

A grayscale photograph of a modern multi-story building with a curved facade. The building features balconies with glass railings and large windows. The image is framed by a white L-shaped graphic in the top-left corner and a teal L-shaped graphic in the bottom-right corner.

BUILDING SYSTEMS:

GENERAL TECHNICAL INFORMATION

Building Systems:

General Technical Information

Capral creates a technical manual for each of its window and door systems, detailing their unique features and manufacturing methods, such as drainage hole locations and sealing details.

This General Technical Information (GTI) document has been developed to accompany these technical manuals and to be read in conjunction with the goal of increasing both general knowledge and practice around Capral windows & doors and their manufacture.

This includes:

- ▶ Finish & properties
- ▶ Care & maintenance
- ▶ Glazing & fabrication techniques
- ▶ Features

ACCESSING CAPRAL TECHNICAL DATA

Technical documents, BIM information, and drawings for Capral products can be found on the Capral website, including:

- ▶ Catalogues & Brochures
- ▶ Technical Manuals
- ▶ Arrangement & profile DXF files
- ▶ Wall charts (PDF & DXF)
- ▶ Summarised Structural & Water Test Results
- ▶ Summarised Acoustic Test results

Most technical documents will require a login to access and you will be prompted to register if you try and access a gated document. Once submitted, registrations are subject to manual approval.

This registration is shared across the website and Hub app and will provide you with access to both.



WEBSITE
capral.com.au



APP
hub.capral.com.au

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IMPORTANT CONDITIONS

By using this document you agree to the following:

DISCLAIMER

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CAPRAL SUPPLY TERMS

Refer to www.capral.com.au/Terms-of-Trade for Capral's Terms and Conditions of Sale for terms of supply by Capral of its products.

Document History

The table below is a summary of this document’s update history. Contact Capral for details of past updates.

RELEASE DATE	UPDATE SUMMARY
12-05-2026	First Release

The table below shows the details of the latest document update.

DOCUMENT RELEASE – 12-05-2026	
DESCRIPTION	AFFECTED PAGES
First Release	

General Information

CAPRAL BRANDS & SYSTEM CODES

Capral has over 15 product & hardware brands including:

- Urban Residential
- Urban Plus Designer Residential
- Urban Comfort Thermal Residential
- AGS Commercial
- SGS Commercial
- Artisan Architectural
- Futureline Thermal Architectural
- Edge
- Amplimesh
- Caprice Hardware
- Caprio Hardware
- Ventus
- AquaGo Drain Systems
- Envy Showers
- Ab pivot Shower
- Elegance Wardrobes
- Magic Touch Wardrobe
- Lumiere Wardrobe

Full details of our brands can be found on <https://www.capral.com.au/our-systems/brands/>.

Most windows & doors have a 3-digit code that has been created with the below format. This code is frequently used in extrusion & component descriptions and can appear in technical documentation, quotation software and order documentation.

Window & Door Systems:

FIRST NUMBER	SECOND NUMBER	THIRD NUMBER
<i>Brand and/or basic frame size</i>	<i>Panel or Sash type</i>	<i>Product Type</i>
2 Urban & Urban Comfort (50mm)	8 Standard panel/sash	0 Sliding Window
3 Urban Plus (76mm)	9 Architectural panel/sash	1 Double Hung Window
4 AGS/SGS 100mm & AGS 101.6mm		2 Awning, Casement Window (POW)
6 AGS/SGS 150mm		3 Louvre Window
9 Artisan Architectural (100 & 150mm)		4 Sliding Door
10 AGS/SGS 250mm		5 Folding Window
Exceptions:		6 Folding Door
215 & 225 Doors		7 Hinged Door
900 Sliding Door		8 Tilt & Turn Window
950 Sliding Window		9 Strut Window

Framing Systems:

FIRST NUMBER	SECOND & THIRD NUMBER
<i>Frame size</i>	<i>Brand & glazing type</i>
3 76mm	00 Narrowline Single Glazed
4 100mm & 101.6mm	25 Narrowline Double Glazed
6 150mm	50 Narrowline Wide Glazed
10 250mm	19 Flushline Single Glazed
Exceptions:	29 Flushline Double Glazed
Curtain Walls	59 Flushline Wide Glazed

General Information

SGS PRODUCT CODES

Super Glazing Suits or SGS is Capral's newest commercial product brand. One of the improved features for the SGS systems, such as the SGS 400 Narrowline, is a new, easier to remember extrusion product code format.

FIRST LETTER		SECOND LETTER		FIRST NUMBER	
N	Narrowline	S	Single Glazed	4	100mm Frame
F	Flushline	D	Double Glazed	6	150mm Frame
		W	Wide Glazed	10	250mm Frame
LAST 2 NUMBERS					
1-9	Frame/Head	20-29	Transom	50-59	Beads
10-19	Sill	30-49	Mullion	60-69	Miscellaneous

Example: SGS 400 Narrowline Standard 45mm Frame is **NS401**

CAPRAL TECHNICAL DATA MANUALS

For comprehensive product information refer to the product technical manuals which can be downloaded from the Capral website or Hub App.

Information in the technical manuals include:

Cover	Product brochure	<i>A product overview including features & specifications</i>
MH	Manual History	<i>A record of changes made to the manual</i>
Sec1	Product Specifications	<i>Full product limitations & performance data</i>
Sec2	Extrusions	<i>Extrusion profiles & structural data</i>
Sec3	Glazing & Components	<i>Glazing details & component information</i>
Sec4	Formulas & BOM	<i>Full cutting formulas & bill of materials</i>
Sec5	Machining Details	<i>Machining drawings</i>
Sec6	3D Assembly Diagrams	<i>3D exploded views and basic fabrication information</i>
Sec7	2D Arrangement Details	<i>2D vertical & horizontal arrangement details</i>
Sec8	Test Report Summaries	<i>All available structural, water, acoustic, bushfire & other test results</i>
Sec9	Span Tables	<i>Structural limitations by span of extrusions</i>

AUSTRALIAN GLASS & WINDOW ASSOCIATION

Capral Aluminium is a member of the Australian Glass and Window Association (AGWA) a peak Australian body for the glass and window industry.

As a centralised body for all industry participants AGWA aims to:

- To promote and advance the awareness of glass and windows as a major architectural component in building design.
- To establish and self-regulate minimum benchmark standards throughout Australia. To facilitate the education and marketing of these standards throughout the industry and wider community.
- To provide a national voice when representing the industry in discussion and negotiations with government, local authorities, business and trade associations and organisations, and the private sector.
- To promote and encourage ethical conduct and sound business practice in the industry.

For more information go to <http://www.agwa.com.au>

General Information

WINDOW ENERGY RATING SCHEME (WERS)

The Window Energy Rating Scheme enables windows to be rated and labelled for their annual energy impact on a whole house, in any climate of Australia.

To participate in WERS, Capral obtains energy ratings for our products from a rating organisation that is accredited by the AFRC (Australian Fenestration Rating Council).

The Window Energy Rating Scheme is managed by the Australian Glass and Window Association (AGWA).

The WERS ratings for Capral products can be found via the WERS link on each products web page or through the Capral hub app.

Urban Comfort 282TB Awning Window



 WERS Rating

VERIFICATION & COMPLIANCE

All windows & doors in Australia must comply to various industry and government standards and regulations including the National Construction code and Australian Standards.

