

# Revolution 100

Designer's guide

Optima

ClearThinking







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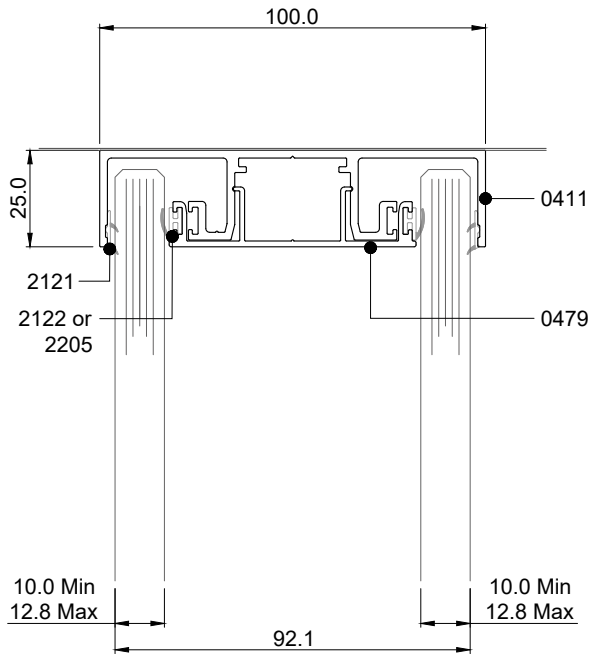
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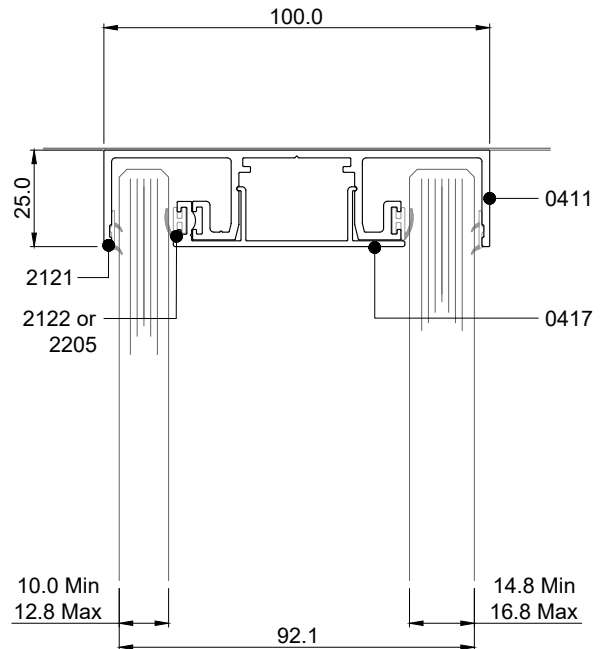
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## Head Track Details: Vertical Sections, 25mm Head Track

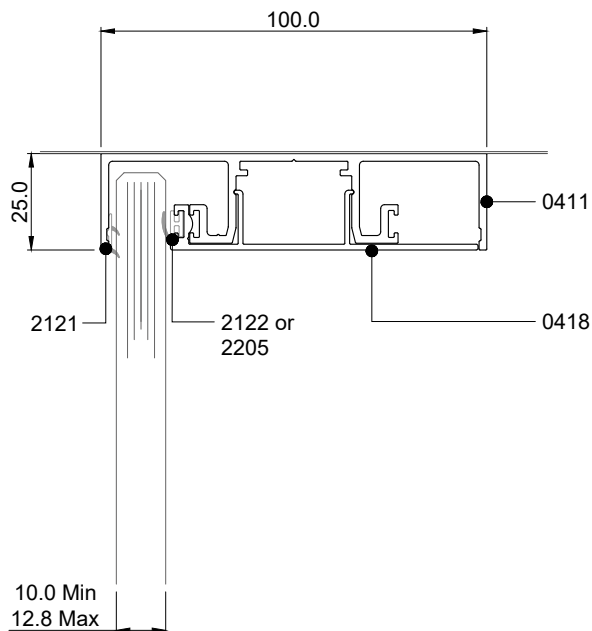
**NOTE:** 2122 Glazing Gasket for 12.0, 12.8 & 16.8mm Glass.  
2205 Glazing Gasket for 10.0, 10.8, 14.8 & 15mm Glass.



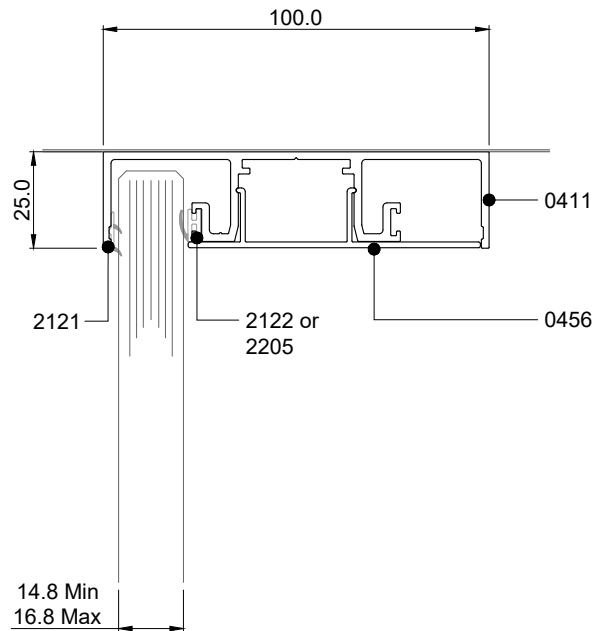
25mm head track double glazed



25mm head track double glazed



25mm head track single glazed



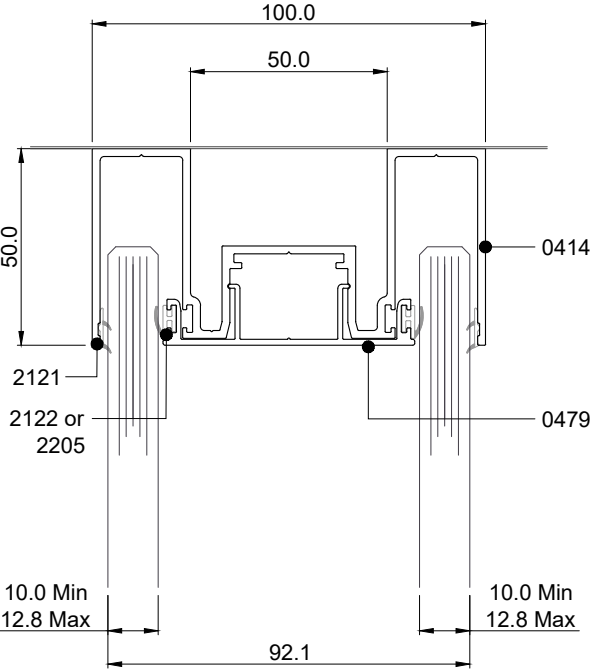
25mm head track single glazed



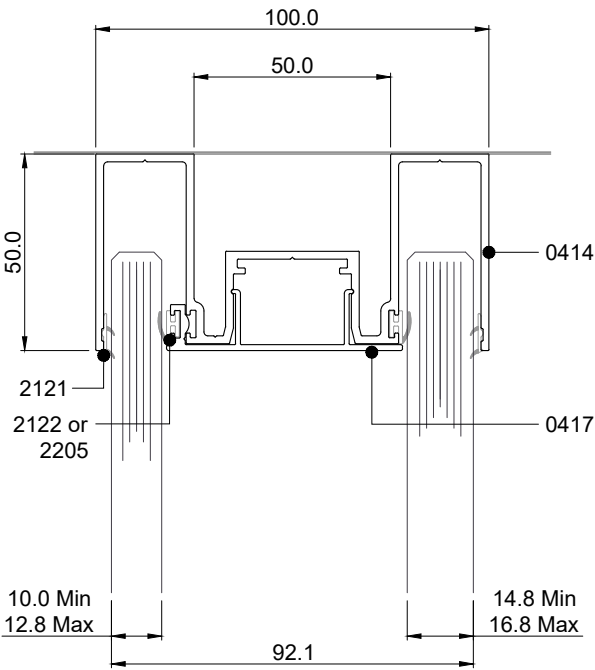
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## Head Track Details: Vertical Sections, 50mm Head Track

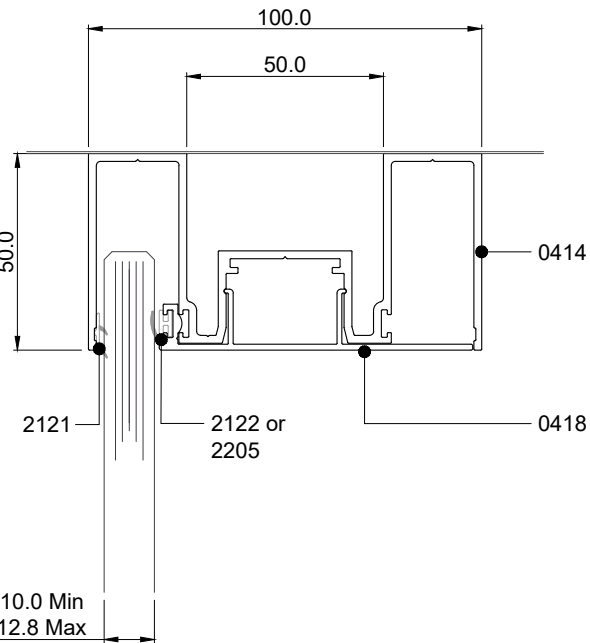
**NOTE:** 2122 Glazing Gasket for 12.0, 12.8 & 16.8mm Glass.  
2205 Glazing Gasket for 10.0, 10.8, 14.8 & 15mm Glass.



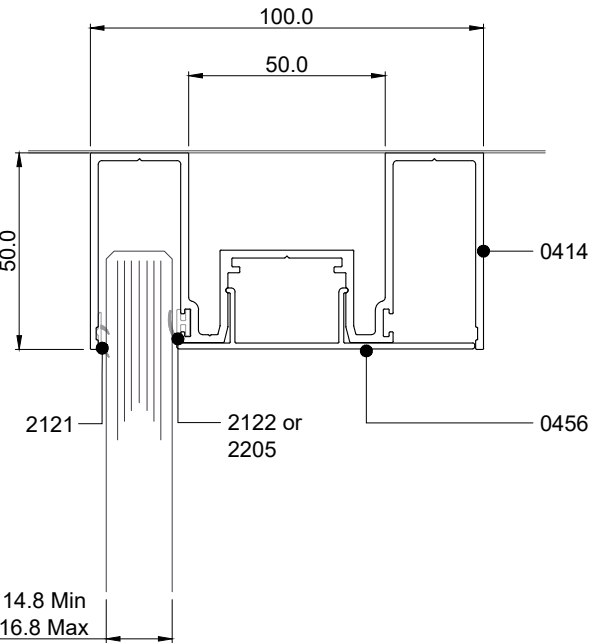
50mm head track double glazed



50mm head track double glazed



50mm head track single glazed



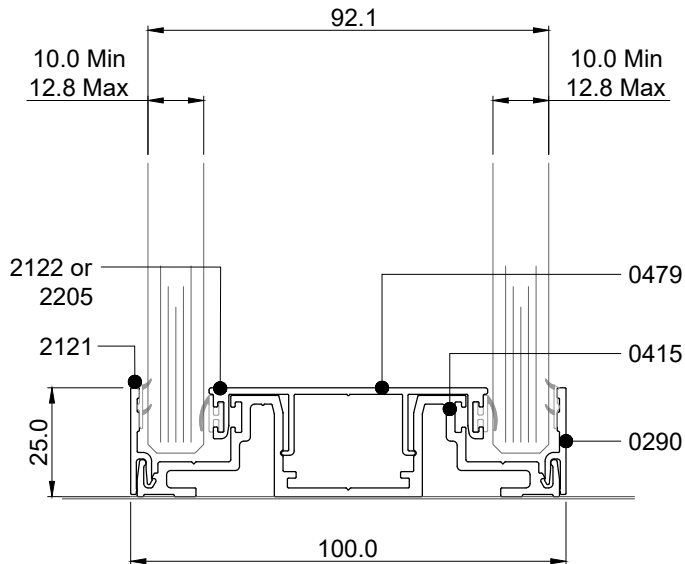
50mm head track single glazed



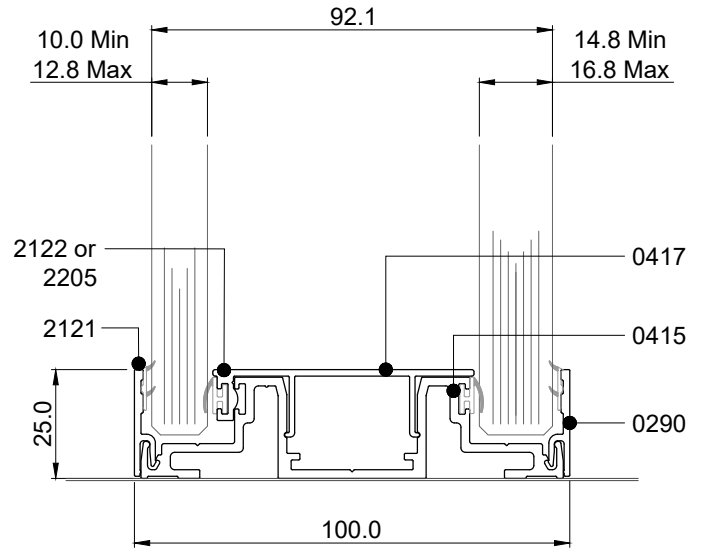
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## Floor Track Details: Vertical Sections, 25mm Floor Track

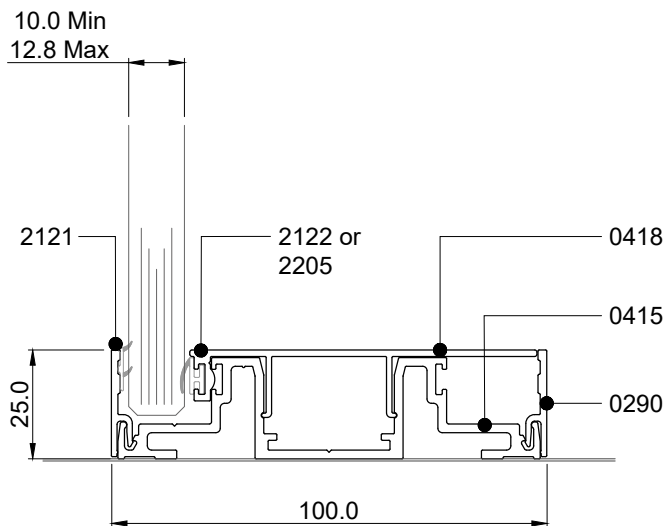
**NOTE:** 2122 Glazing Gasket for 12.0, 12.8 & 16.8mm Glass.  
2205 Glazing Gasket for 10.0, 10.8, 14.8 & 15mm Glass.



