

TECHNICAL SALES BULLETIN 023

06th December 2019

SIG Design Guide (Double Glazing Guide)

Below is a set of guide lines for specifying and installing SIG Units that fall in line with our 10 year warranty on the SIG Units.

This document will address the following items.

- Spacer Bar Width Limitation (vs. Size of Unit – PGBG TSB018)
- Allowed Glass Thicknesses vs Area (AAAMSA ADVISORY NOTICE # 17)
- Breather Tube/Capillary Tube (Guide)
- Location & Setting Blocks (TSB011)
- Sealant Compatibility (Guide)
- Additional Items (Vision Area Imperfections)
- Glazing Recommendations for Double Glazed Unit (TSB 001)

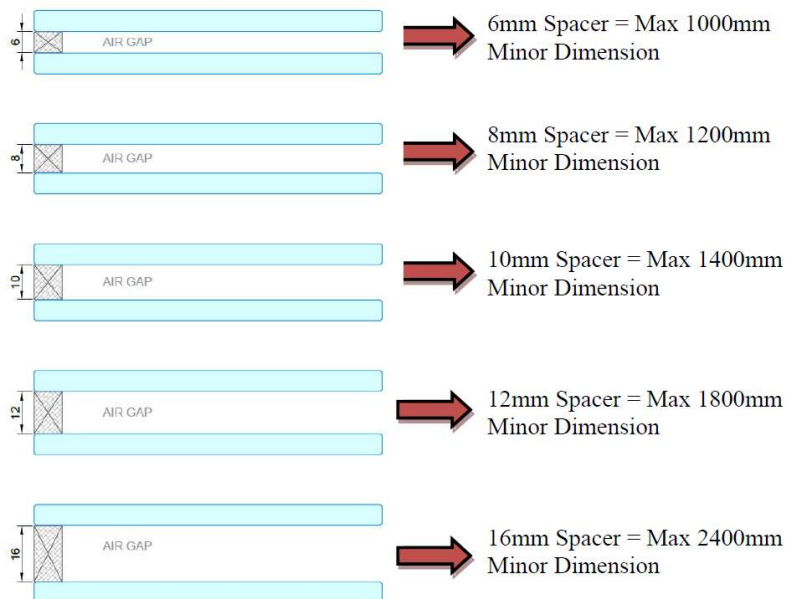
For PG Building Glass to issue a 10 year warranty there are design and installation guides put in place to ensure the longevity of the SIG Units.

Other than area (m²) limitations on certain glass thicknesses we recommend that the following items listed in this bulletin are taken into consideration.

SPACER BAR WIDTH LIMITATIONS

Below are PG Building Glasses recommended minimum spacer bar widths, based on the smallest dimension of the SIG Unit. See TSB018 for additional info.

For example, if the unit is 1450mm x 2100mm, a 12mm spacerbar is the minimum width(airgap) required.



ALLOWED GLASS THICKNESS VS AREA

Glazing and glass areas as stated in SANS 1400 Part N are for Single Glazing applications. AAAMSA have put out a practice note giving the industry a guide to use for maximum areas vs glass thickness that can be used. (Area will be limited based on WEAKEST PANE area)

There is no “2 edge” supported glass allowed for SIG Units.

These areas can be exceeded if we have a Project Windload supplied by the Project Engineer and a Competent Person (Glazing) can do the required calculations to confirm glass is fit for purpose using an alternative glass thickness.

Note that the factory can further limit glass thicknesses vs area due to manufacturing capabilities.

Double glazing (SIGU)							
Dimensions for vertical SIGU supported by a frame on all sides in external walls in buildings where the height measured from the ground to the top of such wall does not exceed 10 and all internal applications							
Type of glass	Maximum pane area						
	m ²						
	Nominal glass thickness weakest light						
	3	4	5	6	8	10	12
Monolithic annealed glass	1.00	2.00	2.80	4.27	6.13	8.00	8.00
Patterned annealed & wired glass	-	1.00	1.60	2.53	3.47	4.53	-
Laminated annealed safety glass	-	-	-	3.87	5.73	7.60	7.60
Toughened safety glass	-	2.53	4.00	6.00	10.67	10.67	10.67

Deviations from the above must be approved by Competent Person (Glazing)

It is not recommended to have an Asymmetrical system with 2 extremely different glass thicknesses.