The National Construction Code (NCC) is produced and maintained by the Australian Building Codes Board (ABCB) on behalf of the Australian Government and each state and territory government. Under the NCC, the Building Code of Australia (BCA) is a uniform set of technical provisions for the design and construction of buildings and other structures throughout Australia. It allows for variations in climate and geological or geographic conditions. The relevant Australian Standards that outline compliance requirements are:

- **AS 2047** Windows and external glazed doors in buildings
- **AS 1288** Glass in buildings: Selection and installation

Some other relevant standards include:

- **AS 1170.2** Structural Design Actions: Wind Actions
- **AS 1428.1** Design for access and mobility
- **AS 3959** Construction of buildings in bushfire-prone areas
- **AS 4284** Testing of building facades
- **AS 1276.1** Acoustics – Rating of sound insulation in buildings & building elements
- **AS 1530.8.1** Methods of fire testing on building materials, components and structures



Capral BAL-40 Windows & Doors



Capral AS1428.1 Door Compliance



Capral Cyclonic Solutions

General Information

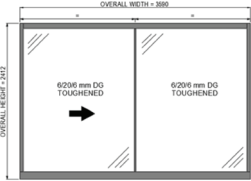
TESTING & TEST DOCUMENTATION

Capral Aluminium conducts rigorous testing to ensure products comply to national codes, standards & regulations and provides verification through technical documentation such as test report summaries and engineering data.

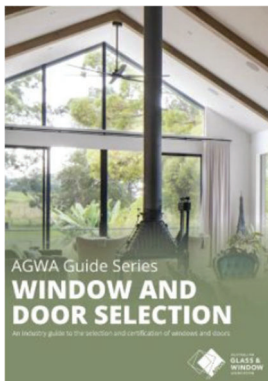
Test report summaries can be found in individual product technical data manuals.

A standard AS 2047 structural and water test report summary includes result of deflection (serviceability pressure, SLS) tests, air infiltration test, water penetration tests, operating force tests and ultimate strength (ultimate pressure, ULS) tests.

A summary of AS2047 and Acoustic test results is available in the 'For Fabricators' section of each product web page on capral.com.au

Test Report Summary		
STRUCTURAL & WATER TEST REPORT NUMBER: QP26-002		
Performed by: Capral Mechanical Test Laboratory, Victoria – March, 2005		
Test Drawing Number: 32-872		
		
Configuration: XQ Internal Sliding Glass: 6200 Toughened Tested drainage pattern: End drainage & pre-ventilated sub sill @ 300mm CTRS Seals: Qilon Seal		
Approved to Standard: AS4420.1-2016 (as called up by AS2047:2014)		
DEFLECTION TEST RESULTS: Interlock: EP24004/EP24005/EP24006/EP24004 (2150mm Span) + Test Pressure 1410Pa @ L/255 - Test Pressure 1413Pa @ L/252		
AIR INFILTRATION RESULTS: 0.07 L/s.m ² @ 75Pa Positive Test Pressure 0.33 L/s.m ² @ 75Pa Negative Test Pressure Achieved Low Air Infiltration Level		
WATER PENETRATION RESULTS: Sill: EP2399/EP15299/EP15298/EP15300 312Pa Pressure for a period of 15mins		
OPERATING FORCE RESULTS: 61.3N to initiate movement 45.5N to sustain movement		
ULTIMATE STRENGTH RESULTS: + Test Pressure 2442Pa - Test Pressure 2411Pa		

WINDOW & DOOR SELECTION



Many factors must be considered to ensure the selection of suitable, compliant and fit for purpose window and door products. This includes wind loads, site conditions, thermal comfort, bushfire attack level and more.

For more information refer to AGWA's
["A Guide to Window & Door Selection"](#)

Finishes & Properties

POWDER COATED ALUMINIUM

Aluminium's good resistance to corrosion, and its ability to develop a natural protective oxide surface film, contribute to its outstanding properties as a base for organic coatings.

When the metal is properly cleaned, deoxidised where necessary to remove objectionable residual oxides, then chemically treated to convert its surface to an inert film, it provides an ideal substrate for such finishes.

Thorough cleaning of the aluminium surface and its proper chemical pre-treatment are always of critical importance. The ultimate performance of any applied coating depends more on the preliminary preparation and treatment of the metal than on the subsequent coating application.

In most cases, a five-step pre-treatment process is used. Firstly, a thorough clean and etch is used to remove such contaminants as coolants, fingerprints and general shop dirt.

After the metal is rinsed, a chromate conversion coating is applied before passing through two more rinsing processes, the last one having the total dissolved solids content adequately controlled so no residues are left on the aluminium.

The metal then passes to the spray booth where banks of electrostatic spray guns reciprocate the full height of the booth. This ensures all critical faces and edges have an even coating of powder. The electrostatic charge serves two purposes:

1. By charging the powder, it is attracted to the nearest non-charged surface, this being the object to be coated.
2. It forces the powder particles to repel each other, similar to the like poles of a magnet, thus aiding atomisation.

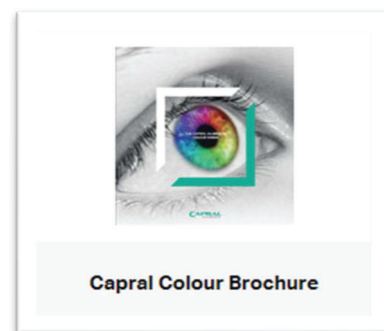
The excess powder that has not adhered to the substrate is removed from the booth by a sophisticated vacuum system. It is then cleaned and re-used.

The powder coated metal moves out of the booth into the baking oven where the powder fuses and cures to a durable and flexible finish.

Powder coating produces colours which are consistent, have an excellent finish and the system has superb covering characteristics even on complex shapes such as extrusions.

The powders are available in two grades, depending upon the application.

- Standard polyester powders are the products most commonly used, with a service life of up to ten years.
- High durability polyester powders have higher grade resins and pigments and offer a service life of up to fifteen years.
- PVF2 fluorocarbon wet paint coatings are available in a limited range of colours and gloss levels. They are also available with a metallic appearance and have a life expectancy in excess of 25 years.



The powder coating of aluminium is covered in Australian Standards:

AS 3715:2025 Title Metal finishing - Thermoset powder coatings for architectural applications of aluminium and aluminium alloys

AS 3754:1990 – Safe application by electrostatic spray for correct handling of powder coatings.

Finishes & Properties

ANODISED ALUMINIUM

Anodising produces a high-quality finish which resists corrosion, abrasion and exposure to industrial, marine and other severe environments. The choice of either clear or coloured anodic films, varying in thickness from 10 to 25 microns, covers a diverse range of applications. The aluminium fabricator, builder or architect can select the natural lustrous clear anodised finish or incorporate any of the wide range of coloured finishes. Anodising is an electrolytic manufacturing process that makes it possible to build a heavy inert oxide film INTO the metal surface.

Aluminium is placed in an electrolyte, (an acid/water solution) and an electric current passed through the aluminium which becomes the anode (positive terminal). Under the influence of the electric current, oxygen forms on this anode and immediately produces a porous oxide film on the aluminium surface. Extending the duration of this process increases the thickness of the anodic film.

Once the required thickness of anodic film is obtained, the aluminium is removed from the electrolyte and "sealed". Sealing is carried out using hot de-ironised water, steam or room temperature nickel fluoride solution. A reaction occurs between the water (or steam) and the porous oxide film. The resultant film is smooth, hard, and translucent.