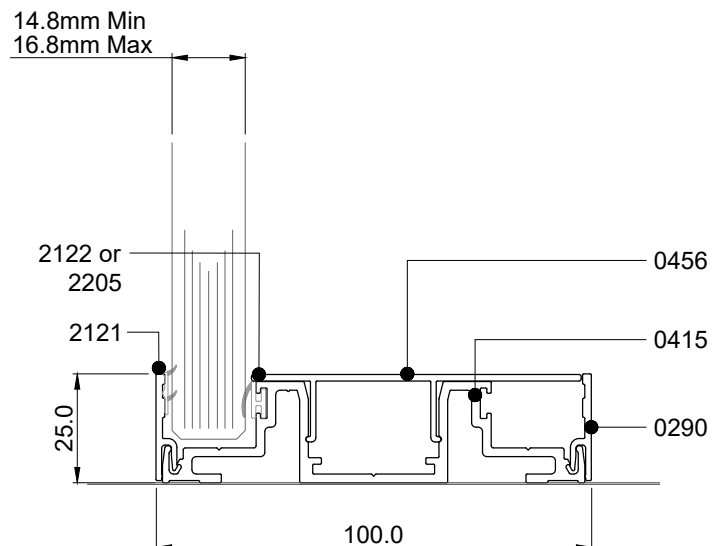
25mm floor track double glazed



25mm floor track double glazed



25mm floor track single glazed



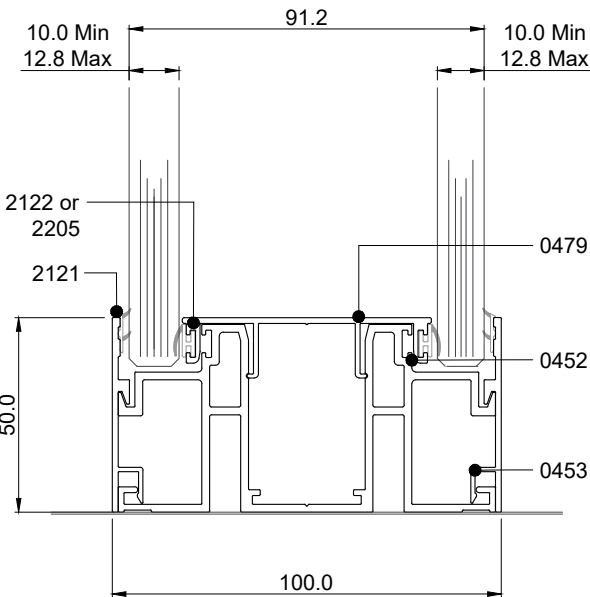
25mm floor track single glazed



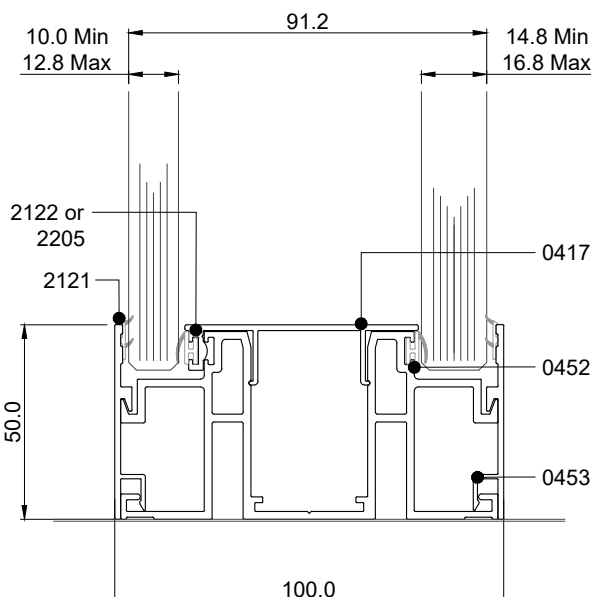
# Revolution 100

## Floor Track Details: Vertical Sections, 50mm Floor Track

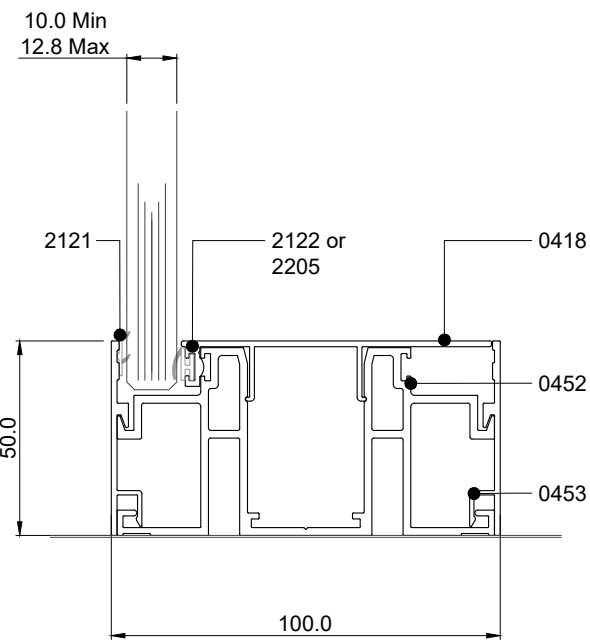
**NOTE:** 2122 Glazing Gasket for 12.0, 12.8 & 16.8mm Glass.  
2205 Glazing Gasket for 10.0, 10.8, 14.8 & 15mm Glass.



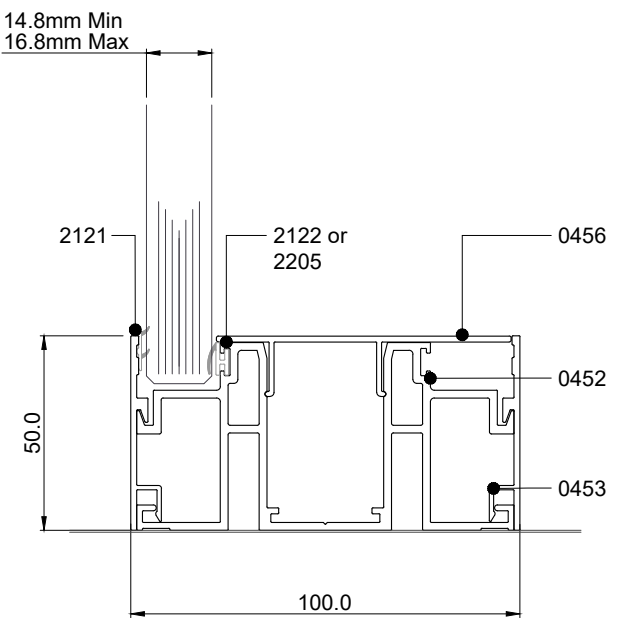
50mm floor track double glazed



50mm floor track double glazed



50mm floor track single glazed



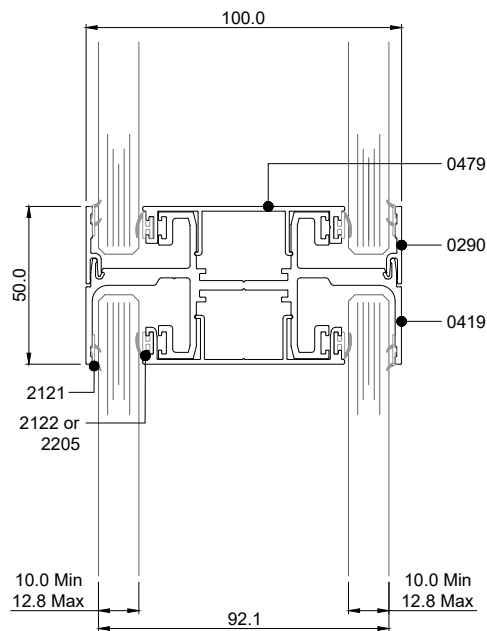
50mm floor track single glazed



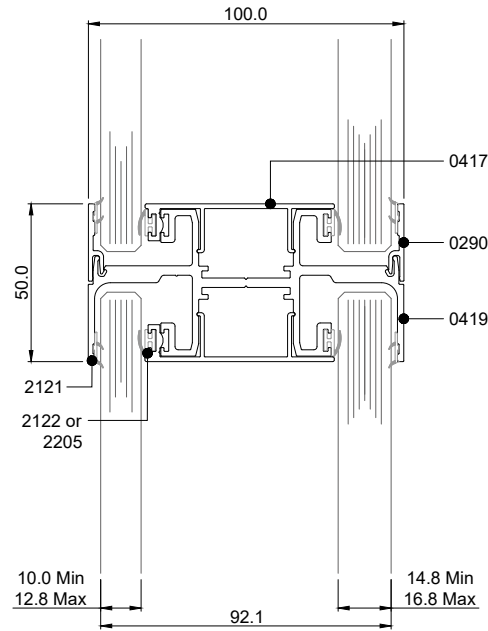
# Revolution 100

## Transom Details: Horizontal Sections

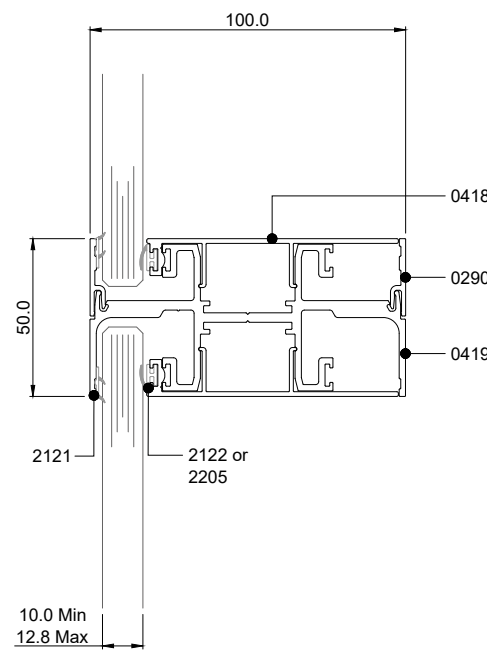
**NOTE:** 2122 Glazing Gasket for 12.0, 12.8 & 16.8mm Glass.  
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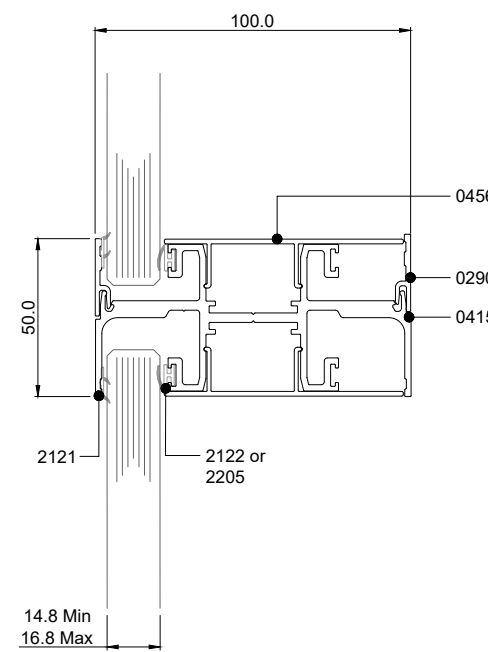
50mm transom double glazed



50mm transom double glazed



50mm transom single glazed

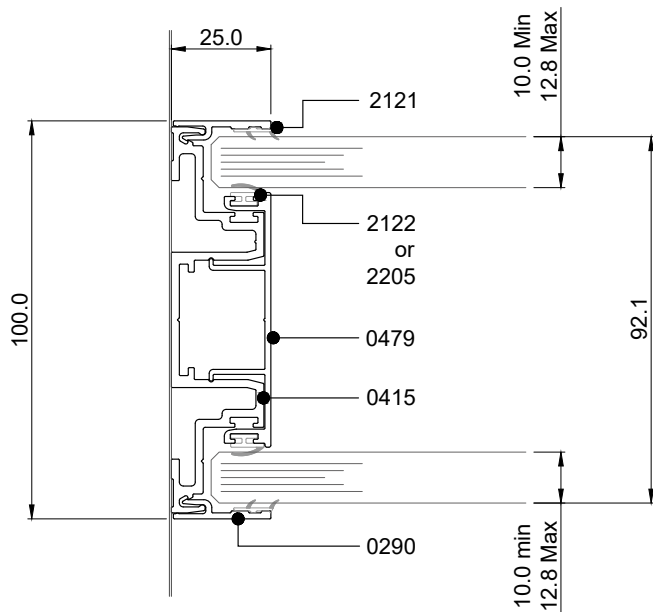


50mm transom single glazed

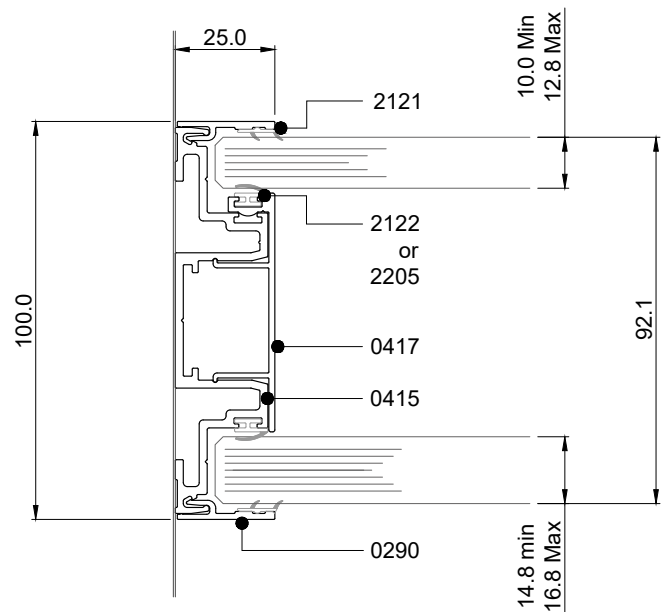
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## Abutment Details: Horizontal Sections, 25mm Track

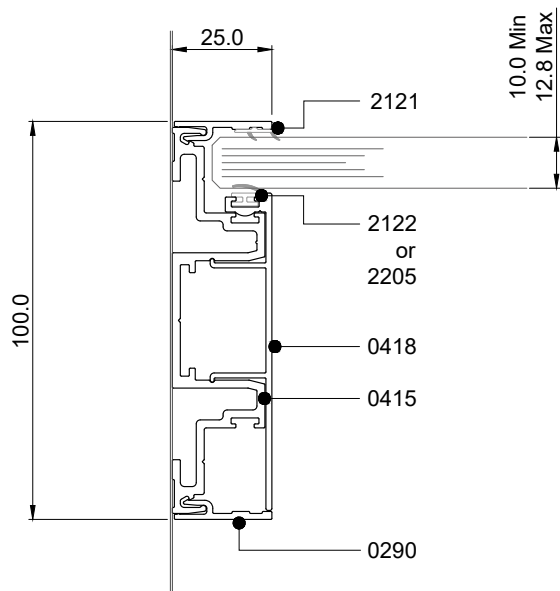
**NOTE:** 2122 Glazing Gasket for 12.0, 12.8 & 16.8mm Glass.  
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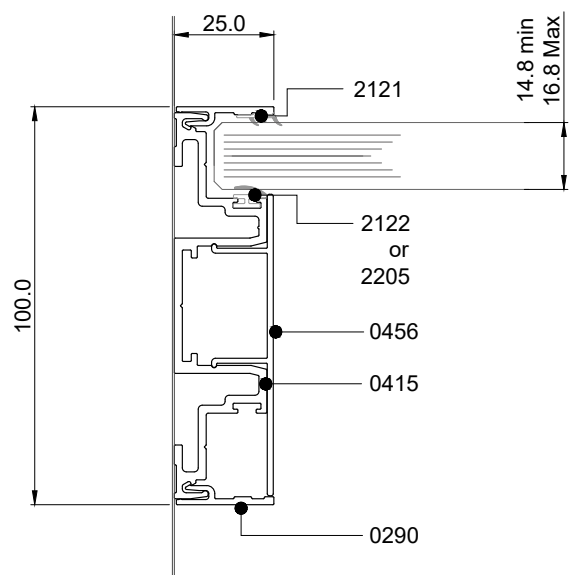
25mm abutment with clip-on bead  
double glazed



