

Kinetic Series

Designer's guide



Optima

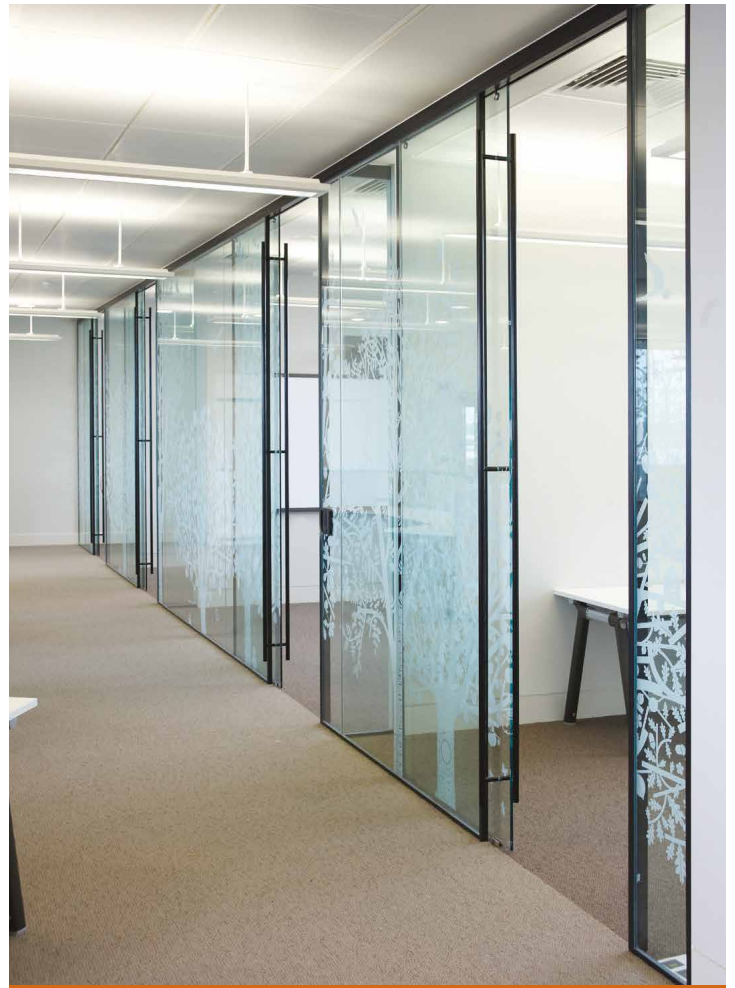
ClearThinking







Kinetic Lite



Kinetic Seal

Kinetic Align

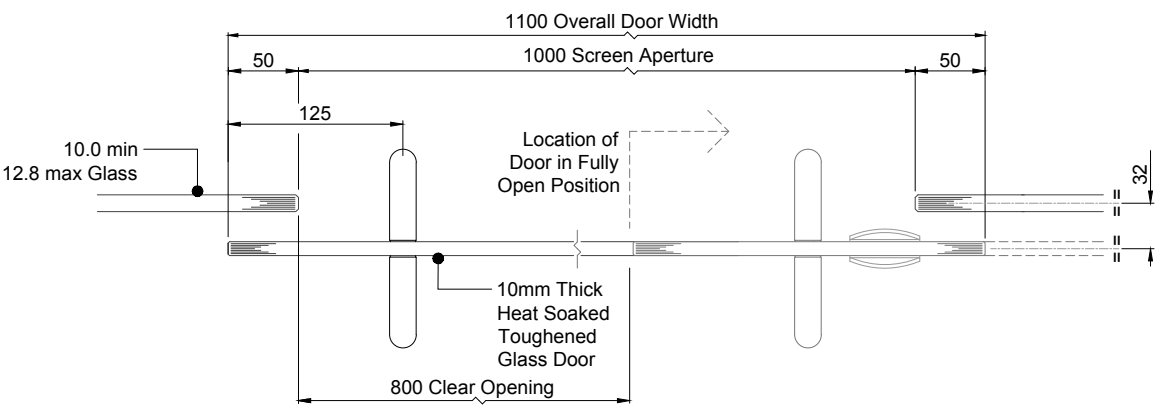


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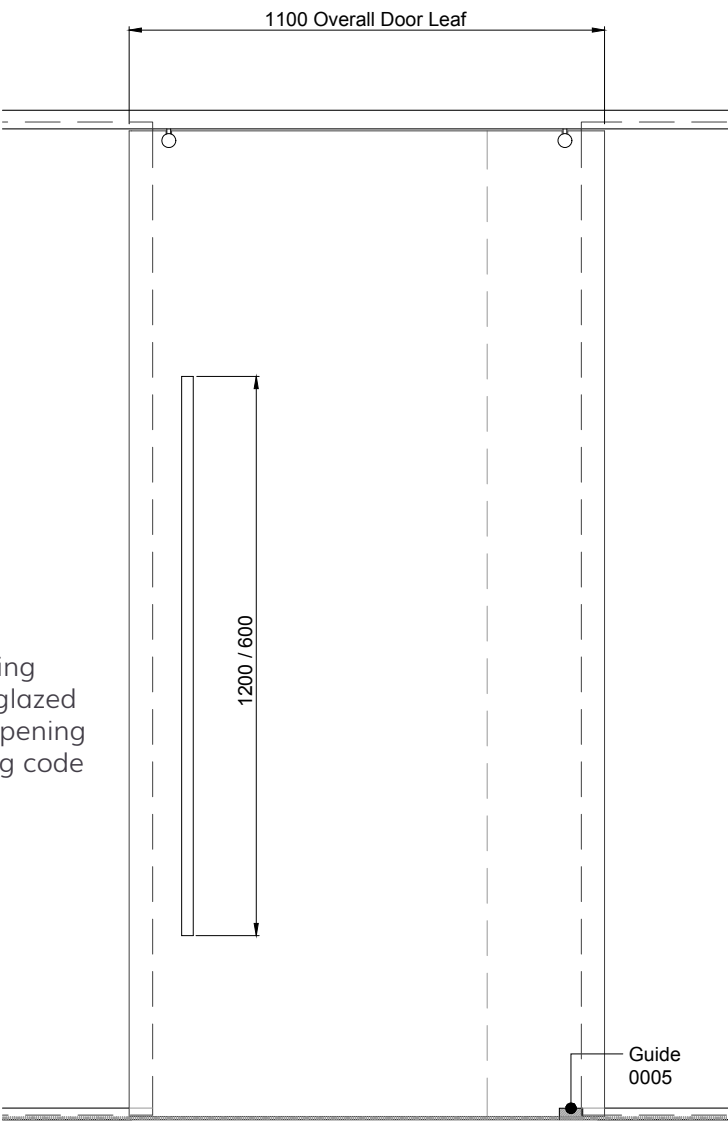
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Kinetic Series

