



 JURALCO

JURALCO WINTERGLAZE®
RETROFIT DOUBLE GLAZING SYSTEM

ISSUE 4/20

Juralco Aluminium Building Products Ltd designs and distributes specialist aluminium joinery systems through a national network of franchised fabricators and agents.

For more than 25 years we have been at the forefront of specialist aluminium door and window products suitable for New Zealand joinery and building methods. Our comprehensive product range includes security and insect screens, balustrades and gates, shutters and awnings, shower screens, wardrobe doors and organisers and internal doors.

The Juralco WinterGlaze® System replaces inefficient single glazed window panels with up to date double glazed units, available in a variety of glass types and thicknesses. The system is extremely versatile and can be custom made in a range of configurations and powder-coat colours to meet most modern architectural requirements.

This Guide is intended for use by Architects, Specifiers and Fabricators
Pages 2-3 give a general overview; pages 4 onwards contain more detail
See Index page 3

General Description

- Juralco RetroFit Double Glazing is the process of replacing your existing single glazing with insulating glass units.
- The process is quick and unobtrusive.
- If you have aluminium-framed windows, a Retro-fit may be as simple as replacing the existing exterior glass beads retaining bead and, where necessary, fit new opening sashes.
- The RetroFit systems apply to all Windows and Doors
- The new beads and sashes are powder coated or anodised to closely match the colour of your existing window frame.
- Fabricators will measure your Windows and Doors; the new units will be made at one of our local fabricator factories.
- Unless you look closely you will probably never notice the change - except the temperature inside your home, the reduction in condensation and your increased comfort.
- With RetroFit double glazing your home is virtually unchanged yet you enjoy all the benefits of double glazing
- Winterglaze Double Glazing Glass units are manufactured by Metro Glass Tech, and are commonly referred to as IGU (Insulating Glass Units)

Advantage 1 - Thermal Insulation. Make your home a warmer, drier place

- It makes sense to maximise your insulation. Double glazing can have added insulating benefits when combined with Argon Gas and Low E glass

What is Argon Gas and Low E Glass?

Argon gas is a naturally occurring inert gas which is not harmful to you.

By trapping a measured amount of Argon gas between the panes of glass and sealing it in, the insulating performance of your double glazing increases. Argon gas is denser than air and acts as a greater barrier to heat loss and heat absorption in the home, with a thermal performance increase of up to 15%.

Low E, or Low Emissivity glass, reflects long wave radiation keeping the heat inside the home.

Using a combination of Low E glass and Argon gas you will receive ultimate insulation performance

Advantage 2 - Sound Insulation. Make your home a quieter place.

Today's world is one of noise. Traffic, trains, aircraft, machinery, appliances, television and music systems.

Sound comes at us from everywhere, much of it unwanted.

Whatever the noise source, the correct selection of glass for the window systems and construction method are crucial for a peaceful environment.

Double Glazing

Metro Glass Tech double glazed Insulating Glass units can be used to reduce noise, if the glass is of appropriate thickness and type. In addition, laminated glass can be combined in an IGU for ultimate sound control.

Laminated Glass

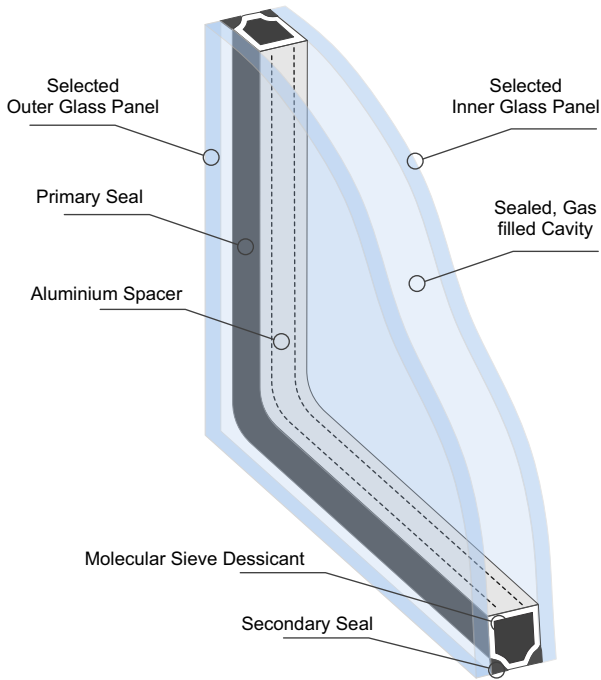
Special acoustic grades of laminated glass are available such as SoundStop which is a special acoustic CIP-laminated glass consisting of two glass sheets with a layer of acoustic resin. Used as part of your double glazed unit will enhance its sound proofing qualities.

Juralco Winterglaze® RetroFit Double Glazing System

Note : This Manual covers the installation of IGU's into Fixed/Awning/Casement Windows with existing Aluminium Joinery. It does not cover any Doors or Windows with Wooden joinery

Pages	Codes	Description
p4 to p7	Specs	IGU Design Limitations - an explanation of sizing, glass thicknesses, wind, altitude and various other limitations of Double Glazed units
p8 to p11	Specs	Human Impact and Reglazing considerations
p12 to p13	IGU, Handling	Notes on IGU Handling, Storage and Cleaning
p14 to p17	Extrusions and Components	Shows all Bead and Sash extrusions. Also Wedges, glazing blocks, corner gussets and inserts. Wedge Chart showing IGU Thickness and Wedge combinations.
p18 to p28	Bead and Sash Arrangements	Shows range of existing/historical single glazed window frames and the extrusions and components necessary to convert to a double glazed system
p29 to p34	Installation Tips	Checklist, Drainage types; also shows how to disassemble an existing Window/Frame, clean and reseal, then install an IGU correctly.
p35 to p42	Stays and Handles	Shows a range of suitable Stays and Handles
p43 to p47	Doors	Shows existing/historical sliding door frames and appropriate adaptors. New Extrusions and Cutting allowances
p48 to p49	Order Forms	IGU and DGU Order Forms

GlassTech® Double Glazing Types



GlassTech® Double Glazing

GlassTech Double Glazing are Insulating Glass Units manufactured by Metro GlassTech. They consist of two or more panes of glass separated around the edges by an aluminium spacer and sealed at the perimeter in factory controlled conditions. The spacer contains a molecular sieve desiccant (drying agent) which absorbs moisture vapour in the cavity.

GlassTech Double Glazing units are dual seal units comprising a primary seal of Polyisobutylene (PIB) to the spacer face and a secondary perimeter seal of Polysulphide. This results in a high quality IGU with a 10 year warranty suitable for commercial and domestic applications.

GlassTech® Standard: Insulating Glass Units filled with air.

GlassTech® Argon+: Insulating Glass Units filled with Argon Gas.

GlassTech® Low E+: Insulating Glass Units comprising of Low E Glass.

GlassTech® Thermal+: Insulating Glass Units with the high tech and innovative Thermix warm edge spacer system, made from stainless steel and high performance engineering plastics.

GlassTech® Structural+: Insulating Glass Units with a special silicone secondary seal for exposed edge conditions, structural silicone glazing, and point fixed structural glass wall applications.

GlassTech® SF: Insulating Glass Units with the Super Spacer Silicone Foam (SF) warm edge spacer system. The black UV resistant silicone foam spacer incorporates molecular sieve desiccant which combines the functions of a spacer, desiccant and corner keys. These units use hot melt butyl as a secondary seal.

INSULATION COMPARISON - CLEAR GLASS U VALUES						
Glass Type	Outer Glass (mm)	Air Space (mm)	Inner Glass (mm)	U Value	R Value	Heat Loss Reduction %
Single Clear	4			5.88	0.17	0%
	6			5.82	0.17	1%
Single Low E	4			3.67	0.27	38%
IGU Clear	4	6	4	3.14	0.32	47%
	4	8	4	2.94	0.34	50%
	4	10	4	2.81	0.36	52%
	4	12	4	2.73	0.37	54%
	4	14	4	2.71	0.37	54%
	4	16	4	2.72	0.37	54%
	4	18	4	2.74	0.37	53%
	5	12	5	2.72	0.37	54%
	6	12	6	2.70	0.37	54%
	6	12	6	2.71	0.37	54%
IGU Argon	4	8	4	2.71	0.37	54%
	4	10	4	2.61	0.38	56%
	4	12	4	2.56	0.39	56%
	4	14	4	2.56	0.39	56%
	4	16	4	2.58	0.39	56%
	4	18	4	2.59	0.39	56%
	6	12	6	2.54	0.39	57%
	4	6	4	2.53	0.39	57%
	4	10	4	2.21	0.45	62%
	4	10	4	2.01	0.50	66%
IGU Low E (Low E #3)	4	12	4	1.90	0.53	68%
	4	14	4	1.90	0.53	68%
	6	12	6	1.89	0.53	68%
	4	8	4	1.83	0.55	69%
IGU Low E (Low E #3) & Argon	4	10	4	1.67	0.60	72%
	4	12	4	1.62	0.62	72%
IGU Low E (Low E #3) & Argon	4	14	4	1.64	0.61	72%
	6	12	6	1.61	0.62	73%

*U Value calculated on LBNL W5.2 for NFRC 100-2001 conditions.

Metro GlassTech - IGU Design Limitations - 1

Introduction

insulating Glass Units (IGUs) are being used more frequently in domestic and commercial buildings to provide improved insulation, comfort, condensation and noise control. However, specifiers need to understand the principles of IGUs and the limitations these place on Design.

The Basics

Clear monolithic glass accounts for less than 5% of a windows insulation value, the rest being supplied by the still air layers of the environment on either side of the glass. Since the heat flow resistance of still air is much greater than that of glass a glass unit made of two panes enclosing an air space will have about twice the insulation value of a single pane window (ie half the heat loss). Triple pane units with two sealed airspaces have an insulating value approximately three times that of single glazing.

This is why double and triple glazed units are called insulating Glass Units as they provide insulation to the windows of a building, like fiberglass insulation provides insulation to the wall.

Insulation is measured by the R Value or U Value.

The U Value is a measure of the rate of heat loss per square metre of glass for a temperature difference of 1°C between the interior and exterior. The lower the U Value the better the insulation.

The R Value is the reciprocal of the U Value ($R=1/U$), so the higher the R Value the better the insulation.

R Values are used more commonly now since the introduction of energy efficiency requirements and the use of NZS 4218:2009 Thermal Insulation — Housing and Small Buildings. This latest version introduces a new term R(window) for the construction R Value of a complete window including the frame.

Pressure and Temperature Effects

An IGU is made by sealing air or gas between panes of glass hence the name IGU (Insulating Glass Unit)

When the unit is sealed, the initial pressure and temperature of the trapped air are the same as outside the unit.

If the panes do not deflect under their own weight, they will initially be flat since there is no pressure difference acting on them.

As long as the unit remains sealed, the mass of the air between the panes is constant and according to Charles Law, the product of its volume and pressure, divided by its absolute temperature, is also constant.

If all the boundaries of the air space were perfectly rigid the volume would be constant too and changes in pressure outside the unit would have no effect on the pressure inside the unit.

But the thin glass panes of an IGU are flexible, meaning that they will deflect if there is a difference in pressure from one side to the other. Hence an IGU can be considered as a sealed flexible chamber.

If the pressure outside the unit increases while the temperature remains the same, the difference in pressure differential will cause the glass panes to deflect inward, thus decreasing the volume of trapped air.

If the pressure outside the unit decreases, the pressure differential will deflect the glass outward increasing the volume of trapped air.

This is why, for special applications such as high altitude windows, it is important to consider the air pressure at the time of sealing and the air pressure at the glazing location.

There are five common causes of either positive or negative pressure changes that affect the IGU

- The barometric changes of weather conditions
- The barometric effects of a change in altitude between the manufacturing site and the installation site
- Wind effects
- Outdoor and indoor air density differences at different temperatures
- Operations of HVAC system in the building

Temperature changes also result in pressure and volume changes with an increase in temperature causing outward movement of the panes and a decrease in temperature causing inward movement.

The change in pressure induced by a temperature rise of 2.7° C is about the same as that caused by a barometric drop of 1 kPa. The barometric pressure is 101.3 kPa at sea level and it will drop by about 1 kPa per 100m in elevation or altitude.

This is why special care must be taken for units glazed at high altitude and often pressure equalisation is required once in location or by using pressure valves or capillary tubes.

The net result is that an installed IGU is forever deflecting in and out with the changes in climate.

This deflection puts stress on the edge seals, which can shorten their life if excessive.

This deflection can also create changes in the appearance of transmission and reflection images especially if the units are made from tinted or reflected glass.

If the unit is large and/or square in geometry the airspace may not be wide enough to stop the two panes deflecting in and touching and if they do you get an effect called "Newton's Rings".

This also means the glass is no longer insulating as the panes are touching and in some cases the glass surfaces can rub and cause permanent surface damage inside the unit.

The deflections in the unit from changes in temperature and pressure can be calculated. For example, a 2500 x 1500mm unit 8/12/8 made on a low pressure day (950mbar) in a factory at 15°C will deflect inward overnight at 10° C on a higher pressure day (1000mbar) by 2mm reducing the airspace to 10mm in the centre. Conversely, small thick glass units and thick long skinny units should be avoided also as they don't flex which means that put a lot of stress on the edge seals, and in some cases the seal sizes need to be increased to cope with these loads

Metro GlassTech - IGU Design Limitations - 2

Wind Pressure Effects

The windows of a building must be strong enough to withstand the effects of wind without breakage.

The wind pressure may be positive or negative on a window, depending on its location, height and the orientation of the building surface to the wind and this is known as the pressure coefficient.

The wind action also affects the barometric pressure inside the building.

When the outer pane of an IGU is subject to external wind pressure it will deflect inward and the air space acts like a spring forcing the inner pane to do the same. Some spring resistance is lost by the air space and thus the inner pane may not deflect as much as the outer. The actual amount of loss is a complex issue but the new NZS 4223 Part 4:2008 provides a load sharing formula (clause 3.4.2) to calculate the individual strength of each Pane.

For the wind load design of an IGU, charts are provided in NZS 4223:2008 Part 4 and tables in Supplement 1 for each glass type once the load sharing of each pane is calculated. For panes of equal thickness the load sharing factor is 0.625.

If different glass types and/or thicknesses are used the calculations are more complex and computer software can help.

However, as a simple guide it is conservative and safe to consider both panes to be the thinner and weaker of the glass types used.

For example, if the units are 5+4mm annealed glass then use 4+4 from the wind load charts or tables once the pressure has been reduced by 0.625. The tables provide for both 4 edge and 2 edge supported glass and for ULS and SLS wind pressures.

Deflection

If the panes of the IGU are the same thickness then it is considered that each pane is sharing the wind load due to the spring effect.

This is a simplification as the inner pane may already be deflecting outward (into the building) due to pressure and temperature changes.

To calculate wind load deflection the load is shared and each pane calculated according to its thickness.

However, in reality there is a bit of cushioning by the airspace under wind load and the inner pane will deflect a little less, so it is better to have the stiffer glass to the outer pane, if possible.

But this is not always possible if the outer glass needs to match other windows.

Heat treated glass such as toughened or heat strengthened glass may also have inherent bow or roller wave that can add to the apparent deflection in the unit and it is not advisable to use two large square thin panes of toughened glass in an IGU even if they meet the design load requirements.

Deflection due to wind load is normally limited to 1.5 times the airspace thickness, or 20mm maximum, otherwise it can become visually disturbing. Table 1 has been prepared using these limits as they have been found to provide units with good service performance and history (for example 1.5 x 12mm space = 18mm).

It is always advisable to have a large airspace for large units as the deflection due to pressure change can reduce performance and cause Newton's Rings.

Note:

- Deflection limits on the glass are based on the frame being stiff enough to support the IGU and frames should comply with NZS 4211 or similar. Any undue deflection in the frame can also increase stress in the edge seals and reduce unit life.

Human Impact

If used in human impact situations, such as a door, where the unit may be subjected to human impact from both sides, then both panes are required to comply with NZS 4223:Part 3:1999. If the unit is subject to human impact from one side only, such as low level glazing in the first floor of a building facade, then only the impact side needs to conform to Part 3.

This standard allows a 1.5 area factor for IGUs under human impact, refer clause 303.6.

The table below provides the maximum IGU areas (sqm) of different glass types from NZS 4223:Part 3:1999.

GLASS	Maximum IGU Area sqm				
	Toughened sqm	Laminated sqm	Annealed Column 1. sqm	Annealed Column 2. sqm	Annealed Column 3. sqm
4 + 4	3	N/A	0.3	0.45	1.65
5 + 5	4.5	3	0.75	1.8	3.3
6 + 6	6	4.5	1.35	3.15	4.95
8 + 8	9	7.5	2.7	4.8	6.75
10 + 10	12	10.5	4.05	6.6	9
12 + 12	15	13.5	6.75	9.45	12

For units with different thicknesses use the thinner of the two. Ie for a unit 5 + 4 use the 4 + 4 row above

Metro GlassTech - IGU Design Limitations - 3

Maximum Sizes

Unit weight, handling and glazing implications of a large IGU can often create limitations on the size of the units available. Table 1 gives the normal recommended maximum sizes for vertically glazed IGUs.

The maximum glass size and/or weight can also be restricted by individual manufacturing plants and processes, so it is always advisable to check with the supplier. As a guide, units should not be over 250kg, otherwise special manufacturing, handling and glazing equipment may be required.

To calculate the approximate weight, use the following:

Height (m) x Width (m) x 2.6 kg/sqm x [thickness outer (mm) + thickness inner (mm)]

For example, a 2m x 1m, 6/12/6 unit = 2 x 1 x 2.6 x (6 + 6) = 62.4kg

Handling and glazing large heavy IGUs is best done with strops so both panes are supported but in some cases suckers are required. If suckers are used on one side only they can put shear stress on the IGU seals and damage them.

Note:

- The thickness and weight of large IGUs can also put severe restrictions on the type of joinery used, especially in the case of sliding and pivot doors. In some sash windows special stays and hardware are required to hold the windows open.

Manufacturing Facilities

Metro GlassTech is the largest IGU manufacturer in New Zealand with four production facilities.

The IGUs are marketed under the name GlassTech Double Glazing.

GlassTech IGUs use aluminium spacer bar dual seal technology, with standard spacer widths of 6, 8, 10, 12, 14, 16 and 18mm. Spacers are available in silver and black.

GlassTech Argon+ IGUs use argon gas instead of air and this can limit the production size as detailed in the table below

GlassTech Thermal+ IGUs use a special warm edge spacer made from high performance stainless steel and engineering plastic in black 10, 12, 14 and 16mm.

GlassTech SF units are Super Spacer silicone foam warm edge technology units and spacer widths are metric nominal 6, 8, 10, 11, 12 and 14mm (actual 6.35, 7.94, 9.52, 11.11, 12.7 and 14.29mm).

IGU Manufacturing - Maximum sizes

Location	Unit Type	Maximum, Argon Fill Size mm	Maximum, Air Fill Size mm
Auckland	Glass Tech	4000 x 2500	4000 x 2500
Bay of Plenty	Glass Tech	4000 x 2500	4000 x 2500
Wellington	Glass Tech	4000 x 2500	4000 x 2500
Christchurch	Glass Tech	4000 x 2500	4000 x 2500

Guide to IGU Glass Weights

Glass Panel 1 mm	Glass Panel 2 mm	Glass Total Thickness mm	Glass Area sqm	IGU Glass Weight kg
4	4	8	1	21
			3	63
4	5	9	1	23
			3	69
5	5	10	1	26
			4	104
5	6	11	1	29
			4	116
6	6	12	1	31
			5	156
6	8	14	1	36
			5	182
6	10	16	1	42
			5	208
8	8	16	1	42
			5	208
8	10	18	1	47
			5	234
10	10	20	1	52
			5	260

Metro GlassTech - IGU Design Limitations - 4

IGUMA Recommended Maximum Sizes of Vertically Glazed IGU'S

IGU Glasses	Spacer Width. mm	Wind Zones (NZS 4233:Part 4 2008)							
		Low	0.72kPa ULS	Medium	0.96kPa ULS	High	1.36kPa ULS	Very High	1.76kPa ULS
			0.51kPa ULS		0.68kPa ULS		0.97kPa ULS		1.25kPa ULS
		Max Short. mm	Max Long. mm	Max Short	Max Long	Max Short	Max Long	Max Short	Max Long
4 + 4	6	1050	2200	1050	1800	900	1900	850	1750
4 + 4	8	1200	2300	1150	2100	1000	2100	1000	1750
4 + 4	10	1350	2500	1350	2150	1100	2300	1100	1950
4 + 4	12	1600	2500	1500	2300	1200	2400	1200	2100
5 + 4	6	1200	2100	1100	2200	1000	1900	900	1800
5 + 4	8	1350	2300	1200	2300	1100	2150	1100	1900
5 + 4	10	1500	2500	1400	2300	1200	2350	1200	2000
5 + 4	12	1650	2700	1500	2550	1300	2500	1300	2150
5 + 5	6	1250	2400	1200	2100	1100	1950	1000	1950
5 + 5	8	1450	2500	1300	2500	1200	2250	1100	2200
5 + 5	10	1700	2550	1450	2600	1300	2500	1200	2400
5 + 5	12	1900	2650	1600	2750	1400	2700	1300	2550
6 + 5	6	1350	2500	1300	2200	1200	2000	1100	1900
6 + 5	8	1500	2750	1500	2250	1300	2300	1200	2200
6 + 5	10	1650	2950	1600	2600	1400	2550	1300	2400
6 + 5	12	1800	3100	1700	2850	1500	2750	1400	2500
6 + 6	6	1400	2900	1300	2650	1300	2000	1150	2100
6 + 6	8	1550	3100	1500	2700	1400	2350	1300	2250
6 + 6	10	1750	3100	1700	2750	1600	2450	1400	2500
6 + 6	12	1950	3250	1900	2850	1700	2700	1550	2600
6 + 6	14	2150	3350	2050	3050	1800	2900	1650	2800
6 + 6	16	2300	3550	2200	3200	1950	3050	1800	2900
6 + 8	10	2000	3200	1900	2900	1800	2550	1600	2550
6 + 8	12	2200	3300	2050	3100	2000	2600	1700	2800
6 + 8	14	2350	3500	2200	3250	2200	2750	1900	2800
6 + 8	16	2440	3850	2440	3300	2400	2850	2100	2850
8 + 8	10	2300	3200	2100	3100	1900	2850	1700	2900
8 + 8	12	2400	3600	2300	3200	2100	3000	1900	2900
8 + 8	14	2440	4000	2400	3500	2300	3100	2100	3000
8 + 8	16	2440	4000	2440	3950	2440	3300	2200	3200
6 + 10	12	2440	4000	2200	3600	2000	3300	1900	3050
6 + 10	14	2440	4000	2300	3900	2100	3600	2000	3250
6 + 10	16	2440	4000	2400	4000	2200	3800	2100	3450
8 + 10	12	2440	4000	2300	3800	2150	3400	2000	3200
8 + 10	14	2440	4000	2440	4000	2300	3550	2150	3350
8 + 10	16	2440	4000	2440	4000	2440	3700	2300	3450
10 + 10	14	2440	4000	2440	4000	2350	3550	2100	3600
10 + 10	16	2440	4000	2440	4000	2440	3900	2300	3600
10 + 10	18	2440	4000	2440	4000	2440	4000	2440	3800

Notes:

- The maximum sizes are restricted by wind load deflections at 1.5 times the spacer width. (ie for 12mm space = 1.5 x 12 = 18mm)
This ensures that under normal function the unit does not have poor performance and/or suffer Newtons Rings.
- Unit sizes over 250kg in weight may require special handling, transportation and glazing requirements.
- The sizes shaded above are restricted by the maximum toughened glass size and the maximum IGU equipment size of 4000 x 2500mm.
- The size may also be restricted to comply with NZS 4223:Part 3:1999. This allows 1.5 x the allowable area for single glass.
- The tables are for annealed glass combinations and are normally suitable for toughened glass and laminated glass.
However, complex glass type, thickness and load combinations can be calculated using NZS 4223:2008 Part 1 and 4.
- Unit combinations can be reversed (ie 4+5 = 5+4) for the same maximum size.

Metro GlassTech - Human Impact and Reglazing considerations

Insulating Glass Units in Human Impact Areas

NZS 4223: Part 3:1999 - Human impact Safety Requirements, sets out the maximum permissible areas for various glass types.