For example if you have a 6mm TSG and a 4mm TSG in a SIG Unit.
The 4mm TSG will limit the overall area of the unit being 2.53m²

When the SIG Unit is exposed to windload or temperature variations the 4mm will deflect more than the 6mm due to it being the weaker pane.

The result is that Newton rings could become visible or “transit rub” can occur resulting in the unit being rejected.

BREATHER TUBE / CAPILLARY TUBE

If SIG Units are manufactured and are to be transported to a site that is 200m more/less in altitude than the place of manufacture, a Breather-tube or Capillary-tube should be installed during manufacture, and sealed once on site.

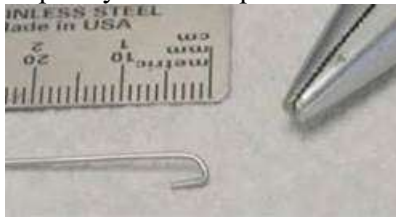
When the SIG units arrive on site the breather/capillary tubes are to be left open for 24hrs under cool conditions with no direct sun strike on the glass in the final position.

When the units are not subject to sun strike the breather/capillary tubes are to be crimped and sealed.

Use a pliers and crimp the tube near its end, so that, if for any reason in future, the tube can be 'snipped' and reopened to equalise again. (This cannot be done if crimped all the way up)

Note that Capillary tubes have a much smaller inner diameter and will be challenging to open after being sealed.

Capillary tube crimped/closed.



The breather/capillary tube is to be glazed on the top corners with the tube facing down.

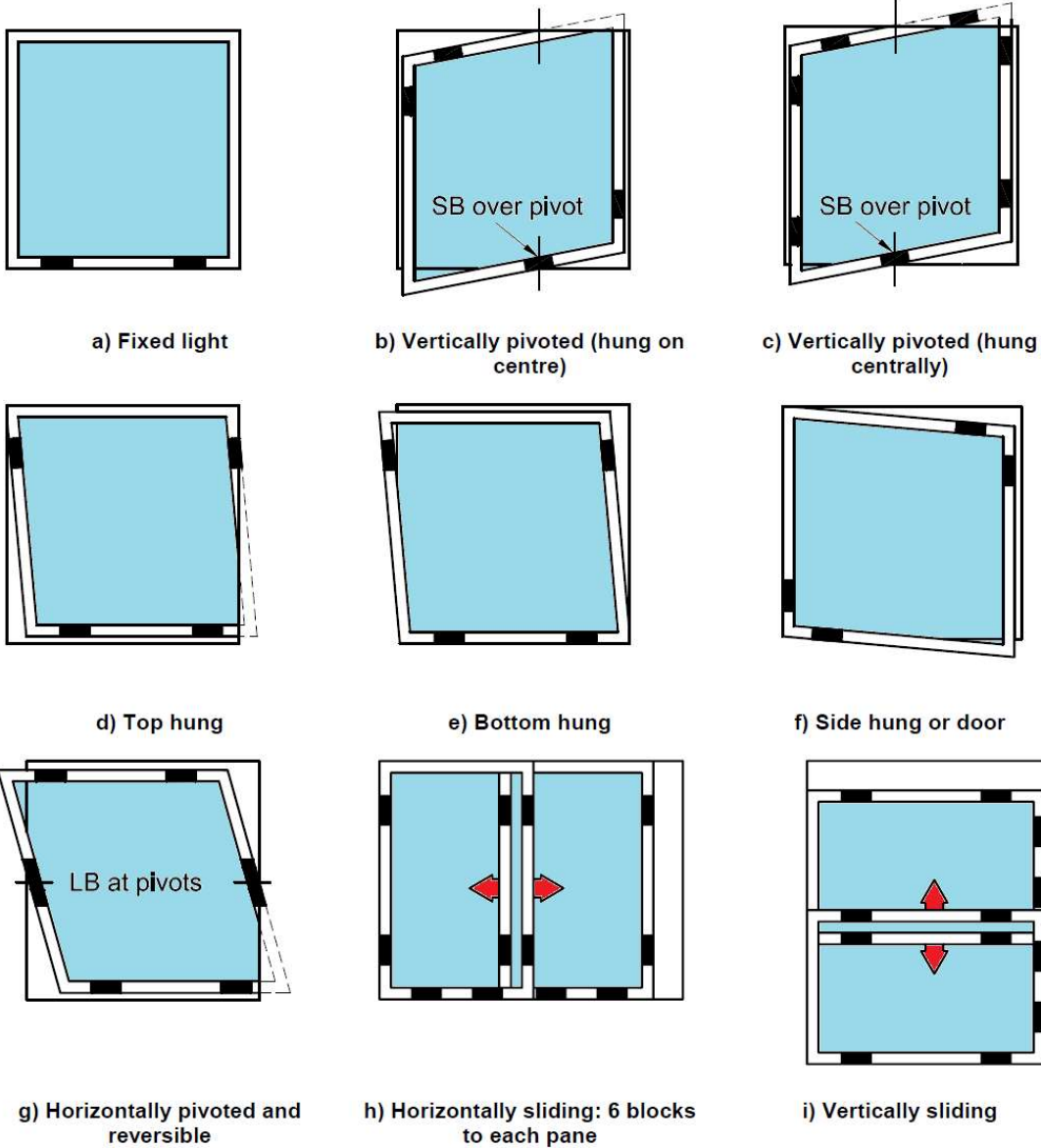
(See picture below for an idea)