Kinetic Lite Sliding Door: Horizontal Section/Elevation



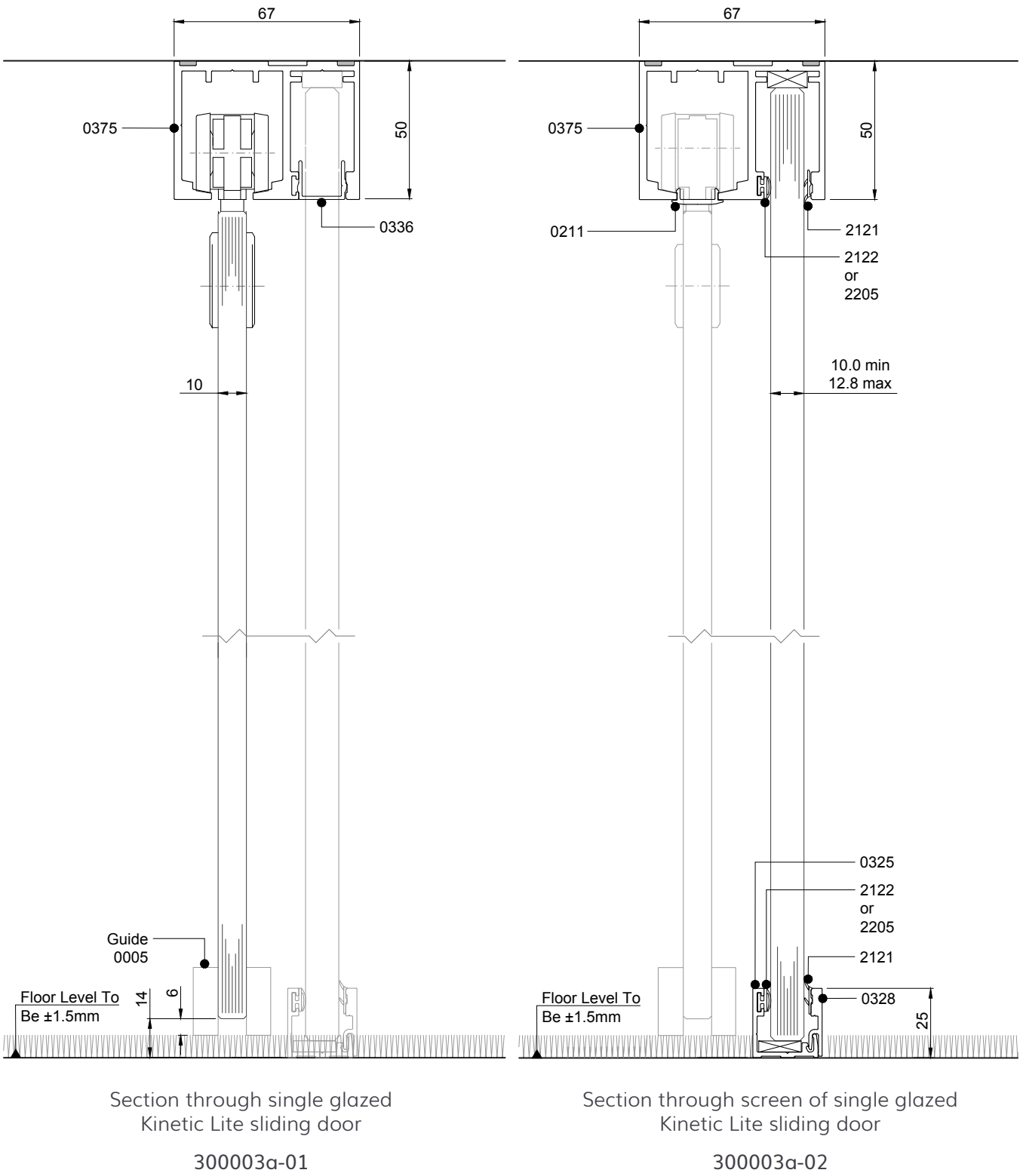
Horizontal section
300002a-01



Elevation showing
Kinetic Lite single glazed
sliding door clear opening
to suit local building code
300002a-02