The clauses and tables are based on single glazed glass for simplicity and there is one general clause 303.6 for insulating Glass Units (IGUs).

This clause 303.6 is a holistic clause in that it applies to all the other clauses.

303.6.1 says - "The maximum area of sealed insulating glass units shall be 1.5 times the area permitted for a single pane of thickness which is equal to the thinner of the two panes of the sealed unit".

For example if you are allowed 0.5 sqm from column 1 of table 3.2 for single 5mm annealed glass, you can use $0.5 \text{ sqm} \times 1.5 = 0.75 \text{ sqm}$ for a 5+5 annealed glass IGU in the same Application.

If one pane was to be 4mm, then from the same column and table you would be allowed $0.2 \text{ sqm} \times 1.5 = 0.3 \text{ sqm}$ for a (4+5) IGU.

The clause also covers situations in which only one side may be subject to impact, such as the first level of a building facade.

303.6.2 says - "When an insulating glass unit is installed in a location where there is pedestrian access to both sides of the unit, then both panes of the unit shall meet the requirements of this Part.

In situations where the pedestrian access is restricted to one side of the unit, then only the accessible side shall conform to this Part".

Re-Glazing

With the adoption of NZS 4223:Part 3:1999 the reglazing rules changed.

What Part 3 says - Clause 303.8 states, "Where glazing is replaced because of breakage or any other reasons, the replacement glass shall comply with this Part". There are no exceptions in the Standard.

What the BIA/DBH says - The BIA/DBH have reviewed the like-for-like repair or replacement in the BIA news No 60, in which they say, "Repairs and replacements, including like-for-like replacements for which building consent is not required, come within the definition of building work and are therefore required to comply with the building code."

- which means the Acceptable Solution - the Standard.

They go on to say that- "It is the Authority's opinion that territorial authorities should permit the like-for-like repair or replacement of a building element without requiring any upgrading of the element which might be necessary to achieve strict compliance with the code, but only if such upgrading would be unreasonable in the circumstances."

They quote glazing in Human Impact areas as an obvious situation where there is risk that someone might fall or run into the glass and thus the glass should be upgraded unless it is unreasonable to upgrade.

In their BIA News No 80 they expand on replacement glazing and say - "The new glass must comply with the building code unless it would be unreasonable for it to do so".

The BIA/DBH does not consider increased cost as unreasonable, but they do concede that "unreasonable" will be very much case specific.

What the Consumer Guarantees Act says, The Consumers Guarantees Act 1993 does not specifically cover glazing but it does infer that any product supplied must be "fit for purpose". For the glass to be fit for purpose it would be reasonably interpreted as complying with current glazing codes, and thus NZS 4223:Part3:1999.

What Metro GlassTech says - All reglazing should be in accordance with NZS 4223:Part 3:1999 unless it is not possible, due to glass availability or frame suitability but then Metro GlassTech would not glaze if not complying with the code. In cases where the glass does not comply with NZS 4223:Part 3:1999 the customer must be notified at the time of quotation to allow them to upgrade their project.

Notification should be in writing if possible and if the customer still stipulates reglazing that does not comply with the Standard then you can utilise the acknowledgement form and suggest they sign it to indemnify the glazier from any claims in the future.

IMPORTANT NOTE:

You cannot legally contract yourself out of acting legally and in a responsible way as the expert in your field.

Such a signed acknowledgment will probably not save you in the event of a nasty accident and litigation.

Metro GlassTech would only glaze where the glass complies fully with the Code.

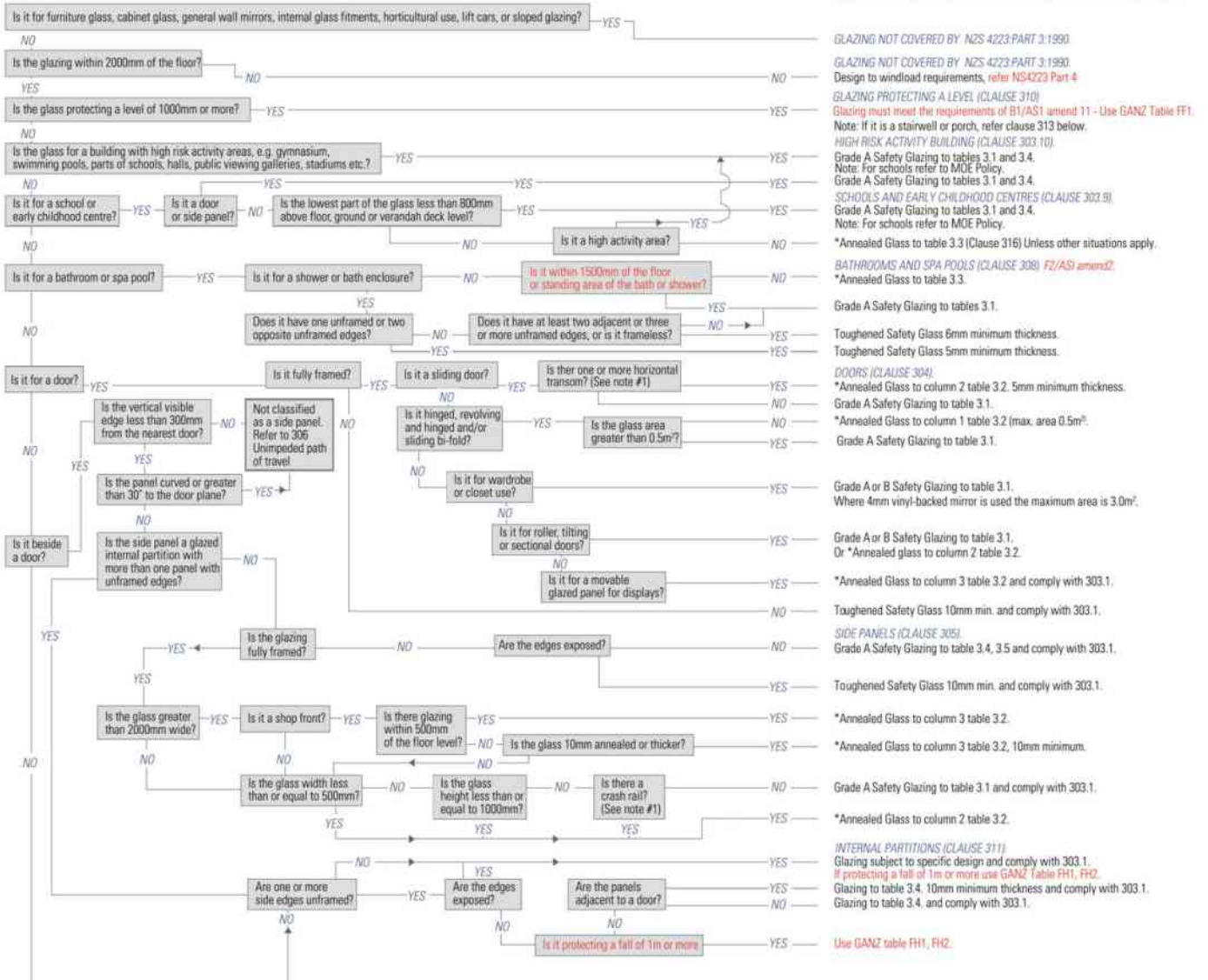
Asking customers to sign this form may however sufficiently concern them not to proceed.

A Guide to Human Impact Safety Requirements

NZS 4223- Part 3 - 1999

Incorporating NZ Building Code changes up to April 2013

***SAFETY GLASS MEETS THE REQUIREMENTS OF EVERY SITUATION.**



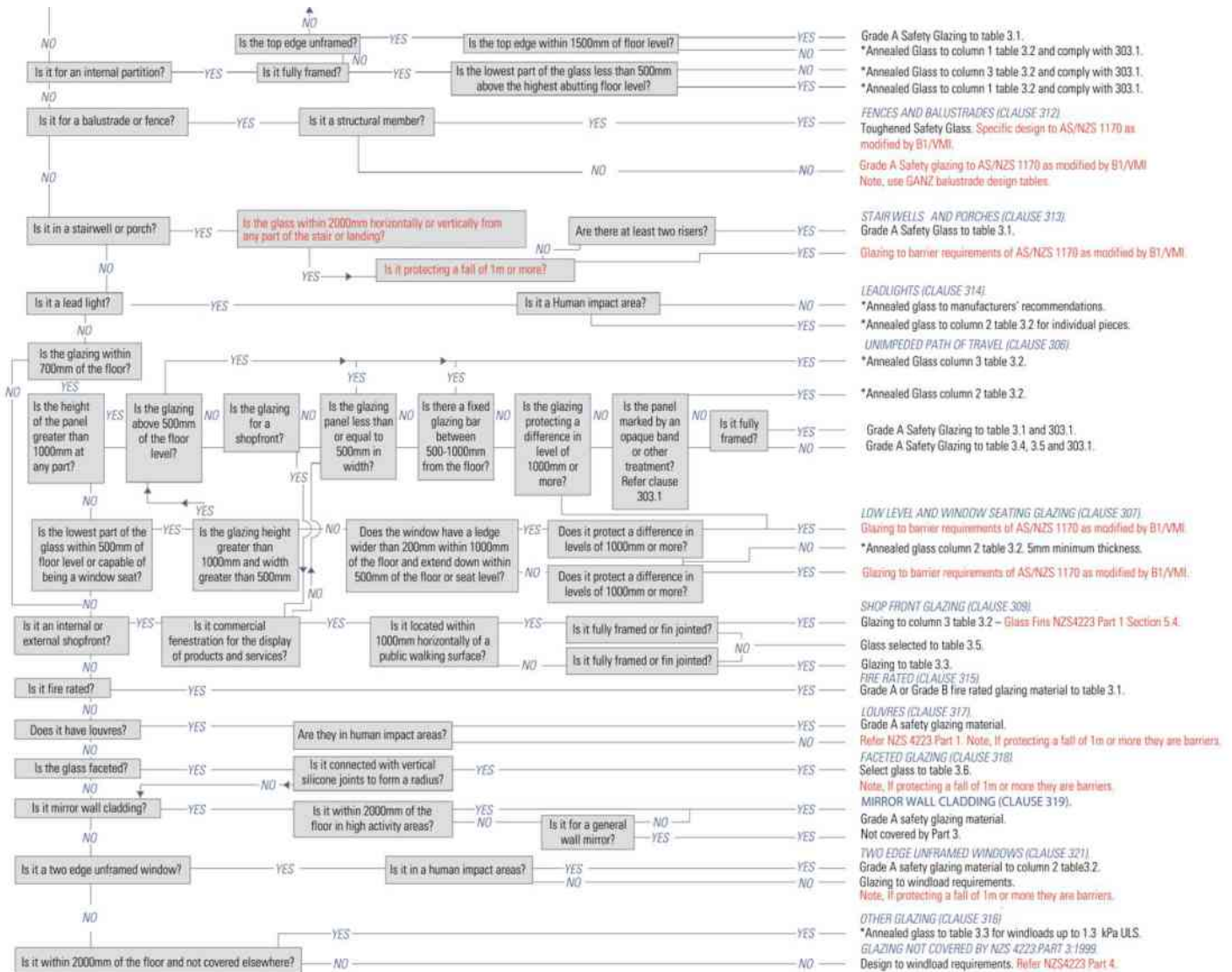
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A Guide to Human Impact Safety Requirements

NZS 4223- Part 3 - 1999

Incorporating NZ Building Code changes up to April 2013

Chart from prev page



Finish

Juralco Winterglaze® RetroFit Double Glazing System - Handling and Storage

HANDLING, STORAGE AND GLAZING OF INSULATING GLASS UNITS

Insulating Glass Units must be handled, stored and glazed in accordance with AS/NZS 4655/2000 and the data sheets provided by the Insulating Glass Unit Manufacturers Association (IGUMA).

A summary of the key issues is as follows;

1. HANDLING AND STORAGE.

- a - Units must be transported and stored so that both panes of glass are equally supported on a 90-degree angle rack set at 4 to 7 degrees from the Horizontal.
- b - Units should not be stacked more than 6 deep without immediate support for each stack.
For various sized units, stack the biggest units against the supports.
- c - Units must be stored in dry ventilated conditions out of direct sunlight.
- d - Units that are transported or installed at heights exceeding 1200 metres above sea level require special pressure equalizing valves and advice should be sought from Metro Glasstech.
- e - Extreme care must be taken in handling units with suckers as this can put extreme stress on edge seals and lead to failure.

2. SKYLIGHTS & SLOPED GLAZING.

- a - Use a glazing system designed and engineered for sloped glazing.
- b - Support the unit dead weight with a setting block on a shoe or glazing bar to prevent unit from slipping down.
- c - Use safety glass for sloped overhead glazing.
- d - Ensure the unit edge cover, on all edges, is 12mm minimum and the edge seal is protected from the sun's UV rays with frames and/or flashings.
- e - Consider the possibility of thermal stress breakage unless heat treated glass is used and use the solar control glass to the outside.
- f - The recommended minimum roof pitch is 5 degrees for water runoff.

3. LABELS & ORIENTATION

Check all units have been glazed in the correct orientation, and then remove all labels after glazing.

Tinted and high performance solar control glass should be glazed to the outside and Low E glass normally to the inside.

IMPORTANT NOTES:

4. DRAINED GLAZING METHOD with GASKET SECTIONS

(Typically Dry Glazed Systems used for Aluminium Joinery)

- a - Always use approved setting blocks. Never install units directly onto a window frame.
- b - Setting blocks should be 8090 Shore A Hardness, 6mm minimum in height and 25mm long .
Position the two setting blocks at quarter points.
- c - Ensure both panes are evenly supported on the setting blocks, which should be 3mm (min) wider than the unit.
- d - Ensure the units have the correct edge clearance. (Top and sides, 5mm min).
- e - Check that gasket and wedge rubber is of correct thickness.
- f - Do not force the wedge in, as this may result in glass fracture.
- g - Ensure the unit edge cover is 12mm minimum and the edge seal is protected from the sun's UV rays.
- h - Ensure rebates are drained with at least 3 drain holes, 6mm minimum diameter
or 5mm x 10mm slots at maximum 80mm centres.

5. GLAZING COMPOUNDS and SEALANTS.

When installing Insulating Glass Units the following have been tested and found to be compatible:

- a - Butyl tape, butyl sealant and neutral cure silicone sealant.
- b - Other compounds and sealants such as linseed oil putty, acid cure silicone, polyurethane, polysulphide, MS sealant and small joint sealant may cause unit failure through sealant incompatibility and testing is advised.

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IGU CLEANING AND MAINTENANCE

A few regular maintenance tasks will help ensure the long term durability of your Insulated Glass Units.

Drainage

Regular checks of the frame drainage system are recommended to ensure drain/weep holes in the joinery are clear and free from obstruction at all times. Insulating Glass Unit failure may occur if free flowing drainage is not present at all times.

Glazing Gaskets and Flashings

Check that glazing gaskets and flashings remain in place and have not become dislodged or shrunk excessively. Dislodged gaskets can allow excessive water into the glazing pockets, and allow direct light onto the sealant surface, causing premature Unit failure.

Cleaning, general

Cleaning agents and chemicals should be compatible with the sealants used in the IGU.

Normal glass cleaning instructions apply, with care taken not to expose the edge seal of the Units to chemicals.

The glass surfaces of the unit should be cleaned every three to six months, with more frequent cleaning advisable in dirty/dusty environments, and during construction.

Normal washing or cleaning compounds can be used and these include warm water and mild soap or liquid detergents, and proprietary glass cleaners. Never use solvents, alkaline cleaners or harsh abrasive cleaners. If you have glass staining, consult the Unit manufacturer for advice.

Soak the glass surfaces with clean water and a mild soap or detergent solution to loosen dirt or debris

Use a soft, clean, grit free cloth, sponge or brush to wash the glass with a mild non-abrasive window washing solution. Try not to wash in direct sunlight

After washing, rinse with clean water and use a grit free squeegee or cloth to remove excess water.

The glass must be dried, otherwise water droplets may become alkaline or evaporate, leaving dissolved minerals on the glass that can cause surface staining.

Cleaning, reflective glass

Take special care when cleaning reflective glass surfaces and always try a small area first, using the above procedures.

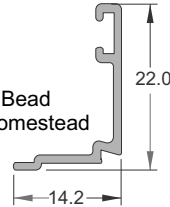
Cleaning, toughened glass

The cleaning of Units incorporating toughened glass requires special care. The glass surface opposite the Standards compliance stamp may, as a consequence of the manufacturing process, have 'pickup' on the surface. 'Pickup' is a deposit of very small particles of glass which are fused to the glass surface. A cleaning method which does not dislodge these particles should be employed otherwise scratching of the glass surface may result. Blades or scrapers have been known to dislodge 'pickup' from the glass surface. A soft cloth, which will not dislodge 'pickup', should be used.

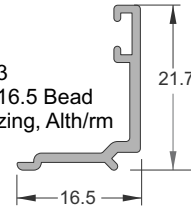
Juralco Winterglaze® RetroFit Double Glazing System - General Components

Bead Extrusions

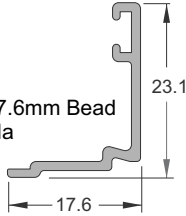
JWG/B02
RetroFit 14.2mm Bead
Nulook Settler, Homestead



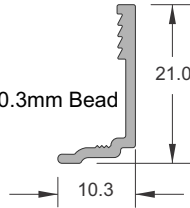
JWG/B03
RetroFit 16.5mm Bead
First Glazing, Alth/rm



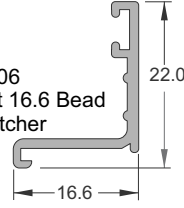
JWG/B04
RetroFit 17.6mm Bead
Nulook Villa



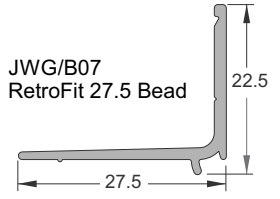
JWG/B05
RetroFit 10.3mm Bead



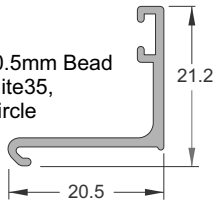
JWG/B06
RetroFit 16.6mm Bead
New Fletcher



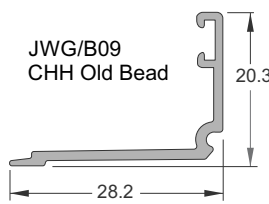
JWG/B07
RetroFit 27.5mm Bead



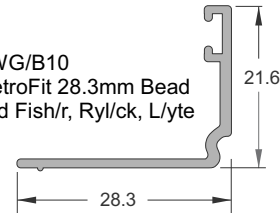
JWG/B08
RetroFit 20.5mm Bead
Fairview, Elite35,
Vantage, Circle



JWG/B09
CHH Old Bead



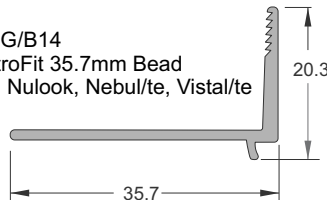
JWG/B10
RetroFit 28.3mm Bead
Old Fisher, Rylck, Lyte



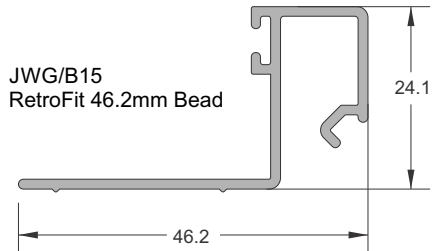
JWG/B12
RetroFit 35.3mm Bead
Old Nulook, Rolls



JWG/B14
RetroFit 35.7mm Bead
Old Nulook, Nebulite, Vistalite



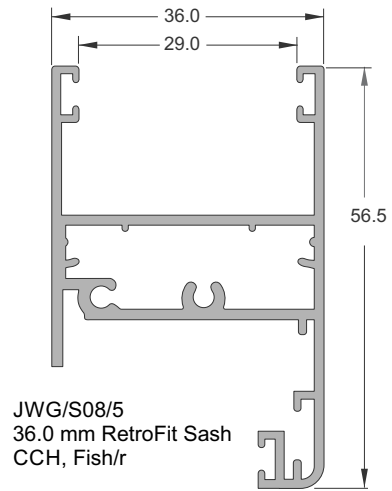
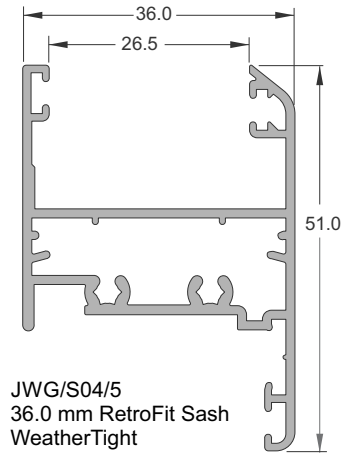
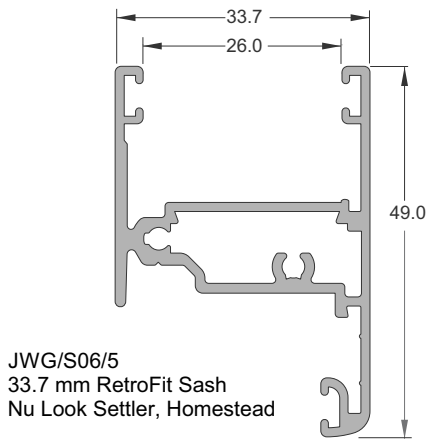
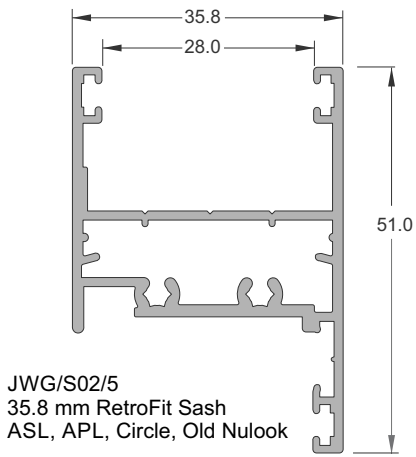
JWG/B15
RetroFit 46.2mm Bead



