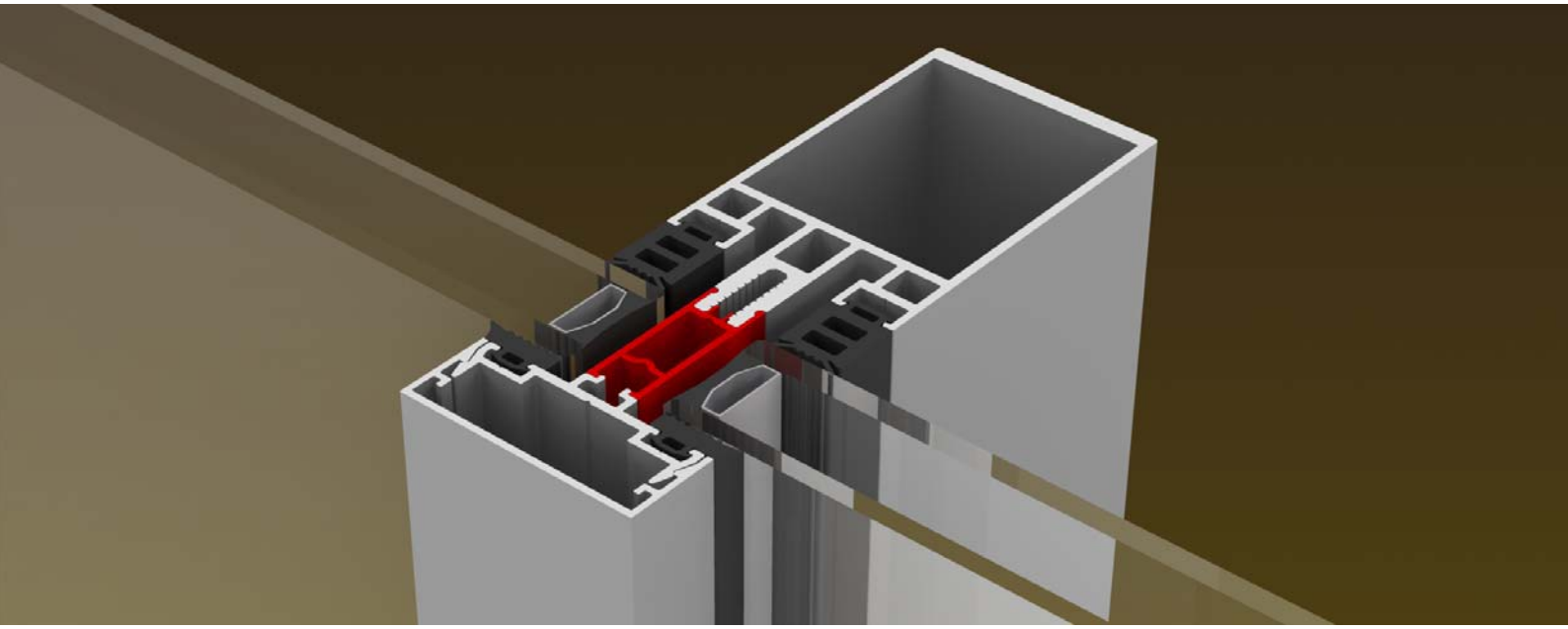
blyweert®
aluminium
exactly your profile



Kratos P52

03/05/2012

Lengte
Longueur
Length

Kleur
Couleur
Color

Brut
Brute
Mill finish

Zwart
Noir
Black

Wit
Blanc
White

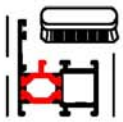
RAL
RAL
RAL

Pagina
Page
Page

Toepassing
Application
Application

Kapmatrijs
Poinçonneuse
Punch tool

Omtrek
Périmètre
Perimeter



Anodisatie-omtrek
Périmètre pour l'anodisatic
Perimeter for anodisation

Pershoek
Clame à sertir
Clamping corner

Schroefhoek
Clame à visser
Square coupling joint

T-verbinding
Assemblage traverse
Connection for transom

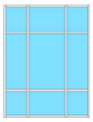
Variabele hoekverbinding
Clame variable
Adjustable connecting component

Primaire zichtzijde
Surface primaire
Primary surface

Secundaire zichtzijde
Surface secundaire
Secondary surface

AN

Geanodiseerd
Anodisé
Anodised



Release Date	Description of Ammendment
01.03.2012	EU Manual Updated to correspond with UK Manual
16.04.2012	Glazing Options Included For A-52-659 Athena Sections/Sawing tables added A-KM-54SO, A-KM-54PD, A-KM-54PO5, A-KM-54PO Added A-52-304 & P-52-395 Added Statics Translated Drainage Deflector Details Page Updated Sprung Cleat Usage Page Updated Level 4 Drainage Introduced
03.05.2012	Accessory/Gasket Translations Included

Kratos P52

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Kratos P52 Curtain Walling Series

Blyweert Beaufort Aluminium produces a wide range of aluminium extrusions for use in the manufacture of curtain walling, ground floor treatments, windows and doors for the commercial sector.

Scope

The Blyweert Beaufort Aluminium curtain walling series is a system designed for a wide variety of building types, from residential to commercial, and for high and low rise buildings, new projects and refurbishments.

The Kratos curtain wall system is designed as a stick-frame assembly with weather performance achieved by drainage and ventilation of the glazing rebates. Drainage and ventilation is achieved via mullion drainage or via each individual transom zone being drained through the pressure plate and capping.

The system is designed on a 52mm face width and is available in a variety of mullion depths which combined with four thermal break size options and many external capping profiles provide flexibility of design, with outstanding performance and ease of installation to suit individual project requirements.

The system is completely compatible with the complete range of Blyweert Beaufort Aluminium systems.

The system has been exclusively designed, developed and supplied by Blyweert Beaufort Aluminium, with installation contracts carried out via approved and accredited dealers.

Product Features

- Dry jointing method using specially engineered EPDM gaskets and moulding pieces
- Concealed mullion drainage – ventilation & drainage via the mullions or
- Zone drainage – each pane acts as an individual self draining unit
- Can accommodate glazing and infill's from 6mm up to 50mm in thickness
- Exceeds the requirements of Approved Document L & J for thermal performance
- Fully capped (zone drained & mullion drained with wide choice of face cap options)
- Tested and certified in accordance with CWCT sequence B
- Extensive range of mullion, transom & face cap options with 52mm sightlines
- High insulation versions can be utilised for enhanced thermal performance
- Facilitates the integration of all vent systems & includes a concealed vent option
- Four thermal break options
- Transom fixing options include; front-loaded using spring cleats, traditional ladder construction using shear blocks.

Construction

The curtain wall system has been designed as a notched system to ensure the connection between mullion and transom joints is to the highest level of structural stability. The curtain wall is constructed in stick format utilising EPDM expansion pad joints between horizontal and vertical joints.

The can accommodate various construction techniques from traditional shear block and ladder construction to sprung-loaded cleats to enable front loaded mullion to transom connections thus enabling faster onsite construction.

The system is designed with three levels of drainage to fulfil architectural design requirements. Drainage between Level 1 transoms to Level 3 mullions would be most common however due to technical reasons sometimes a requirements for the third level of drainage is needed. An example of this is over a set of double doors where a mullion is required above the doors to accommodate large expanses of glass between modules. This third level of drainage level allows an even greater degree of reliability from the system.

Mullion Drainage

The Kratos P52 curtain wall is to be mullion drained with drainage and ventilation achieved via drainage deflectors at the top and bottom of the wall and located above mullion to mullion joints. Transoms are to be notched and overlapped to the mullion which incorporates an EPDM gasket to seal between mullion and transom. The system is designed with a positive location between pressure plate and isolator to ensure water ingress via the transom zone is avoided.

Zone Drainage

The Kratos P52 curtain wall is to be zone drained with drainage and ventilation slots located in the horizontal pressure plates. Transoms are to be notched and overlapped to the mullion which incorporates an EPDM gasket to seal between mullion and transom. The mullion transom connections incorporate EPDM mouldings and gaskets to maintain each zone.

Standards

BS EN 12020 – Extruded aluminium profiles 6060/6063 T6
BS 3987 Specification for anodic coatings
BS 6496 - Specification for powder organic coatings
BS 4255 Part 1 – Glazing gaskets are formed using high quality EPDM rubber to BS 4255.
ISO 9001:2000 – Quality management system
CWCT Standard and Test Method for Curtain Wall Sequence B
BS EN 13830:2003 Curtain Walling Product Standard
BS EN 12152:2002 Curtain Walling - Air Permeability - Performance requirements and classification
BS EN 12153:2000 Curtain Walling - Air Permeability - Test method
BS EN 12154:2000 Curtain Walling - Water tightness - Performance requirements and classification
BS EN 12155:2000 Curtain Walling - Water tightness - Laboratory test under static pressure
BS EN 13116:2001 Curtain Walling - Resistance to wind load - Performance requirements
BS EN 12179:2000 Curtain Walling - Resistance to wind load - Test method

Performance

The system is designed to exceed the rigorous requirements of the CWCT standard for systemised building envelopes. The system, installed and glazed to Blyweert Beaufort Aluminium's recommended procedures, is tested and certificated in accordance with the CWCT, Standard for Systemised Building Envelopes to Sequence B.

- Air Permeability to EN12152 = 600Pa Class A4
- Water Penetration (Static and Dynamic) for wall with window EN12154 = 600Pa Class R7
- Water Penetration (Static and Dynamic) for wall without window EN12154 = 1050Pa Class RE_{1050}
- Wind Resistance (Serviceability) to EN13116 = 2400Pa
- Wind Resistance (Safety Testing) to EN13116 = 3600Pa

The system has also been certificated to the BRE's LPCB Standard LPS1175:SR1 for security and is the first curtain wall system to achieve this security rating. The system is fully compliant with Secured By Design requirements.

The system also accommodates a high insulation solution which also enhances the thermal performance of the system. The system is designed to surpass the current building regulations and will allow U-values to accommodate the highest levels of BREEAM and other environmental performance standards.

For CWCT Certification please see following pages.

Blyweert Beaufort CWCT Test Certificate

Certificate of Testing

CENTRE FOR WINDOW AND CLADDING TECHNOLOGY

Certificate Number: 2010/43

Date: September 2010

System: **Kratos P-52 Curtain walling**

Manufacturer: Blyweert Beaufort Aluminium
Queensway Meadows
Newport
NP19 4SQ

Tests performed:

Air permeability	✓
Watertightness – static	✓
Watertightness – dynamic	✓
Wind resistance – serviceability	✓
Wind resistance – safety	✓
Hose test	✓

In accordance with 'Standard for systemised building envelopes', CWCT, 2006

Signed: ..... Test Witness

Signed: ..... Director

Description of components tested

Glazing system:	**Kratos P-52 Curtain walling**
Framing material:	Aluminium 6063
Glass units:	6/16/6 sealed units both panes toughened
Mullion - Type:	P-52-335
Box size:	180 mm x 52 mm
Transom - Type:	P-52-120
Box size:	125 mm x 52 mm
Transom connection:	Overlap joint Sealing piece A-52-208 between ends of transoms and side of mullion
Drainage and ventilation:	Mullion drained and ventilated Drainage spouts above mullion joint and at bottom of mullion
Curtain wall seals	
Inner seal – Type:	Gasket, No A-GS-204, 8.5mm for transom and No A-GS-210, 15mm for mullion
Jointing:	Corners butt jointed and sealed with butyl sealant
Material:	EPDM
Outer seal – Type:	Gasket No A-GS-201
Jointing:	Butyl Sealant
Material:	EPDM
Mullion bracket: (Brackets were to facilitate test on wall and are not part of certified system)	Intermediate bracket: pair of stainless steel angles fixed to slab edge and with bolt through mullion. Base bracket: pair of stainless steel angles fixed to ground and pair of bolts through mullion.
Mullion movement joint:	Coupling sleeve P-52-535 to provide structural connection. Cover piece in mullion drainage channels and silicone sealant between cut ends of mullion for remainder of perimeter.
Opening light:	Included to test interface detail only.

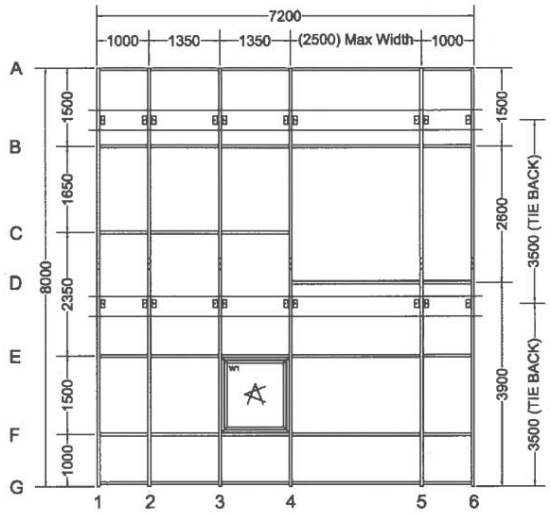
Testing laboratory

	Technology Centre Vinci Construction UK Ltd Stanbridge Road Leighton Buzzard Bedfordshire LU7 4QH
Registration No:	UKAS No 0057
Independent testing authority:	Technology Centre Vinci Construction UK Ltd Stanbridge Road Leighton Buzzard Bedfordshire LU7 4QH
Witness:	Alan Keiller Centre for Window & Cladding Technology University of Bath Claverton Down Bath BA2 7AY
Date of test:	May/June 2010

Summary of results

Air permeability:	PASS
Pressure:	600Pa (infiltration) 600Pa (exfiltration)
Leakage rate (max):	0.19 m³/hour/m² (infiltration fixed glazing) 0.10 m³/hour/m² (exfiltration fixed glazing)
Watertightness - static:	PASS
Test pressure:	600Pa
Watertightness - dynamic:	PASS (Dynamic aero engine)
Wind resistance serviceability:	PASS
Test pressure:	2400Pa
Wind resistance safety:	PASS
Test pressure:	3600Pa
Hose test:	PASS

Elevation of test sample



blyweert aluminium exactly your profile

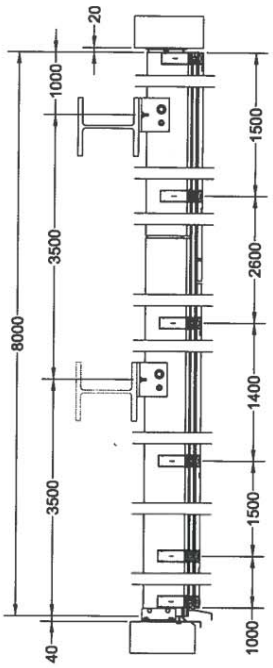
Wind resistance - serviceability test

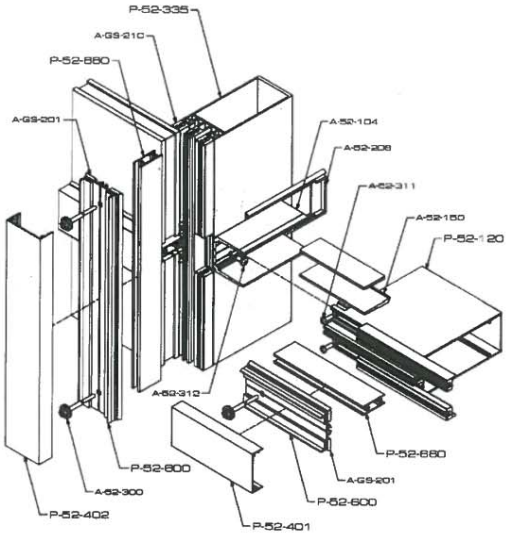
Result: PASS
Pressure: 2400 Pa

Deflections

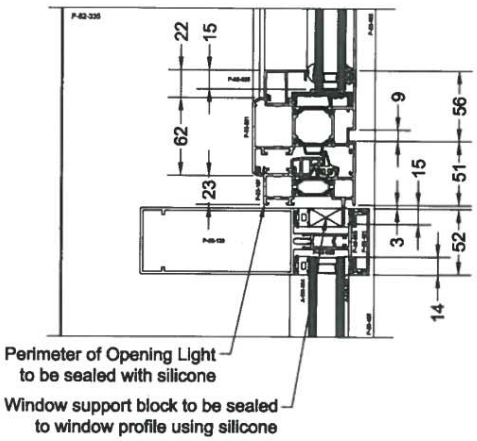
Member	Length (L)	Measured Deflection (d)			
	(mm)	Pos (mm)	Neg (mm)	Pos d/L	Neg d/L
Mullion 4 upper span	3500	7.7	1/455	-7.9	1/443
Mullion 4 lower span	3500	8.6	1/407	-9.0	1/389
Transom F span 4-5	2450	7.4	1/331	-7.5	1/327

Section through test wall



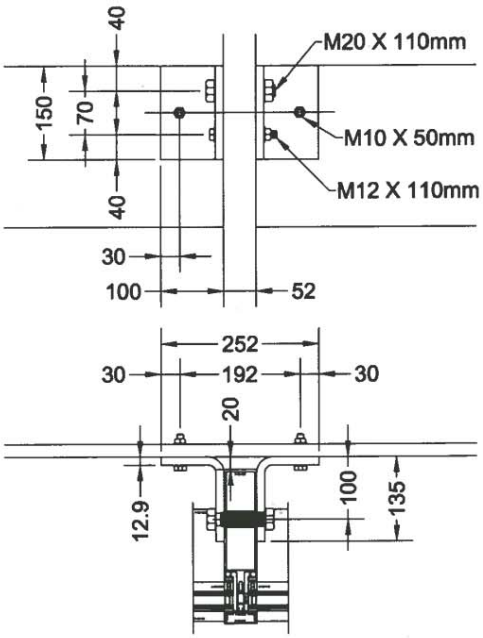


Exploded view of mullion/transom joint

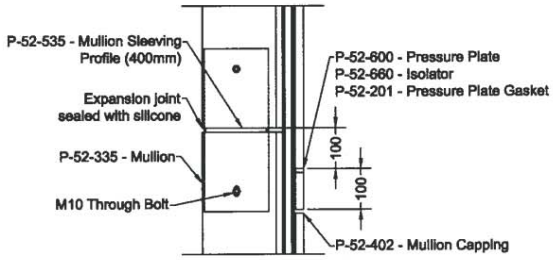


Transom/opening light details

Bracket details



Mullion Joint Details



CENTRE FOR WINDOW AND CLADDING TECHNOLOGY

Fabricator: Blyweert Beaufort Aluminium
Queensway Meadows
Newport
NP19 4SQ

Installer: Blyweert Beaufort Aluminium
Queensway Meadows
Newport
NP19 4SQ

University of Bath
Claverton Down
Bath BA2 7AY

Telephone (01225) 386541
Fax (01225) 386556
email cwct@bath.ac.uk
www.cwct.co.uk

Printed on 9 lives Offset, 100% recycled fibre. Forest Stewardship Council certified. NAPM certified recycled. Totally chlorine free. Suitable for archival storage.

Finishes

Over 130 standard and 31 metallic Blyweert Beaufort Aluminium polyester powder coated paint finishes are available. A range of standard and coloured anodised finishes are also available. Colour samples are available on request from the Blyweert Beaufort Aluminium marketing department. The coatings are covered by standard guarantees; 15 years gloss guarantees are subject to application and Blyweert Beaufort Aluminium acceptance in marine, industrial, swimming pools or other aggressive atmospheres.

Glazing

The Kratos P52 system can accommodate glazing and infill panels from 6mm to 50mm in thickness. Sealing is achieved with dry glazing using EPDM gasket technology. Consult Blyweert Beaufort technical literature for details.

Security glazing can also be achieved via specially designed pressure plate fasteners which have been tested to LPS1175:SR1 which complies with Secured By Design.

Fabrication and Installation

All Blyweert Beaufort Aluminium products are fabricated and installed by a network of trained authorised Blyweert Beaufort Aluminium dealers, offering national support at local level. The Blyweert Beaufort Training Centre provides specific product knowledge training and installer training.

For Dealers in your area contact the Blyweert Beaufort Aluminium Sales Department.

Size Limitations

The mullion and transom profiles are available in a large range of graduated dimensions to meet varying wind load and dead load requirements. BS6399 should be used to determine the wind loads applicable in the UK. All mullions and transoms should be dimensioned to suit the loads and maximum deflections required. The data to be able to determine the required deflections is detailed on the following pages and will enable the specifier to determine the relevant profiles required for wind loads, dead loads and live loads.

The inclusion of multi-span applications are only applicable when a single length of mullion is used with a mid-point fixing to provide to equal spans. The relevant information is detailed in the Statics Information on the following pages.

Static Information

The section looks into all loading types that influence the design of the curtain wall facade, the main areas that are focused on include:

- Wind Loading
- Dead Loading
- Live Loading

The details in this section are mainly applicable to the UK environmental conditions, they are also applicable in similar climates elsewhere but may need to be modified when specifying and constructing curtain walls in other climatic zones.

Wind Loading

The design wind pressure for the building envelope shall be calculated in accordance with BS 6399-2. A detailed understanding of the anticipated wind pressures is fundamental to the design of the building envelope.

Wind pressure calculations should be undertaken with the help of a qualified structural engineer, and full allowance should be made for the effects of vortices, separation and funnelling. Guidance on wind loads can be found in the CWCT Standard for systemised building envelopes.

Dead Loading

The building envelope shall be capable of carrying both the curtain wall dead load and also the dead loads derived from permanent fixtures including signage and solar shading.

The curtain wall shall transmit safely all dead loads likely to be placed on it to the building structure via the correct points of support designed for the purpose. The bracket supports should be designed in conjunction with a qualified structural engineer.

Live Loading

As described in the CWCT standard, the building envelope shall transmit safely all live loads acting upon it to the primary structure via the points provided for the purpose. Care should be taken to meet all live loads requirements set out in the CWCT standard these include; maintenance loads, barrier loads in accordance with BS6399, occupancy loads, snow loads and wind loads on permanent fixtures.

General Deflections of Framing Members

The static information of each of the mullion and transom profiles are detailed in the Profile Identification Section of this Technical Manual.

At both positive and negative applications of the peak test pressure, the maximum normal to plane deflection shall not exceed:

Length:	Allowable Deflections:	Applicable Standard:
Height ?3000mm	??Height / 200	EN1 3830
> 3000mm Height < 7500mm	??Height / 300 + 5	EN1 3830
?7500mm Height	??Height / 250	BS811 8-1

Localised Deflections

Localised deflections are used to calculate deflections of elements within the curtain wall that could be subject to its own deflection limits. These are measured over a single infill panel, glazing unit or other component. These deflection limits apply to all framing members irrespective of orientation.

Framing Members with Single Glazing

At both positive and negative applications of the peak test pressure, the maximum deflection shall not exceed:

- Four edge support = 1 / 125 of the length measured along the pane edge
- Two edge support = 1000 / 180 of the square of their span between supports, where deflection is measured in mm and span in meters.

Framing Members with Double Glazing

At both positive and negative applications of the peak test pressure, the maximum deflection shall not exceed:

- Four edge support = 1 / 175 of the length measured along the unit edge, or 15mm whichever is the lesser
- Two edge support = 1000 / 540 of the square of their span between supports, where deflection is measured in mm and span in meters, or 20mm whichever is the lesser.

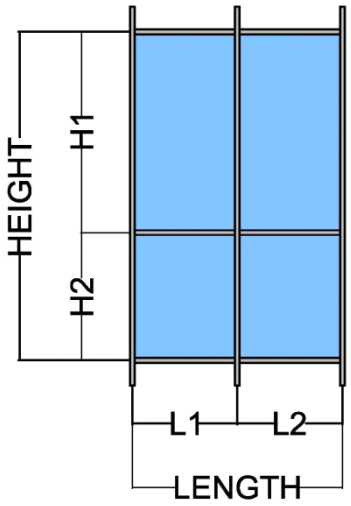
Calculating Inertia Values of Profiles

This section will give a brief example of the method for calculating the inertia requirements of the framing members.

To calculate the mullion requirement the Ixx value needs to be calculated for the various elements of the facade. The calculation required is as follows:

Example Single Span Calculation

$$I_{xx} = \frac{\left(\frac{5\ x\ (H\ x\ L\ x\ P) x\ H^3}{384\ \text{x}\ 70000\ \text{x}\ \text{D}}\right)}{10^{10}}$$



H = Height of single span mullion
L = Length of transom
P = Wind load
D= Deflection based on mullion height

The following is an example of how to calculate the correct mullion profile for a typical project. For the purposes of this exercise the following has been assumed:

- Height (H) = 3600mm
- Length (L1) = 1000mm
- Wind load (P) = 1200Pa
- Deflection (D) = (3600 / 300 + 5) = 17mm

Worked Example 1:

$$I_{xx} = \frac{\left(\frac{5\ x\ (3600\ x\ 1000\ x\ 1200) x\ 3600^3}{384\ \text{x}\ 70000\ \text{x}\ 17}\right)}{10^{10}}$$

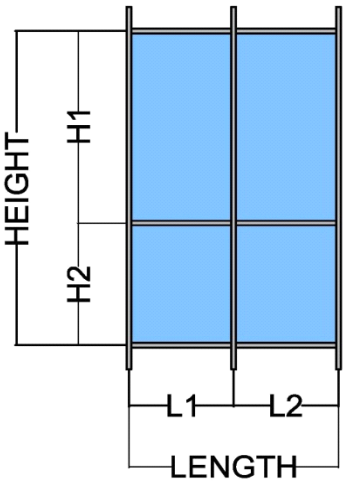
Ixx = 220.54cm^4

Therefore the P-52-320 mullion would be required for this project with an I_{xx} 233.91 cm^4.

The same principles are used to calculate the I_{xx} requirement of transom profiles.

Example Transom Span Calculations for Localised Deflections

$$I_{xx} = \frac{\left(\frac{5\ x\ (H\ x\ L\ x\ P) x\ H^3}{384\ \text{x}\ 70000\ \text{x}\ \text{D}}\right)}{10^{10}}$$



H = Height of single span mullion
L = Length of transom
P = Wind load
D= Deflection based on mullion height

The following is an example of how to calculate the correct transom profile for a typical project based on a double glazed unit infill. For the purposes of this exercise the following has been assumed:

- Height (H1) = 2400mm
- Length (L1) = 1000mm
- Wind load (P) = 1200Pa
- Deflection (D) = (1000 / 175) = 17mm

Worked Example 2:

$$I_{xx} = \frac{\left(\frac{5\ x\ (3000\ x\ 1000\ x\ 1200) x\ 1000^3}{384\ \text{x}\ 70000\ \text{x}\ 5.7}\right)}{10^{10}}$$

Ixx = 11.84cm^4

Therefore the P-52-100 transom would be required for this project with an I_{xx} 25.83cm^4.

Stati-Calc®

Stati-Calc® is a free piece of calculation software designed to help aid fabricators / contracts in specifying the correct Kratos profiles for the static requirements of each project.

Included in the software is also a basic bracket design tool which includes a catalogue of industry standard fasteners / fixings i.e. Hiliti, Fischer and Rawl etc.

The introductions detailed below describe in brief how to use Ststi-Calc® and the outputs that are produced.

IMPORTANT: Stati-Calc® software is provided to assist in the statics, span and loading calculations used with the Kratos curtain walling system. All preliminary data contained with the CD/software is derived from BS6399-2, Code of Practice for Wind loading. The CD/Software is for guidance only and, although we have taken every measure possible to ensure accuracy, you should use this data in conjunction with an official structural analysis conducted by your project engineer.

Abbreviations:

DDL - Dead Load (i.e. dead load is calculated by dividing the glass weight by gravity (9.81 m/S^2).

DWL - Design Wind Load, measured in Pa / KN E.g. 1000 Pa = 1 KN (i.e. this is usually calculated or supplied at the start of a project / contract. This can also be calculated using Logikal production software - all window load calculations in accordance with BS6399-2 & BS6262-3 Inc. CWCT).

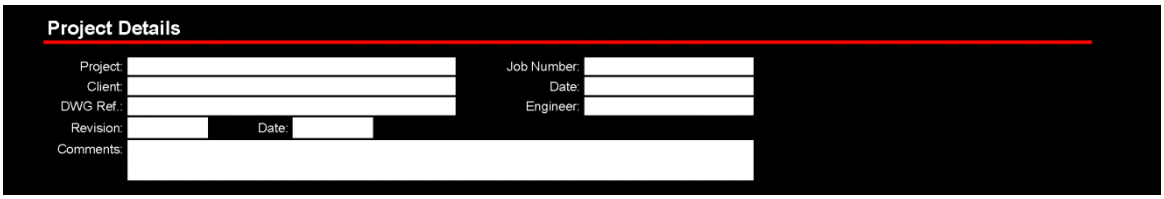
There are two options to choose from when calculating the statistical requirements of each curtain wall construction, Single Span or double span.

The choice between the two options is purely project driven i.e. the architect / contractor may specify the preferred construction method at the start of the project. Typically we default to using the single span method, the steps below are the same for both construction types.

Single / Double Span - Mullion/Bracket & Fixing Calculations

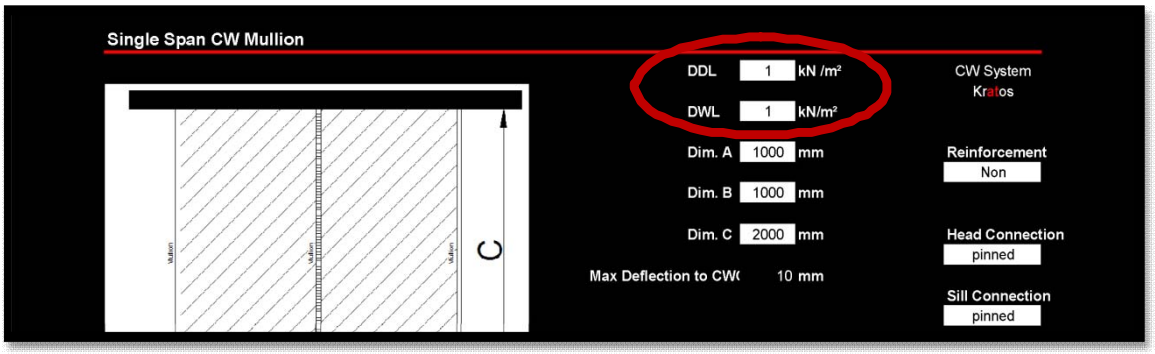
Stage 1.

- Fill in all project details as this can then be printed alongside the results as part of your project / contract documentation.



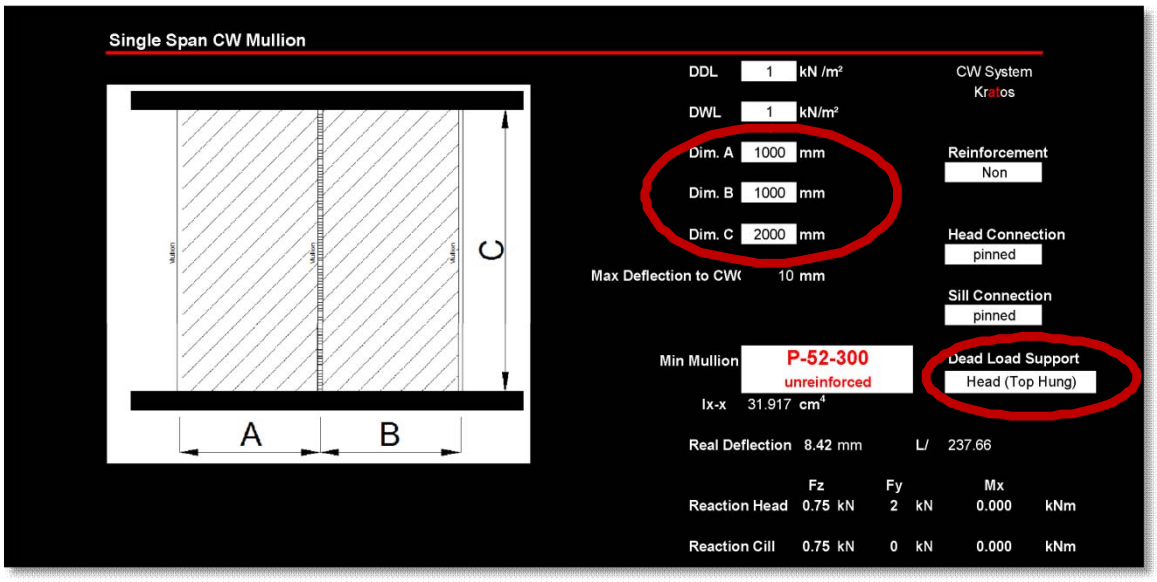
Stage 2.

- Fill in the dead load (DDL) and design wind load (DWL) in the correct units.



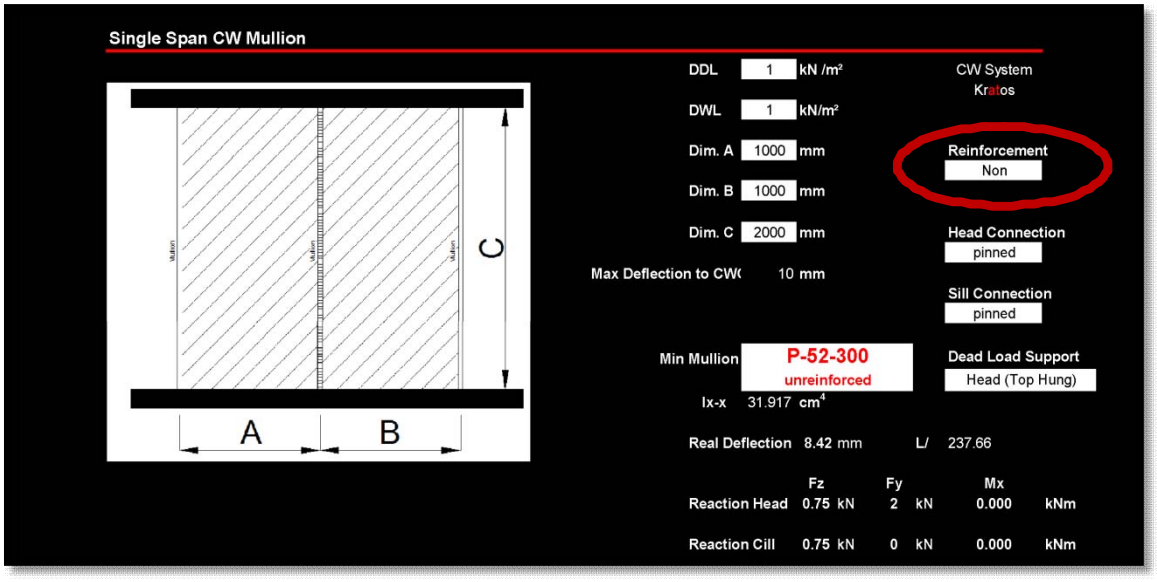
Stage 3.

- Fill in worst case/largest dimensions for the curtain wall design i.e. A, B and C, along with picking from the drop down menu whether the wall is top hung or bottom stacked Ref: Dead Load Support.

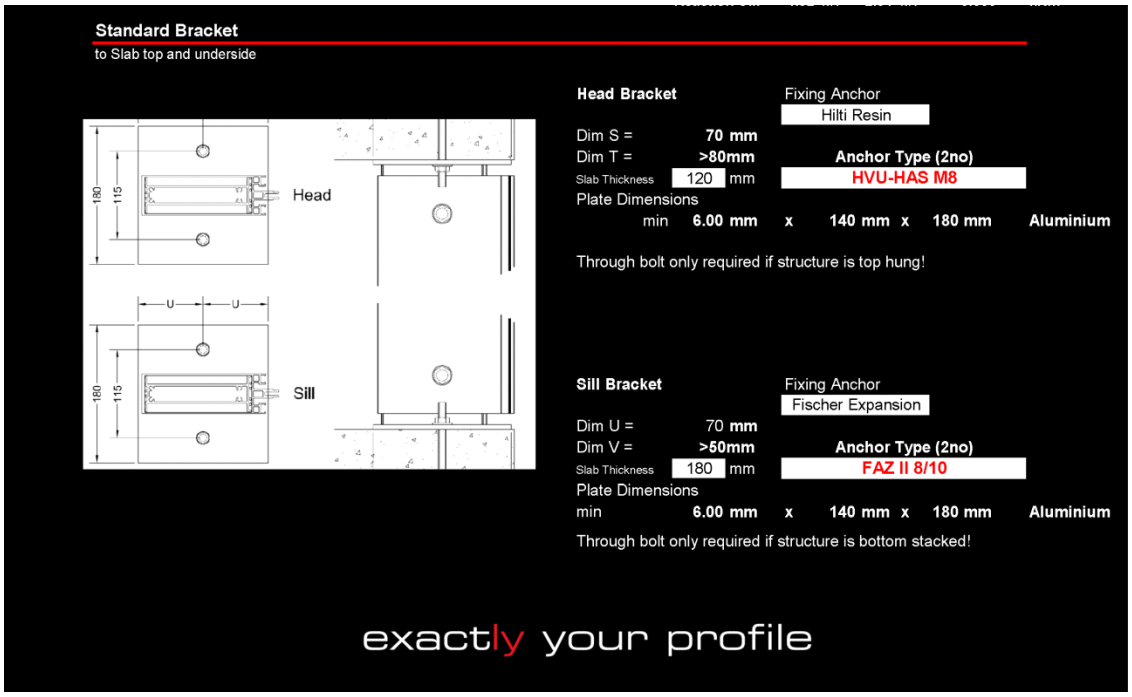


Once correctly filled in the suitable Kratos mullion will be chosen i.e. highlighted in RED.

Note: Additional options can be selected by picking the drop down menu labelled 'Reinforcement'. This option will allow smaller box sections to be used with reinforcements i.e. Steel or Aluminium.



Bracket & Fixing Design / Options



Transom Deflection - Fastening / Profile Calculations

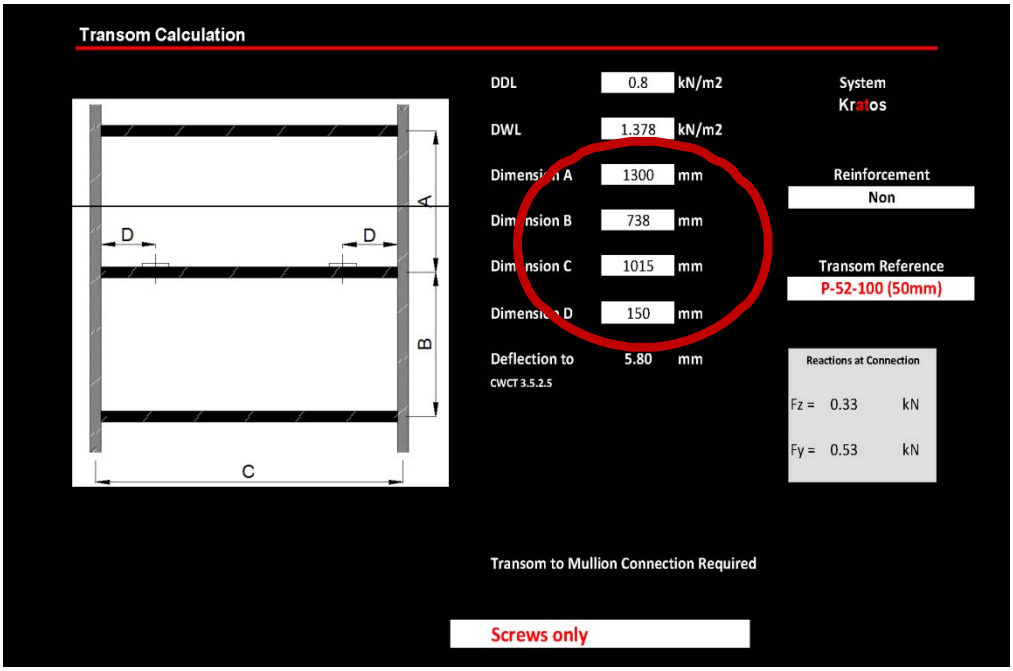
Finally, once the correct mullion and bracket/fixing options have been calculated, the only remaining calculation to process is the affect of the dead load and design window load on the curtain wall transom span i.e. typically the worst case within the design.

Stage 4.

- Fill in the dead load (DDL) and design wind load (DWL) in the correct units.

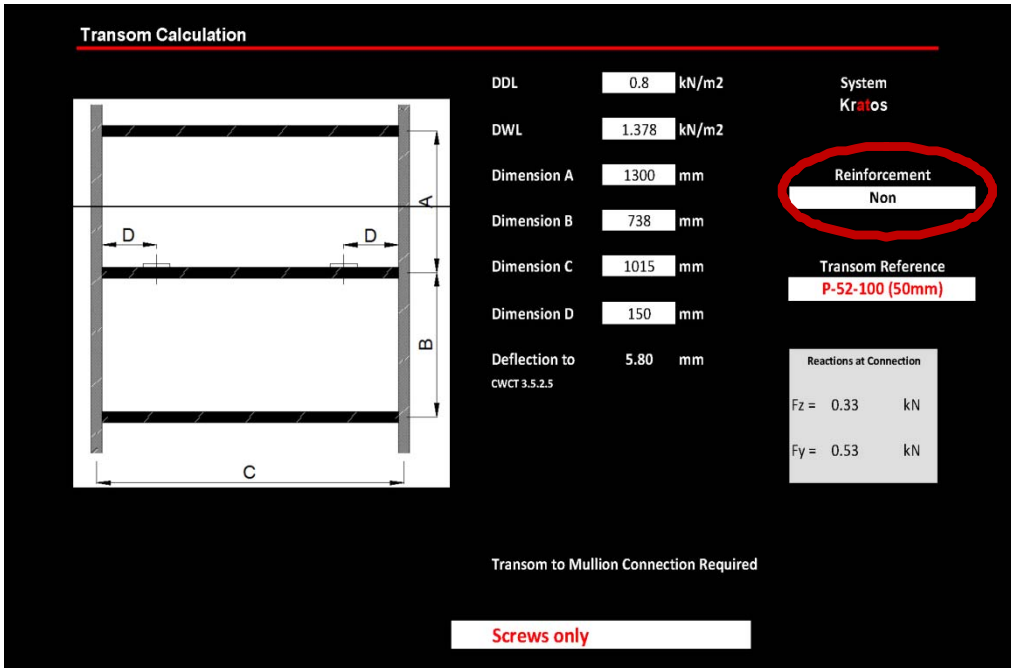
Stage 5.

- Fill in worst case/largest dimensions for the curtain wall design i.e. A, B, C, D.