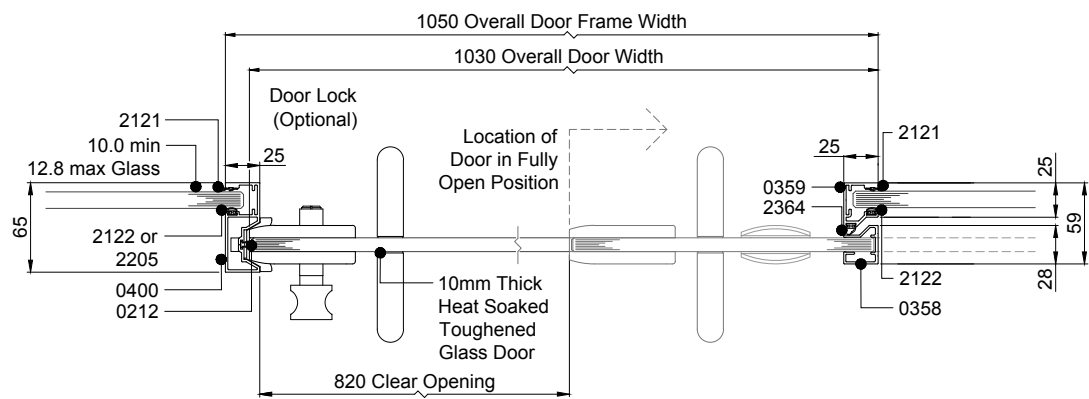
Kinetic Series

Kinetic Lite Sliding Door: Vertical Sections No Deflection Head

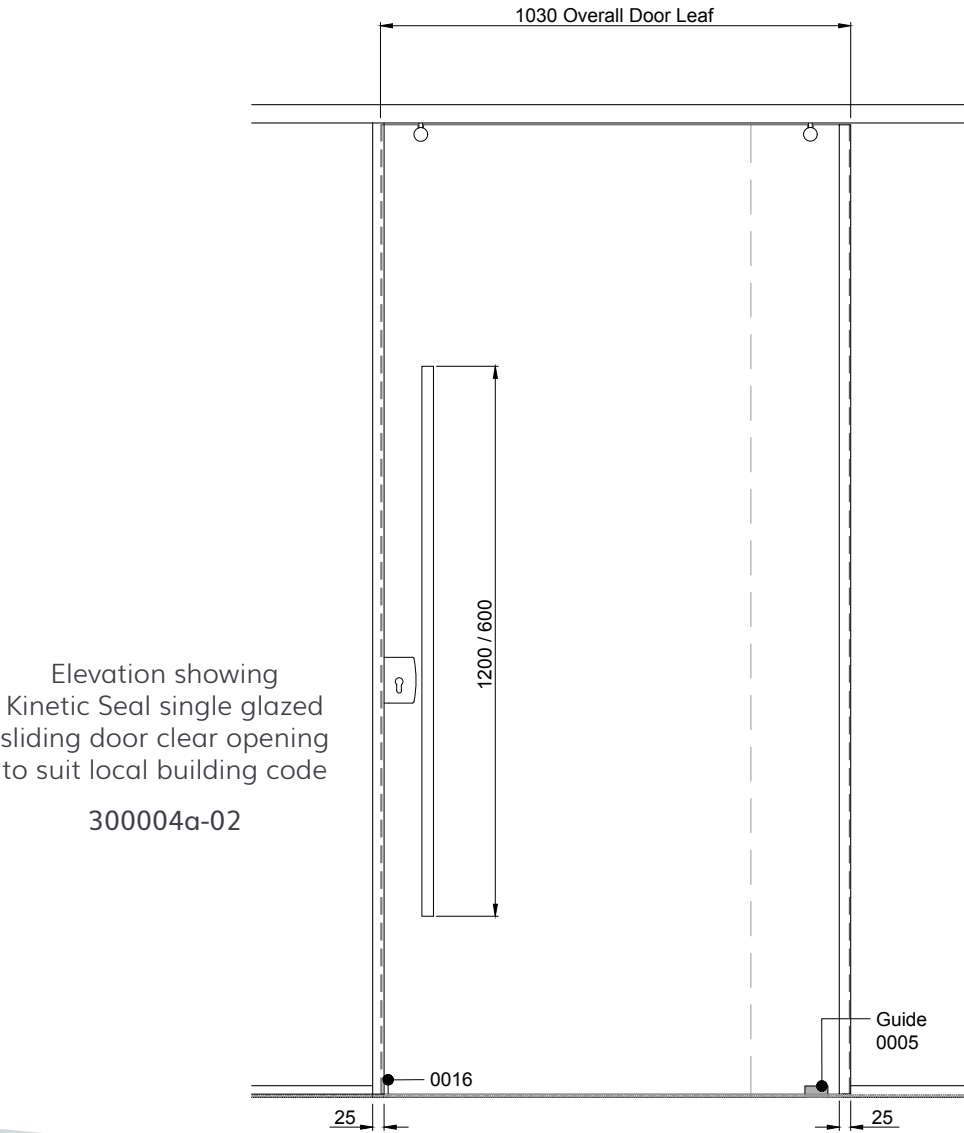


Kinetic Series

Kinetic Seal Sliding Door: Horizontal Section/Elevation



