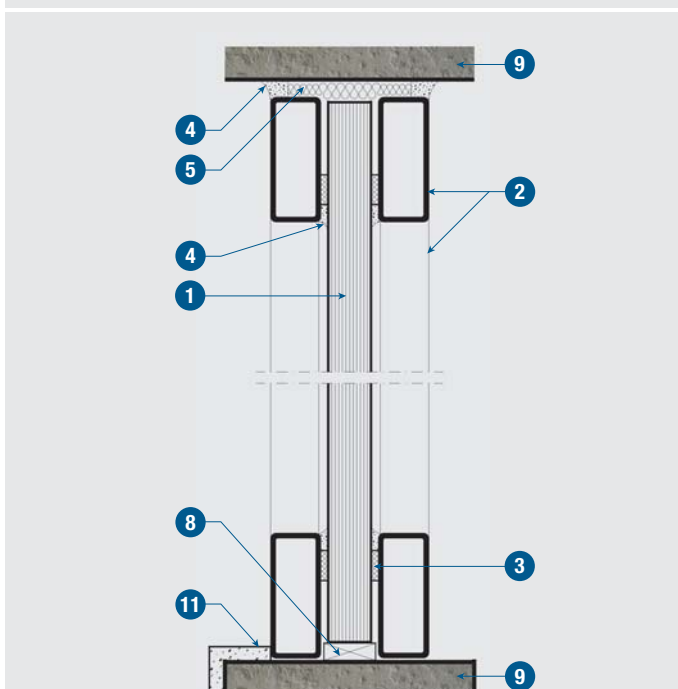


Detail 1 Elevation (Vertical & horizontal unframed joints)



Detail 2 Silicone joint (Section A-A)



Detail 3 Vertical section (Section B-B)

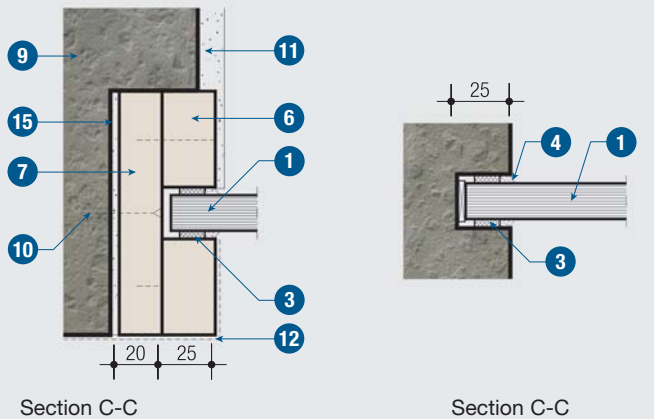
This unique design concept for a fire rated glass wall is a revolutionary technical breakthrough in the passive fire protection industry. Exciting design concepts are now possible with the new SYSTEMGLAS®. The system offers superior passive fire protection quality using innovative methods of construction. The SYSTEMGLAS® construction provides insulation across the glass joints without the need for insulating cover fillets. This performance is only possible with the new, specially developed SYSTEMGLAS®.

SYSTEMGLAS® is available in many variations, which can be used in exterior or interior applications as insulating laminated glass. They are available in several tints and with different coatings.

TECHNICAL DATA

1/2 hour and 1 hour fire rating, integrity and insulation in accordance with the criteria of BS 476: Part 22 and AS 1530: Part 4.

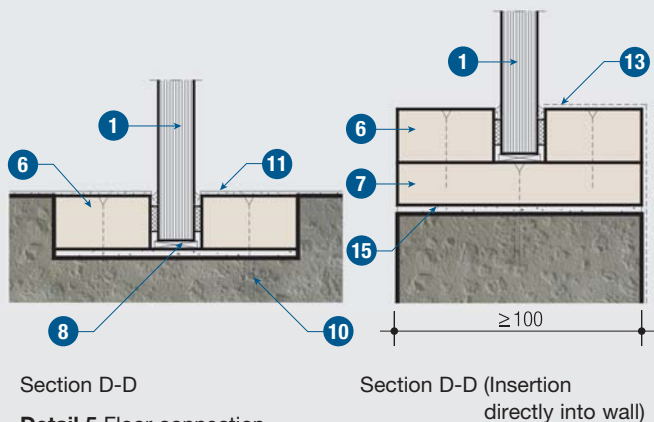
- 1 30 minutes fire rating:**
SYSTEMGLAS® F30, chamfered edges, 17mm thick
maximum pane size 1400mm x 2700mm
- 60 minutes fire rating:**
SYSTEMGLAS® F60, chamfered edges, 25mm thick
maximum pane size 1400mm x 2700mm
- 2 Steel hollow sections**
For overall glazed element up to 3m high:
minimum 50mm x 20mm x 2mm thick
For overall glazed element over 3m high:
minimum 60mm x 25mm x 2mm thick
- 3 Self adhesive glazing tape 10mm x 3mm**
- 4 PROMASEAL® translucent silicone sealant**
- 5 Mineral wool, 15mm thick compressed**
- 6 PROMATECT®-H 50mm x 25mm thick fixed using 50mm screws at nominal 200mm centres, or 50mm x 10mm x 1.5mm steel wire staples at nominal 100mm centres**
- 7 PROMATECT®-H strips, minimum 20mm thick**
- 8 PROMATECT®-H setting blocks**
- 9 Solid wall, floor or ceiling with a fire-resistance equal to or greater than that of the glazing system**
- 10 Masonry fixing, expansion bolt or similar at nominal 500mm centres**
- 11 Plaster or cement rendering**
- 12 Optional covering profiles made of stainless steel, aluminium, wood or plastic profiles**
- 13 Steel angle to cover raw glass edge and to provide additional protection against impact**
- 14 Identification plate of SYSTEMGLAS®**
- 15 Bedding mortar where required for uneven substrate**
- 16 Fire rated dry wall**
- 17 PROMASEAL® PL strip**
- 18 Lightweight partition framing**