The Australian Standard, **AS 1231-2000** Standard - Aluminium and aluminium alloys - Anodic oxidation coatings, specifies requirements for anodic oxidation coatings on aluminium and its alloys for general applications and for external architectural applications.

Summary of anodising thickness grades and related applications

Conditions	Thickness Grade	Description
Interior	Mild	AA5 = 5 µm
	Moderate	AA10 = 10 µm & AA15 = 15 µm
	Severe	AA20 = 20 µm
	Very Severe	AA25 = 25 µm
Exterior	Mild	AA15 = 15 µm
	Moderate	AA15, AA20 & AA25
	Tropical	AA25 = 25 µm
	Severe	AA25 = 25 µm
	Very Severe	AA25 = 25 µm

Finishes & Properties

ANODISED ALUMINIUM Cont.

Clear anodised

Clear Anodised is the original process developed that enhances the surface appearance. Clear anodising is often called natural, satin or silver.

Kolona

Ideal for interior applications such as partition trim, suspended ceilings etc. Kolona is an anodic film thickness of 10 microns and is available in colours of black and bronze and as a result of the publishing of AS 1231-2000 should not be used in external applications.

Anolok

A high-quality tough finish developed in strict accordance with AS 1231-2000. Optimum film hardness is established to ensure extra-long life and abrasion resistance. As colour is not dependent on the anodic film thickness, the most economic film can be specified for the particular application. Anolok is available in colours of black and bronze in 15, 20 and 25 microns.

The colours for both Kolona and Anolok are produced by the same electrolytic deposition technique. Stable inorganic metal/oxide particles are "locked-in" at the base of the anodic film prior to "sealing". Hence, when surface abrasion occurs, the colour is protected by the hard transparent anodic film above. As the colour is created by inorganic metal/oxide pigments which are permanently stable and unaffected by ultra-violet radiation, the finish is colour fast and will not fade.

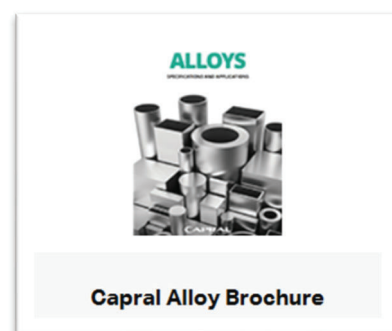
As with timber, brick and other traditional building materials, no two pieces of anodised metal look exactly alike. Slight colour variations are inherent in all colour anodising processes. The designer can create a "natural" look by breaking up expanses of colour with other colours, changes of plane or other architectural treatments.

Kolona and Anolok are registered trademarks.

PROPERTIES OF ALUMINIUM

Aluminium is highly valued in the building industry for its lightweight strength, corrosion resistance, and recyclability. It offers excellent thermal and acoustic performance, design flexibility, and low maintenance needs. Additionally, aluminium is non-combustible and reflective, making it energy-efficient and safe. These properties make it ideal for windows, doors, facades, and cladding, supporting innovative and sustainable construction projects.

Capral supplies a number of different aluminium alloys and tempers. For more information refer to Capral's Alloy Brochure.



Care & Maintenance

ALUMINIUM PAINTED AND ANODISED

Aluminium

The majority of the aluminium supplied for architectural products has its natural corrosion resistance further enhanced by additional surface protection. These finishes produce a surface that is both attractive in appearance and low in maintenance.

Care

The products made from this material being in a finished condition require suitable packing to prevent damage from abrasion during delivery. On site they should be stored in a clean dry area away from cement, lime, paint, acid etc. During installation, they must be protected from building fall-out such as wet plaster, mortar, paint and welding spatter. Wet plaster and mortar should be removed immediately and the soiled area washed down with clean water. Acid used for cleaning brickwork must be prevented from dripping on to aluminium. Should this occur, the acid must immediately be washed off with clean water.

If strippable coatings or pressure sensitive tapes are used to protect exposed surfaces, care must be taken not to damage the finish during their removal. Prolonged exposure to sunlight can make them increasingly difficult to remove.

Door tracks and window sills should be protected from planks, scaffolding and barrows.

Maintenance

Both painted and anodised finished surfaces should be regularly washed down with water to maintain their attractive appearance. The aluminium frames of windows and doors should be washed whenever the glass is cleaned.

The frequency of washing is determined by the desired appearance of the structure and by the local environment but should occur at least every six months. Areas close to the sea or subject to industrial fall-out and having limited rainfall require more frequent attention.

Cleaning

Where regular maintenance does not remove all the dirt which may be adhering to the surface, the following procedure should be followed:

Painted finish

Wash with warm water and a non-abrasive kitchen detergent, using a soft cloth or a soft bristle brush. To prevent shiny spots do not press too hard and to minimise streaking wash from the bottom up. Rinse with fresh clean water immediately afterwards to remove all traces of detergent.

Anodised finish

Washing as recommended for paint finish should first be tried. If this does not remove all dirt build-up a solvent cleaner such as kerosene, turpentine or white spirit may be used. Failing this, mild oil-base abrasive car cleaner or mild soap-based abrasive bath cleaner can be used. Thoroughly rinse and dry with a soft cloth after cleaning.

A coat of liquid wax may be used to enhance the gloss finish.

Do not use highly caustic or highly abrasive cleaners on any type of finish.

Do not use solvent cleaners on paint finishes.

Care & Maintenance

PRECAUTIONS

1. To avoid the possibility of corrosion, only aluminium, stainless steel or galvanised steel fasteners should be used for fixing aluminium.
2. In a marine environment, stainless steel fasteners must only be used.
3. Water running off copper or lead roofing or flashing materials may have a corrosive effect on aluminium. Avoid installing copper or copper alloy products if water may run from them on to aluminium.
4. Insulate and protect aluminium from unseasoned timber as the sap can cause stains which are almost impossible to remove.
5. Aluminium products should be isolated from permanent contact with mortar as corrosion can occur. Caulking gaps between frame and wall or aluminium angle trims are preferred for contact rather than the frame member.

FLEXIBLE PROFILES

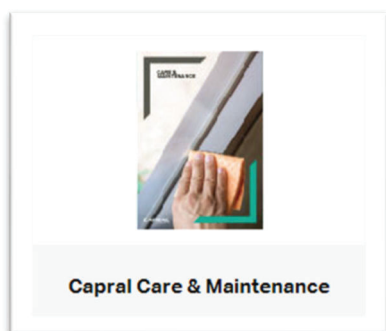
Flexible profiles such as PVC, Neoprene, Santoprene, EPDM etc. are used for glazing gaskets and weather seals.

Initial installation will be assisted by a smear coating of a lubricating solution such as Dow Corning Emulsion No 8 (available from Ajax Chemicals) and weather seals should be treated with the same solution in service - say, on a six monthly basis.

HARDWARE

Flexible profiles such as PVC, Neoprene, Santoprene, EPDM etc. are used for glazing gaskets and weather seals.

Initial installation will be assisted by a smear coating of a lubricating solution such as Dow Corning Emulsion No 8 (available from Ajax Chemicals) and weather seals should be treated with the same solution in service - say, on a six monthly basis.



For more information refer to the
Capral Care & Maintenance Brochure

Principles of Commercial Fabrication

DISCLAIMER

This document is general by nature, however its principles are generally accepted within the commercial fabrication market and have been used throughout our tested products. We have written this to assist fabricators, builders and architects to understand the basic principles adopted in the fabrication of commercial products.