25mm abutment with clip-on bead  
double glazed



25mm abutment with clip-on bead  
single glazed



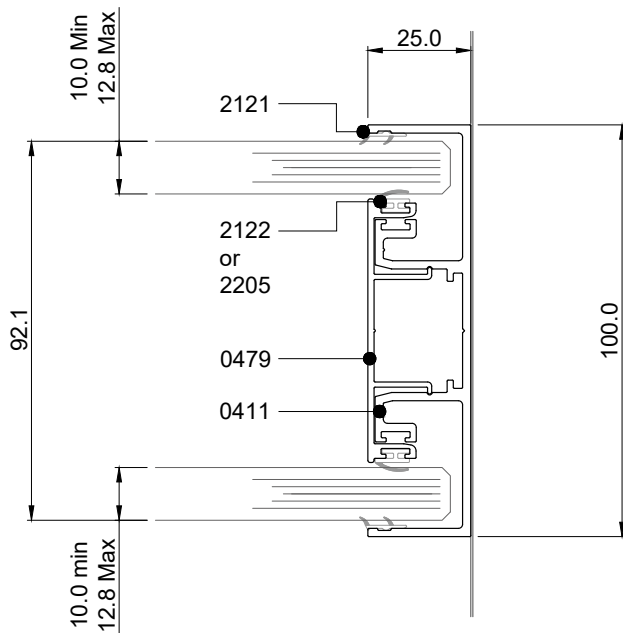
25mm abutment with clip-on bead  
single glazed



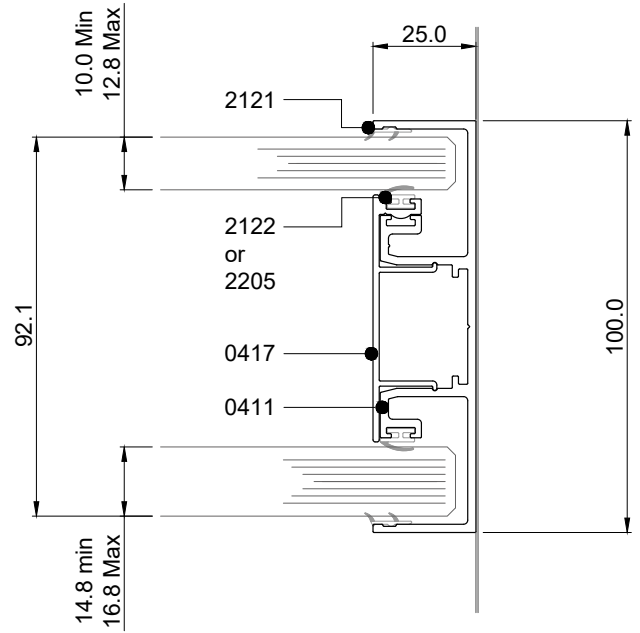
# Revolution 100

## Abutment Details: Horizontal Sections, 25mm Track

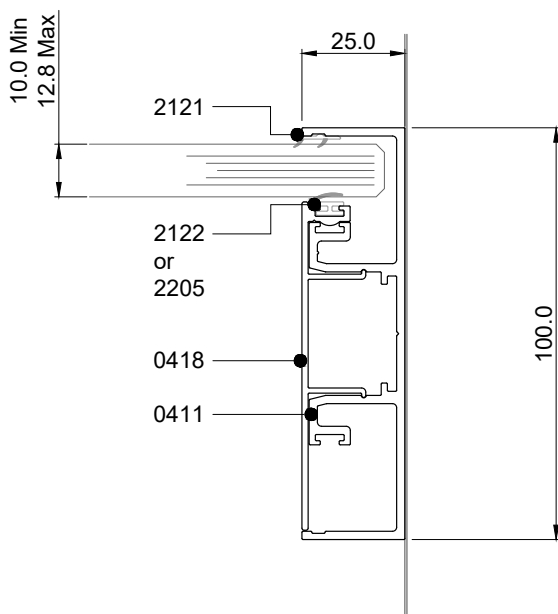
**NOTE:** 2122 Glazing Gasket for 12.0, 12.8 & 16.8mm Glass.  
2205 Glazing Gasket for 10.0, 10.8, 14.8 & 15mm Glass.



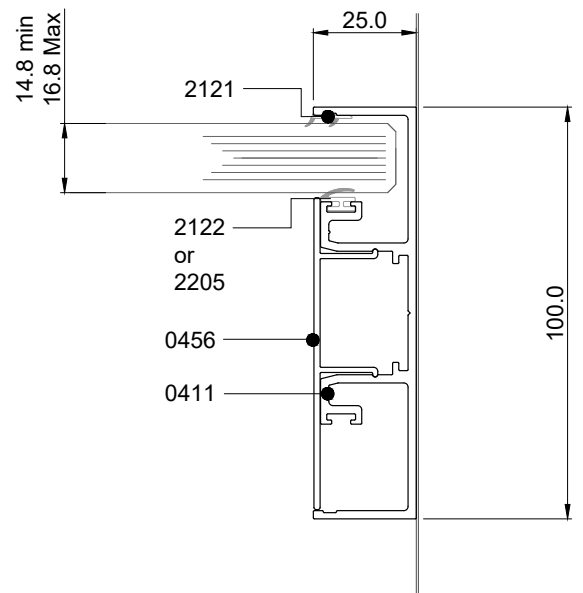
25mm abutment  
double glazed



25mm abutment  
double glazed



25mm abutment  
single glazed

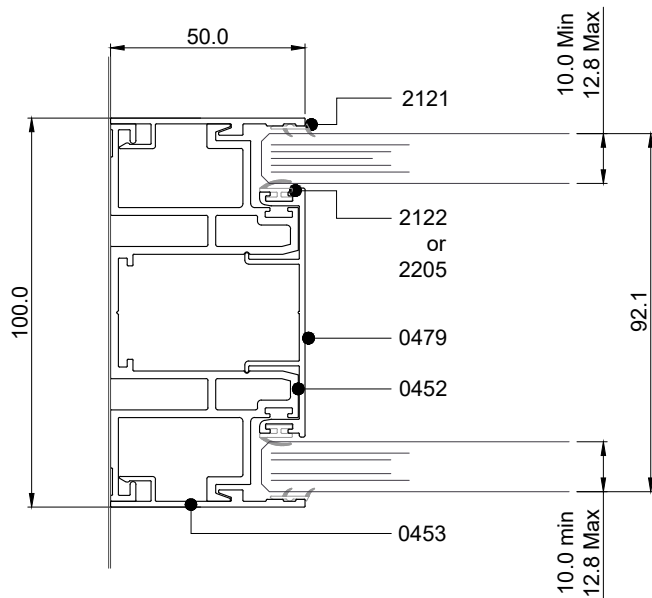


25mm abutment  
single glazed

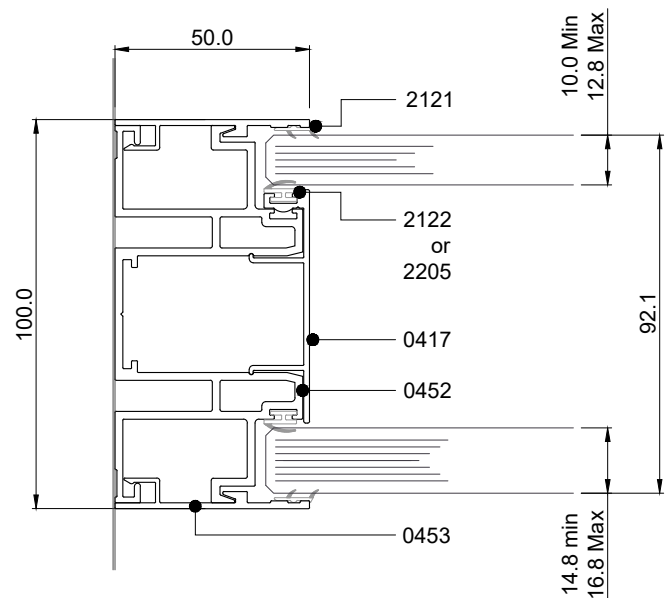
# Revolution 100

## Abutment Details: Horizontal Sections, 50mm Track

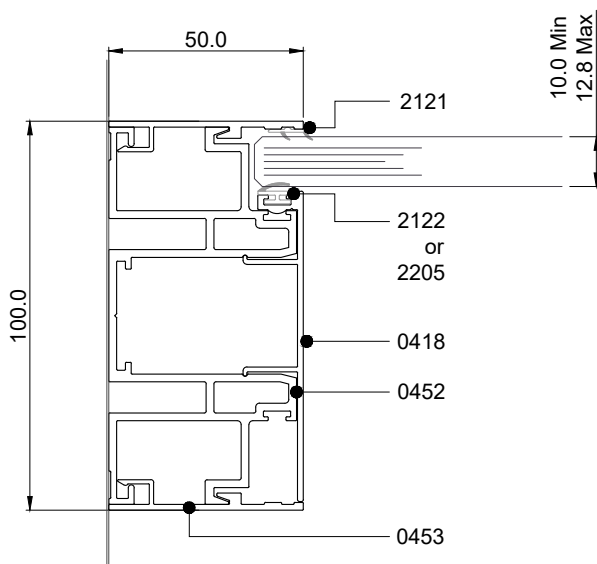
**NOTE:** 2122 Glazing Gasket for 12.0, 12.8 & 16.8mm Glass.  
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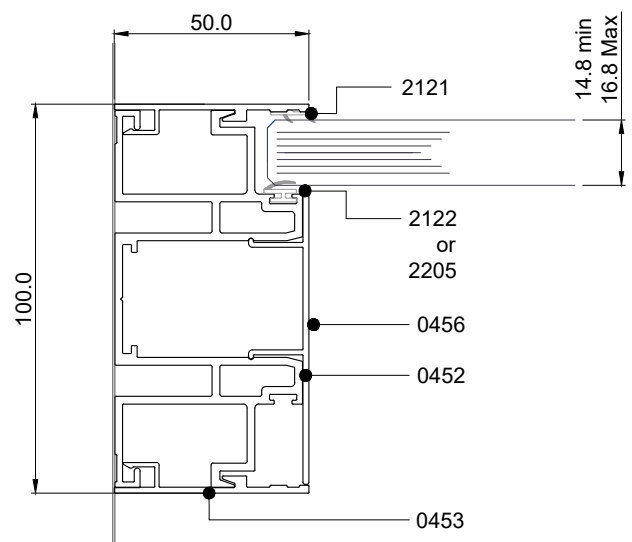
50mm abutment with clip-on bead  
double glazed



50mm abutment with clip-on bead  
double glazed



50mm abutment with clip-on bead  
single glazed



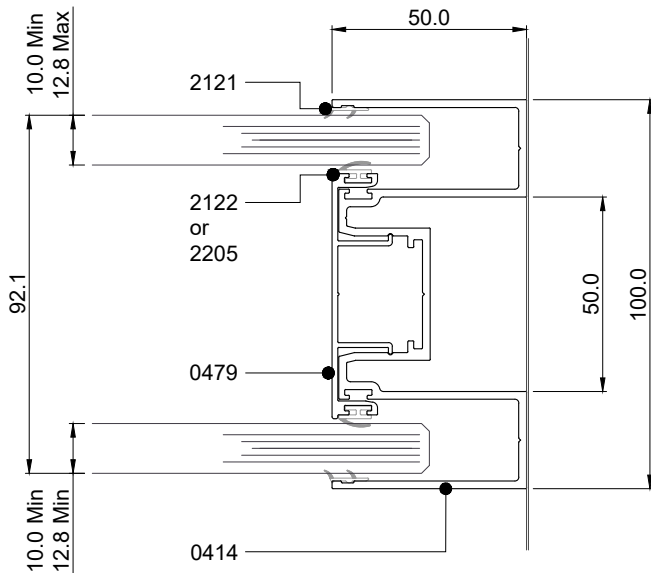
50mm abutment with clip-on bead  
single glazed



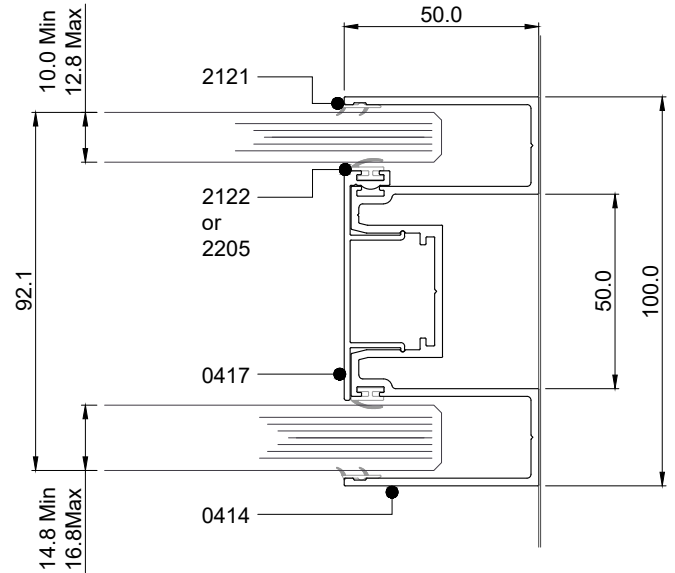
# Revolution 100

## Abutment Details: Horizontal Sections, 50mm Track

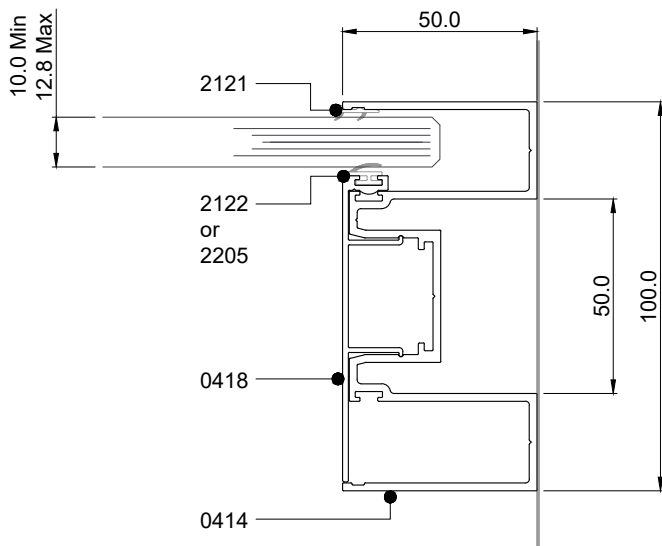
**NOTE:** 2122 Glazing Gasket for 12.0, 12.8 & 16.8mm Glass.  
2205 Glazing Gasket for 10.0, 10.8, 14.8 & 15mm Glass.



