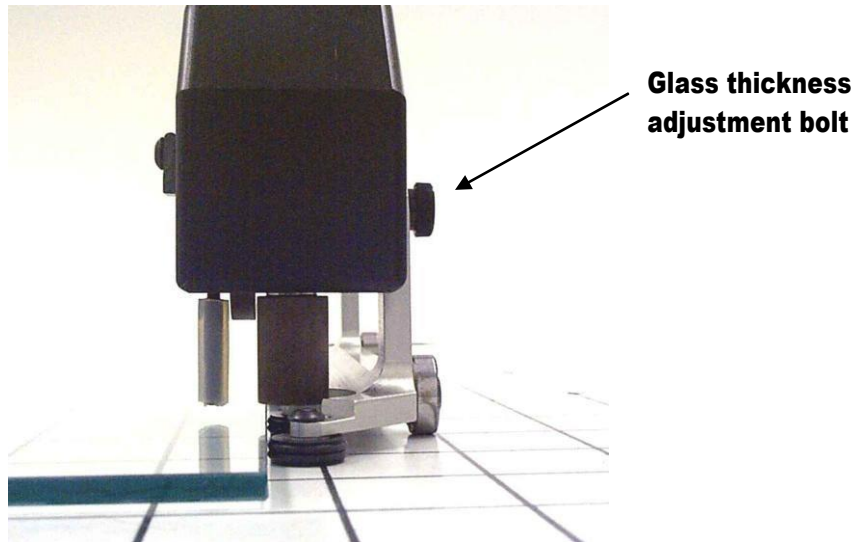


Figure 10: Pivot pin should be adjusted to 1/16" to 1/8" above glass surface.

Once the tool is adjusted to the desired glass thickness, a shim or spacer block should be installed between the front base plate arm and the top of the notch for this arm on the Flexible Spacer PRO tool head. This will eliminate any possible slippage during use. Also included with tool is a set screw that can be inserted below the glass thickness adjustment bolt (instructions are included with tool).

EDGE APPLICATION – When applying the spacer to the glass edge with any of the Flexible Spacer PRO tools, the Pointspacer should be lightly held (not stretched), slightly above and off the edge of the glass. This allows the vertical guide wheels and pressure wheel to consistently perform their functions.

Figure 11: Hold the spacer lightly, and slightly above and off the glass edge.



CORNER FORMING – To form the applied corner, back the Flexible Spacer PRO tool away from the corner, hold the corner point and rotate the glass while using the other hand to pull the spacer from the spool.

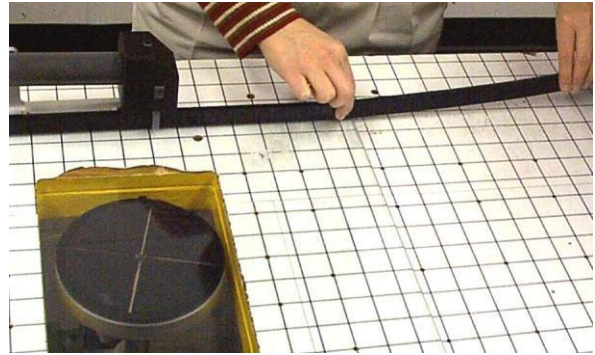


Figure 12: Hold the corner while rotating glass.

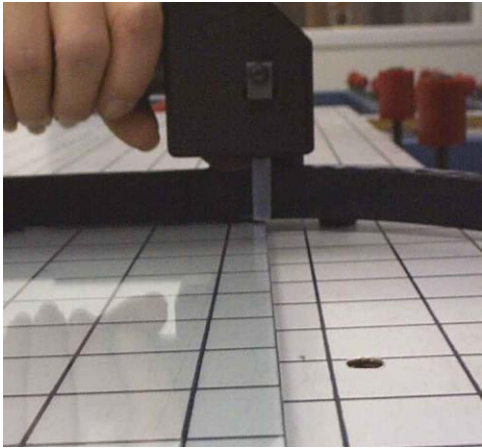
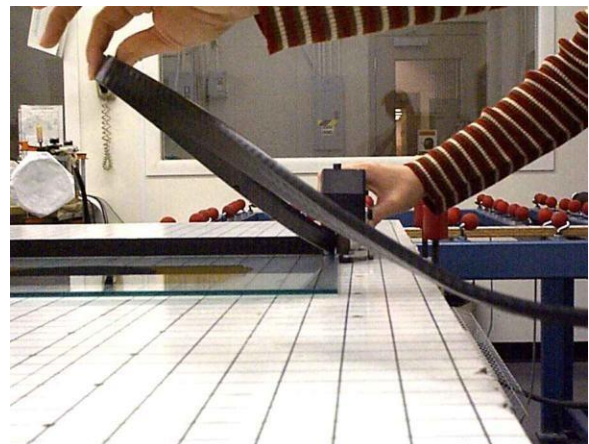
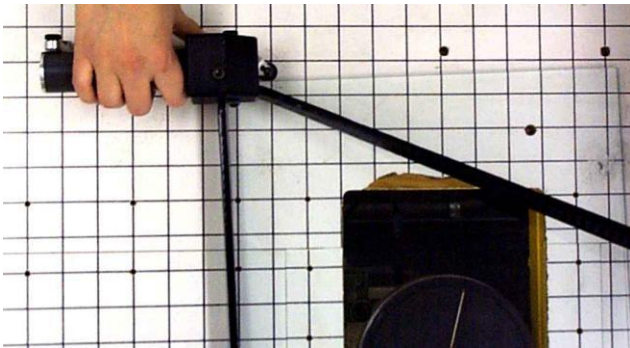