Once correctly filled in the suitable Kratos transom will be chosen i.e. highlighted in RED, along with the type of connection / support required.

Note: Additional options can be selected by picking the drop down menu labelled 'Reinforcement'. This option will allow smaller box sections to be used with reinforcements i.e. Steel or Aluminium.



Kratos Thermal Specification

The system has been designed around a core module ensuring the glass / infill panels sit directly over the thermal break which gives optimum thermal performance

This configuration ensures lower glass specifications are required when compared with other systems i.e. in some cases this can be the difference between a soft-coat and hard-coat glass.

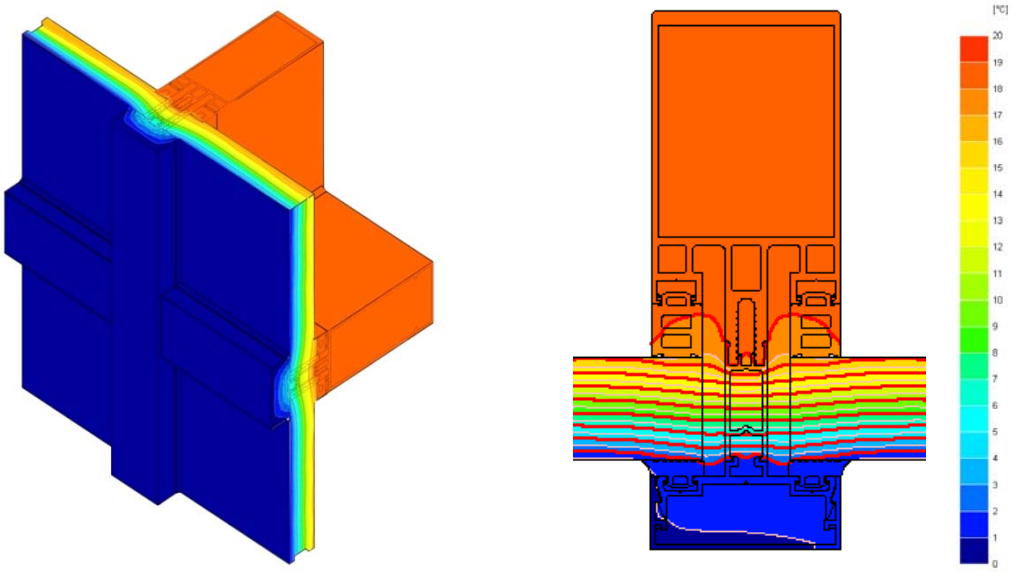
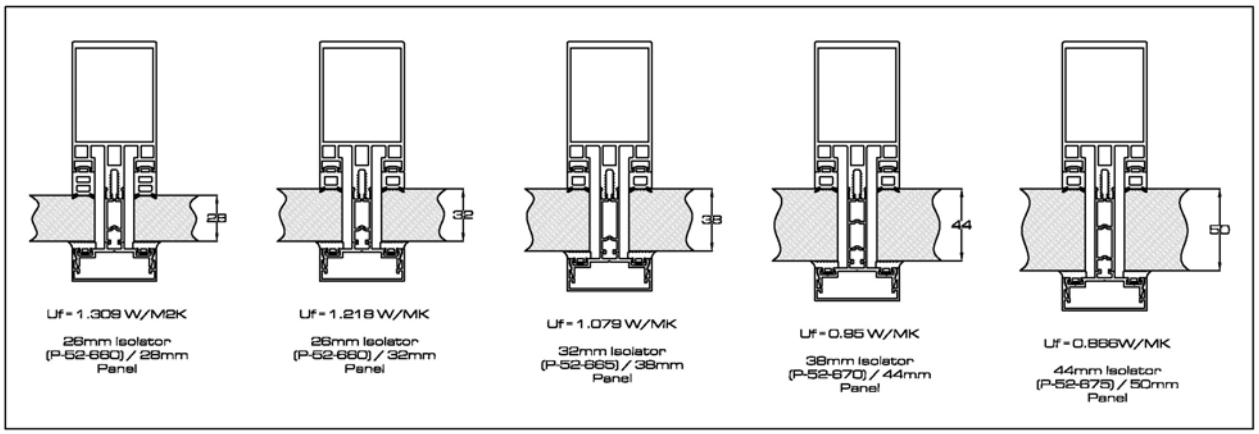


Figure 1.0 Kratos Thermal Image P-52-310 & P-52-110 (28mm Panel)

There are 4 thermal break options to accommodate glazing infill's from 4mm to 50mm in width.

The U_{frame} values are calculated in line with EN10077:2 and U_{cw} figures are calculated in line with EN13947, the U_{frame} values are shown as follows:

Fig. 1.1 Typical U_{frame} values standard mullion box size (P-52-310)



Kratos Uf Values

Fig 1.2 U_f Values - L3 Mullion (U_{zone} Frame C)

Panel Width	P-52-300	P-52-305	P-52-310	P-52-315	P-52-320	P-52-325	P-52-330	P-52-335	P-52-340	P-52-345	P-52-350
28	1.297	1.304	1.309	1.314	1.318	1.321	1.323	1.327	1.329	1.331	1.334
32	1.206	1.213	1.218	1.224	1.228	1.232	1.234	1.239	1.241	1.243	1.243
38	1.069	1.075	1.079	1.084	1.088	1.091	1.093	1.096	1.098	1.099	1.102
44	0.942	0.946	0.95	0.954	0.956	0.958	0.96	0.963	0.977	0.966	0.967
50	0.859	0.863	0.866	0.869	0.871	0.873	0.869	0.877	0.889	0.879	0.88

Fig 1.3 U_f Values - L3 Half Mullion (U_{zone} Frame A & B)

Panel Width	P-52-300	P-52-305	P-52-310	P-52-315	P-52-320	P-52-325	P-52-330	P-52-335	P-52-340	P-52-345	P-52-350
28 *	2.266	2.293	2.318	2.342	2.355	2.373	2.385	2.405	2.416	2.426	2.437
32 *	2.235	2.266	2.292	2.32	2.336	2.354	2.367	2.384	2.401	2.411	2.411
38 *	2.034	2.06	2.081	2.105	2.118	2.133	2.144	2.157	2.172	2.174	2.198
44 *	1.817	1.838	1.854	1.872	1.883	1.893	1.902	1.913	1.982	1.934	1.936
50 *	1.702	1.721	1.734	1.752	1.76	1.771	1.748	1.788	1.845	1.802	1.808

Fig 1.4 U_f Values - L1 Mullion/Transom (U_{zone} Frame C)

Panel Width	P-52-100	P-52-105	P-52-110	P-52-115	P-52-120	P-52-125	P-52-130	P-52-135
28	1.257	1.257	1.262	1.265	1.269	1.269	1.275	1.277
32	1.165	1.170	1.172	1.176	1.180	1.180	1.187	1.189
38	1.033	1.039	1.043	1.046	1.050	1.052	1.056	1.057
44	0.914	0.919	0.921	0.925	0.926	0.927	0.930	0.932
50	0.832	0.839	0.841	0.841	0.843	0.849	0.850	0.848

Fig 1.5 U_f Values - L1 Half Mullion/Transom (U_{zone} Frame A & B)

Panel Width	P-52-100	P-52-105	P-52-110	P-52-115	P-52-120	P-52-125	P-52-130	P-52-135
28*	2.106	2.037	2.066	2.075	2.095	2.089	2.111	2.119
32*	1.998	2.017	2.042	2.053	2.068	2.069	2.097	2.106
38*	1.829	1.862	1.878	1.886	1.904	1.915	1.924	1.931
44*	1.658	1.675	1.688	1.694	1.710	1.713	1.722	1.734
50*	1.548	1.637	1.592	1.585	1.594	1.621	1.621	1.614

Fig 1.6 U_f Values - L2 Transom (U_{zone} Frame C)

Panel Width	P-52-200	P-52-205	P-52-210	P-52-215	P-52-220	P-52-225	P-52-230	P-52-235
28	1.275	1.278	1.285	1.29	1.274	1.297	1.298	1.3
32	1.21	1.187	1.192	1.2	1.205	1.202	1.209	1.208
38	1.05	1.06	1.058	1.064	1.072	1.088	1.075	1.073
44	0.929	0.934	0.936	0.938	0.957	0.942	0.948	0.947
50	0.847	0.851	0.857	0.859	0.86	0.86	0.862	0.864

Fig 1.7 U_f Values - L2 Half Transom (U_{zone} Frame A & B)

Panel Width	P-52-200	P-52-205	P-52-210	P-52-215	P-52-220	P-52-225	P-52-230	P-52-235
28*	2.168	2.17	2.203	2.238	2.128	2.255	2.278	2.272
32*	2.244	2.133	2.154	2.189	2.217	2.213	2.232	2.24
38*	1.942	1.973	1.95	2.003	2.031	2.093	2.039	2.045
44*	1.764	1.777	1.778	1.78	1.887	1.802	1.842	1.831
50*	1.646	1.657	1.683	1.691	1.7	1.702	1.715	1.716

The U_{frame} values stated in the tables previously (Fig 1.2 - 1.7) can be used to calculate U_{zone} figures, as stated in method 1 of the CWCT document for 'The thermal assessment of window assemblies, curtain walling and non-traditional building envelopes'. See example calculation method below.

E.g. calculation based upon CWCT standard zone as shown in their CWCT Standard.

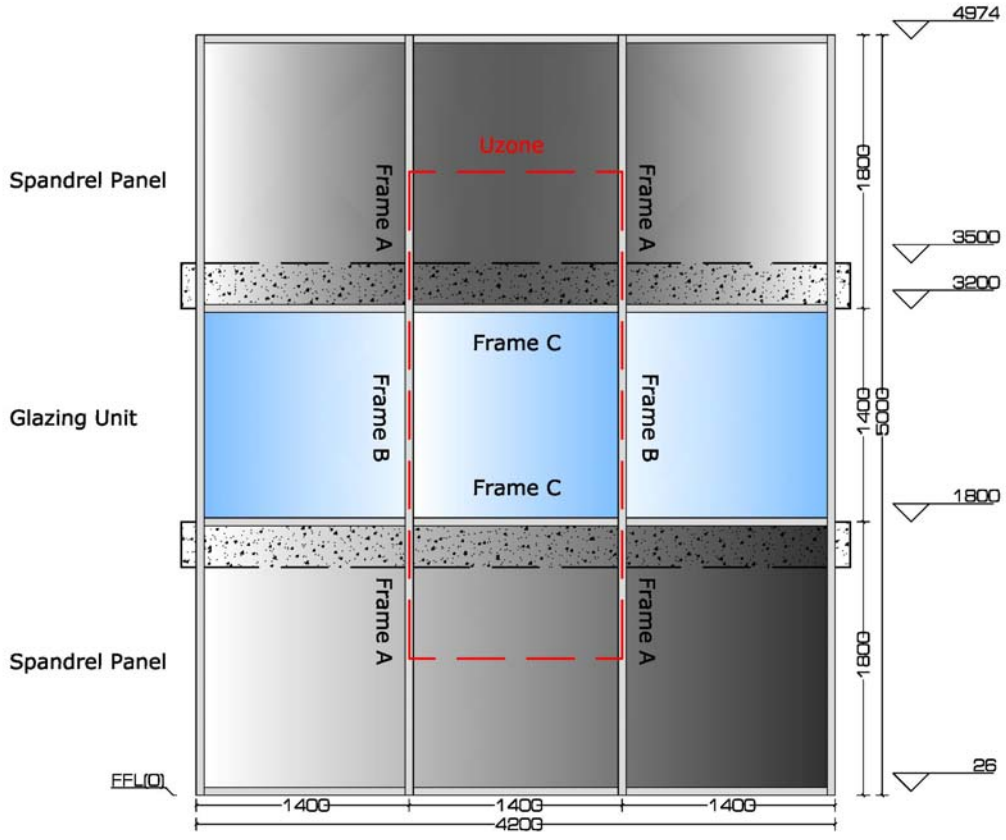
This is an approximate method and is only used at the early design stage to give an indicative U-value of a building element (Ref: prEN 13947).

Example - Method 1 U_{zone}

The zone of calculation can be any extent of curtain wall but for the purposes of this example we have base the calculation on the CWCT standard zone as shown in their Standard ref: ???.

Calculation of this u-value allows simple comparison between different curtain wall designs or systems.

Fig 1.8 Typical Curtain Wall U_{zone}



See U_{zone} Formula below:

$$U_{zone} = ?AU + ?P\Psi / ?A$$

Where:

?AU is the sum of the total area covered by the Glass / Spandrel / Frame A / Frame B / Frame C, multiplied by each elements U-value (W/m²K).

?PΨ is the sum of the total perimeter of Frame A / Frame B / Frame C, multiplied by each elements Psi (Ψ) value (W/K).

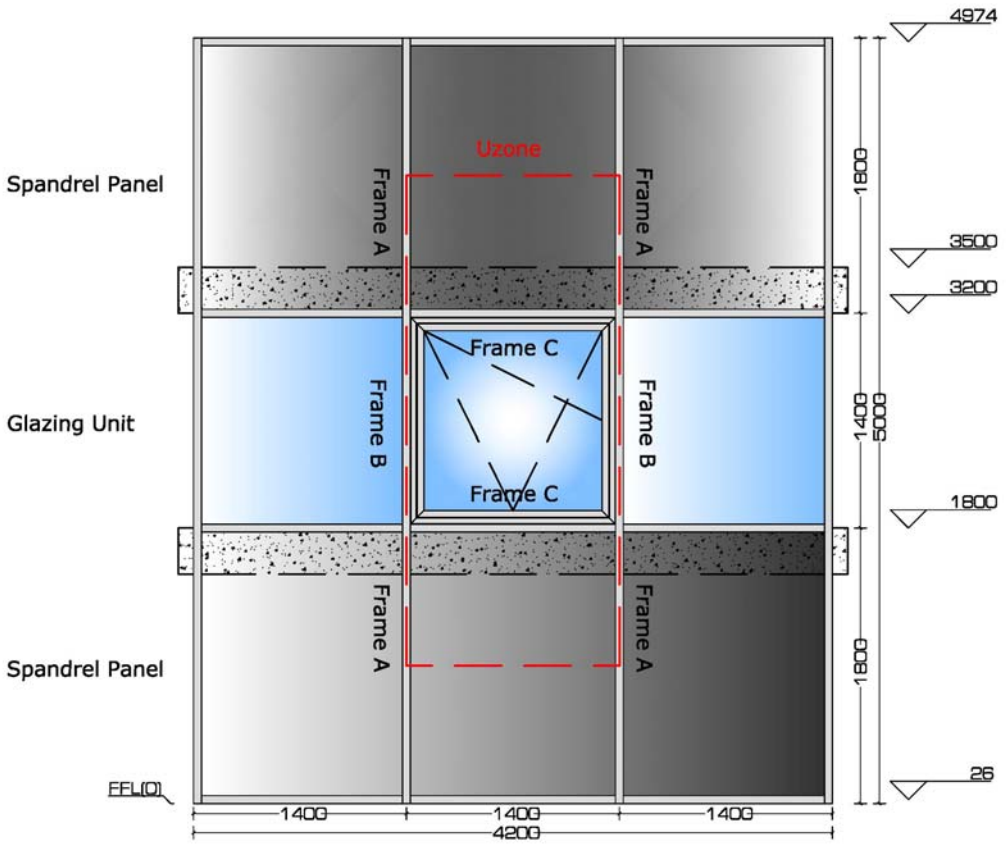
?A is the sum of the total area covered by the Glass / Spandrel / Frame A / Frame B / Frame C.

	m	m	m2	m2	W/m2K	W/K	W/M2k	m	W/K
Glass	1.376	1.376	1.893	1.893	1.500	2.840			
Spandrel	0.888	1.376	1.222	2.444	0.350	0.855			
Frame A	0.900	0.026	0.023	0.187	1.685	0.315	0.140	3.496	0.489
Frame B	1.400	0.026	0.036	0.073	1.685	0.123	0.140	2.696	0.377
Frame C	1.348	0.052	0.070	0.140	1.170	0.164	0.140	5.392	0.755
Total			?A 4.737		?AU 4.298			?P? 1.622	

Uzone = ?AU + ?P?/?A	=	1.249

The thermal performance of this zone is very low with a U_{zone} figure of 1.3W/m²K using a 1.5 CP unit and a aluminium spacer bar.

Fig 1.9 Addition of an opening Light



If the glazed opening in the example above is replaced by an opening light with a U-value of 1.6 W/m^{2}K, then the U-value of the zone is calculated as follows:

Element	Height m	Width m	Area m2	Total Area m2	U-value W/m2K	A x U W/K	Psi W/M2k	Perimeter m	P x Psi W/K
O/L	1.376	1.376	1.893	1.893	1.800	3.408			
Spandrel	0.888	1.376	1.222	2.444	0.350	0.855			
Frame A	0.900	0.026	0.023	0.187	1.685	0.315	0.140	3.496	0.489
Frame B	1.400	0.026	0.036	0.073	1.685	0.123	0.140	2.696	0.377
Frame C	1.348	0.052	0.070	0.140	1.170	0.164	0.140	5.392	0.755
Total			?A 4.737		?AU 4.866			?P? 1.622	

Uzone = ?AU + ?P?/?A	=	1.369

Where O/L is the opening light within the U_{zone}.

The thermal performance of this zone has now changed with a U_{zone} figure of 1.4W/m^{2}K.

Estimating U-Values

Figures 2.0 - 2.5 show the U-values with different glazed fractions and with glazing of different U-values, see below.

It is initially assumed that the glazing zone is glazed with all-fixed-lights (glazing units installed into the glazing rebate of the mullions and transoms). The dominant factors affecting the overall U-value of the wall are the fraction of glazing and the mullion spacing.

NB: The U-value of the curtain wall can be reduced by replacing some of the fixed lights with insulated panels.

The following tables show the U_{cw} based upon a our standard range of 100mm mullion / transom profiles.

Detailed U_{cw} simulations can be carried out using our estimation / production software Logikal. These tables are purely used as an estimation tool at the preliminary design stage.

Fig 2.0 Estimating U-value - Mullion Spacing 1000mm

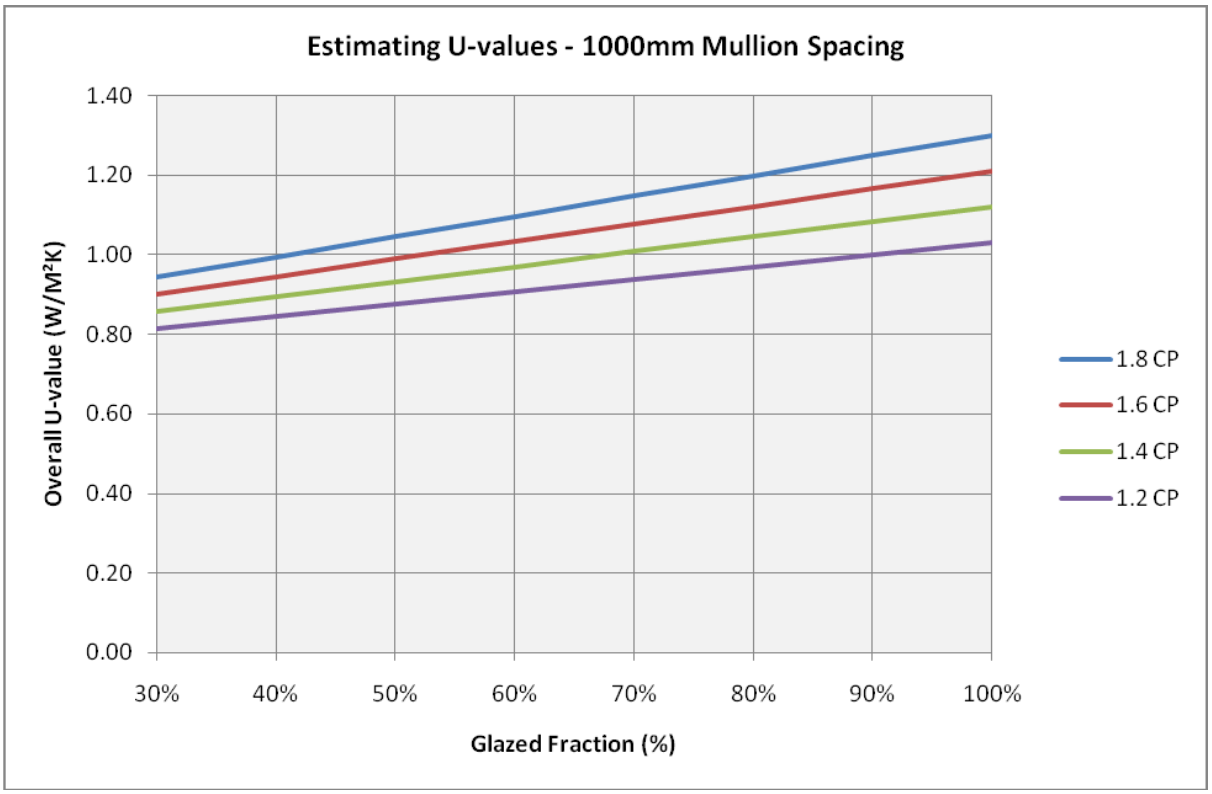


Fig 2.1 Estimating U-value - Mullion Spacing 1250mm

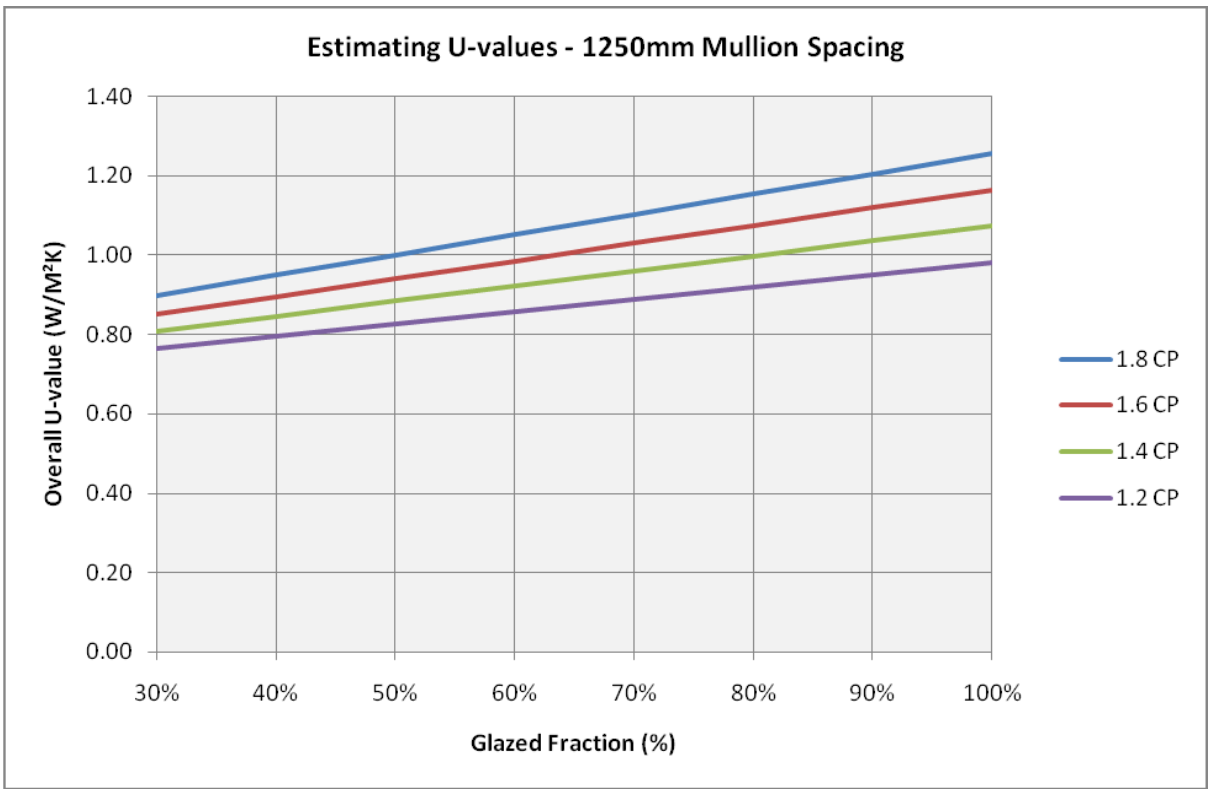


Fig 2.2 Estimating U-value - Mullion Spacing 1500mm

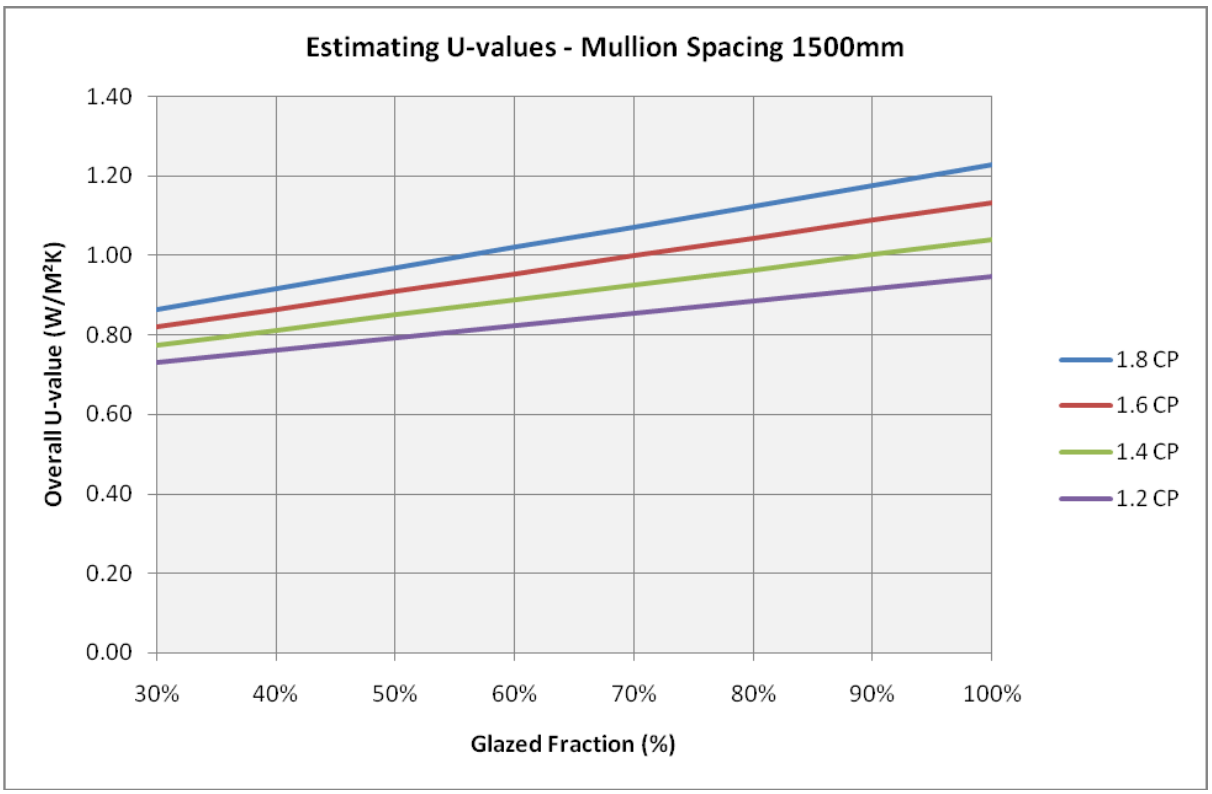


Fig 2.3 Estimating U-value - Mullion Spacing 2000mm

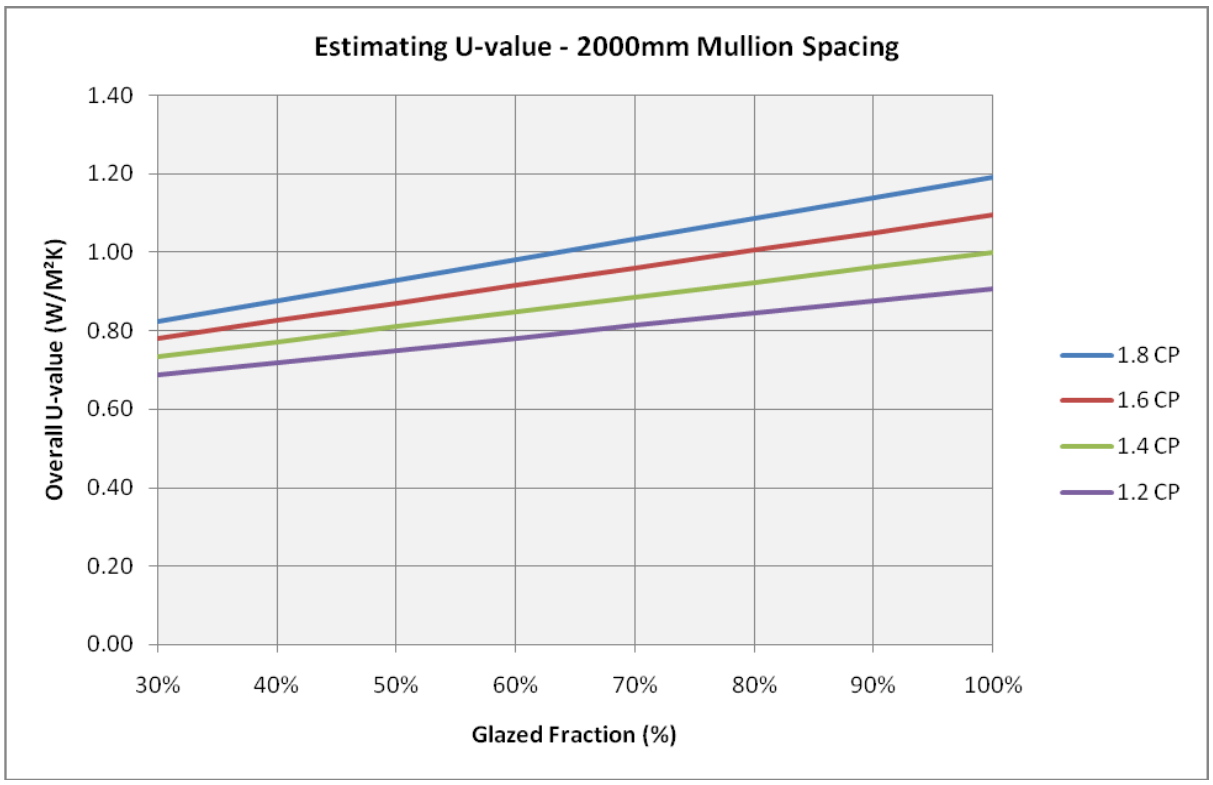


Fig 2.4 Estimating U-value - Mullion Spacing 2500mm

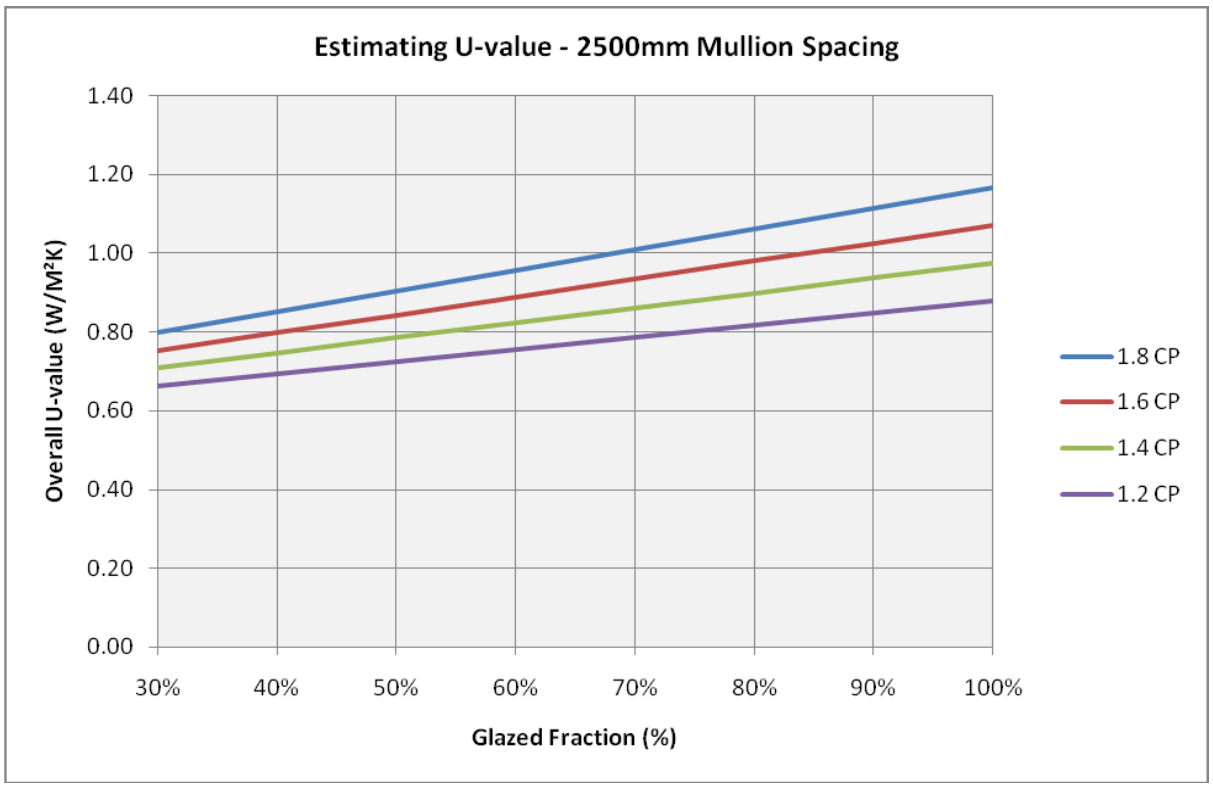
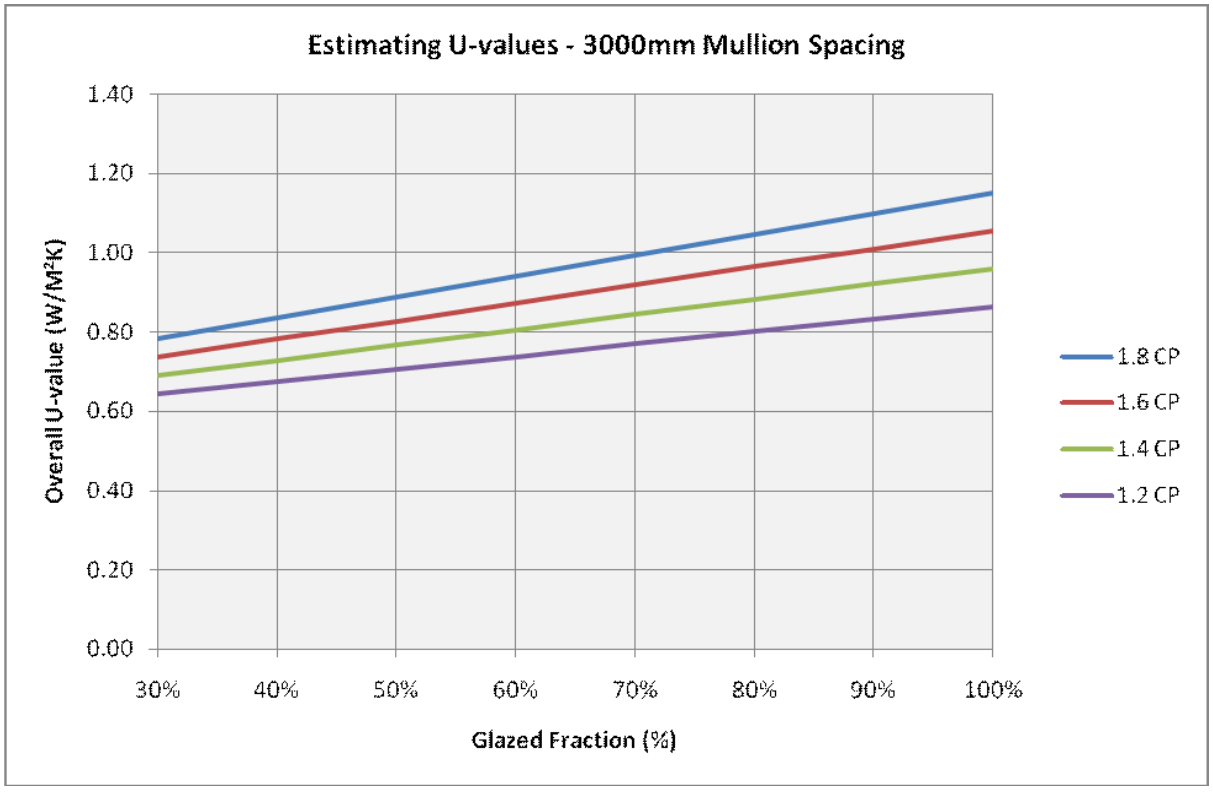


Fig 2.5 Estimating U-value - Mullion Spacing 3000mm



Nederlands

Gordijngevel Kratos P52

Blyweert Aluminium produceert een grote waaier aluminium extrusies voor gordijngevel, ramen, deuren, schuifdeuren en veranda's

Toepassing

De Blyweert Aluminium gordijngevel is een systeem gecreerd voor diverse bouwtypes, van residentieel tot commercieel, voor hoge en lage gebouwen, nieuwe projcten en verbouwingen.

De Kratos gordijngevel is bestand tegen weeromstandigheden door afwatering en ontluchting via de glassponning. Afwatering en ontluchting worden bekomen door de vertikale stijl en via elke horizontale regel.

Het systeem heeft een profielbreedte van 52mm en is beschikbaar met verschillende profieldieptes. De regels en stijlen worden gecombineerd met vier thermische isolators en een aantal afdekprofielen met afzonderlijke uitzichten, met uitstekende prestaties en gemakkelijk te installeren voor elk project.

De Kratos is compatible met de meeste Blyweert Aluminium systemen.

Product kenmerken

- De dichtingsrubbers zijn vervaardigd uit EPDM.
- Verborgen afwatering gebreurt via de stijlen.
- Elk paneel heeft zijn eigen ontwatering.
- Glas en panelen kunnen een dikte hebben van 6mm tot 50mm.
- Getest en goedgekeurd door en in overeenstemming met CWCT.
- Uitgebreide reeks van stijlen, regels en afdekprofiel met een zichtbreedte van 52mm.
- Hoge isolatiewaarde voor betere thermische prestatie.
- Vier soorten thermische onderbrekingen.
- Vereenvoudigd verborgen ontluchtingssysteem.
- Verbinding tussen stijlen en regels kunnen op verschillende manieren geassembleerd worden.

Bewerking

De gordijngevel heeft een systeem met uitfrezingen om een stevige verbinding tussen stijlen en regels te garanderen. Het systeem wordt uitgevoerd in rasterverband met gebruik van EPDM tussen de horizontale en verticale rubbers. Het is geschikt voor verschillende constructietechnieken van de traditionele vaste verbindings-blok tot de pen-blok verbinding voor een snellere plaatsing op de werf. Het systeem is ontworpen met drie niveau's van afwatering om aan de architecturale eisen te voldoen. Afwatering tussen niveau 1 regel en nveau 3 stijl is de meest voorkomende, maar voor technische redenen is er soms een derde niveau van afwatering nodig. Een voorbeeld: bij een dubbele deur is het nodig om een stijl te plaatsen om het grote gewicht van glas op te vangen. Door dit derde niveau van afwatering bekomt men een betere betrouwbaarheid.

Stijl afwatering

De Kratos gordijngevel wordt afgewaterd en ontlucht door de stijlen via uitfrezingen aan de bovenkant en onderkant van de gevel net boven de stijl. De regels worden uitgefreesd en overlappen de stijlen zodat een rubber de stijlen en regels overlapt. Het systeem is ontworpen met een ruimte tussen de isolator en klemprofiel om ervoor te zorgen dat er geen afwatering via de regels binnen kan komen.

Zone afwatering

De gordijngevel is zone afwaterend met afwatering- en ontluchtinggaten in de horizontale klemprofielen. De regels worden uitgefreesd en overlappen de stijlen zodat een rubber de stijlen en regels overlapt. Hierdoor kan de afwatering niet in een andere zone komen.

Normen

NBN EN 12020 - Gextrudeerde aluminium profielen 6060/6063 T6
Qualanod - Normalisatie voor anodisatie
Qualicoat - Normalisatie voor poedercoating
ISO 9001:2000 - Kwaliteit management systeem
CWCT Standaard en test methode voor gordijngevels
NBN EN 13830:2003 Gordijngevel standaard product
NBN EN 12152:2002 Gordijngevel - Luchtdoorlatendheid - Prestatie-eisen en classificaties
NBN EN 12153:2000 Gordijngevel - Luchtdoorlatendheid - Test methode
NBN EN 12154:2000 Gordijngevel - Waterdichtheid - Prestatie-eisen en classificaties
NBN EN 12155:2000 Gordijngevel - Waterdichtheid - Laboratoria test onder druk
NBN EN 13116:2001 Gordijngevel - Weerstand tegen windbelasting - Prestatie-eisen
NBN EN 12179:2000 Gordijngevel - Weerstand tegen windbelasting - Test methode

Prestatie

Het systeem is ontworpen om aan de eisen van het CWCT/EN13830 standaard voor systeemleveranciers te voldoen. De gordijngevel, gefabriceerd en beglaasd met de Blyweert Aluminium eisen is getest en goedgekeurd door en in overeenstemming met CWCT standaard.

- luchtdoorlatendheid EN12152 = 600Pa Class A4
- Waterinfiltratie (Statische en dynamische) voor gevel met raam EN12154 = 600Pa Class R7
- Waterinfiltratie (Statische en dynamische) voor gevel met raam EN12154 = 1050Pa Class RE_{1050}
- Windbestendigheid (Bruikbaarheid) EN13116 = 2400Pa
- Windbestendigheid (Veiligheidstest) EN13116 = 3600Pa

Het systeem is ook gecertificeerd door de BRE's LPCB Standard LPS1175:SR1 voor veiligheid en is de eerste gordijngevel systeem die dit bemachtigde. Het systeem is compatibel met Secured By Design eisen.

Het systeem heeft een hoge isolatieoplossing die de thermische waarden van de gevel verbeterd.
De gordijngevel is ontworpen aan de bouwregelingen en heeft het hoogste niveau van de BREEAM en andere milieu-prestaties.