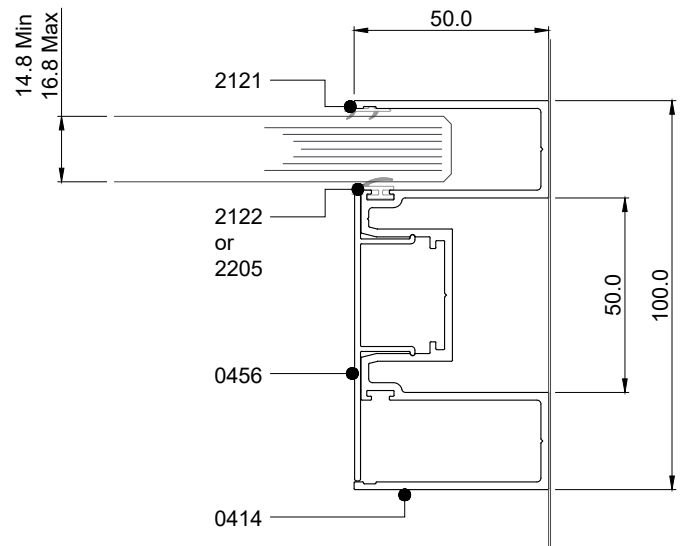
50mm abutment  
double glazed



50mm abutment  
double glazed



50mm abutment  
single glazed

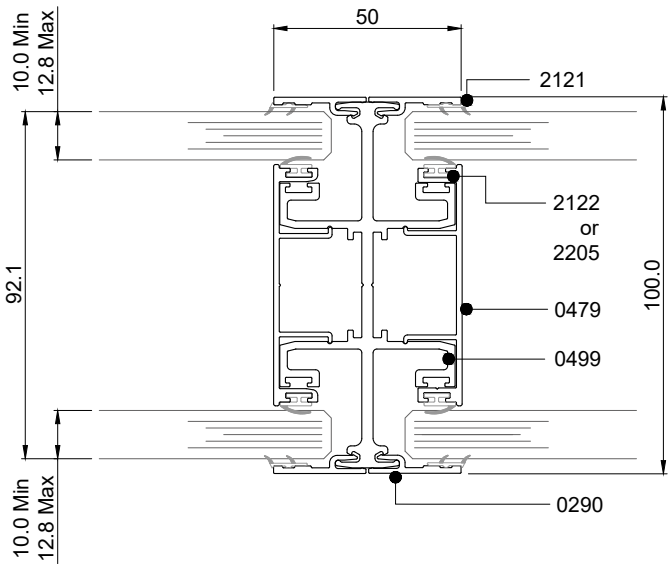


50mm abutment  
single glazed

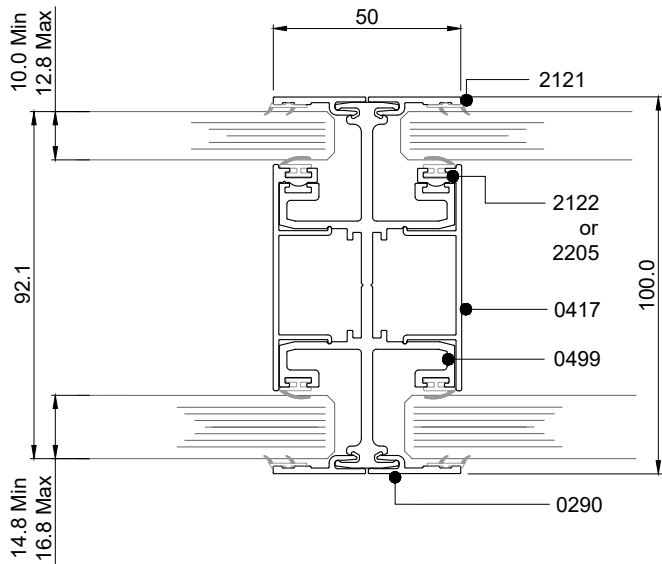
# Revolution 100

## Mullion Details: Horizontal Details

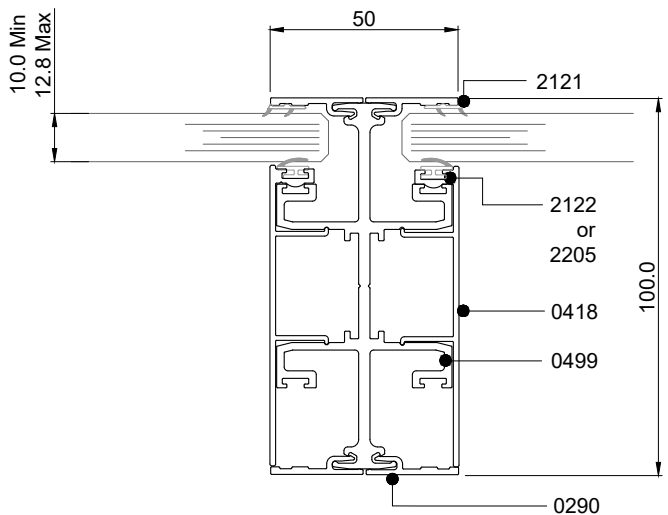
**NOTE:** 2122 Glazing Gasket for 12.0, 12.8 & 16.8mm Glass.  
2205 Glazing Gasket for 10.0, 10.8, 14.8 & 15mm Glass.



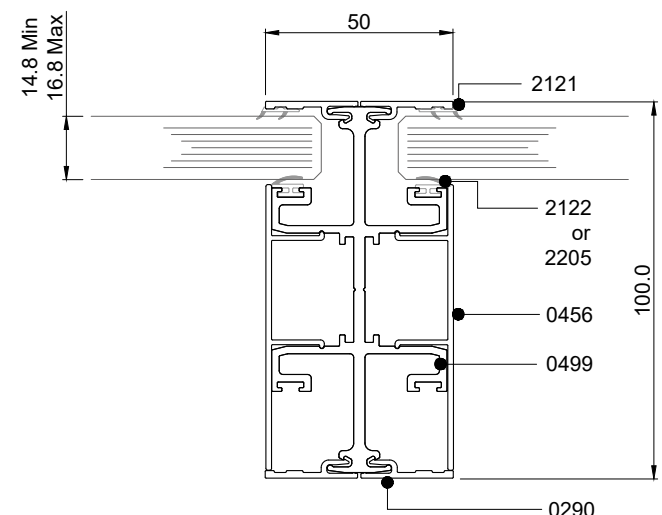
50mm mullion with double glazing



50mm mullion with double glazing



50mm mullion with single glazing

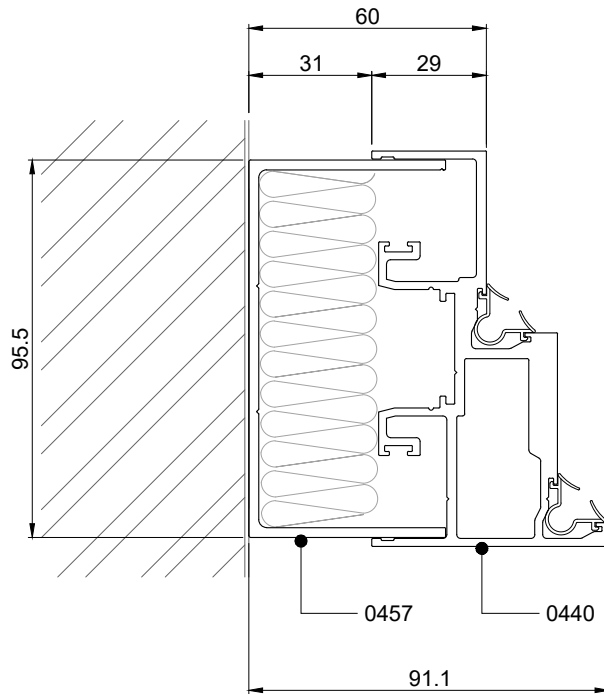


50mm mullion with single glazing

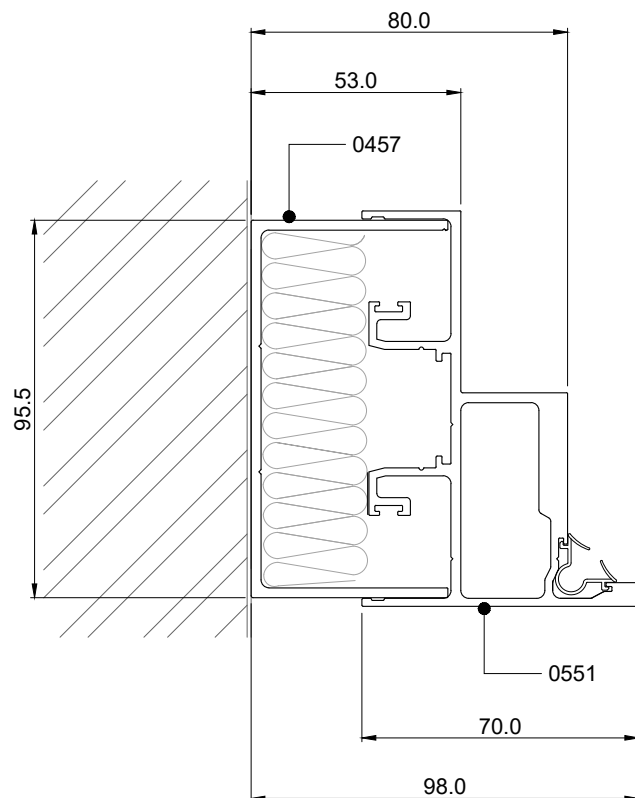


# Revolution 100

## Wall Abutment Details: Door Frame Wall Abutment Spacer



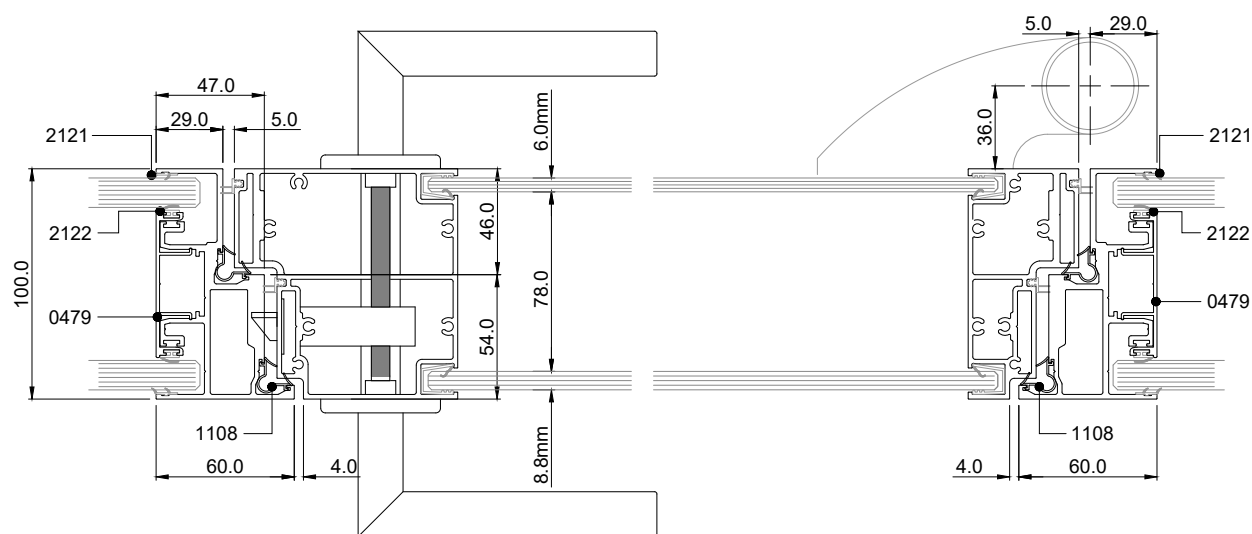
Wall abutment spacer  
with D660 door frame



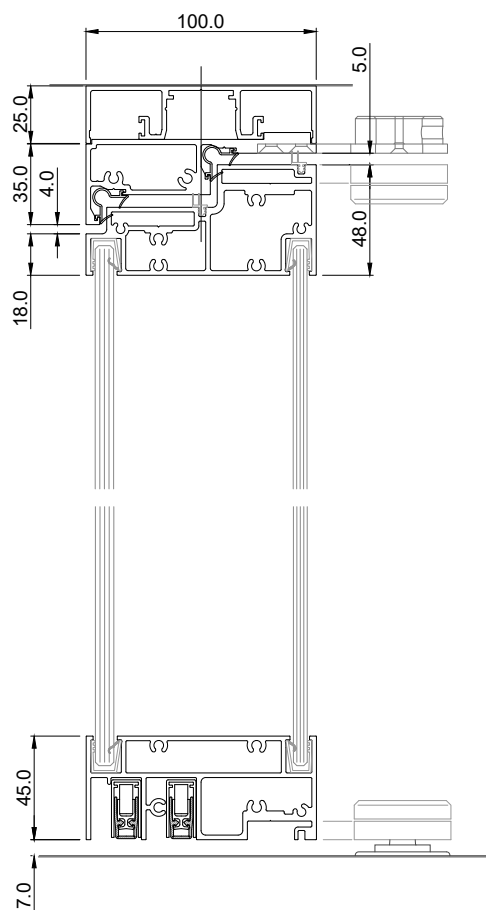
Wall abutment spacer  
with D670 door frame

# Revolution 100

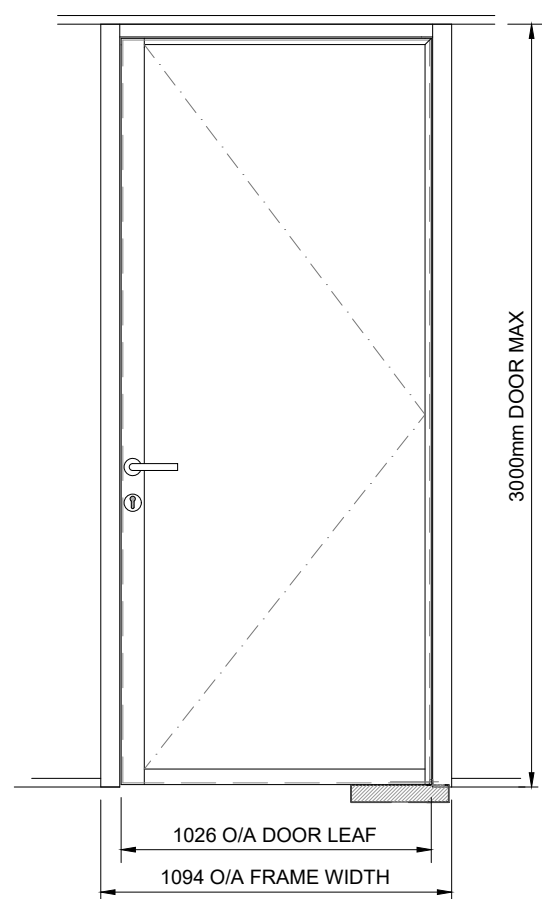
## Door Sets: Vertical / Horizontal Sections