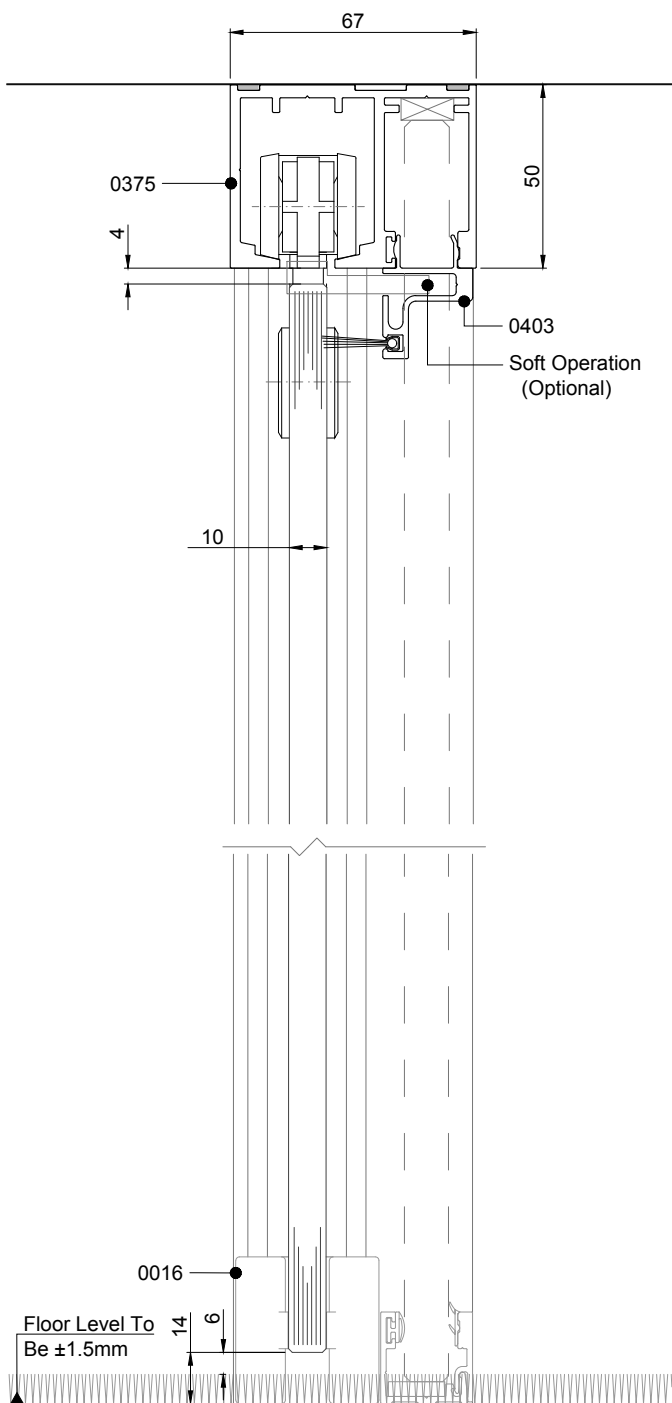
Horizontal section
300004a-01



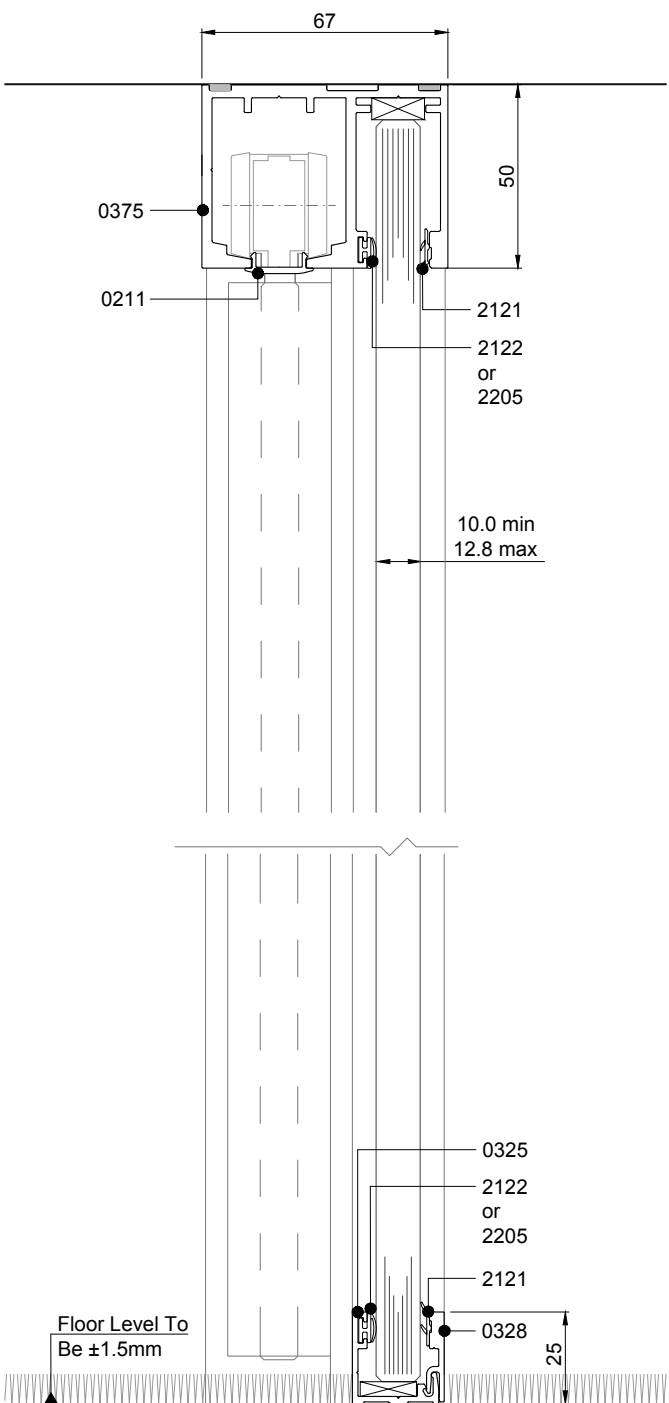
Elevation showing
Kinetic Seal single glazed
sliding door clear opening
to suit local building code
300004a-02