Juralco Winterglaze® RetroFit Double Glazing System - General Components

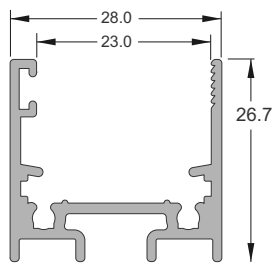
Sash and Glazing Adaptor Extrusions

For Sash Windows

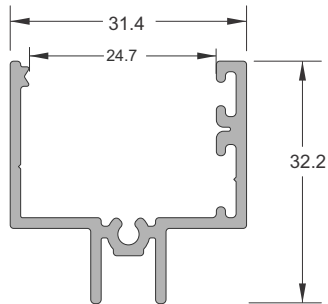


Door Glazing Adaptor Extrusions

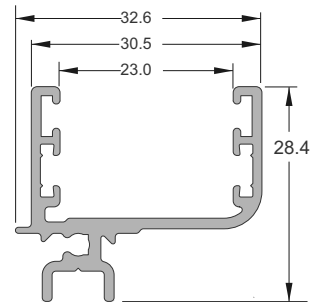
For Doors



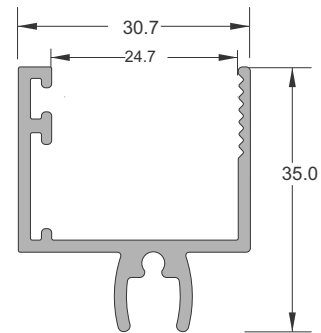
JWG/A02
28.0mm RetroFit Adaptor



JWG/A03
31.4mm RetroFit Adaptor



JWG/A04
32.6mm RetroFit Adaptor

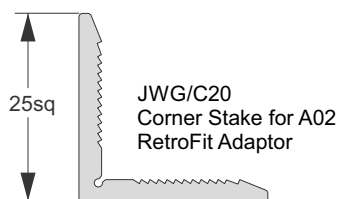
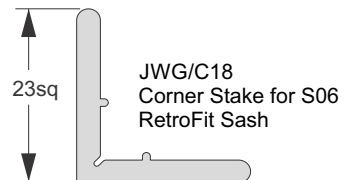
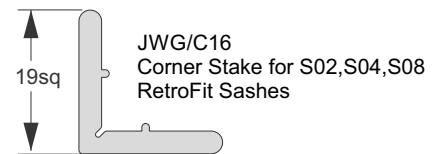
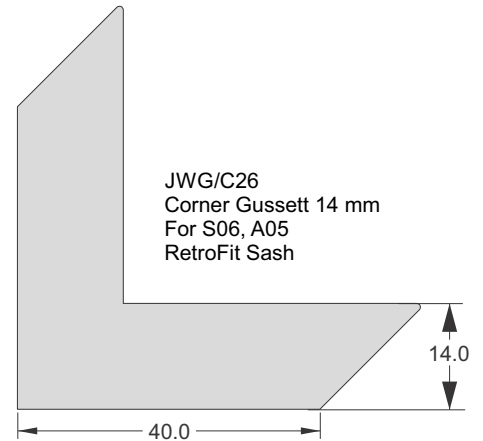
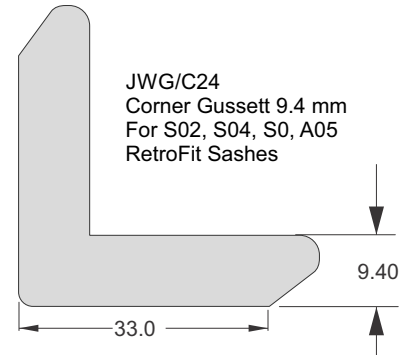
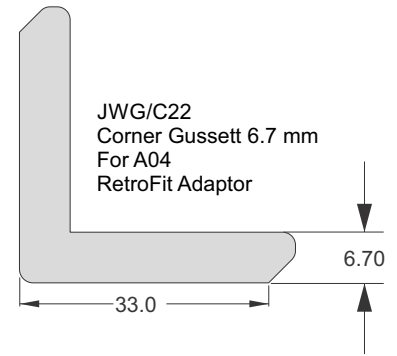
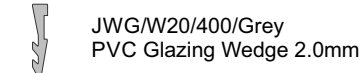
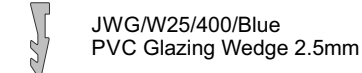
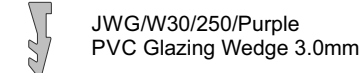
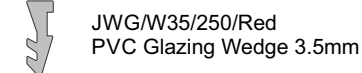
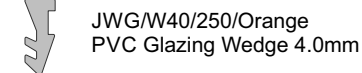
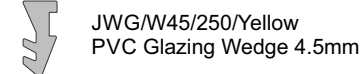
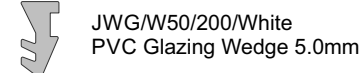
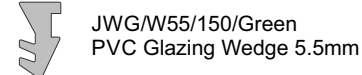
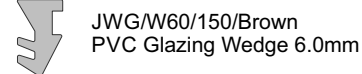
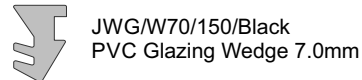
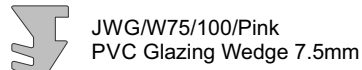
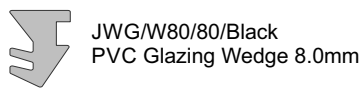
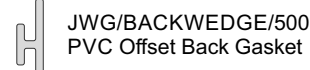
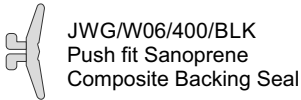
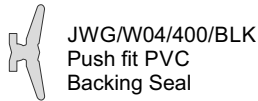
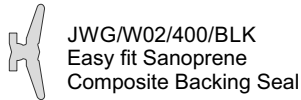
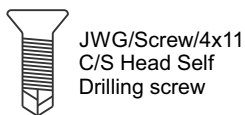
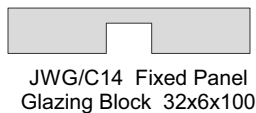
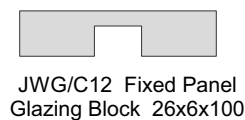
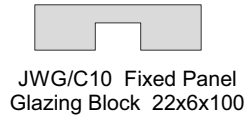
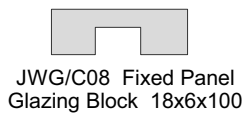
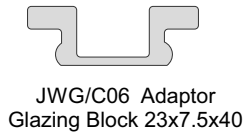
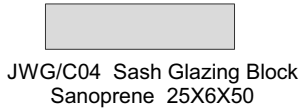
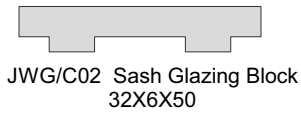


JWG/A05
30.7mm RetroFit Adaptor



Juralco Winterglaze® RetroFit Double Glazing System - General Components

General Components



Juralco Winterglaze® RetroFit Double Glazing System - Wedge Chart



JWG/BACKWEDGE
PVC Offset Back Gasket



JWG/W02
Easy fit Sanoprene
Composite Backing Seal



JWG/W04
Push fit PVC
Backing Seal



JWG/W06
Push fit Sanoprene
Composite Backing Seal

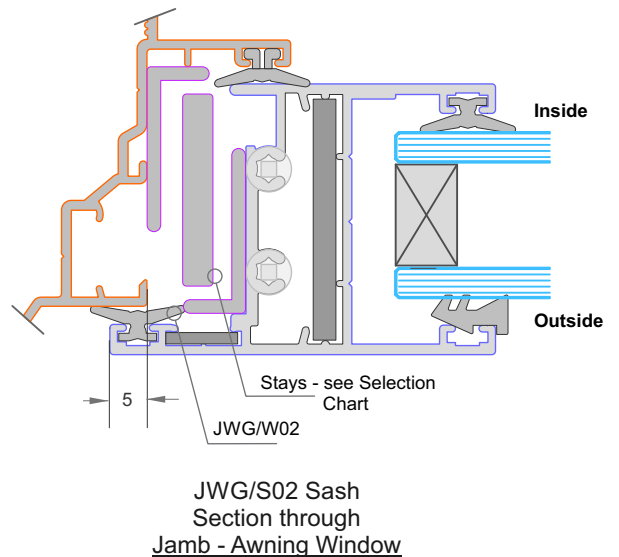
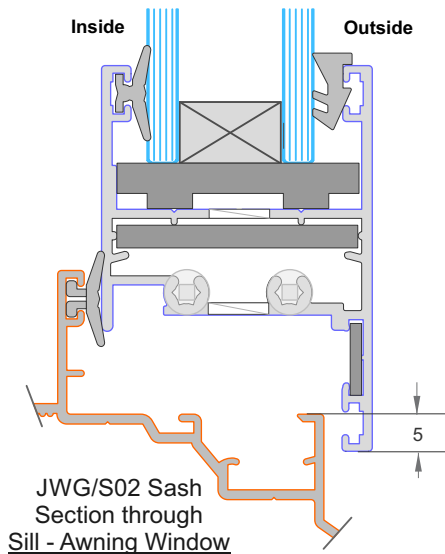
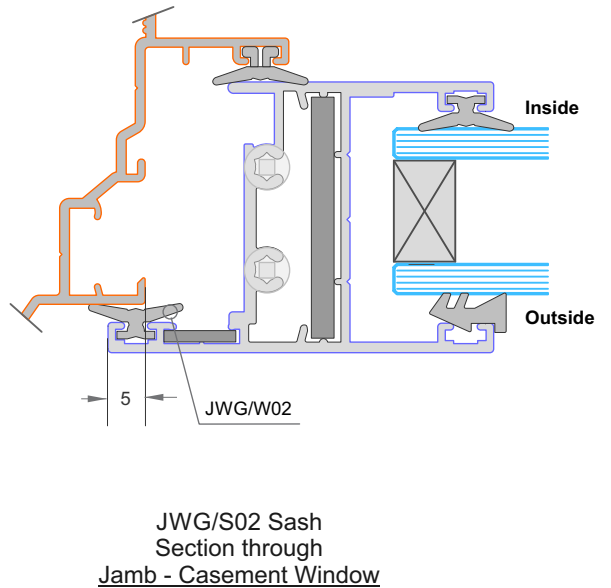
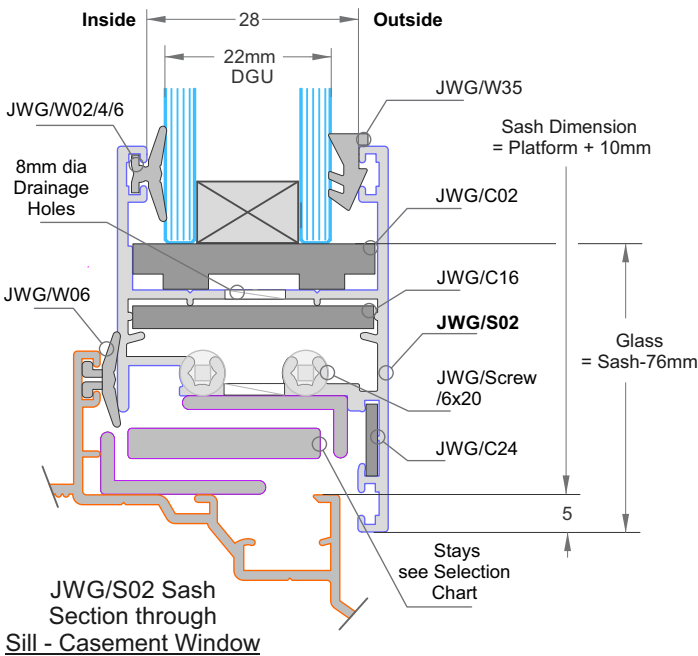
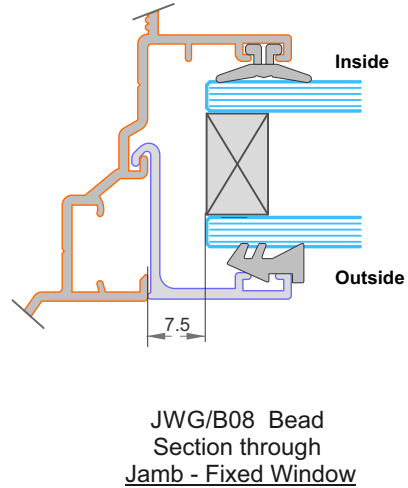
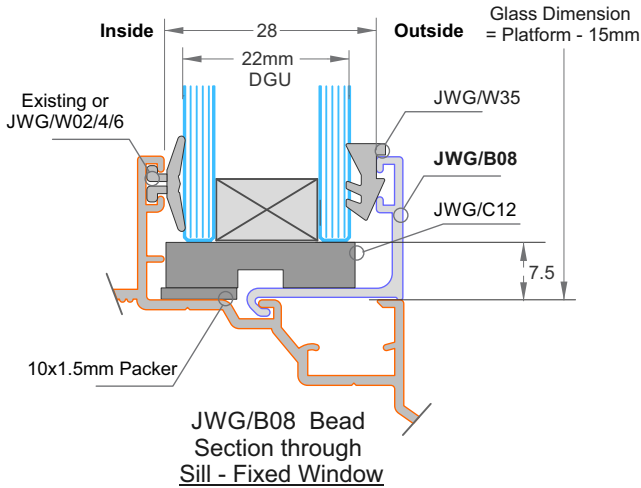
Double Glazing Wedge Chart

Double Glazing Unit Thickness	22mm Cavity		23mm Cavity		26.5mm Cavity		28mm Cavity		30mm Cavity	
	JVB/ Backwedge to Back	JWG/W02 /04/06 To Back	JVB/ Backwedge to Back	JWG/W02 /04/06 To Back	JVB/ Backwedge to Back	JWG/W02 /04/06 To Back	JVB/ Backwedge to Back	JWG/W02 /04/06 To Back	JVB/ Backwedge to Back	JWG/W02 /04/06 To Back
16mm	JWG/W50 Wedge	JWG/W40 Wedge	JWG/W55 Wedge	JWG/W45 Wedge	N/A	JWG/W80 Wedge	N/A	N/A	N/A	N/A
18mm	JWG/W30 Wedge	N/A	JWG/W35 Wedge	JWG/W25 Wedge	JWG/W70 Wedge	JWG/W60 Wedge	N/A	JWG/W75 Wedge	N/A	N/A
20mm	N/A	N/A	N/A	N/A	JWG/W50 Wedge	JWG/W40 Wedge	JWG/W65 Wedge	JWG/W55 Wedge	N/A	JWG/W75 Wedge
21mm					JWG/W40 Wedge	JWG/W30 Wedge	JWG/W55 Wedge	JWG/W40 Wedge	N/A	JWG/W65 Wedge
22mm	N/A	N/A	N/A	N/A	JWG/W30 Wedge	JWG/W20 Wedge	JWG/W45 Wedge	JWG/W35 Wedge	JWG/W65 Wedge	JWG/W55 Wedge
24mm	N/A	N/A	N/A	N/A	N/A	N/A	JWG/W25 Wedge	N/A	JWG/W45 Wedge	JWG/W35 Wedge
26mm	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	JWG/W25 Wedge	N/A

Juralco Winterglaze® RetroFit Double Glazing System - Beads and Sashes

Fairvi/w, Main/nd Frame, 1

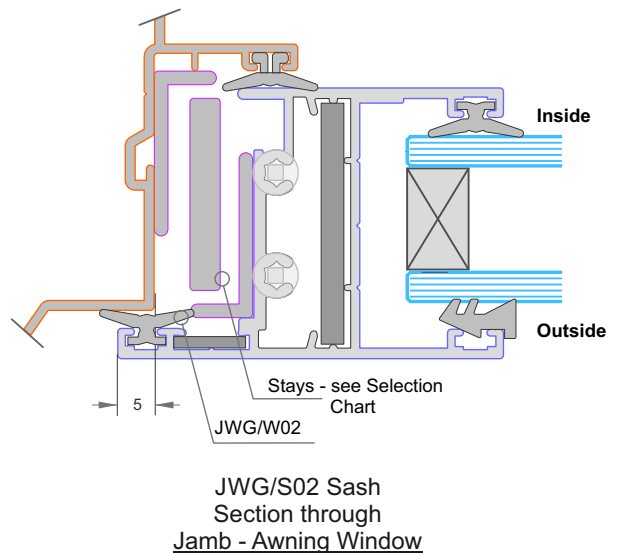
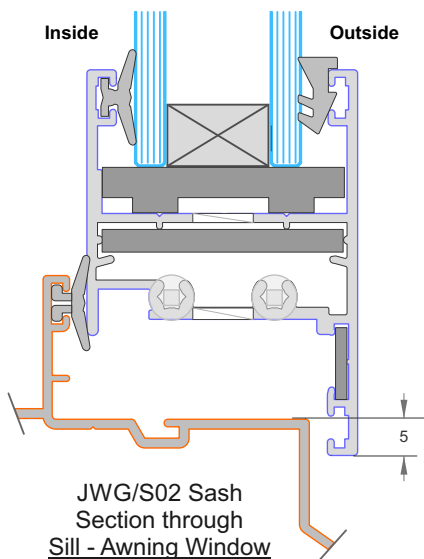
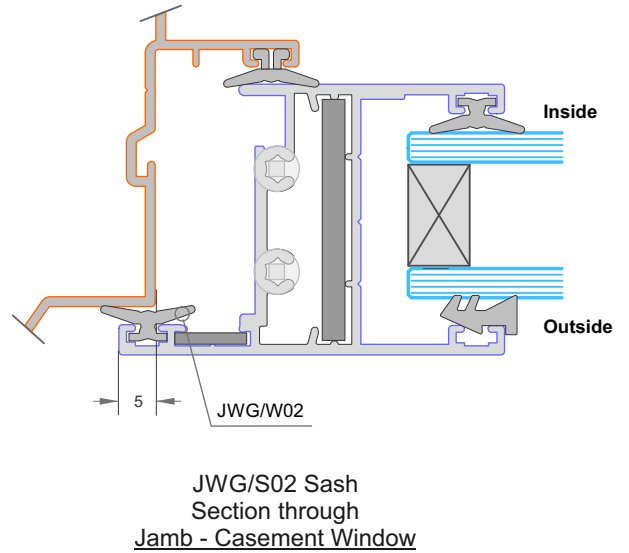
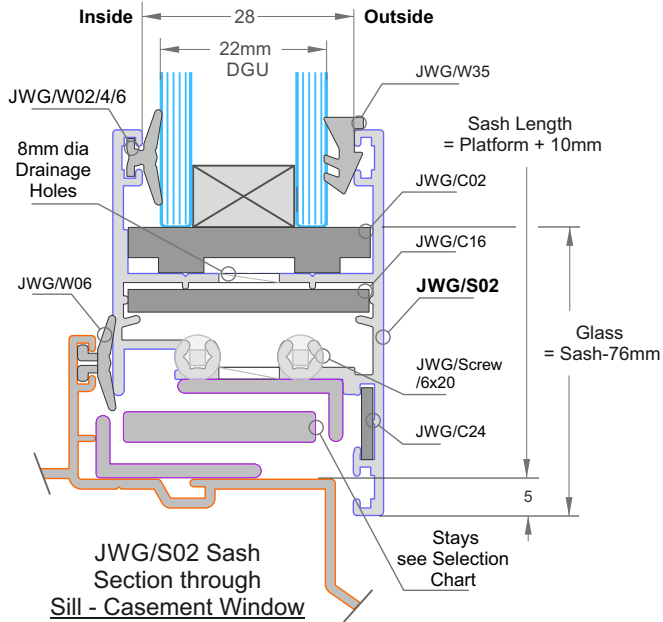
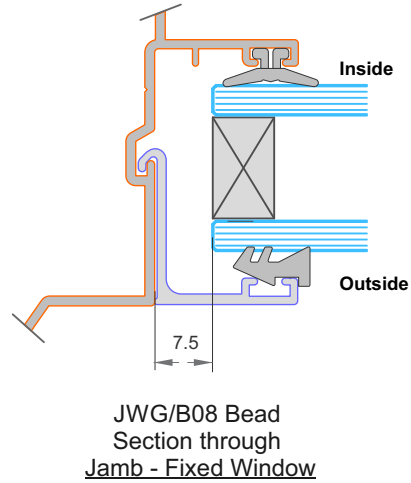
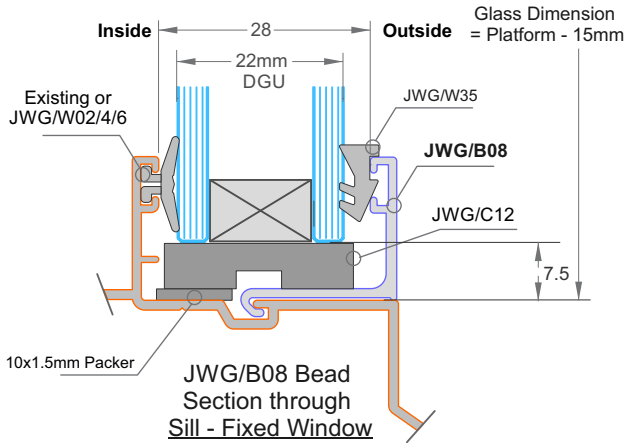
All cutting allowances are symmetrical, ie same deductions/additions for vertical and horizontal



Juralco Winterglaze® RetroFit Double Glazing System - Beads and Sashes

Fairi/w, Main/nd Frame, 2

All cutting allowances are symmetrical, ie same deductions/additions for vertical and horizontal



JURALCO

www.juralco.co.nz ph (09) 478 8018

Juralco Winterglaze® RetroFit Double Glazing System

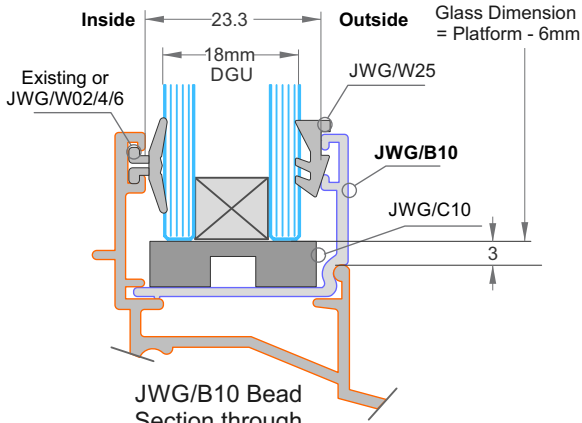
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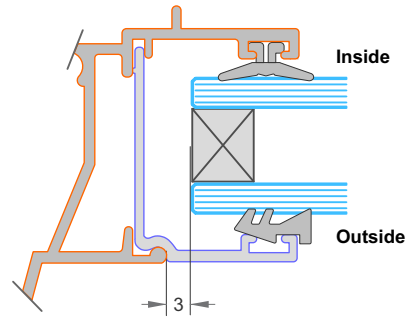
Juralco Winterglaze® RetroFit Double Glazing System - Beads and Sashes

Old Fish/r, Ryl/ck, L/ylte Frames

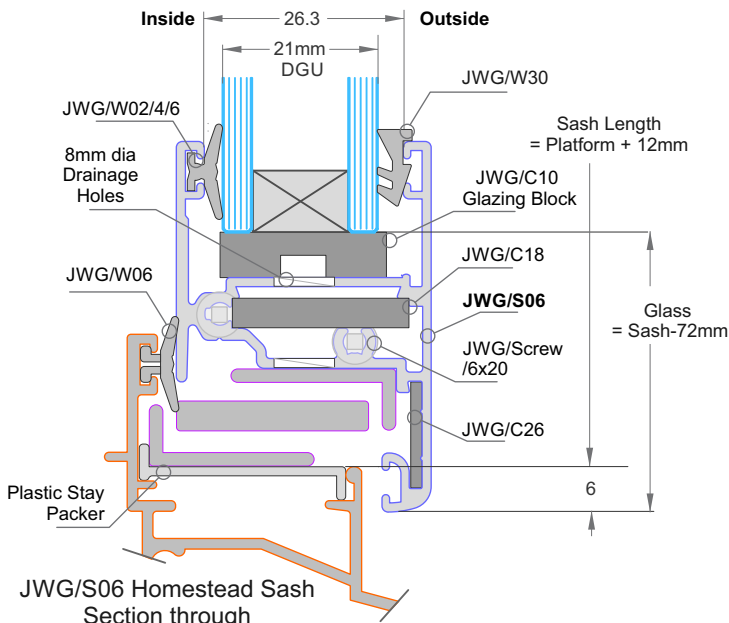
All cutting allowances are symmetrical, ie same deductions/additions for vertical and horizontal



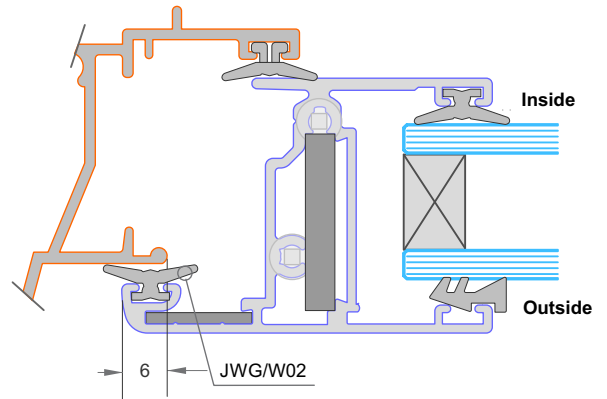
JWG/B10 Bead Section through Sill - Fixed Window



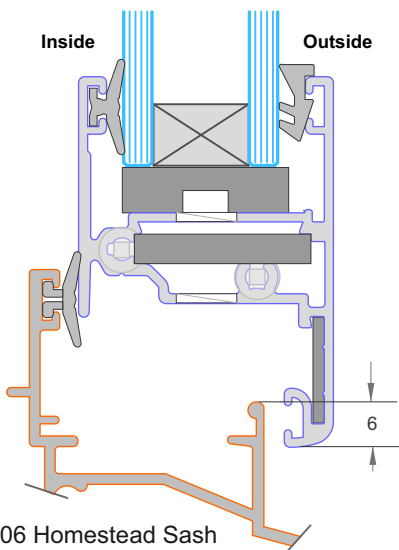
JWG/B10 Bead Section through Jamb - Fixed Window



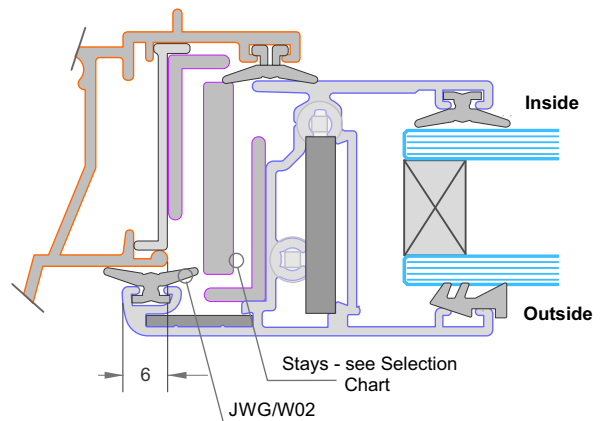
JWG/S06 Homestead Sash Section through Sill - Casement Window