Tube facing down. *(red arrow)*



LOCATION AND SETTING BLOCKS

All SIG Units are to be packed as per SANS 10137 with the correct placement of the setting and location blocks. See TSB011 for additional info.



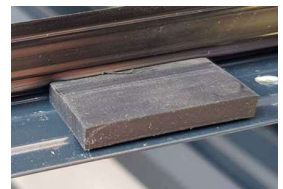
Both pieces of the SIG unit are to be supported at all times with an approved packer. The packer lengths are to be 25mm per 1m² of glass, placed at quarter points.

Example:

SIG Unit = 1 m² then packers are 25mm each and equal to SIG unit thickness
(see example of 25mm wide packer in below picture)

SIG Unit = 2 m² then packers are 50mm each and equal to glass thickness

SIG Unit = 4 m² then packers are 100mm each and equal to glass thickness

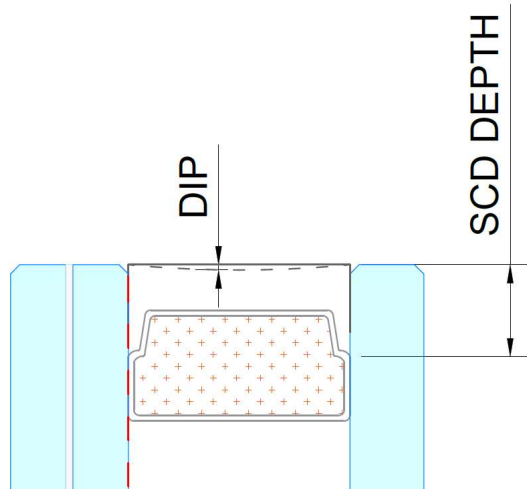


SECONDARY SEALANT DEPTH AND COMPATIBILITY ISSUES

The Secondary seal depth (SCD) will vary on the size of the SIG Unit and the project windload.

The spacerbar thickness plus the below is applicable. (6mm + SCD)

- Polyurethane 4mm Minimum and 6mm Nominal SCD is required.
- Silicone is 6mm up to 20mm or more depending on the unit size and project windload.



It is extremely important to ensure that if silicone sealant is to come in contact with the Secondary Seal (Polyurethane or Silicone) of the SIG Unit that they are compatible. If the incorrect sealant is used the SIG Unit will fail. (*See below example of failed unit after 1 month*)



ADDITIONAL ITEMS

In addition to size limitations and glazing guide lines there are items that can be perceived as allowed and others are defects.

Approved framing systems (SANS 613 Tested) with deflection limitations to 1/175 and edge bite as per AAAMSA recommendations (*15mm edge bite for SIG*) is required resulting in a +20mm rebate required to ensure spacerbar is concealed within the glazing rebate.