Afwerking

Meer dan 130 standaard en 31 metallic Blyweert Aluminium poeder-lakkleuren zijn beschikbaar. Eveneens een gamma standaard en metallic anodisatiekleuren. Kleurenstalen zijn beschikbaar via de marketing afdeling. De coatings worden bedekt met een standaard garantie van 15 jaar.

Beglazing

In de Kratos kan beglazing of panelen gebruikt worden met een dikte van 6mm tot 50mm.
Glasrubbers zijn vervaardigd uit EPDM rubbers. Voor meer detail, raadpleeg de Blyweert cataloog.

Fabricatie en installatie

Al de Blyweert Aluminium producten worden gefabriceerd en geinstalleerd door b-professionals.
Het Blyweert Aluminium training center biedt productkennis en installatie training.

Contacteer www.blyweertaluminium.com voor b-professionals in uw regio.

Afmetingen en beperkingen

De profielen zijn leverbaar in grote afmetingen om te voldoen aan windbelasting en dode last. Al de stijlen en regels moeten berekend worden op de eigen belasting (dode last) en externe belasting (windbelasting, ...)
Meer relevante informatie vind u in de volgende pagina's.

Sterkteberekening

We focussen ons op de grootste belastingen die invloed hebben op de gordijngevel.

- Eigen belasting
- Externe belasting

Eigen belasting

Het gebouw moet bestand zijn tegen zijn eigen belasting, hierbij hoort ook zonnewering, signalisatie, …. Al hetgene wat bij de constructie hoort.
De gordijngevel moet veilig geplaatst worden aan het gebouw met de correcte steunpunten die voor dit doel zijn ontworpen. De verstevigingen moeten worden bevestigd in samenspraak met een gekwalificeerde constructeur.

Externe belasting

Externe belasting zoals wind, sneeuw, persoonlijke belasting moet zorgvuldig worden berekend om de stevigheid van de gordijngevel te garanderen.
Berekening van externe belasting moet uitgevoerd worden door een gekwalificeerd persoon.

Algemene doorbuigingen van de gevelstructuur

De sterktewaarden van elke stijl en regelprofiel kan je terugvinden in deze cataloog.

De maximaal toelaatbare doorbuiging kan je terugvinden in onderstaande tabel.

Lengte:	Toelaatbare doorbuiging:	Normen:
Hoogte ?3000mm	??Hoogte / 200	EN13830
> 3000mm Hoogte < 7500mm	??Hoogte / 300 + 5	EN13830
?7500mm Hoogte	??Hoogte / 250	BS8118-1

Plaatselijke doorbuigingen

Gevelstructuur met enkele beglazing

Maximale doorbuiging voor de gevelstructuur met enkele beglazing:

- Bij vier kanten bevestiging = 1 / 125 van de lengte, gemeten langs de paneelrand.
- Bij twee kanten bevestiging = 1000 / 180 van het kwadraat van de overbrugging tussen de stijlen. Waarbij doorbuiging wordt weergegeven in millimeter en overbrugging in meter.

Gevelstructuur met dubbele beglazing

Maximale doorbuiging voor de gevelstructuur met dubbele beglazing:

- Bij vier kanten bevestiging = 1 / 175 van de lengte, gemeten langs de gevelrand.
- Bij twee kanten bevestiging = 1000 / 540 van het kwadraat van de overbrugging tussen de stijlen. Waarbij doorbuiging wordt weergegeven in millimeter en overbrugging in meter.

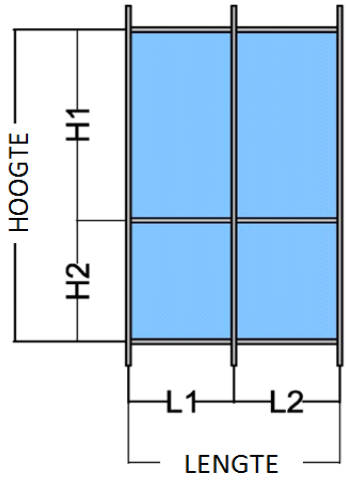
Berekening van traagheidsmomenten van de profielen

Berekening voor de Ixx-waarden van de stijlen en regels vind u terug op de volgende bladzijden.

Voorbeeld enkele overbrugging berekening

$$I_{xx} = \frac{\left(\frac{5\ x\ (H\ x\ L\ x\ P) x\ H^3}{384\ \text{x}\ 70000\ \text{x}\ \text{D}}\right)}{10^{10}}$$

H = Hoogte van de stijl
L = Lengte van de regel
P = Windbelasting
D= Doorbuiging gebasseerd op de stijlhoogte



Hieronder vindt u een voorbeeld voor de berekening om de juiste regel te bekomen voor elk individueel project. Volgende gegevens worden voor het voorbeeld gebruikt:

- Hoogte (H) = 3600mm
- Lengte (L1) = 1000mm
- Windbelasting (P) = 1200Pa
- Doorbuiging (D) = (3600 / 300 + 5) = 17mm

Werkvoorbeeld 1 :

$$I_{xx} = \frac{\left(\frac{5\ x\ (3600\ x\ 1000\ x\ 1200) x\ 3600^3}{384\ \text{x}\ 70000\ \text{x}\ 17}\right)}{10^{10}}$$

Ixx = 220.54cm^4

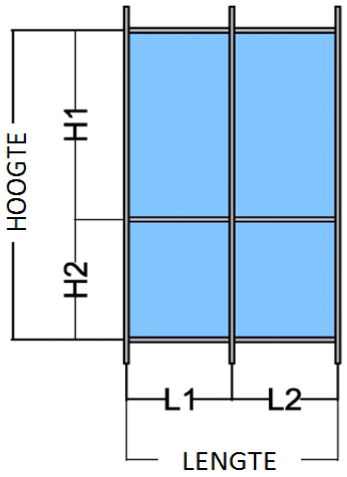
Bij deze situatie moet de stijl P-52-320 met I_{xx} 233.91 cm^4 worden gebruikt.

Hetzelfde principe wordt gebruikt om de I_{xx} van de stijlen uit te rekenen.

Voorbeeld regel overbrugging berekening voor plaatselijke doorbuiging

$$I_{xx} = \frac{\left(\frac{5\ x\ (H\ x\ L\ x\ P) x\ H^3}{384\ \text{x}\ 70000\ \text{x}\ \text{D}}\right)}{10^{10}}$$

H = Hoogte van de stijl
L = Lengte van de regel
P = Windbelasting
D= Doorbuiging gebasseerd op de stijlhoogte



Hieronder vindt u een voorbeeld voor de berekening om de juiste regel te bekomen voor elk individueel project rekening houdend met dubbele belazing.
Volgende gegevens worden voor het voorbeeld gebruikt:

- Hoogte (H1) = 2400mm
- Lengte (L1) = 1000mm
- Windbelasting (P) = 1200Pa
- Doorbuiging (D) = (1000 / 175) = 17mm

Werkvoorbeeld 2:

$$I_{xx} = \frac{\left(\frac{5\ x\ (3000\ x\ 1000\ x\ 1200) x\ 1000^3}{384\ \text{x}\ 70000\ \text{x}\ 5.7}\right)}{10^{10}}$$

Ixx = 11.84cm^4

Bij deze situatie moet de regel P-52-100 met I_{xx} 25.83cm^4 worden gebruikt.

FRANCAIS

Mur-rideau Kratos P52

Blyweert Aluminium propose une large gamme de systèmes de menuiseries aluminium pour la fabrication de murs-rideaux, de fenêtres, de portes, de coulissants et de vérandas.

Champ d'application

Le système de mur-rideau Kratos de Blyweert aluminium est conçu pour être installer sur une grande variété de bâtiments : résidentiel ou commercial, de grande hauteur ou sur un seul niveau, en construction neuve ou en rénovation.

Le système de mur rideau Kratos est conçu sur le principe d'une grille, épines filantes et traverses pénétrantes. Le drainage et la ventilation des feuillures de vitrage sont réalisés soit en cascade avec le drainage par les épines entre serreur et capots ou directement sur chaque traverse à travers le serreur et le capot.

Le système est conçu avec une largeur de profil de 52mm, il est disponible dans une grande variété de profondeur d'épines et de traverses qui peuvent être combinées avec quatre profils isolateurs thermiques et de nombreux profils de capotage, cela permet : une grande flexibilité dans la conception, des performances remarquables et une facilité d'installation en fonction des exigences spécifiques de chaque projet.

Le système est entièrement compatible avec la gamme des systèmes Blyweert Aluminium.

Caractéristiques du produit

- L'assemblage épine/traverse est réalisé à sec avec des joints extrudés et des pièces moulées en EPDM.
- Drainage et ventilation invisibles réalisés en cascade avec évacuation entre serreurs et capots au droit des épines.
- Drainage et ventilation masqués sur la traverse basse de chaque volume de remplissage avec évacuation à travers serreur et capot.
- Remplissage de 6 à 50mm d'épaisseur.
- Quatre niveaux de profils isolateurs thermiques assurant une isolation thermique adaptée très performante.
- L'assemblage des traverses percutantes sur les épines est assuré soit par vis seules, soit par vis et connecteurs anti-devers à ressorts, soit par vis et attaches traverses pleine chambre.
- Dans le cas de traverses inclinées l'assemblage des traverses percutantes sur les épines est assuré par vis et attaches traverses à angles variables.

Ce système offrent une grande flexibilité de conception grâce à une large gamme d'épines et de traverses de 25cm4 à 2520cm4 d'inertie qui peuvent être renforcées soit par des profilés d'éclisse en aluminium soit par des profilés ou des pliages en acier.

Construction

Le système de mur-rideau KRATOS est conçu avec des traverses pénétrantes pour assurer à la connexion entre épines et traverses un meilleur niveau de stabilité structurelle. La grille de mur-rideau est construite en utilisant des pièces en EPDM intercalées entre les profilés verticaux et horizontaux assurant ainsi un joint de dilatation à chaque jonction.

Il est conçu avec diverses techniques d'assemblage mais toujours avec des traverses pénétrantes vissées de face qui peuvent le cas échéant être associées soit avec des blocs anti devers à ressort placés à l'arrière des traverses, soit à des blocs pleine chambre à 90 ou à angle variable. Les deux premiers systèmes permettent la construction d'échelles en atelier et donc une intervention plus rapide sur chantier, le système bloc pleine chambre quant à lui est un système dit à l'avancement nécessitant un assemblage complet sur site.

Le système est conçu avec trois niveaux de drainage afin de satisfaire aux exigences de la conception architecturale. Le drainage entre les niveaux 1 et 3 est le plus couramment utilisé mais il arrive qu'en raison de conceptions techniques particulières il soit nécessaire de recourir au niveau 2 afin de garder au système toutes ses performances. Un exemple des plus courants est l'intégration de portes deux vantaux avec donc la nécessité de placer une épine entre deux traverses au dessus de la porte afin de respecter l'esthétique générale. Ces trois niveaux de drainage permettent de conserver une grande fiabilité des performances du système.

Drainage et ventilation par les épines

Le mur rideau Kratos peut être drainé et ventilé en cascade au niveau des épines à travers des déflecteurs de drainage traversant les serreurs et déversant dans les capots, ils sont positionnés en haut, en partie courante et en bas de la façade, ils sont toujours situés au dessus des zones d'éclissage des épines.
Les traverses doivent être entaillées et viennent en appui sur la face avant de l'épine avec interposition d'une pièce en EPDM assurant l'étanchéité en partie intérieure. Le système est conçu de sorte que la jonction entre le nez de l'épine et le rupteur thermique (clipage, pincement et vissage) ne permette pas le passage de l'eau d'infiltration dans la cellule située en dessous et donc ne risque pas de stagner sur le joint de scellement supérieur du double vitrage, ces eaux d'infiltration sont ensuite évacuées aux extrémités de la traverse dans le déflecteur.

Drainage et ventilation par les traverses

Le mur rideau Kratos peut être drainé et ventilé pour chaque volume de remplissage à travers les serreurs et capots par des lumières, en façade pour le serreur et en face inférieure pour le capot de sorte de n'être pas visible en façade.
Les traverses doivent être entaillées et viennent en appui sur la face avant de l'épine avec interposition d'une pièce en EPDM assurant l'étanchéité en partie intérieure.
Le système est conçu de sorte que la jonction entre le nez de l'épine et le isolateur thermique (clipage, pincement et vissage) ne permette pas le passage de l'eau d'infiltration dans la cellule située en dessous, les extrémités de traverse reçoivent une pièce en EPDM moulée permettant d'assurer l'étanchéité, ces eaux d'infiltration sont ensuite évacuées à travers les lumières pratiquées dans le serreur et le capot.

Normes

NF EN 12020 - profilés en aluminium extrudé 6060/6063 T6
QUALANOD - Label pour les revêtements anodiques
QUALICOAT – Label pour les revêtements thermo laqués
NF EN 12365 - joints de vitrage extrudés en EPDM
ISO 9001:2000 - Système de management de la qualité
Standard CWCT et Méthode d'essai B pour les mûrs rideaux.
NF EN 13830:2003 Mur-rideau Produit standard
NF EN 12152:2002 façades rideaux - Perméabilité à l'air - Exigences de performance et
classement
NF EN 12153:2000 façades rideaux - Perméabilité à l'air - Méthode d'essai
NF EN 12154:2000 façades rideaux - Etanchéité à l'eau - Exigences de performance et
classement
NF EN 12155:2000 façades rideaux - Etanchéité à l'eau - Essai de laboratoire sous pression statique
NF EN 13116:2001 Mur-rideau - Résistance au vent - Exigences de performance
NF EN 12179:2000 Mur-rideau - Résistance au vent - Méthode d'essai

Performance

Le système est conçu pour dépasser les exigences rigoureuses de la norme CWCT pour les
enveloppes de bâtiment. Le système, fabriqué, installé et vitré selon les recommandations et procédures préconisées par Blyweert aluminium, est testé et certifié conformément à la norme CWCT en méthode B.

- Perméabilité de l'air suivant EN12152 = 600Pa classe A4
- Perméabilité à l'eau (statique et dynamique) pour un mur-rideau équipé de fenêtre suivant EN12154 = 600Pa Classe R7
- Perméabilité à l'eau (statique et dynamique) pour un mur-rideau sans fenêtre suivant EN12154 classe = 1050Pa RE1050
- Résistance au vent (utilisation courante) suivant EN13116 = 2400Pa
- Résistance au vent (tests de sécurité) suivant EN13116 = 3600Pa
- Le système a également reçu un certificat de LPS1175 du BRE norme LPCB: SR1 pour la sécurité et il est le premier système de mur-rideau à obtenir cette performance de sécurité.
- Le système offre une solution d'isolation élevée qui améliore la performance thermique de la façade. Le système est conçu pour répondre et même dépasser les normes et réglementations thermiques actuellement en vigueur avec des coefficients Uw répondants aux plus hautes exigences.

Finitions

Le mur-rideau KRATOS de Blyweert aluminium peut être livré en de nombreuses finitions, thermolaquage brillant, mate, satiné, grainé, texturé, il peut également être fourni en finition anodisé. Les revêtements sont couverts par des garanties standards de 15 ans (voir les autres catalogues pour spécifications particulières)

Vitrage

Le système KRATOS peut recevoir des vitrages et des panneaux de remplissage de 6mm à 50mm d'épaisseur. L'étanchéité est assurée avec des joints de vitrage à sec en EPDM.

Fabrication et installation

Tous les systèmes Blyweert aluminium sont fabriqués et installés par un réseau de professionnels accrédités par Blyweert aluminium, ce dernier leur assurant un soutien national au niveau local. Les centres de formations Blyweert aluminium offrent une formation spécifique concernant les produits, leur fabrication et leur installation. Pour les professionnels de votre région, contacter le département de vente de Blyweert aluminium.

Dimensions et Limitations

Les profils épines et traverses sont disponibles dans une large gamme de dimensions afin de répondre aux exigences de performance à la charge au vent et la charge propre. Tous les épines et traverses doivent être dimensionnées en fonction des charges et flexions maximales requises. Vous trouverez dans les pages suivantes les éléments vous permettant de calculer et déterminer les profils les mieux appropriés à chaque situation en fonction des charges au vent, des charges permanentes et des surcharges.
Les calculs en multi supports (trois et plus) sont applicables uniquement lorsqu'une seule longueur de meneau est utilisée avec un point de fixation intermédiaire. Ces informations sont détaillées dans les pages suivantes..

Les informations statiques

Cette page se penche sur tous les types de charges qui influencent la conception de la façade mur rideau, les principaux paramètres sont les suivants:

- Charge au vent
- Charge propre
- Charge directe

Charge au vent

La pression du vent prise en compte pour la conception de l'enveloppe du bâtiment doit être calculée conformément à la norme NF EN 1991-1-3 et NV 65. Une compréhension détaillée des pressions de vent prévues est fondamental pour la conception de l'enveloppe du bâtiment.
Le calcul de la pression du vent doit être entrepris avec l'aide d'un ingénieur de structure et il est également très important de tenir compte des effets de bords lorsque ceux-ci sont présents de part la conception du projet.

Charge propre

L'enveloppe du bâtiment doit être capable de supporter à la fois la charge propre du mur rideau et les charges provenant de dispositifs permanents comme la signalisation et la protection solaire.
Le mur-rideau doit transmettre en toute sécurité toutes les charges permanentes susceptibles d'être placés sur lui au gros œuvre du bâtiment via les points d'ancrage conçus à cette fin. Les pièces de liaison au gros œuvre devront être conçues en collaboration avec un ingénieur de structure.

Charges directes

L'enveloppe du bâtiment doit transmettre en toute sécurité toutes les charges agissant sur la structure primaire au travers des points prévus à cet effet. Des précautions doivent être prises pour satisfaire toutes les exigences et notamment concernant: les charges d'entretien, charges de nacelle, les charges d'occupation, les charges de neige et du vent sur des installations permanentes.

Déformation générale de la structure

Les informations statiques concernant chacune des épines et traverses sont détaillés dans la partie « profil échelle 1 » de ce manuel technique.
Les déformations en pression et dépression maximales, ne doivent pas dépasser les valeurs figurant dans le tableau ci-dessous.

Hauteur:	Déformation maximale:	Normes:
Hauteur ?3000mm	??Hauteur / 200	EN13830
> 3000mm Hauteur < 7500mm	??Hauteur / 300 + 5	EN13830
?7500mm Hauteur	??Hauteur / 250	BS8118-1

Déformation circonscrite

Les déformations circonscrites sont utilisées pour calculer les déformations d'éléments dans le mur rideau qui pourrait faire l'objet de dépassement des limites autorisées. Ces dernières sont mesurées sur un panneau unique de remplissage, vitrage ou autre composant. Ces limites de déformation, s'appliquent à tous les éléments d'ossature indépendamment de l'orientation.

Les éléments de structure avec simple vitrage

Les déformations en pression et dépression maximales, ne doivent pas dépasser les valeurs suivantes :

- En appui sur les quatre bords = 1/125 de la plus grande longueur du panneau
- En appui sur deux bords = 1000/180 du carré de leur portée entre les deux appuis où la flexion est mesurée en mm et la portée en mètres.

Éléments de structure avec double vitrage

Les déformations en pression et dépression maximales, ne doivent pas dépasser les valeurs suivantes :

- En appui sur les quatre bords 1/175 de la plus grande longueur du panneau ou 15 mm en prenant la plus faible des deux valeurs.
- En appui sur deux bords 1000/540 du carré de leur portée entre les deux appuis où la flexion est mesurée en mm et la portée en mètres ou 20 mm en prenant la plus faible des deux valeurs.

Calcul des valeurs d'inertie des profils

Section vous donnera un bref exemple de la méthode de calcul des exigences concernant l'inertie des éléments de la structure.

Pour déterminer le type d'épine ou de traverse la valeur Ixx doit être calculée pour les différents éléments de la façade. Le calcul doit être le suivant:

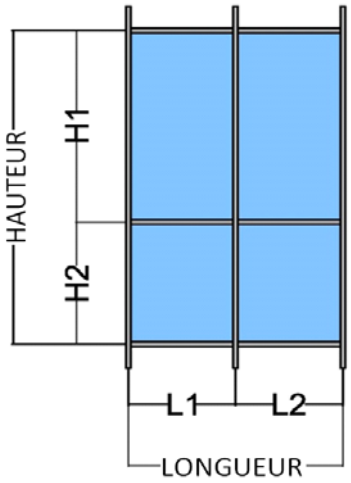
Calcul des valeurs d'inertie des profils

Cette page vous donnera un bref exemple de la méthode de calcul des exigences de l'inertie des éléments de la structure.

L'exigence de la valeur Ixx doit être calculée pour les différents éléments de la façade.
Exemple de calcul d'une épine sur deux appuis

$$I_{xx} = \frac{\left(\frac{5\ x\ (H\ x\ L\ x\ P) x\ H^3}{384\ \text{x}\ 70000\ \text{x}\ \text{D}}\right)}{10^{10}}$$

H = Dimension de l'épine entre deux appuis
L = Longueur de la traverse
P = Charge au vent
D= Flèche maximale basée sur
la dimension H de l'épine



Ce qui suit est un exemple de la façon de calculer l'inertie nécessaire donc de déterminer la bonne épine pour un projet spécifique.
Pour cet exemple les valeurs suivantes ont été choisies :

- Hauteur (H) = 3600mm
- Longueur (L1) = 1000mm
- Charge au vent (P) = 1200Pa
- Déformation maximale (D) = (3600 / 300 + 5) = 5,7mm

Exemple 1 :

$$I_{xx} = \frac{\left(\frac{5\ x\ (3600\ x\ 1000\ x\ 1200) x\ 3600^3}{384\ \text{x}\ 70000\ \text{x}\ 17}\right)}{10^{10}}$$

Ixx = 220.54cm^4

Par conséquent, l'épine P-52-320 d'une inertie de 233.91 cm4 serait nécessaire et suffisante pour ce projet.

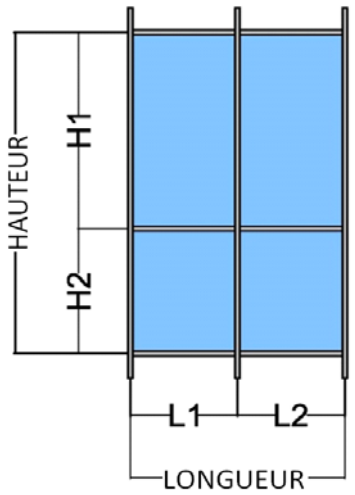
Exemple de calcul de déformation pour une traverse

Ce qui suit est un exemple de la façon de calculer l'inertie nécessaire donc de déterminer la bonne traverse pour un projet spécifique en double vitrage.
Pour cet exemple les valeurs suivantes ont été choisies :

- Hauteur (H) = 2400mm
- Longueur (L1) = 1000mm
- Charge au vent (P) = 1200Pa
- Déformation maximale (D) = (1000 / 175) = 17mm

$$I_{xx} = \frac{\left(\frac{5\ x\ (H\ x\ L\ x\ P) x\ H^3}{384\ \text{x}\ 70000\ \text{x}\ \text{D}}\right)}{10^{10}}$$

H = Dimension de l'épine entre deux appuis
L = Longueur de la traverse
P = Charge au vent
D= Flèche maximale basée sur
la dimension H de l'épine



- Charge au vent (P) = 1200Pa
- Déformation maximale (D) = (1000 / 175) = 17mm

Exemple 2 :

$$I_{xx} = \frac{\left(\frac{5\ x\ (3000\ x\ 1000\ x\ 1200) x\ 1000^3}{384\ \text{x}\ 70000\ \text{x}\ 5.7}\right)}{10^{10}}$$

Ixx = 11.84cm⁴

Par conséquent, la traverse P-52-100 d'une inertie de 25,83cm4 serait nécessaire et suffisante pour ce projet.

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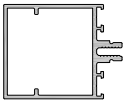
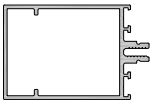
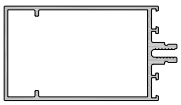
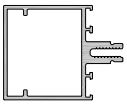
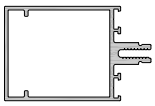
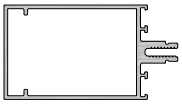
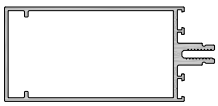
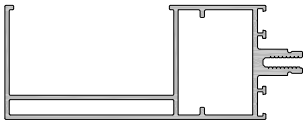
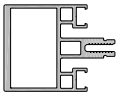
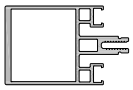
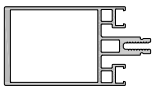
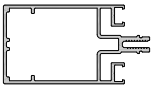
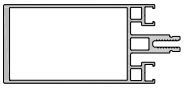
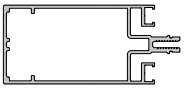
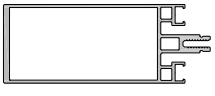
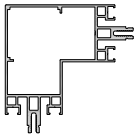
	P-52-100	7000	Ral Brut	309mm	-	p.75
	P-52-105	7000	Ral Brut	339mm	-	p.75
	P-52-110	7000	Ral Brut	369mm	-	p.76
	P-52-115	7000	Ral Brut	409mm	-	p.76
	P-52-120	7000	Ral Brut	448.9mm	-	p.77
	P-52-125	7000	Ral Brut	488.9mm	-	p.77
	P-52-130	7000	Ral Brut	528.9mm	-	p.78
	P-52-135	7000	Ral Brut	568.9mm	-	p.78
	P-52-200	7000	Ral Brut	324.8mm	-	p.79
	P-52-205	7000	Ral Brut	354.8mm	-	p.79
	P-52-210	7000	Ral Brut	384.8mm	-	p.80
	P-52-215	7000	Ral Brut	424.8mm	-	p.80

Kratos P52

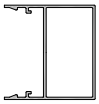
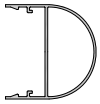
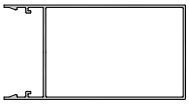
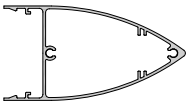
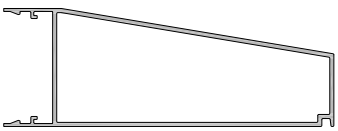
	P-52-220	7000	Ral Brut	464.8mm	-	p.81
	P-52-225	7000	Ral Brut	504.8mm	-	p.81
	P-52-230	7000	Ral Brut	544.8mm	-	p.82
	P-52-235	7000	Ral Brut	584.8mm	-	p.82
	P-52-280	7000	Ral Brut	553.0mm	-	p.83
	P-52-300	4000 7000	Ral Brut	389.8mm	-	p.84
	P-52-305	4000 7000	Ral Brut	419.8mm	-	p.84
	P-52-310	4000 7000	Ral Brut	449.8mm	-	p.85
	P-52-311	7000	Ral Brut	489.2mm	-	p.85
	P-52-315	4000 7000	Ral Brut	489.8mm	-	p.86
	P-52-316	7000	Ral Brut	489.8mm	-	p.86
	P-52-320	4000 7000	Ral Brut	529.8mm	-	p.87

Kratos P52

profielen ■ profils ■ profiles

	P-52-321	7000	Ral Brut	570mm	-	p.87
	P-52-325	4000 7000	Ral Brut	569.8mm	-	p.88
	P-52-326	7000	Ral Brut	610mm	-	p.88
	P-52-330	4000 7000	Ral Brut	609.8mm	-	p.89
	P-52-335	4000 7000	Ral Brut	649.8mm	-	p.89
	P-52-340	4000 7000	Ral Brut	689.8mm	-	p.90
	P-52-345	4000 7000	Ral Brut	749.8mm	-	p.90
	P-52-350	4000 7000	Ral Brut	809.8mm	-	p.91
	P-52-395	7000	Ral Brut	759.0mm	-	p.92
	P-52-400	7000	Ral Brut	164.6mm	-	p.93
	P-52-401	7000	Ral Brut	177.9mm	-	p.93

Kratos P52

	P-52-402	7000	Ral Brut	199.9mm	-	p.93
	P-52-403	7000	Ral Brut	219.9mm	-	p.93
	P-52-404	7000	Ral Brut	265.5mm	-	p.93
	P-52-405	7000	Ral Brut	244.1mm	-	p.94
	P-52-406	7000	Ral Brut	365.5mm	-	p.94
	P-52-407	7000	Ral Brut	324.9mm	-	p.94
	P-52-409	7000	Ral Brut	149.1mm	-	p.95
	P-52-410	7000	Ral Brut	198.9mm	-	p.95
	P-52-411	7000	Ral Brut	227.7mm	-	p.95
	P-52-480	7000	Ral Brut	441.1mm	-	p.96

Kratos P52

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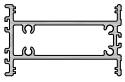
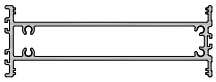
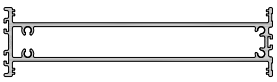
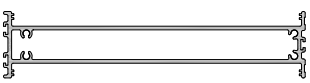
	P-52-481	7000	Ral Brut	456.5mm	-	p.96
	P-52-500	7000		261mm	-	p.97
	P-52-505	7000		291mm	-	p.97
	P-52-510	7000		321mm	-	p.98
	P-52-515	7000		361mm	-	p.98
	P-52-520	7000		401mm	-	p.99
	P-52-525	7000		441mm	-	p.99
	P-52-530	7000		481mm	-	p.100
	P-52-535	7000		513mm	-	p.100
	P-52-540	7000		550mm	-	p.101
	P-52-545	7000		609mm	-	p.101

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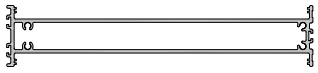
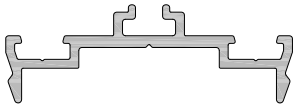
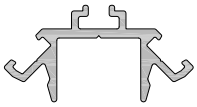
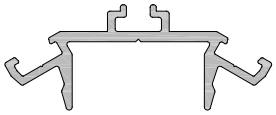
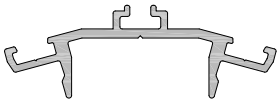
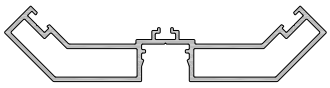
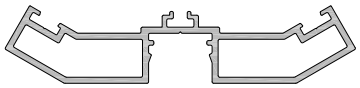
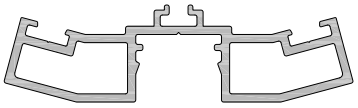
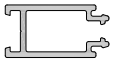
	P-52-550	7000		652mm	-	p.102
	P-52-6000P	7000		187.1mm	-	p.103
	P-52-602	7000		187.2mm	-	p.103
	P-52-603	7000		206mm	-	p.103
	P-52-604	7000		218mm	-	p.103
	P-52-605	7000	Ral Brut	422.8mm	-	p.104
	P-52-606	7000	Ral Brut	356.1mm	-	p.104
	P-52-607	7000	Ral Brut	294.5mm	-	p.104
	P-52-610	7000	Ral Brut	64.9mm	-	p.105
	P-52-615	7000	Ral Brut	105.7mm	-	p.105
	P-52-620	7000	Ral Brut	129.7mm	-	p.105
	P-52-625	7000	Ral Brut	153.7mm	-	p.105

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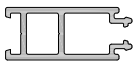
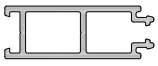
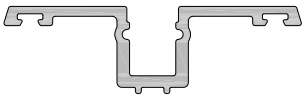
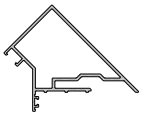
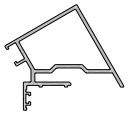
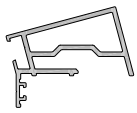
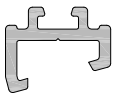
	P-52-630	7000	Ral Brut	157.7mm	-	p.105
	P-52-635	7000	Ral Brut	169.7mm	-	p.105
	P-52-640	7000	Ral Brut	193.7mm	-	p.105
	P-52-689	7000	Ral Brut	205.4mm	-	p.106
	P-52-690	7000	Ral Brut	393.4mm	-	p.107
	P-52-691	7000	Ral Brut	327.2mm	-	p.107
	P-52-692	7000	Ral Brut	275.5mm	-	p.107
	P-52-693	7000	Ral Brut	84mm	-	p.108
	P-52-694	7000	Ral Brut	77mm	-	p.108
	P-52-695	7000	Ral Brut	70.1mm	-	p.108
	P-00-500	6500	Ral Brut	86.7mm	-	p.108

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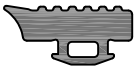
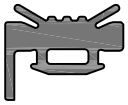
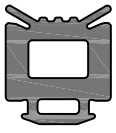
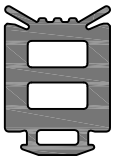
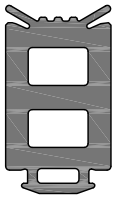
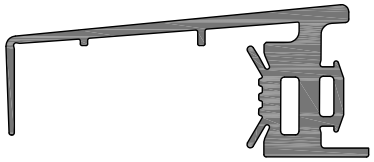
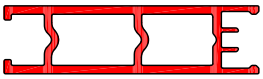
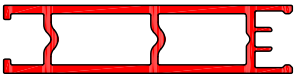
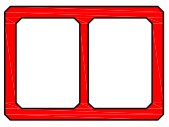
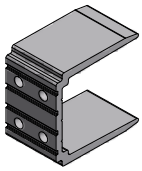
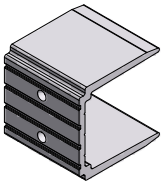
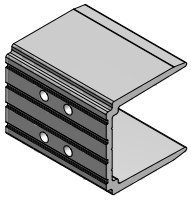
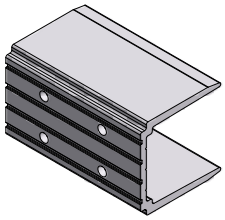
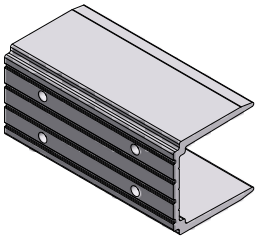
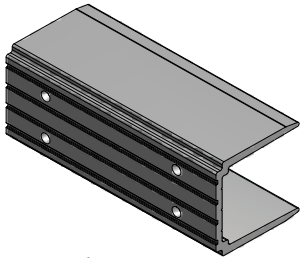
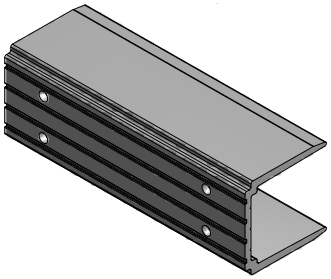
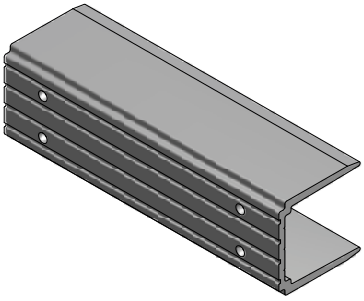
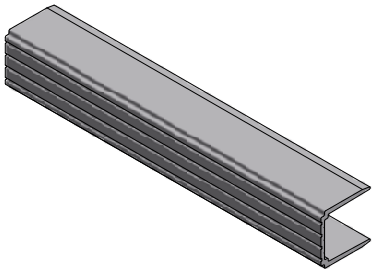
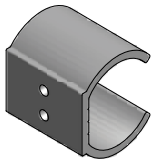
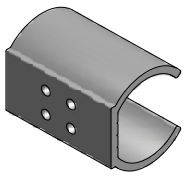
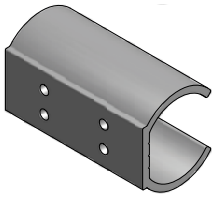
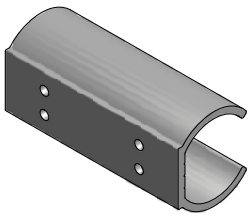
	A-GS-201 Pressure Plate Gasket Beglazingsrubber Joint de vitrage	100	●	P-52-6000P
	A-GS-202 4.5mm Transom Gasket 4.5mm Beglazingsrubber 4.5 mm Joint de vitrage	100	●	P-52-100 - P-52-135
	A-GS-203 6.5mm Transom Gasket 6.5mm Beglazingsrubber 6.5mm Joint de vitrage	100	●	P-52-100 - P-52-135
	A-GS-204 8.5mm Transom Gasket 8.5mm Beglazingsrubber 8.5mm Joint de vitrage	75	●	P-52-100 - P-52-135
	A-GS-208 11mm Mullion Gasket 11mm Beglazingsrubber 11mm Joint de vitrage	75	●	P-52-200 - P-52-235 P-52-300 - P-52-350
	A-GS-209 13mm Internal Gasket 13mm Beglazingsrubber 13mm Joint de vitrage	50	●	P-52-200 - P-52-235 P-52-300 - P-52-350

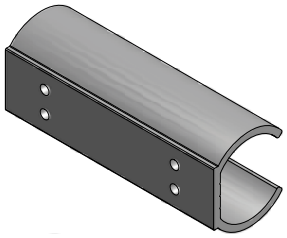
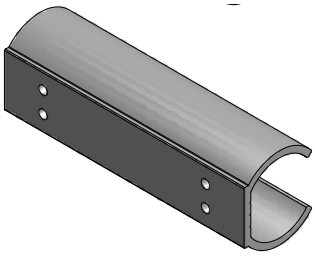
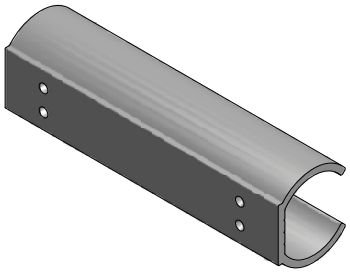
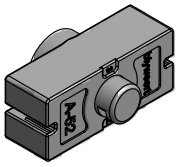
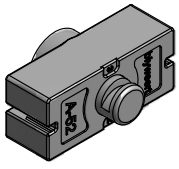
	A-GS-210 15mm Internal Gasket 15mm Beglazingsrubber 15mm Joint de vitrage	50	●	P-52-200 - P-52-235 P-52-300 - P-52-350
	A-GS-220 Level 3 Glazing Adaptor Gasket Beglazingsrubber Joint de vitrage	100	●	P-52-610-640 P-52-693-695
	A-GS-221 Level 1 & 2 Glazing Adaptor Gasket Beglazingsrubber Joint de vitrage	100	●	P-52-610-640 P-52-693-695
	A-GS-222 Faceted Pressure Plate Gasket Beglazingsrubber Joint de vitrage	100	●	P-52-300 - P-52-350
	* A-GS-230 20mm Mullion Gasket Beglazingsrubber Joint de vitrage * Non Stock Item	100	●	P-52-300 - P-52-350
	* A-GS-231 47mm Transom Gasket Beglazingsrubber Joint de vitrage * Non Stock Item	100	●	P-52-280 Transom

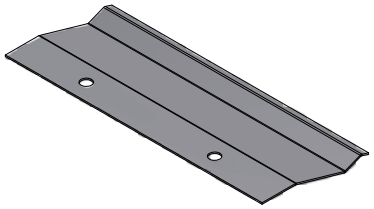
	P-52-659 24mm Isolator 24mm Isolator 24mm isolateur	4000		P-52-100-135 P-52-200-235 P-52-300-350
	P-52-660 28mm Isolator 28mm Isolator 28mm isolateur	7000		P-52-100-135 P-52-200-235 P-52-300-350
	P-52-665 32mm Isolator 32mm Isolator 32mm isolateur	7000		P-52-100-135 P-52-200-235 P-52-300-350
	P-52-670 38mm Isolator 38mm Isolator 38mm isolateur	7000		P-52-100-135 P-52-200-235 P-52-300-350
	P-52-675 44mm Isolator 44mm Isolator 44mm isolateur	7000		P-52-100-135 P-52-200-235 P-52-300-350

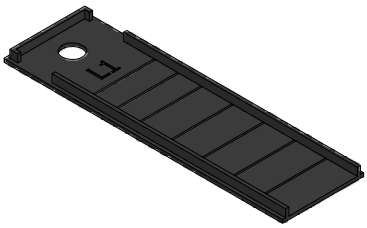
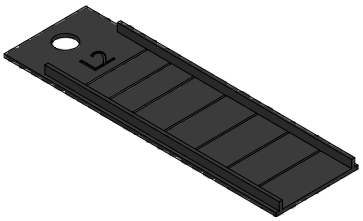
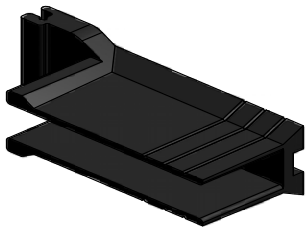
	P-52-680 28mm Glazing Infill Block 28mm infill blok 28mm remplissage bloc	5000		P-52-100-135 P-52-200-235 P-52-300-350
	A-52-100 30mm Shear Block 30mm T-verbinding 30mm Attache traverse	40		P-52-100 P-52-200
	A-52-101 45mm Shear Block 45mm T-verbinding 45mm Attache traverse	40		P-52-105 P-52-205
	A-52-102 60mm Shear Block 60mm T-verbinding 60mm Attache traverse	40		P-52-110 P-52-210
	A-52-103 80mm Shear Block 80mm T-verbinding 80mm Attache traverse	40		P-52-115 P-52-215

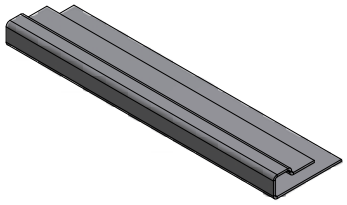
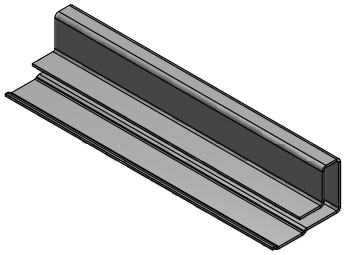
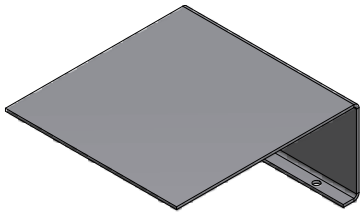
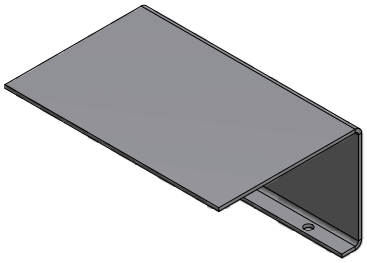
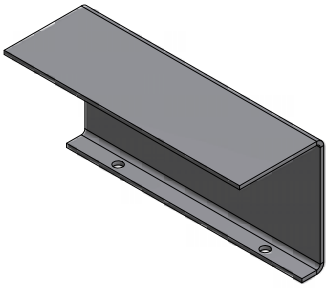
	A-52-104 100mm Shear Block 100mm T-verbinding 100mm Attache traverse	40		P-52-120 P-52-220
	A-52-105 120mm Shear Block 120mm T-verbinding 120mm Attache traverse	40		P-52-125 P-52-225
	A-52-106 140mm Shear Block 140mm T-verbinding 140mm Attache traverse	40		P-52-130 P-52-230
	A-52-107 160mm Shear Block 160mm T-verbinding 160mm Attache traverse	40		P-52-135 P-52-235
	A-52-108 Faceted Shear Block T-verbinding Attache traverse	2		P-52-100-135 P-52-300-350