JWG/S06 Homestead Sash Section through Jamb - Casement Window



JWG/S06 Homestead Sash Section through Sill - Awning Window

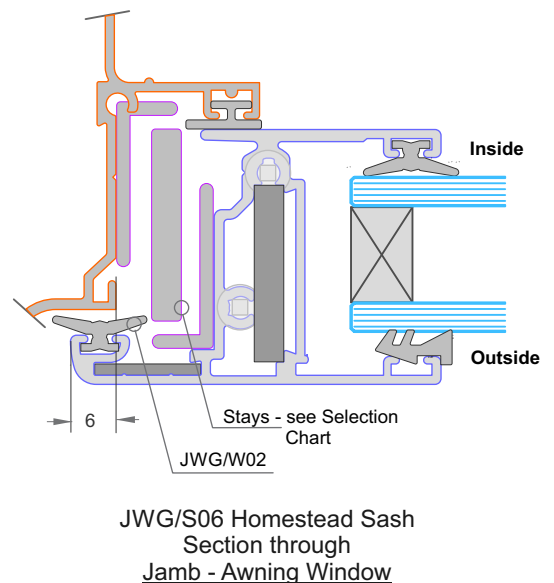
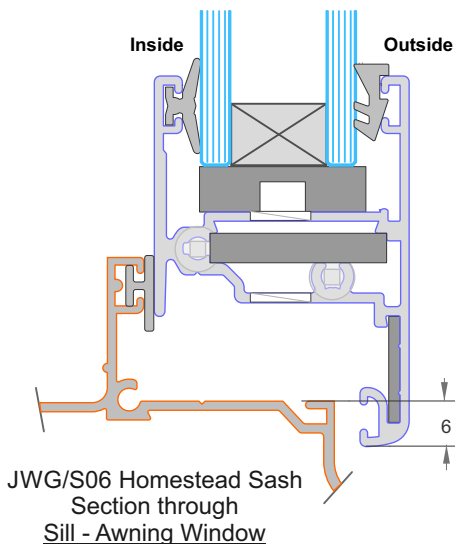
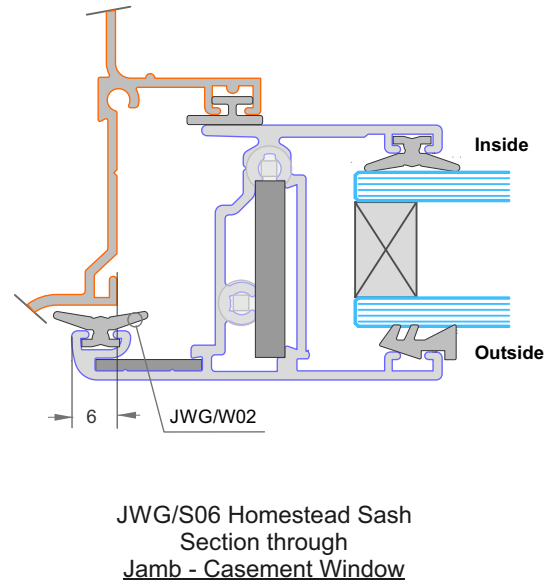
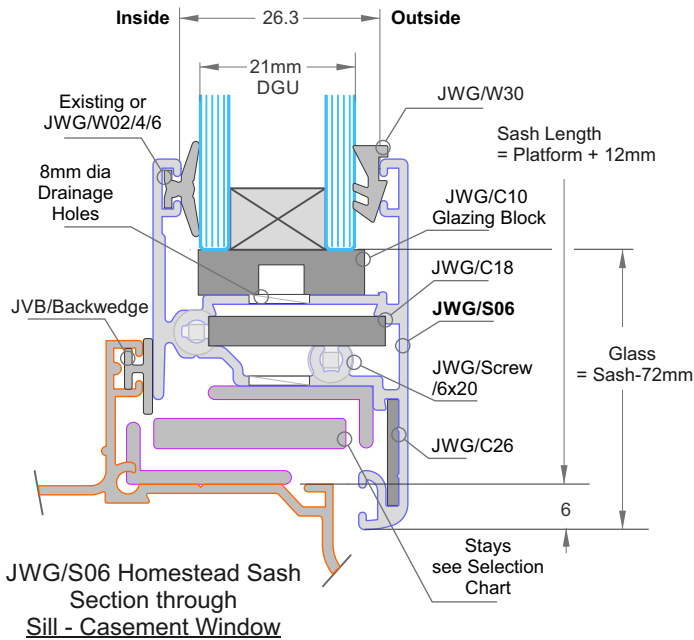
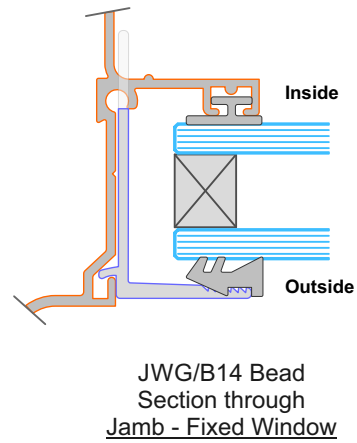
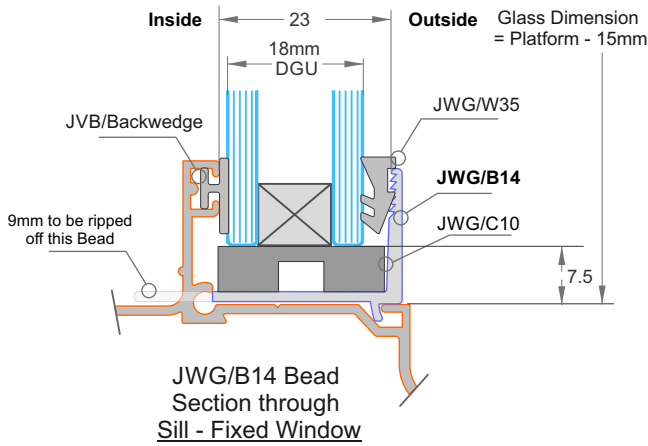


JWG/S06 Homestead Sash Section through Jamb - Awning Window

Juralco Winterglaze® RetroFit Double Glazing System - Beads and Sashes

Old NuLook, Vistal/te
Nebul/te Frames

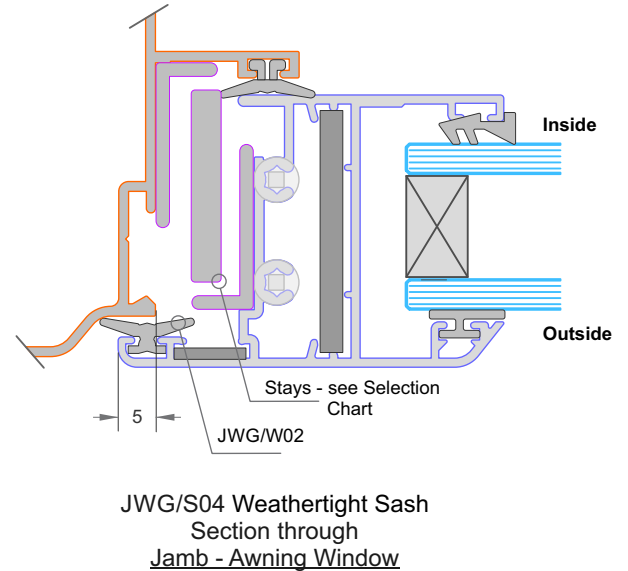
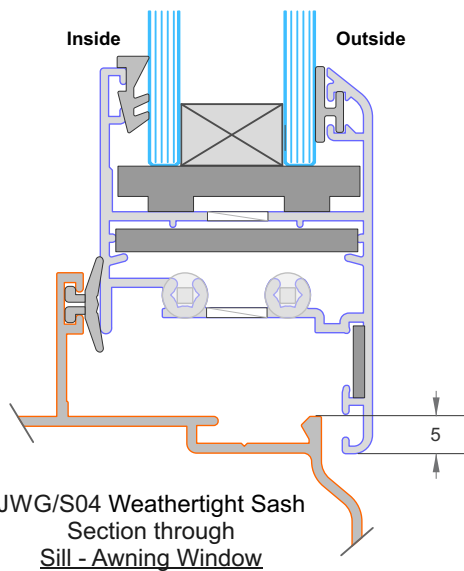
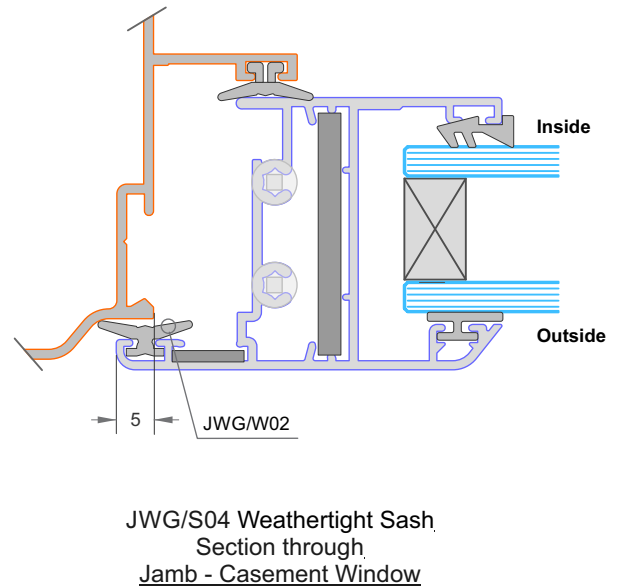
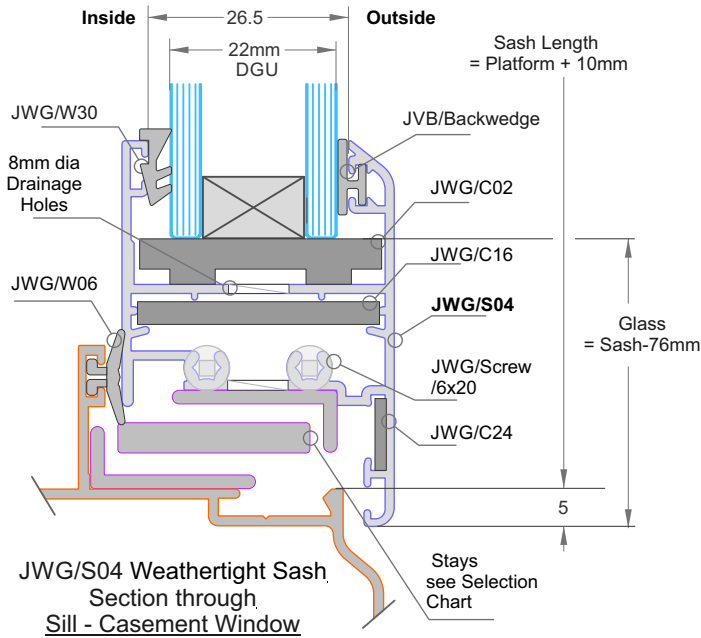
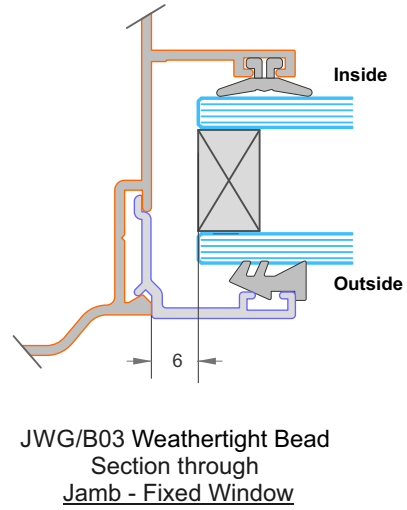
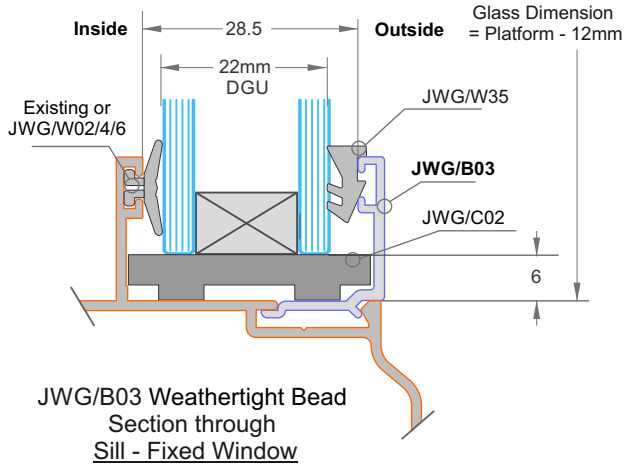
All cutting allowances are symmetrical, ie same deductions/additions for vertical and horizontal



Juralco Winterglaze® RetroFit Double Glazing System - Beads and Sashes

F/rst Glazing Platform

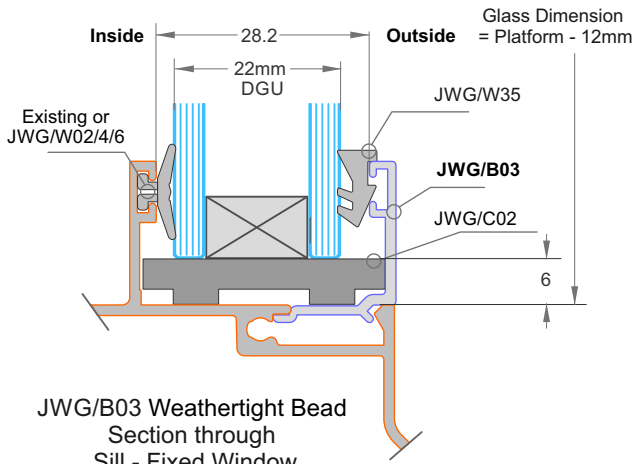
All cutting allowances are symmetrical, ie same deductions/additions for vertical and horizontal



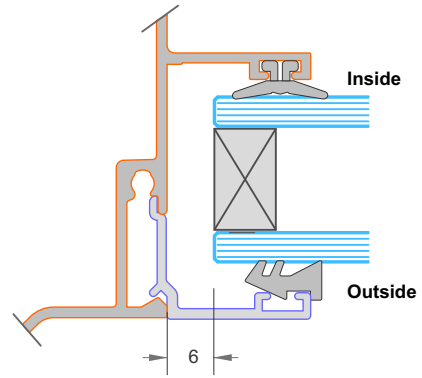
Juralco Winterglaze® RetroFit Double Glazing System - Beads and Sashes

Alth/rm Glazing Platform

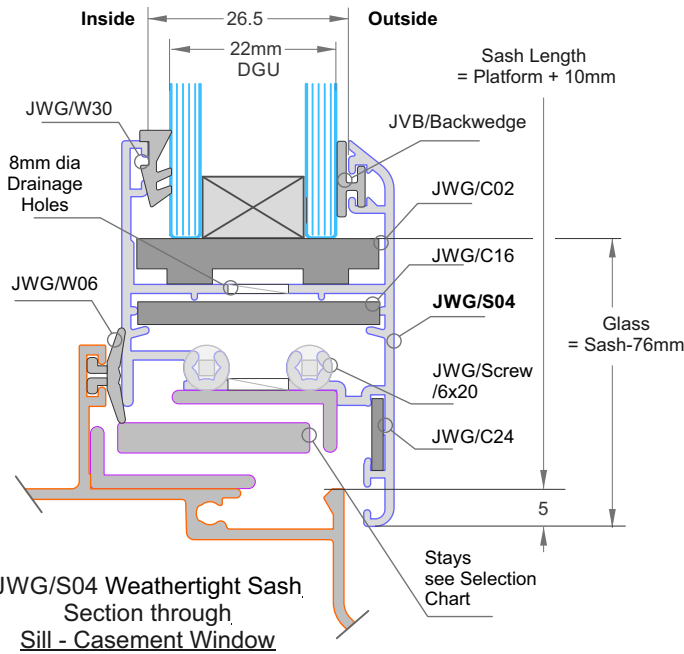
All cutting allowances are symmetrical, ie same deductions/additions for vertical and horizontal



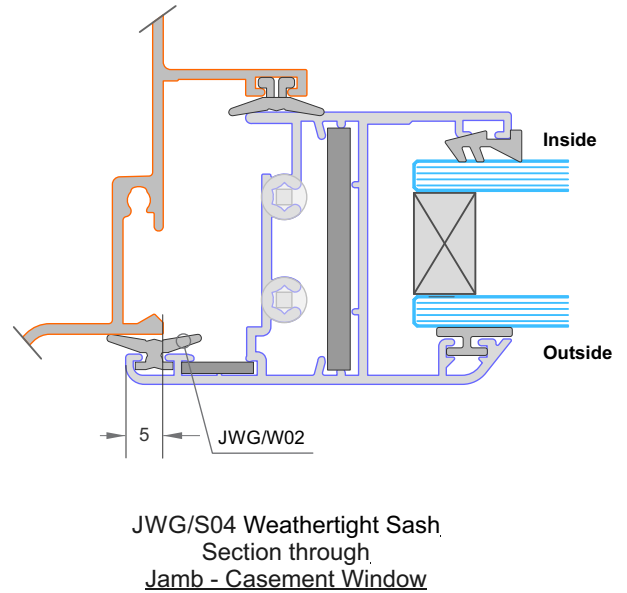
JWG/B03 Weathertight Bead
Section through
Sill - Fixed Window



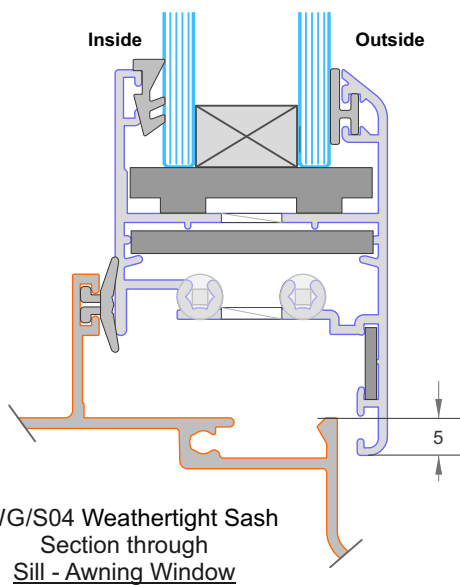
JWG/B03 Weathertight Bead
Section through
Jamb - Fixed Window



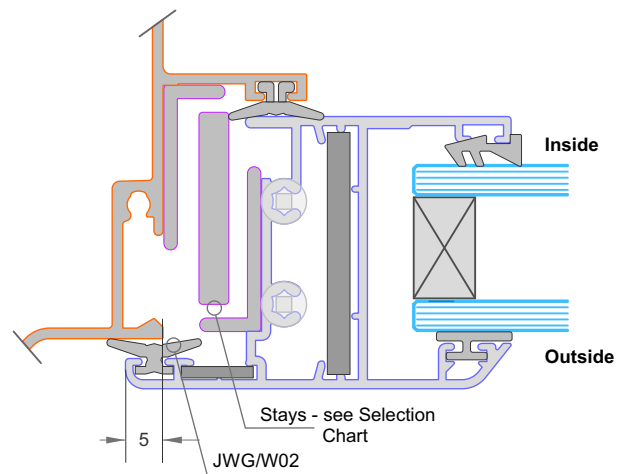
JWG/S04 Weathertight Sash
Section through
Sill - Casement Window



JWG/S04 Weathertight Sash
Section through
Jamb - Casement Window



JWG/S04 Weathertight Sash
Section through
Sill - Awning Window

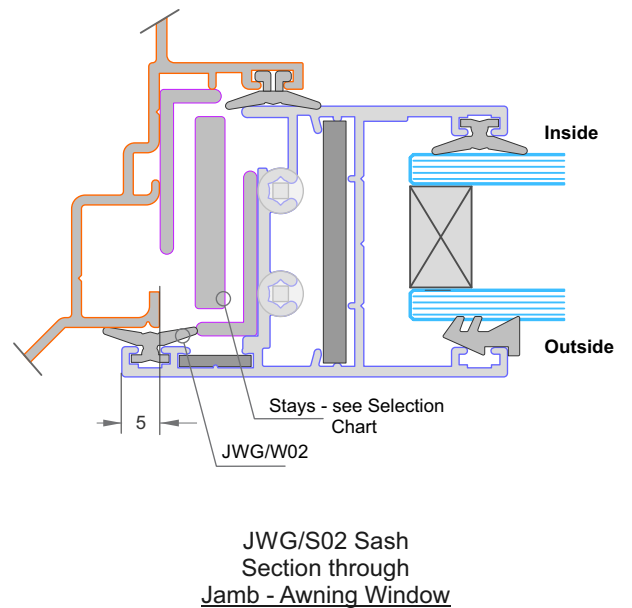
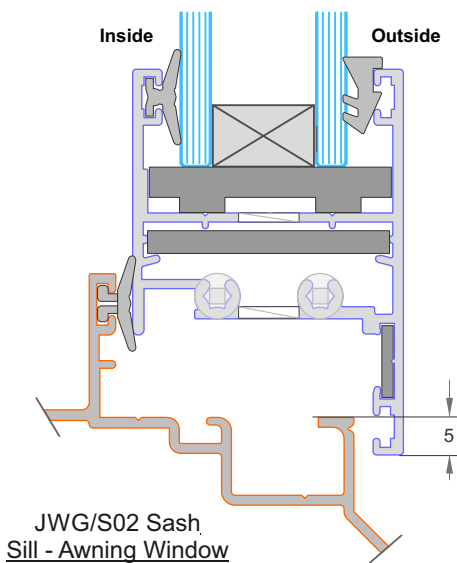
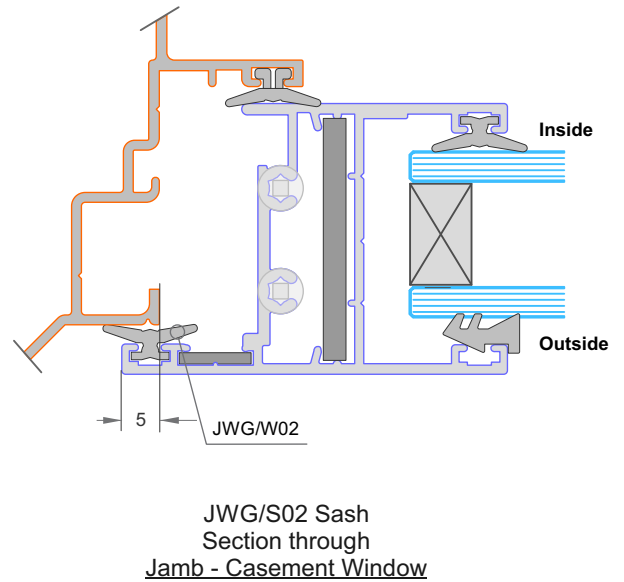
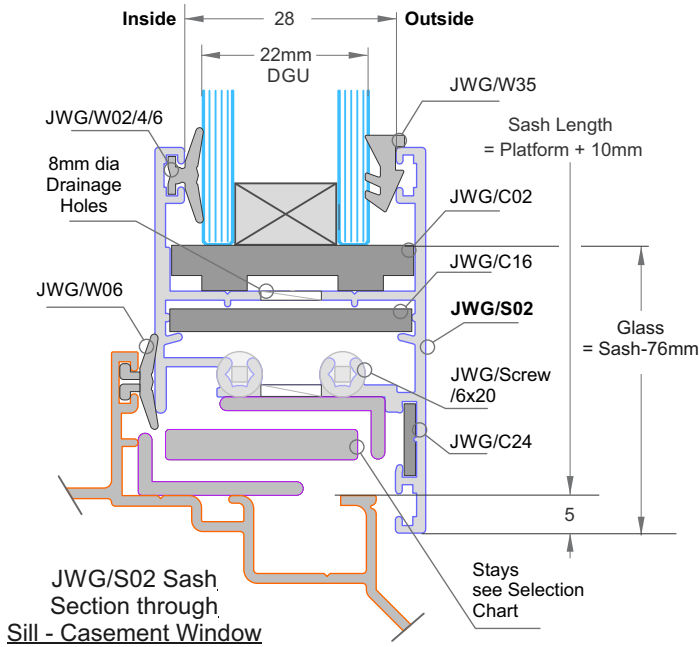
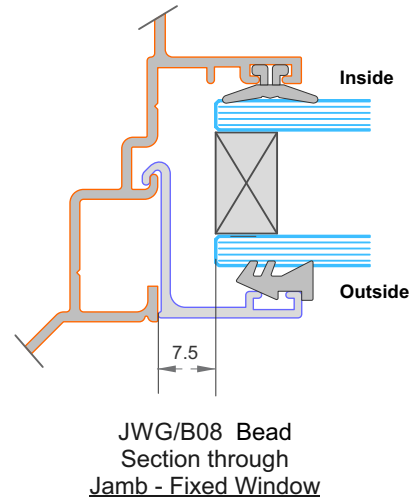
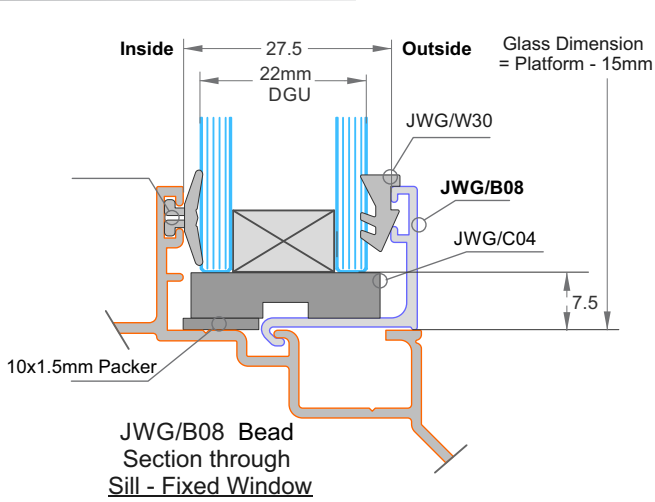