This becomes important as there isn't the opportunity throughout a general technical manual to detail all aspects of the construction of a frame, or to depict just one method of manufacture or assembly.

Where methods of manufacture are being used which run counter to the principles noted, it is appropriate to request for verification from the fabricator/façade engineer that the method has been tested and is appropriate.

GENERAL PRINCIPLE

By its nature, commercial framing needs to be very flexible and straightforward to assemble, to allow for the imagination of architects and building designers. Most products are designed to be square cut, or have minimal end machining. Usually products are used with continuous verticals (jambs and mullions), and horizontals butt between (heads, sills, transoms and midrails). Using this principle, commercial frames are designed to be fitted into prepared openings by the fabricator and are usually supplied to site unglazed in modules and clipped together, side by side.

In most cases horizontals run between jambs and mullions however in some cases it is possible to have continuous horizontals with mullions butting in between. This variation is usually done for high or low lights or for extra support for hinged awnings but is limited due to more complex fabrication and a lack of expansion and contraction on large spans.

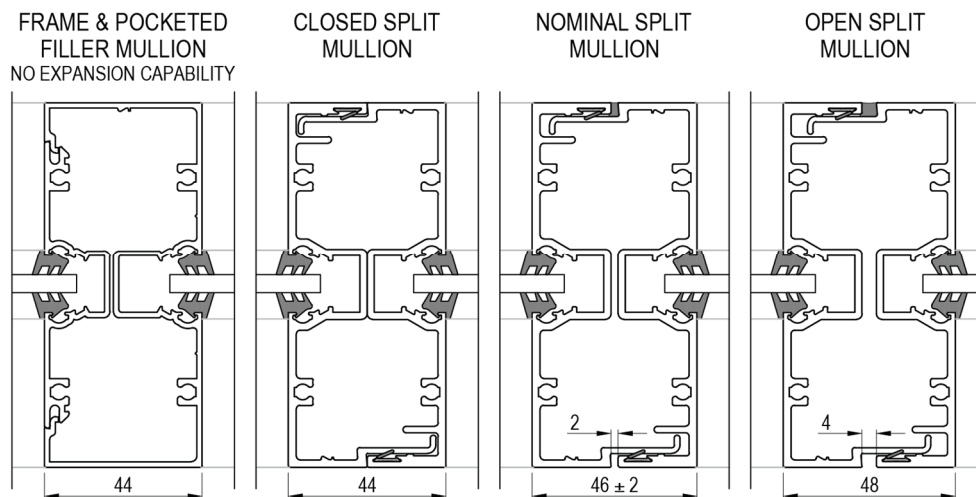
Principles of Commercial Fabrication

EXPANSION AND CONTRACTION

As runs of commercial framing can be extensive in length, expansion and contraction does need to be considered in situations where it is appropriate. Aluminium expands around 1mm/m of its length ($\pm 0.5\text{mm}$) with a temperature difference of 40°C. The choice of dark finishes can influence the likelihood of expansion occurring.

The use of split mullions is generally appropriate where mullion centres exceed 900mm and becomes more important if long runs of framing are being used.

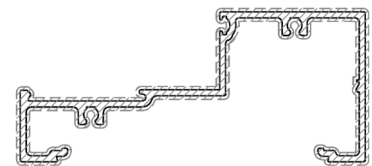
When used for expansion, the gap of the split mullion should be set to a nominal 2mm for standard framing systems or as documented for curtain walls to allow for positive & negative movement. Note that expansion and contraction rates can vary between sills, transoms & heads locations due to the frames weight which can retard movement, thus the gap may vary along the length of a mullion. This is not a fault in design or application as the joint is dynamic and can alter marginally from season to season.



FRAME ASSEMBLY & CAULKING

The sealing of all aluminium joints is critical to the overall performance window or door. This can be done with either small joint sealant or in some cases appropriately shaped end gaskets.

Small joint sealing of cut or machined edges that abut continuous assemblies (usually horizontals abutting verticals) prior to screwing, and over caulking screw heads is the most consistent and effective method of sealing frame joints.



Small joint sealant is recommended in this application due to its ability to remain flexible once dry.

For simple butt joints, an appropriately shaped foam or butyl end gasket can be applied to the continuous surface before attaching the adjoining piece. Any gaps behind the gasket should be sealed with silicone, particularly on transoms and when no sub sill is used.

When end gaskets are used on runs of multiple frames, consideration should be given the combined thickness of the gaskets. Each gasket, when assembled, measures approximately 0.35mm which, if required, can be countered by reducing the cut length of the horizontal extrusions.

Principles of Commercial Fabrication

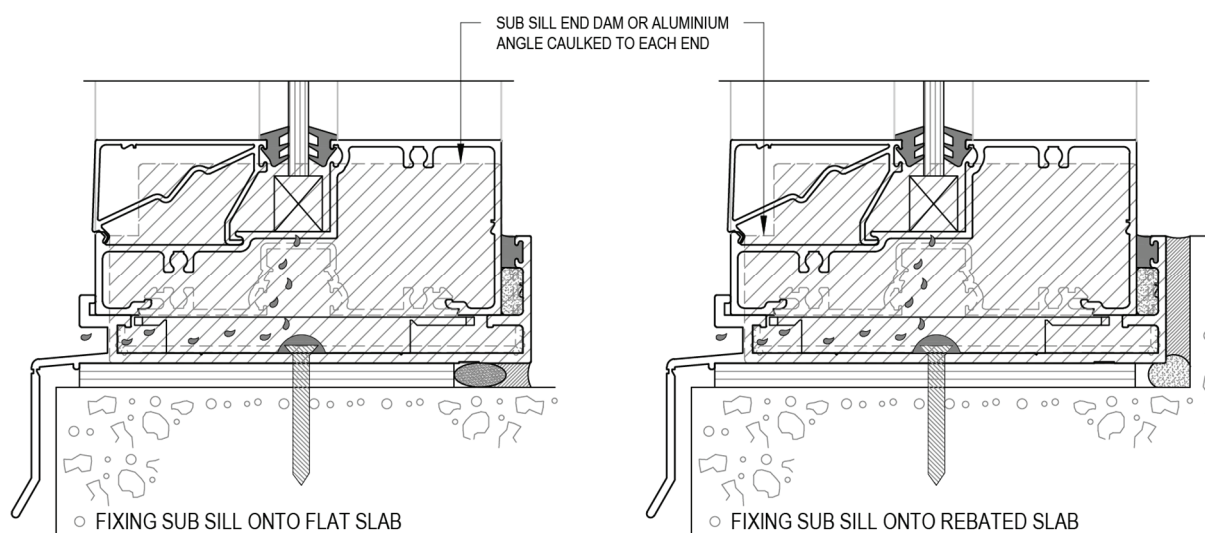
SUB SILLS

Pre slotted subsills have become the industry standard for commercial framing as they simplify installation and are pre fitted to an opening prior to the frame being fitted, with pre fitted end dam (the ends of subsills fitted with a sealed return angle to act as a "tray flashing" - shaded). The subsill is packed along its length, and at points aligning with the glass support blocks to ensure it remains straight and flat, then fixed to the structure using suitable fixing which are caulked over.

It is critical that adequate support is provided between the frame & sub sill with the use of sill support blocks at regular centres.