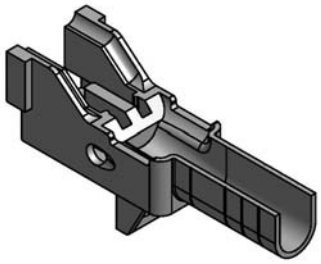
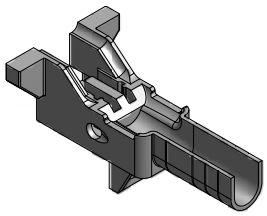
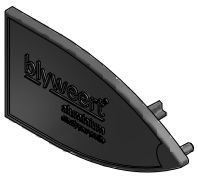
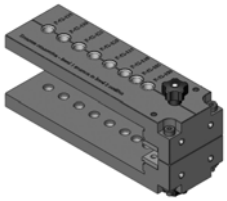
	A-52-120 30mm Variable Angle Shear Block 30mm Attache traverse à angle variable 30mm Variable angle shear block	40		P-52-100 P-52-200
	A-52-121 45mm Variable Angle Shear Block 45mm Attache traverse à angle variable 45mm Variable angle shear block	40		P-52-105 P-52-205
	A-52-122 60mm Variable Angle Shear Block 60mm Attache traverse à angle variable 60mm Variable angle shear block	40		P-52-110 P-52-210
	A-52-123 80mm Variable Angle Shear Block 80mm Attache traverse à angle variable 80mm Variable angle shear block	40		P-52-115 P-52-215
	A-52-124 100mm Variable Angle Shear Block 100mm Attache traverse à angle variable 100mm Variable angle shear block	40		P-52-120 P-52-220

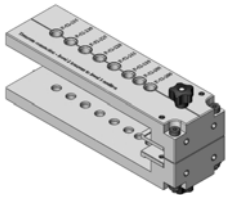
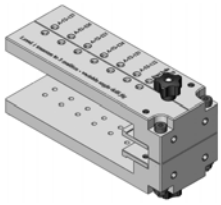
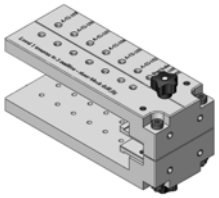
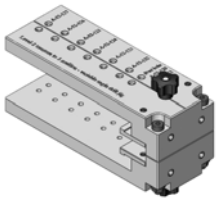
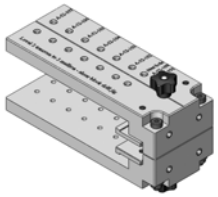
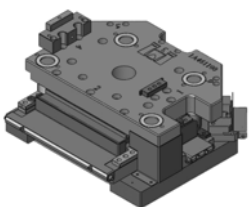
	A-52-125 120mm Variable Angle Shear Block 120mm Attache traverse à angle variable 120mm Variable angle shear block	40		P-52-125 P-52-225
	A-52-126 140mm Variable Angle Shear Block 140mm Attache traverse à angle variable 140mm Variable angle shear block	40		P-52-130 P-52-230
	A-52-127 160mm VariableAngle Shear Block 160mm Attache traverse à angle variable 160mm Variable angle shear block	40		P-52-135 P-52-235
	A-52-140 T-Connection (2mm) T-verbinding met veer Attacher traverse avec ressort	100		P-52-300 - P-52-330
	A-52-141 T-Connection (3mm) T-verbinding met veer Attacher traverse avec ressort	100		P-52-335 - P-52-350

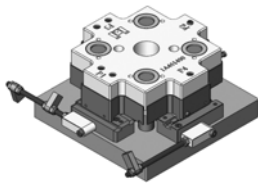
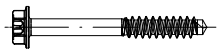
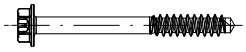
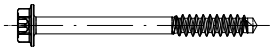
	A-52-145 Anti Twist Clip Profiel clip Clip profil	1		P-52-690 P-52-691 P-52-692
	A-52-150 40mm Glass Support 40mm Glassteun 40mm Support cale de vitrage	100		P-52-660
	A-52-151 46mm Glass Support 46mm Glassteun 46mm Support cale de vitrage	100		P-52-665
	A-52-152 52mm Glass Support 52mm Glassteun 52mm Support cale de vitrage	100		P-52-670
	A-52-153 58mm Glass Support 58mm Glassteun 58mm Support cale de vitrage	100		P-52-675

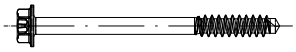
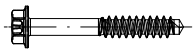
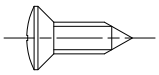
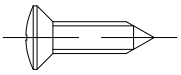
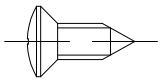
	A-52-206 Transom End Pad (Level 1) Eindstuk regel Embout traverse	100		A-52-140 A-52-141
	A-52-207 Transom End Pad (Level 2) Eindstuk regel Embout traverse	100		A-52-140 A-52-141
	A-52-208 Transom Sealing Piece (Level 1) Afdichting regel Joint traverse	100		A-52-104 - A-52-107 A-52-120 - A-52-127
	A-52-209 Transom Sealing Piece (Level 2) Afdichting regel Joint traverse	100		A-52-104 - A-52-107 A-52-120 - A-52-127
	A-52-210 Transom Sealer Piece Dichting regel Joint piece traverse	100		All P52 Transoms. For Com- partment Drainage

	A-52-215 Splice Joint Sealing Piece Dichting voor verbinding stijlen Joint piece pour l'epine	50		P-52-300-350 met uitzon-dering van à l'exclusion P-52-311 P-52-316 P-52-321 P-52-326
	A-52-216 Econo Mullion Splice Joint Sealing Piece Dichting voor verbinding stijlen Joint piece pour l'epine	1		P-52-311 P-52-316 P-52-321 P-52-326
	A-52-217 Splice Piece splice stuk pièce de jonction	1		P-52-690
	A-52-218 Splice Piece splice stuk pièce de jonction	1		P-52-691
	A-52-219 Splice Piece splice stuk pièce de jonction	1		P-52-692

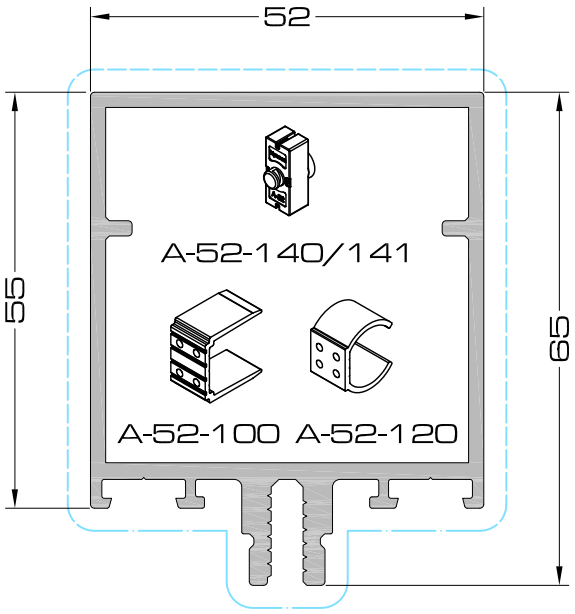
	A-52-221 Drainage Deflector Afwatering stijl Drainage l'epine	100		P-52-300-350 met uitzon-dering van à l'exclusion P-52-311 P-52-316 P-52-321 P-52-326
	A-52-222 Econo Mullion Drainage Deflector	100		P-52-311 P-52-316 P-52-321 P-52-326
	A-52-225 Transom Sealing Tape Dichtingstape regel Ruban adhésif pour traverse	1000		All P52 Transoms
	A-52-252 Tremco Butyl Sealant	1		A-GS-....
	A-52-253 Tremco 40 Sealant Adhesive	1		
	A-52-407 Aerofoil End Cap Eindstuk Embout	1 Pair		P-52-407
	A-KM-4615 Transom Connection Drill Jig Boormal regel-verbinding Gabarit de percage - traverse	1		Level 1 Regels Traverse Transoms To Level 2 Stijlen L'epine Mullions

	A-KM-4616 Transom Connection Drill Jig Boormal regel-verbinding Gabarit de percage - traverse	1		Level 1 Regels Traverse Transoms To Level 3 Stijlen L'epine Mullions
	A-KM-4617 Transom Connection Drill Jig Boormal regel-verbinding Gabarit de percage - traverse	1		Level 2 Regels Traverse Transoms To Level 3 Stijlen L'epine Mullions
	A-KM-4618 Variable Angle Drill Jig Boormal variabele hoek Gabarit de percage - angle variabele	1		Level 1 Regels Traverse Transoms To Level 3 Stijlen L'epine Mullions
	A-KM-4619 Shear Block Drill Jig Boormal t-verbinder Gabarit de percage - attacher traverse	1		Level 1 Regels Traverse Transoms To Level 3 Stijlen L'epine Mullions
	A-KM-4621 Variable Angle Drill Jig Boormal variabele hoek Gabarit de percage - angle variabele	1		Level 2 Regels Traverse Transoms To Level 3 Stijlen L'epine Mullions
	A-KM-4622 Shear Block Drill Jig Boormal t-verbinder Gabarit de percage - attacher traverse	1		Level 2 Regels Traverse Transoms To Level 3 Stijlen L'epine Mullions
	A-KM-4611 Press Tool 1	1		

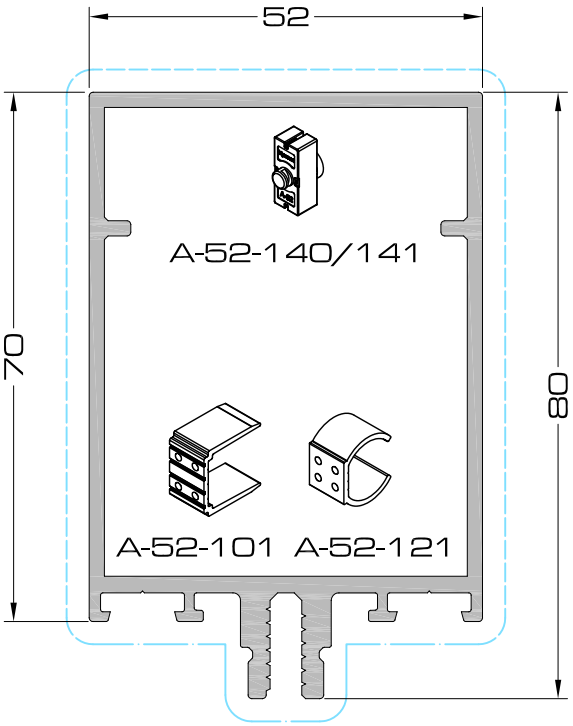
	A-KM-4614 Press Tool 2	1		
	A-KM-54PD Safety Pedal for A-KM-54PO beveligingspedaal voor A-KM-54PO Pédale de securité pour A-KM-54PO	1		
	A-KM-54PO Pneumatic Press Pneumatische eenheid Unite pneumatique	1		
	A-KM-54PO5 Pneumatic Unit Pneumatische eenheid Unite pneumatique	1		
	A-KM-54SO Sokkel voor A-KM-54PO Socle pour A-KM-54PO Support for A-KM-54PO	1		
	A-52-300 Schroef met afdichtingsring Vis avec joint en caoutchouc Fastener with bonded washer 5.9 x 45mm	100		P-52-660
	A-52-301 Schroef met afdichtingsring Vis avec joint en caoutchouc Fastener with bonded washer 5.9 x 51mm	100		P-52-665
	A-52-302 Schroef met afdichtingsring Vis avec joint en caoutchouc Fastener with bonded washer 5.9 x 57mm	100		P-52-670

	A-52-303 Schroef met afdichtingsring Vis avec joint en caoutchouc Fastener with bonded washer 5.9 x 63mm	100		P-52-675
	A-52-304 Schroef met afdichtingsring Vis avec joint en caoutchouc Fastener with bonded washer 5.9 x 41mm	100		P-52-659
	A-52-310 4.2 x 13mm Transom Fixing (S/Tap/P/Head) Stainless Steel 4.2 x 13mm	100		P-52-200 - P-52-235
	A-52-311 4.2 x 16mm Transom Fixing (S/Tap/P/Head) Stainless Steel 4.2 x 16mm	100		P-52-100 - P-52-135
	A-52-312 4.8 x 13mm T-Connection Fastner (S/Tap/P/Head Stainless Steel 4.8 x 13mm	100		A-52-100 - A-52-107 A-52-120 - A-52-127

P-52-100



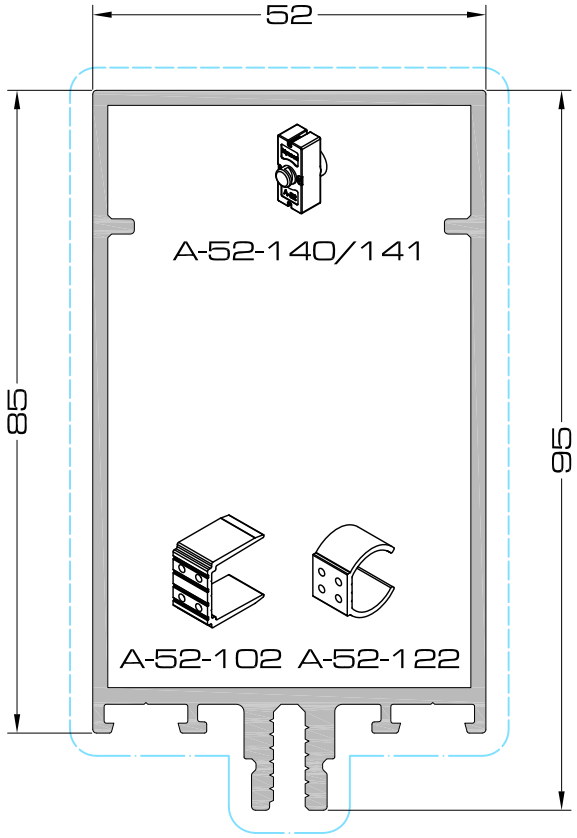
P-52-105



y x y x
Ix = 25.8cm4
Iy = 18.7cm4
Wx = 7.9cm3
Wy = 7.1cm3

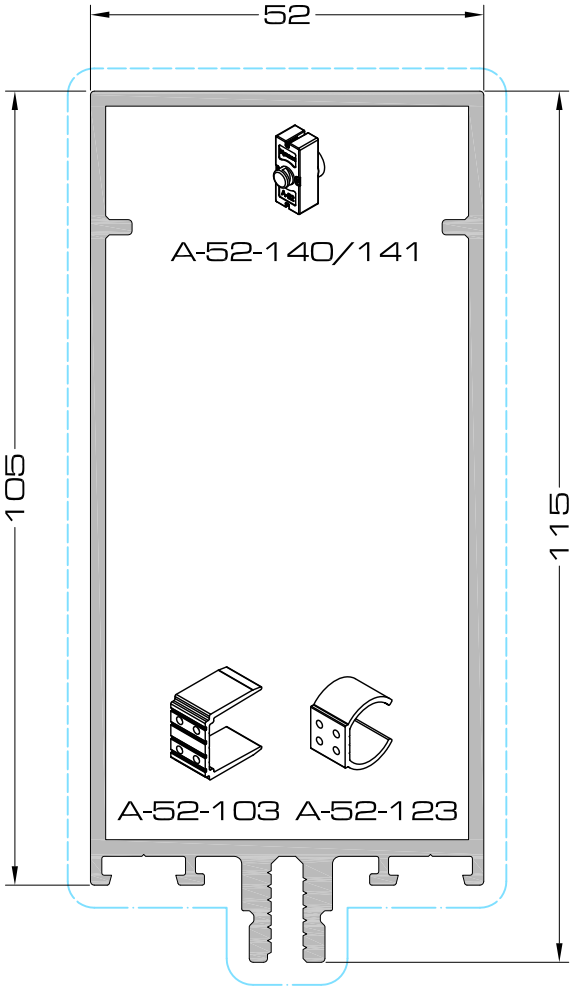
y x y x
Ix = 45.2cm4
Iy = 22.4cm4
Wx = 11.0cm3
Wy = 8.6cm3

P-52-110



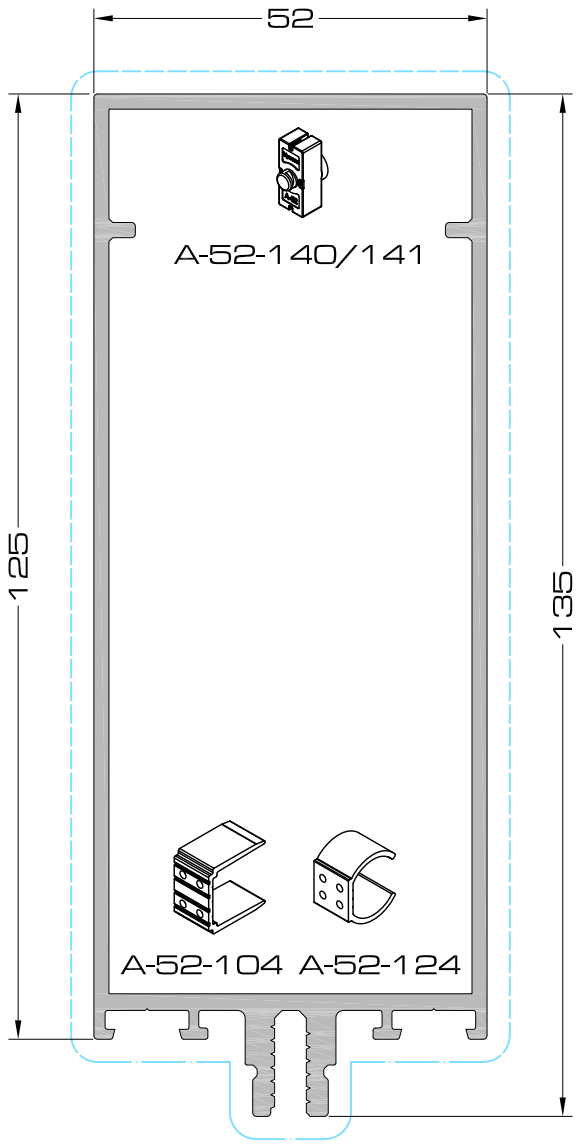
y x y x
Ix = 71.4cm4
Iy = 26.2cm4
Wx = 14.5cm3
Wy = 10.0cm3

P-52-115



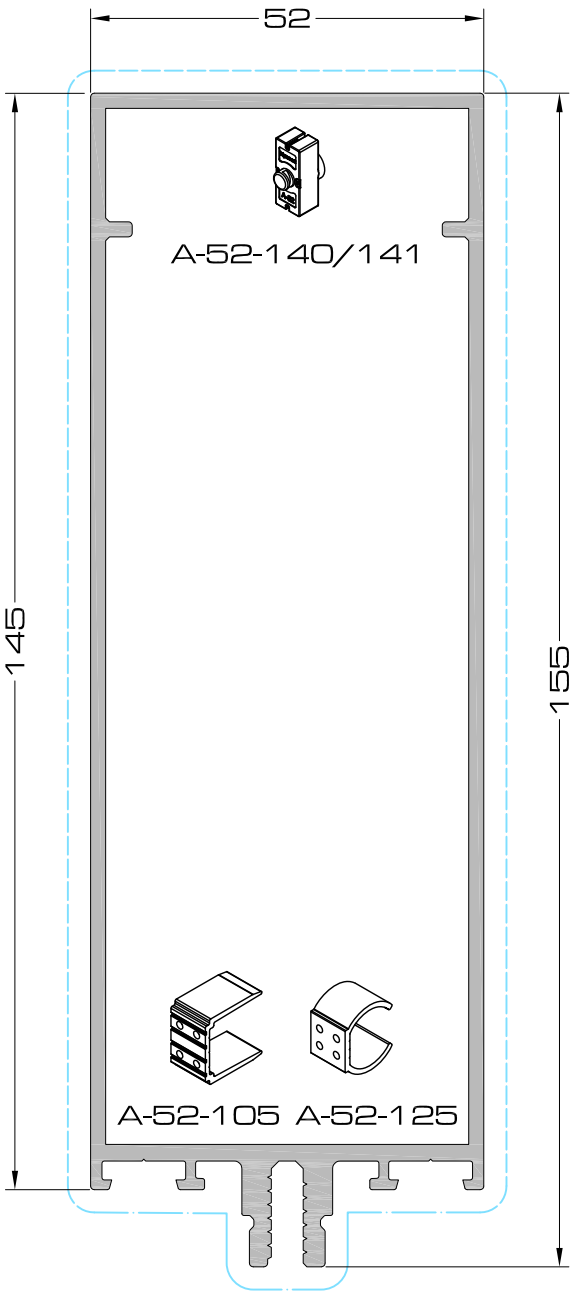
y x y x
Ix = 117.8cm4
Iy = 31.1cm4
Wx = 19.6cm3
Wy = 11.9cm3

P-52-120



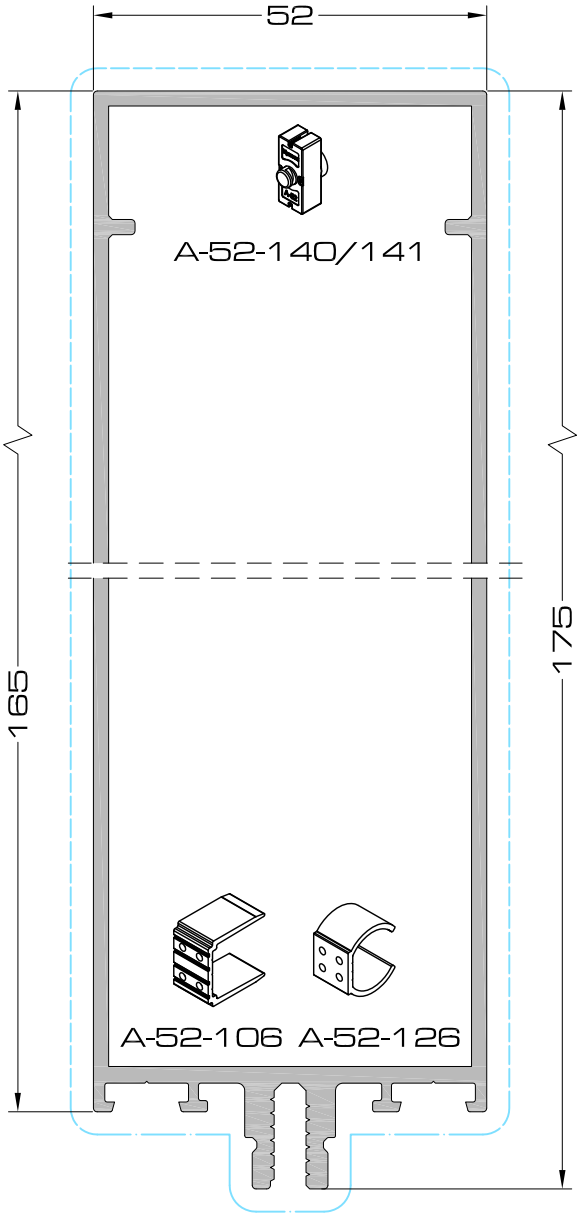
Ix = 179.2cm4
Iy = 36.2cm4
Wx = 25.4cm3
Wy = 13.9cm3

P-52-125



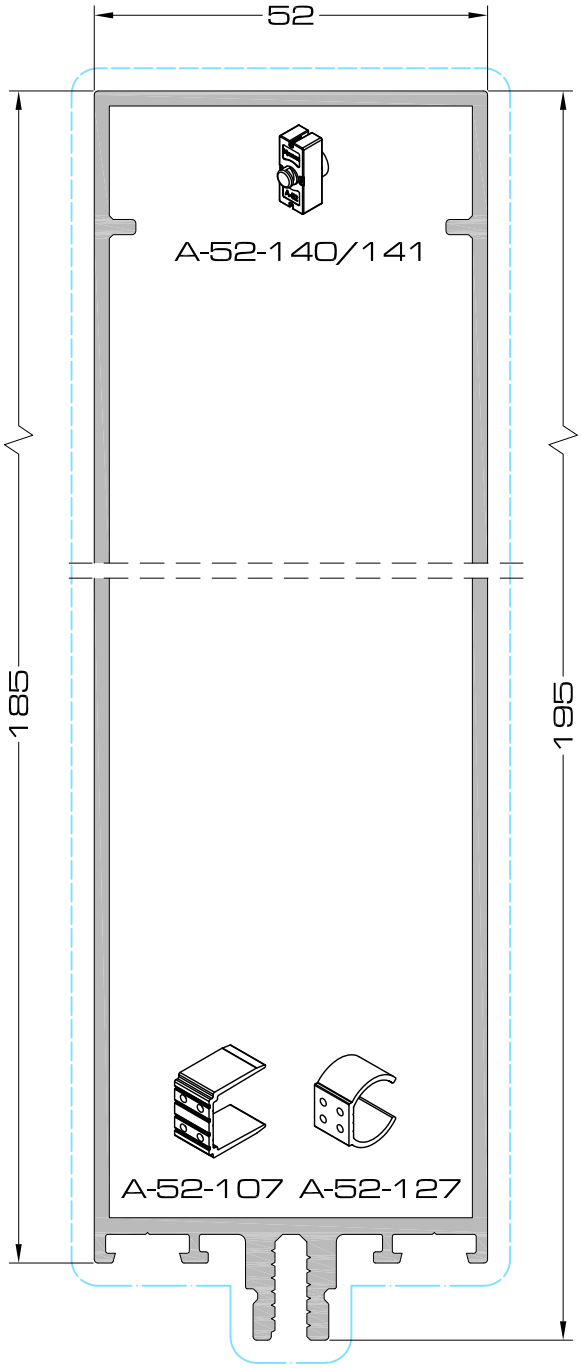
Ix = 257.0cm4
Iy = 41.2cm4
Wx = 31.7cm3
Wy = 15.8cm3

P-52-130



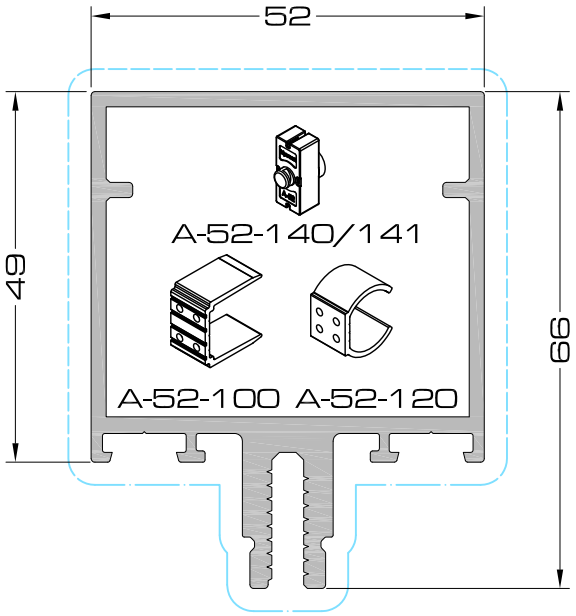
Ix = 352.8cm4	
Iy = 46.2cm4	
Wx = 38.6cm3	
Wy = 17.7cm3	

P-52-135



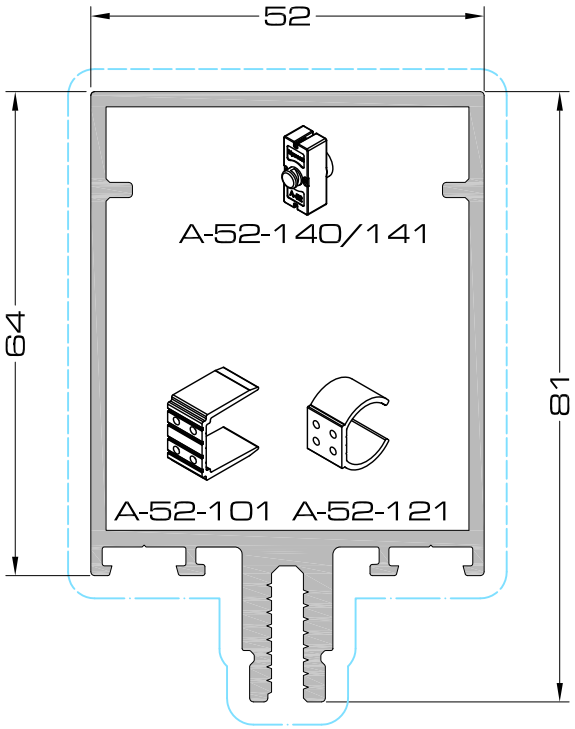
Ix = 468.3cm4	
Iy = 51.2cm4	
Wx = 46.1 cm3	
Wy = 19.7cm3	

P-52-200



y x y x
Ix = 24.7cm4
Iy = 17.3cm4
Wx = 7.4cm3
Wy = 6.6cm3

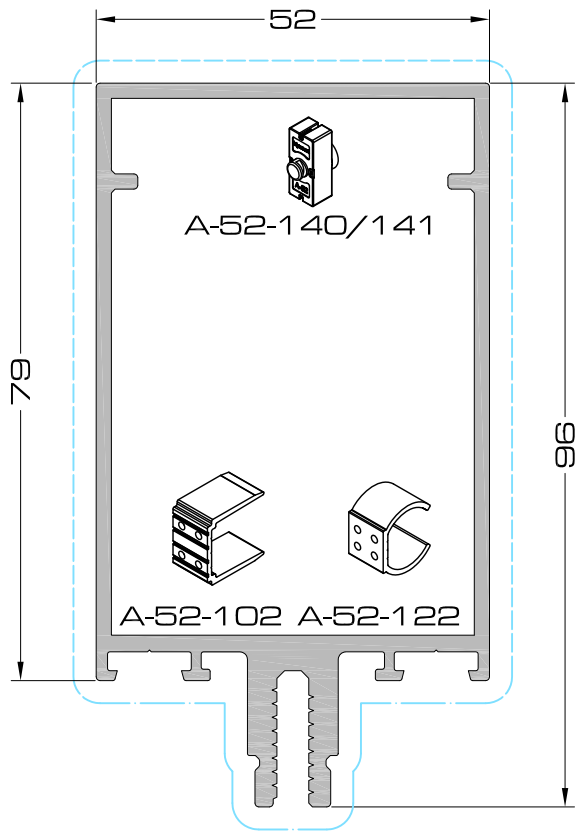
P-52-205



y x y x
Ix = 44.1cm4
Iy = 21.0cm4
Wx = 10.7cm3
Wy = 8.0cm3

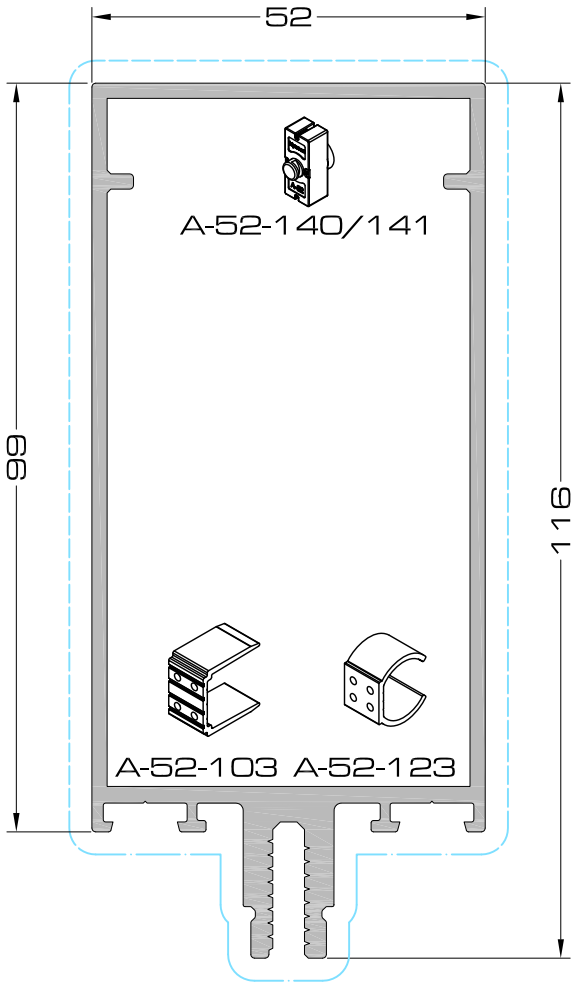
Kratos P52

P-52-210



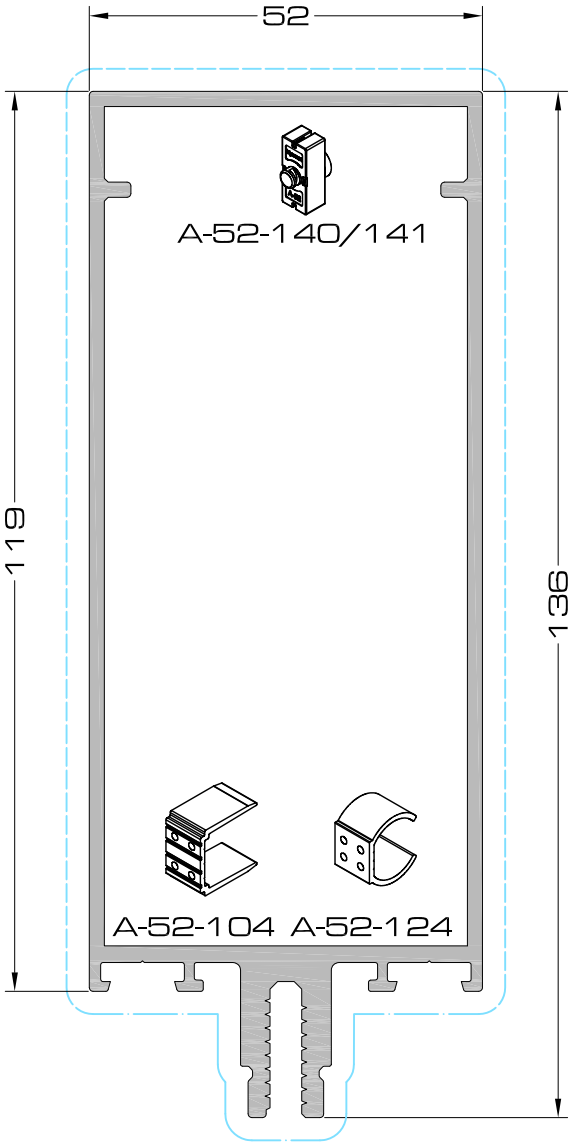
Ix = 70.5cm4
Iy = 24.8cm4
Wx = 14.2cm3
Wy = 7.2cm3

P-52-215



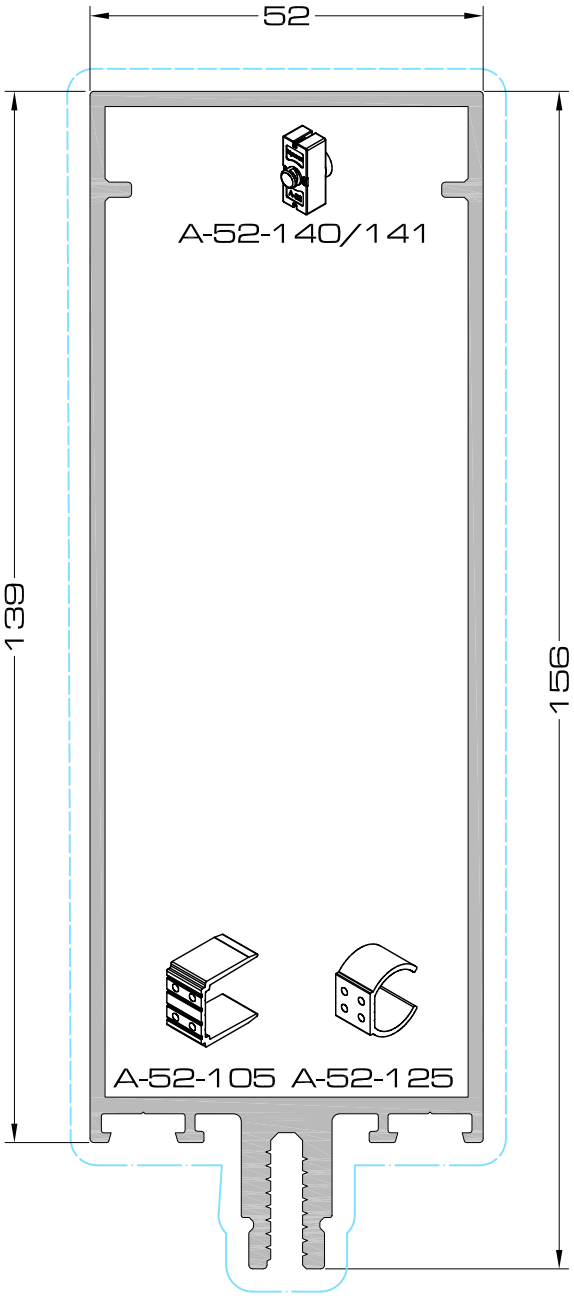
Ix = 117.8cm4
Iy = 29.8cm4
Wx = 19.5cm3
Wy =11.5cm3

P-52-220



y x y x
Ix = 180.9cm4
Iy = 34.0cm4
Wx = 31.7cm3
Wy =15.3cm3

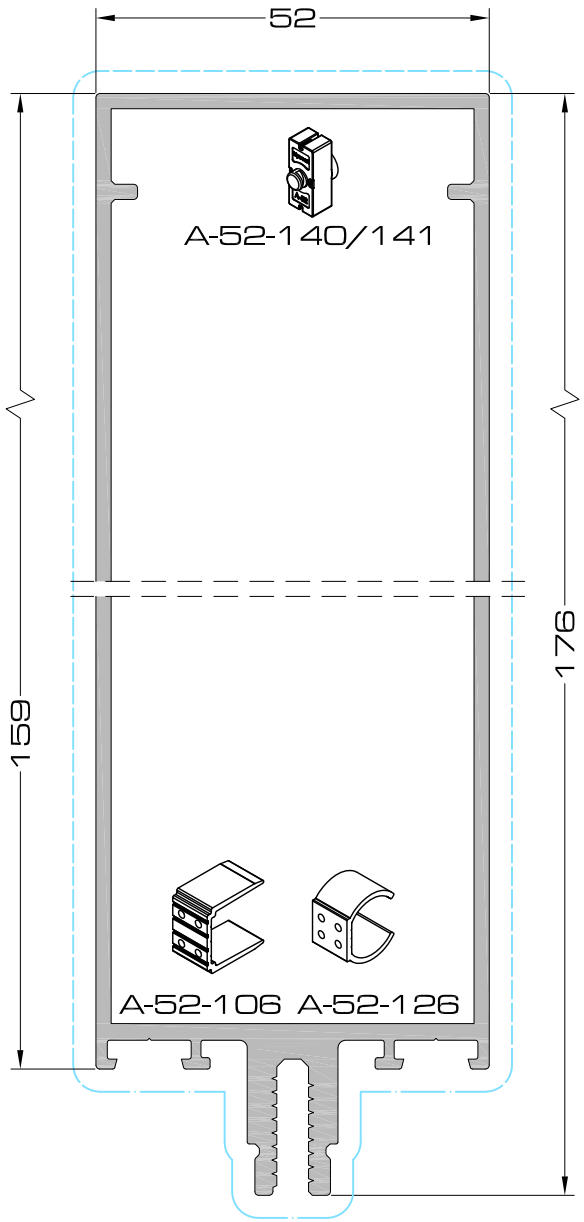
P-52-225



y x y x
Ix = 260.9cm4
Iy = 39.8cm4
Wx = 31.7cm3
Wy = 15.3cm3

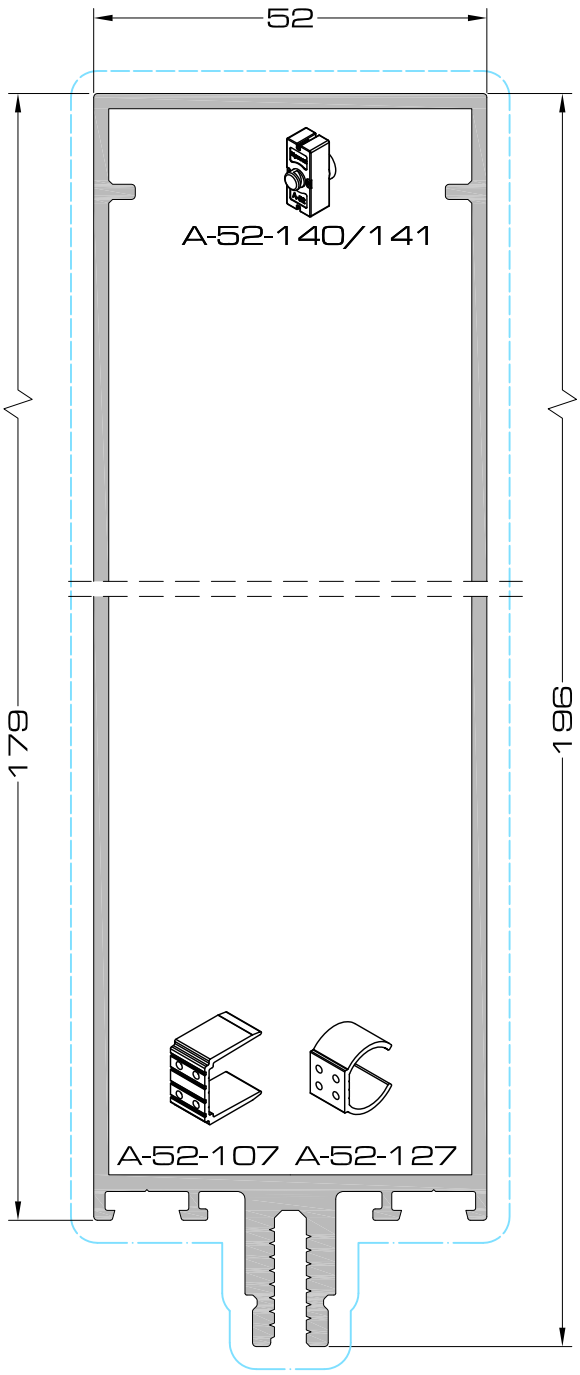
Kratos P52

P-52-230



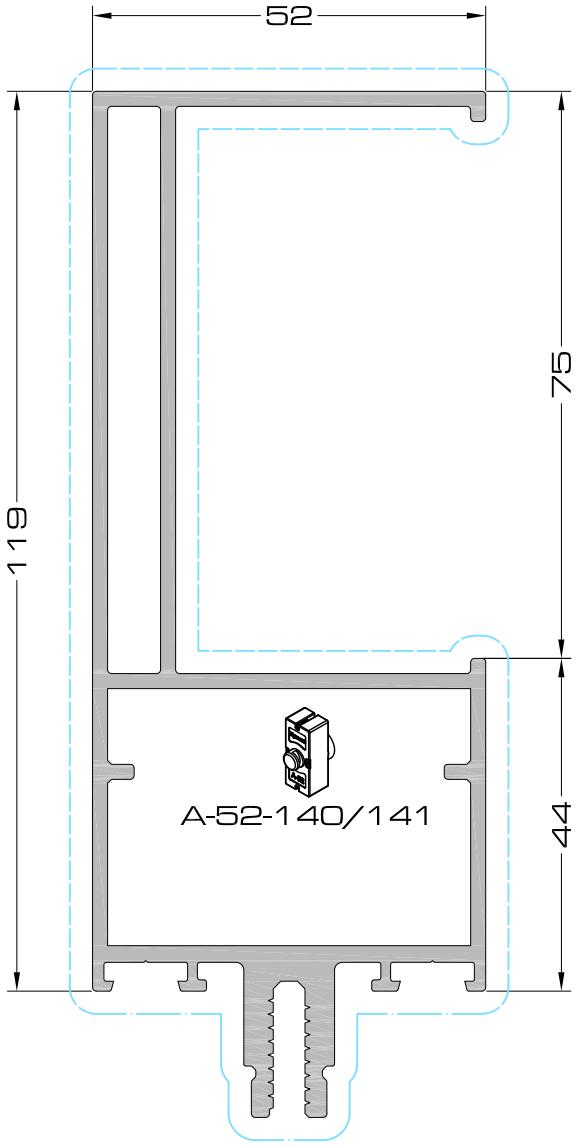
Ix = 359.7cm4	
Iy = 44.8cm4	
Wx =38.7cm3	
Wy =17.2cm3	