Horizontal section D660 door frame and Elite Affinity 100mm door with lever handles



Vertical section D660 door frame and Elite Affinity 100mm door with pull handles

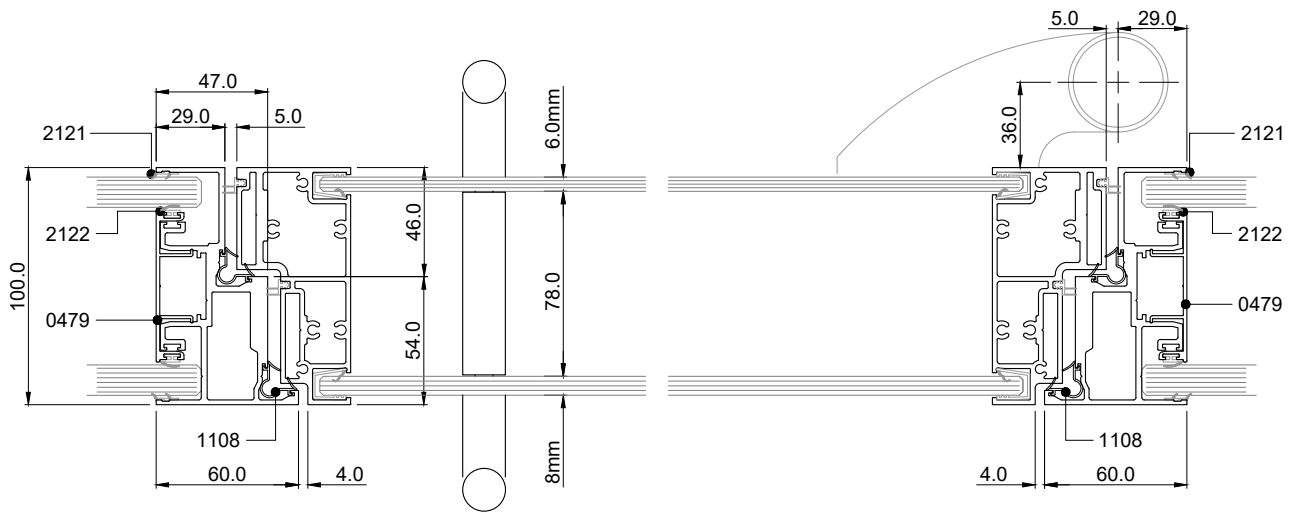


Elevation showing D660 door frame and Elite Affinity 100mm door with pull handles

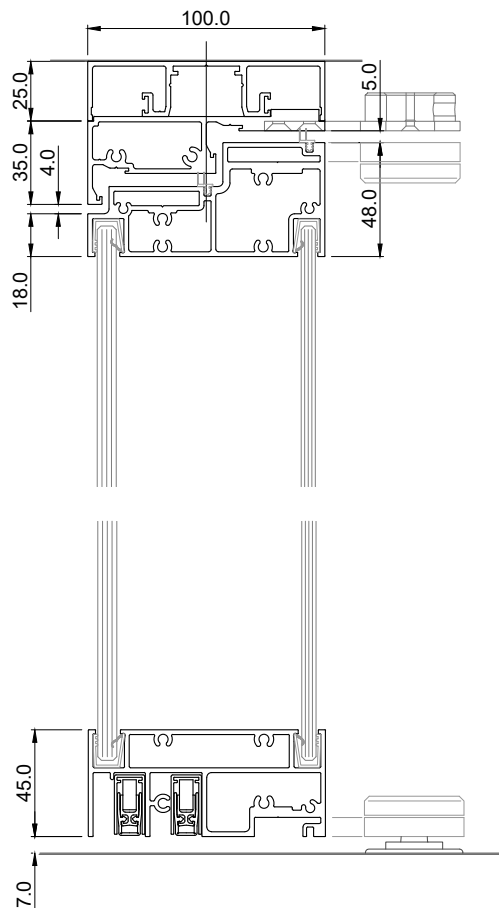


# Revolution 100

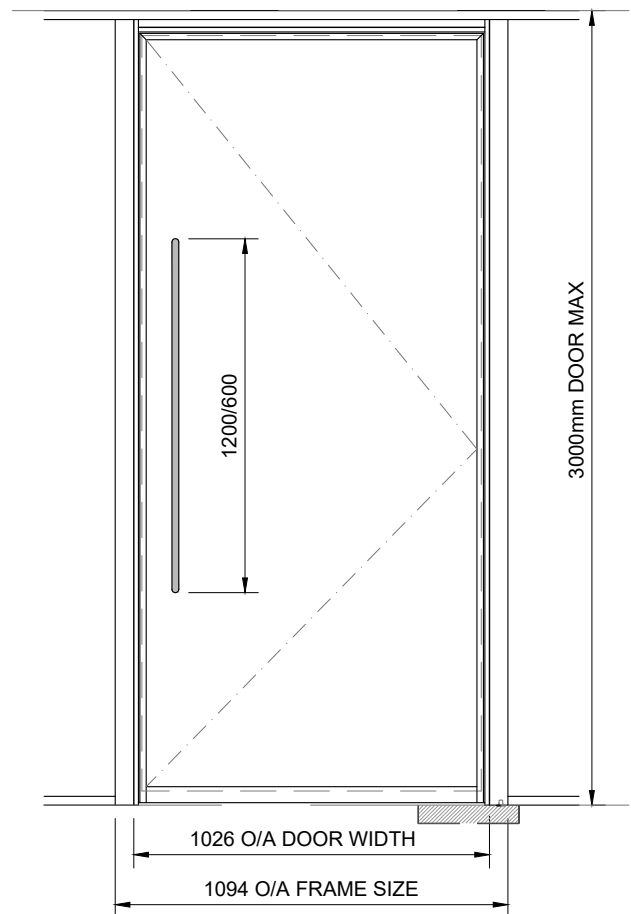
## Door Sets: Vertical / Horizontal Sections



Horizontal section D660 door frame and Elite Symmetry 100mm door with pull handles



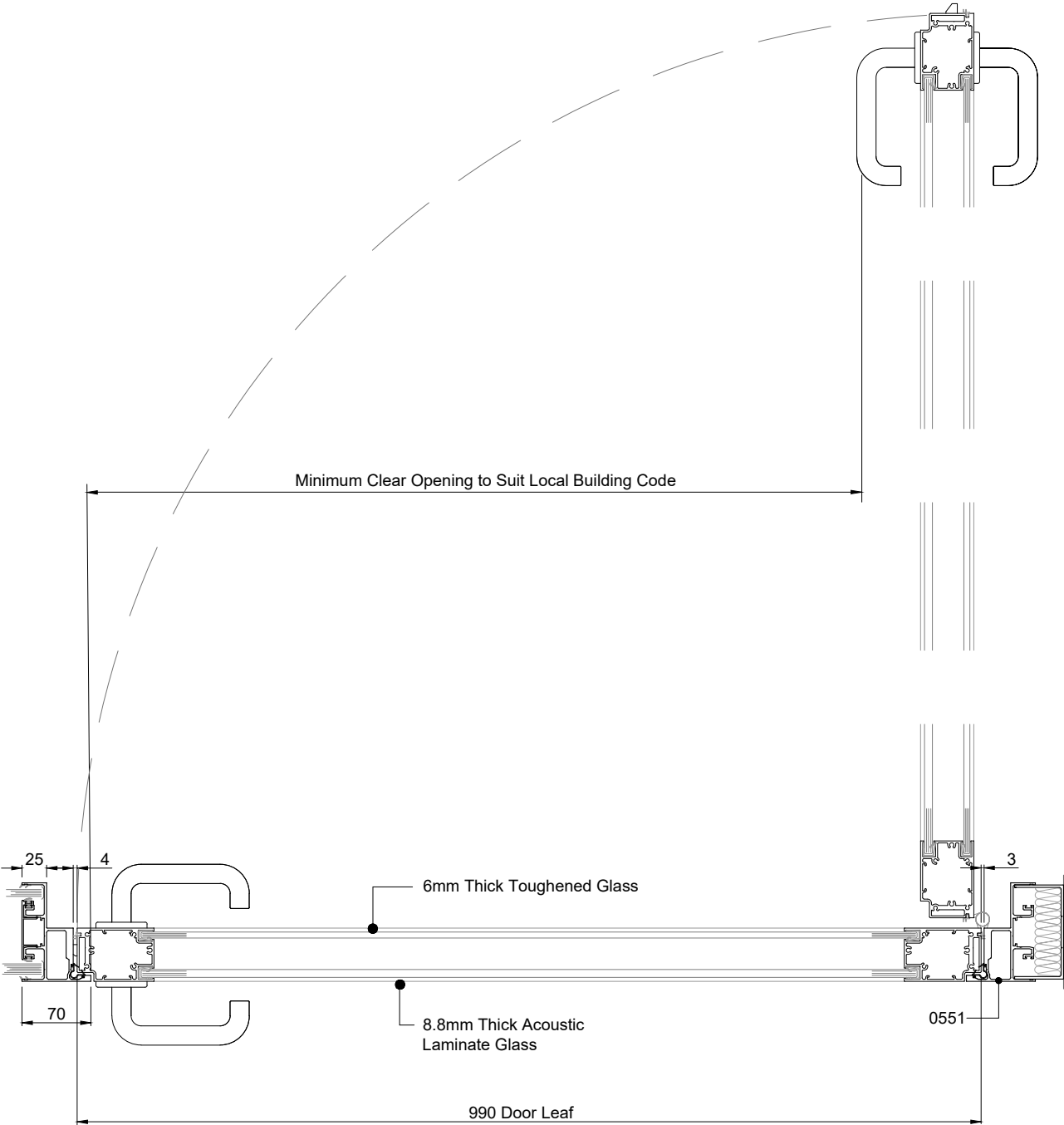
Vertical section D660 door frame and Elite Symmetry 100mm door with pull handles



Elevation showing D660 door frame and Elite Symmetry 100mm door with pull handles