The weight of a frame holds it in place, and it is usually not necessary to fix the sill to the subsill itself. If a fixing is required, it can be fixed through the back of the subsill. In some cases, a retaining bracket is recommended in a product's technical manual. It is secured to the sub sill (screws caulked over) and then the sill is placed over it a fixed to the bracket.

In testing it is not uncommon for the complete sill / subsill void to fill with water. It is imperative that an adequate end dam or stop end is used on subsills, and the gap between sill and subsill is silicone sealed for water tightness. Without an adequate end dam, water will overspill the ends of a subsill and can run underneath walls.



Principles of Commercial Fabrication

SUB HEADS & SUB FRAMES

Sub heads are used to either simplify installation, especially in above floor applications, or where vertical movement is likely to occur, where a slab is likely to settle or move as a result of live loads.

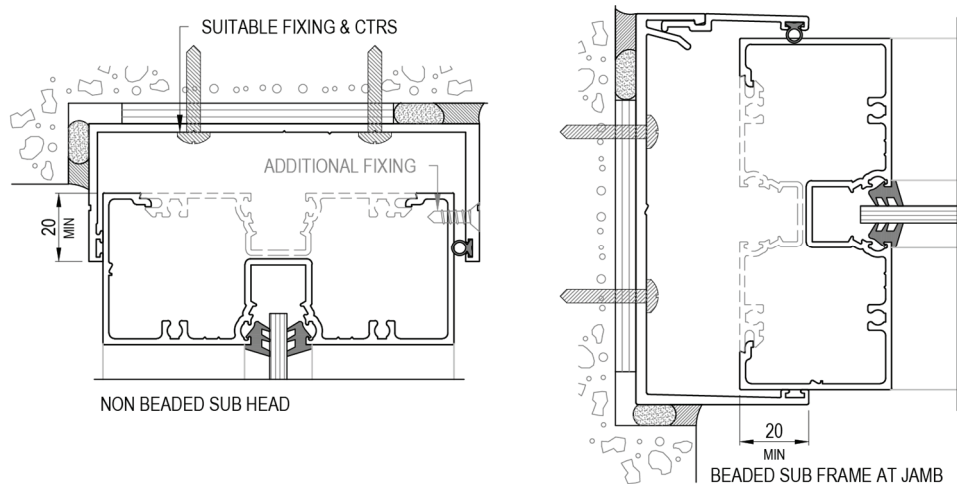
When a sub sill, sub jambs and a sub head are combined, it works as a complete outer frame that is pre-fitted into an opening.

They are often more weatherproof than just a subsill, as air leakage is totally controlled (can be an important consideration when fitting frame into cavities where there is air flow).

While the weatherproofing is improved, the structural strength and performance of the frame, which is no longer fixed directly to the structure, is reduced. In cases where higher performance is required fixing through the sub head into the door/window frame may be required.

Consideration also needs to be given to the potential movement of the frame within the sub frame due to the operation of the product inside of it. Door mullions particularly, should be fixed via aluminium angle to the sub head, the details of which can be found in the product's technical manual or Sub Framing manual.

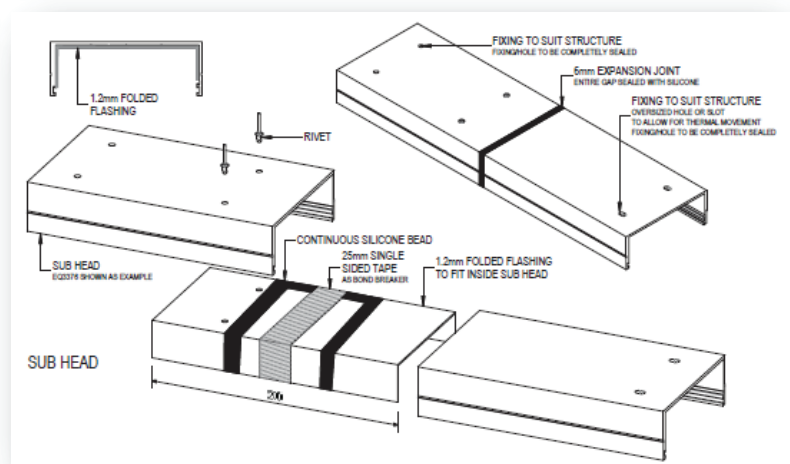
Capral's AGS Sub Sills & Sub Frames technical manual shows a large range of sub framing options, examples of use and assembly details.



SUB HEAD & SILL SPLICING

When long runs of framing exceed the available length of the sub head and sub sill, the extrusions need to be joined end to end using an appropriate splicing technique. Failure to do so could result in water leaking through the joint and into the building.

The full details for splicing can be found in the AGS Sub Sills & Sub Frames or Futureline Framing technical manuals and require the use of folded flashings, double sided tape, comprehensive silicone seals and fixings that allow for expansion.



Building Systems Information

Principles of Commercial Fabrication

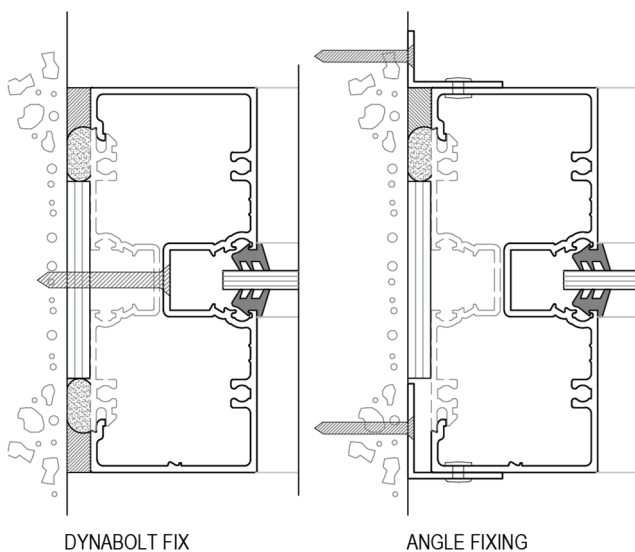
FRAME FIXING METHODS

Generally commercial frames are fixed into prepared openings on site. Ensuring that the frame is tailor made to the opening.

The use of an appropriate fixing through glazing pockets into the building or internal/external trim angles are the most common methods of securing a frame.

Commercial frames are usually fitted leaving a nominal gap on the sides. This allows clearance to easily insert the frame, provides leeway for openings which are out of square, stops metal to mortar/brick contact, which can result in corrosion, and provides sufficient gap to continuously caulk and or finish off with angle trims.

When caulking the frame, the internal seal is usually more important than an external seal, as it provides an impervious seal which stops water entry into the building.



Refer to the Australian Glass and Window Association's "Window & Door Fixing Guide" for more information.