Figure 13: Bring Flexible PRO tool pivot pin to edge of glass.

Bring the Flexible Spacer PRO tool to the glass edge so that the pivot pin rests at the glass edge, as shown in Figure 13.

Rotate and pull back on Flexible Spacer PRO tool while holding the Pointspacer tape up and over



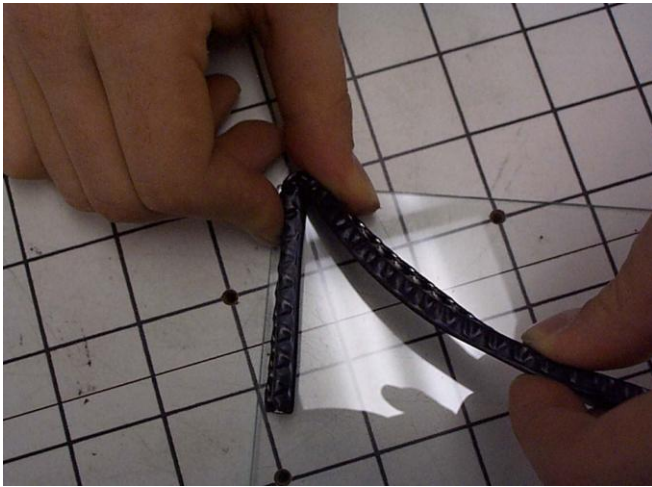


Figure 16: Pinch the corners to sharpen the angle.

Bring the spacer back off the edge of glass and apply the side. See Figure 15. The corner may be pinched to sharpen the angle, as shown in Figure 16.

FINAL CORNER LAY-UP – Continue POINTSPACER PRO tool application around the straight sides and corners until the final corner is reached. At the final corner of an air-filled unit, ensure that a no gap (zero gap) remains to minimize bond-line shearing as the unit's fourth corner is closed, as shown in Figure 17. Also trim the POINTSPACER flush with the glass edge, as shown in Figure 17.

NOTE: JOINING TWO TAPES TOGETHER – When joining two tapes together on a unit, always make the joints at a corner.

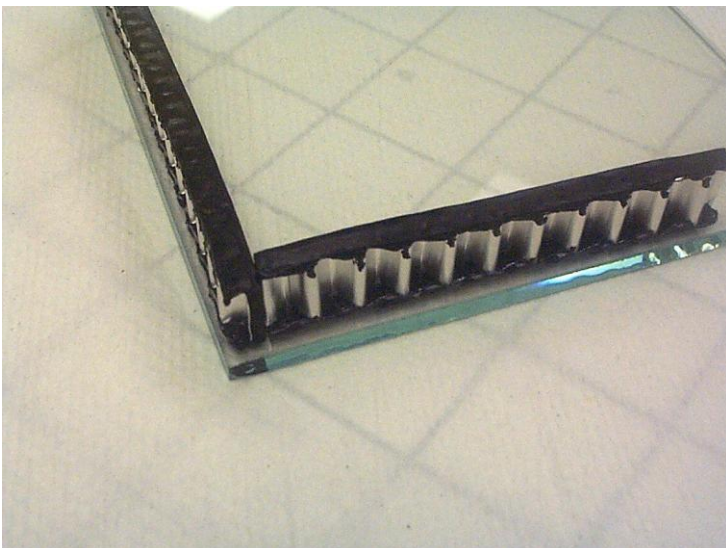


Figure 17: Ensure that there is no gap (zero gap) at the final corner of an air-filled unit to minimize bond-line shear during corner closing.