Kinetic Series

Kinetic Seal Sliding Door: Vertical Sections

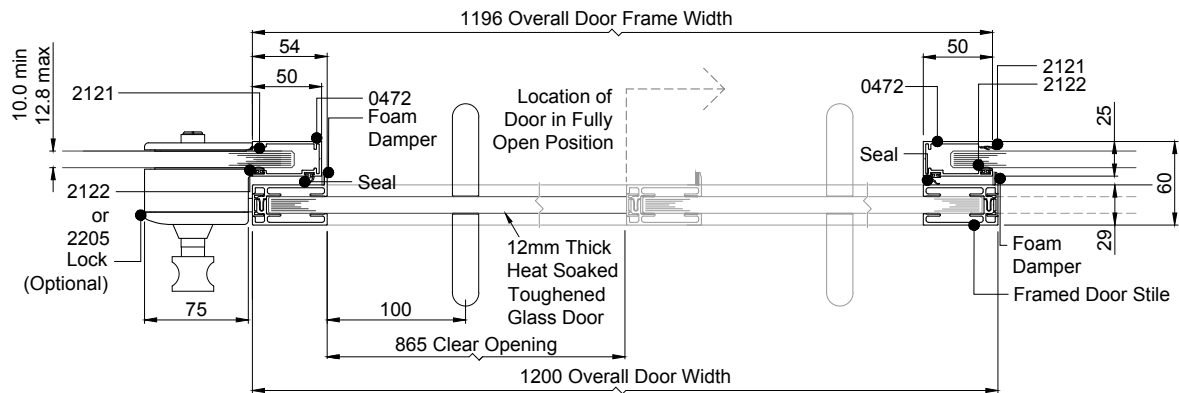


Section through single glazed
Kinetic Seal sliding door
300005a-01



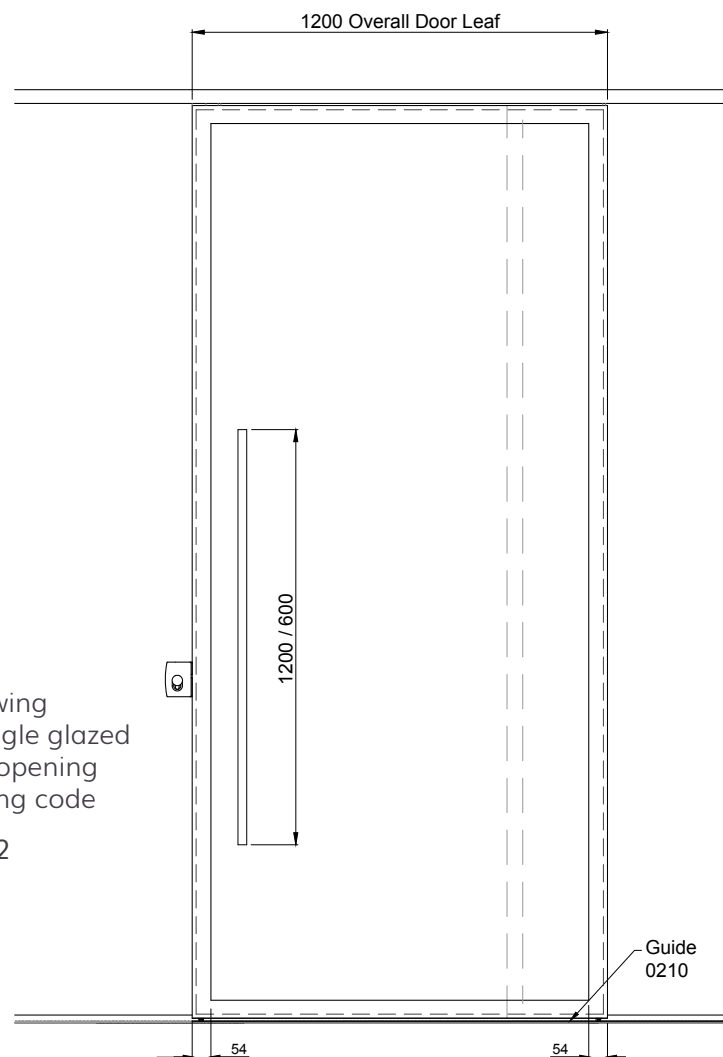
Section through screen of single glazed
Kinetic Seal sliding door
300005a-02

Kinetic Asia Align Sliding Door: Horizontal Section/ Elevation



Horizontal section

300006a-01

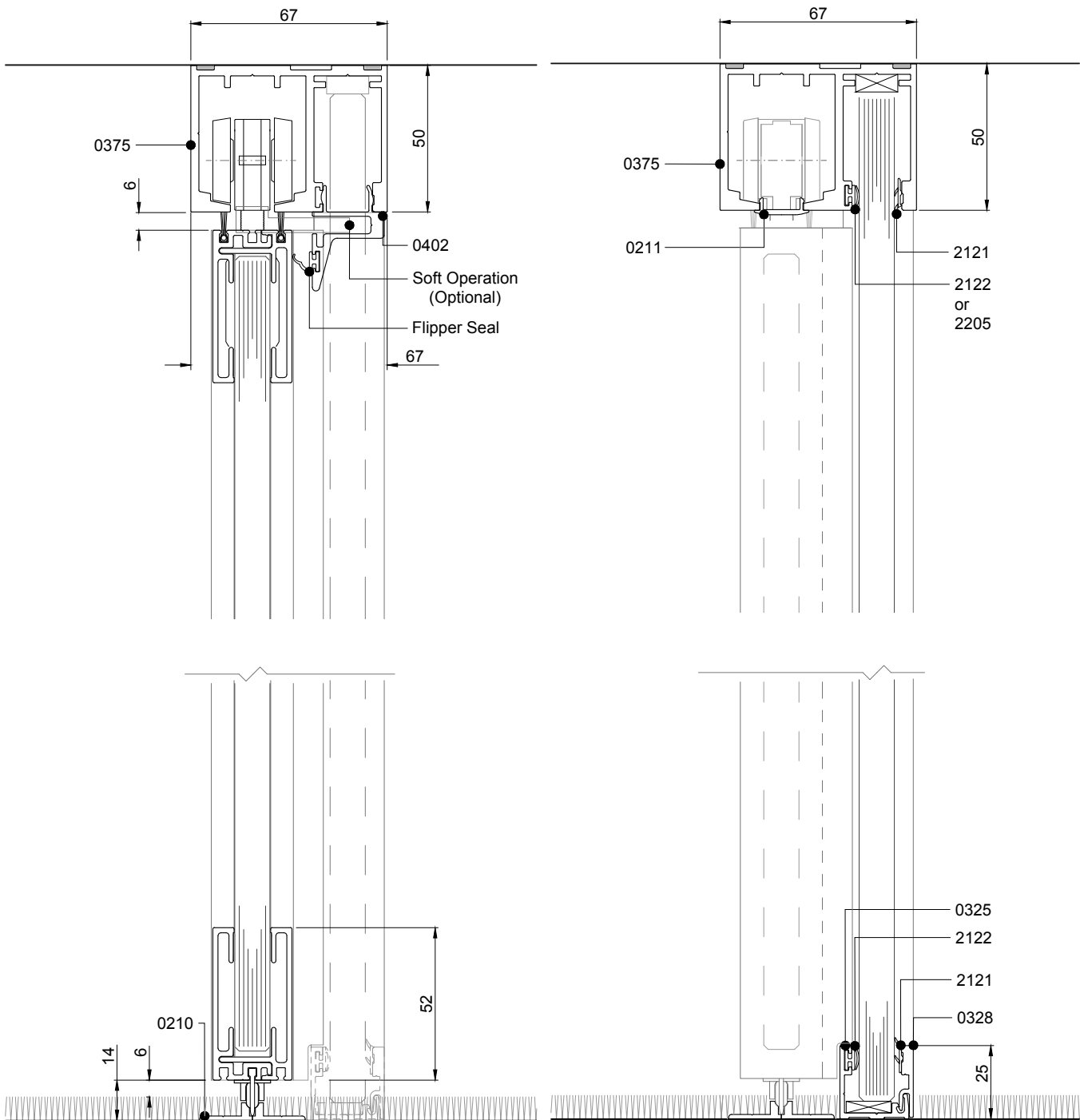


Elevation showing
Kinetic ASIA Align single glazed
sliding door clear opening
to suit local building code