JWG/S04 Weathertight Sash
Section through
Jamb - Awning Window

Juralco Winterglaze® RetroFit Double Glazing System - Beads and Sashes

Vant/ge Platform

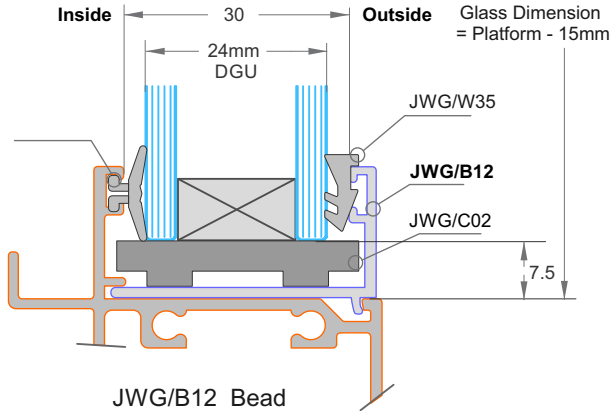
All cutting allowances are symmetrical, i.e. same deductions/additions for vertical and horizontal



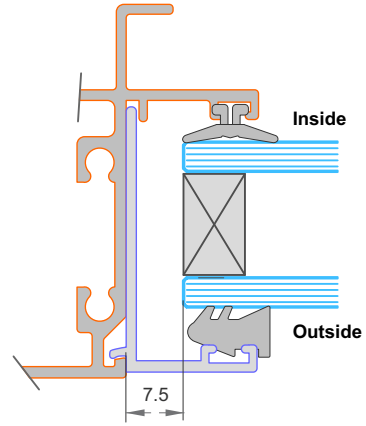
Juralco Winterglaze® RetroFit Double Glazing System - Beads and Sashes

Old Nulook, Rolls 6171 1986

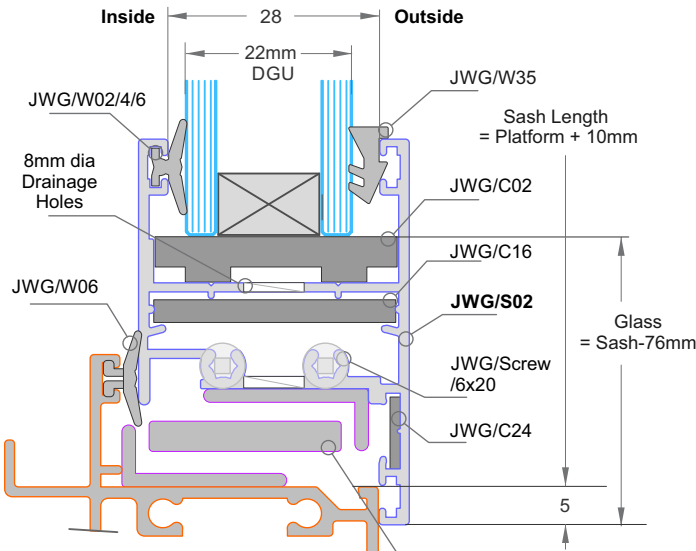
All cutting allowances are symmetrical, ie same deductions/additions for vertical and horizontal



JWG/B12 Bead Section through Sill - Fixed Window

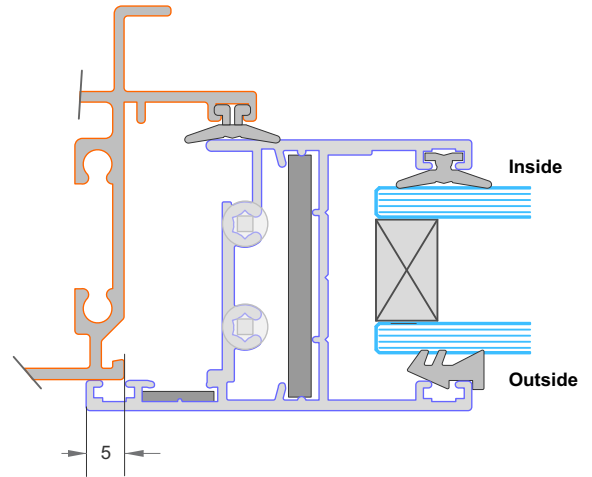


JWG/B12 Bead Section through Jamb - Fixed Window

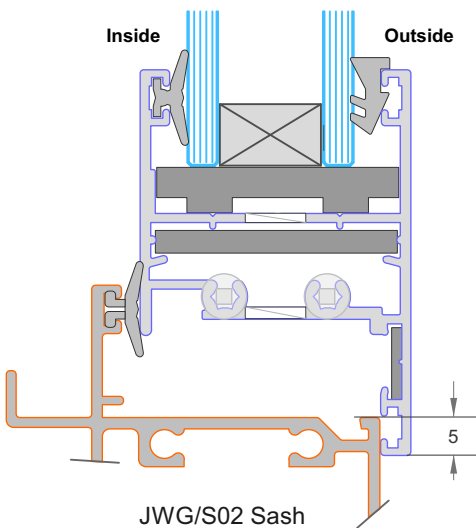


JWG/S02 Sash Section through Sill - Casement Window

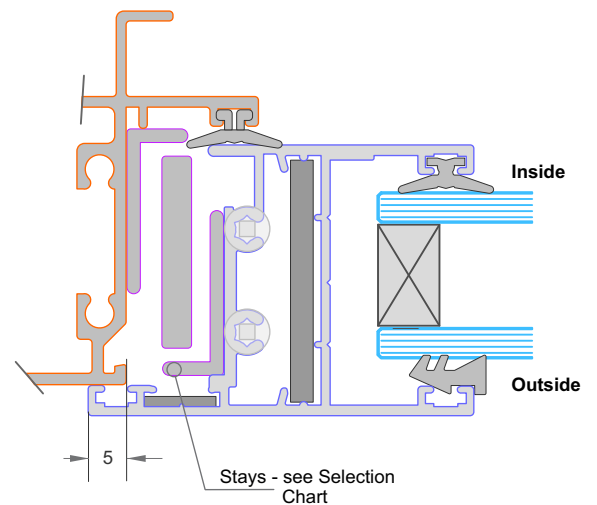
Stays see Selection Chart



JWG/S02 Sash Section through Jamb - Casement Window



JWG/S02 Sash Section through Sill - Awning Window

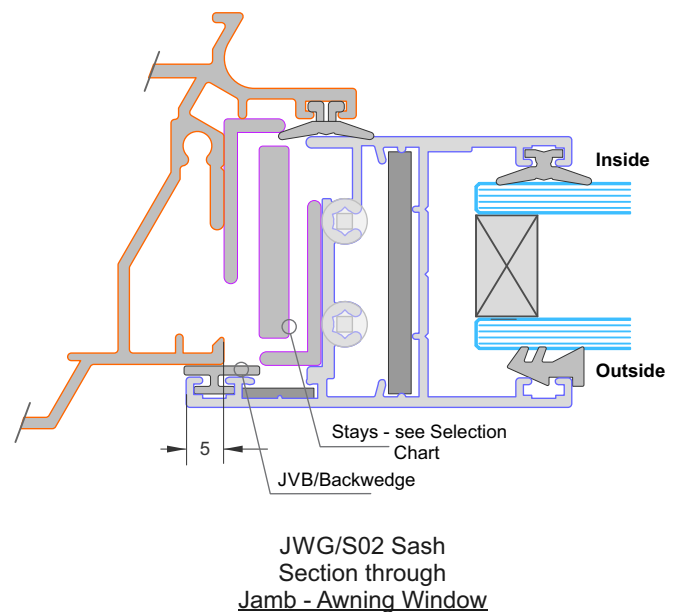
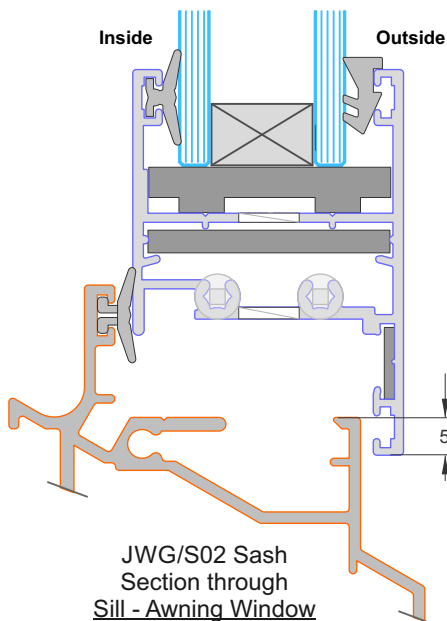
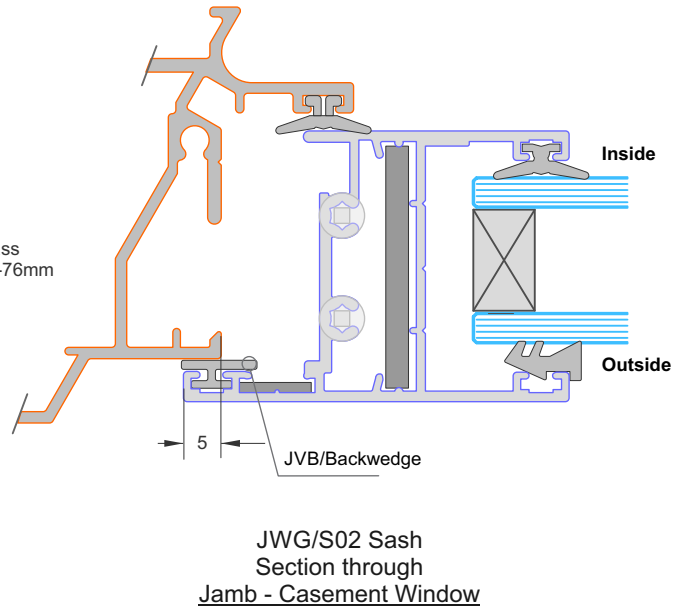
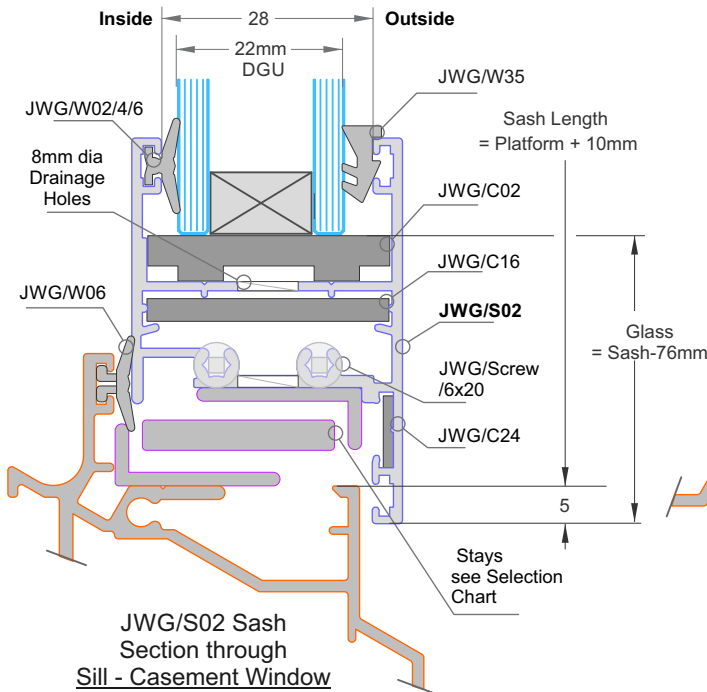
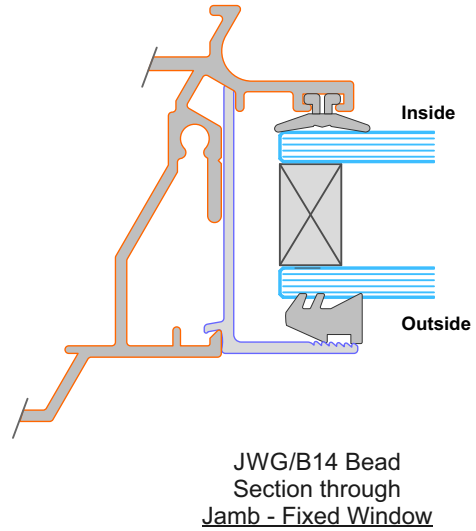
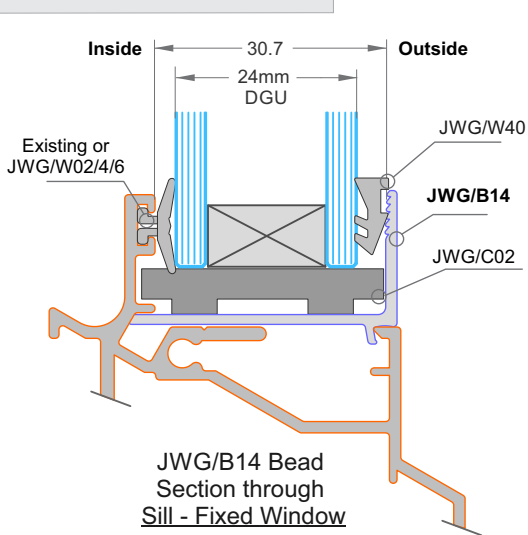


JWG/S02 Sash Section through Jamb - Awning Window

Juralco Winterglaze® RetroFit Double Glazing System - Beads and Sashes

Old Nulook, Nuron 6534 1989

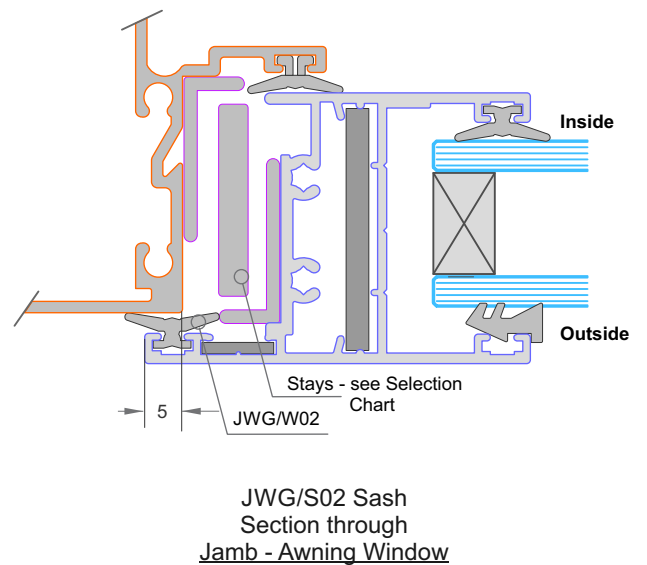
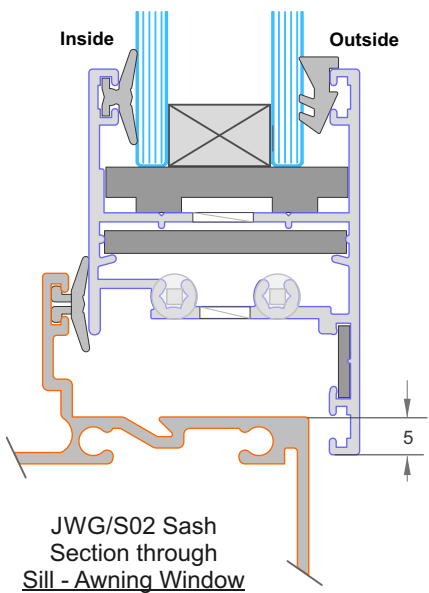
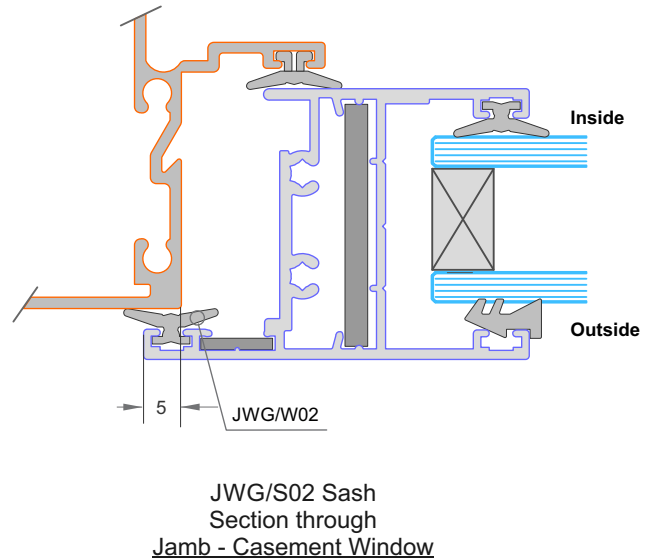
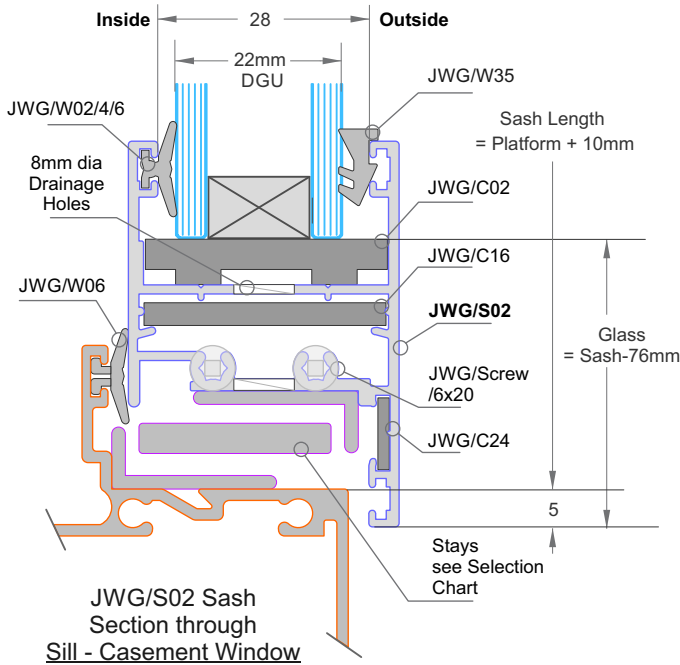
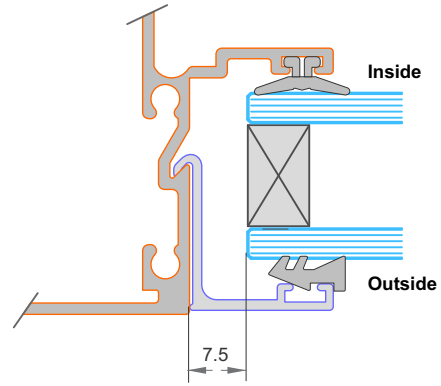
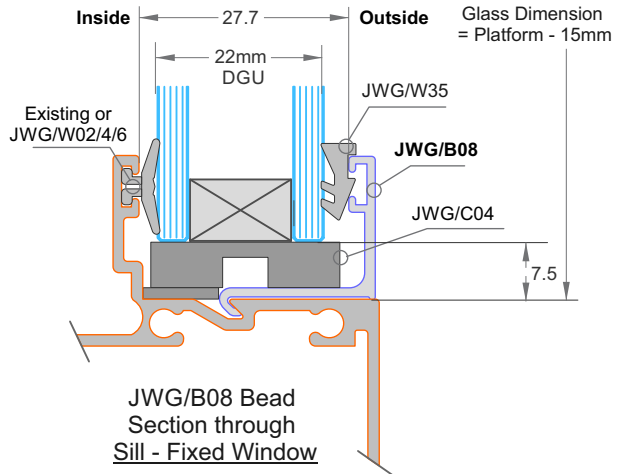
All cutting allowances are symmetrical, ie same deductions/additions for vertical and horizontal