Allowed and can be expected on SIG Units (

- Misalignment/Stepped edge of glass panes (*max +/- 2mm step*)
- PIB Squeeze Out (PIB Creep) (*max 3mm above spacerbar into vision area except for corners*)
- Edge Deletion of soft coated products (*max 3mm*)
- Spacerbar in Vision Area.
- Spacerbar misalignment from glass edge.
- Scratches as per AAAMSA guides.
- PG1/Armourplate Logo not on same corner/location on SIG Unit.
- Print on Spacerbar.
- Above is relaxed when units are other than square or rectangle.

(Defects) Not Allowed in SIG Units upon delivery

- Marks (Hand Marks / Oil Marks)
- Scratches outside of AAAMSA Guides. (*to be inspected upon delivery of Units*)
- Desiccant inside Air Cavity.
- Gap in spacerbar (*compromising primary seal*)
- Twisted or bent spacerbar.
- PIB Migration (*Coffee Stains*).
- Spacerbar read through (*Spacer visible in PID Seal Area compromising primary seal*)

In addition to above PIB Scalloping can occur after the unit is installed if there is excessive pressure on the edge of the SIG Unit.

This is caused by over-tightened pressure plates or incorrect beading systems used to secure the SIG Unit in curtain wall, shopfront or any framing component. This can also be seen on sloped glazing systems due to increased pressure due to self-weight.

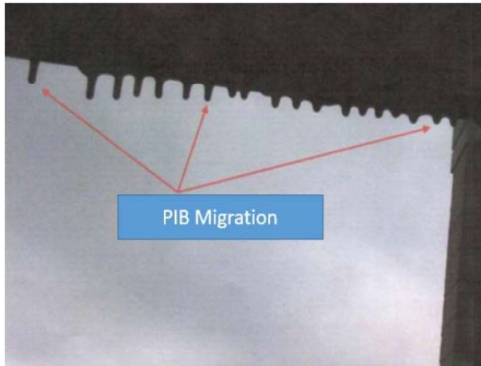
This is not a manufacturing defect but ultimately a defect caused by the frame/installation method used.

As per TSB 001 a 20mm glazing rebate is required to ensure the spacerbar and primary/secondary sealants are concealed.

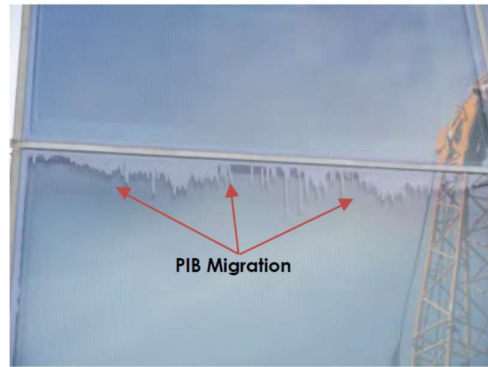
Please see the following page for some examples that have been mentioned above.



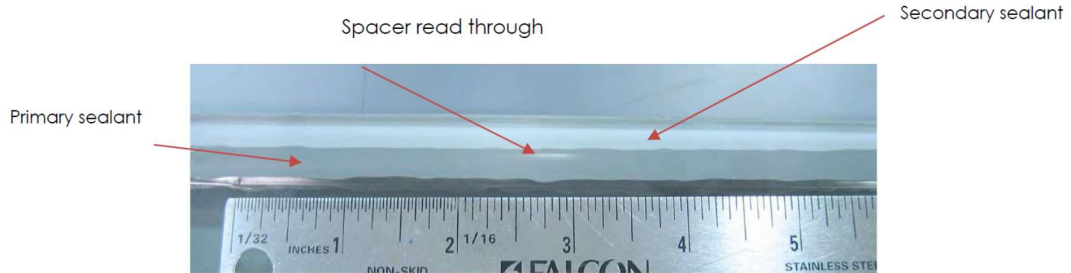
PIB Squeeze Out (Creep)



PIB Migration



PIB Migration



Primary sealant

Spacer read through

Secondary sealant



Black PIB Scalloping