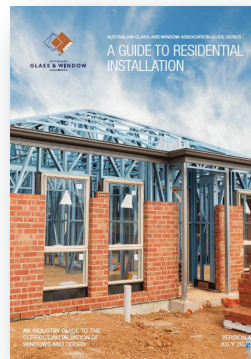
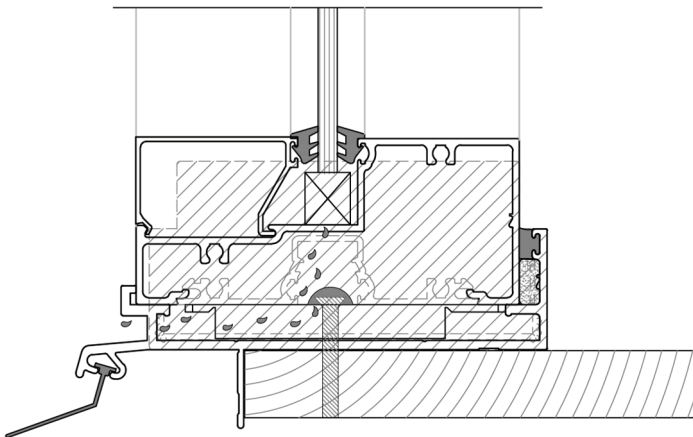
Principles of Commercial Fabrication

FITTING COMMERCIAL FRAMES INTO RESIDENTIAL APPLICATIONS

Frequently commercial frames are used in flats, apartments and residential homes. Commercial fabricators in most instances make their products to the opening size and fit after the opening has been prepared for them, and the commercial frames are site glazed.

In certain situations windows are supplied in a pre-glazed condition and are left for the builder to fit. There are a number of situations arising where this is dangerous as the builder generally is not used to fitting commercial style frames and may create difficulties with the product in service.

1. They do not understand the importance of subsills, and the need to have a stop end to ensure water does not flow into cavities or stud work
2. Occasionally frames have been rendered over the face, damming up drain holes in subsills, or under sill drainage
3. They are not familiar with what to seal, and where to caulk off the frames
4. Commercial windows are not supplied with sill flaps which allow for building movement and may fit sill bricks hard underneath the frame.
5. Commercial frames by nature are large and heavy. Supplying pre-glazed and revealed frames make them awkward to handle and damage can occur in handling affecting the weathering capabilities.
6. Shown below is an example of a pre-glazed window sill onto a timber reveal.



Refer to the Australian Glass and Window Association's "A Guide to Residential Installation" for more information.

SASH ASSEMBLY

Awning and casement sashes are used widely in commercial framing. In most commercial suites they are fitted into a rebate formed by a sash adaptor. The adaptor can either be mitre cut or square cut and vertical leg notched, leaving a continuous horizontal adaptor to weather behind. It is important that the adaptor be caulked around its perimeter and small joint sealant used at the ends.

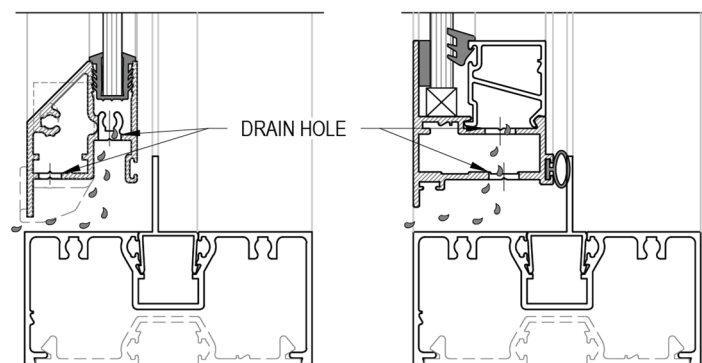
Drainage holes in the glazing pocket of the sash bottom rail are recommended to allow any build up of water to safely drain. If beaded, the inside leg should be sealed with a continuous silicone bead and both ends sealed with small joint sealant.

The sash is mitre cut, joints sealed with small joint sealant and assembled with a corner stake and either crimped or screwed together.

A bulb seal either on the inside of the sash or sash adaptor runs along all four sides and should be joined at the corners with a compatible superglue or vulcanisation (welding). This is vital for creating a continuous watertight seal.

Any seals used on the outside of the sash are used on the top and sides only reducing water ingress while allowing what does get in to drain.

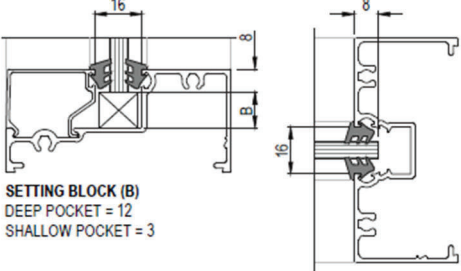
All hardware fitted to sashes (winders, operators, cam handles) require fixing holes to be sealed over.



Glazing & Weathering

GLAZING

The following pages illustrate a number of glazing methods that are used with aluminium building systems. This information deals in general terms only. The exact glazing pocket geometry and recommended system for each individual product is shown on the glazing pages of the systems Technical Data Manuals. This included recommendations on seal combinations which should be adhered to.



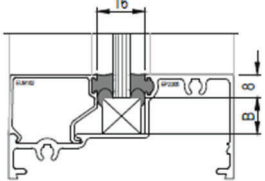
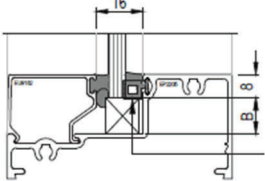
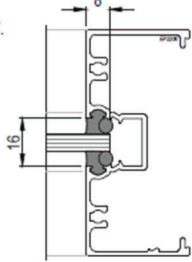
SETTING BLOCK (B)
DEEP POCKET = 12
SHALLOW POCKET = 3

DRY GLAZING - 16mm Pocket				
GLASS SIZE	WEDGE	GAP	WEDGE	GAP
4mm	300013 (315788*)	5mm	300004	8mm
5mm	300013 (315788*)	5mm	300003	7mm
6mm	300013 (315788*)	5mm	300013	5mm
8mm	300001 (315787*)	3mm	300013	5mm
10mm	300001 (315787*)	3mm	300001	3mm

* CAPTIVE WEDGE ALTERNATIVE

WET GLAZING

- WHERE THE GLASS THICKNESS PERMITS, INSERT A BACKING ROD ON EITHER SIDE OF THE GLASS.
- CENTRE THE GLASS WITHIN THE GLAZING POCKET USING APPROPRIATE PACKERS ON EITHER SIDE.
- APPLY A CONTINUOUS SILICONE BEAD AROUND THE FULL PERIMETER OF THE FRAME, BOTH INSIDE AND OUT.

6mm CO-EXTRUDED
HEADLESS WEDGE
322672

Notes:

Care must be taken to ensure all materials used in glazing are compatible such as setting block compatibility with DG units.

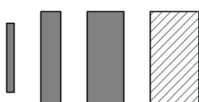
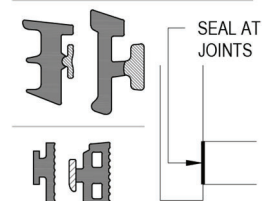
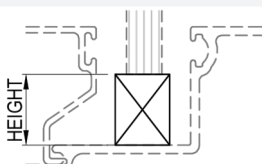
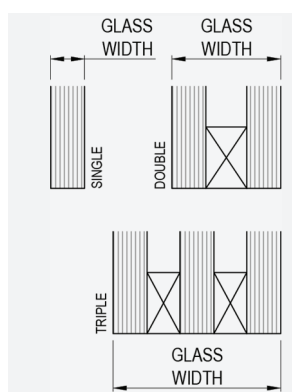
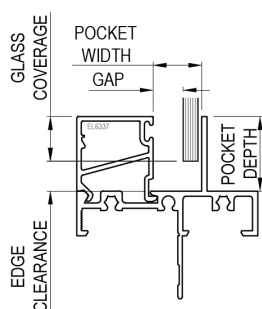
The methods of glazing described in this document are specifically for vertical glazing. Selection of materials for sloped glazing can be more critical and we recommend that advice be sought from the supplier of glazing materials.