Juralco Winterglaze® RetroFit Double Glazing System - Beads and Sashes

Circle 5980 1987

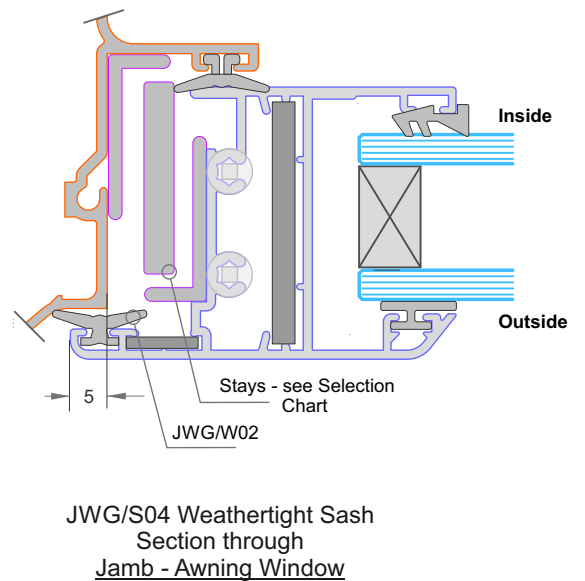
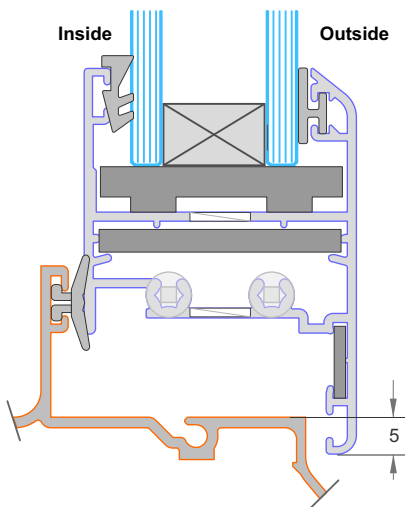
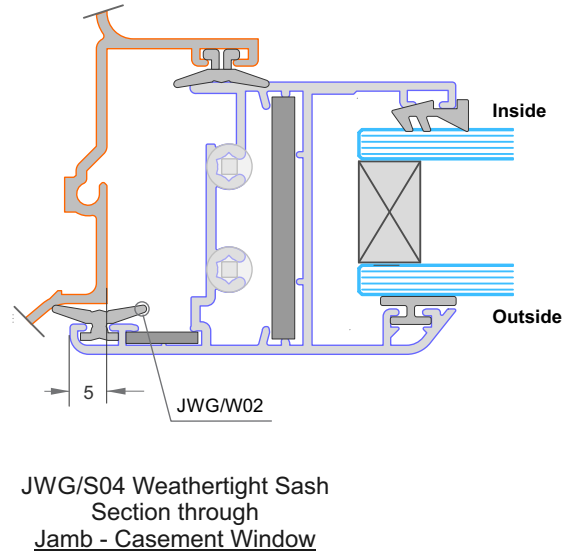
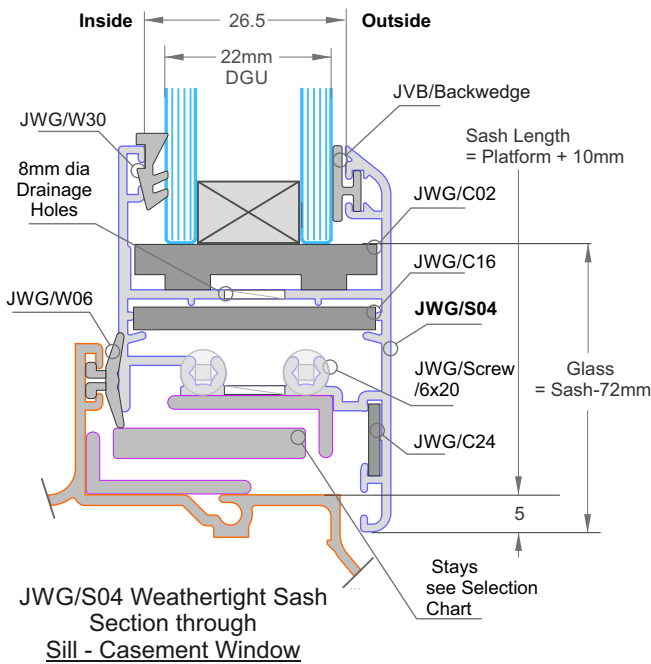
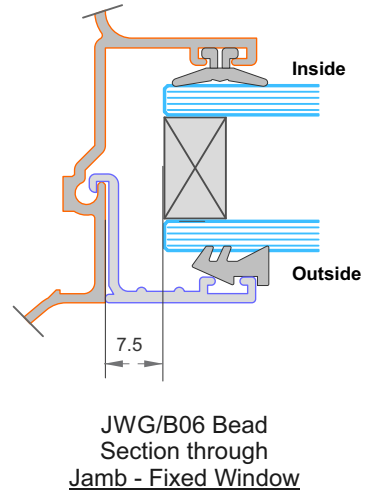
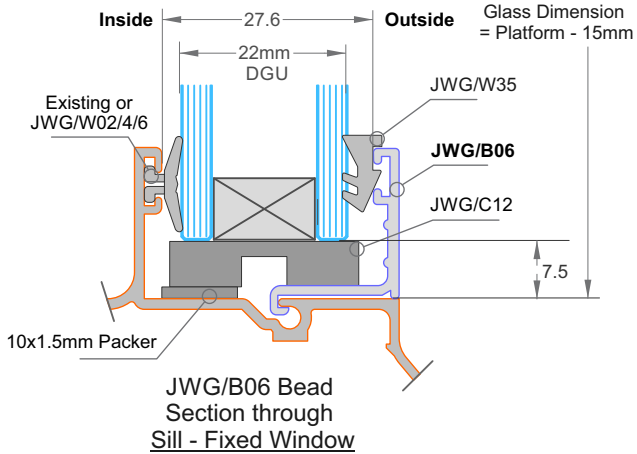
All cutting allowances are symmetrical, ie same deductions/additions for vertical and horizontal



Juralco Winterglaze® RetroFit Double Glazing System - Beads and Sashes

Fletch/r 35mm Pacif/c Suite

All cutting allowances are symmetrical, ie same deductions/additions for vertical and horizontal



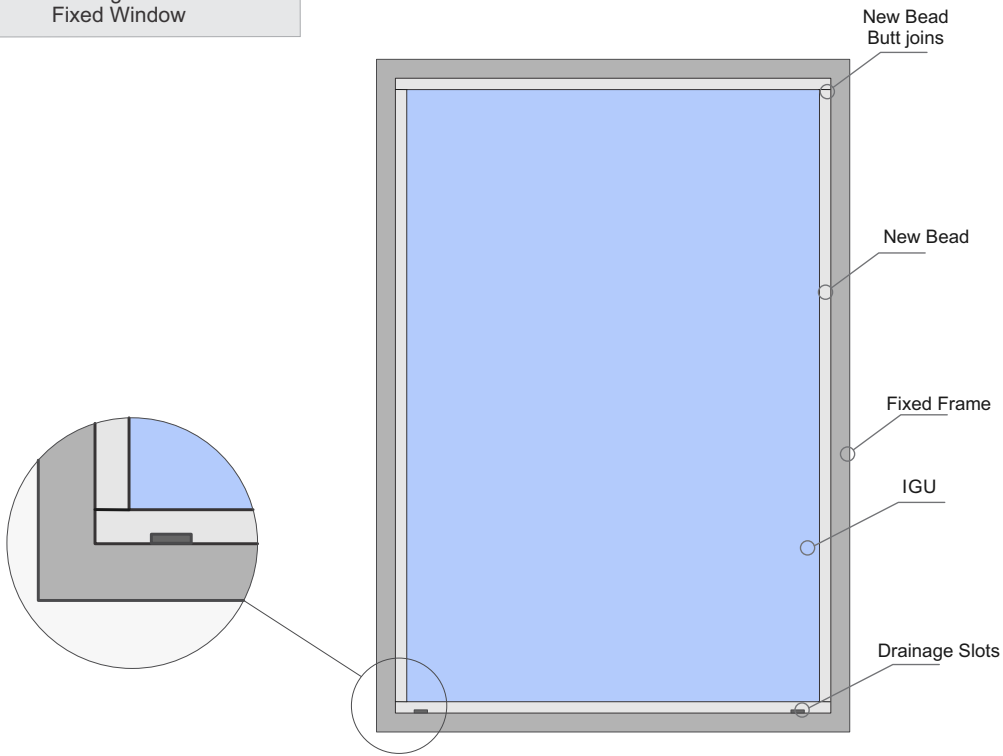
Juralco Winterglaze® RetroFit Double Glazing System - Checklist

**Note : This Manual covers the installation of IGU's into Fixed/Awning/Casement Windows and Sliding/Hinged Fixed Glass Doors,with existing Aluminium Joinery.
It does not cover any Doors or Windows with Wooden joinery**

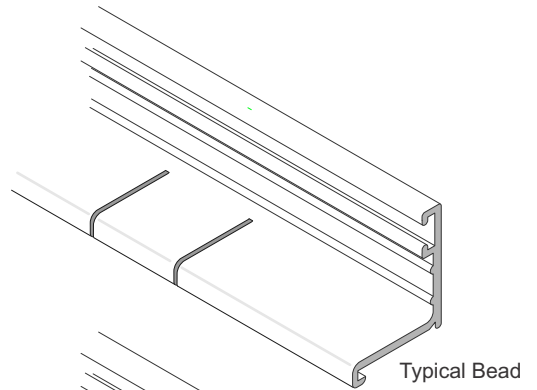
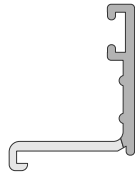
- 1 - Check state of Aluminium joinery. Is in good condition? Is the supporting structure in good condition? If not do not proceed
- 2 - Check thickness of current fixed glazing. The existing Joinery was designed for a single glazing system. The IGU, if too heavy will place undue strains, with possible moisture leakages compromising the building structure. It is very important this is prevented.
The most important part of the fixed frame (attached to the building) is the Sill. The heavier IGU has the potential to stress the sill and the miter corner joins, leading to moisture ingress.
- For Fixed windows up to say 1200mm wide x 1200mm high a heavier IGU should not be a problem
- For Awning Windows the stays transfer the load down to the bottom miter joins.
For 'HD A' Stays the maximums are, 1800mm high sash = 15kg to a 1200mm high sash = 43kg
- For Casement Windows (the worst case scenario) the bottom stay is producing a twisting moment adjacent to one of the sill corner miters. Be very sure the sill fixed frame extrusion is very secure.
For '4BC' Stays the maximums are, 750mm wide sash = 20kg to a 1000mm high sash = 40kg
- 3 - Check on requirements for Human Impact Areas. These minimum toughened glass thickness requirements may preclude the fitting of an IGU to existing joinery on weight considerations
- 4 - Assuming the project complies with all relevant standards.....
- 5 - Check with the customer on IGU construction type, Glass type selection and glass thicknesses
- 6 - Check on the existing Joinery type with samples supplied. Check on stay and handle requirements. Accurately measure Bead lengths (fixed) or Sash sizes (Awning/Casement)
- 7 - Order the necessary extrusions, stays and handles. Order IGU's
- 8 - Manufacture, cut beads to length for Fixed Windows. Cut extrusions to length for Sash Windows, assemble
On ALL sill lengths, cut or drill the appropriate drainage holes.
IGU's will fail prematurely if the seals are exposed to standing water.
- 9 - For Manufacture/Installation information - see following pages.

Juralco Winterglaze® RetroFit Double Glazing System - Manufacture

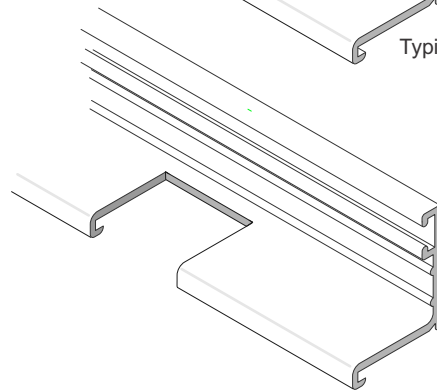
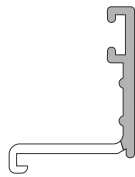
Drainage Hole
Fixed Window



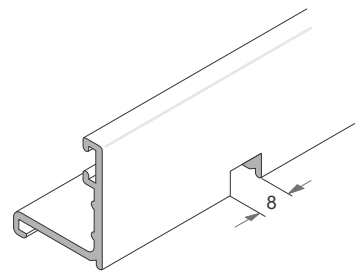
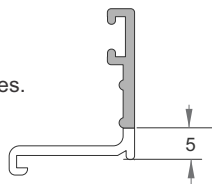
1 - About 50mm in from each Sill length
Hacksaw cuts x 2 neatly to the front face,
about 15-20mm apart



2 - Grip with pliers and break tab off.
File edges clean



3 - With router or special tool . Cut/rout/punch
drainage hole on front Face, This must be clean,
neat, tidy and for optimal drainage have sharp edges.
Vertical height 5mm. Length 8 mm



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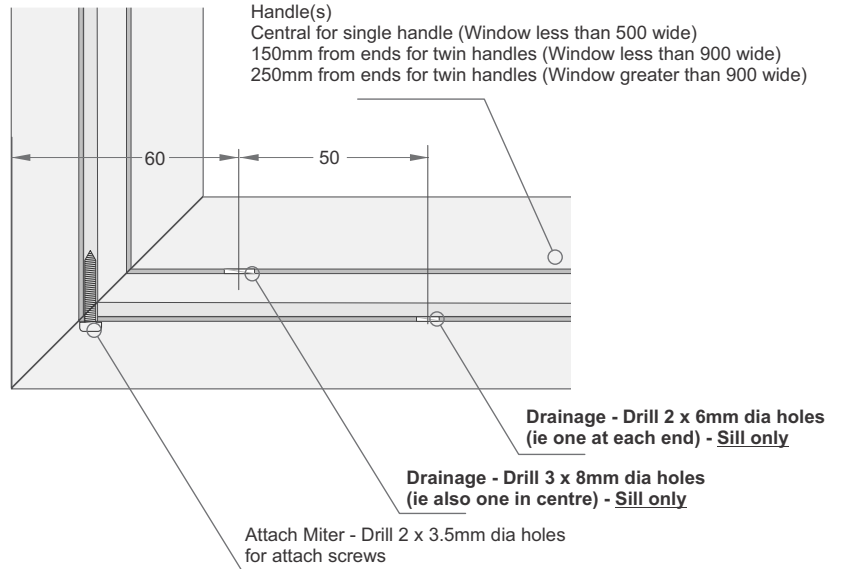
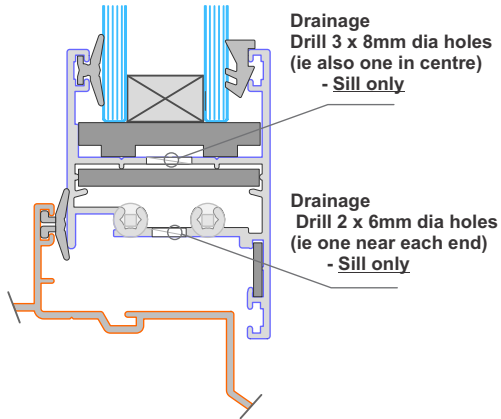
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Juralco Winterglaze® RetroFit Double Glazing System

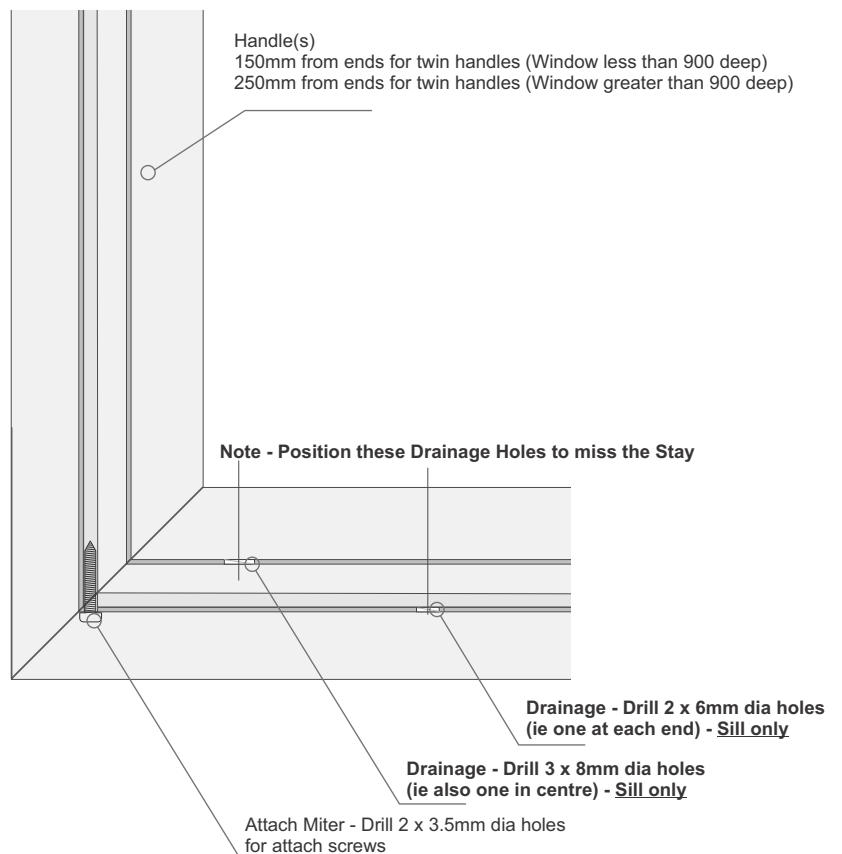
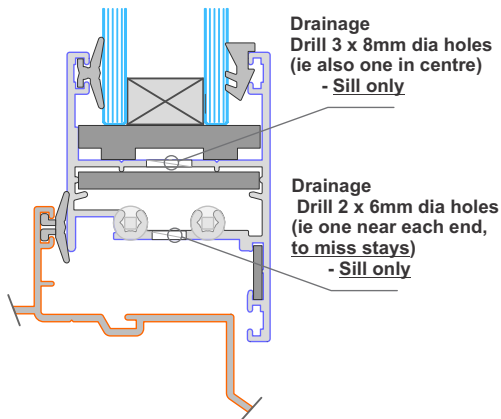
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Juralco Winterglaze® RetroFit Double Glazing System - Manufacture

Drainage, Handle Holes Awning Window



Drainage, Handle Holes Casement Window



Juralco Winterglaze® RetroFit Double Glazing System - Manufacture

Backing Seal

Fixed Window - Replace old seal if necessary
 Awning/Casement Window - Place in position on the completed Sash before IGU insertion



Glazing Wedges Exterior compression Wedge

Note : Glazing Wedge lengths = IGU length +7%.
 DO NOT Stretch when positioning. Use Glazing Wedge Tool
 Install Horizontal Wedges first, then verticals

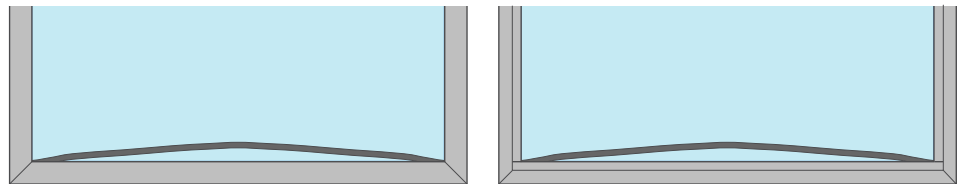


Glazing Wedge Tool

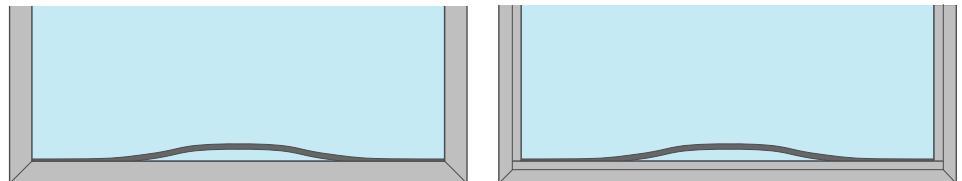
1 - Cut selected Wedge to length
 (Bottom bead first)



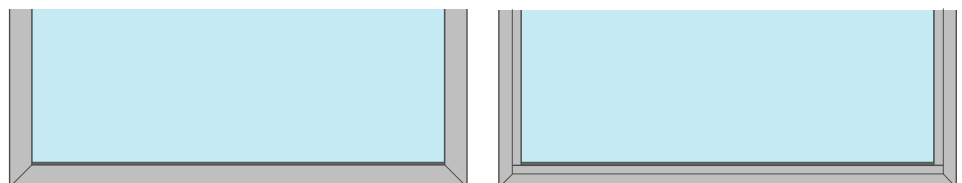
2 - Press neatly into each corner



3 - Using the Glazing Wedge Tool roll evenly from each end towards the centre.



4 - Finally roll the centre area down.



Awning/Casement Window

Fixed Window

5 - Repeat for Top Bead, then two Vertical beads

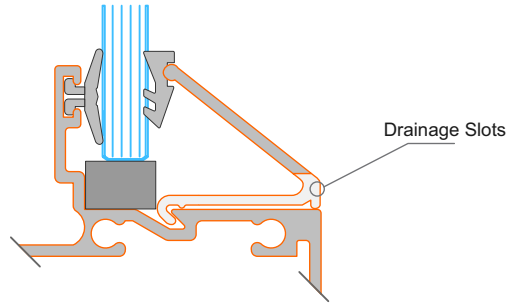
Juralco Winterglaze® RetroFit Double Glazing System - Installation

Fixed Windows IGU Installation

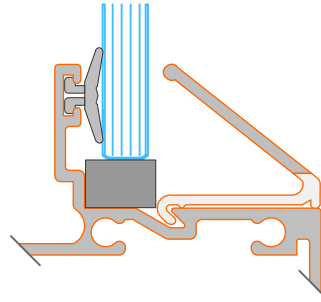
1 - Existing Single Glazed Fixed Window



Select new bead , measure up
Order all Extrusions, Wedges and IGU.



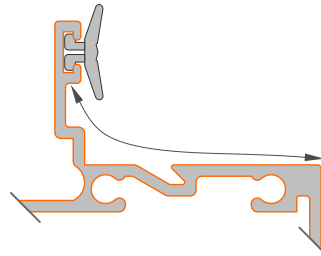
2 - Remove Vertical Exterior Wedges first,
(with putty knife) then Horizontal ones



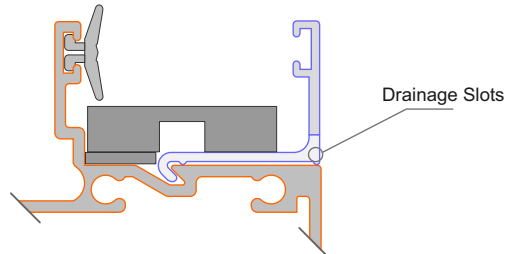
3 - Remove all beads, remove Glass,
remove Spacers.



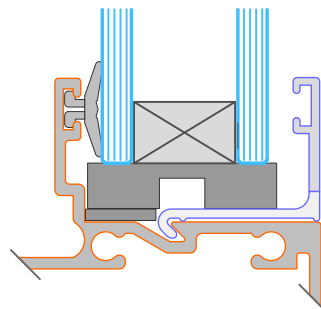
4 - Thoroughly clean the inside of the Frame, all round,
but especially the sill and evenly more importantly the
bottom corners. Scrape all corners clean, dry off and
apply fresh sealant beads.
Sealant needs to be a compatible small joint type.
Inspect backing seal. Replace if necessary



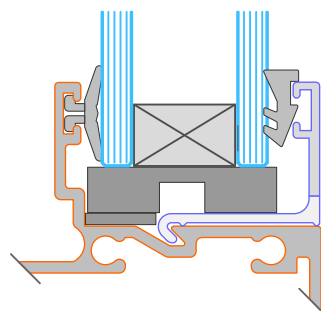
5 - Insert New Bottom Bead and Spacers at quarter points.
(ie 25% IGU width in from each edge)



6 - Insert IGU, ensuring even spacing all round.
Insert remaining Beads



7 - Insert Glazing Wedges using Glazing Wedge Tool
Bottom first, then top, then verticals

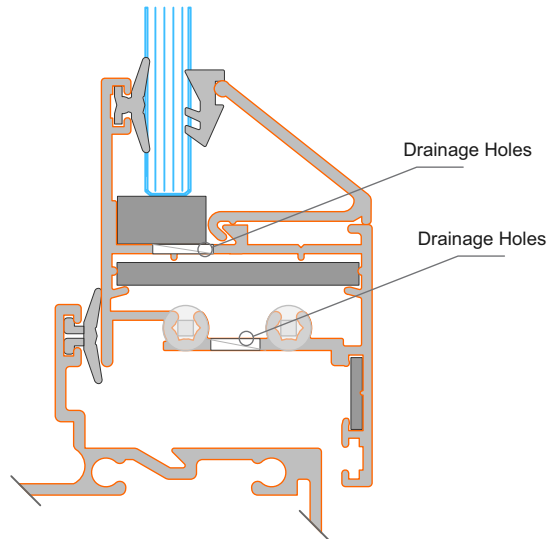


Juralco Winterglaze® RetroFit Double Glazing System - Installation

Sash Windows IGU Installation

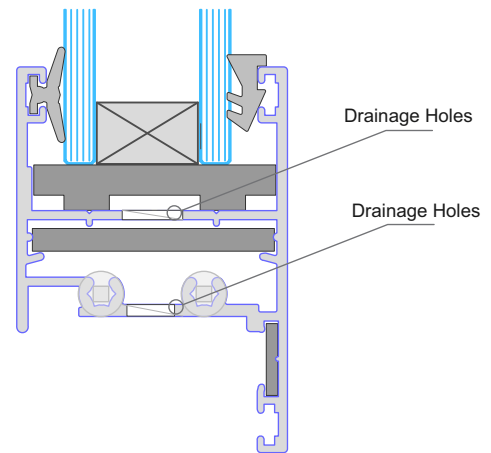
1 - Existing Single Glazed Sash Window.

Select new extrusion, measure up
Order all Extrusions, Wedges and IGU.



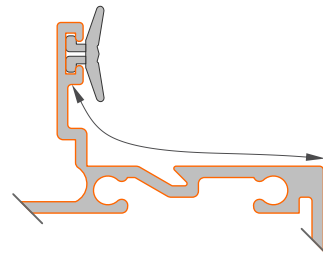
2 - Build New Window Sash. Insert the IGU before completing the Frame. Attach the selected Stays to the Window Frame, taking care that the stay may be for a 33mm x 13mm cavity (Awning) or a 33mm x 14mm cavity (Casement).