300006a-02

Kinetic Series

Kinetic Asia Align Sliding Door: Vertical Sections



Section through single glazed
Kinetic ASIA Align sliding door
no deflection

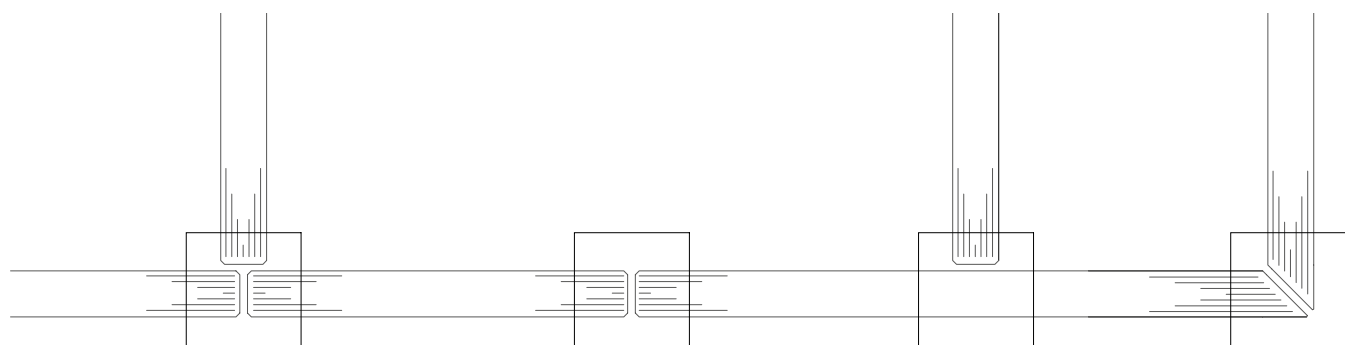
300007a-01

Section through screen of single glazed
Kinetic ASIA Align sliding door
no deflection

300007a-02

Kinetic Series

Kinetic Sliding Door: Horizontal Section Abutment and Glass Joint Details



3-way to butt joint

300008a-01

Butt joint

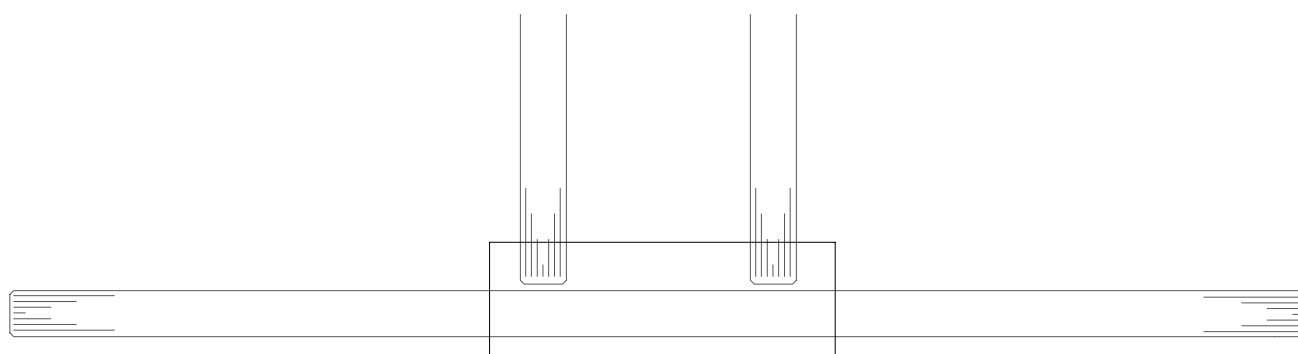
300008a-02

3-way to plain glass

300008a-03

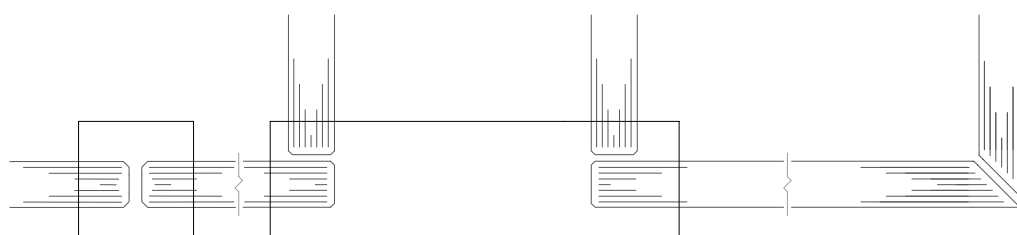
90° corner

300008a-04



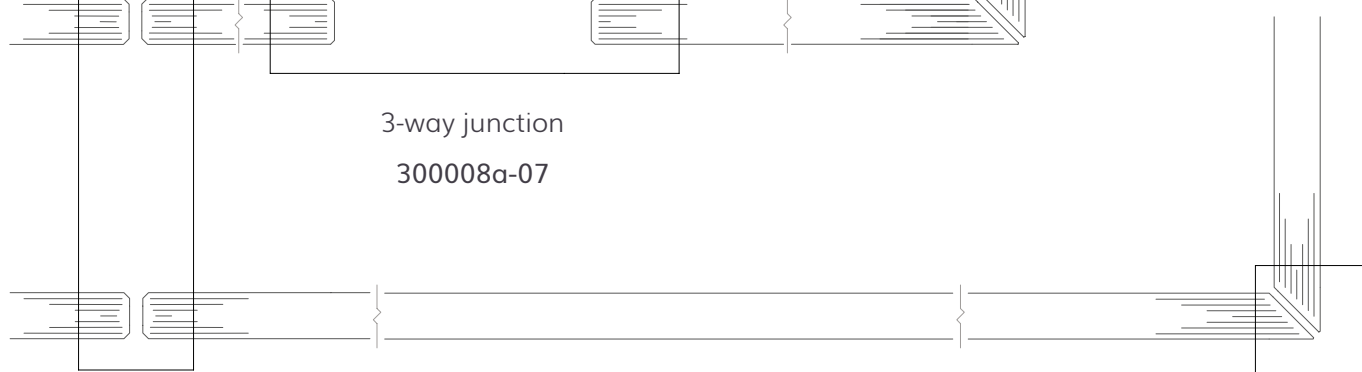
Double glazed 3-way to single glazed plain glass