Section C-C

Section C-C

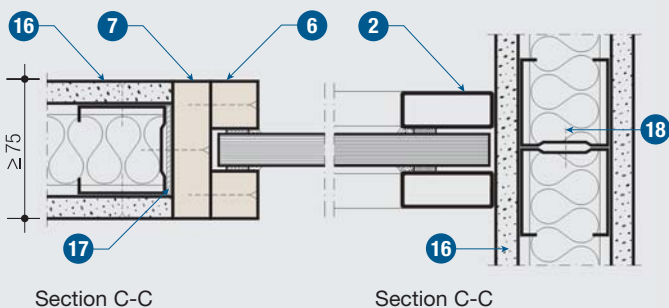
Detail 4 Wall connection



Section D-D

Section D-D (Insertion directly into wall)

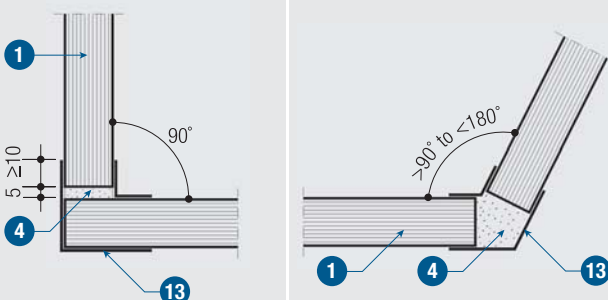
Detail 5 Floor connection



Section C-C

Section C-C

Detail 6 Alternative wall connection to lightweight partition



Detail 7 Corner detail 90°

Detail 8 Corner detail >90° to <180°

Details 4 & 5 Wall and floor connections

Where a hidden perimeter frame is required in order to achieve the aesthetics, it is possible to dispense with the steel hollow profiles and in their place use strips of PROMATECT®-H; section DD and CC to the left show the construction using PROMATECT®-H strips (7) are of 20mm and 25mm in thickness. The PROMATECT®-H beads, item (6), can be either screwed (using 50mm screws at nominal 300mm centres) or stapled (using 50mm staples at nominal 100mm centres) to the main substrate boarding. Where connecting to a central masonry pillar they should be of a width equal to the masonry construction. The masonry or concrete substrate should be of sufficient mass to ensure they are inherently fire resistant themselves, to a level equivalent to the glass construction. Please note that the PROMATECT®-H can be decorated or plaster skimmed after installation, the recommendations for the finishing of PROMATECT®-H are contained elsewhere within this handbook.

In certain circumstances it is possible to simply insert the SYSTEMGLAS® within a groove cut into the substrate and adhere into position using the PROMASEAL® translucent fire rated silicone sealant. Before attempting to use this method, please consult the Promat technical department.

Detail 6 Alternative wall connection to lightweight partition

The perimeter frames are fixed back to a substrate that is solid enough to support and brace the glass construction, this substrate must have a fire rating that is at least equal to that provided by the glass construction. The substrate can consist of masonry, or lightweight partitions as detailed here. (2) should be securely fixed back to the framing support (18) of the lightweight partition.

Detail 7 Corner detail 90°

This idea of using the two sections of glass adhered together with silicone can be taken one step further in order to construct corners without steel framing, as detailed below.

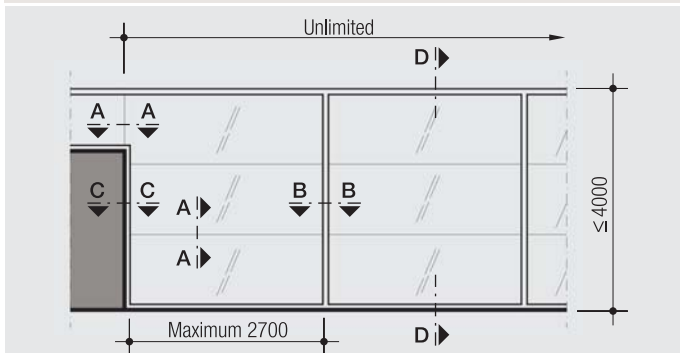
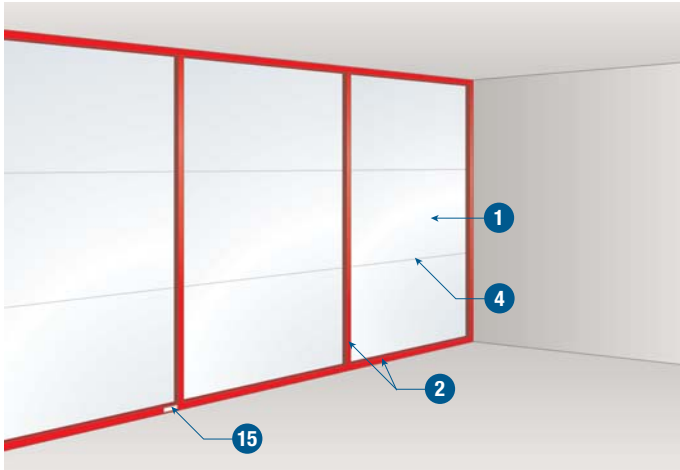
The corner joints can be constructed, for construction heights up to 2700mm. Detail 6 shows the 90° option, butt jointing square glass together using the silicone sealant. The corners can be any angle between 90° and 180° but all will need a small cover section (13) as shown, this section is necessary to provide impact protection to the corner of the glass and is required to hide the end of the glass, this strip can simply be applied with silicone sealant.

The edges of the glass within the system are sealed with an aluminium tape to protect the edge against ingress of moisture, this tape is not visible when the joint is sealed.

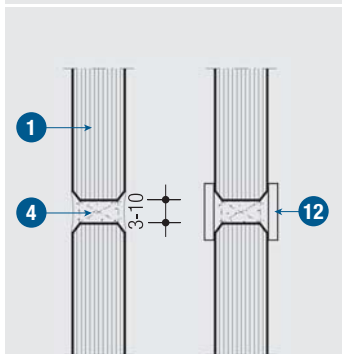
NOTE: Under no circumstances should the edging tape be removed from the glass, it is there to prevent ingress of moisture or acetate from the silicone sealant entering the intumescent layer and causing discoloration.

Detail 8

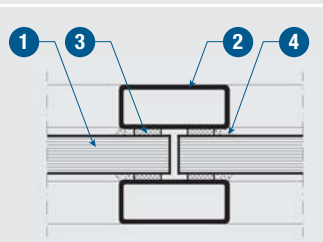
For an alternative corner joint Details 7 and 8 are applicable for 30 minutes ratings only. In this system the glass sections are sealed together using PROMASEAL® fire rated translucent silicone sealant, in addition there is a small cover plate over the joint, which should extend 20mm either side of the joint, and is fixed into position using the silicone, this cover plate is in position for the purpose of providing a degree of impact resistance to the edges of the glass joint, at present the maximum approved height for this type of joint is 2700mm and angles from 180° to 90°.