Drill handle holes for selected handles
Insert Exterior Wedges using Glazing Wedge Tool



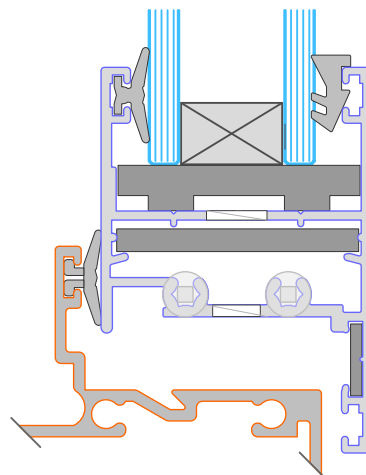
3 - Remove Stays, Remove Sash

4 - Thoroughly clean the inside of the Fixed Frame, all round, but especially the sill and evenly more importantly the **bottom corners**. Scrape all corners clean, dry off and apply fresh sealant beads. Sealant needs to be a compatible small joint type. Seal up all old stay holes. Take special care with Casement stay holes in the Sill. Inspect backing seal. Replace if necessary



5 - Present Window Frame incl Stays to Fixed Frame. Screw stays in place. Screw Handles in place.

Check for satisfactory operation, Clean and Polish



INTERLOCK FRICTION STAYS

'A' SERIES

33mm x 13mm Cavity

Awning Windows



This complete range of 4-bar friction stays provides support and control of standard weight projected top hung (PTH) sashes. The A-Series friction hinges (stays) are manufactured from extruded aluminium and has no sliding channels.

Features

- A complete range to cater for most residential applications
- Manufactured with the unique "pull-in" feature
- Black powdercoated finish

Options

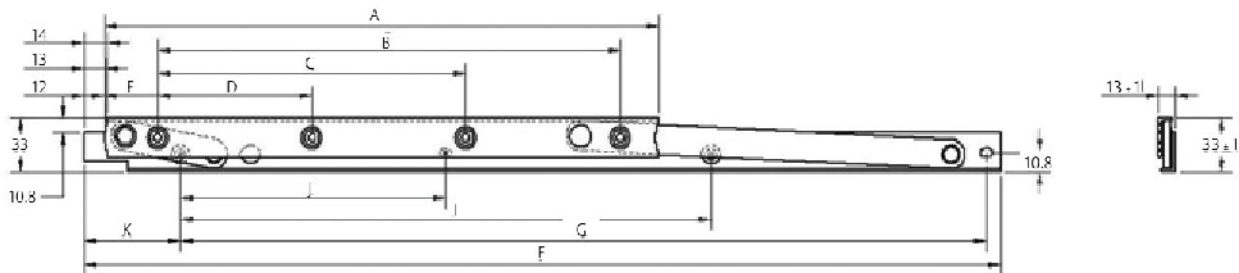
- Available in four sizes to cater for sashes weighing up to 43kg
Includes specific function models:
 - 'A' Full friction
 - 'V' Low friction
 - 'NF' Non-friction
 - 'HD A' Heavy Duty
- Non-friction model for use with window control mechanisms

Model	Application	Max. Sash Height	Opening Angle	Max. Sash Weight	Product Number
230 A	PTH	750mm	45°	6kg	P1560B
230 V	PTH	400mm	45°	4kg	P509B
230 NF	PTH	***	45°	10kg	P1559B
330 A	PTH	1000mm	35°	9kg	P1561B
420HD A	PTH	1800mm	20°	15kg	P1553B
420HD A	PTH	1500mm	20°	20kg	P1553B
420HD A	PTH	1200mm	20°	43kg	P1553B
500 A	PTH	1300mm	27°	12kg	P1530B

Note: Interlock casement stays are only recommended for use on casement windows where the window height is twice the window width.

(mm)	A	B	C	D	E	F	G	H	I	J	K
230 A Stay	110	65	29	-	30	235	172	-	-	55.5	54
330 A Stay	198	158	79	-	30	330	266	-	133	65	54
420 A Stay	228	212	160	52	8	440	390	-	240	90	40
500 A Stay	310	258	172	86	30	512	450	-	296	148	54

Note: Letters apply to dimension diagram below.



INTERLOCK FRICTION STAYS

'A' SERIES

33mm x 13mm Cavity

Installation

INSTALLATION INSTRUCTIONS

FIGURE 1

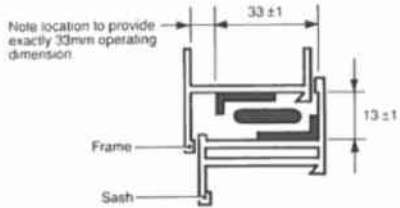


FIGURE 1: The width of sash members to frame members should be set to provide a stay cavity height of 13mm. Where the 'front-to-back' dimension of the jamb cavity exceeds 33mm one baseplate (usually the frameplate) must be located away from the 'hard-back' position as in Figs 1 and 2.

FIGURE 2

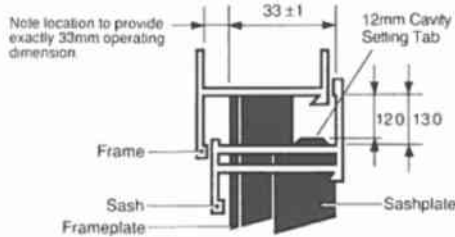
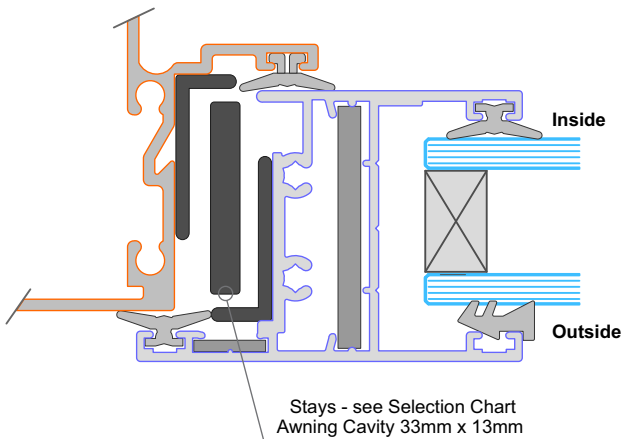


FIGURE 2: The frameplate is fixed hard up to underside of the frame cavity and parallel with the vertical plane of the frame. The two tier sashplate should be fixed flush with the top surface of the sash for a 12mm cavity and flush with the tabs shoulders for a 13mm cavity.



Stay Attach - M4x11 self drive/drill C/S square drive

Recommended stay cavity height.

The 420 HD A (P1553) model use a thicker, heavy duty short arm and therefore the cavity MUST be cut to no less than the nominal 13mm.

FIGURE 3

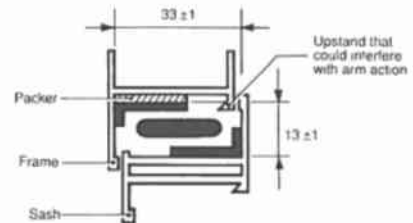
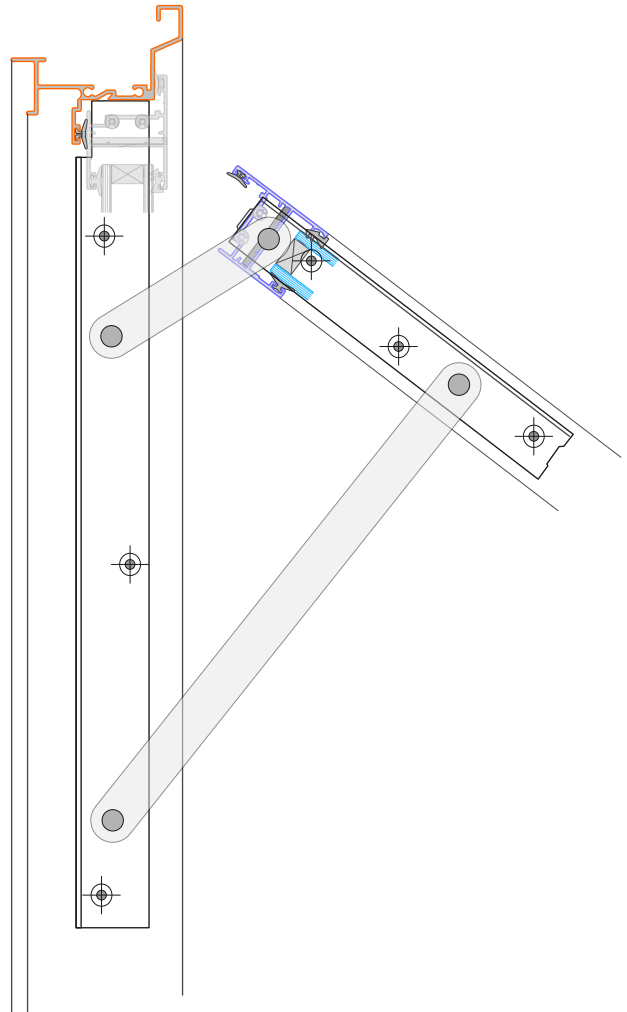


FIGURE 3: Where upstands protrude into the stay cavity by more than 2.5mm it may be necessary to use packers or shims to ensure that the stay arms can operate freely.



INTERLOCK FRICTION STAYS

'4BC' SERIES

33mm x 14mm Cavity

Casement Windows



A premier range of 4-bar friction hinges (stays) used for the support and frictional control of projecting side hung (PSH) aluminium, timber or uPVC sashes. Manufactured from 304 grade austenitic (non-magnetic) stainless steel, the range caters for the sizes and weights of sashes normally associated with residential or light commercial applications.

Features

- A comprehensive range to cater for most applications
- Non-handed
- Manufactured with the unique "pull-in" feature
- No sliding channels
- Factory set friction levels thus no on-site adjustment necessary
- New Zealand made

Options

- Available in four sizes, designated by the frame plate length, catering for sashes weighing up to 40kg. The selection of which is determined by the sash weight and height (refer chart below)
- Non-friction model for use with window control mechanisms.



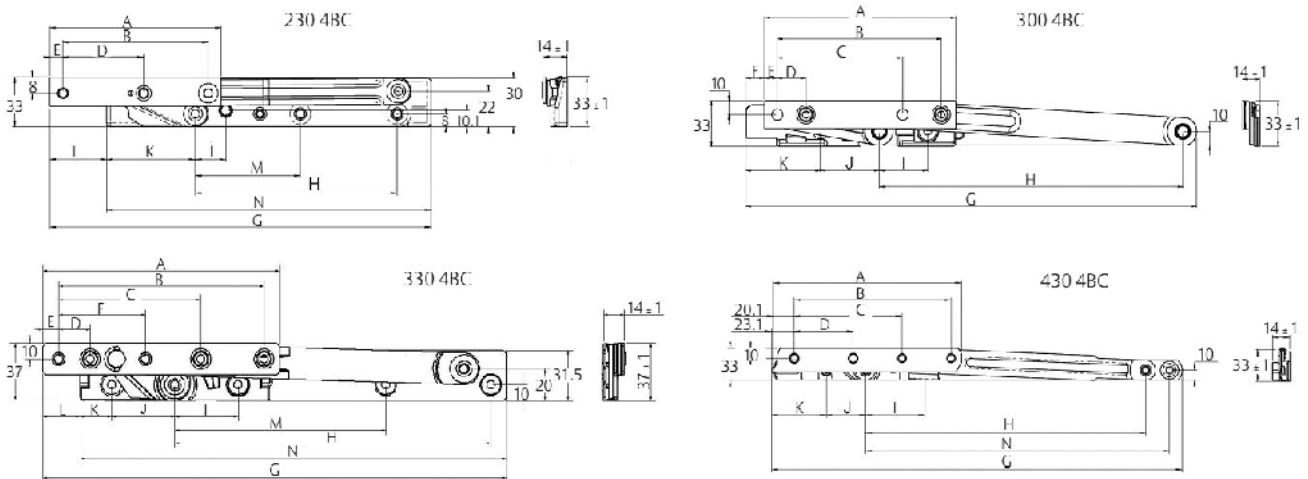
Specifications:

Model	Application	Max. Sash Width	Opening Angle	Max. Sash Weight	Product Number
230 4BC	PSH	800mm	90°	25kg	P1090
230 4BC NF	PSH	***	90°	25kg	P1090NF
230 4BC R	PSH	800mm	77°	25kg	P1090R
300 4BC	PSH	750mm	56°	20kg	P1120
330 4BC	PSH	800mm	90°	30kg	12C-NS3300-00F
430 4BC	PSH	1000mm	90°	40kg	P1080
430 4BC NF	PSH	***	90°	40kg	P1080NF
430 4BC SH	PSH	***	90°	40kg	P1080SH

Note: Interlock casement stays are only recommended for use on casement windows where the window height is twice the window width.

(mm)	A	B	C	D	E	F	G	H	I	J	K	L	M	N
230 4BC	106	90	-	50	8	-	236	125	18.9	-	55	34	65	201
300 4BC	139	119	91	21	9	11	325	220	35	43	52	-	-	-
330 4BC	150	130	90	20	10	55	293	200	40	40	20	23	133.5	270
430 4BC	193	160	110	60	-	-	420	285.7	60	40	57	-	-	310

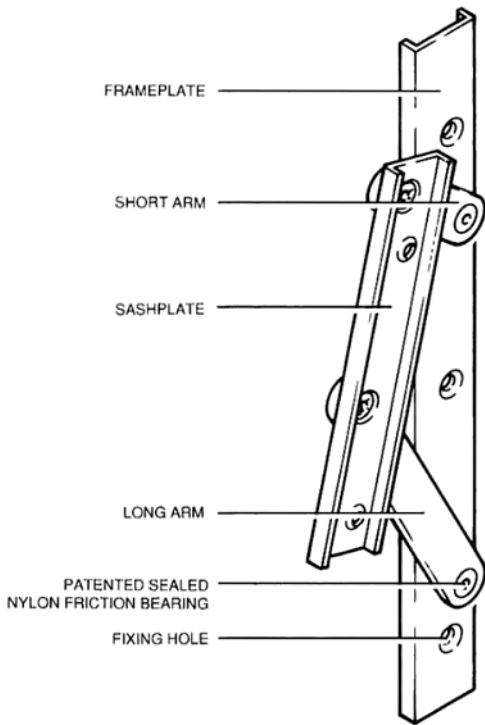
Note: Letters apply to dimension diagram below.



FRICTION STAYS 'CHH' SERIES.

For old CHH, Fish/r Extrusions

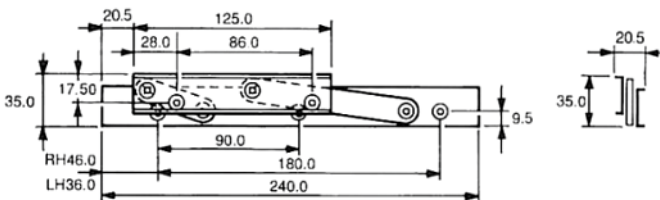
35mm x 20.5mm Cavity



- A custom-made range of four-bar aluminium friction stays used for the support and frictional control of standard weight projecting top-hung (*awning*) and side-hung (*casement*) aluminium sash windows.
- The unique bearing design and 'pull-in' patented features combined with the direct 'out-and-back' action of the CHH series creates a tight weatherproof seal around the sash. (*Refer to Section Introduction*).
- The CHH Series range is designed to be housed within a 35 x 20.5 mm cavity, (*Refer to Installation Instructions*).
- Available in five sizes designated by the approximate frameplate length, the CHH Series caters for most requirements. The recommended maximum sash dimensions and weights stated below are guidelines. For full product capability refer to appropriate accompanying matrices. If your application exceeds the matrices parameters please refer directly to Interlock.
- The standard CHH Series range is complemented by specific functional models:
 - 'CHH' - Standard friction level
 - 'LF' - Low friction level, primarily for use on shallow sashes
 - 'NF' - Non-friction level, used with remote control
 - 'G' - Casement, for projected side-hung sashes
- Packed in pairs, the hand of the friction stay is determined from the window sash exterior.
- CHH stays are manufactured to a high degree of accuracy from quality aluminium with nylon 6 washers.
- CHH stays are polyester/epoxy powdercoated after chemical cleaning and a chromate conversion process.
- **TEST CRITERIA:** Tested to criteria that exceed most international standards. Test results are available upon request.
- **FINISH:** Black. White is available on special order.

240mm CHH SERIES

APPLICATION	RECOMMENDED MAXIMUM SASH HEIGHT*	OPEN <	RECOMMENDED MAXIMUM SASH WEIGHT	PRODUCT No.	
240 CHH	PTH	800mm	40°	8kg	P362

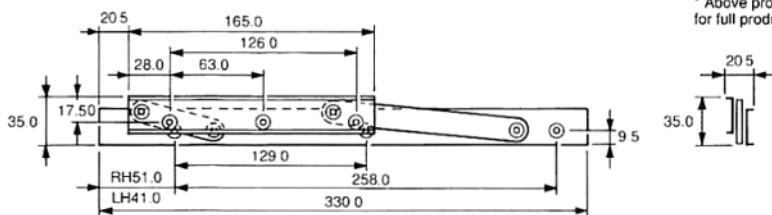


* Above product selection guidelines are based on 4mm glazing. Refer to appropriate matrix for full product selection. Right hand illustrated in the closed position. Not to scale.

* FOR USE WITH REMOTE CONTROL

330mm CHH SERIES

APPLICATION	RECOMMENDED MAXIMUM SASH HEIGHT*	OPEN <	RECOMMENDED MAXIMUM SASH WEIGHT	PRODUCT No.	
330 CHH	PTH	1000mm	38°	10kg	P363

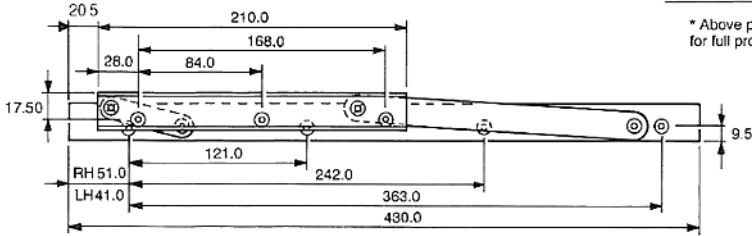


* Above product selection guidelines are based on 4mm glazing. Refer to appropriate matrix for full product selection. Right hand illustrated in the closed position. Not to scale.

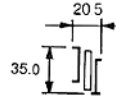
FRICITION STAYS For old CHH, Fish/r Extrusions
'CHH' SERIES. 35mm x 20.5mm Cavity

430mm CHH SERIES

APPLICATION	RECOMMENDED MAXIMUM SASH HEIGHT*	OPEN <	RECOMMENDED MAXIMUM SASH WEIGHT	PRODUCT No.
430 CHH	PTH	1200mm	28° 16kg	P364

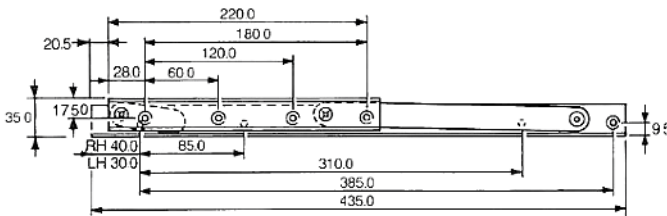


* Above product selection guidelines are based on 4mm glazing. Refer to appropriate matrix for full product selection. Right hand illustrated in the closed position. Not to scale.



420mm 'HD' CHH SERIES

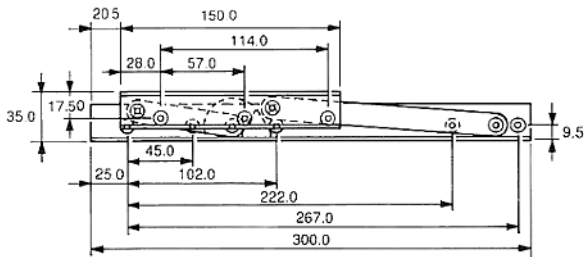
APPLICATION	RECOMMENDED OPTIMUM SASH HEIGHT/WEIGHT RELATIONSHIP*	OPEN <	PRODUCT No.
420 HD CHH	PTH	1800mm × 15kg	20° P568



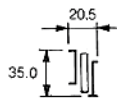
*This stay was specially designed for heavy duty applications. Refer to appropriate matrix for full product selection. Right hand illustrated in the closed position. Not to scale.

300mm 'G' CHH SERIES

APPLICATION	RECOMMENDED MAXIMUM SASH WIDTH*	OPEN <	RECOMMENDED MAXIMUM SASH WEIGHT	PRODUCT No.
300 G	PSH	750mm	54° 20kg	P170



* Above product selection guidelines are based upon a minimum sash height to width ratio equal to or greater than 2:1. Right hand illustrated in the closed position. Not to scale.



FRICITION STAYS 'CHH' SERIES.

For old CHH, Fish/r Extrusions

35mm x 20.5mm Cavity

INSTALLATION INSTRUCTIONS

FIGURE 1.

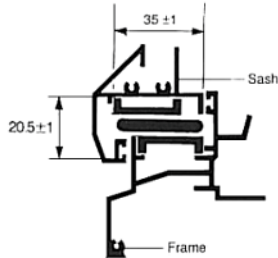


FIGURE 1: The width of sash members to frame members should be set to provide a stay cavity thickness of 20.5mm.

FIGURE 2.

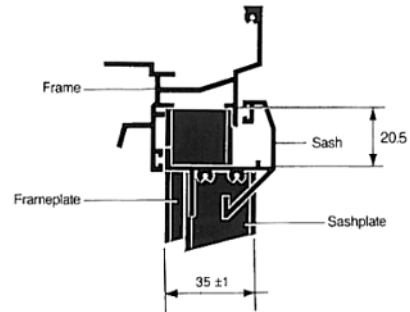


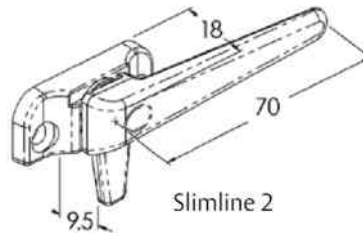
FIGURE 2: The frameplate is fixed hard up to underside of the frame cavity and parallel with the vertical plane of the frame. The sashplate should be fixed flush with the top surface of the sash and in general tightly forward against the sash flange.