Cut the Pointspacer flush with the glass edge.

COMPRESSION EQUIPMENT

Conveyor speeds should be set to achieve the desired overall thickness while maintaining a Pointspacer exit temperature between 110° F to 120° F (43° C to 49° C). **Conveyor speed may require adjustment throughout the day, depending on environmental conditions as well as IG unit volume. Pointspacer exit temperatures should be checked periodically during production. Calibration of the press should be confirmed daily by measuring the overall thickness of the exiting IG units and comparing to the gauge setting. Proper compression will optimize Pointspacer performance and prevent difficulties in glazing. Pointspacer exit temperature can be measured with an infrared temperature probe.**

Follow manufacturer's recommended maintenance and lubrication schedule, and keep the press clean. Dirt on the quartz heat lamps may cause their premature failure, and dirty compression rollers can scratch, mar, or otherwise mark the IG units as well as cause glass breakage during compression. If two or more lamps are not functioning, they should be replaced immediately. It is important that all lamps are operating to ensure proper heating of the IG unit, consistent overall unit thickness, and to minimize glass breakage during compression. Even heating of the top and bottom lites is critical to even compression of I.G. unit and optimal wet-out of bond-line sealant.

Check frequently that all emergency stop systems are operating correctly. The malfunction of emergency stops may result in personal injury, equipment damage, or production downtime for repairs and clean up.

GAS FILLING

A one-hole method of gas filling should be used when filling Pointspacer IG units. The start-point of application from glass edge is modified from 1/4" (air-filled) to 3/8" to 7/16" (argon-filled) to achieve an 1/8" nominal gap. Press in the normal fashion.

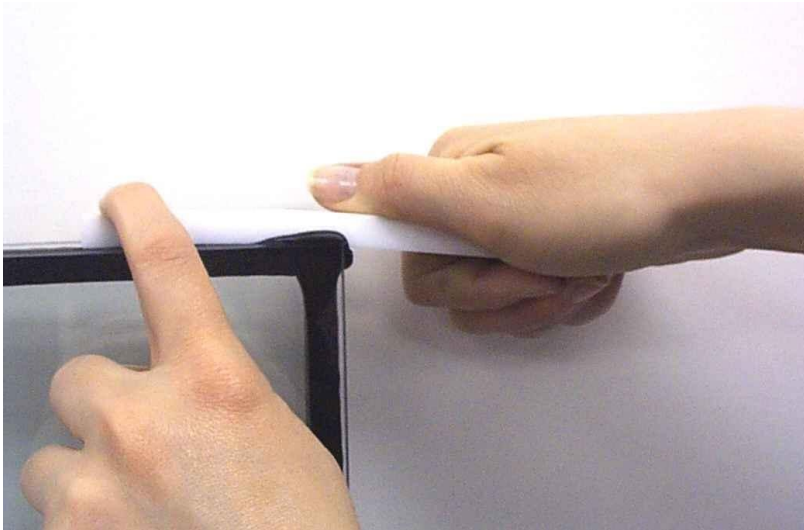
The fill wand should be inserted into the unit through the elevated open corner, and should reach to within two inches of the bottom of the unit.

To achieve desired percent fill, ensure that the correct time is used for a given flow rate and IG unit airspace and size for timer-fill systems, and that the sensor is calibrated for sensor fill systems.

For units with internal muntins, insert the wand as far as possible, and double the listed time to fill (for timer-fill systems) given the unit airspace and size. For sensor-fill systems, cycle twice.

To make the final corner seal after gas filling, use the following procedure:

Reheat only the fourth corner area with a quartz heat lamp or hot air spot heater, prior to completing the corner seal. Then using a sharp Teflon corner sealing block, press the tail end of the Pointspacer application into the start end as shown in Figure



After marrying topcoat-to-topcoat, and to complete the corner, tuck any excess Pointspacer mastic/spacer between the glass lites to prevent the unit from adhering to surfaces such as the window sash or frame during the glazing operation, as shown in Figure.

The final corner seal is ready to glaze or ship.

When using the Teflon corner sealing block, push the the tail end, as shown in following Figure, and press the Pointspacer ends together. Eliminate any hairline voids by tooling with a sharp corner-sealing block. Avoid excessive wiping action to minimize bondline shearing.