300008a-05



3-way junction

300008a-07



Glass to glass butt joint

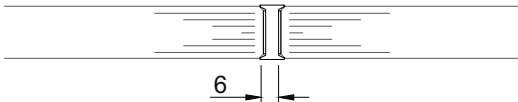
300008a-06

90° corner

300008a-08

Kinetic Series

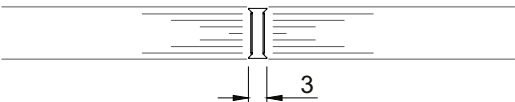
Kinetic Sliding Door: Horizontal Section Abutment and Glass Joint Details



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

Glass to glass aluminium dry joint

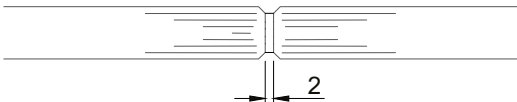
300009a-01



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

Glass to glass Ghost dry joint

300009a-02



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

Taped dry joint

300009a-03



4918 - All glass thicknesses

90° mitre taped corner dry joint

300009a-04



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

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

90° corner aluminium dry joint

300009a-05



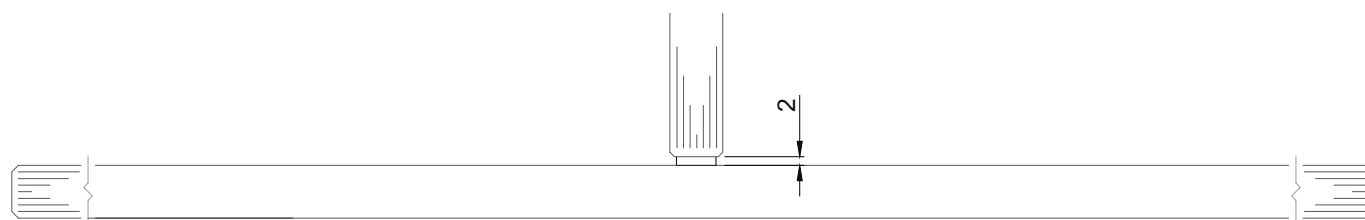
4618 - 10mm & 10.8mm glass
4918 - All other glass thicknesses

90° corner taped dry joint

300009a-06

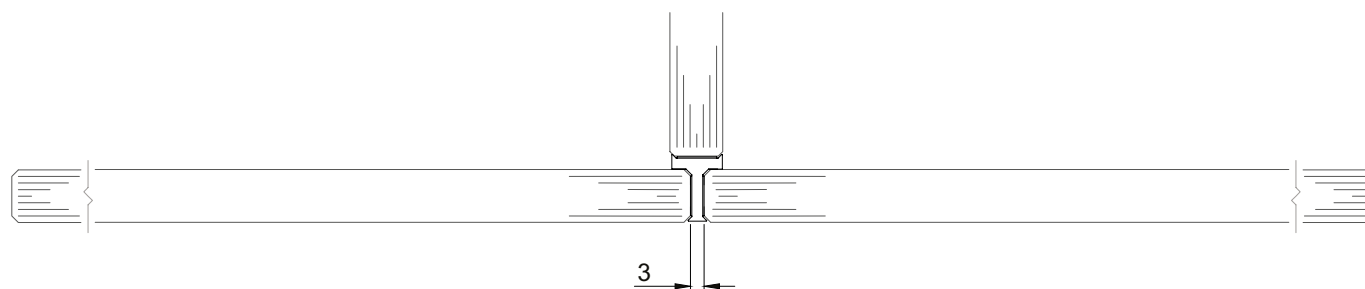
Kinetic Series

Kinetic Sliding Door: Horizontal Section Abutment and Glass Joint Details



4618 - 10mm & 10.8mm glass
4918 - 12mm & 12.8mm glass

Taped 3-way to plain glass
300010a-01



1004 - 10mm glass
1084 - 10.8mm glass
1204 - 12mm glass
1284 - 12.8mm glass

Ghost 3-way joint
300010a-02

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 Kinetic Sliding Door system has the capacity to accommodate the following levels of asynchronous live load deflection:

Vertical Deflection: $\pm 25\text{mm}$ and $\pm 40\text{mm}$ to special order

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.

Maximum Height

Taking the above stiffness criteria into account, the Kinetic Sliding Door system is available as follows:

Maximum Ceiling Height (12/12.8mm glass): **3000mm** as standard

Greater ceiling heights may be accommodated subject to special order and correct glass selection – see below.

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 Laminate 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.

Laminate Glass

Standard: BS EN ISO 12543

Laminate 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 Laminate Glass

Standard: BS EN ISO 12543

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

Toughened Laminate Glass

Standards: BS EN 12150 (Toughened) and BS EN 12543 (Laminate)

This type of glass combines the benefits of both toughened and laminate 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 laminate 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. The result is expressed as an R_w value.

The Kinetic Sliding Door system has achieved the following UKAS accredited aggregate acoustic values for the stated construct:

| | | |
|----------------|--------------------------------|---|
| 24dB (R_w) | Test Ref: 542-431 with 745-755 | 10mm Kinetic Seal door in 12.8mm Acoustic Laminate Glass screen |
| 36dB (R_w) | Test Ref: 542-431 with 542-453 | 12mm Kinetic Align door in 12.8mm Acoustic Laminate Glass screen |

It should be noted that in an on-site acoustic test, a partition or door set may demonstrate an apparent 3dB to 8dB lesser performance than under laboratory conditions, depending on the partition type and surrounding structure. This can be further affected by ambient noise levels on the receiving side of the test sample and by poorly insulated abutments offering a 'flanking' path for audible sound.

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

Specification

Compliance with the Building Regulations

Building Regulations Approved Documents K and M (and BS8300:2009)

Kinetic Sliding Doors are supplied as standard with a view to compliance with Approved Document M (and the contributory BS8300:2009) in terms of minimum clear opening and maximum operating forces although neither specifically cater for manually operated sliding doors. In all cases local building control should be consulted to agree the project specific requirements.