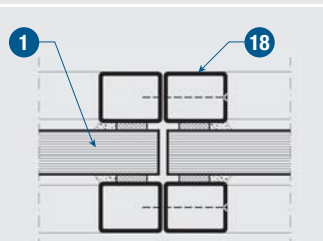
Detail 1 Elevation (Horizontal unframed joints)



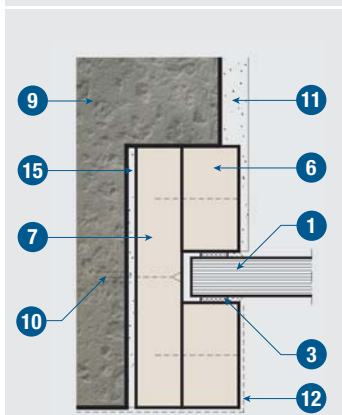
Detail 2 Silicone joint (Section A-A)



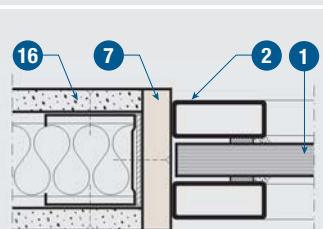
Detail 4 Mullion detail (Section B-B)



Detail 5 Steel profile connection (Section B-B)



Detail 3 (a) Wall connection (Section C-C)



(b) Connection to lightweight partition (Section C-C)

An alternative method of using the unique butt jointed SYSTEMGLAS®, where the joints between the glass panes are in a horizontal orientation. The total width of the glazed screen is unlimited, the height is restricted to 4000mm, the maximum glass pane size is 2700mm x 1400mm.

The horizontal joints between the glass panes are butt jointed and sealed using Promat SYSTEMGLAS® silicone sealant.

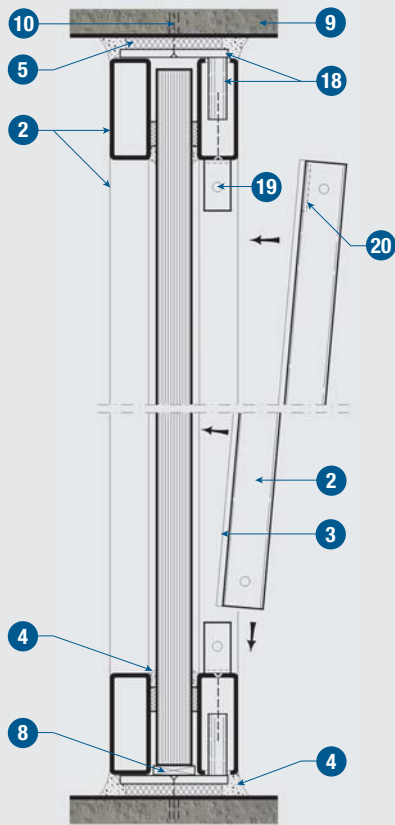
The perimeter framing is formed from either steel hollow sections as shown, PROMATECT®-H strips or steel angles. The vertical mullions are either steel hollow sections as shown, or masonry columns, please consult Promat Technical Department for further details.

TECHNICAL DATA

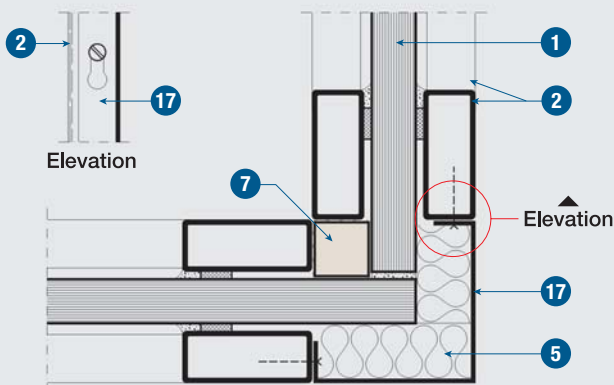
1/2 hour and 1 hour fire rating, integrity and insulation in accordance with the criteria of BS 476: Part 22 and AS 1530: Part 4.

- 1 30 minutes fire rating:**
SYSTEMGLAS® F30, chamfered edges, 17mm thick
maximum pane size 1400mm x 2700mm
- 60 minutes fire rating:**
SYSTEMGLAS® F60, chamfered edges, 25mm thick
maximum pane size 1400mm x 2700mm
- 2 Steel hollow sections**
For overall glazed element up to 3m high:
minimum 50mm x 20mm x 2mm thick
For overall glazed element over 3m high:
minimum 60mm x 25mm x 2mm thick
- 3 Self adhesive glazing tape 10mm x 3mm**
- 4 PROMASEAL® translucent silicone sealant**
- 5 Mineral wool, 15mm thick compressed**
- 6 PROMATECT®-H 50mm x 25mm thick fixed using 50mm screws at nominal 200mm centres, or 50mm x 10mm x 1.5mm steel wire staples at nominal 100mm centres**
- 7 PROMATECT®-H strips, minimum 20mm thick**
- 8 PROMATECT®-H setting blocks 52mm x 21mm x 6mm thick, 2 pieces per glass pane at least 100mm from the corner of glass (Optional, more required for width of glass over 1400mm)**
- 9 Solid wall, floor or ceiling with a fire-resistance equal to or more than that of the glazing system**
- 10 Masonry fixing, expansion bolt or similar at nominal 500mm centres**

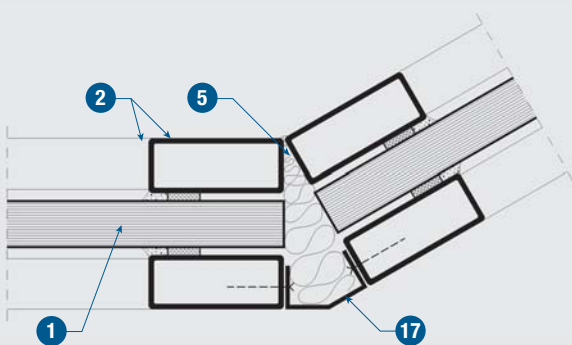
(continued on next page)