Disclaimer:

Most of the systems, assemblies, installations and glazing details illustrated in this and other relevant Capral literature have been tested and found to comply with the requirements of AS2047 for strength and weather resistance. If variations of the documented glazing details are proposed, care should be taken to establish that the alternatives are comparable in quality and performance to those specified. Refer also to Capral Conditions available on the Capral website.

Glazing & Weathering

GENERAL TERMINOLOGY



Glazing Pocket: The cavity into which the glass is recessed, measured by width & depth. They can be formed by a single extrusion or created from 2 extrusions.

Glazing Bead: A separate extrusion that is connected to another extrusion such as a frame or a stile to create a glazing pocket.

Glass coverage: The amount that the glass recesses into the pocket. It is sometimes referred to as structural bite.

Edge Clearance: The distance between the edge of the glass and the bottom of the pocket.

Gap or Face Clearance: The space between the glass & the side of the pocket.

Single Glazing (SG): A single pane of glass, typically 3mm up to 10mm. This includes Laminated glass.

Double Glazing (DG): Two panes of glass separated by a space filled with air or an inert gas like argon, also known as an IGU.

Triple Glazing: Three panes of glass separated by spaces filled with air or an inert gas like argon, also known as an IGU.

Insulated Glass Unit (IGU): Two or more panes of glass separated by a spacer and sealed to create a single unit. Also known as double or triple Glazing.

Insulator: The spacer that separates multiple panes of glass in IGUs. Typically available in two types, aluminium and warm edge.

Setting Block: A block that supports the glass with the correct edge clearance, typically located at the 1/4 OR 1/8 points. Polyethylene or polypropylene blocks are recommended for IGUs. The height of the block is critical to ensuring the correct glass coverage.

Co-Extrusion: A seal fabrication method where it is manufactured with a combination of either multiple different materials or different colours. Different colours are used to easily recognise different sizes. Mixed materials are used to add rigidity without compromising function.

Glazing Wedge: An extruded flexible profile that is pushed/rolled into the gap between the glass and pocket sides. In some cases, different sizes are colour coded with a strip of colour at the bottom. Typically PVC or Santoprene.

Captive Wedge: A co-extruded seal that is held captive by a seal groove in the aluminium. It is inserted into the aluminium prior to assembly & glazing. Typically PVC or Santoprene.

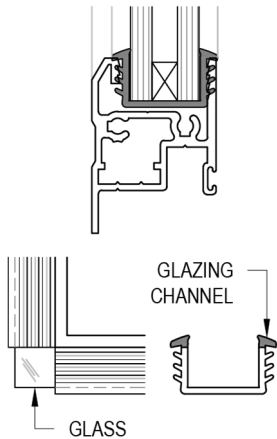
Backing Gasket: A flexible or co-extruded seal with a flatter profile that provides a firm backing for the glass, typically held captive by a seal groove.

Glazing Channel: An extruded flexible profile that wraps around the glass and fits snugly into the glazing pocket. Typically PVC or Santoprene. These are often punched along the bottom for drainage purposes.

Glazing Tape: A single sided tape used to position glass against the side of a pocket. Typically butyl or foam.

Glazing & Weathering

WRAP AROUND GLAZING



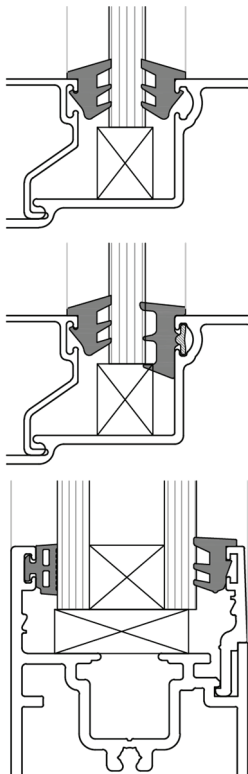
Method: This method is traditionally used for residential window sashes and sliding door panels.

Frames must be assembled around the glass, therefore re-glazing requires panels to be removed and dis-assembled.

1. Position the glass on wood or nylon blocks so the edges are clear of the work surface.
2. Apply the glazing channel continuously, without stretching, around the entire pane, splitting but not breaking it at the corners.
3. Apply the aluminium extrusions by positioning it against the prepared glass/channel and knocking it on by hand or with a soft hammer.
4. Screw/tighten the corners of the sash together.
5. Ensure the extrusions are straight without bowing and that the sash/panel is square.

Notes: Some products require the use of setting blocks for heavy IGUs.

POCKET DRY GLAZING



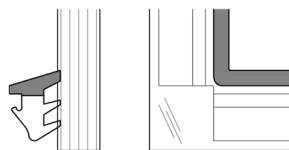
Method: This method using either two roll-in wedges or one roll-in with a captive wedge is typically used on shopfronts and other commercial style products. At least one bead per opening is required to allow glass insertion and is usually at the sill/bottom rail.

It is neat and clean to execute & easily re-glazed.

Carefully installed, this system is designed to be weatherproof at high water rating requirements.

1. Refer to the Glazing Details in the technical manual to determine the wedge combination to suit your glass size.
2. If using a captive wedge or backing gasket, it must be inserted into the frame during assembly and prior to glazing. The joints at the corner should be sealed with a small joint sealant.
3. Shuffle the glass into position as shown below, placing setting blocks at the 1/4 or 1/8 points.
4. Install the glazing bead
5. When using captive wedges, use small pieces of wedge or horseshoe packers around the perimeter to push the glass against the captive wedge. When using 2 roll-in wedges, use small pieces of the wedge around the perimeter, on both sides, to temporarily hold the glass in the correct position.

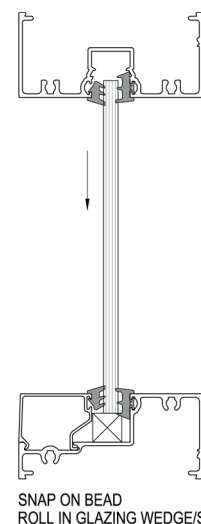
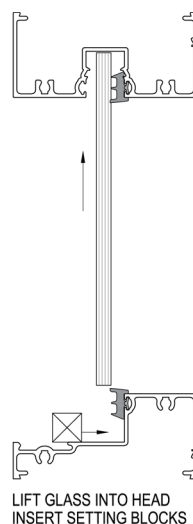
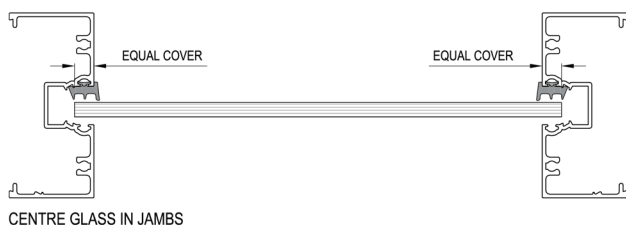
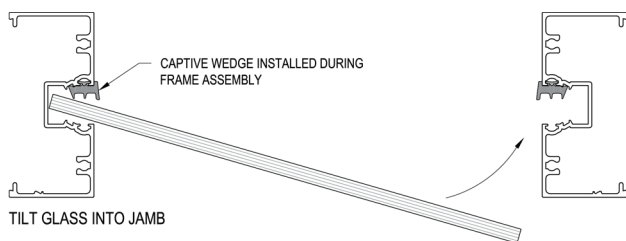
Glazing & Weathering



6. Apply the glazing wedge continuously, without stretching, around the entire perimeter, removing the temporary packers along the way. It is recommended that the wedge starts in the centre of the top of the glass.