# Revolution 100

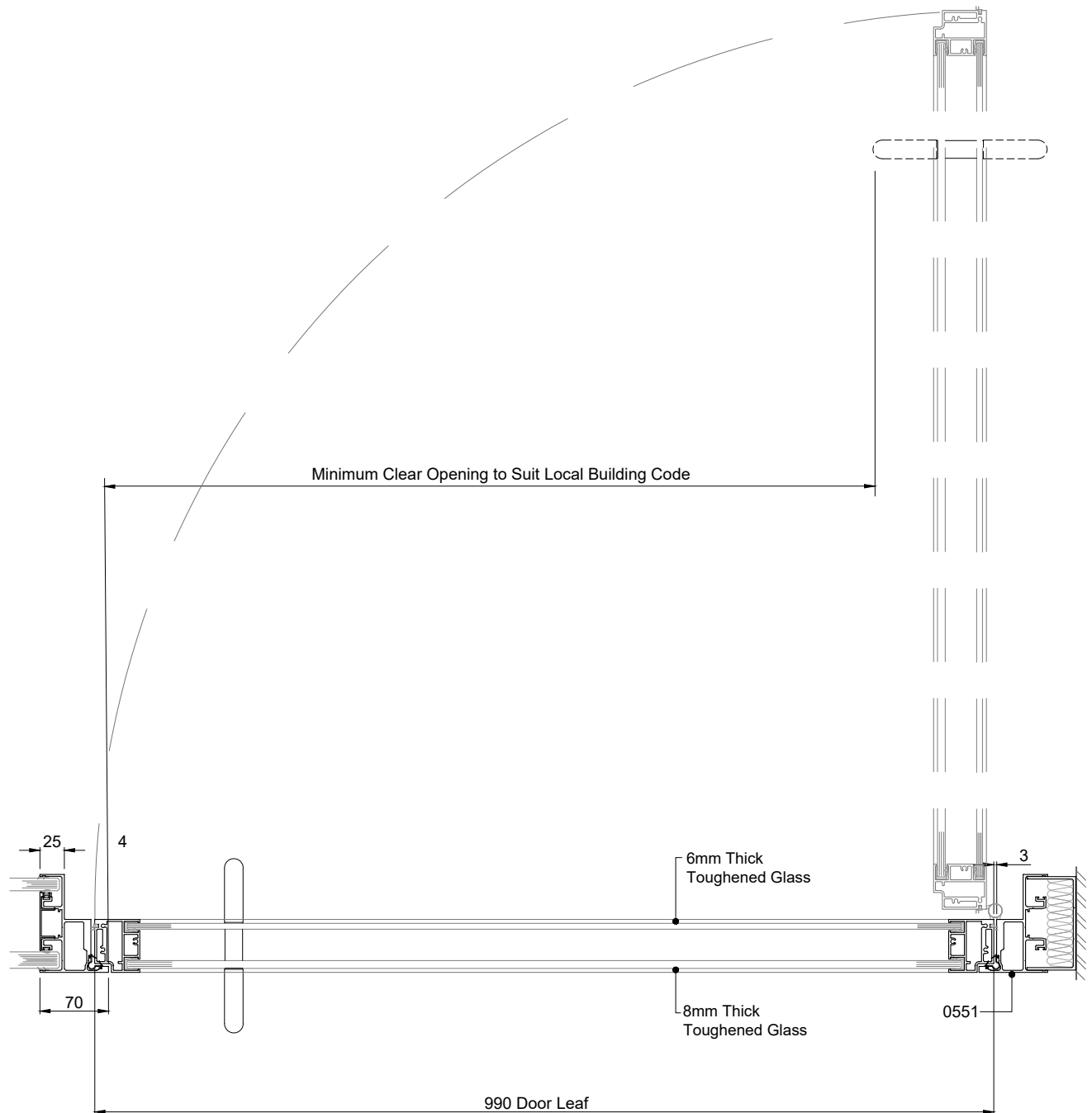
## Door Sets: Horizontal Section



Elevation showing D670 door frame and ASIA Affinity door with levers

# Revolution 100

## Door Sets: Horizontal Section

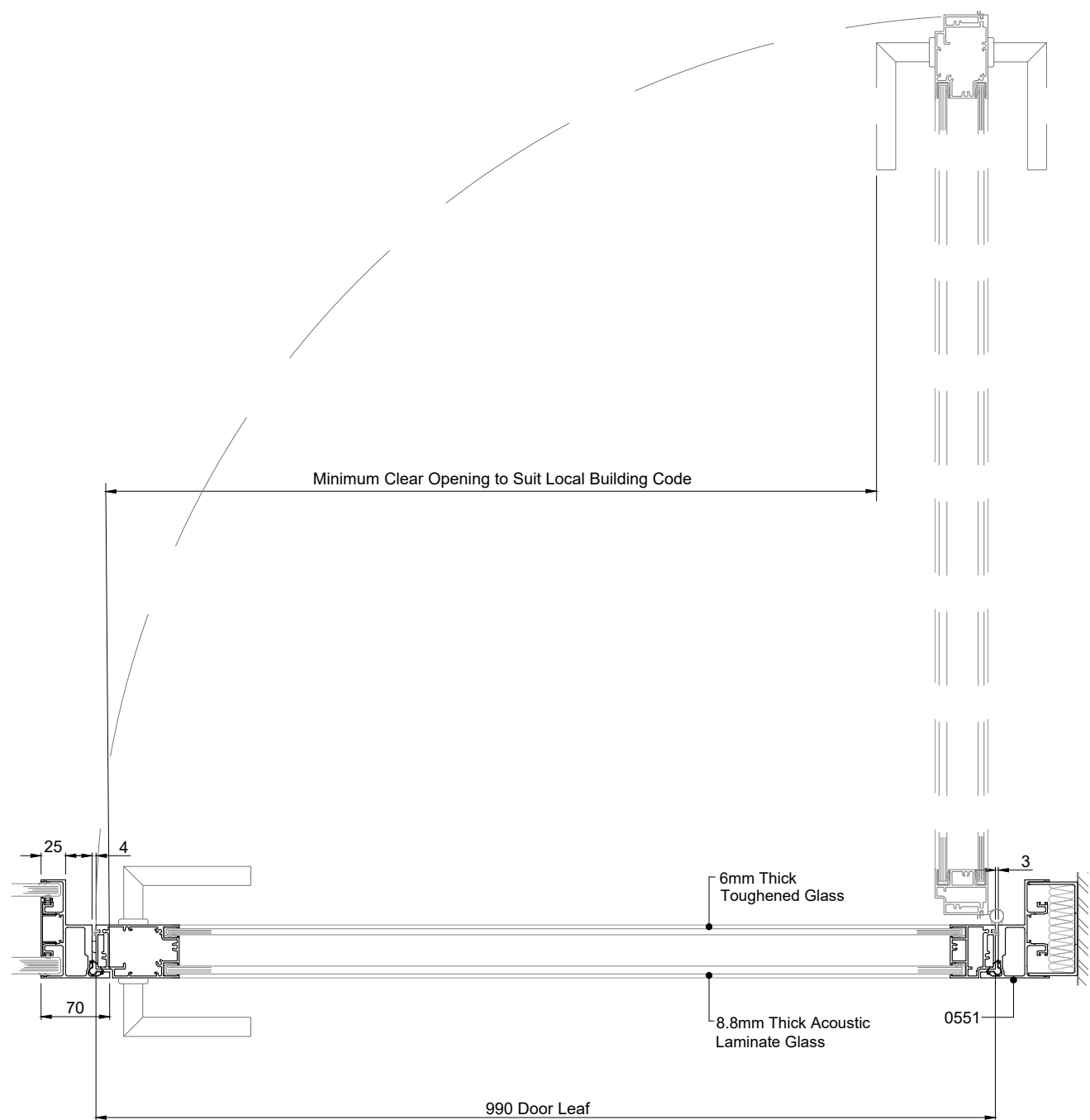


Elevation showing D670 door frame and Edge Unity door with pull handles



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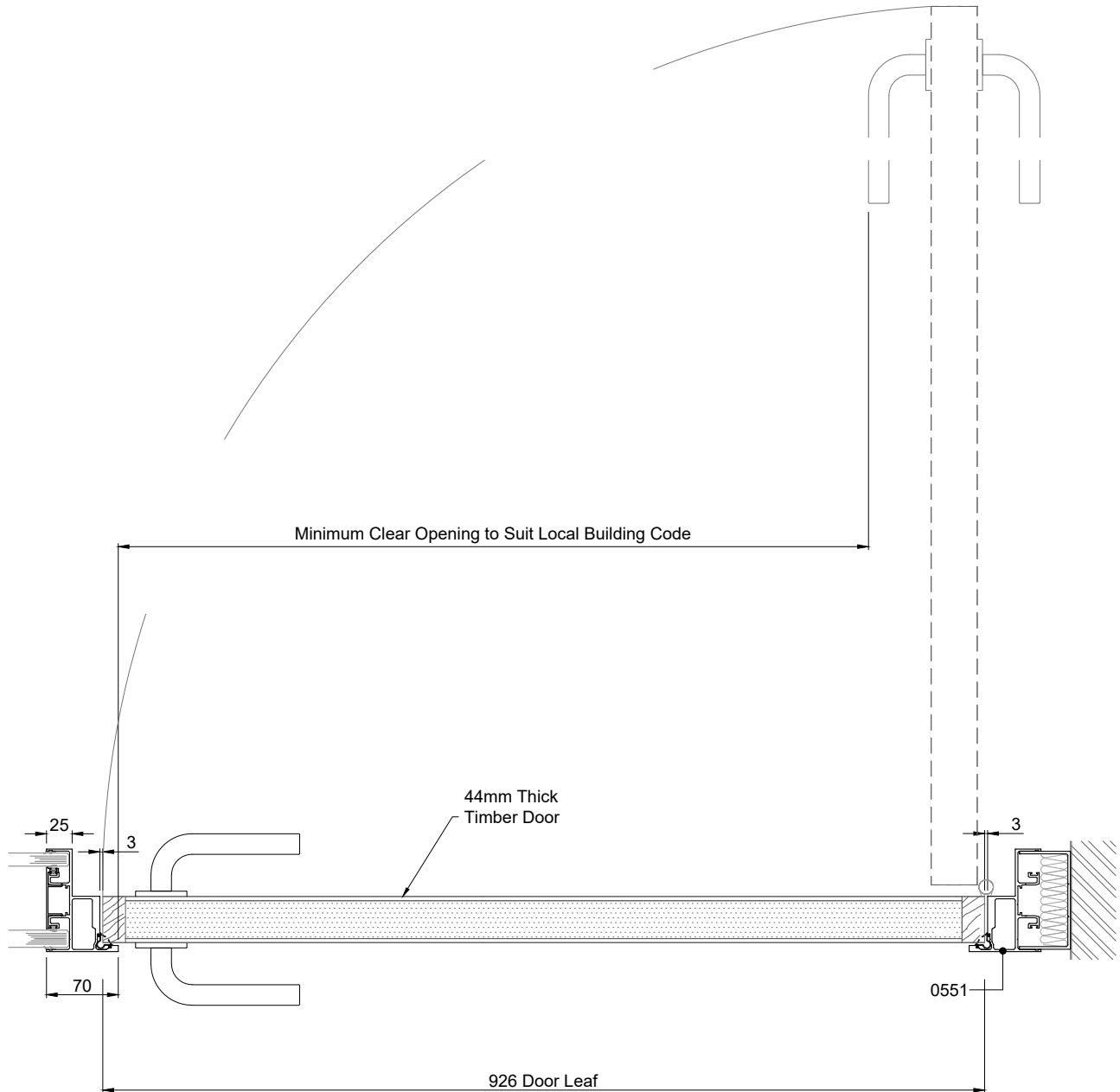
## Door Sets: Horizontal Section



Elevation showing D670 door frame and Edge Synergy door with pull handles

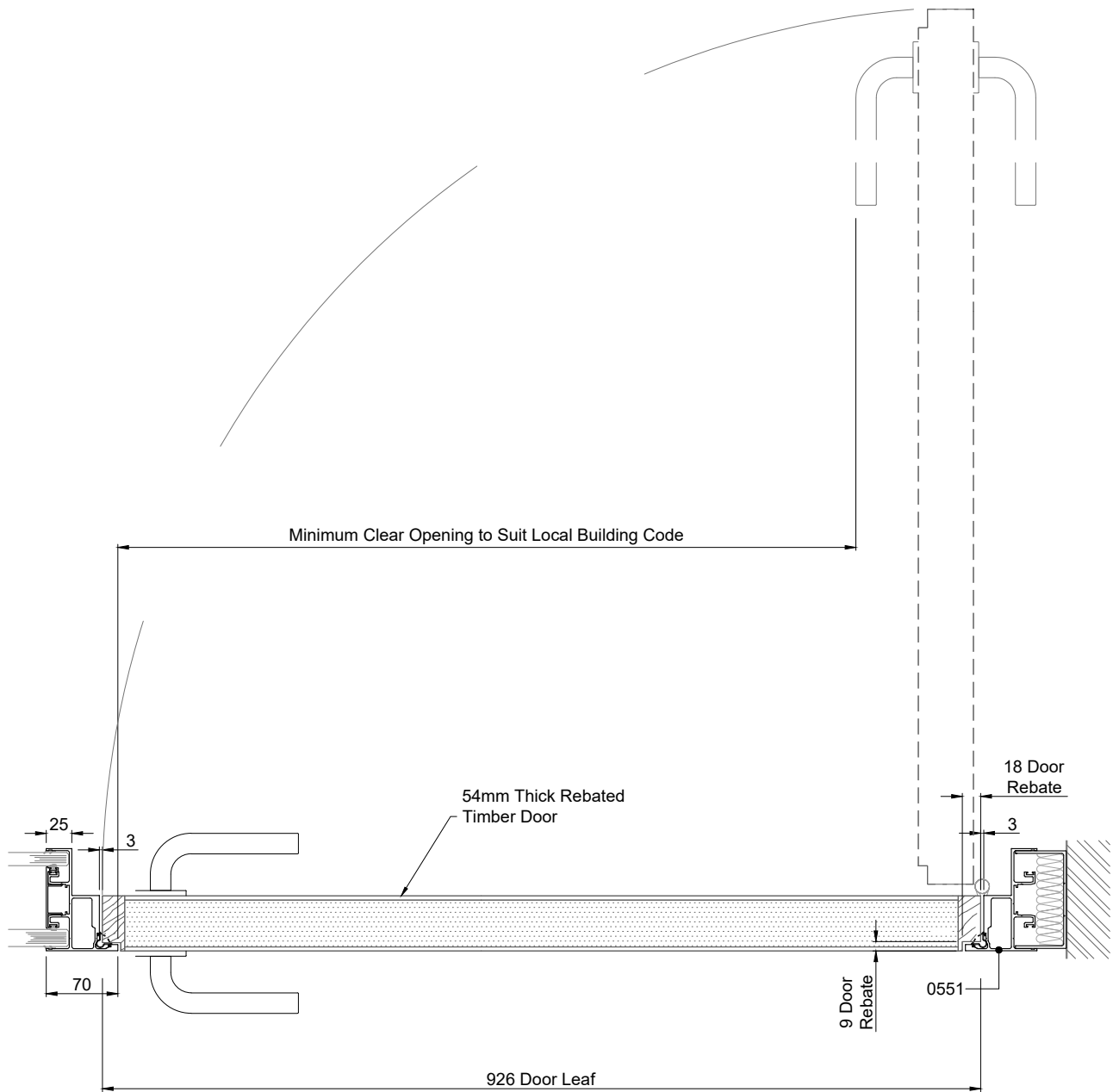
# Revolution 100

## Door Sets: Horizontal Section



Elevation showing D670 door frame and 44mm timber door with levers

## Door Sets: Horizontal Section



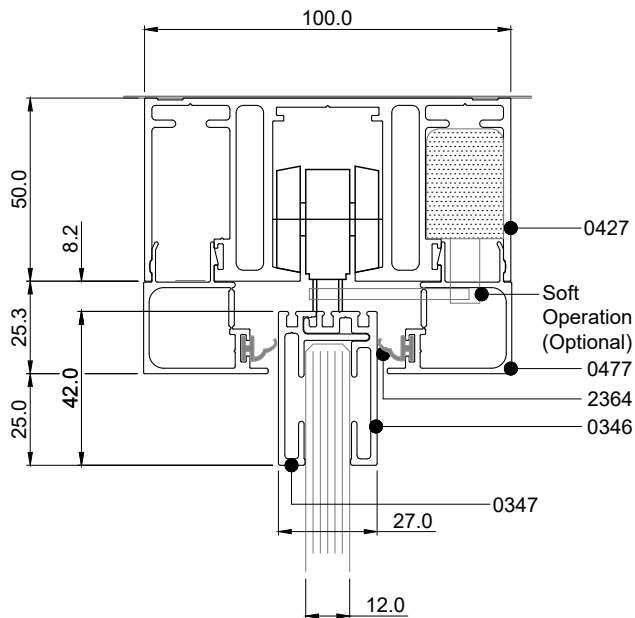
Elevation showing D670 door frame and 44mm rebated timber door with levers



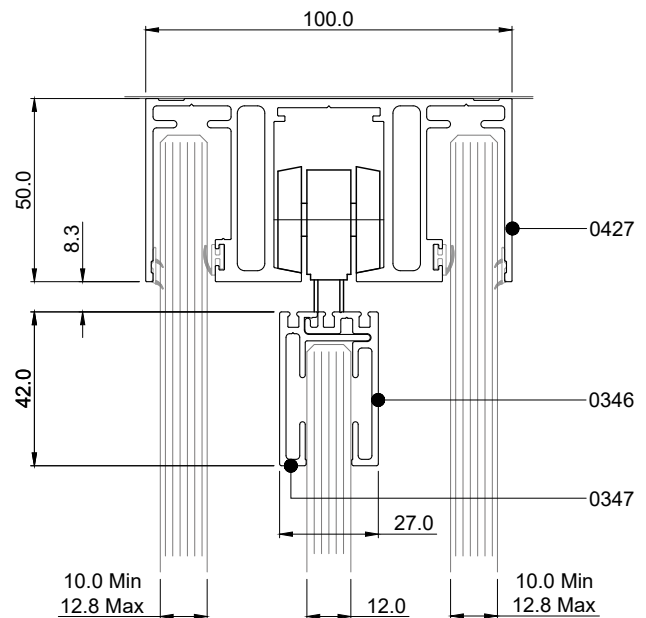
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## Elite Aero PSD Details: Vertical Section, 50mm Head and 25mm Base

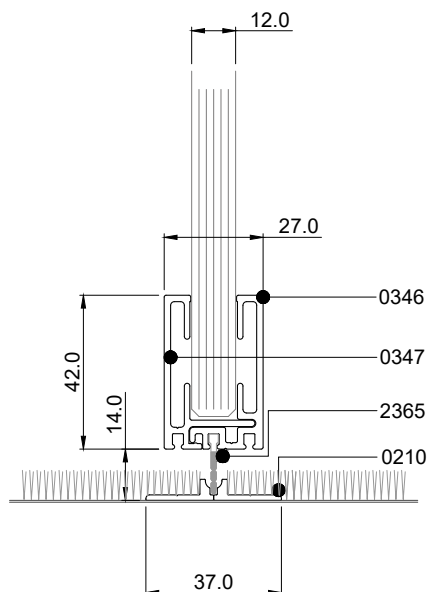
**NOTE:** 2122 Glazing Gasket for 12.0 & 12.8mm Glass.  
2205 Glazing Gasket for 10.0 & 10.8mm Glass.