Stay Attach - M4x11 self drive/drill C/S square drive

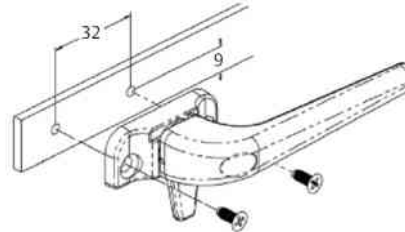
Juralco Winterglaze® RetroFit Double Glazing System - Handles

Handles
Slimline 2 Low Profile, Face Fix

Face Fix Handles. Part No JP 242B, Right hand. Part No JP 243B, Left Hand



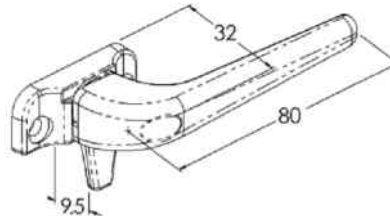
Slimline 2



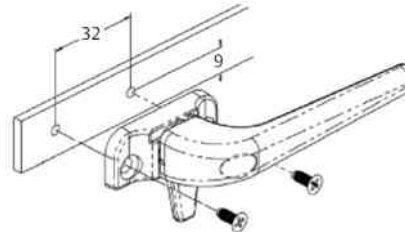
Recommended Fixing
2 x 8g x 3/8 Raised C/S Pozi
Type B SS Screws
Into 3.3mm dia drilled holes
@ 32mm centres

Handles
Styleline 2 Standard Profile, Face Fix

Face Fix Handles. Part No JP 204B, Right hand. Part No JP 205B, Left Hand



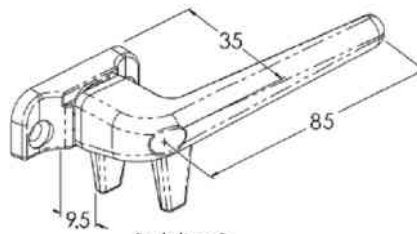
Styleline 2 -
Standard



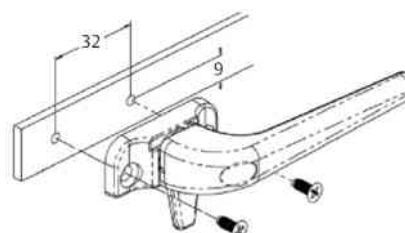
Recommended Fixing
2 x 8g x 3/8 Raised C/S Pozi
Type B SS Screws
Into 3.3mm dia drilled holes
@ 32mm centres

Handles
Styleline 2 Double Tongue, Face Fix

Face Fix Handles. Part No JP 240B, Right hand. Part No JP 241B, Left Hand



Styleline 2 -
Double tongue

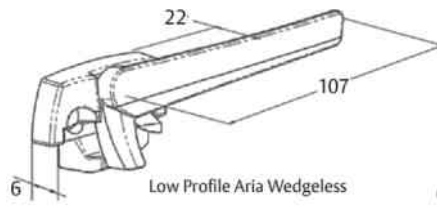


Recommended Fixing
2 x 8g x 3/8 Raised C/S Pozi
Type B SS Screws
Into 3.3mm dia drilled holes
@ 32mm centres

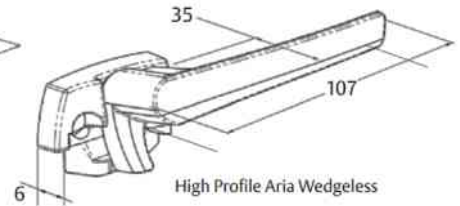
Juralco Winterglaze® RetroFit Double Glazing System - Handles

Handles
Wedgeless Aria Face Fix

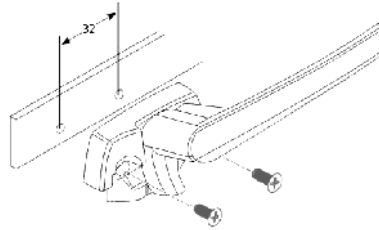
Low Profile Face Fix Handles. Part No JP 520B, Right hand. Part No JP 521B, Left Hand
High Profile Face Fix Handles. Part No JP 530B, Right hand. Part No JP 531B, Left Hand



Low Profile Aria Wedgeless



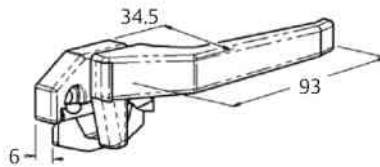
High Profile Aria Wedgeless



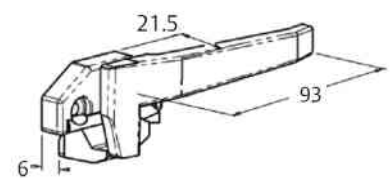
Recommended Fixing
2 x 8g x 3/8 Raised C/S Pozi
Type B SS Screws
Into 3.3mm dia drilled holes
@ 32mm centres

Handles
Wedgeless Face Fix

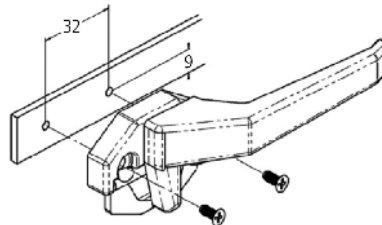
Low Profile Face Fix Handles. Part No JP 320B, Right hand. Part No JP 321B, Left Hand
High Profile Face Fix Handles. Part No JP 330B, Right hand. Part No JP 331B, Left Hand



High Profile Wedgeless



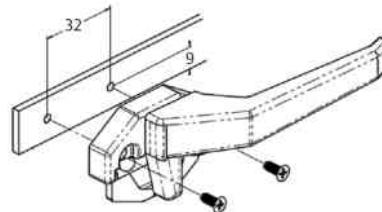
Low Profile Wedgeless



Recommended Fixing
2 x 8g x 3/8 Raised C/S Pozi
Type B SS Screws
Into 3.3mm dia drilled holes
@ 32mm centres

Handles
Wedgeless Deluxe Locking, Face Fix

Face Fix Handles. Part No JP 345B, Right hand. Part No JP 346B, Left Hand



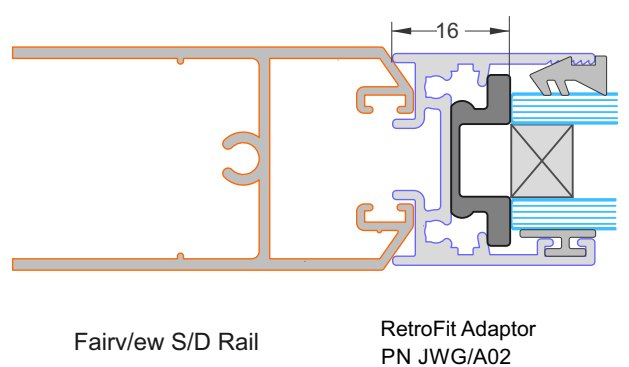
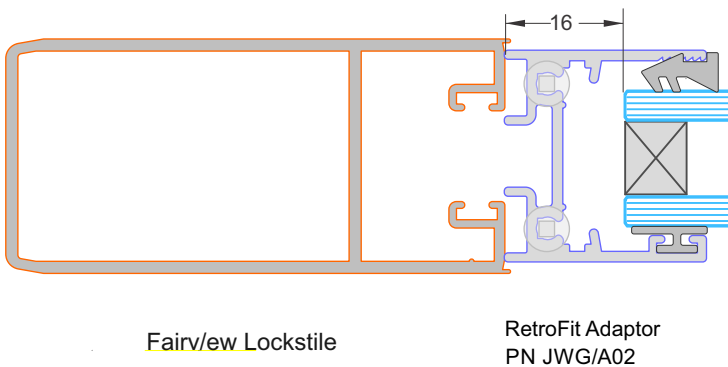
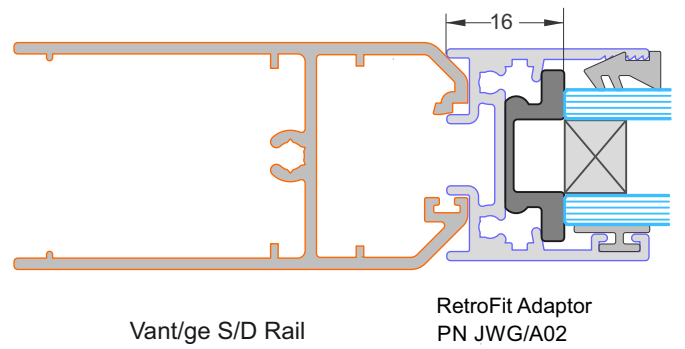
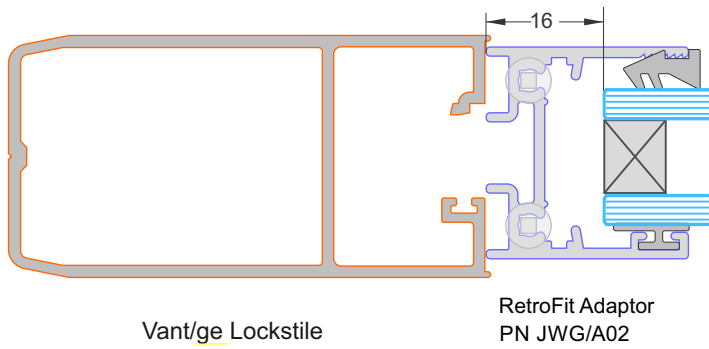
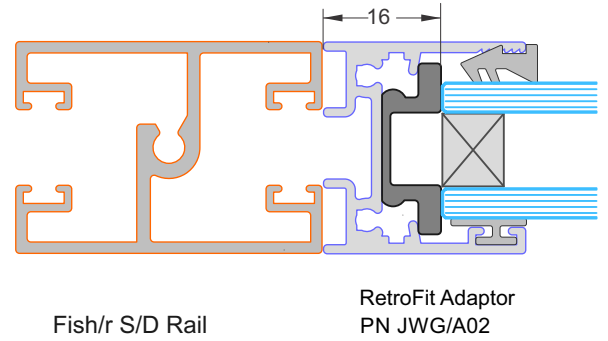
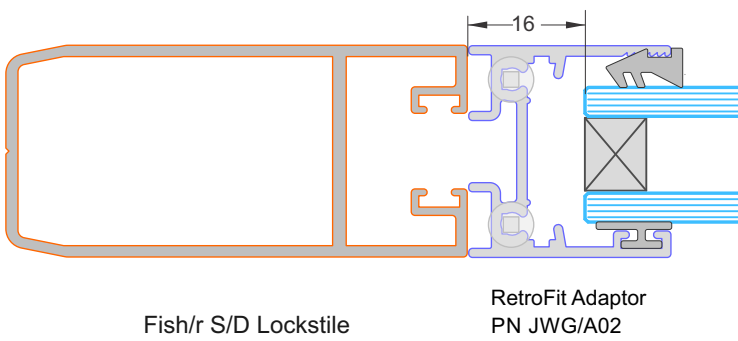
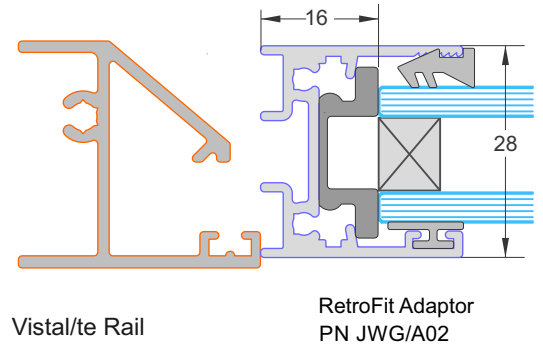
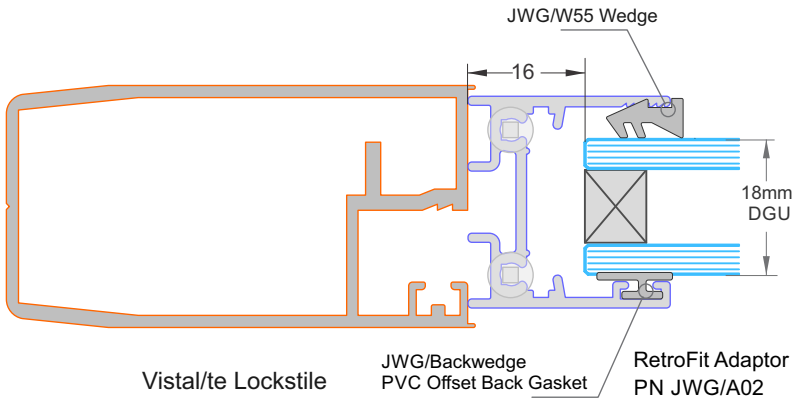
Recommended Fixing
2 x 8g x 3/8 Raised C/S Pozi
Type B SS Screws
Into 3.3mm dia drilled holes
@ 32mm centres

Handles
Standard Adhesive Wedges

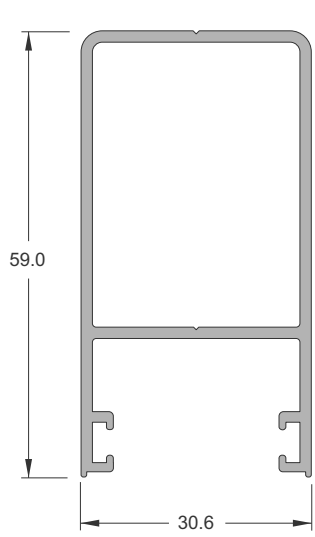
Part No JP 8741B - 2mm Black
Part No JP 8713B - 3mm Black
Part No JP 2695B - 4mm Black



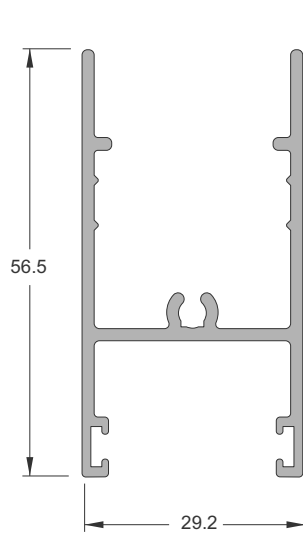
Juralco Winterglaze® RetroFit Double Glazing System - Doors



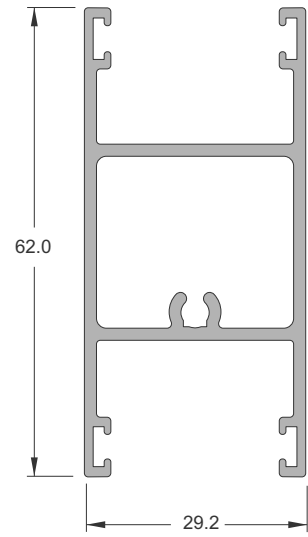
Juralco Winterglaze® RetroFit Double Glazing System - Sliding Door Extrusions



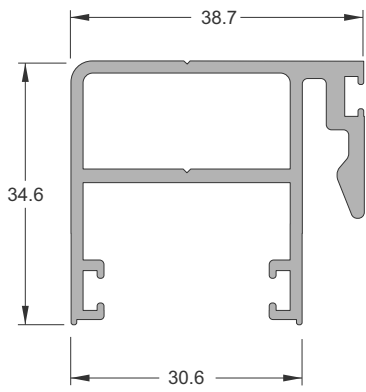
JWG/SD01
Sliding Door
Stile



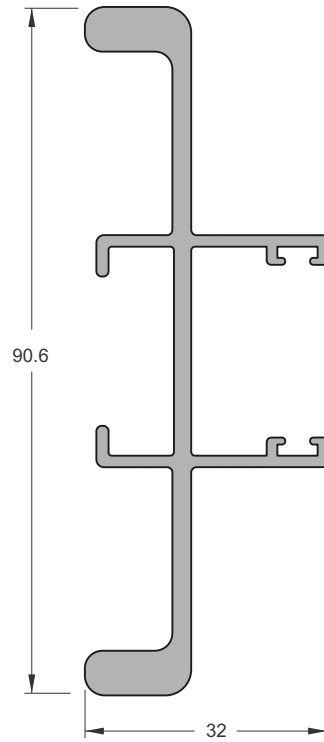
JWG/SD02
Sliding Door Top,
Bottom Rail



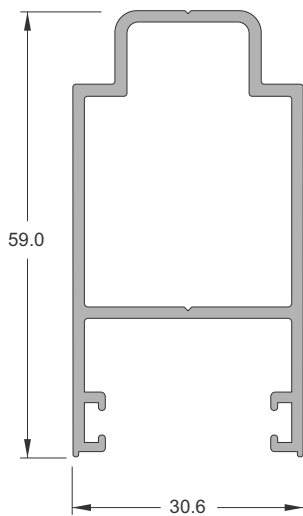
JWG/SD03
Sliding Door
Mid Rail



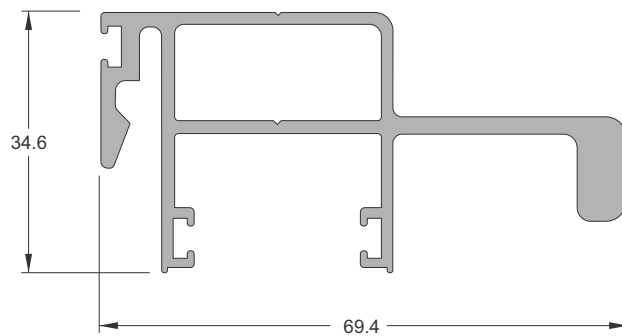
JWG/SD04
Sliding Door
Interlock



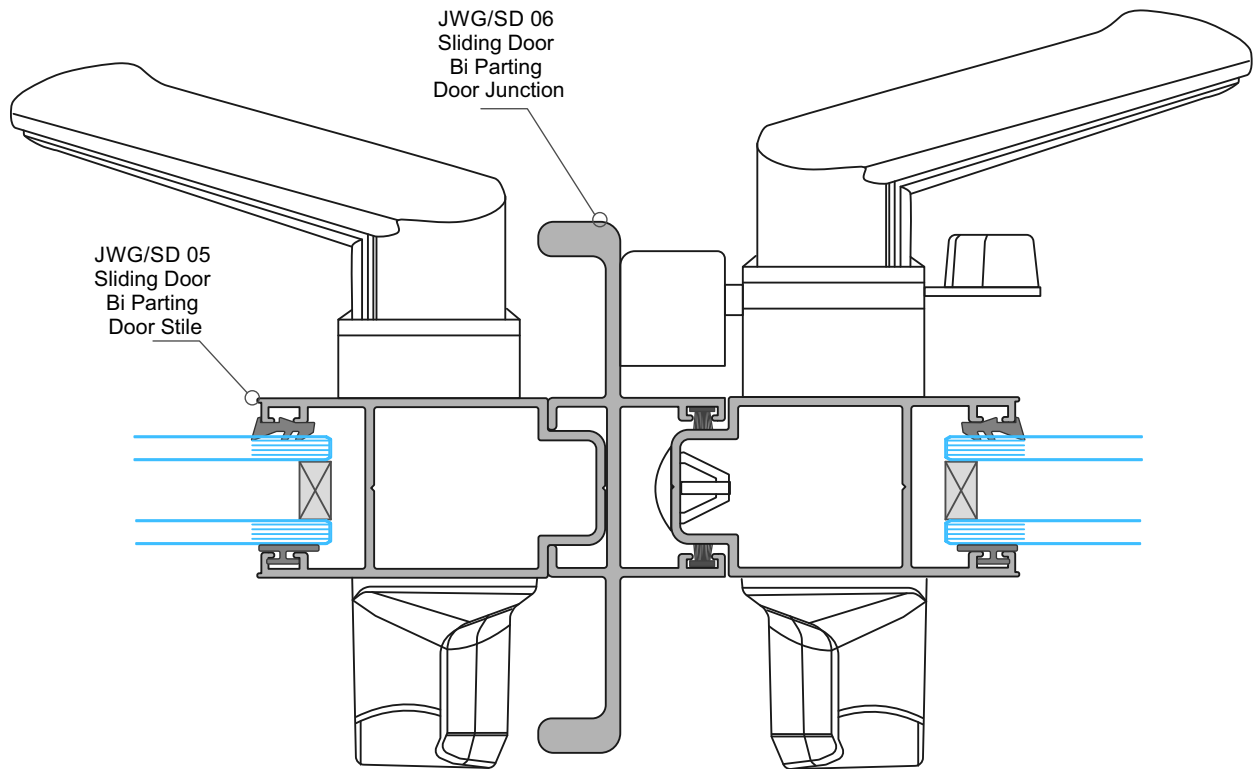
JWG/SD06
Sliding Door
Bi Parting
Door Junction



JWG/SD05
Sliding Door
Bi Parting
Door Stile

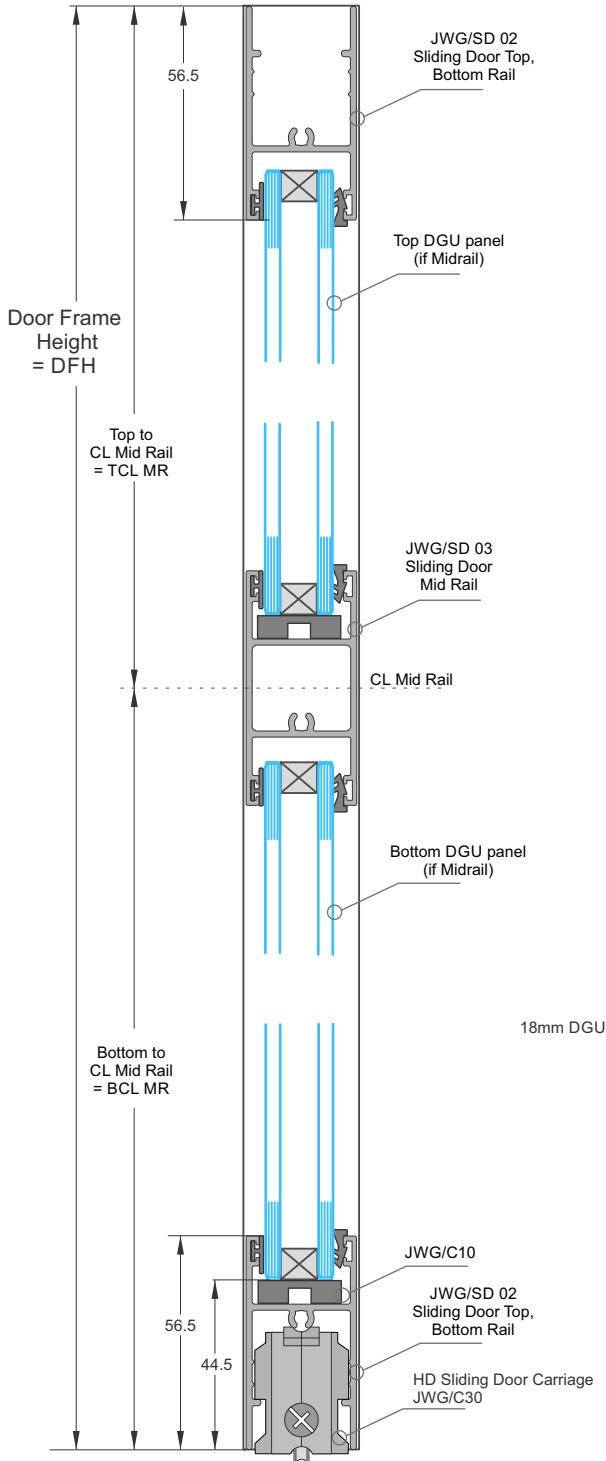
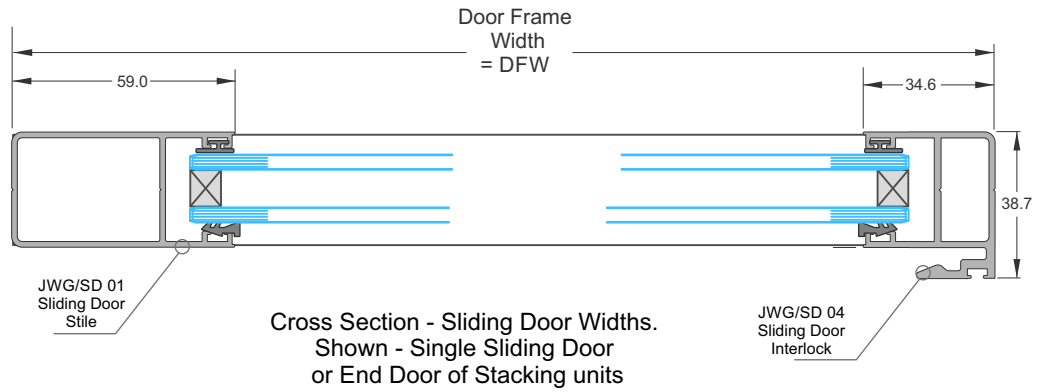


JWG/SD07
Sliding Door
Heavy Stile



Bi Parting Sliding Door Stiles

Juralco Winterglaze® RetroFit Double Glazing System - Sliding Door Cutting Deductions



Single/End Slider, Single Interlock

DGU WIDTHS
18mm DGU Width = DFW - 67

DGU HEIGHT - No Mid Rail
18mm DGU Height = DFH-43-43 = DFW - 86

DGU HEIGHTS - Mid Rail - Equal Panel Heights
18mm DGU Height = DFH/2-62

Multiple Slider, Two Interlocks

DGU WIDTHS
18mm DGU Width = DFW - 42

DGU HEIGHT - No Mid Rail
18mm DGU Height = DFH-43-43 = DFW - 86

DGU HEIGHTS - Mid Rail - Equal Panel Heights
18mm DGU Height = DFH/2-62

WINTERGLAZE® IGU/DGU ORDER FORM

FORM A

Juralco Aluminium Building Products Ltd, 48 Bruce McLaren Rd, Henderson, Auckland
Phone: (09) 478 8018 Fax : (09) 478 7883

Order No: _____ Order Date: _____ From: _____

Remarks: _____ Deliver to: _____

Date Required: _____

Metro : Please fax Order Confirmation to: (09) 478 7883

Quantity	Glass Type		Height x Width, mm	IGU thickness, mm	Air or Argon fill	Identification	Safety Stamp Position.
	Inside Layer Toughened (T) or Annealed (A). Thickness, mm	Outside Layer Toughened (T) or Annealed (A). Thickness, mm					

If a drawing is involved please use Form B

WINTERGLAZE® IGU/DGU ORDER FORM

FORM B

Juralco Aluminium Building Products Ltd, 48 Bruce McLaren Rd, Henderson, Auckland
Phone: (09) 478 8018 Fax : (09) 478 7883

Order No: _____ Order Date: _____ From: _____

Remarks: _____ Deliver to: _____

Date Required: _____

Metro : Please fax Order Confirmation to: (09) 478 7883

Quantity	Glass Type		Height x Width, mm	IGU thickness, mm	Air or Argon fill	Identification	Safety Stamp Position.
	Inside Layer Toughened (T) or Annealed (A). Thickness, mm	Outside Layer Toughened (T) or Annealed (A). Thickness, mm					

Drawing. Please draw clearly, indicating angles, dimensions for irregular shapes, special stamp positions. One diagram per page