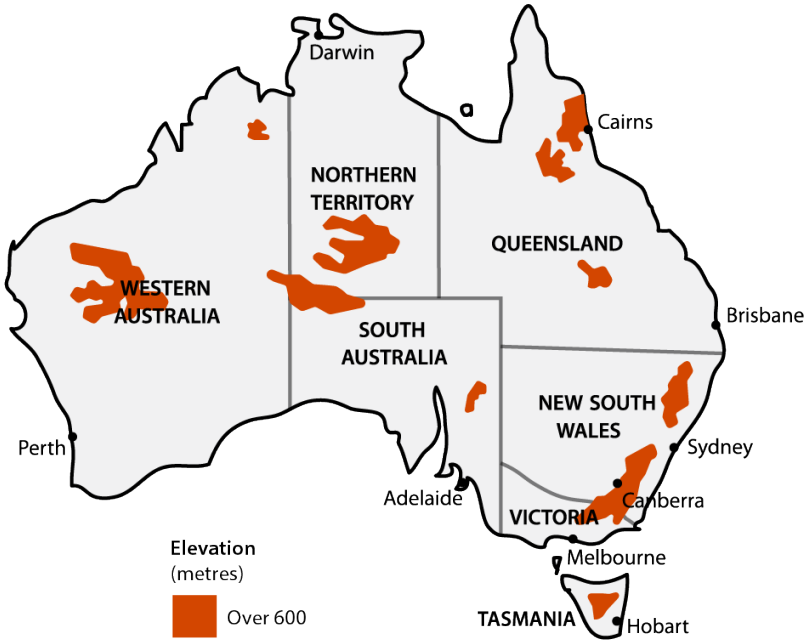
AUSTRALIAN GLASS & WINDOW ASSOCIATION

TECHNICAL FACTSHEET

Capillary Tube Use for Insulated Glass Units at High Elevations

INTRODUCTION

As an IGU is a sealed unit they have always had to deal with changes in pressure. Pressure changes can be the result of changing barometric pressure, changes in altitude or changes in temperature. If the pressure changes are significant enough it will not only cause visual distortion due to bowing but, more concerning, is that this can lead to premature failure of the unit. Under most normal installations this pressure difference is not large enough to present an issue. However, there is a problem when the elevation change between the place of manufacture and place of installation differs by more than 800 metres.



A method to accommodate large elevation changes is to allow the pressure in the unit to be equalized with the atmospheric pressure using a capillary breather tube. These tubes vary in dimension and material type but all are inserted into the unit, via the edge seal, at manufacture to allow pressure equalization.

There are advantages and disadvantages to using a capillary tube in an IGU that should be considered before a decision is made to use them.

ADVANTAGES

- Allows pressure equalization for units manufactured at significantly different elevations compared to that of installation.
- Minimizes possible distortion due to glass deflection caused by barometric pressure changes.
- Reduces the stress due to glass deflection on the glass and the sealant that may lead to premature failure of the unit.

DISADVANTAGES

- Not recommended for use in gas filled units as the gas content can escape through the tube during equalization and prior to sealing. This can affect the thermal performance of the unit.
- Additional processing steps during manufacture adding to processing time.
- Additional difficult step closing/sealing tubes at installation.
- IGUs must be site glazed to allow access to close off the capillary tube.
- Potential for the desiccant to be exposed to additional moisture before closing/sealing that could lead to failure of the unit.
- Decreased or no warranty being offered on units – check with the manufacturer for warranty provisions.

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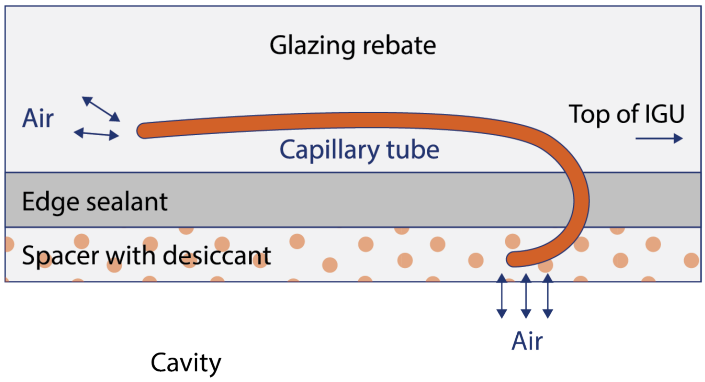

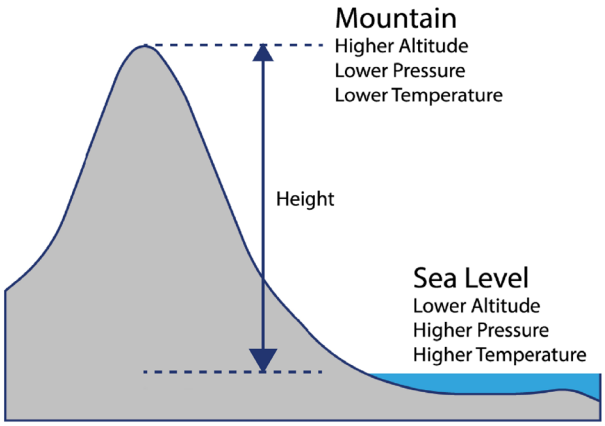

STORAGE AND HANDLING CONSIDERATIONS

- Units with capillary tubes should be stored out of the elements with caution taken to ensure the units are not exposed to excessive moisture. Consider placing the end of the tube into a small bag of desiccant to prevent moisture entering the unit and consuming the desiccant in the side seal.
- Minimize the time between manufacture and delivery to the final location to decrease the time the unit is “open” and exposed.
- Units should be always stored with the tube at the top of the unit.
- The tube should be pointing down, free from kinks and twists that would block or obstruct the tube and be of the recommended length.
- A minimum of 48 hours should elapse between delivery to site and installation/close of the tube. This allows time for the unit to equalize the pressure

GLAZING CONSIDERATIONS

- The IGU manufacturer should be consulted regarding specific requirements for installation and closing of the tube.
- The tube should be crimped at the end and sealed with sealant.
- Any sealant used to close the tube should be compatible with the sealant used in the IGU.
- The capillary tube should be glazed with the tube at the top of the window or door.

CONCLUSION

Due to the potential for decreased lifespan and performance, capillary tube IGUs should only be considered when the elevation changes between manufacture and installation exceeds 800 metres. If they are required then clear communication between the manufacturer, installer and the consumer is necessary to ensure all are aware of their advantages and disadvantages particularly in relation to warranty provisions and tube close off methods.

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Insulating Glass Manufacturers Affiliation (IGMA)

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