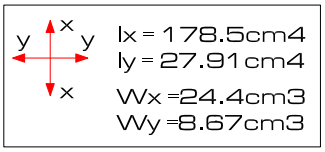
P-52-235



Ix = 478.7cm4	
Iy = 49.7cm4	
Wx = 46.3cm3	
Wy = 19.1cm3	

* P-52-280

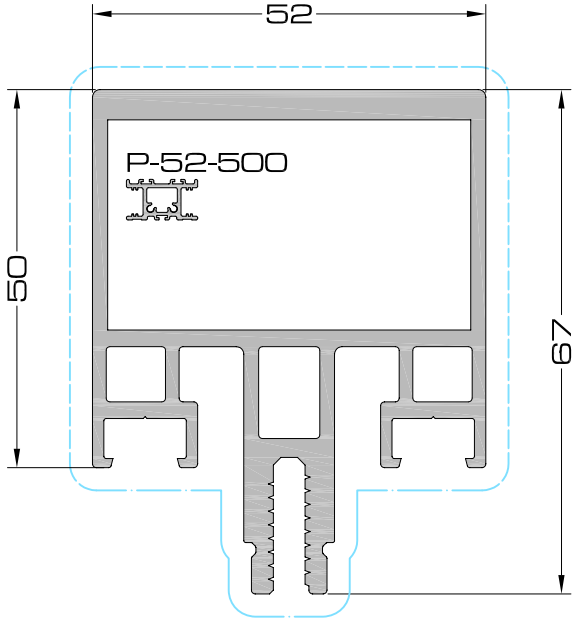




* Non Stock Item

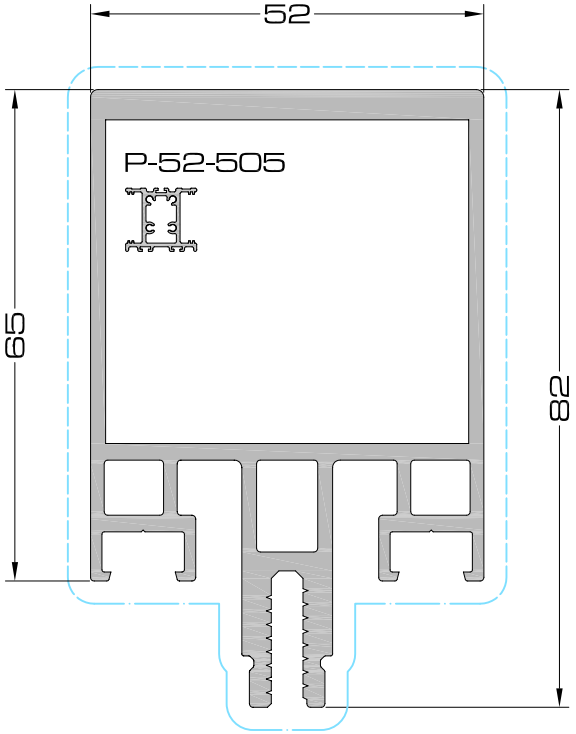
Kratos P52

P-52-300



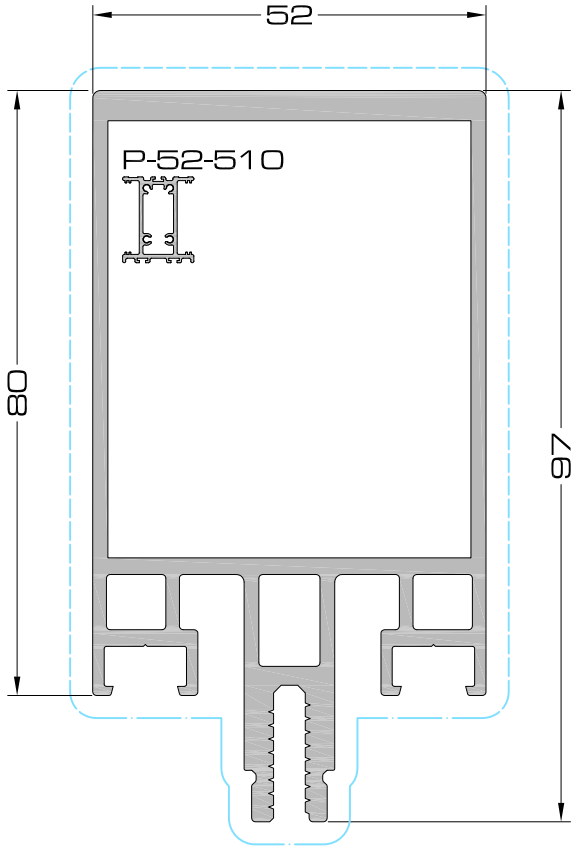
Ix = 33.6cm4	
Iy = 25.7cm4	
Wx = 9.5cm3	
Wy = 9.9cm3	

P-52-305



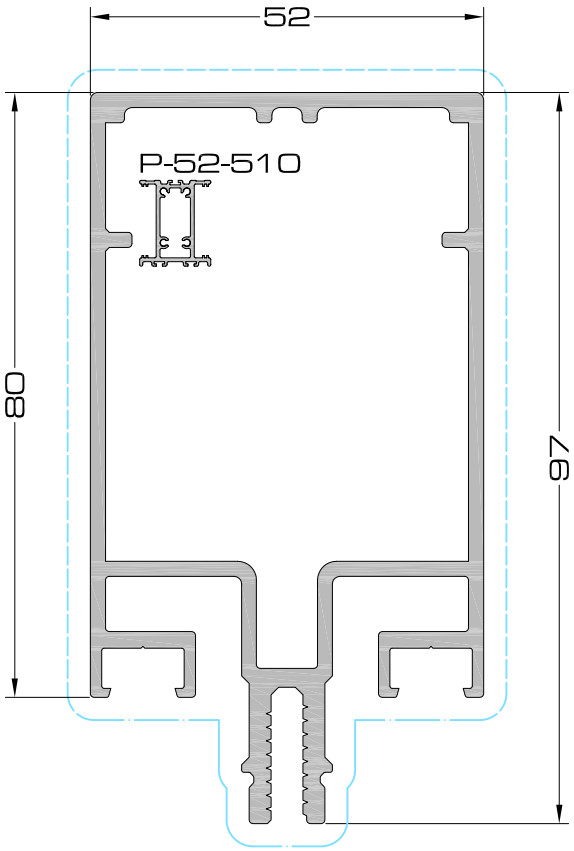
Ix = 61.3cm4	
Iy = 29.5cm4	
Wx = 14.8cm3	
Wy = 11.3cm3	

P-52-310



Ix = 91.4cm4
Iy = 28.4cm4
Wx = 18.4cm3
Wy = 10.9cm3

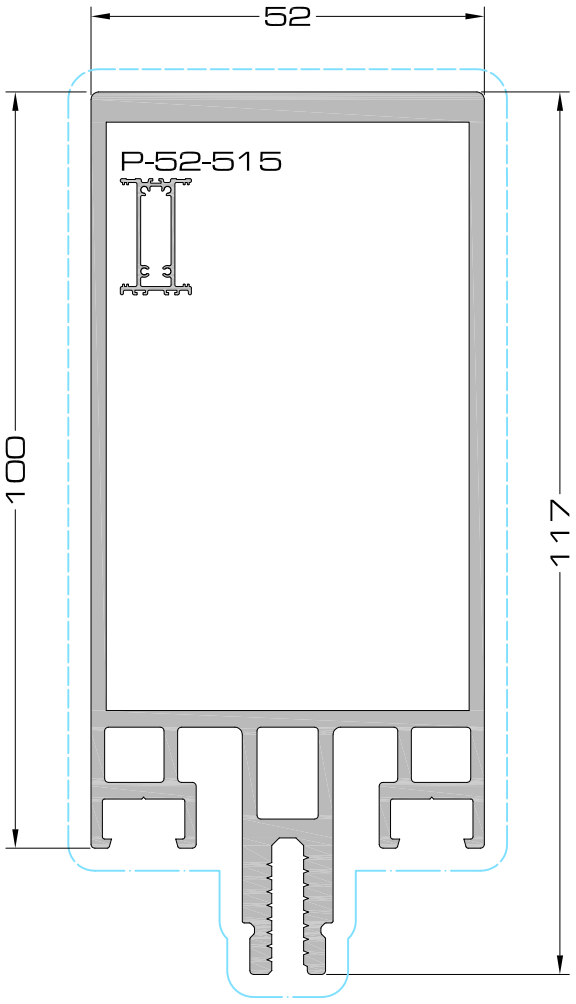
P-52-311



Ix = 72.8cm4
Iy = 27.1cm4
Wx = 14.9cm3
Wy = 10.4cm3

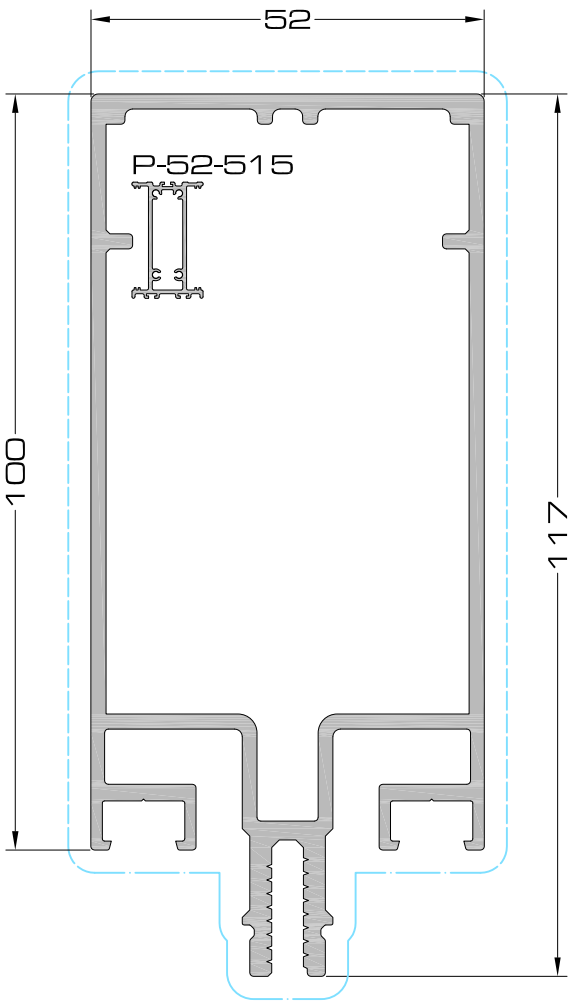
Kratos P52

P-52-315



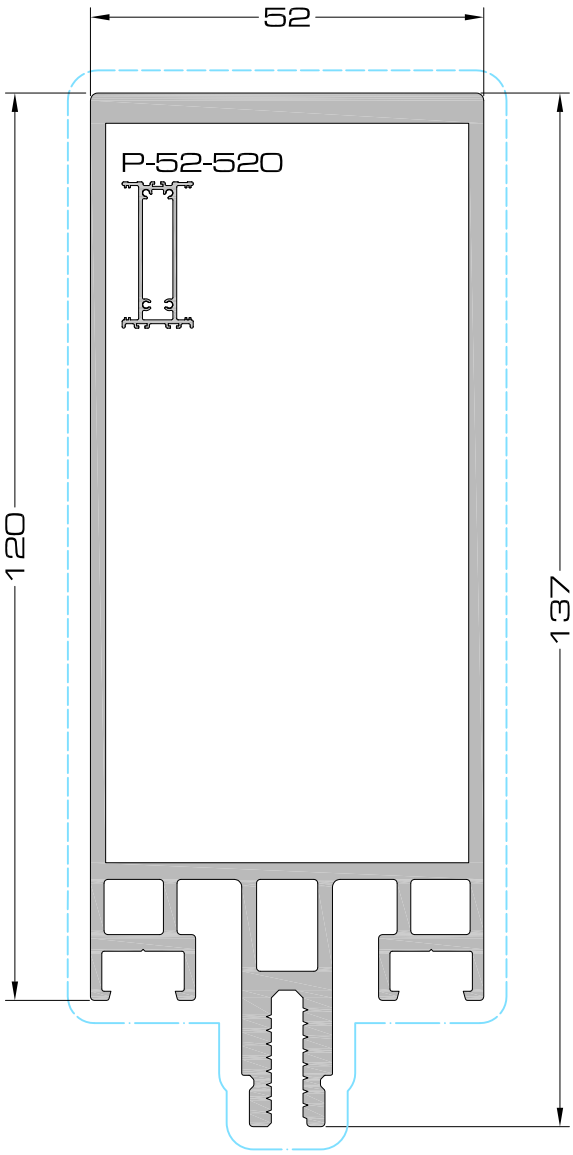
Ix = 152.9cm4	
Iy = 33.4cm4	
Wx = 26.7cm3	
Wy = 12.8cm3	

P-52-316



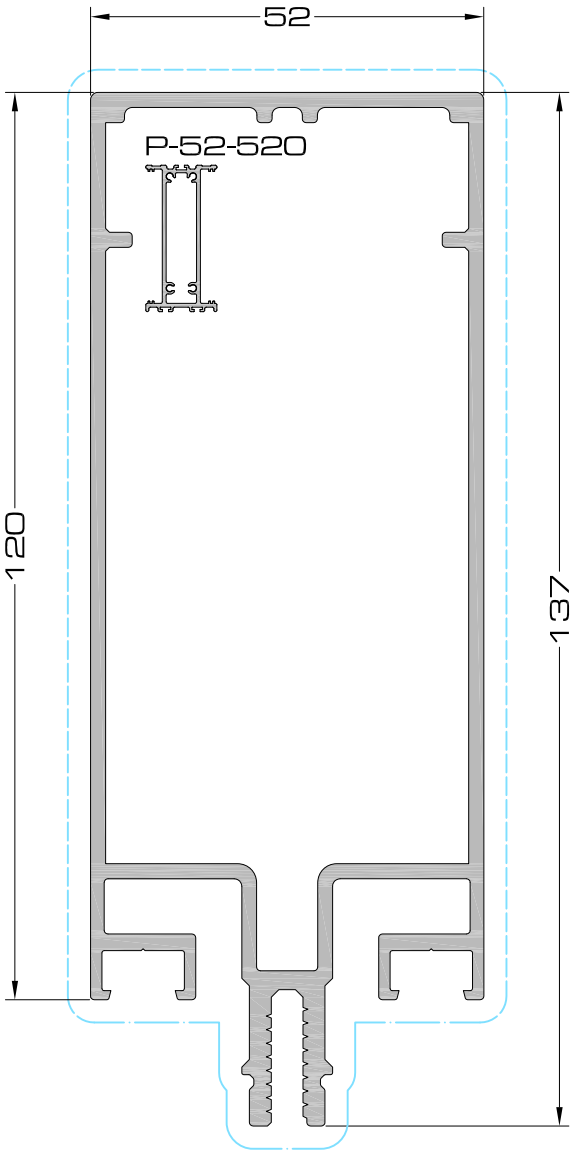
Ix = 122.9cm4	
Iy = 31.9cm4	
Wx = 20.4cm3	
Wy = 12.2cm3	

P-52-320



y x y x
Ix = 233.9cm4
Iy = 38.4cm4
Wx = 33.4cm3
Wy = 14.8cm3

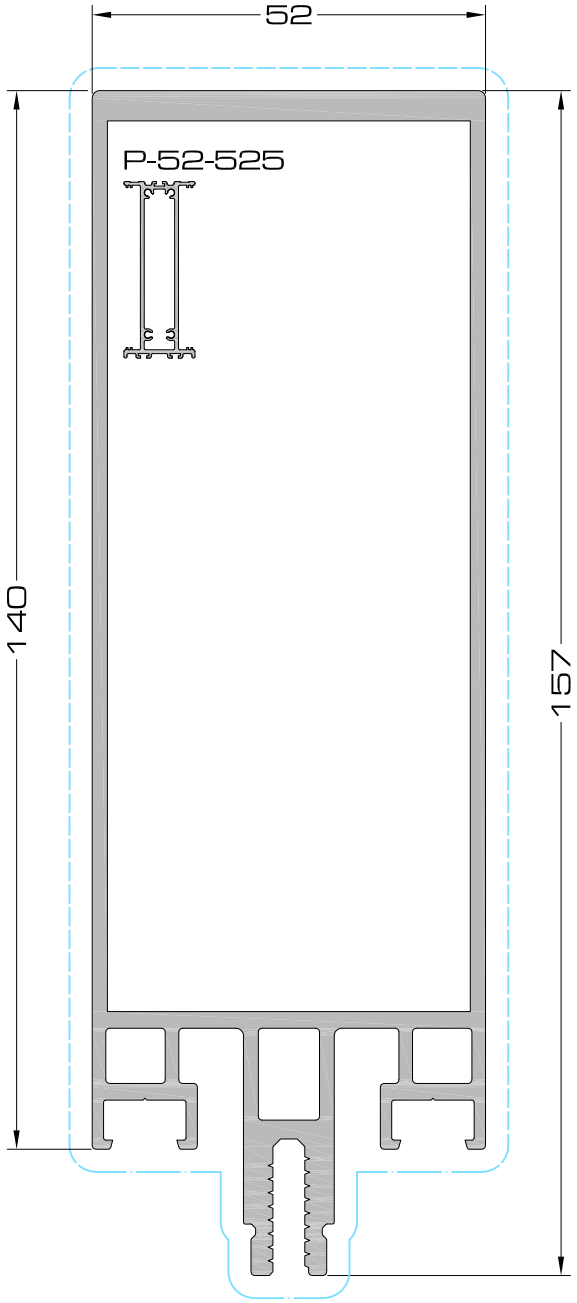
P-52-321



y x y x
Ix = 189.9cm4
Iy = 36.9cm4
Wx = 26.5cm3
Wy = 14.2cm3

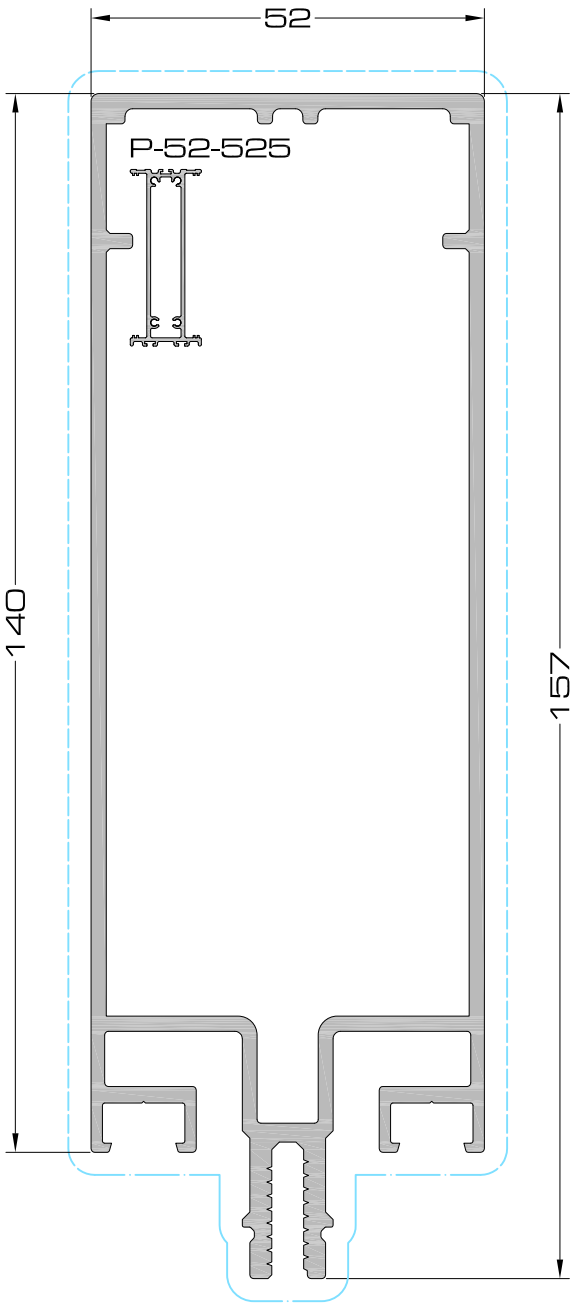
Kratos P52

P-52-325



Ix = 336.0cm4
Iy = 43.4cm4
Wx = 41.4cm3
Wy = 16.7cm3

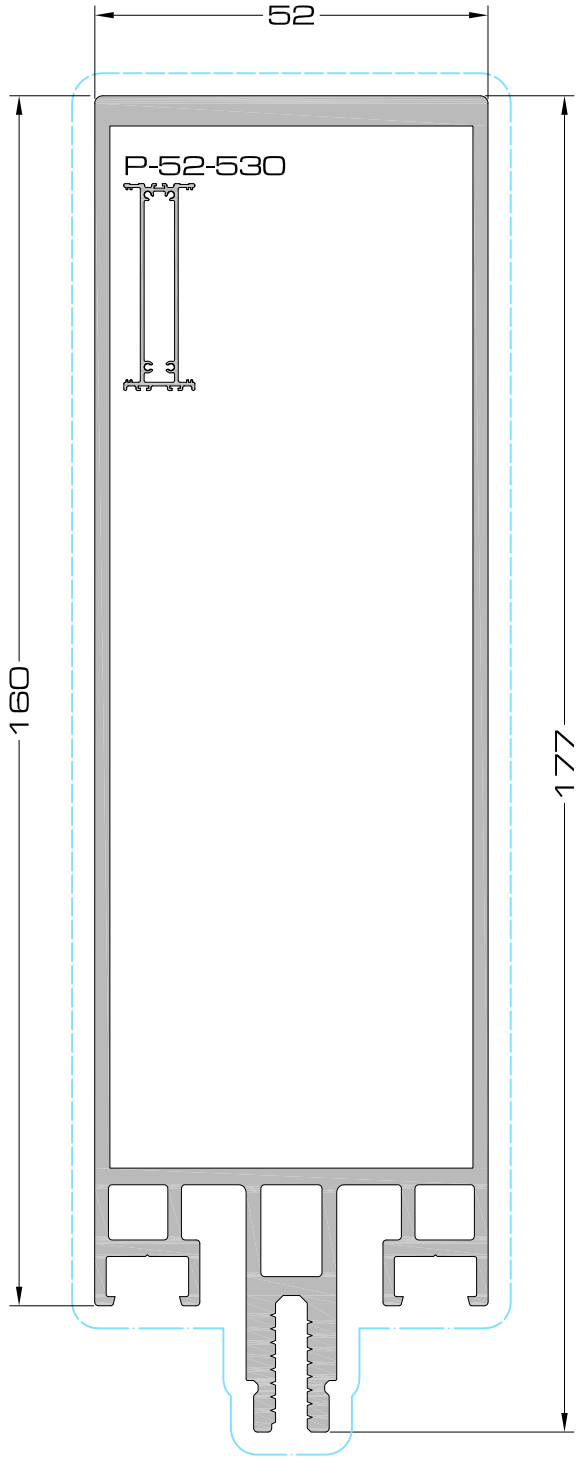
P-52-326



Ix = 275.2cm4
Iy = 41.98cm4
Wx = 33.3cm3
Wy = 16.1cm3

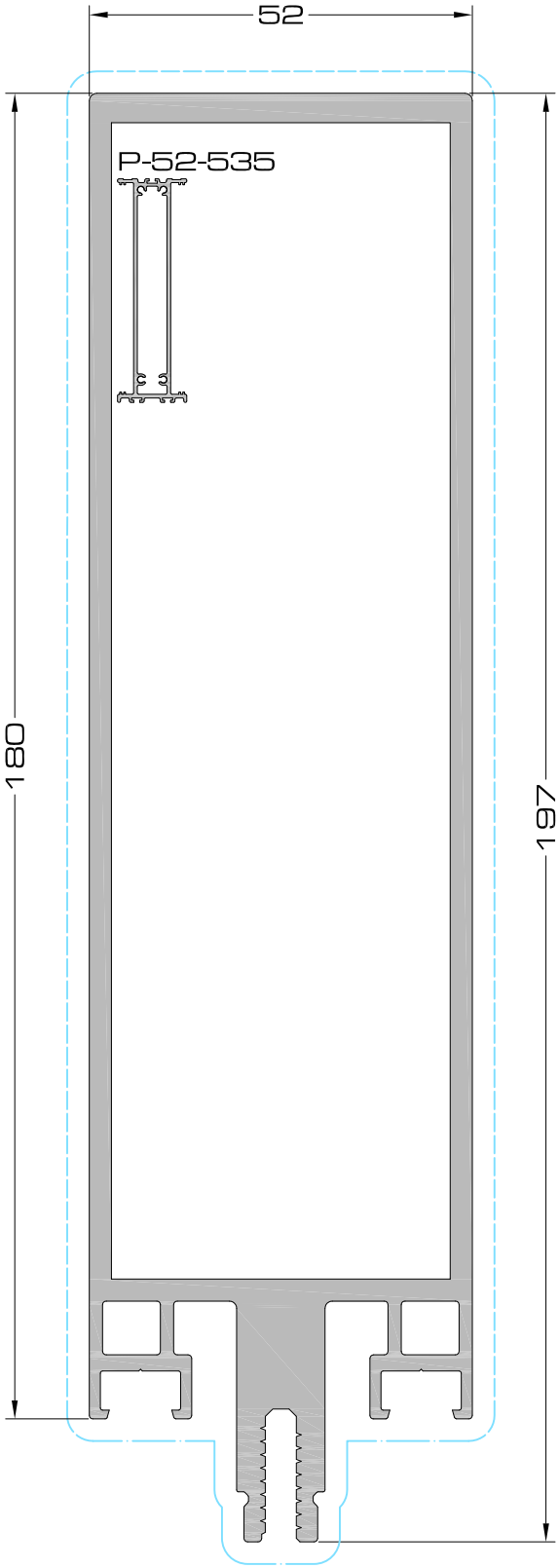
Kratos P52

P-52-330



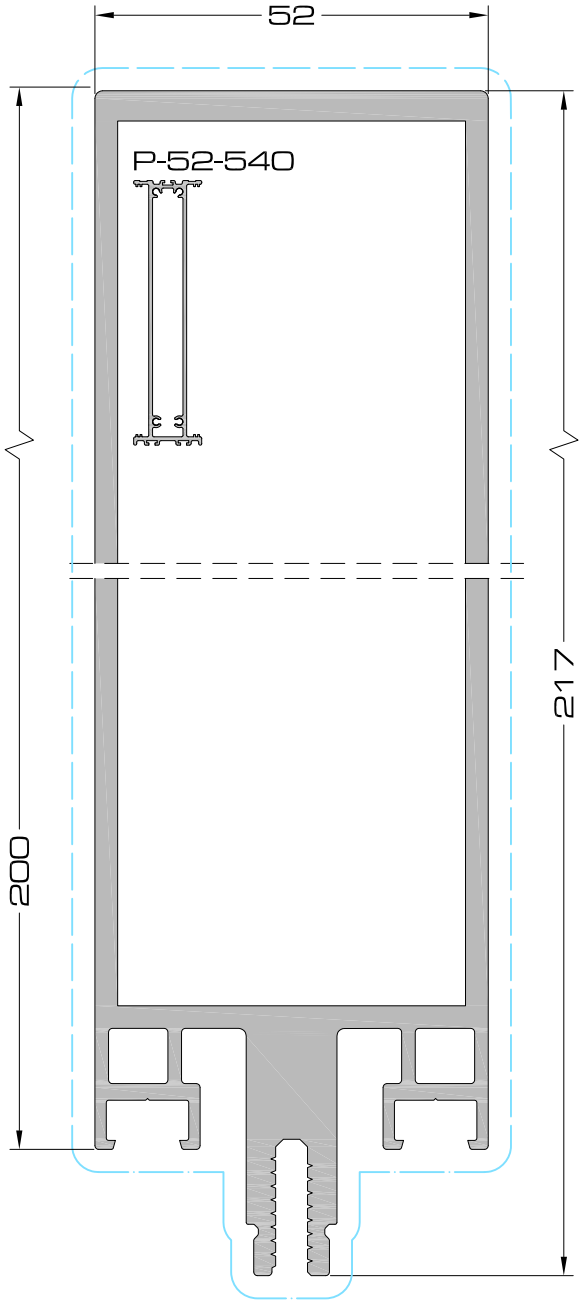
Ix = 460.9cm4	
Iy = 48.5cm4	
Wx = 50.0cm3	
Wy = 18.6cm3	

P-52-335



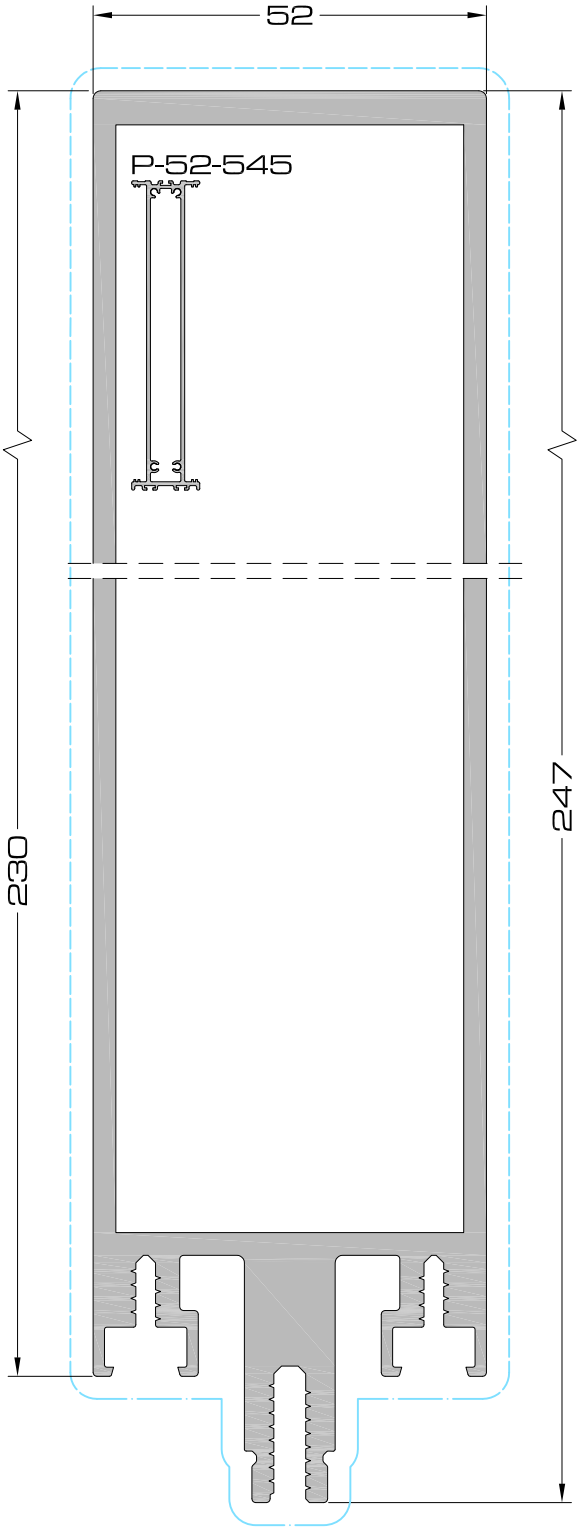
Ix = 745.0cm4	
Iy = 71.6cm4	
Wx = 71.4cm3	
Wy = 27.5cm3	

P-52-340



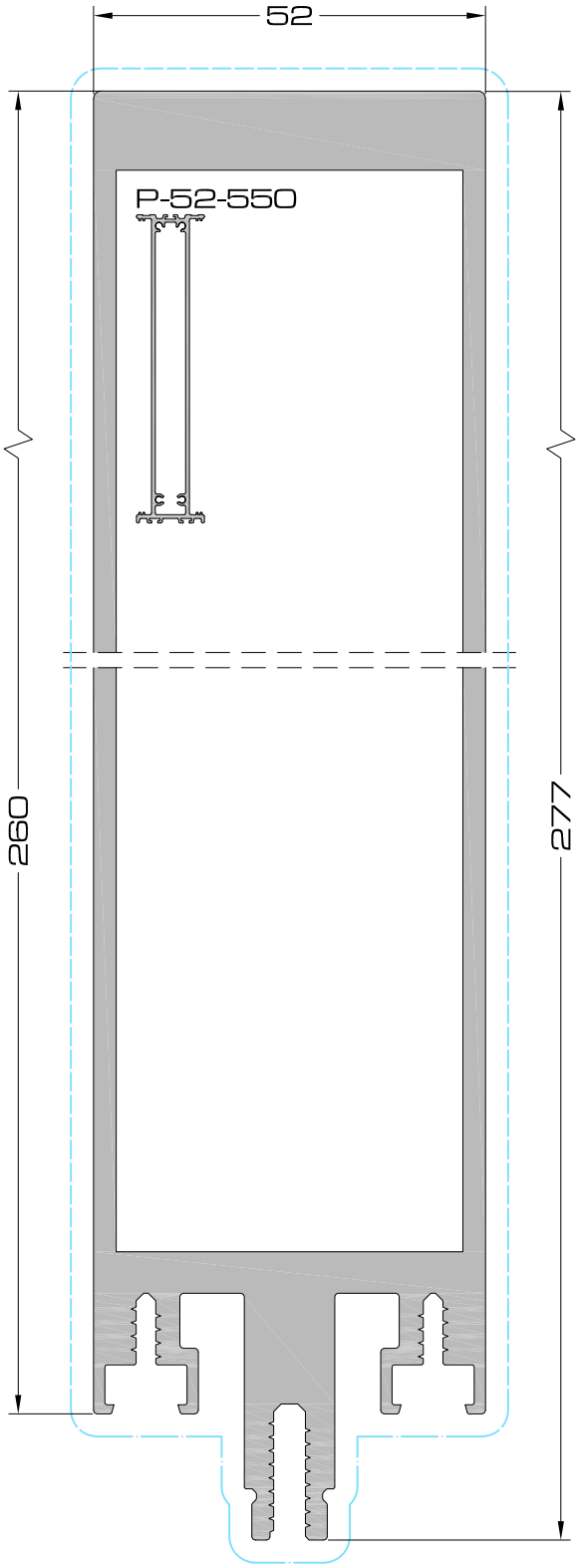
y x y x
Ix = 968.6cm4
Iy = 78.8cm4
Wx = 84.1cm3
Wy = 30.3cm3

P-52-345



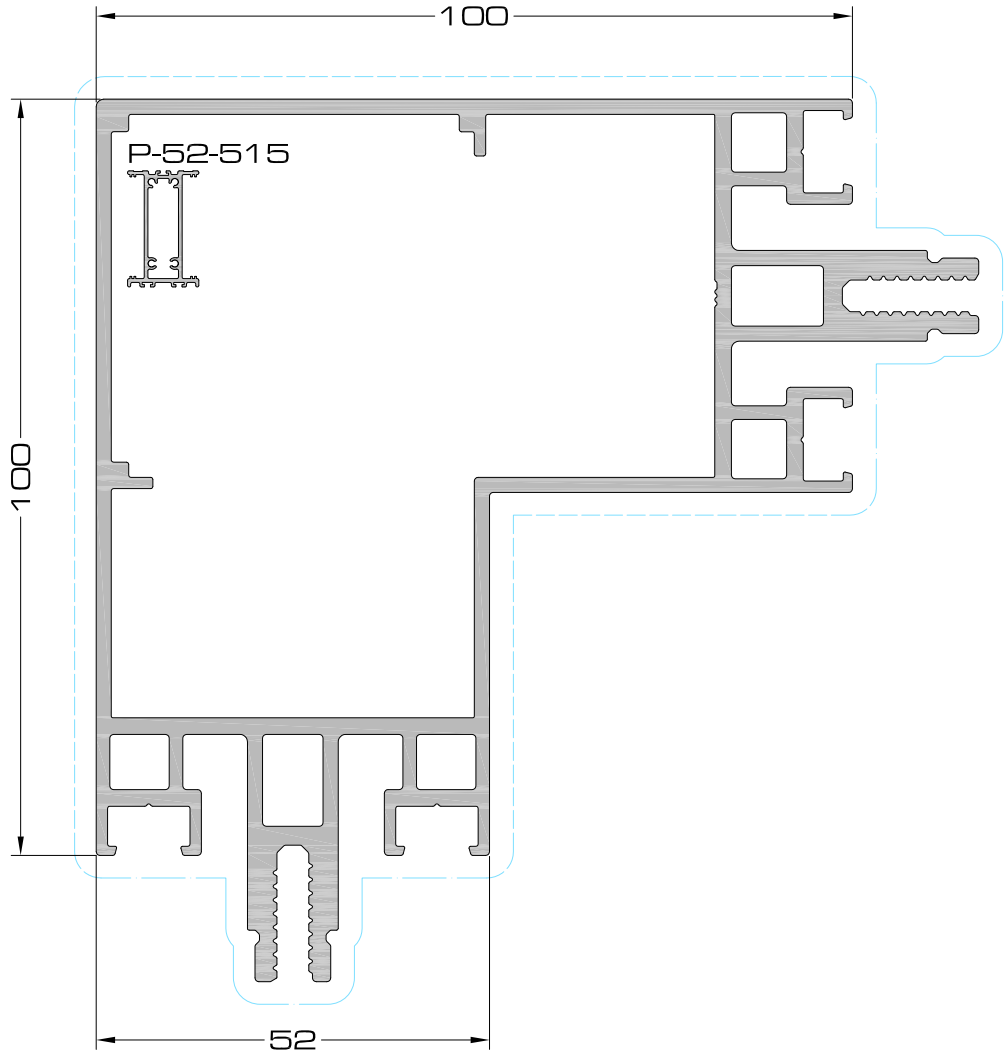
y x y x
Ix = 1458cm4
Iy = 93.0cm4
Wx = 110cm3
Wy = 35.7cm3

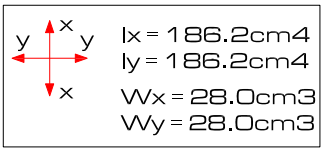
P-52-350



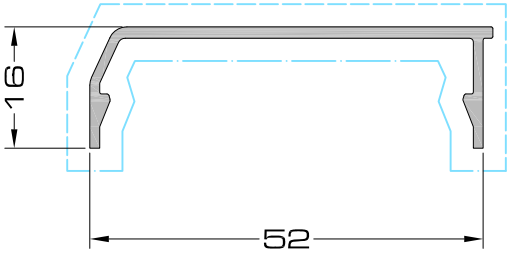
Ix = 2598cm4	
Iy = 110.7cm4	
Wx = 187cm3	
Wy = 42.5cm3	