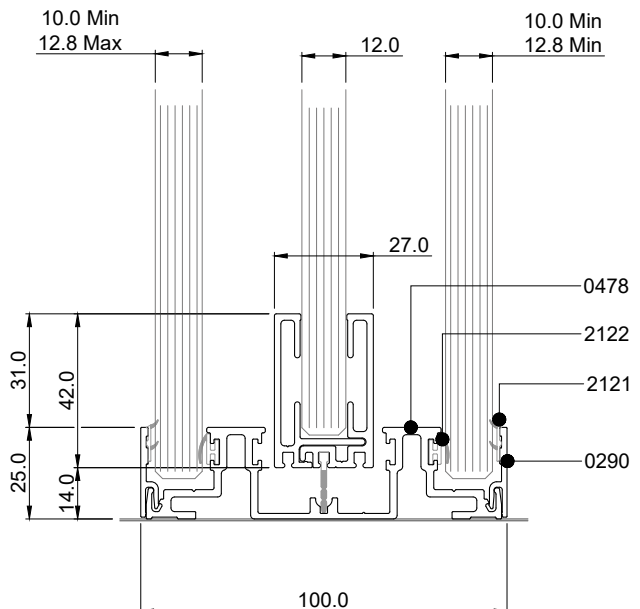
Fixed 50mm head track at PSD opening



Fixed 50mm head track at PSD side screen



Floor guide track (carpet) at PSD opening

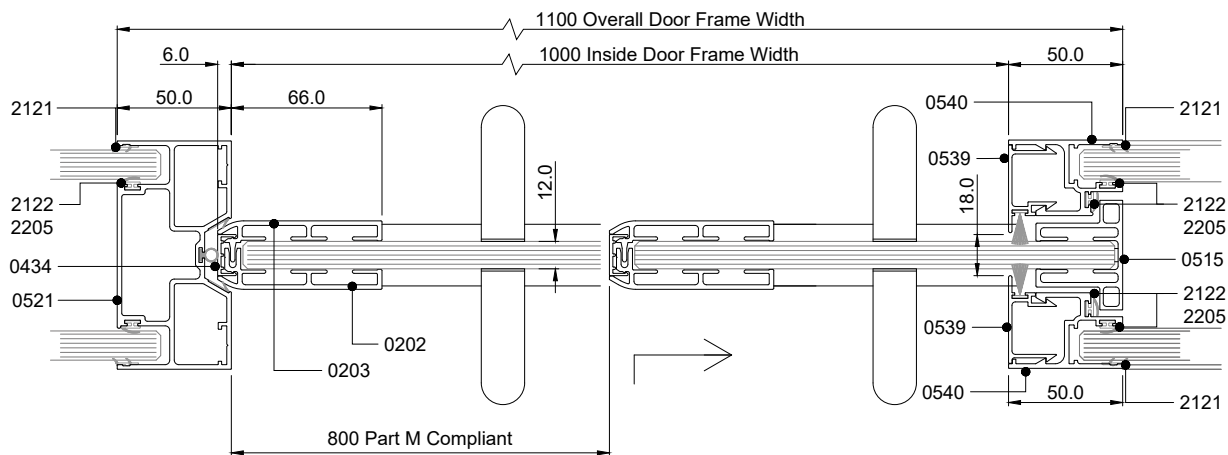


25mm floor guide track at PSD opening

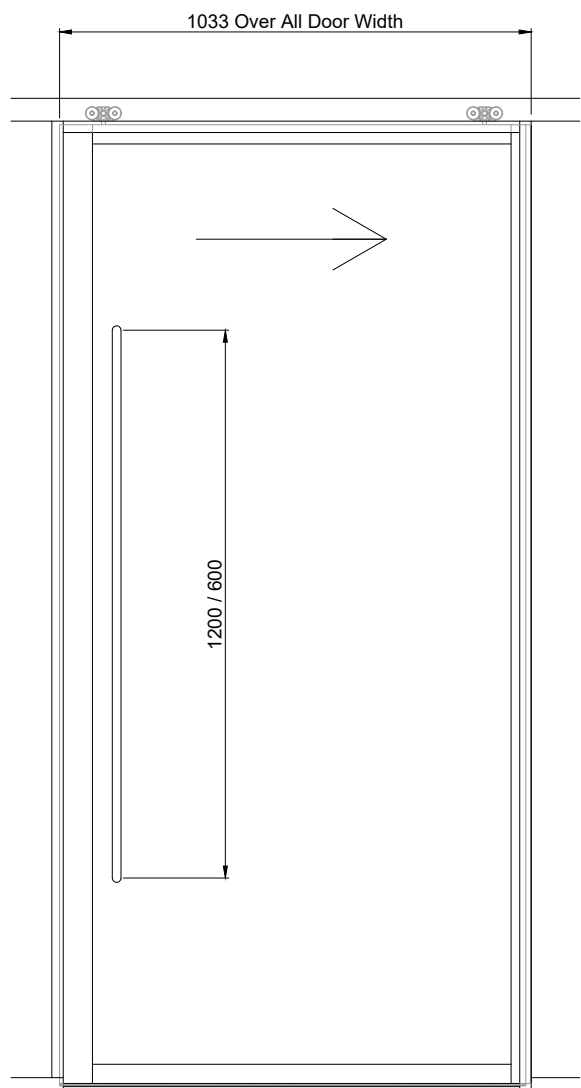
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## Elite Aero PSD Details: Horizontal Section and Elevation – No Lock

**NOTE:** 2122 Glazing Gasket for 12.0 & 12.8mm Glass.  
2205 Glazing Gasket for 10.0 & 10.8mm Glass.



Horizontal section  
PSD no lock

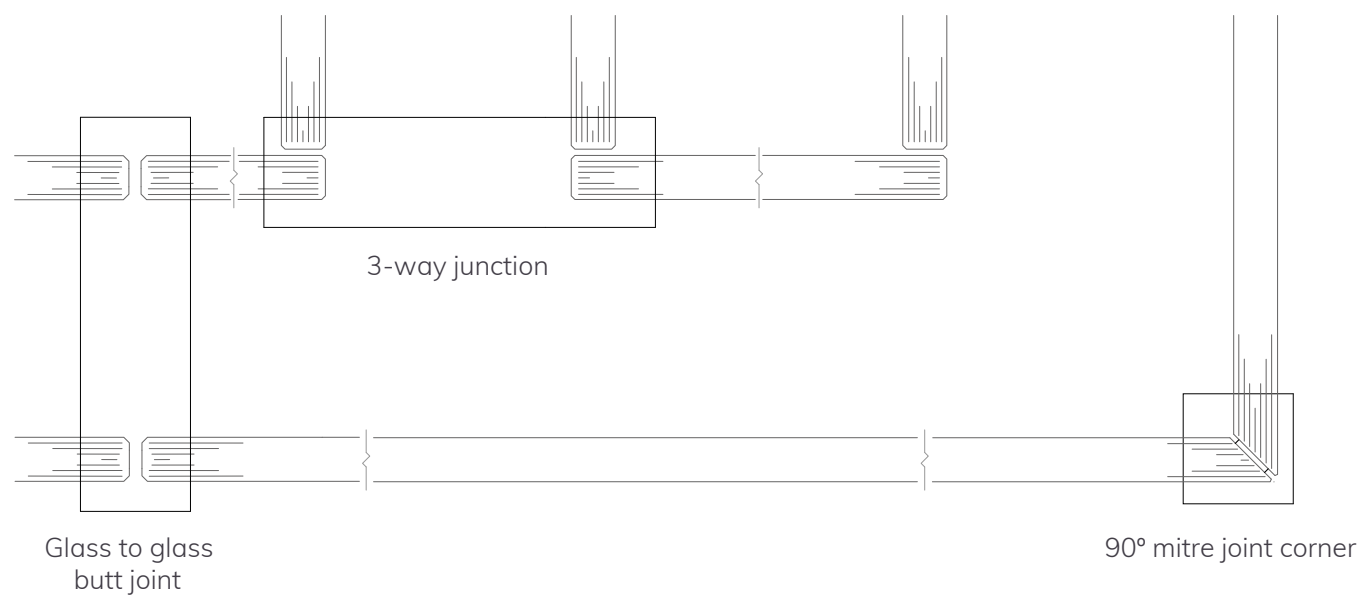
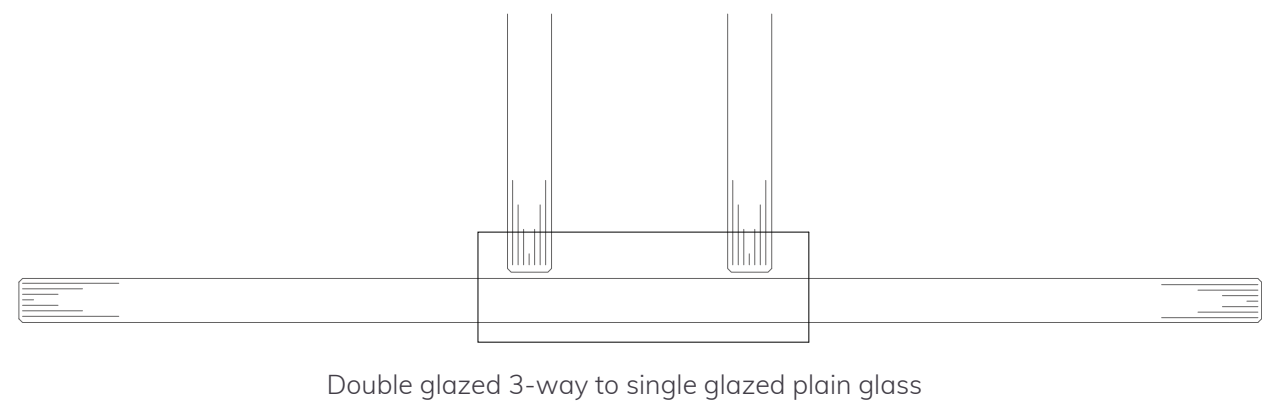
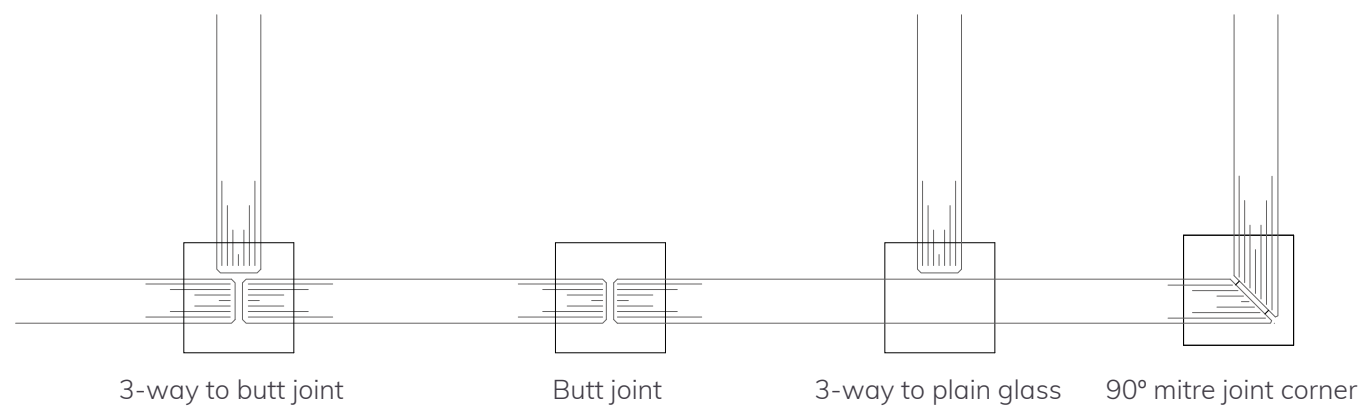


Elevation showing  
PSD no lock

**NOTE: EXTENDED LEAD TIME**

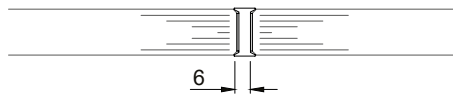
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## Glass to Glass Joint Options: Horizontal Sections



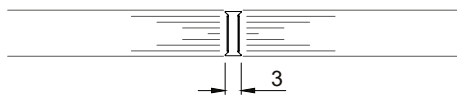
# Revolution 100

## Glass to Glass Joint Options: Horizontal Sections



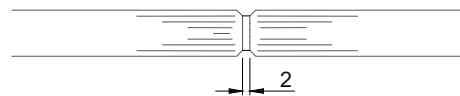
0060 - 12mm & 12.8mm glass  
0077 - 10mm & 10.8mm glass

Glass to glass aluminium dry joint



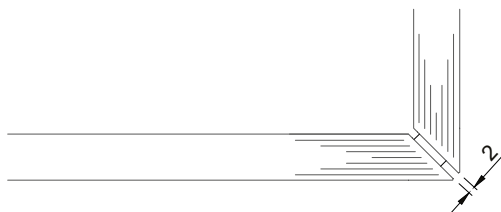
1001 - 10mm glass      1201 - 12mm glass  
1081 - 10.8mm glass    1281 - 12.8mm glass

Glass to glass Ghost dry joint



4618 - 10mm & 10.8mm glass  
4918 - All other glass thicknesses

Taped dry joint



4918 - All glass thicknesses

90° mitre taped corner dry joint



(Including 3-Way cavity junction in double glazed application)

0076 - 10mm & 10.8mm glass  
0075 - 12mm & 12.8mm glass  
0420 - 16.8mm glass

90° corner aluminium dry joint



4618 - 10mm & 10.8mm glass  
4918 - All other glass thicknesses

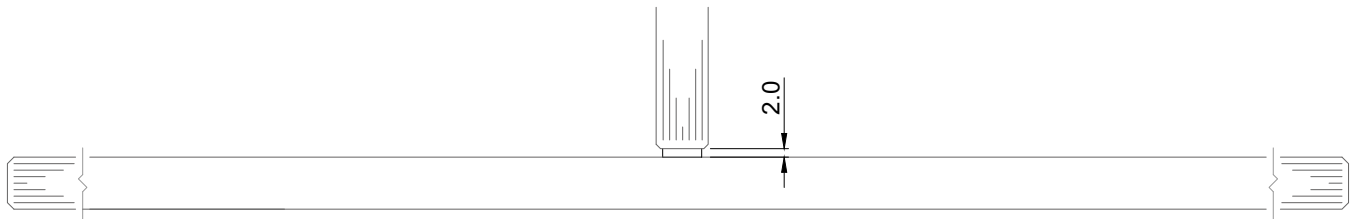
90° corner taped dry joint



# Revolution 100

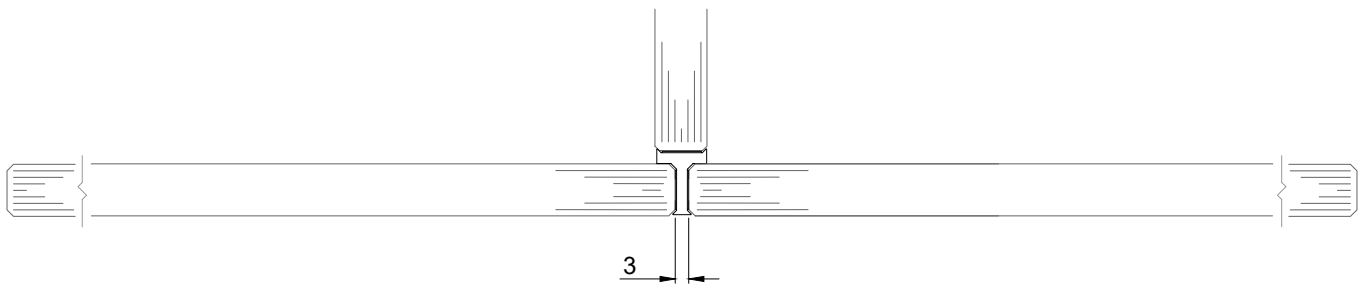
## Glass to Glass Joint Options: Horizontal Sections

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4618 - 10mm & 10.8mm glass  
4918 - All other glass thicknesses

Taped 3-way to plain glass



1204 - 12mm glass  
1284 - 12.8mm glass

Ghost 3-way joint

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# Specification

## Live Load Deflection

With the increasing trend towards the use of lightweight building materials, Optima recognises the need to cater for the resulting inevitable live load deflection of both structural slabs and perimeter curtain walling.