Detail 6 Vertical section (Section B-B)



Detail 7 Corner detail 90°



Detail 8 Corner Detail >90° to <180°

TECHNICAL DATA

(continued from previous page)

- 11 Plaster or cement rendering
- 12 Optional covering profiles made of stainless steel, aluminium, wood or plastic profiles
- 13 Connecting steel profiles, screwed together:
Minimum 25mm x 20mm x 2mm, maximum 3m height
Minimum 30mm x 25mm x 2mm, maximum 4m height
- 14 Identification plate of SYSTEMGLAS®
- 15 PROMASEAL® Mortar
- 16 Fire rated dry wall
- 17 Steel cover profile, fixed to the steel hollow sections using screws at nominal 200mm
- 18 Mild steel hollow section 25mm x 20mm for construction of prefabricated frames
Steel plate welded on 2 on one site of the screen at 655mm centre
- 19 Frame fixing bracket of mild steel channel 25mm x 46mm x 25mm x 15mm side x 1.5mm thick
- 20 Notch cut out to top of hollow section to allow installation around item 19

Detail 5 Steel profile connection (Section B-B)

It is feasible for smaller framing sections for these to be produced with welded joints off site and simply secured together using machine screws. The detail below shows how two smaller profiles can be joined to make one larger section.

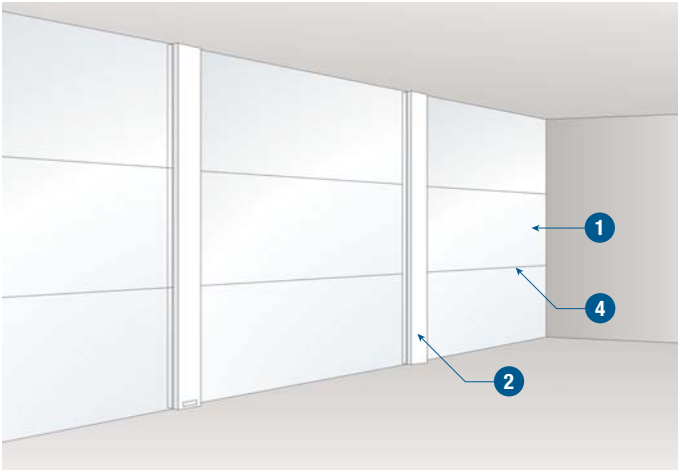
Detail 6 Vertical section (Section B-B)

20 depicted in the above drawing is a cut out to the back face of the hollow profile which enables the section to slip over the U profile 19, the hollow section is then fixed to the U profile using a machine screw. The horizontal hollow sections forming the transom to the system is fixed to U profiles in a similar manner to the vertical sections.

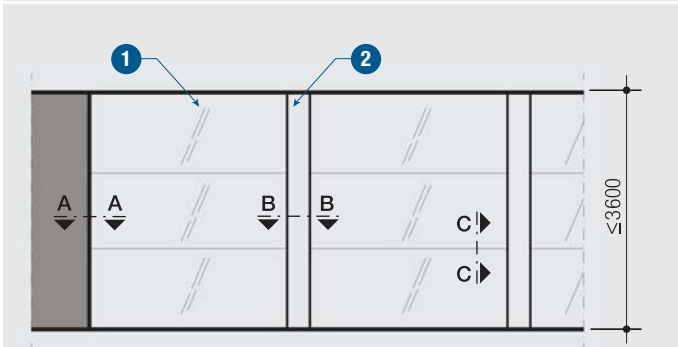
Details 7 & 8 Corner details

Corner joints can be constructed using a combination of steel hollow profiles, mineral wool Infill and steel cover profiles as depicted below, these corner sections can be at any angle required.

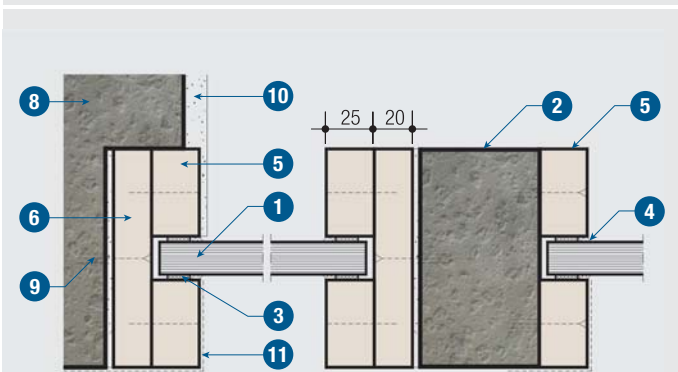
These corner details are applicable for fire resistance in terms of the integrity and insulation criteria of BS 476: Part 22 and AS 1530: Part 4 for periods up to 60 minutes.



Where there exist concrete or masonry columns, the SYSTEMGLAS® can simply be installed between these by use of the methods detailed below. The PROMATECT®-H beads (5) can be either screwed or stapled to the main substrate boarding. Where connecting to a central masonry pillar (2) the PROMATECT®-H strips should be of a width equal to the masonry construction. The width of the masonry of concrete pillars should be sufficient to ensure they are inherently fire resistant themselves, to a level equivalent to the glass construction.



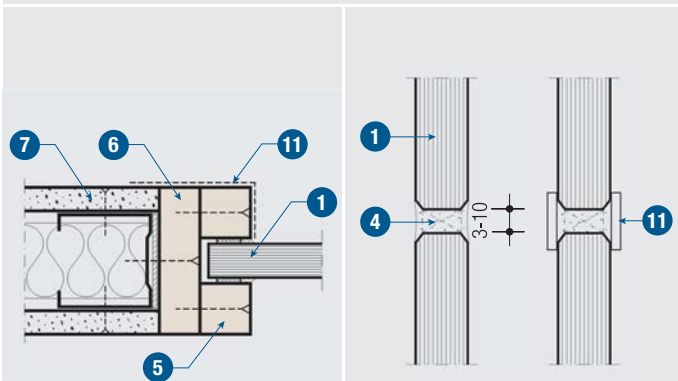
Detail 1 Elevation (Horizontal unframed joints)