P-52-395

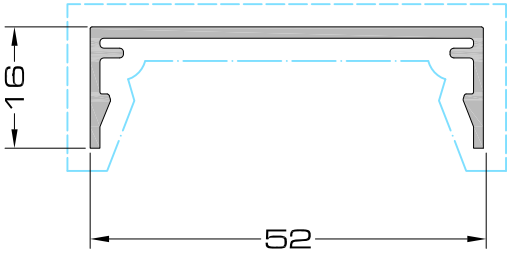

100
P-52-515
100
52


x
y
y
x
Ix = 186.2cm4
Iy = 186.2cm4
Wx = 28.0cm3
Wy = 28.0cm3

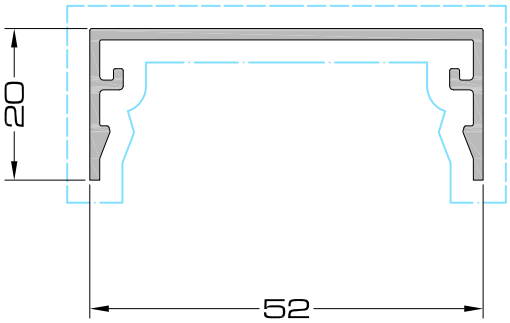
P-52-400



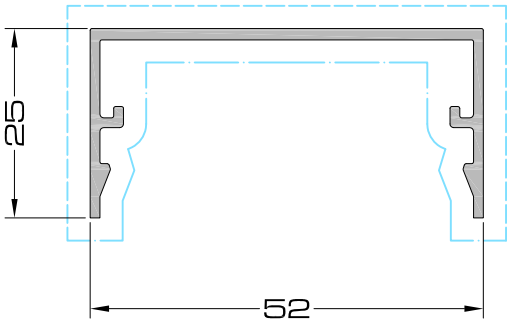
P-52-401



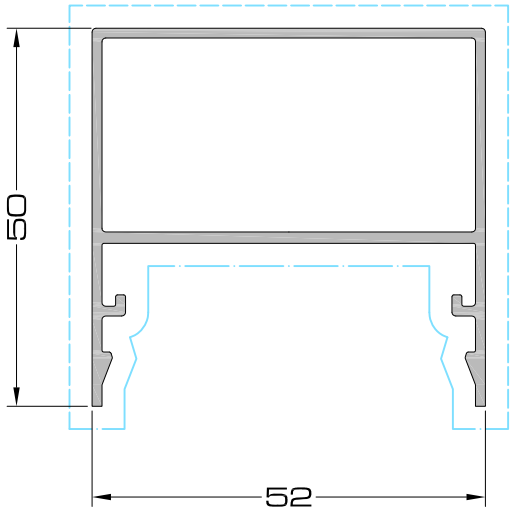
P-52-402



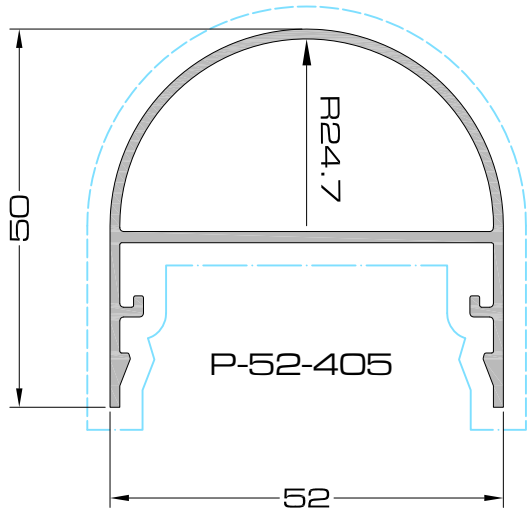
P-52-403

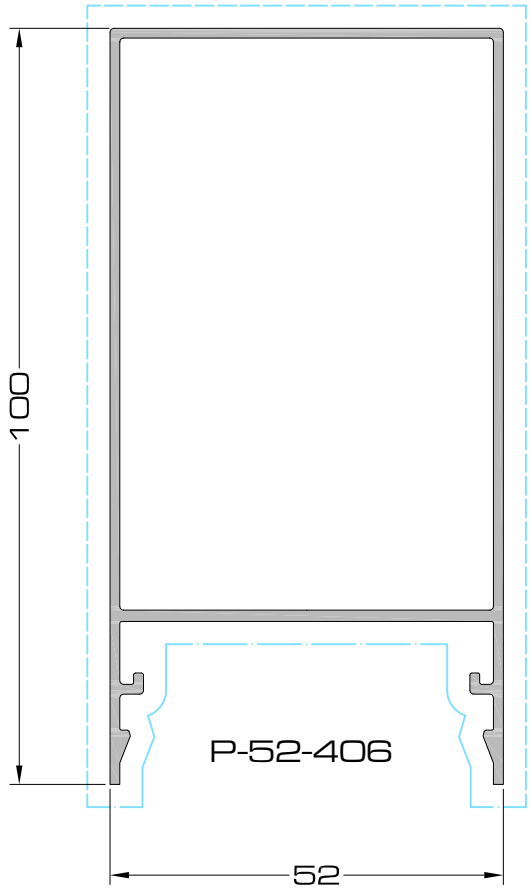


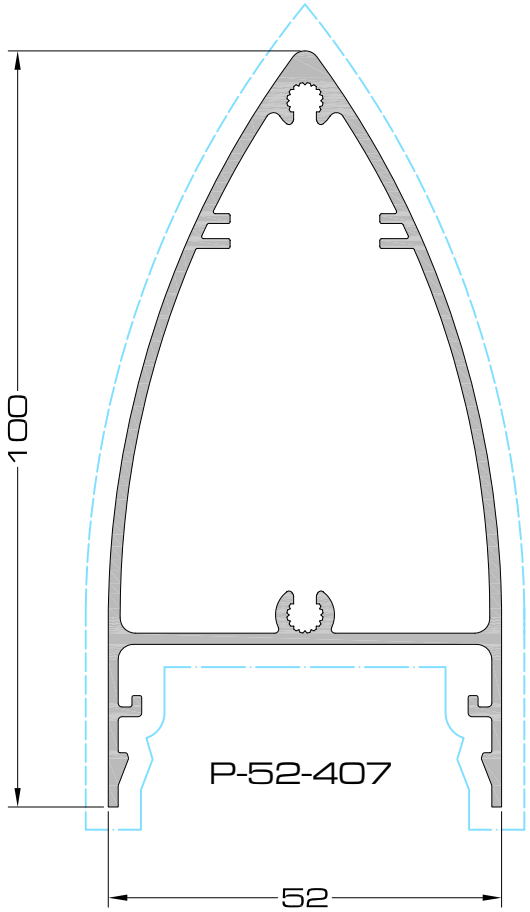
P-52-404



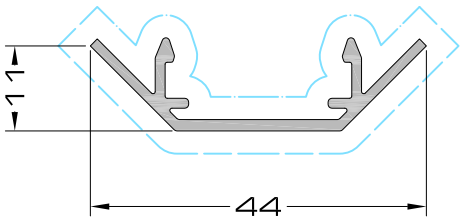
Kratos P52



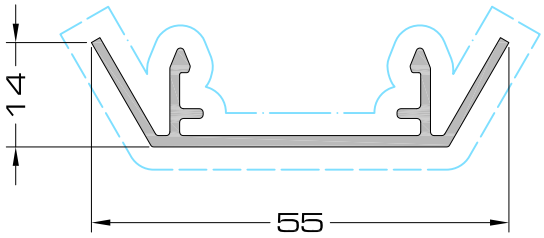




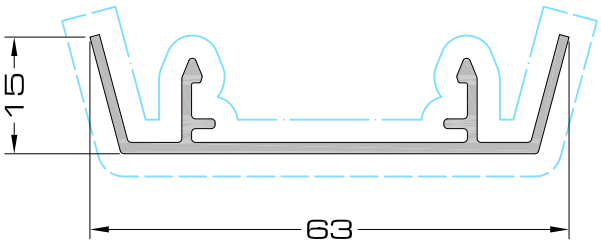
P-52-409



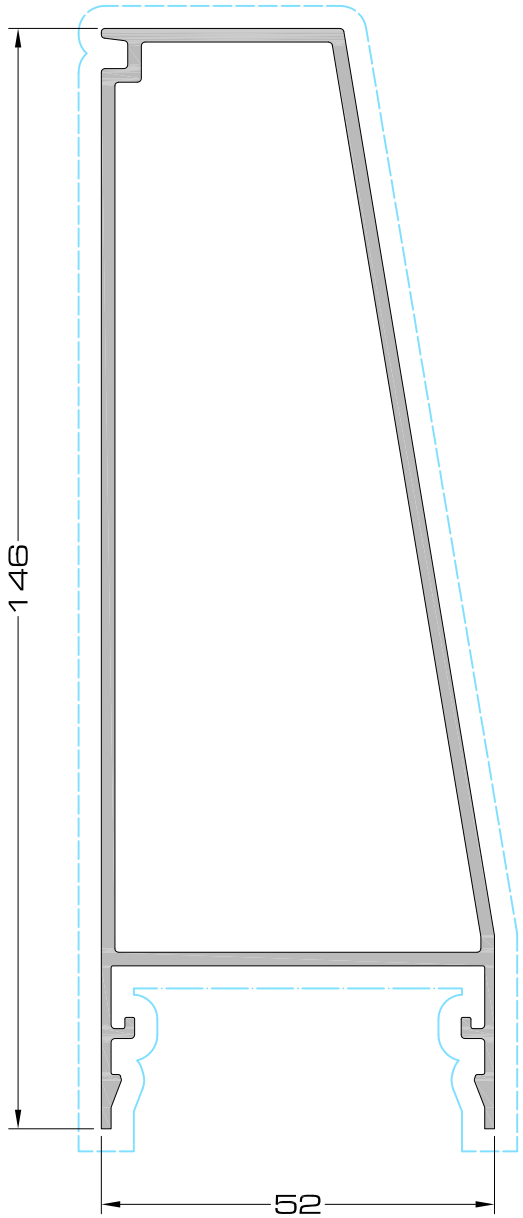
P-52-410



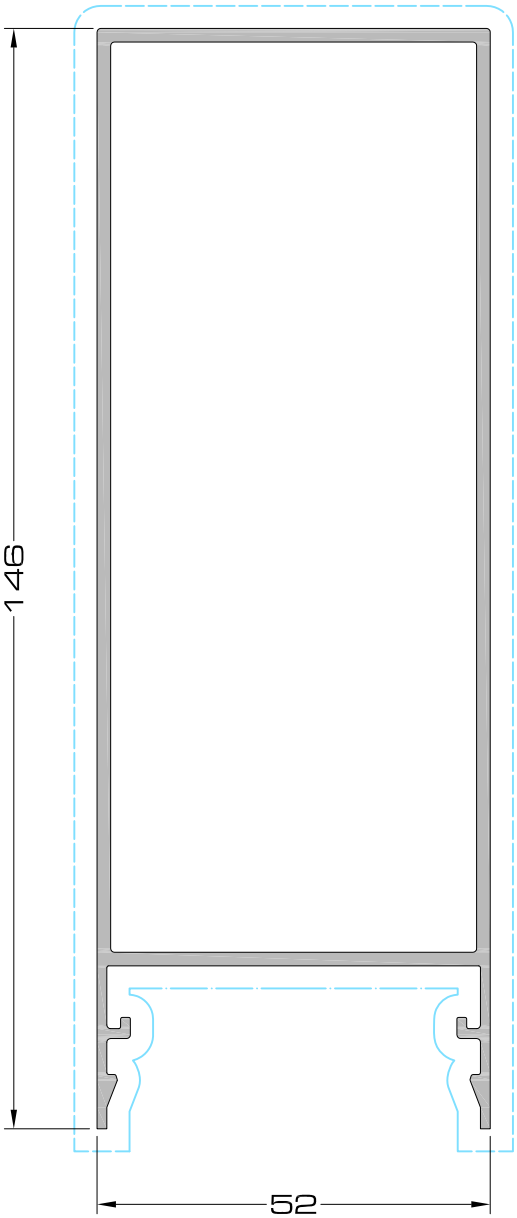
P-52-411



* P-52-480

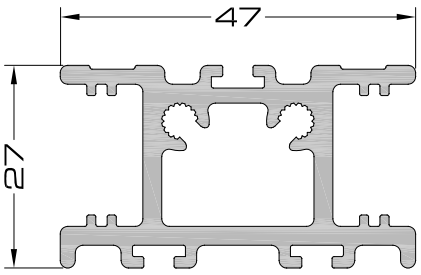


* P-52-481



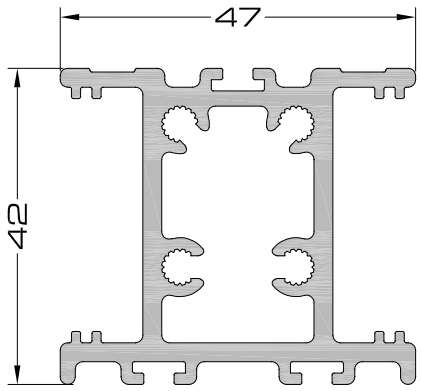
* Non Stock Item

P-52-500



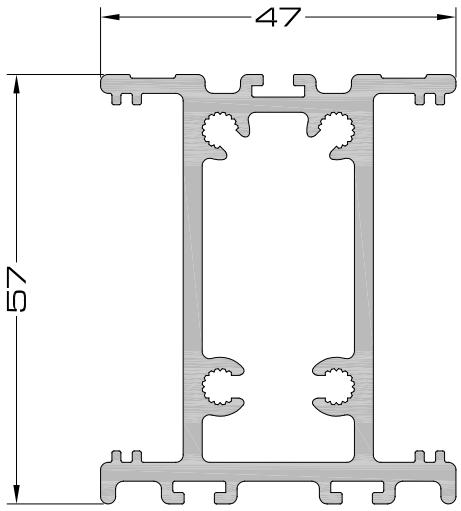
Ix = 3.5cm4
Iy = 6.8cm4
Wx = 2.6cm3
Wy = 2.9cm3

P-52-505



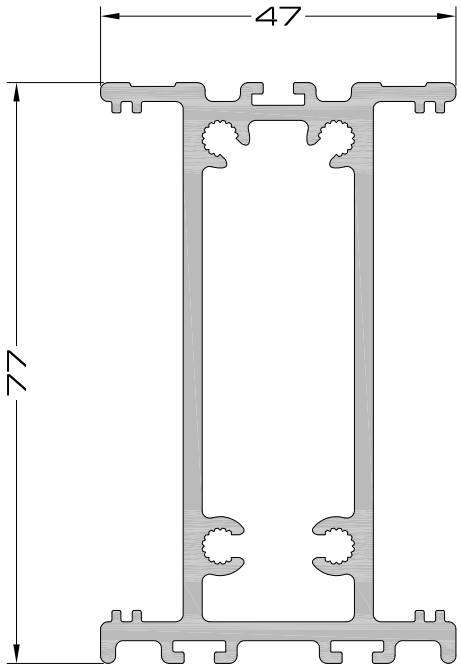
Ix = 11.6cm4
Iy = 8.2cm4
Wx = 5.5cm3
Wy = 3.5cm3

P-52-510



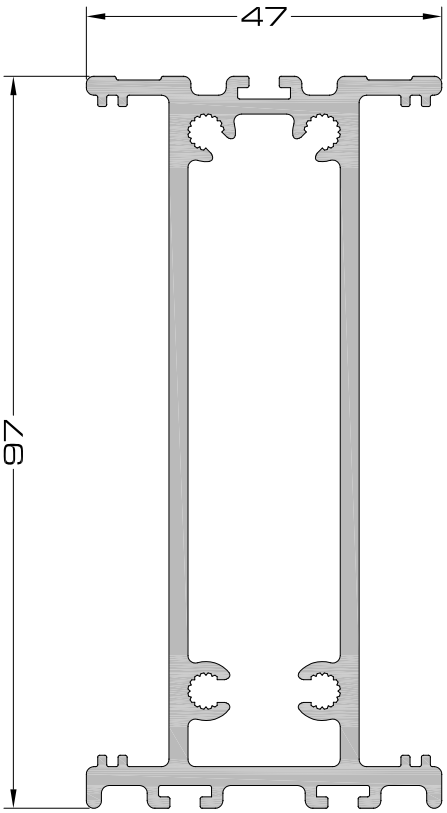
y x y x
Ix = 25.5cm4
Iy = 9.1cm4
Wx = 8.8cm3
Wy = 3.9cm3

P-52-515



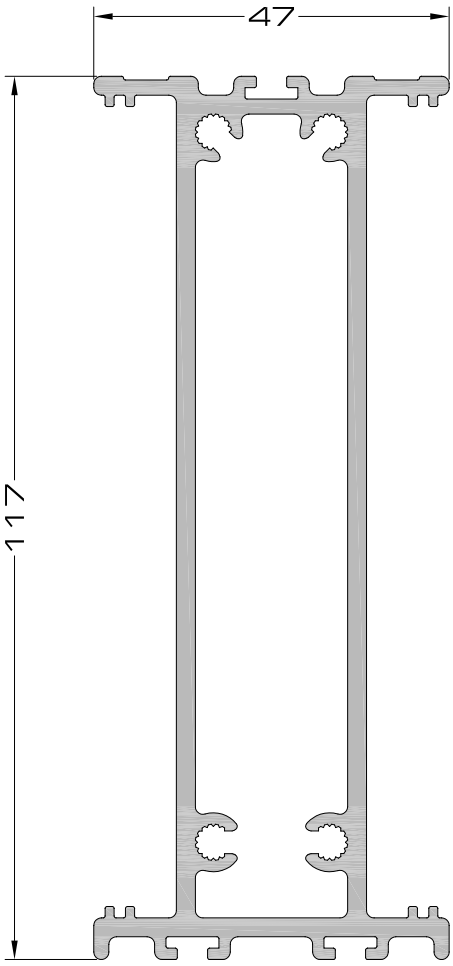
y x y x
Ix = 54.8cm4
Iy = 10.5cm4
Wx = 13.9cm3
Wy = 4.4cm3

P-52-520



y x y x
Ix = 98.1cm4
Iy = 11.7cm4
Wx = 19.8cm3
Wy = 4.9cm3

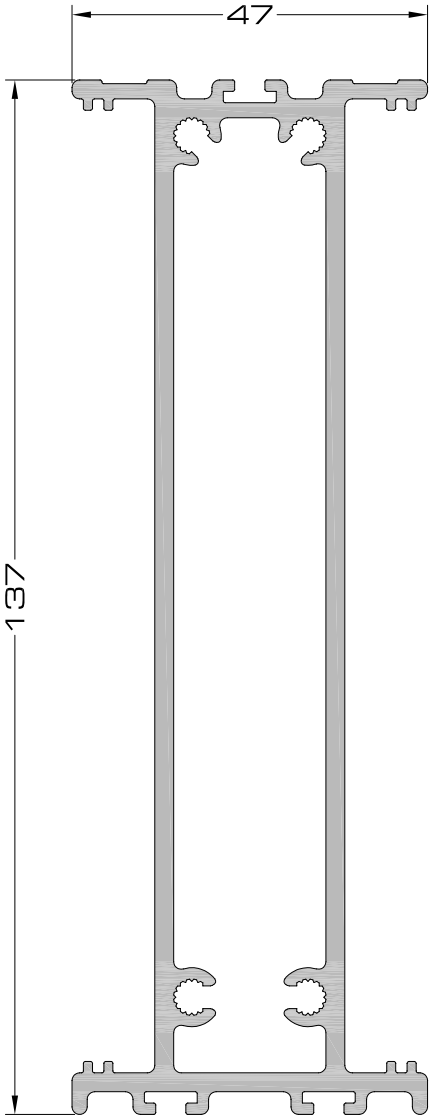
P-52-525



y x y x
Ix = 157.5cm4
Iy = 13.0cm4
Wx = 26.3cm3
Wy = 5.5cm3

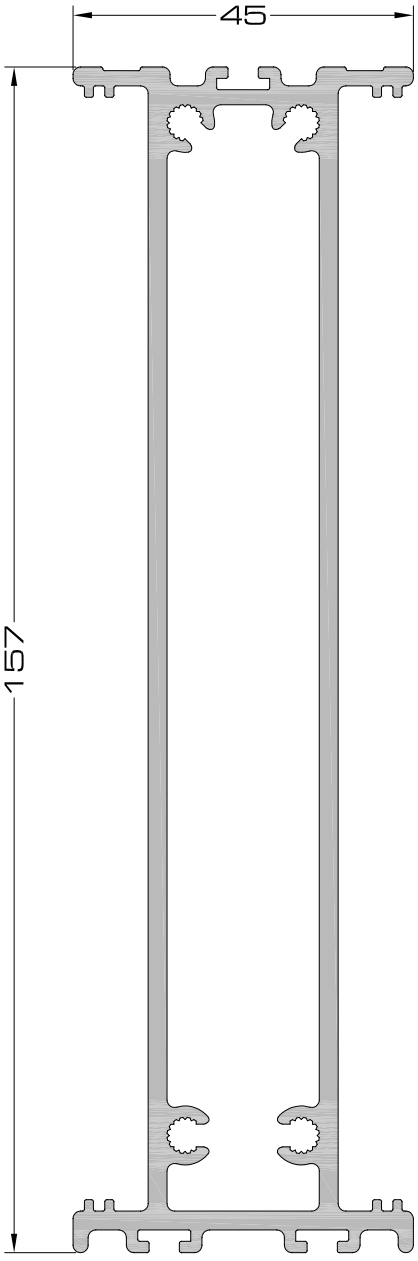
Kratos P52

P-52-530



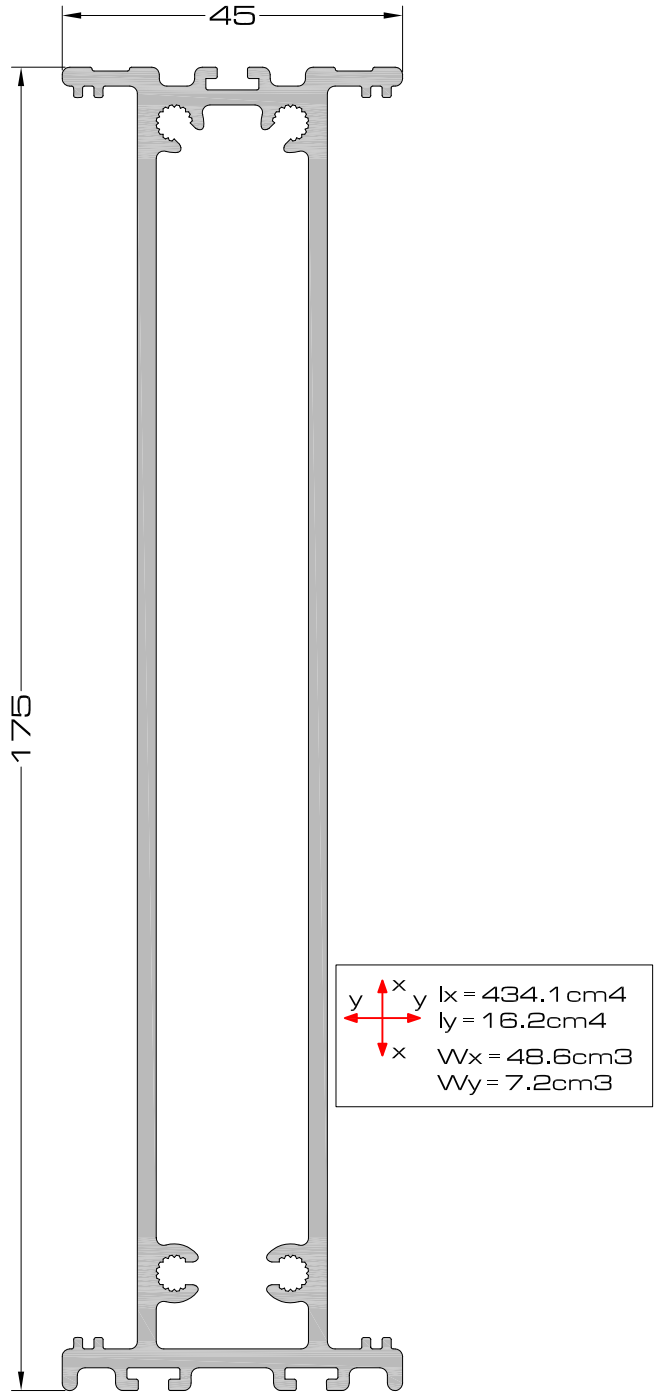
y x y x
Ix = 235.0cm4
Iy = 14.3cm4
Wx = 33.6cm3
Wy = 6.1 cm3