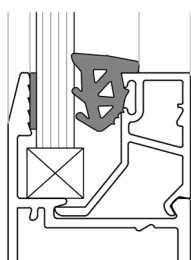
IMPORTANT: The bottom of the glazing wedge should be split at the corners but NOT fully cut in order to be fully inserted into the corners.

7. Seal the start/end joint of the glazing wedges with small joint sealant.



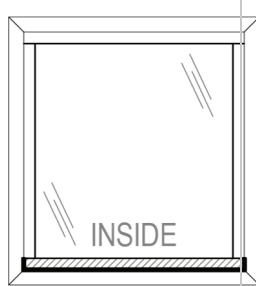
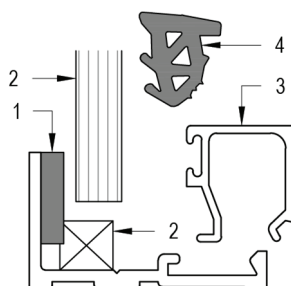
Notes: Due to tolerances on metal, glass and glazing materials, the wedge combinations recommended in the technical manual should be taken as a guide only and should be verified and modified if required to suit actual job materials.

DRY REBATE GLAZING



Method: This method is more versatile than above and allows more tolerance on glass cutting sizes.

Typically, glazing tape is used on a flat surface with a roll-in wedge & bead on the other side.

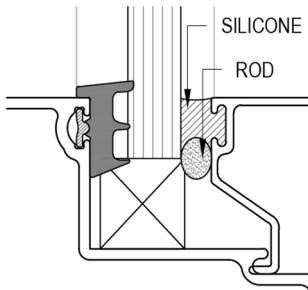


1. Apply the glazing tape to the assembled frame/panel/sash ensuring that the tape overlaps the aluminium joints.
2. Position the glass onto setting blocks, as shown previously, and press firmly against the tape.
3. Install the glazing bead or beads. The bead at the bottom of the glass should run full width inside the frame/panel/sash with the inside leg and both ends fully sealed.
4. Apply the glazing wedge using the same method as described for pocket dry glazing.

Notes: ???

Glazing & Weathering

ONE-SIDED WET GLAZING



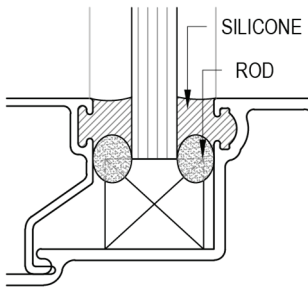
Method: This mixed method combines captive wedges, backing gasket or glazing tape dry glazing with a silicone seal.

For best performance the product should be beaded & siliconed from the inside.

1. Apply Captive Wedge, backing gasket or glazing tape as described above
2. Shuffle glass into position onto setting blocks apply beads as describe previously.
3. Used packers below the lip of the pocket force the glass against the wedge/gasket/tape to ensure proper compression.
4. Insert closed cell backing rods into the cavities around the glass ensuring enough space is left for the silicone.
5. Apply silicone continuously into the pocket around the full perimeter.

Notes: It is recommended to apply silicone to the inside and have wedge on the outside to ensure quality water seal

TWO-SIDED WET GLAZING

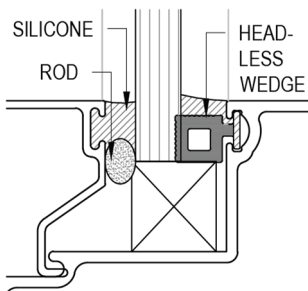


Method: This method uses a continuous silicone seal around both sides of the glass and provides highest performance level.

This method is suitable for both beaded and wrap around assembly methods.

1. Insert the glass and apply glazing bead if applicable
2. Use packers below the lip of the pocket to hold glass in position and insert closed cell backing rod ensuring enough space is left for the silicone.
3. Apply silicone continuously into the pocket around the full perimeter on both side of the glass ensuring the silicone is pumped down into the cavity.

HEADLESS WEDGE WET GLAZING

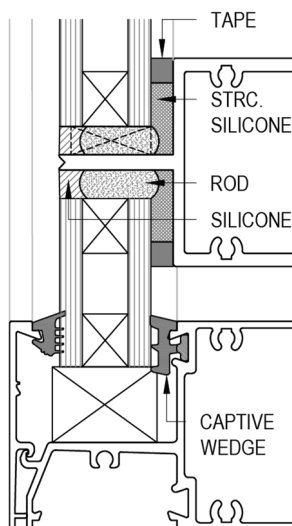


Method: This method is a compromise between one & two-sided glazing where a headless wedge the backing rod on one side and helps to position the glass.

Ideally the headless should be applied to the inside of the glass.

1. Insert the headless wedge into aluminium during assembly
2. Insert the glass and apply glazing bead if applicable
3. Use packers below the lip of the pocket to press glass against the headless wedge and insert closed cell backing rod on the other side ensuring enough space is left for the silicone.
4. Apply silicone continuously into the pocket around the full perimeter on both side of the glass ensuring the silicone is pumped down into the cavity.

STRUCTURAL GLAZING – FRAMING SYSTEMS & CURTAIN WALLS



Method: This method uses structural silicone to hold the glass to a flat surface without it being captive within a pocket. This is typically used for shop fronts and facades and creates large areas of glass without aluminium visible on the outside.

Structural glazing can be used on one side one or more sides of the glass with any remaining sides pocket glazed using the methods above where the glass position matches the structural glazing requirements.

The exact details of structural glazing is dependant on the specific structural silicone used and should be confirmed with the structural silicone supplier.

1. Assemble and position the frame ensuring it is square, level and secure.
2. Prepare the surface where the silicone is to be applied using the silicone supplier's specified preparation methods.
3. Apply glazing tape or another specified spacer.
4. Position glass and complete any pocket glazing.
5. Apply structural silicone according to the silicone supplier's instructions and specifications.
6. Refer to the silicones' specification to determine the setting time of the silicone. The frame should not be moved until the structural silicone is fully set.
7. Once sufficiently set, backing rods and non-structural silicone can be used fill and finish any remaining gaps between the glass and frame.

Notes: The structural glazing technique and structural bite should be confirmed with the structural silicone supplier

Glazing & Weathering

WEATHERING & DRAINAGE

Drainage holes should not be necessary for correctly sealed and glazed panels, sashes & fixed lights, however for practical purposes they are desirable provided that the drained water can be diverted to the outside of the building. If drainage holes are required in the glazing pocket area, they should be created before glazing.

Transom drainage, where transoms are cut between pocketed jambs/mullions, the pocket of the jamb/mullion must be completely sealed at the transom level. This can be done with pocket filler components, positioned and sealed over with silicone, or a piece of the frame's flush filler sealed into position.

External Drainage, typically using slots exposed to the outside, can be visible and are subject to wind loads. In some cases, these factors can be mitigated with the use of a continuous sill flap seal or drain valve components.

Side (internal) drainage, uses a hole in the jamb/mullion at the transom level to direct water internally downwards. For this drainage type a sub sill must be used, jambs must be sealed full height, split mullions must have an appropriate seal towards the inside including 100mm silicone at the bottom and any jamb/mullion pockets must be completely sealed with a pocket filler & silicone.