Section A-A

Section B-B

Detail 2 Wall connection and mullion detail



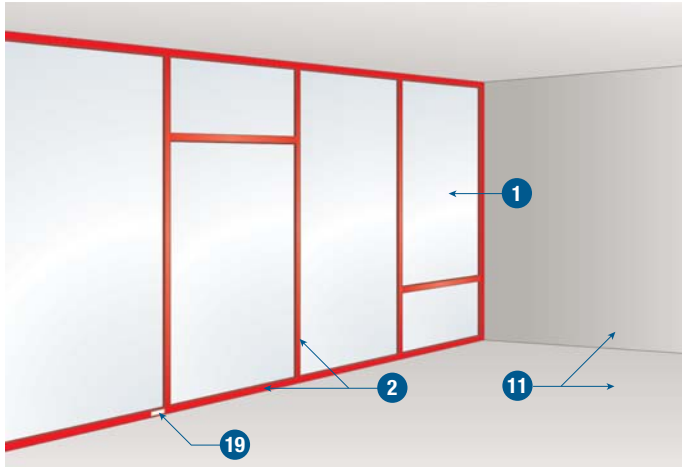
Detail 3 Connection to lightweight partition (Section A-A)

Detail 4 Silicone joint (Section C-C)

TECHNICAL DATA

1/2 hour and 1 hour fire rating, integrity and insulation in accordance with the criteria of BS 476: Part 22 and AS 1530: Part 4.

- 1 30 minutes fire rating:**
SYSTEMGLAS® F30, chamfered edges, 17mm thick
maximum pane size 1400mm x 2700mm
- 60 minutes fire rating:**
SYSTEMGLAS® F60, chamfered edges, 25mm thick
maximum pane size 1400mm x 2700mm
- 2** Concrete or masonry columns with a fire resistance equal or greater than the glass
- 3** Self adhesive glazing tape 10mm x 3mm
- 4** PROMASEAL® translucent silicone sealant
- 5** PROMATECT®-H 50mm x 25mm thick fixed using 50mm screws at nominal 200mm centres, or 50mm x 10mm x 1.5mm steel wire staples at nominal 100mm centres
- 6** PROMATECT®-H strips, minimum 20mm thick
- 7** Fire rated dry wall
- 8** Solid wall, floor ceiling with a fire resistance equal to or more than that of the glazing system
- 9** Masonry fixing, expansion bolt or similar at nominal 500mm centres
- 10** Plaster or cement rendering
- 11** Optional covering profiles made of stainless steel, aluminium, wood or plastic profiles



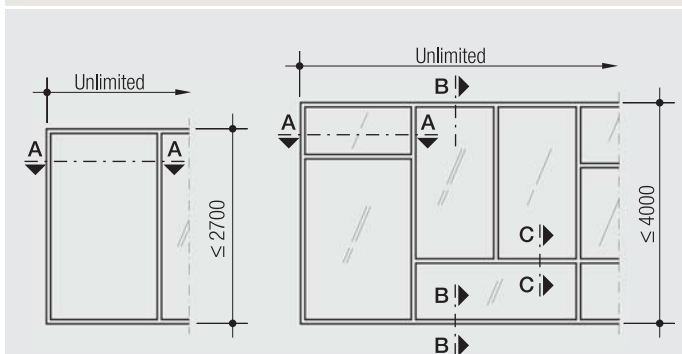
SYSTEMGLAS® F30 and F60 are new designs for a unique glazing system that provides outstanding benefits to building owners, architects, consultants and contractors. The system uses standard steel hollow sections, replacing costly and difficult to source special glazing components. Fabrication of the system is simple, as the framing can be pre-fabricated and assembled on site using standard fasteners. A single or double-leaf door can be incorporated in the design of the glazed screen.

TECHNICAL DATA

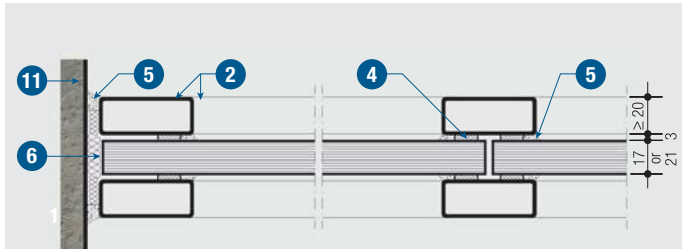
1/2 hour and 1 hour fire rating, integrity and insulation in accordance with the criteria of BS 476: Part 22 and AS 1530: Part 4.

- 1** 30 minutes fire rating:
SYSTEMGLAS® F30, 17mm thick
maximum pane size 1400mm x 2700mm
60 minutes fire rating:
SYSTEMGLAS® F60, 21mm thick
maximum pane size 1200mm x 2500mm
60 minutes fire rating:
SYSTEMGLAS® F60, 25mm thick
maximum pane size 1400mm x 2700mm
- 2** Steel rectangular hollow sections:
Minimum 50mm x 20mm x 2mm, maximum 3m height
Minimum 60mm x 25mm x 2mm, maximum 4m height
- 3** Connecting steel profiles, screwed together:
Minimum 25mm x 20mm x 2mm, maximum 3m height
Minimum 30mm x 25mm x 2mm, maximum 4m height
- 4** Self adhesive glazing tape 10mm x 3mm
- 5** PROMASEAL® translucent silicone sealant
- 6** Rock wool, 15mm thick compressed
- 7** Setting blocks of PROMATECT®-H, 2 pieces per glass pane at least 100mm from the corner of the glass
Additional blocks are required for width of glass over 1400mm
- 8** Small steel holding plates
20mm x 20mm x 1mm with screw
- 9** Optional cover made in stainless steel, aluminium or wood
- 10** Masonry fixing, expansion bolt or similar at nominal 500mm centres
- 11** Solid wall, floor or ceiling with fire resistance equal or greater than the glazed screen
- 12** Plaster or cement rendering
- 13** PROMATECT®-H strips
- 14** Steel channel profile used where allowance for vertical movement of the substrate is required
- 15** Mild steel tube with thread hole through the centre to take M6 machine screw, welded to steel plate 60mm x 30mm x 5mm
Steel plate welded on **2** on one site of the screen at 655mm centre
- 16** Frame fixing bracket of mild steel channel 25mm x 46mm x 25mm x 15mm side x 1.5mm thick
- 17** Notch cut out to top of hollow section to allow installation around item **16**
- 18** PROMASEAL® PL strip, 2.5mm thick
- 19** Identification of SYSTEMGLAS®

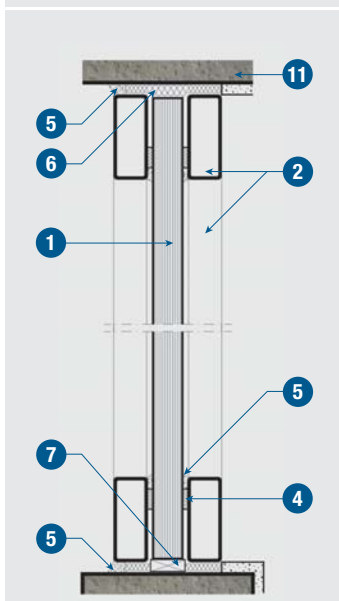
NOTE: Other glass finishes, e.g. tinted, patterned or etched can be supplied upon request.