P-52-535

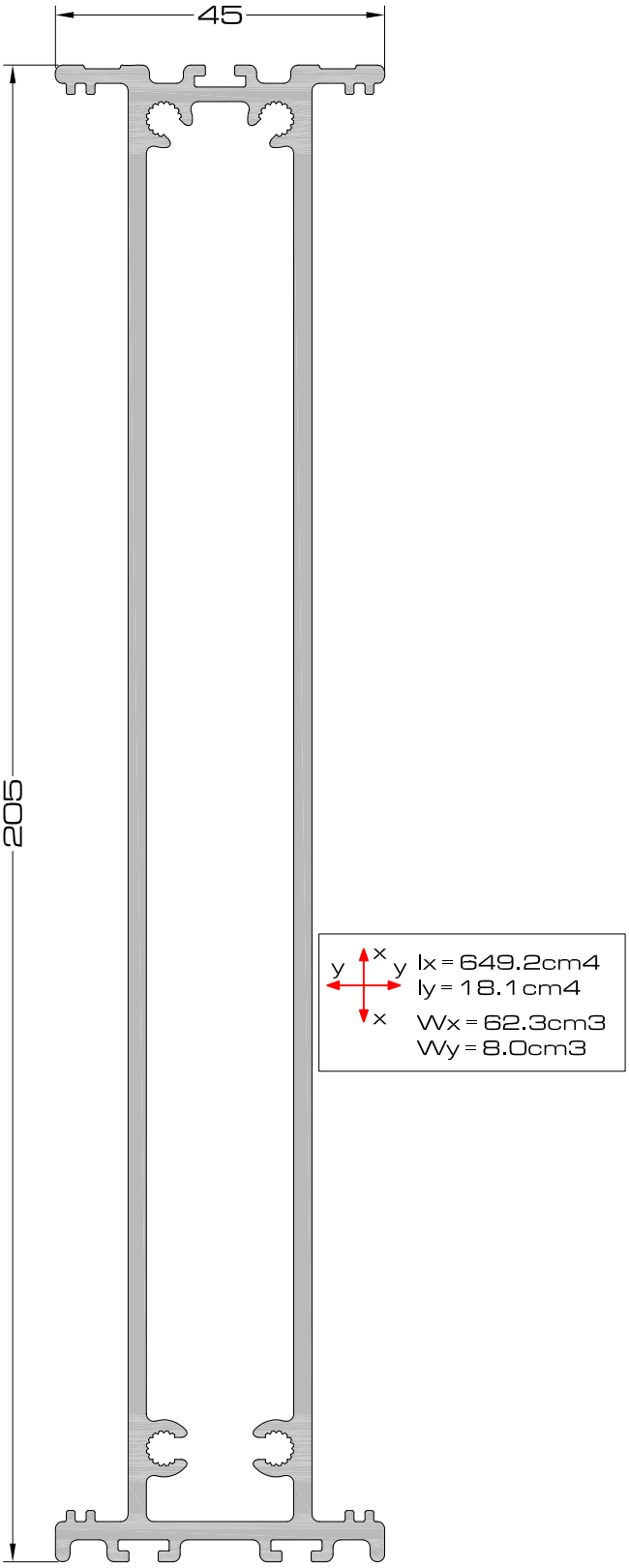


y x y x
Ix = 327.5cm4
Iy = 15.0cm4
Wx = 40.9cm3
Wy = 6.7cm3

P-52-540

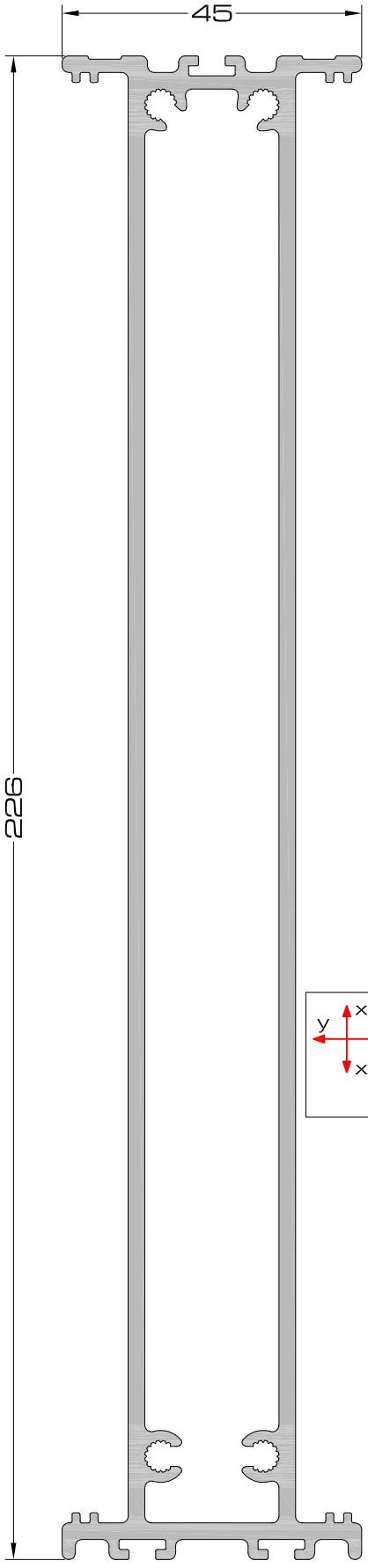


P-52-545



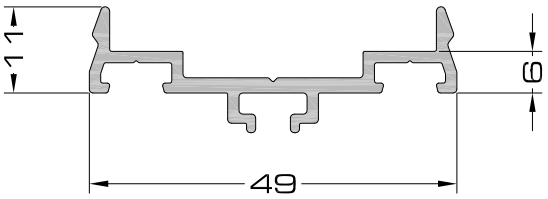
Kratos P52

P-52-550

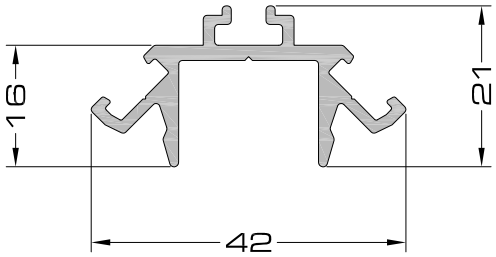


Ix = 842.3cm4
Iy = 19.4cm4
Wx = 73.2cm3
Wy = 8.6cm3

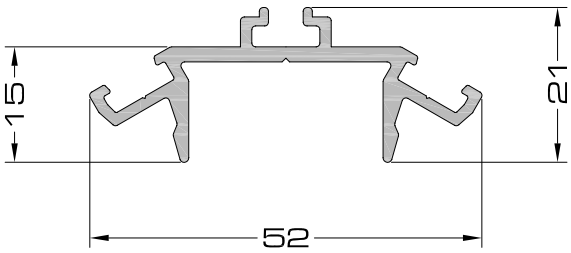
P-52-6000P



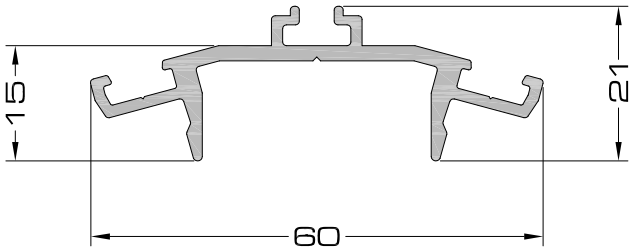
P-52-602



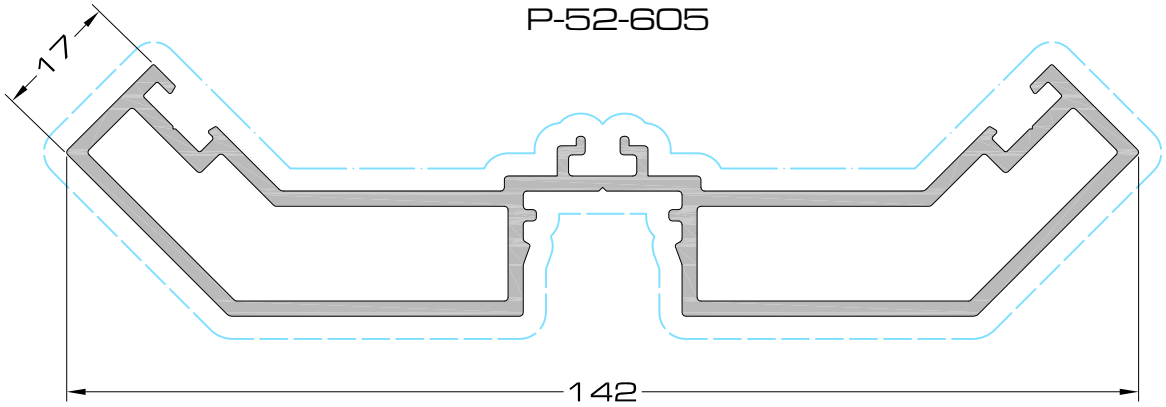
P-52-603



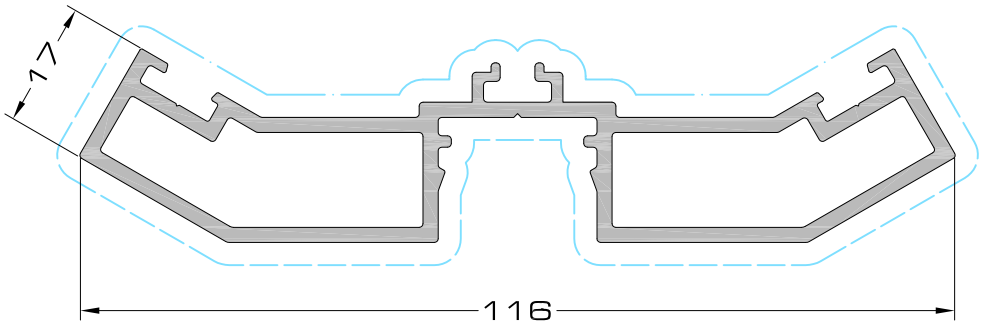
P-52-604



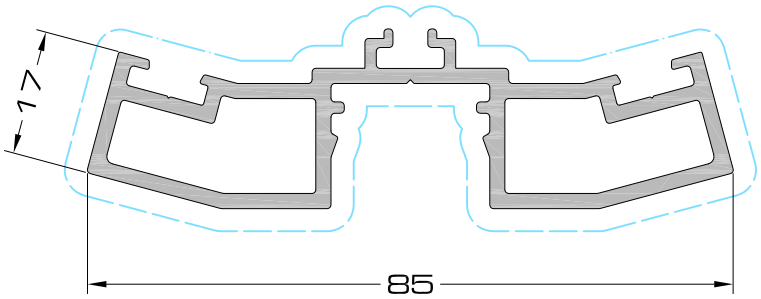
P-52-605



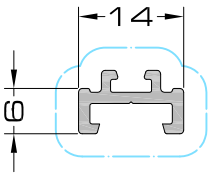
P-52-606



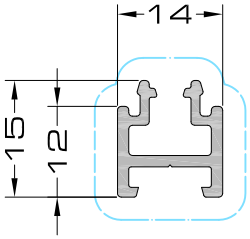
P-52-607



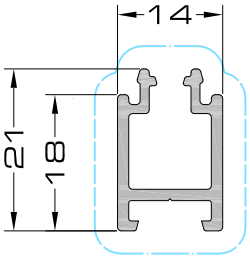
P-52-610



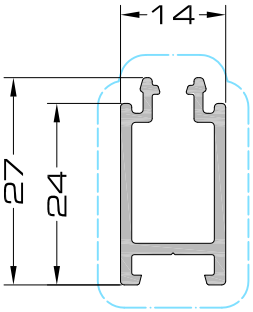
P-52-615



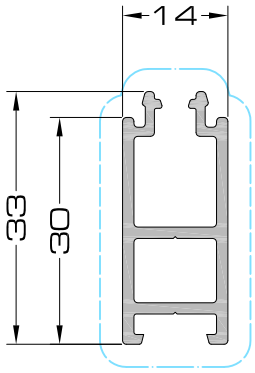
P-52-620



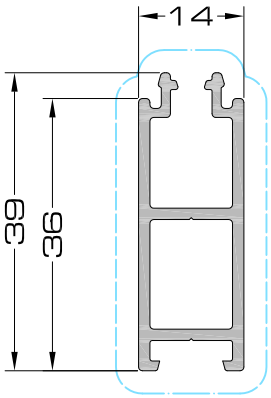
P-52-625



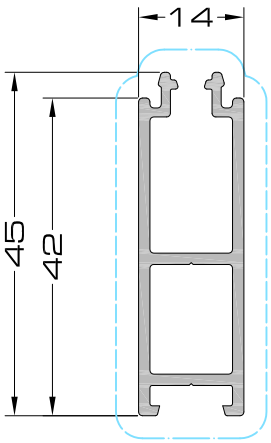
P-52-630



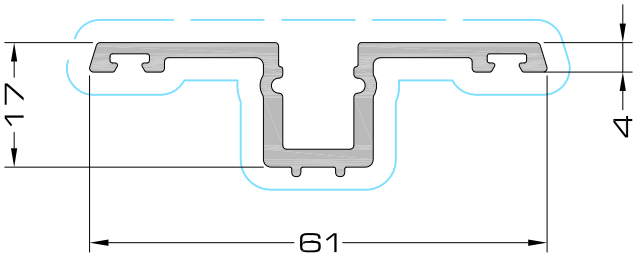
P-52-635



P-52-640

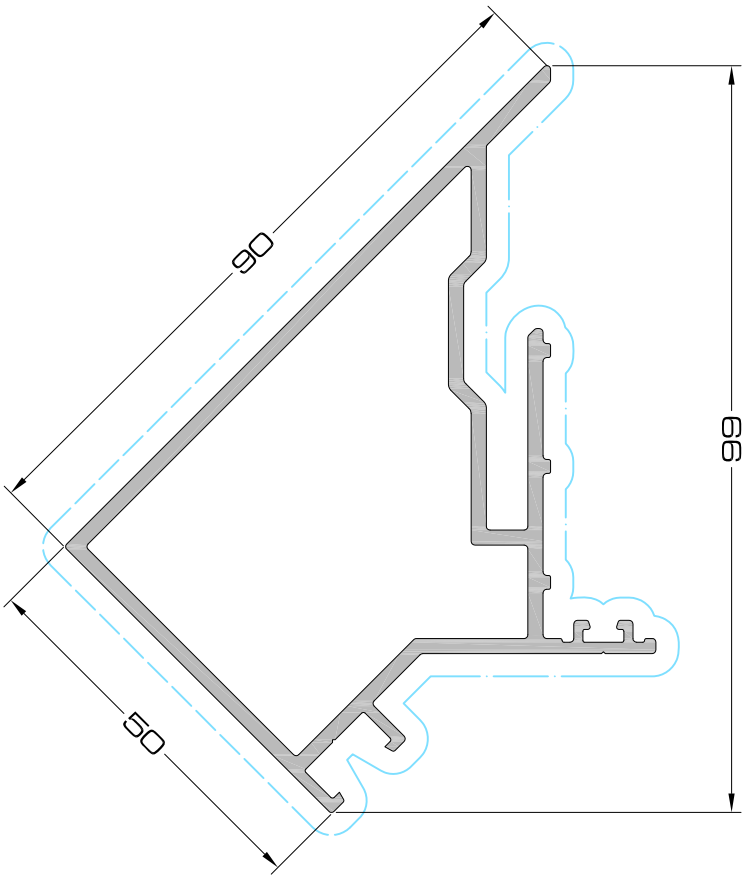


* P-52-689

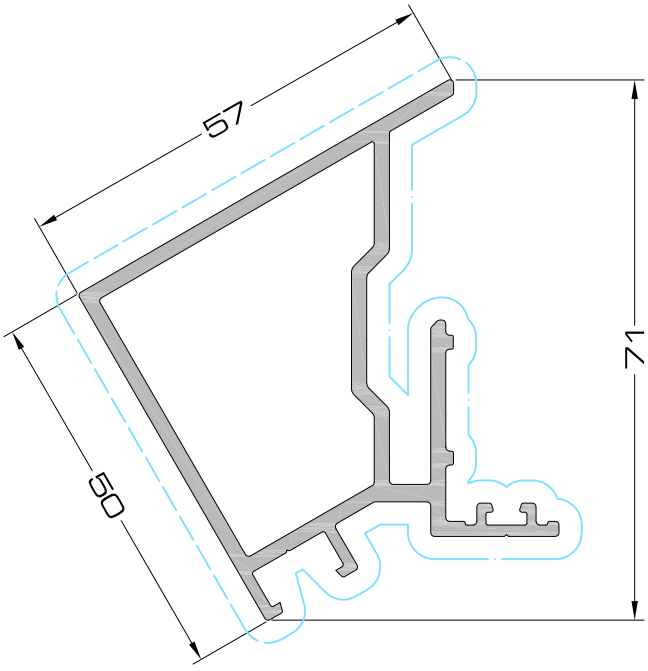


* Non Stock Item

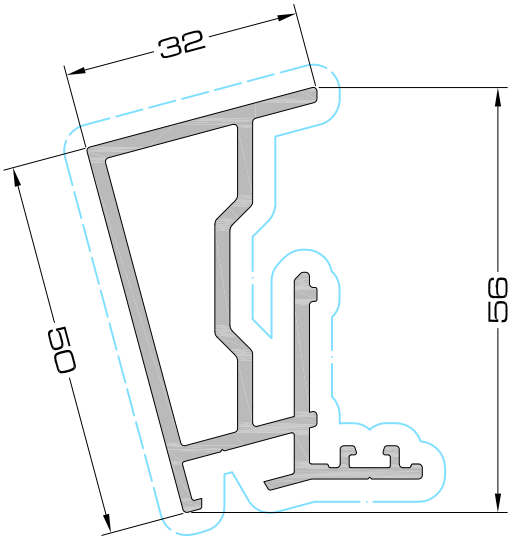
P-52-690



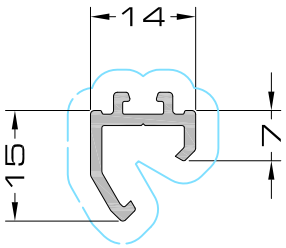
P-52-691



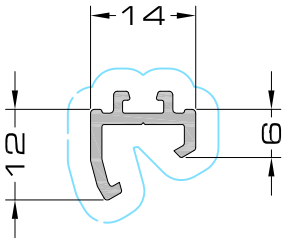
P-52-692



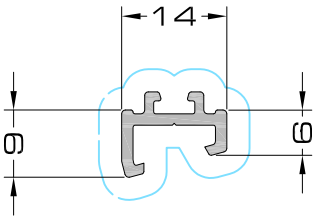
P-52-693



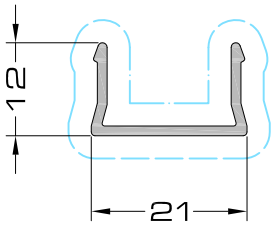
P-52-694



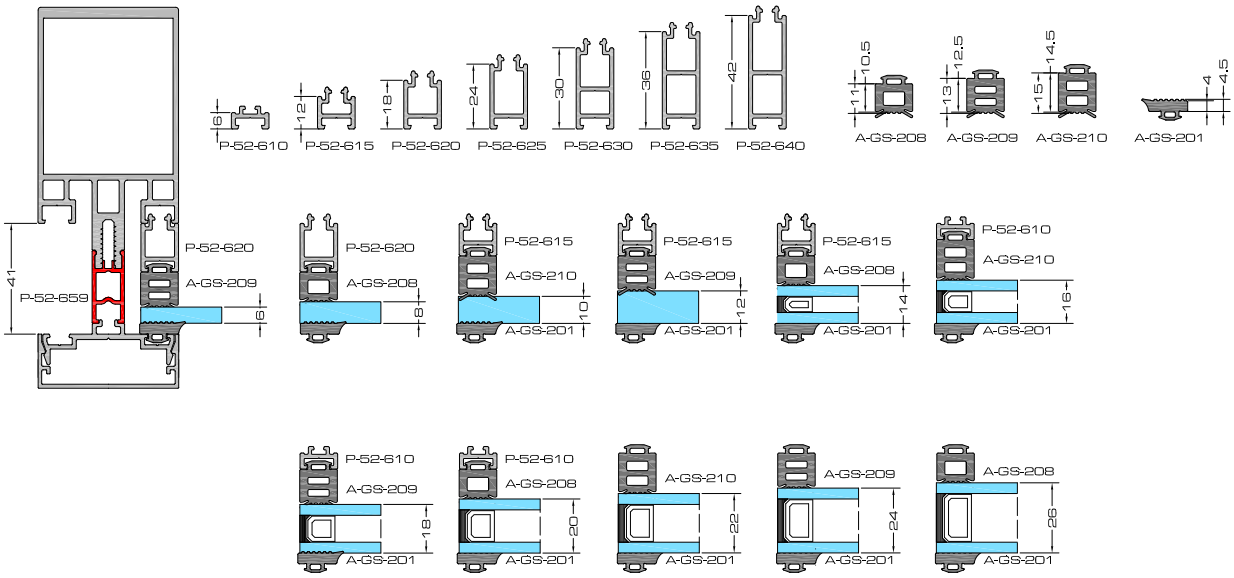
P-52-695



P-00-500

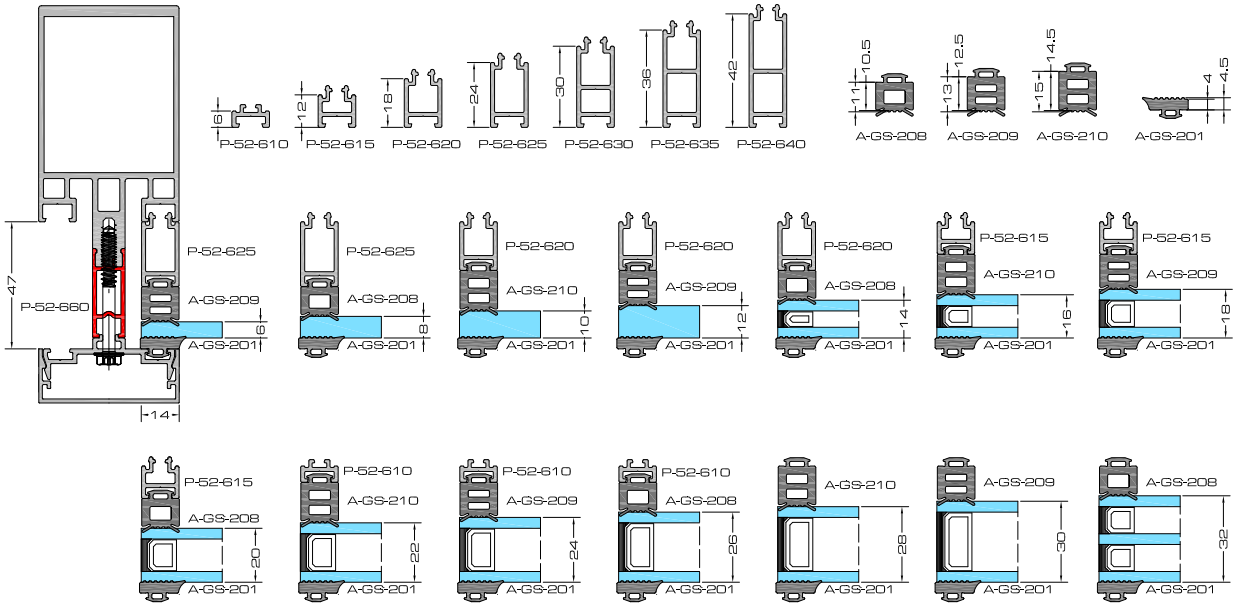


Level 2 Transom & Level 3 Mullion Glazing Configurations



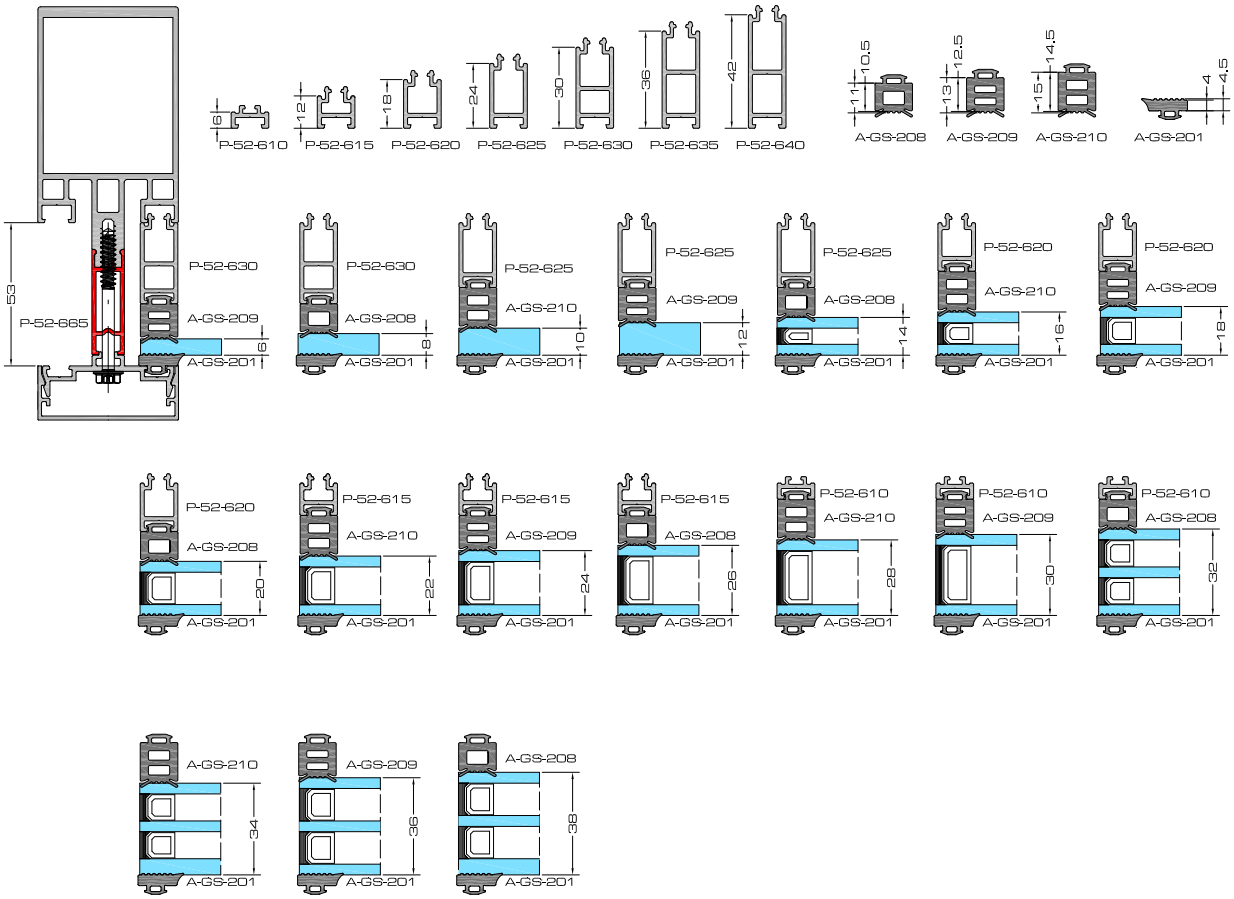
P-52-659	6mm	P-52-620	A-GS-209	A-GS-201	A-GS-220	A-52-304
P-52-659	8mm	P-52-620	A-GS-208	A-GS-201	A-GS-220	A-52-304
P-52-659	10mm	P-52-615	A-GS-210	A-GS-201	A-GS-220	A-52-304
P-52-659	12mm	P-52-615	A-GS-209	A-GS-201	A-GS-220	A-52-304
P-52-659	14mm	P-52-615	A-GS-208	A-GS-201	A-GS-220	A-52-304
P-52-659	16mm	P-52-610	A-GS-210	A-GS-201	A-GS-220	A-52-304
P-52-659	18mm	P-52-610	A-GS-209	A-GS-201	A-GS-220	A-52-304
P-52-659	20mm	P-52-610	A-GS-208	A-GS-201	A-GS-220	A-52-304
P-52-659	22mm	-	A-GS-210	A-GS-201	-	A-52-304
P-52-659	24mm	-	A-GS-209	A-GS-201	-	A-52-304
P-52-659	26mm	-	A-GS-208	A-GS-201	-	A-52-304

Level 2 Transom & Level 3 Mullion Glazing Configurations



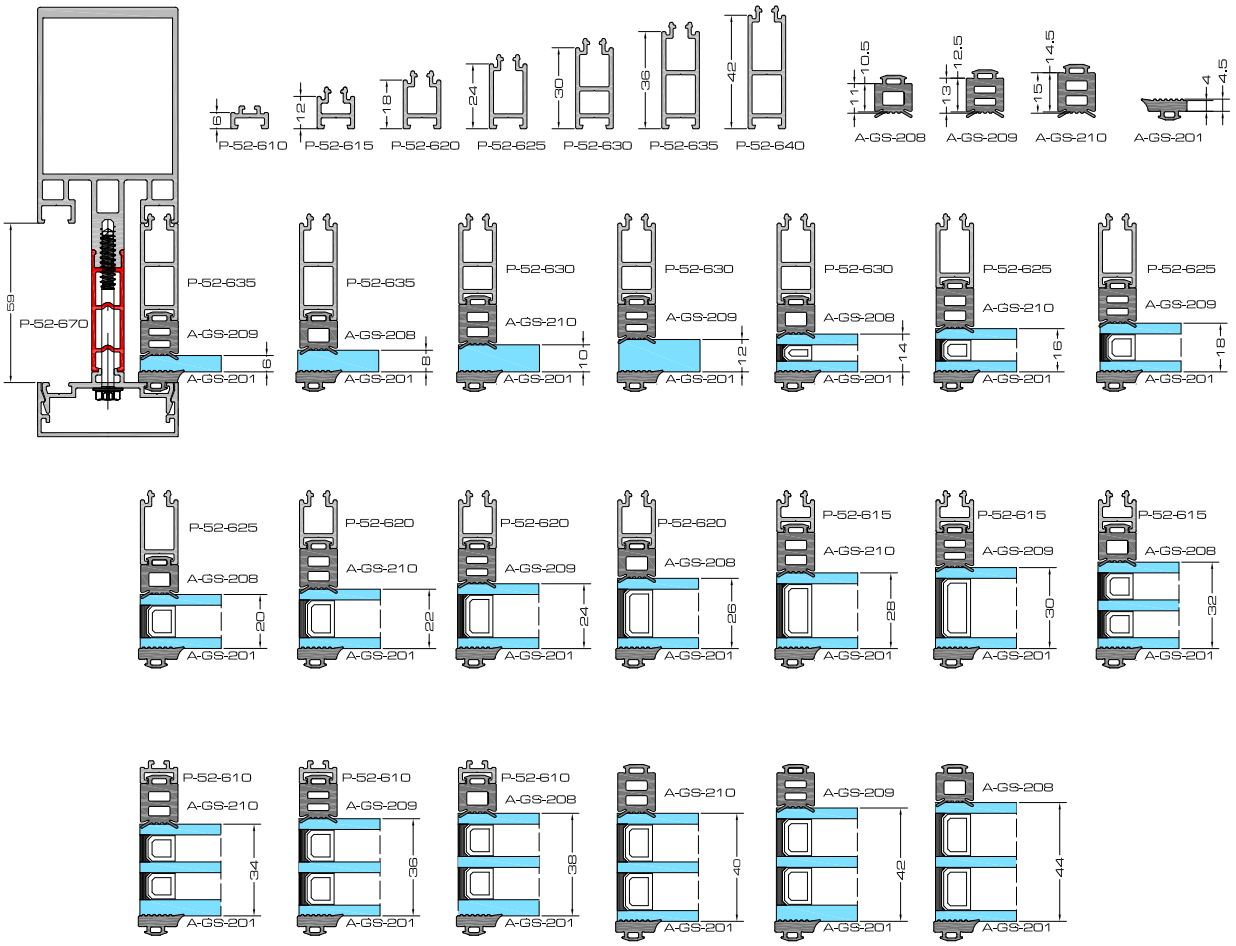
P-52-660	6mm	P-52-625	A-GS-209	A-GS-201	A-GS-220	A-52-300
P-52-660	8mm	P-52-625	A-GS-208	A-GS-201	A-GS-220	A-52-300
P-52-660	10mm	P-52-620	A-GS-210	A-GS-201	A-GS-220	A-52-300
P-52-660	12mm	P-52-620	A-GS-209	A-GS-201	A-GS-220	A-52-300
P-52-660	14mm	P-52-620	A-GS-208	A-GS-201	A-GS-220	A-52-300
P-52-660	16mm	P-52-615	A-GS-210	A-GS-201	A-GS-220	A-52-300
P-52-660	18mm	P-52-615	A-GS-209	A-GS-201	A-GS-220	A-52-300
P-52-660	20mm	P-52-615	A-GS-208	A-GS-201	A-GS-220	A-52-300
P-52-660	22mm	P-52-610	A-GS-210	A-GS-201	A-GS-220	A-52-300
P-52-660	24mm	P-52-610	A-GS-209	A-GS-201	A-GS-220	A-52-300
P-52-660	26mm	P-52-610	A-GS-208	A-GS-201	A-GS-220	A-52-300
P-52-660	28mm	-	A-GS-210	A-GS-201	-	A-52-300
P-52-660	30mm	-	A-GS-209	A-GS-201	-	A-52-300
P-52-660	32mm	-	A-GS-208	A-GS-201	-	A-52-300

Level 2 Transom & Level 3 Mullion Glazing Configurations



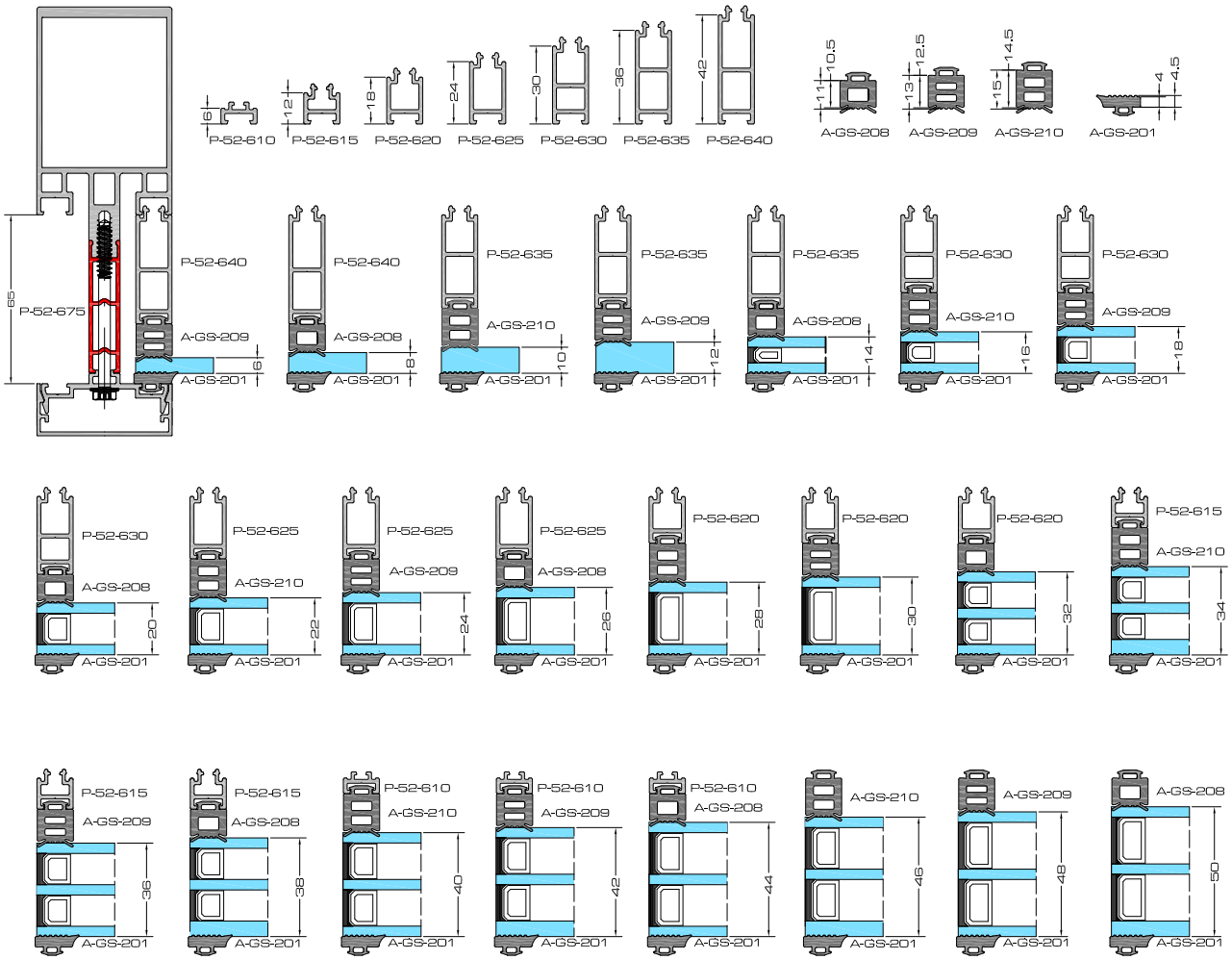
P-52-665	6mm	P-52-630	A-GS-209	A-GS-201	A-GS-220	A-52-301
P-52-665	8mm	P-52-630	A-GS-208	A-GS-201	A-GS-220	A-52-301
P-52-665	10mm	P-52-625	A-GS-210	A-GS-201	A-GS-220	A-52-301
P-52-665	12mm	P-52-625	A-GS-209	A-GS-201	A-GS-220	A-52-301
P-52-665	14mm	P-52-625	A-GS-208	A-GS-201	A-GS-220	A-52-301
P-52-665	16mm	P-52-620	A-GS-210	A-GS-201	A-GS-220	A-52-301
P-52-665	18mm	P-52-620	A-GS-209	A-GS-201	A-GS-220	A-52-301
P-52-665	20mm	P-52-620	A-GS-208	A-GS-201	A-GS-220	A-52-301
P-52-665	22mm	P-52-615	A-GS-210	A-GS-201	A-GS-220	A-52-301
P-52-665	24mm	P-52-615	A-GS-209	A-GS-201	A-GS-220	A-52-301
P-52-665	26mm	P-52-615	A-GS-208	A-GS-201	A-GS-220	A-52-301
P-52-665	28mm	P-52-610	A-GS-210	A-GS-201	A-GS-220	A-52-301
P-52-665	30mm	P-52-610	A-GS-209	A-GS-201	A-GS-220	A-52-301
P-52-665	32mm	P-52-610	A-GS-208	A-GS-201	A-GS-220	A-52-301
P-52-665	34mm	-	A-GS-210	A-GS-201	-	A-52-301
P-52-665	36mm	-	A-GS-209	A-GS-201	-	A-52-301
P-52-665	38mm	-	A-GS-208	A-GS-201	-	A-52-301

Level 2 Transom & Level 3 Mullion Glazing Configurations



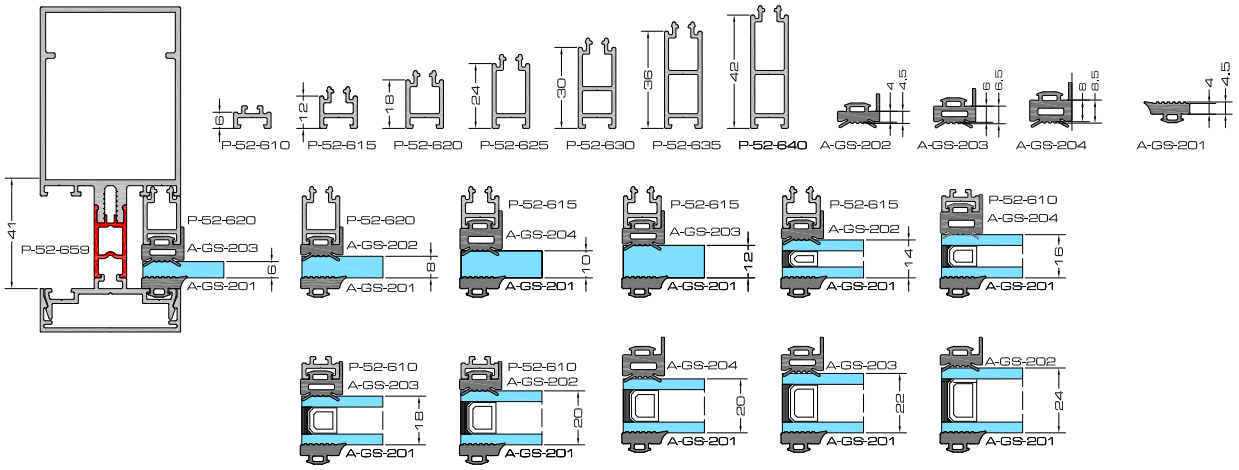
P-52-670	6mm	P-52-635	A-GS-209	A-GS-201	A-GS-220	A-52-302
P-52-670	8mm	P-52-635	A-GS-208	A-GS-201	A-GS-220	A-52-302
P-52-670	10mm	P-52-630	A-GS-210	A-GS-201	A-GS-220	A-52-302
P-52-670	12mm	P-52-630	A-GS-209	A-GS-201	A-GS-220	A-52-302
P-52-670	14mm	P-52-630	A-GS-208	A-GS-201	A-GS-220	A-52-302
P-52-670	16mm	P-52-625	A-GS-210	A-GS-201	A-GS-220	A-52-302
P-52-670	18mm	P-52-625	A-GS-209	A-GS-201	A-GS-220	A-52-302
P-52-670	20mm	P-52-625	A-GS-208	A-GS-201	A-GS-220	A-52-302
P-52-670	22mm	P-52-620	A-GS-210	A-GS-201	A-GS-220	A-52-302
P-52-670	24mm	P-52-620	A-GS-209	A-GS-201	A-GS-220	A-52-302
P-52-670	26mm	P-52-620	A-GS-208	A-GS-201	A-GS-220	A-52-302
P-52-670	28mm	P-52-615	A-GS-210	A-GS-201	A-GS-220	A-52-302
P-52-670	30mm	P-52-615	A-GS-209	A-GS-201	A-GS-220	A-52-302
P-52-670	32mm	P-52-615	A-GS-208	A-GS-201	A-GS-220	A-52-302
P-52-670	34mm	P-52-610	A-GS-210	A-GS-201	A-GS-220	A-52-302
P-52-670	36mm	P-52-610	A-GS-209	A-GS-201	A-GS-220	A-52-302
P-52-670	38mm	P-52-610	A-GS-208	A-GS-201	A-GS-220	A-52-302
P-52-670	40mm	-	A-GS-210	A-GS-201	-	A-52-302
P-52-670	42mm	-	A-GS-209	A-GS-201	-	A-52-302
P-52-670	44mm	-	A-GS-208	A-GS-201	-	A-52-302

Level 2 Transom & Level 3 Mullion Glazing Configurations



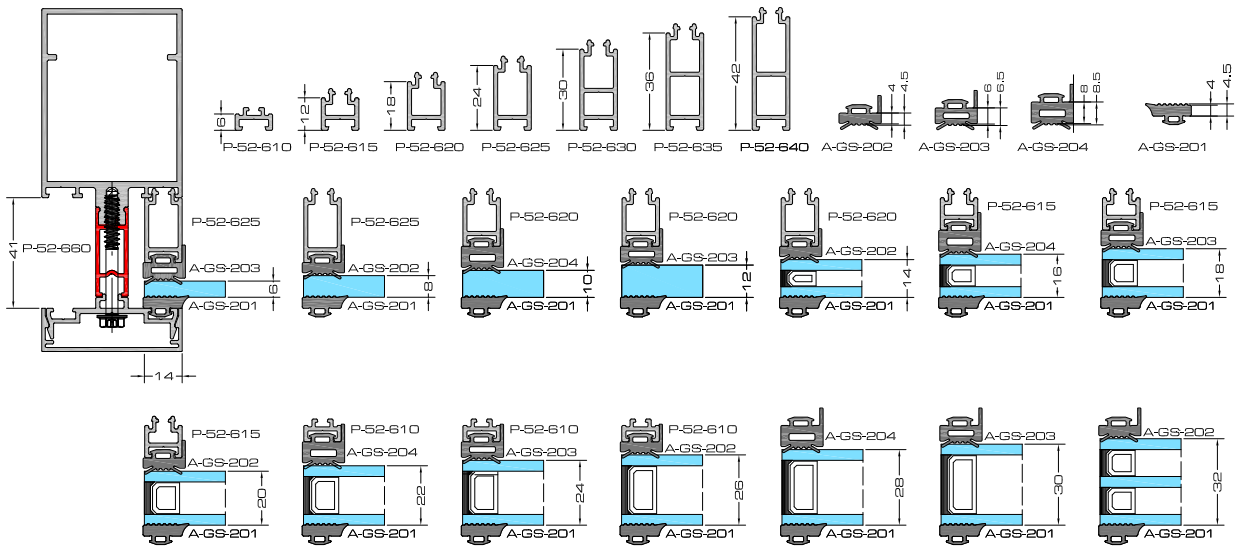
P-52-675	6mm	P-52-640	A-GS-209	A-GS-201	A-GS-220	A-52-303
P-52-675	8mm	P-52-640	A-GS-208	A-GS-201	A-GS-220	A-52-303
P-52-675	10mm	P-52-635	A-GS-210	A-GS-201	A-GS-220	A-52-303
P-52-675	12mm	P-52-635	A-GS-209	A-GS-201	A-GS-220	A-52-303
P-52-675	14mm	P-52-635	A-GS-208	A-GS-201	A-GS-220	A-52-303
P-52-675	16mm	P-52-630	A-GS-210	A-GS-201	A-GS-220	A-52-303
P-52-675	18mm	P-52-630	A-GS-209	A-GS-201	A-GS-220	A-52-303
P-52-675	20mm	P-52-630	A-GS-208	A-GS-201	A-GS-220	A-52-303
P-52-675	22mm	P-52-625	A-GS-210	A-GS-201	A-GS-220	A-52-303
P-52-675	24mm	P-52-625	A-GS-209	A-GS-201	A-GS-220	A-52-303
P-52-675	26mm	P-52-625	A-GS-208	A-GS-201	A-GS-220	A-52-303
P-52-675	28mm	P-52-620	A-GS-210	A-GS-201	A-GS-220	A-52-303
P-52-675	30mm	P-52-620	A-GS-209	A-GS-201	A-GS-220	A-52-303
P-52-675	32mm	P-52-620	A-GS-208	A-GS-201	A-GS-220	A-52-303
P-52-675	34mm	P-52-615	A-GS-210	A-GS-201	A-GS-220	A-52-303
P-52-675	36mm	P-52-615	A-GS-209	A-GS-201	A-GS-220	A-52-303
P-52-675	38mm	P-52-615	A-GS-208	A-GS-201	A-GS-220	A-52-303
P-52-675	40mm	P-52-610	A-GS-210	A-GS-201	A-GS-220	A-52-303
P-52-675	42mm	P-52-610	A-GS-209	A-GS-201	A-GS-220	A-52-303
P-52-675	44mm	P-52-610	A-GS-208	A-GS-201	A-GS-220	A-52-303
P-52-675	46mm	-	A-GS-210	A-GS-201	-	A-52-303
P-52-675	48mm	-	A-GS-209	A-GS-201	-	A-52-303
P-52-675	50mm	-	A-GS-208	A-GS-201	-	A-52-303

Level 1 Transom Glazing Configurations



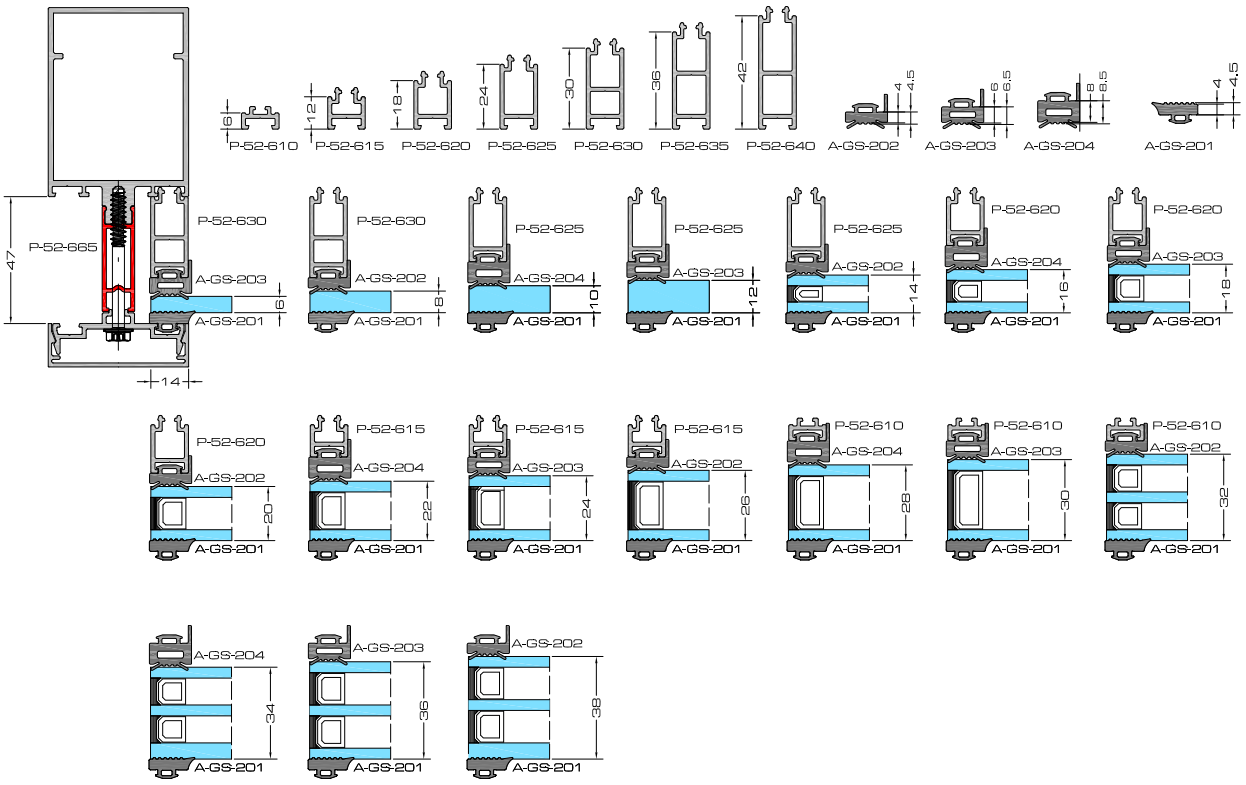
P-52-659	6mm	P-52-620	A-GS-203	A-GS-201	A-GS-221	A-52-304	A-52-154
P-52-659	8mm	P-52-620	A-GS-202	A-GS-201	A-GS-221	A-52-304	A-52-154
P-52-659	10mm	P-52-615	A-GS-204	A-GS-201	A-GS-221	A-52-304	A-52-154
P-52-659	12mm	P-52-615	A-GS-203	A-GS-201	A-GS-221	A-52-304	A-52-154
P-52-659	14mm	P-52-615	A-GS-202	A-GS-201	A-GS-221	A-52-304	A-52-154
P-52-659	16mm	P-52-610	A-GS-204	A-GS-201	A-GS-221	A-52-304	A-52-154
P-52-659	18mm	P-52-610	A-GS-203	A-GS-201	A-GS-221	A-52-304	A-52-154
P-52-659	20mm	P-52-610	A-GS-202	A-GS-201	A-GS-221	A-52-304	A-52-154
P-52-659	22mm	-	A-GS-204	A-GS-201	-	A-52-304	A-52-154
P-52-659	24mm	-	A-GS-203	A-GS-201	-	A-52-304	A-52-154
P-52-659	26mm	-	A-GS-202	A-GS-201	-	A-52-304	A-52-154

Level 1 Transom Glazing Configurations



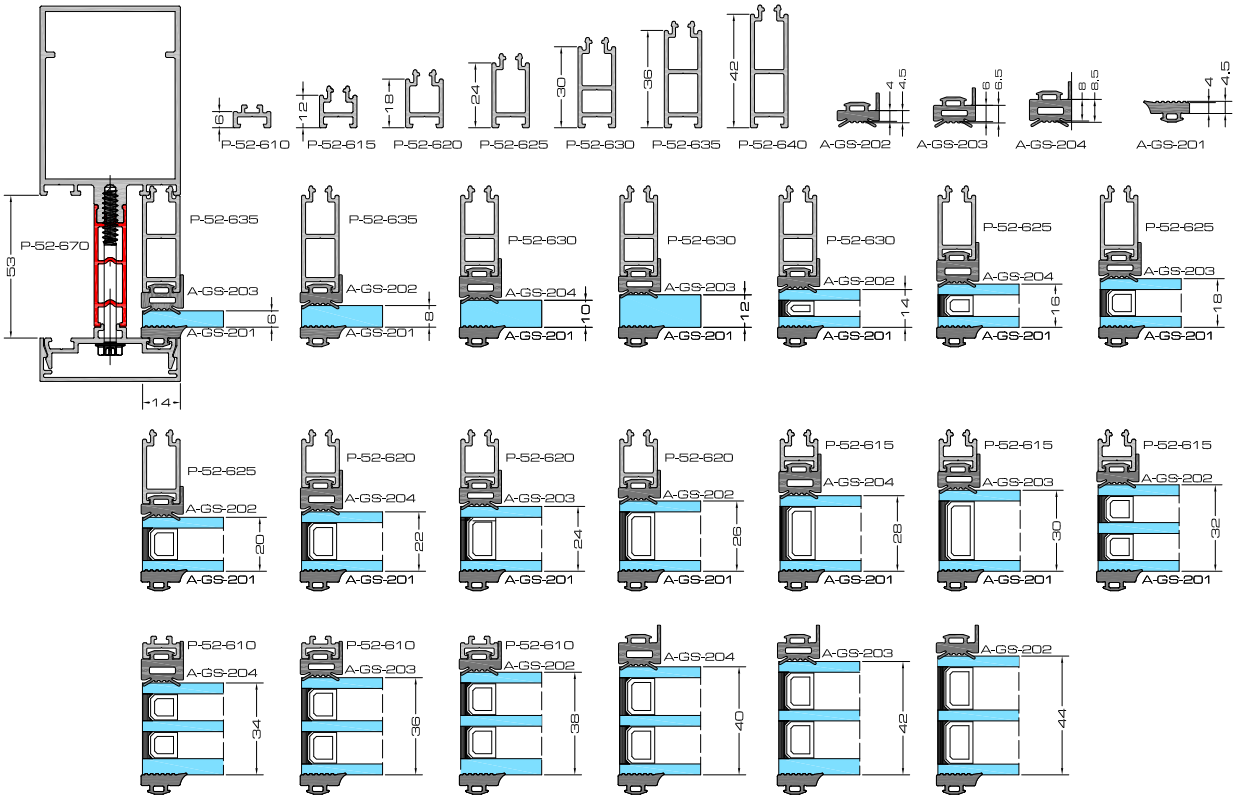
P-52-660	6mm	P-52-625	A-GS-203	A-GS-201	A-GS-221	A-52-300	A-52-150
P-52-660	8mm	P-52-625	A-GS-202	A-GS-201	A-GS-221	A-52-300	A-52-150
P-52-660	10mm	P-52-620	A-GS-204	A-GS-201	A-GS-221	A-52-300	A-52-150
P-52-660	12mm	P-52-620	A-GS-203	A-GS-201	A-GS-221	A-52-300	A-52-150
P-52-660	14mm	P-52-620	A-GS-202	A-GS-201	A-GS-221	A-52-300	A-52-150
P-52-660	16mm	P-52-615	A-GS-204	A-GS-201	A-GS-221	A-52-300	A-52-150
P-52-660	18mm	P-52-615	A-GS-203	A-GS-201	A-GS-221	A-52-300	A-52-150
P-52-660	20mm	P-52-615	A-GS-202	A-GS-201	A-GS-221	A-52-300	A-52-150
P-52-660	22mm	P-52-610	A-GS-204	A-GS-201	A-GS-221	A-52-300	A-52-150
P-52-660	24mm	P-52-610	A-GS-203	A-GS-201	A-GS-221	A-52-300	A-52-150
P-52-660	26mm	P-52-610	A-GS-202	A-GS-201	A-GS-221	A-52-300	A-52-150
P-52-660	28mm	-	A-GS-204	A-GS-201	-	A-52-300	A-52-150
P-52-660	30mm	-	A-GS-203	A-GS-201	-	A-52-300	A-52-150
P-52-660	32mm	-	A-GS-202	A-GS-201	-	A-52-300	A-52-150

Level 1 Transom Glazing Configurations



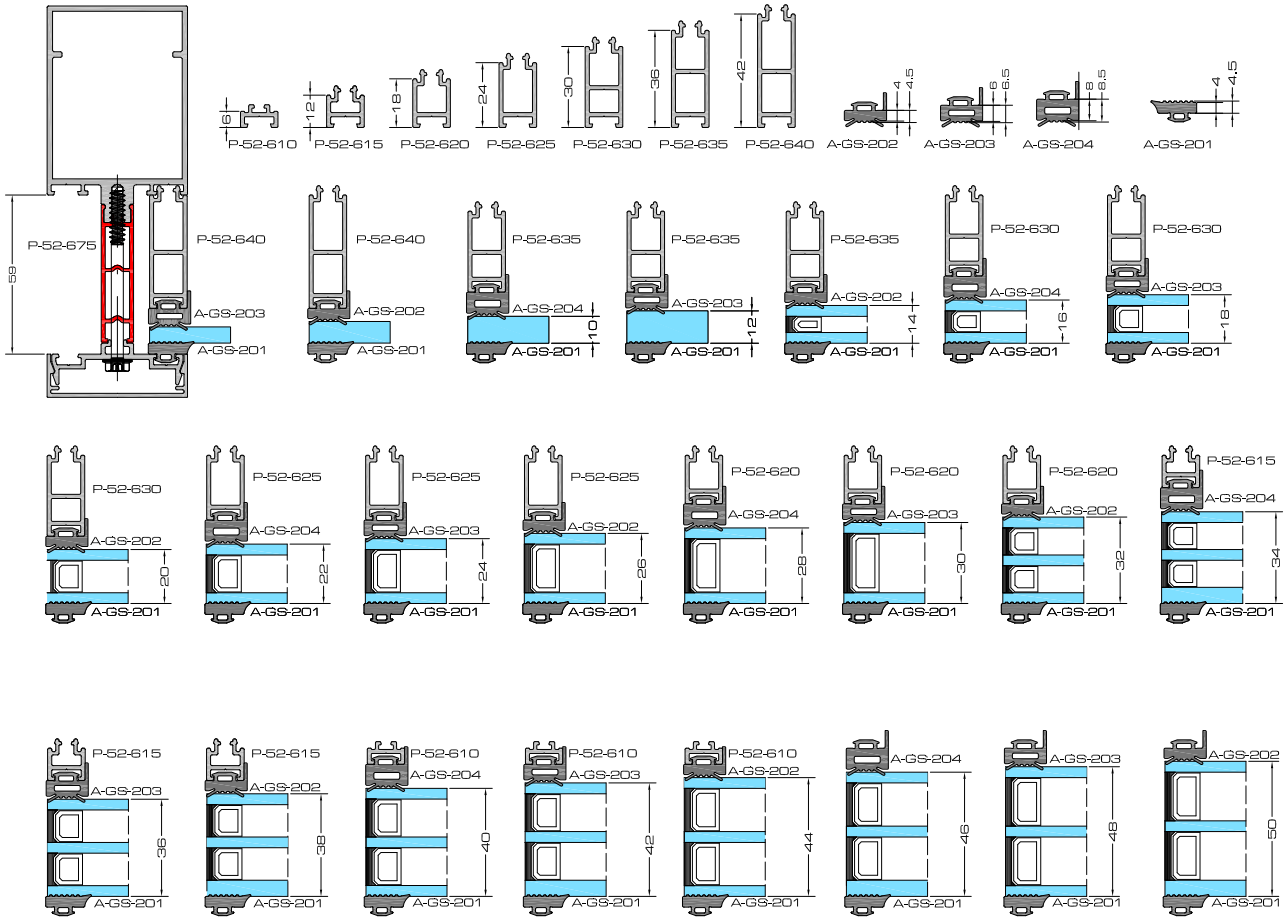
P-52-665	6mm	P-52-630	A-GS-203	A-GS-201	A-GS-221	A-52-301	A-52-151
P-52-665	8mm	P-52-630	A-GS-202	A-GS-201	A-GS-221	A-52-301	A-52-151
P-52-665	10mm	P-52-625	A-GS-204	A-GS-201	A-GS-221	A-52-301	A-52-151
P-52-665	12mm	P-52-625	A-GS-203	A-GS-201	A-GS-221	A-52-301	A-52-151
P-52-665	14mm	P-52-625	A-GS-202	A-GS-201	A-GS-221	A-52-301	A-52-151
P-52-665	16mm	P-52-620	A-GS-204	A-GS-201	A-GS-221	A-52-301	A-52-151
P-52-665	18mm	P-52-620	A-GS-203	A-GS-201	A-GS-221	A-52-301	A-52-151
P-52-665	20mm	P-52-620	A-GS-202	A-GS-201	A-GS-221	A-52-301	A-52-151
P-52-665	22mm	P-52-615	A-GS-204	A-GS-201	A-GS-221	A-52-301	A-52-151
P-52-665	24mm	P-52-615	A-GS-203	A-GS-201	A-GS-221	A-52-301	A-52-151
P-52-665	26mm	P-52-615	A-GS-202	A-GS-201	A-GS-221	A-52-301	A-52-151
P-52-665	28mm	P-52-610	A-GS-204	A-GS-201	A-GS-221	A-52-301	A-52-151
P-52-665	30mm	P-52-610	A-GS-203	A-GS-201	A-GS-221	A-52-301	A-52-151
P-52-665	32mm	P-52-610	A-GS-202	A-GS-201	A-GS-221	A-52-301	A-52-151
P-52-665	34mm	-	A-GS-204	A-GS-201	-	A-52-301	A-52-151
P-52-665	36mm	-	A-GS-203	A-GS-201	-	A-52-301	A-52-151
P-52-665	38mm	-	A-GS-202	A-GS-201	-	A-52-301	A-52-151