For reference purposes only the relevant sections of Approved Document M are reproduced below.

| Table 2: Minimum Effective Clear Widths of Doors | | |
|---|--------------------|-------------------------|
| Direction and width of approach | New Buildings (mm) | Existing Buildings (mm) |
| Straight-on (without a turn or oblique approach) | 800 | 750 |
| At right angles to an access route at least 1500mm wide | 800 | 750 |
| At right angles to an access route at least 1200mm wide | 825 | 775 |
| External doors to buildings used by the general public | 1000 | 775 |

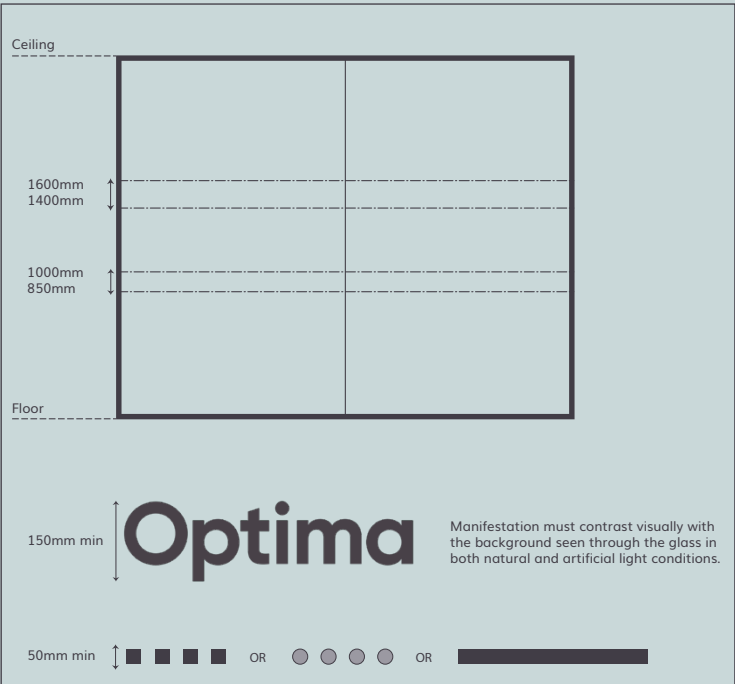
Note:
The effective clear width is the width of the opening measured at right angles to the wall in which the door is situated from the outside of the door stop on the door closing side to any obstruction on the hinge side, whether this be projecting door opening furniture, a weather board, the door or the door stop. For specific guidance of the effective clear widths of doors in sports accommodation, refer to 'Access for Disabled People'.

Approved Document M, in a clarification following amendment 1:2005 to BS8300:2001, states:

"For disabled people to have independent access through single or double swing doors, the opening force, when measured at the leading edge of the door, should be not more than 30 N from 0° (the door in the closed position) to 30° open, and not more than 22.5 N from 30° to 60° of the opening cycle."

Approved Document K requires that glass partitions and doors should be easily distinguished by the visually impaired:

- 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.



Specification

CDM Regulations

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

Panel Size

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

Panel Weight

- Can the panel/door be installed manually? Optima generally considers that 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 $2.5\text{kg} \times \text{thickness (mm)} \times \text{area (sq.m)}$.
- If mechanical means to install would be necessary, can this be achieved if the panel/door needs to be replaced during the lifespan of the building?

Breakage

- What would be the consequence of a door failure?
- Should a failsafe condition be built into the design?
- Is there risk to building occupants as a result of the breakage?
- Can the door be replaced safely?

































Maintenance

- Can the installation be maintained safely and without undue risk?










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.

Component Selector

The following is a complete list of all the aluminium and plastic components that make up the Kinetic Sliding Door system, as annotated in this guide.

| | | | | | | | | |
|---|------|---|---|------|--|--|------|--|
|  | 0210 | Floor Guide Angle |  | 0211 | Head Track Infill Clip |  | 0212 | 10mm Glass Edge Protector |
|  | 0322 | Fixed Glazing Track |  | 0325 | Fixed Glazing Floor Track |  | 0345 | ALIGN Stile Outer |
|  | 0328 | Fixed Glazing Track Bead |  | 0336 | Glazing Rebate Clip |  | 0358 | SEAL Back Stile |
|  | 0343 | ALIGN Lead Stile Inner |  | 0344 | ALIGN Back Stile Inner |  | 0384 | Deflection Head Inner (±25mm) |
|  | 0346 | ALIGN Rail Inner |  | 0347 | ALIGN Rail Outer |  | 0402 | ALIGN Head Clip-in |
|  | 0359 | SEAL Partition End Cap |  | 0375 | Head Track |  | 0075 | Aluminium Glass Corner Joint (12/12.8mm glass) |
|  | 0400 | Slam Post |  | 0401 | ALIGN Partition End Cap (40mm) |  | 0060 | Aluminium Glass Joint (12/12.8mm glass) |
|  | 0403 | SEAL Head Clip-in |  | 0076 | Aluminium Glass Corner Joint (10/10.8mm glass) |  | 0077 | Aluminium Glass Joint (10/10.8mm glass) |
|  | 1001 | Glass to Glass Ghost Dry Joint (10mm glass) |  | 1081 | Glass to Glass Ghost Dry Joint (10.8mm glass) |  | 1201 | Glass to Glass Ghost Dry Joint (12mm glass) |
|  | 1281 | Glass to Glass Ghost Dry Joint (12.8mm glass) |  | 1002 | 90° Corner Ghost Dry Joint (10mm glass) |  | 1082 | 90° Corner Ghost Dry Joint (10.8mm glass) |
|  | 1202 | 90° Corner Ghost Dry Joint (12mm glass) |  | 1282 | 90° Corner Ghost Dry Joint (12.8mm glass) |  | 1004 | 3-Way Ghost Dry Joint (10mm glass) |

Component Selector

| | | | | | | | | |
|---|------|--|---|------|--|--|------|--|
|  | 1084 | 3-Way Ghost Dry Joint (10.8mm glass) |  | 1204 | 3-Way Ghost Dry Joint (12mm glass) |  | 1284 | 3-Way Ghost Dry Joint (12.8mm glass) |
|  | 2121 | Glazing Outer Gasket |  | 2122 | Glazing Inner Gasket |  | 2205 | Glazing Gasket |
|  | 2364 | Door Edge Seal |  | 3575 | Slam Post Seal |  | 0016 | Slam Post Location Guide |

No other components may be used to substitute for those described above. For specific advice on component usage, consult the Optima Technical Sales Team.

Optima

Kinetic Series
Designer's Guide

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