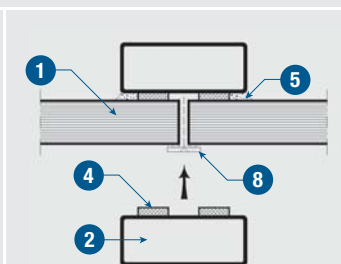
Detail 1 Elevation (Horizontal and vertical externally framed joints)



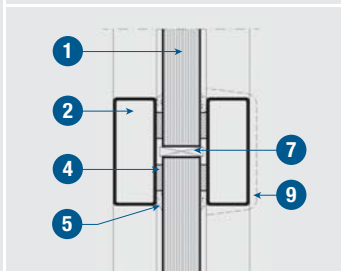
Detail 2 Horizontal section (Section A-A)



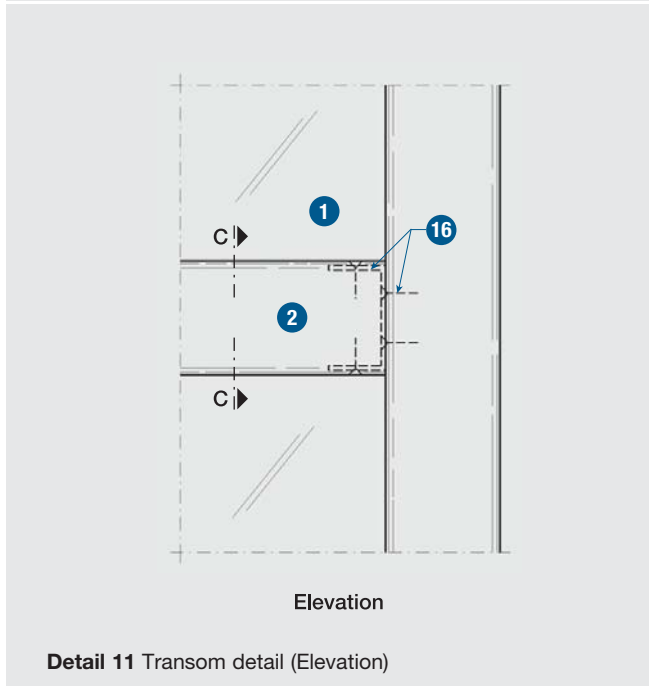
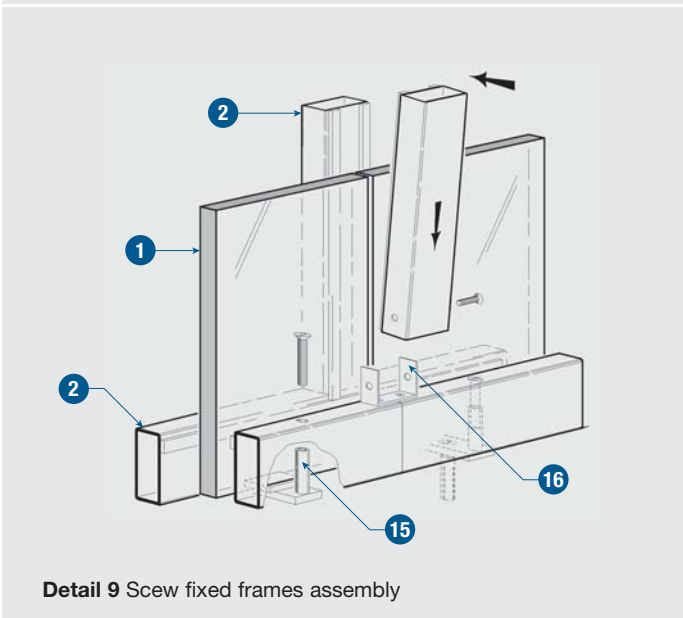
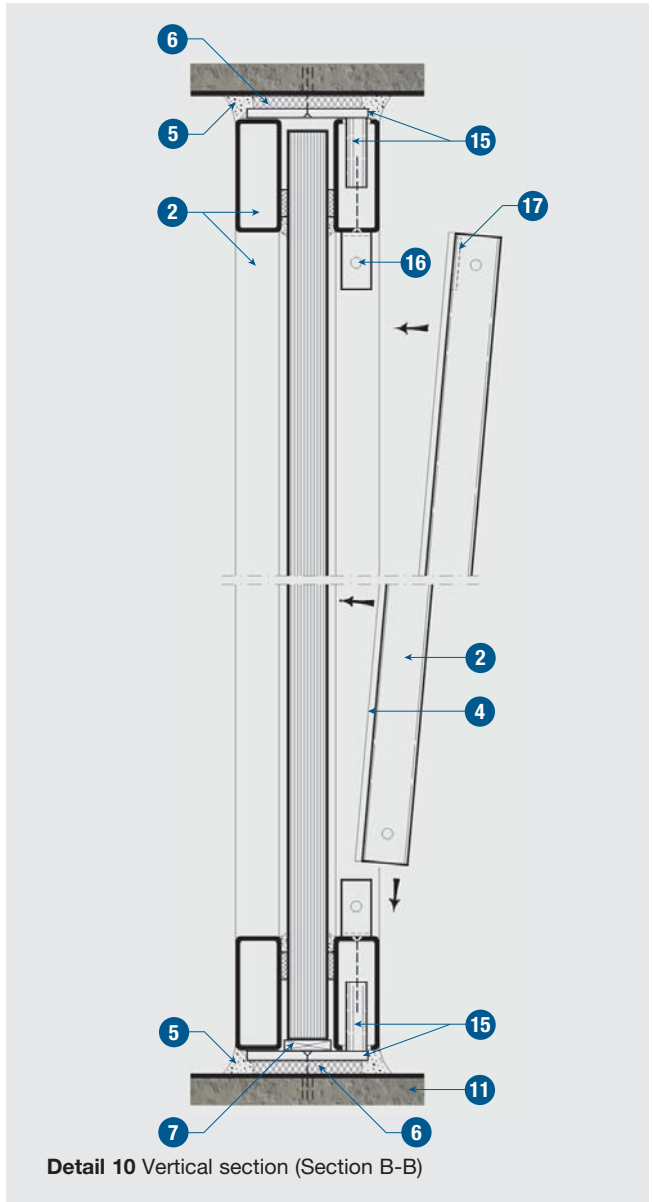
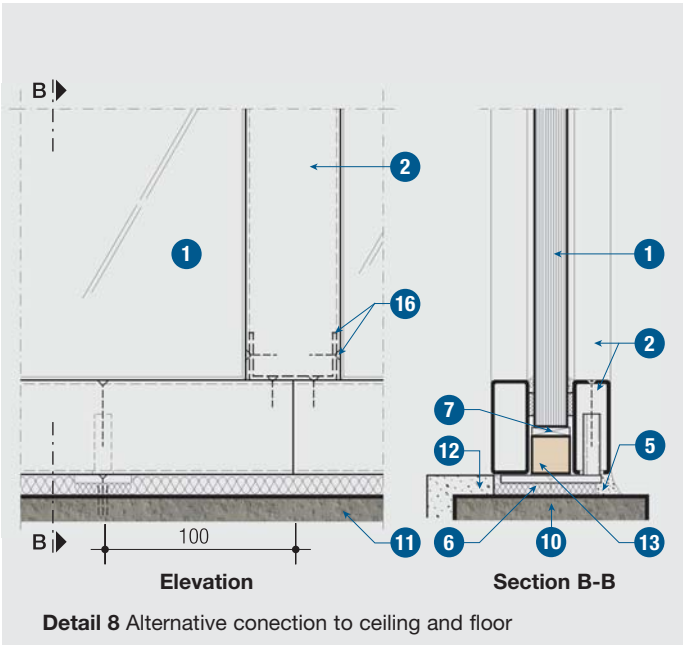
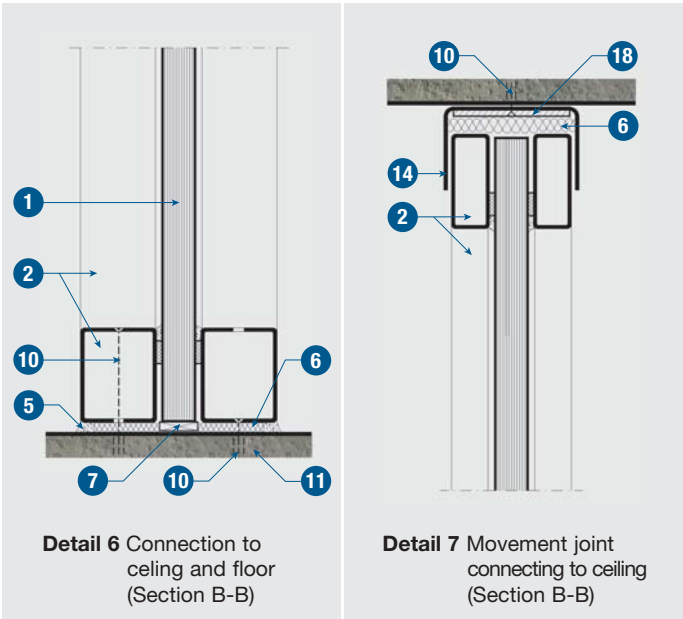
Detail 3 Vertical section (Section B-B)