The Revolution 100 partition system has the capacity to accommodate the following levels of asynchronous live load deflection:

Vertical Deflection: **±25mm** and **±40mm** as standard

Lateral Deflection: **±25mm** as standard

## Stiffness

Standards:      **BS 5234 – Parts 1 & 2**  
                      **BS 6399 – Part 1**

All Optima glazed partition systems are designed to withstand the nominal crowd loadings that may be present in a typical office fit-out where there is no change in level greater than 380mm between one side of the partition and the other.

The recognised standard for the design and installation of partitions is BS 5234. However, since this standard was published, the nature of partition design has evolved to the extent that the standard no longer accurately represents the product on the market.

Part 2 of BS 5234 requires a series of tests to demonstrate strength and robustness with the results defined as a 'Duty Rating'. Unlike the partition types covered in the scope of BS 5234, modern 'frameless' glazed partitions are formed predominantly of glass and the testing regime cannot be reasonably applied.

Instead, Optima uses the known physical and structural characteristics of glass and specifies appropriate partition glass based on calculation and with reference to BS 6399 – Part 1. This standard suggests design loads that may act on the surface of a partition in a range of environments. However, neither BS 6399, nor any other UK standard stipulates the maximum degree of acceptable deflection under the design loads.

Every project is different and Optima considers each on its own merits and calculates the type and thickness of glass accordingly. Without a guiding standard the degree of acceptable deflection is extremely subjective. The Optima recommended criteria for maximum deflection are L/120 or 25mm, whichever is the lesser value. This is in line with the International Building Code, a US standard widely applied in many overseas regions, particularly the Middle East. These criteria will ensure a high degree of stiffness in the partition glass.

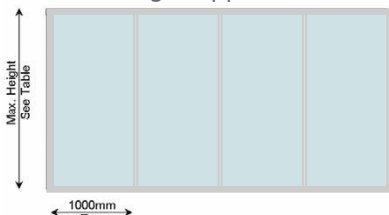
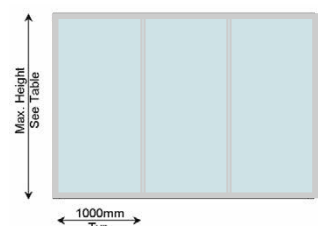
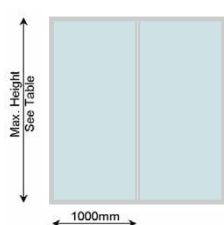

A more relaxed set of criteria are commonly applied in the UK. These state that the maximum acceptable deflection should be L/65 or 50mm, whichever is the lesser value. This would result in a more flexible partition. Therefore it is important to ensure that the safe stress limit of the glass is taken into account when specifying type and thickness. This is particularly important when considering glazed partitions for projects and locations where there is less incentive for the occupants to exercise care such as Public Sector buildings, particularly schools and hospitals.

Optima will consider both sets of deflection criteria when recommending glass on a project by project basis and in consultation with designers and specifiers. For further information and advice on glass specification, please contact the Optima Technical Sales Team.

# Specification

## Maximum Height

Taking the above stiffness criteria into account, the Revolution 100 system, when installed in the stated configuration is capable of achieving the maximum heights stated in the following table:

Maximum Deflection of L/120 or 25mm (whichever is the lesser value)			
Screen Configuration	Glass Type	Maximum Height for Stated Line Load	
		0.36kN/m	0.74kN/m
4 or more Panes: top and bottom edge supported 	10mm CFT	2600mm	2100mm
	10.8mm CFL	2600mm	1600mm
	12mm CFT	3300mm	2500mm
	12.8mm CFL	3300mm	2200mm
	15mm CFT	>4000mm	3200mm
	16.8mm CFL	>4000mm	3500mm
3 Panes: 3-edge support with tied mid-pane 	10mm CFT	>4000mm	>4000mm
	10.8mm CFL		
	12mm CFT		
	12.8mm CFL		
	15mm CFT		
	16.8mm CFL		
2 Panes: 3-edge supported 	10mm CFT	>4000mm	>4000mm
	10.8mm CFL		
	12mm CFT		
	12.8mm CFL		
	15mm CFT		
	16.8mm CFL		
1 Pane: 4-edge supported 	10mm CFT	>4000mm	>4000mm
	10.8mm CFL		
	12mm CFT		
	12.8mm CFL		
	15mm CFT		
	16.8mm CFL		
For maximum heights and glass thicknesses to suit greater line loads or the less onerous stiffness criteria, contact the Optima Technical Sales Team for advice.			

# Specification

## Glass Selection

It is important to select glass appropriate to the situation into which it is being installed. All glass used in Optima glazed systems is class A safety glass as defined in BS6206. However, there are a number of glass types that fall into this category, some more appropriate than others in certain scenarios, and these are explained below.

### Annealed Glass

#### Unprocessed float glass

Annealed glass in its basic, unprocessed form is not categorised as a safety glass and is therefore not suitable for use in partition systems or glass doors.

#### Toughened Glass

##### Standard: BS EN 12150

This is annealed glass that has been thermally treated to give it much greater impact resistance: typically seven times greater. Toughened glass satisfies BS6206 in that it breaks safely, shattering into equally sized 'dice'. Toughened glass is the only glass recommended for use where drilling or clamping is required, for example, when used for accommodating door furniture.

It is important to note that the toughening process stimulates Nickel Sulphide (NiS), known as 'inclusions', which occurs naturally in float glass. The presence of these inclusions can, over time, although very rare, induce a spontaneous fracture of a toughened glass panel. While all glass processors take all practicable steps to supply inclusion-free glass, it is not possible to guarantee their absence.

In order to ensure complete customer confidence in the safety of a glass, Optima recommends the use of Heat Soaked Toughened Glass for doors and Laminated Glass for Partitions. See below for more details.

### Heat Soaked Toughened Glass

##### Standard: BS EN 14179

To significantly reduce the risk of NiS induced spontaneous failure, toughened glass panels can be subjected to an additional process known as Heat Soak Testing. Although not providing a 100% guarantee, this process is used to

reveal the presence of NiS inclusions. It is a destructive test, designed to break any panel that is at risk.

### Laminated Glass

##### Standard: BS EN ISO 12543

Laminated glass is produced by bonding two layers of annealed glass either side of a PolyVinyl Butyral (PVB) Interlayer. In order to be categorised as a class A safety glass the PVB interlayer must be not less than 0.76mm thick and safe breakage is achieved by the interlayer holding the fractured panel together.

### Acoustic Laminated Glass

##### Standard: BS EN ISO 12543

Acoustic laminated glass is produced in the same way as the regular laminated described above. However, it utilises a specially formulated acoustic PVB interlayer to achieve significantly better acoustic properties.

### Toughened Laminated Glass

##### Standards: BS EN 12150 (Toughened) and BS EN 12543 (Laminated)

This type of glass combines the benefits of both toughened and laminated glass and would typically involve a 1.5mm PVB interlayer. Because it has the additional benefit of lamination, the glass would not normally require the additional process of heat soaking. Toughened laminated glass should typically be specified for glass screens adjacent to a significant change in level (e.g., an atrium) and where there is the potential for significant crowd loading as defined in BS 6180 and BS 6399.

The Optima Technical Sales Team will be happy to assist in the specification of the appropriate glass for your particular project requirements.



# Specification

## Acoustic Performance

All Optima systems are subjected to sound insulation tests in accordance with BS EN ISO 10140-1:2010 and BS EN ISO 10140-2:2010 at UKAS accredited laboratories. These are optimised tests of the system only and not aggregate values for screen and door (unless stated otherwise). The result is expressed as an Rw value.

The Revolution 100 partition system and doors have achieved the following UKAS accredited acoustic values for the stated construct:

34dB (Rw)	Test Ref: 2151-1861	Single glazed with 12mm Toughened Glass
36dB (Rw)	Test Ref: 2151-1863	Single glazed with 10.8mm Acoustic Laminated Glass
38dB (Rw)	Test Ref: 2151-1862	Single glazed with 12.8mm Acoustic Laminated Glass
39dB (Rw)	Test Ref: 2151-1859	Single glazed with 14.8mm Acoustic Laminated Glass
40dB (Rw)	Test Ref: 2151-1857	Single glazed with 16.8mm Acoustic Laminated Glass
45dB (Rw)	Assessment Ref: EPL5466 <sup>(1)</sup>	Double glazed with 2 x 12mm Toughened Glass
48dB (Rw)	Test Ref: 2151-1845	Double glazed with 12mm Toughened Glass and 12.8mm Acoustic Laminate Glass
49dB (Rw)	Test Ref: 2151-1850	Double glazed with 10.8mm Acoustic Laminate and 12.8mm Acoustic Laminate Glass
50dB (Rw)	Test Ref: 2151-1851	Double glazed with 10.8mm Acoustic Laminate and 16.8mm Acoustic Laminate Glass
51dB (Rw)	Test Ref: 2151-1848	Double glazed with 2 x 12.8mm Acoustic Laminate Glass
52dB (Rw)	Assessment Ref: EPL5466 <sup>(1)</sup>	Double glazed with 12.8mm Acoustic Laminate and 16.8mm Acoustic Laminate Glass
39dB (Rw)	Test Ref: F15242/01/P004	ELITE Aero PSD in double glazed screen with 2 x 12.8mm Acoustic Laminate Glass
45dB (Rw)	Test Ref: F15443/01/P004	ELITE Affinity double glazed door in Microflush frame
43dB (Rw)	Test Ref: F15443/01/P002	ELITE Symmetry double glazed door in Microflush frame
<sup>(1)</sup> Assessments made by independent acoustic consultancy using calculated octave band sound reduction indices generated from the laboratory test data noted in the table above.		

For further information on potential aggregate values for screens with doors or advice on alternative glass types and configurations, consult the Optima Technical Sales Team.

It should be noted that in an on-site acoustic test, a partition may appear to demonstrate a 3dB to 8dB lesser performance than under laboratory conditions, depending on the method of testing. Although a small amount of degradation might be attributed to workmanship, it is more likely that any apparent under-performance will be due to other factors like poor sound attenuation through floor/ceiling voids, flanking paths through perimeter abutments, inclusion of weaker performing door sets and unsympathetic ambient noise levels. Contact Optima for further advice on acoustic performance characteristics.

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# Specification

## CDM Regulations

In the absence of any specific legislation, Optima recommends that designers adopt the following industry-typical design considerations:

### Panel Size

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- Can the panel be transported to site, loaded out to the workface and installed?
- Is there a suitable access route, particularly if the glass is not located on the ground floor?
- Is it still possible to replace the panel after the building is in service?

### Panel Weight

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- Can the panel be installed manually? Optima generally consider one man should not be expected to lift more than 25kg for a prolonged duration. However, every lift would have to be properly assessed for risk according to the prevailing circumstances.  
As a guide, the weight of glass should be calculated by 2.5kg x thickness (mm) x area (sq.m).
- If mechanical means to install would be necessary, can this be achieved if the panel needs to be replaced during the lifespan of the building?

### Breakage

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- What would be the consequence of a panel failure?
- Is the panel in a safety critical location? (e.g. an atrium barrier)
- Should a fail safe condition be built into the design?
- Is there risk to building occupants as a result of the breakage?
- Can the panel be replaced safely?

### Maintenance

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- Can the installation be maintained safely and without undue risk?
- Is there a mechanism to protect the maintenance staff, such as safety harness anchorage points?

Every project will throw up its own unique challenges. The Optima Technical Sales Team should be consulted at the earliest opportunity, if there is any doubt that a scheme can be built and maintained safely.

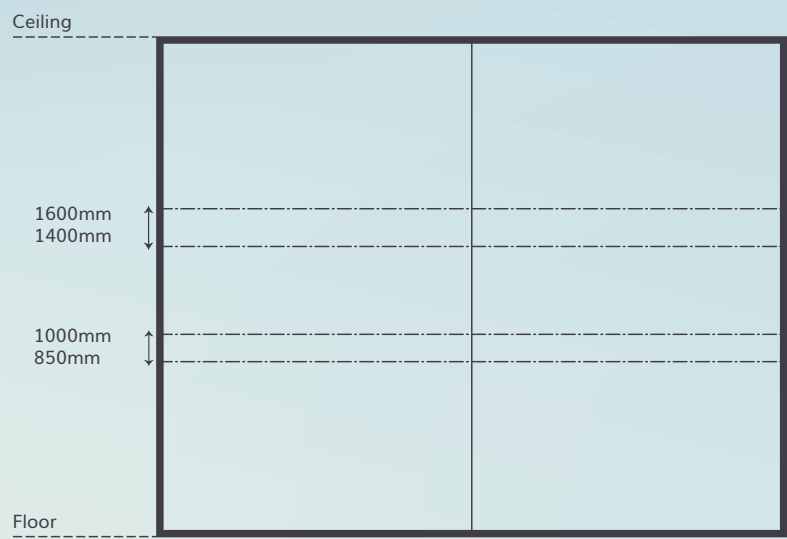
# Specification

## Building Regulations Approved Document K (2013)

### Glass Entrance Doors and Glazed Screens

- The location of glass entrance doors should be easily distinguished, especially when they are within a glazed screen and when the door is both open and shut.
- Manifestation should be clearly contrasting with the background in all weather/lighting conditions.
- Manifestation should be located between 850mm–1000mm and 1400mm–1600mm i.e. in 150mm high bands which could be a solid band, a decorative feature or split bands of 50mm each.
- High contrast strips at the top and on both sides of a glazed door in a glazed screen should be provided.
- If glass doors can remain in the open position, the leading edge should be clearly distinguished and protected by guarding (entrance doors only) to prevent it becoming a collision hazard.

Please refer to Door Sets Designer's Guide for information regarding minimum clear openings in relation to Part M.



# Optima

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No. 6 Jalan Utarid U5/13  
Mah Sing Integrated Industrial Park  
Seksyen U5  
40150  
Shah Alam  
Selangor  
Malaysia

[www.optimasystems.asia](http://www.optimasystems.asia)

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