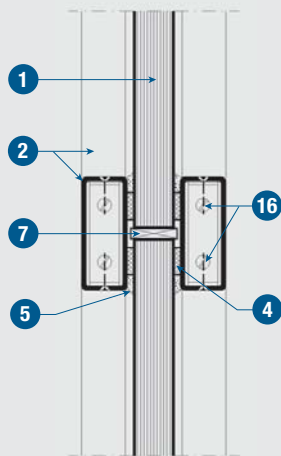


Detail 4 Glass assembly



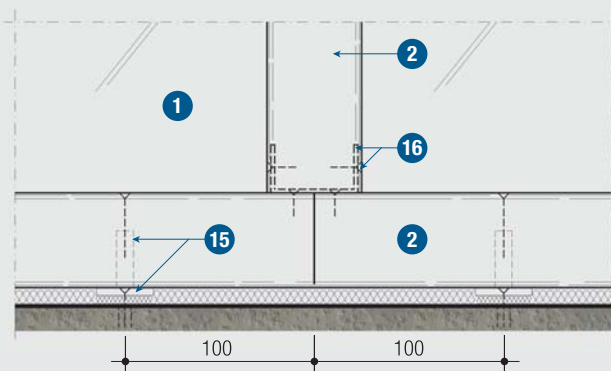
Detail 5 Transom detail (Section C-C)



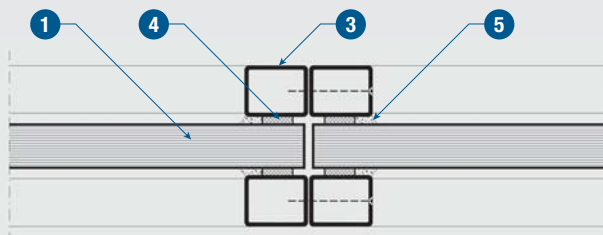


Section C-C

Detail 11 Transom detail (Section)



Detail 12 Positioning of fixing plates



Detail 13 Connecting steel profile

Detail 1 Elevation (Horizontal and vertical externally framed joints) (page 6)

The length of the glazing can be unlimited. The individual glass panel surfaces can be divided according to the specified requirements. For heights of up to 2700mm for both F30 and F60, the glazing can be composed of adjoining individual glass panes without the need for either horizontal transoms or vertical mullion framing members (the maximum dimensions of the individual glass pane need to be taken into account).

In instances where the construction height is up to 4000mm, two or more glass panes are positioned one on top of the other. A transom will cover the horizontal glass joints. This transom section can be adhered with silicone mastic. It should be noted that where protection against impact is required i.e. at heights of some 1000mm above floor level, a framing member can be mounted directly onto the surface of the glass pane by means of adhesion using the PROMASEAL® translucent silicone sealant. This method can also be used to provide visual separation even where there is no joint between the panes of glass. The separating member can be fabricated from steel, aluminium, timber or plastic, the insulative nature of the SYSTEMGLAS® prevents this having any adverse effect on the fire performance of the entire system.

In instances where the construction height will exceed 2700mm and the use of a horizontal framing member would adversely affect the aesthetics of the system, the SYSTEMGLAS® can also be used with the joints between the glass panes in a horizontal plane rather than vertical, for construction heights of up to 4000mm, however, if this system is used, it will then be necessary to include a vertical framing member at the vertical joints between the glass panes, e.g. if using maximum glass pane size these would be at 2700mm centres (see page 3). Please consult the Promat technical department for further details.

In addition to the installation of SYSTEMGLAS®, it is also possible to insert Promat boards as screens. Please consult Promat Technical Department.

Detail 2 Horizontal section (Section A-A) (page 6)

The glazing screen is constructed with front and back frame made of rectangular steel hollow sections 2 with glass panes 1 mounted in between. Alternatively both frames can either be assembled by screwing the profiles together on site or in a workshop by welding the steel profiles together. See Detail 13 this page.

The section of rectangular hollow profiles can be increased if required for aesthetic reasons but should follow the minimum requirements as indicated under 2.

Installation of the system

The glazing system is to be installed in the following steps:

- a) Fix the back frame to the ceiling and floor (see Details 6 & 7);
- b) Apply the self-adhesive glazing tape 4 on the back frame;
- c) SYSTEMGLAS® F30 or F60 1 to be seated upon the setting blocks in front of the installed frame (see Detail 5);
- d) Self-adhesive glazing tape 4 to be applied to the front frame;
- e) Front frame to be positioned to the face of the glass panes and fixed at the floor and the ceiling;
- f) Seal the surrounding gap between the glass and the steel profiles with PROMASEAL® translucent silicone sealant 5;
- g) Connections to the floor, wall and ceiling to be packed with mineral wool 6 and PROMASEAL® translucent silicone sealant.

Detail 3 Vertical section (Section B-B) (page 6)

For the fixing of the frames at the top and the bottom several solutions are available (see Details 6 & 7). The joint to the floor can be sealed with plaster or cement rendering.

Detail 4 Glass assembly (page 6)

Each glass pane ① sits on two or more setting blocks ⑦. Prior to the installation of the front frame, the glass panes need to be retained against the back frame with small steel or timber holding plates ⑧ screwed through the gap between panes to the back frame.

Detail 5 Transom detail (Section C-C) (page 6)

If two glass panes are to be installed vertically, two (or more depending on pane width) setting blocks ⑦ are used as spacers between each pane. The horizontal joint between the two panes should be sealed with PROMASEAL® silicone sealant. For aesthetic reasons or to protect the glass against possible shocks, transom sections can be glued to the glass with sealant even where there are no joints between the glass panes. The aesthetics of the screen can be enhanced by covering the steel profiles with aluminium or timber cover profiles ⑨. These cover profiles can be clipped, glued or mechanically fixed to the frame.

Detail 6 Connection to ceiling and floor (Section B-B) (page 7)

Where wider than normal hollow sections are used as the framing member, it is possible to fix directly through the frame ② into the substrate beneath ⑪.

Alternatively the more usual method is detailed in the section below. See detail ⑧.

Detail 7 Movement joint connecting to ceiling (Section B-B) (page 7)

Care must be taken that no additional stress or weight is placed upon the wall system via its framing, if there is any likelihood of movement within the substrate to which the frame is secured, then a movement joint must be constructed which allows for this movement, similar to that depicted. This detail shows the use of a steel channel profile which has sufficient depth to allow for the expected movement of the substrate above, this channel is secured to the substrate using non combustible fixings at nominal 500mm centres, the cavity between the underside of the slab and the top of the glass is packed with mineral wool so ensuring the insulation across the sections under fire conditions is maintained.

Detail 8 Alternative connection to ceiling and floor (page 7)

For the alternative to method of fixing the frame to the substrate than shown in Detail 6, a steel plate is welded to the underside of one steel frame, this plate has a dowel with a thread aperture to take a M6 machine screw. The plate and thus the first frame are fixed to the substrate using non combustible fixings. After installing the glass panes, the second frame is offered up to the glass and inserted over the dowels, the M6 machine screws then pass through the hollow sections into the dowels thus fixing the frame in position.

Detail 9 Screw fixed frames assembly (page 7)

The vertical mullions and horizontal transom sections are installed by means of clipping over the steel U brackets and held in position with M6 machine screws.

NOTE: All machine screws should have powder coated heads to match the colour of the main framing members.

Detail 10 Vertical section (Section B-B) (page 7)

The vertical joints between glass panes are to be covered with steel hollow sections in the following steps:

- Steel hollow section ② is cut to fit precisely between the top and bottom frame members;
- Notch out at the top of the mullion section to allow passage for the U-brackets;
- Apply the glazing tape ④ to the profile;
- Screw the U-steel brackets ⑬ on to the top and bottom profiles;
- Vertical profile ② is fixed to the U-steel brackets with machine screws;
- Finish the joints with PROMASEAL® translucent silicone sealant ⑤.

Detail 11 Transom details (pages 7 and 8)

Horizontal joints to be covered with a steel hollow profile ② and to be screw fixed to the vertical profiles by means of U-steel brackets ⑬. A transom profile can also be applied as a cover fillet where there are no joints between the glass panes by using glazing tape ④ and translucent PROMASEAL® translucent silicone sealant ⑤.

Detail 12 Positioning of fixing plates (page 8)

The steel fixing plates ⑮ should be positioned no more than 100mm from the proposed location of the vertical profiles.

Detail 13 Connecting steel profile (page 8)

As an alternative to the on-site screw fix assembly method for the frame, pre-fabricated frames of small steel profiles ③ can be mounted at site and connected to each other with machine screws. In instances of glass breakage, a full section of the frame will require dismantling. The choice between a screw fixed frame, or a single welded frame section, or a number of small steel frames connect to each other, depends on transport restrictions, on the working conditions at the construction site as well as on the length and height of the screen.