Level 1 Transom Glazing Configurations

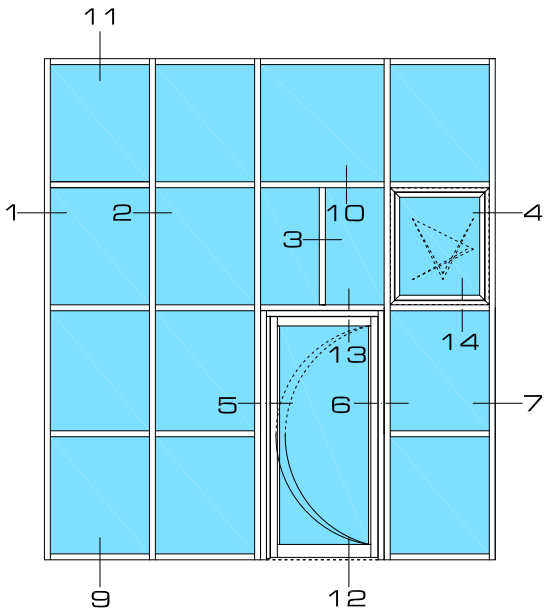


P-52-670	6mm	P-52-635	A-GS-203	A-GS-201	A-GS-221	A-52-302	A-52-152
P-52-670	8mm	P-52-635	A-GS-202	A-GS-201	A-GS-221	A-52-302	A-52-152
P-52-670	10mm	P-52-630	A-GS-204	A-GS-201	A-GS-221	A-52-302	A-52-152
P-52-670	12mm	P-52-630	A-GS-203	A-GS-201	A-GS-221	A-52-302	A-52-152
P-52-670	14mm	P-52-630	A-GS-202	A-GS-201	A-GS-221	A-52-302	A-52-152
P-52-670	16mm	P-52-625	A-GS-204	A-GS-201	A-GS-221	A-52-302	A-52-152
P-52-670	18mm	P-52-625	A-GS-203	A-GS-201	A-GS-221	A-52-302	A-52-152
P-52-670	20mm	P-52-625	A-GS-202	A-GS-201	A-GS-221	A-52-302	A-52-152
P-52-670	22mm	P-52-620	A-GS-204	A-GS-201	A-GS-221	A-52-302	A-52-152
P-52-670	24mm	P-52-620	A-GS-203	A-GS-201	A-GS-221	A-52-302	A-52-152
P-52-670	26mm	P-52-620	A-GS-202	A-GS-201	A-GS-221	A-52-302	A-52-152
P-52-670	28mm	P-52-615	A-GS-204	A-GS-201	A-GS-221	A-52-302	A-52-152
P-52-670	30mm	P-52-615	A-GS-203	A-GS-201	A-GS-221	A-52-302	A-52-152
P-52-670	32mm	P-52-615	A-GS-202	A-GS-201	A-GS-221	A-52-302	A-52-152
P-52-670	34mm	P-52-610	A-GS-204	A-GS-201	A-GS-221	A-52-302	A-52-152
P-52-670	36mm	P-52-610	A-GS-203	A-GS-201	A-GS-221	A-52-302	A-52-152
P-52-670	38mm	P-52-610	A-GS-202	A-GS-201	A-GS-221	A-52-302	A-52-152
P-52-670	40mm	-	A-GS-204	A-GS-201	-	A-52-302	A-52-152
P-52-670	42mm	-	A-GS-203	A-GS-201	-	A-52-302	A-52-152
P-52-670	44mm	-	A-GS-202	A-GS-201	-	A-52-302	A-52-152

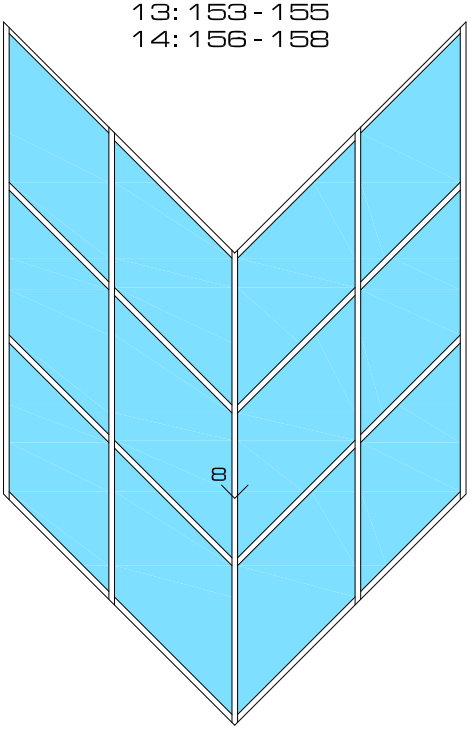
Level 1 Transom Glazing Configurations



P-52-675	6mm	P-52-640	A-GS-203	A-GS-201	A-GS-221	A-52-303	A-52-153
P-52-675	8mm	P-52-640	A-GS-202	A-GS-201	A-GS-221	A-52-303	A-52-153
P-52-675	10mm	P-52-635	A-GS-204	A-GS-201	A-GS-221	A-52-303	A-52-153
P-52-675	12mm	P-52-635	A-GS-203	A-GS-201	A-GS-221	A-52-303	A-52-153
P-52-675	14mm	P-52-635	A-GS-202	A-GS-201	A-GS-221	A-52-303	A-52-153
P-52-675	16mm	P-52-630	A-GS-204	A-GS-201	A-GS-221	A-52-303	A-52-153
P-52-675	18mm	P-52-630	A-GS-203	A-GS-201	A-GS-221	A-52-303	A-52-153
P-52-675	20mm	P-52-630	A-GS-202	A-GS-201	A-GS-221	A-52-303	A-52-153
P-52-675	22mm	P-52-625	A-GS-204	A-GS-201	A-GS-221	A-52-303	A-52-153
P-52-675	24mm	P-52-625	A-GS-203	A-GS-201	A-GS-221	A-52-303	A-52-153
P-52-675	26mm	P-52-625	A-GS-202	A-GS-201	A-GS-221	A-52-303	A-52-153
P-52-675	28mm	P-52-620	A-GS-204	A-GS-201	A-GS-221	A-52-303	A-52-153
P-52-675	30mm	P-52-620	A-GS-203	A-GS-201	A-GS-221	A-52-303	A-52-153
P-52-675	32mm	P-52-620	A-GS-202	A-GS-201	A-GS-221	A-52-303	A-52-153
P-52-675	34mm	P-52-615	A-GS-204	A-GS-201	A-GS-221	A-52-303	A-52-153
P-52-675	36mm	P-52-615	A-GS-203	A-GS-201	A-GS-221	A-52-303	A-52-153
P-52-675	38mm	P-52-615	A-GS-202	A-GS-201	A-GS-221	A-52-303	A-52-153
P-52-675	40mm	P-52-610	A-GS-204	A-GS-201	A-GS-221	A-52-303	A-52-153
P-52-675	42mm	P-52-610	A-GS-203	A-GS-201	A-GS-221	A-52-303	A-52-153
P-52-675	44mm	P-52-610	A-GS-202	A-GS-201	A-GS-221	A-52-303	A-52-153
P-52-675	46mm	-	A-GS-204	A-GS-201	-	A-52-303	A-52-153
P-52-675	48mm	-	A-GS-203	A-GS-201	-	A-52-303	A-52-153
P-52-675	50mm	-	A-GS-202	A-GS-201	-	A-52-303	A-52-153



1: 120
2: 121 - 126
3: 127
4: 143 - 145
5: 146 - 148
6: 149
7: 120
8: 128 - 136
9: 137
10: 138 - 141
11: 142
12: 150 - 152
13: 153 - 155
14: 156 - 158



Kratos P52

Wall Connection

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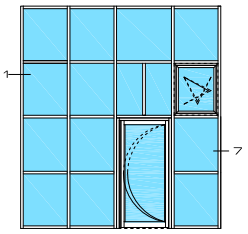

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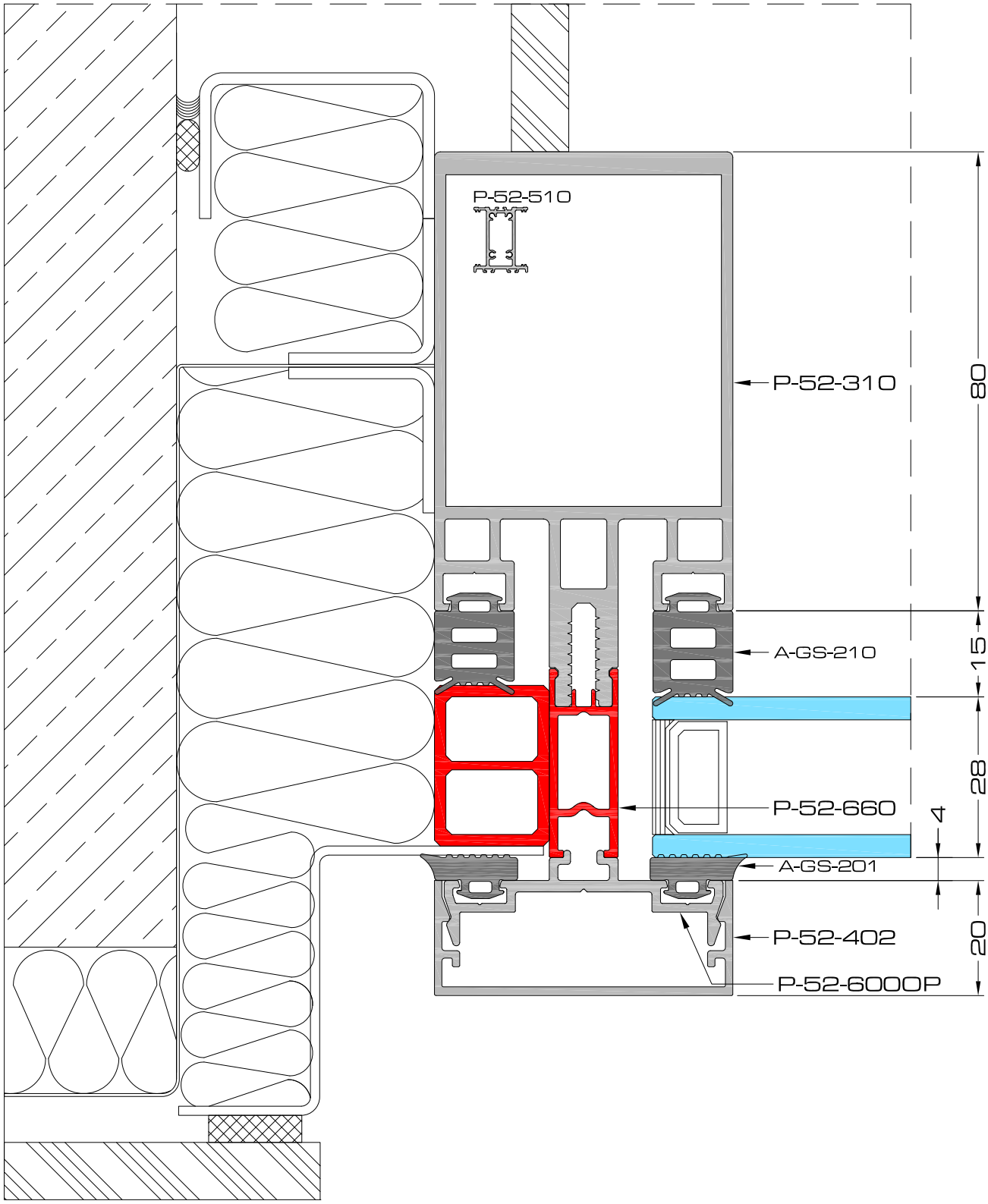
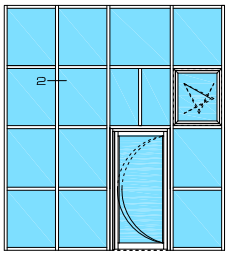


Mullion

Scale 1:1



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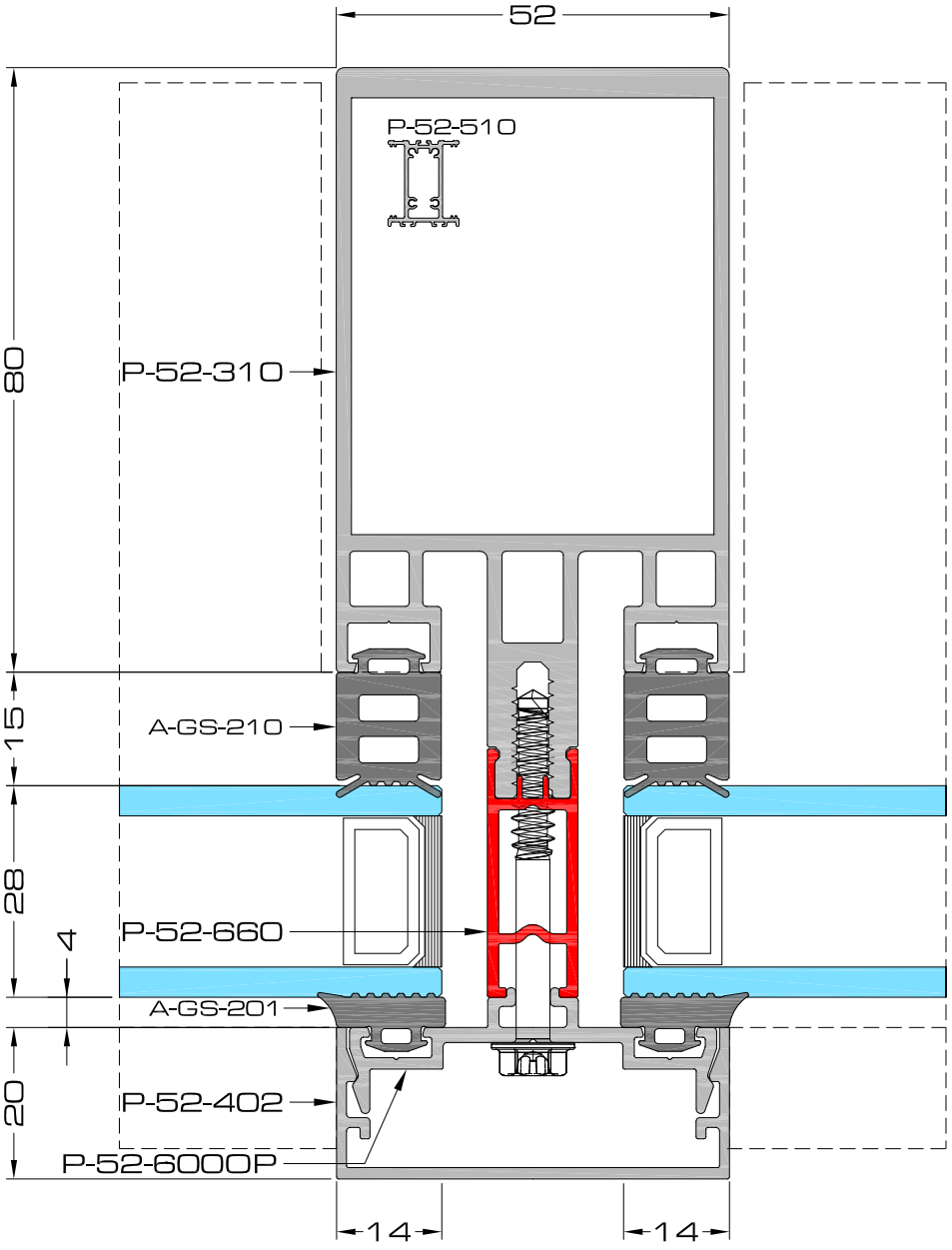
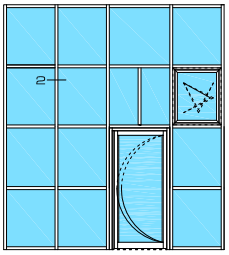


Kratos P52

Economic Mullion

Scale 1:1



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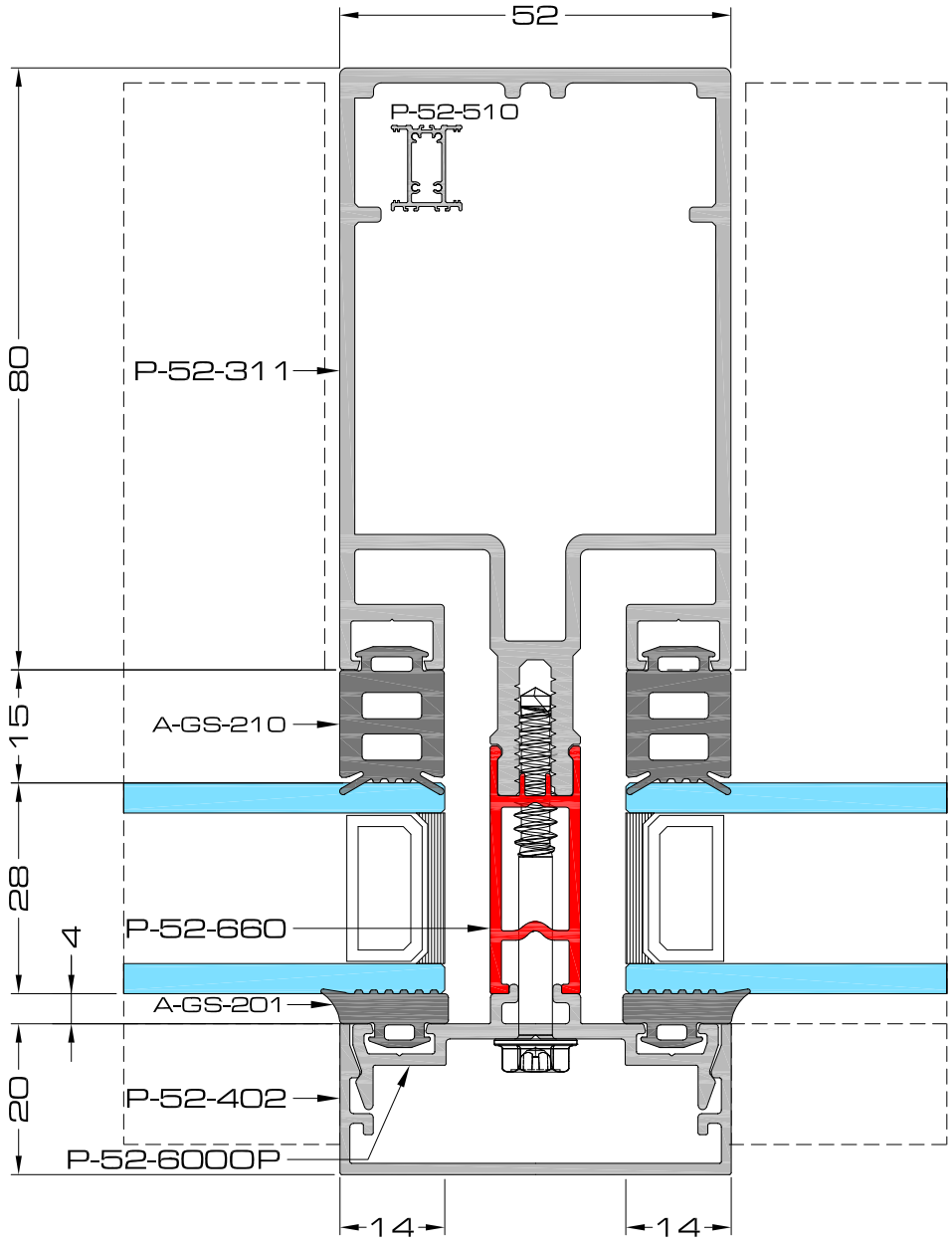
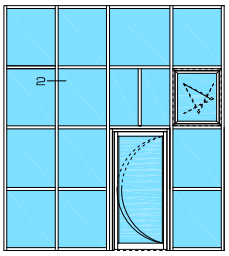


Mullion With Glazing Adaptor

Scale 1:1



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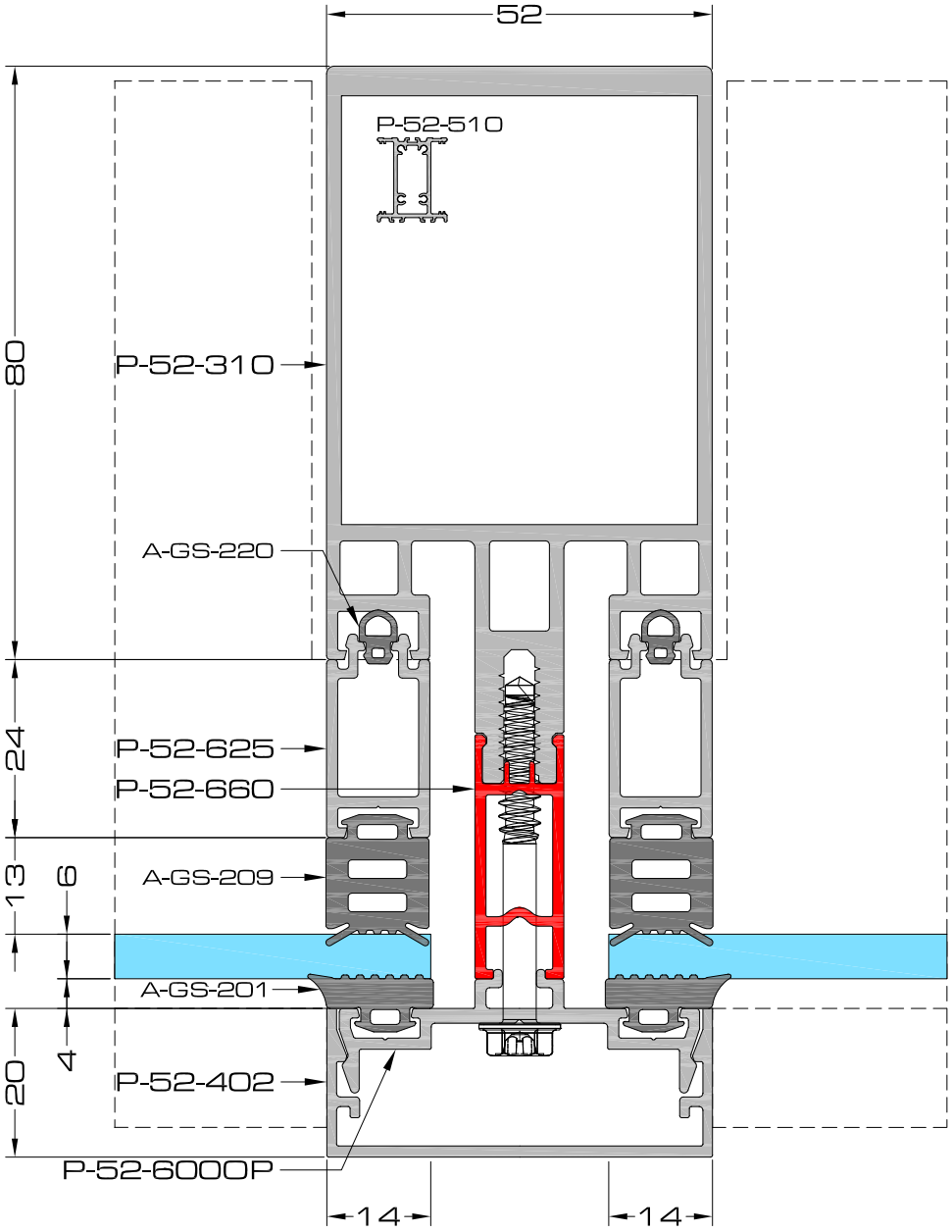
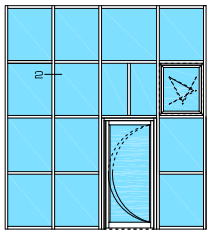
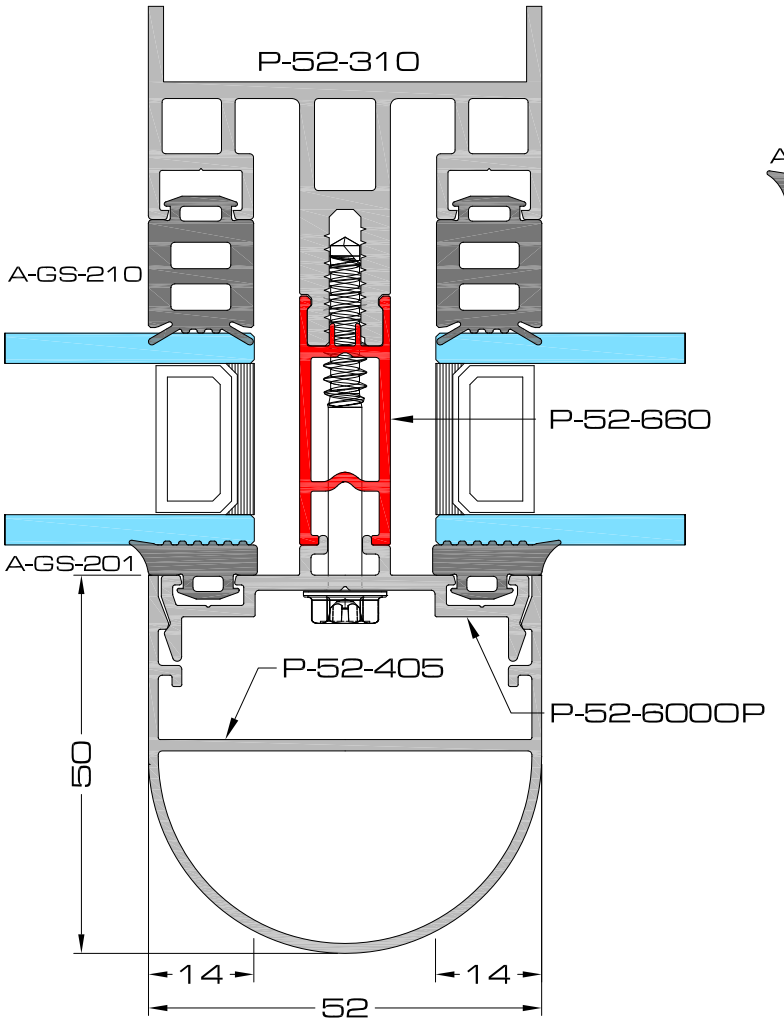


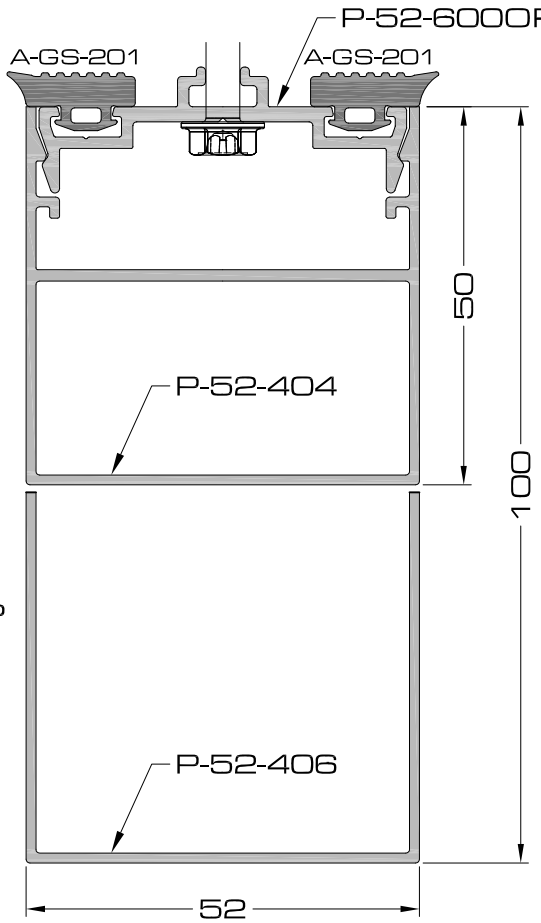
Kratos P52

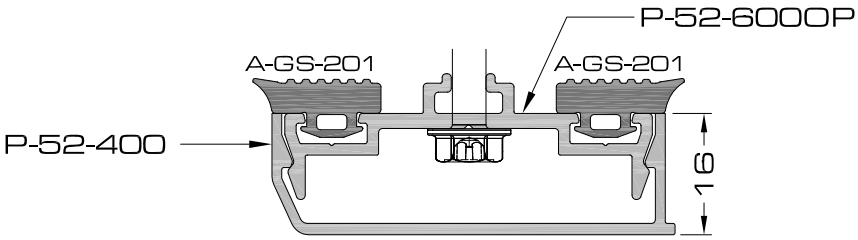
Mullion Facecap Options

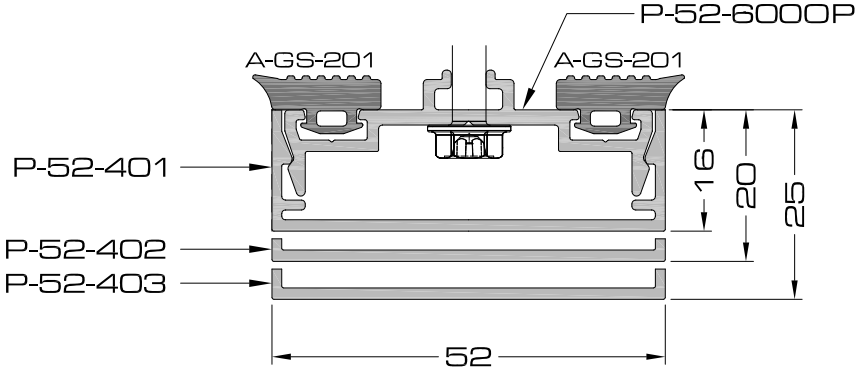
Scale 1:1











Mullion Facecap Options

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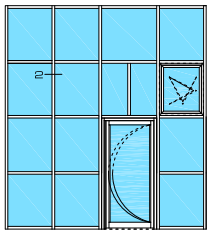

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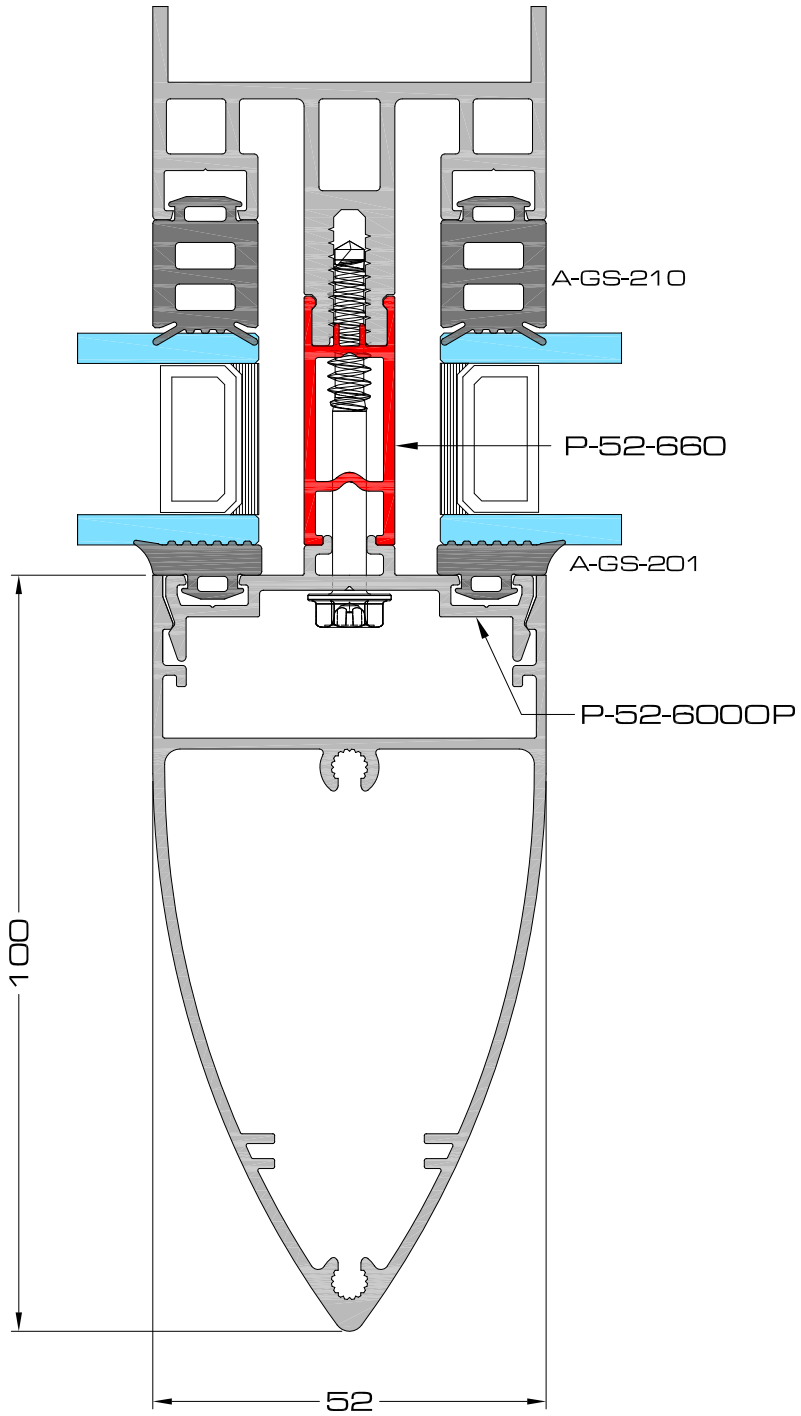
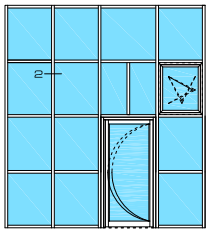


Kratos P52

Reinforced Mullion

Scale 1:1



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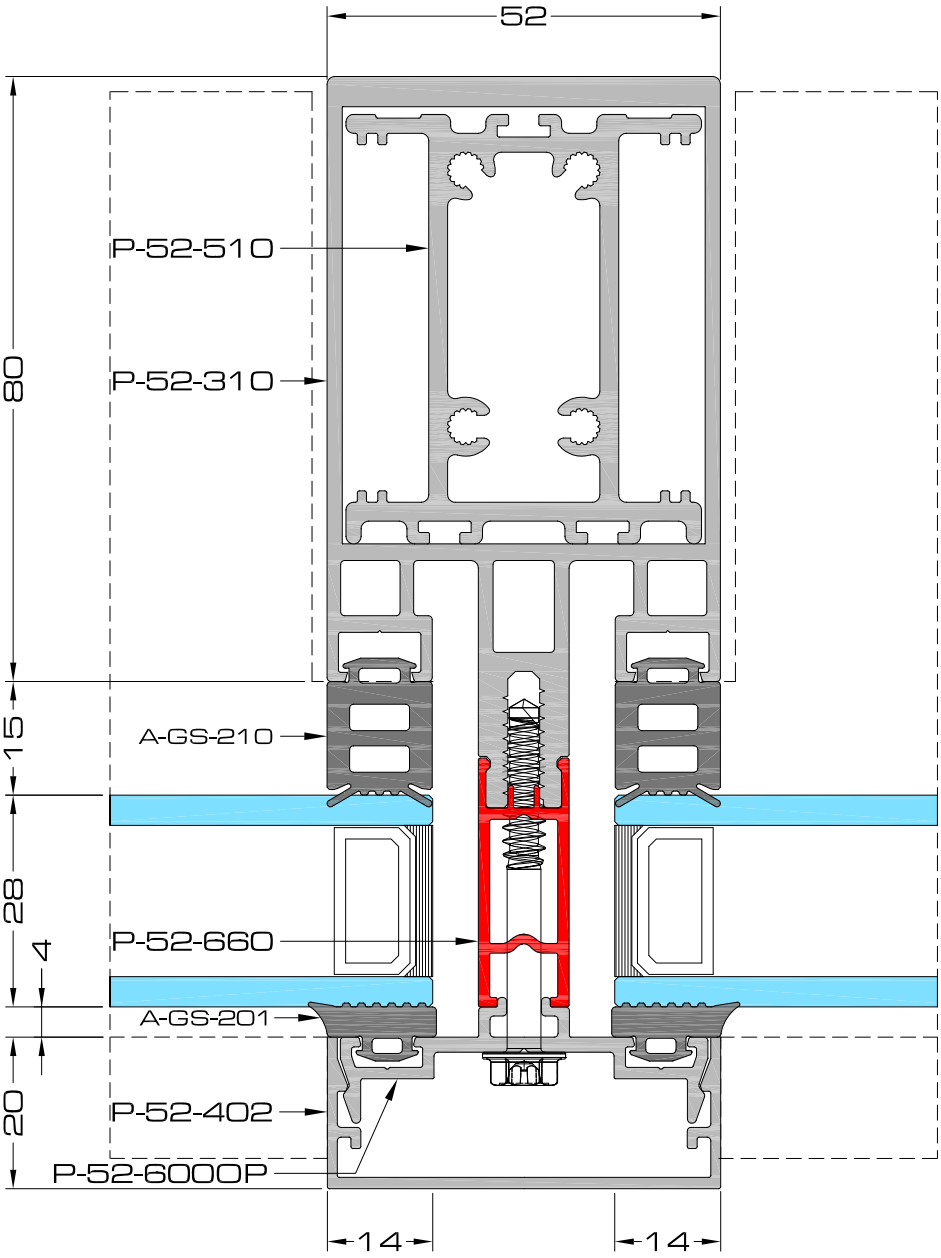

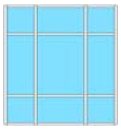

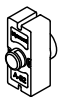

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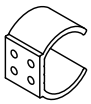
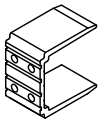


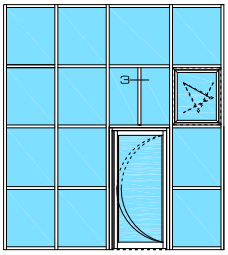
A-52-122



A-52-102

Level 1 Mullion Drainage

Scale 1:1



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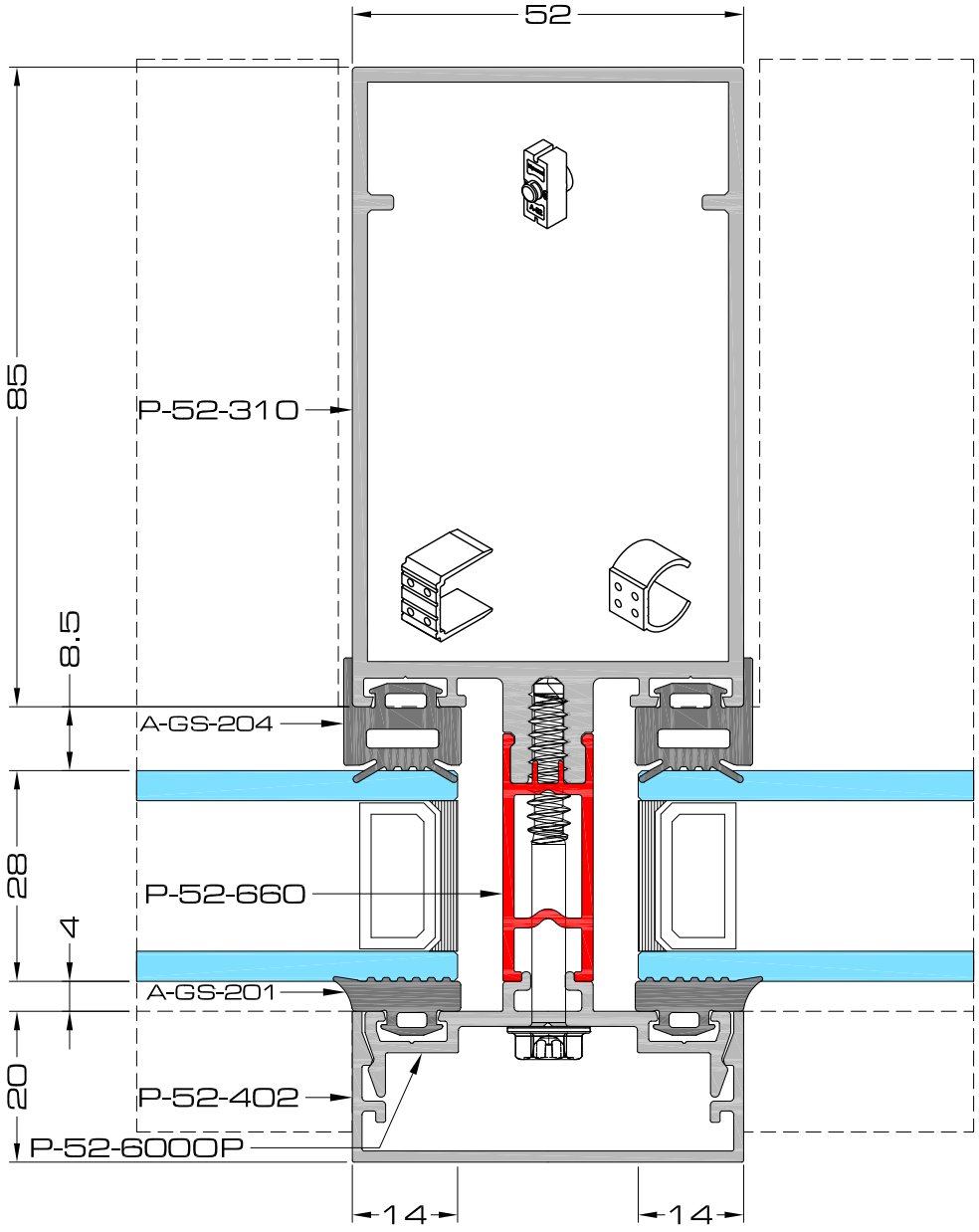
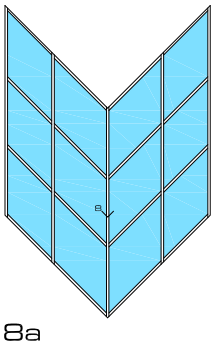
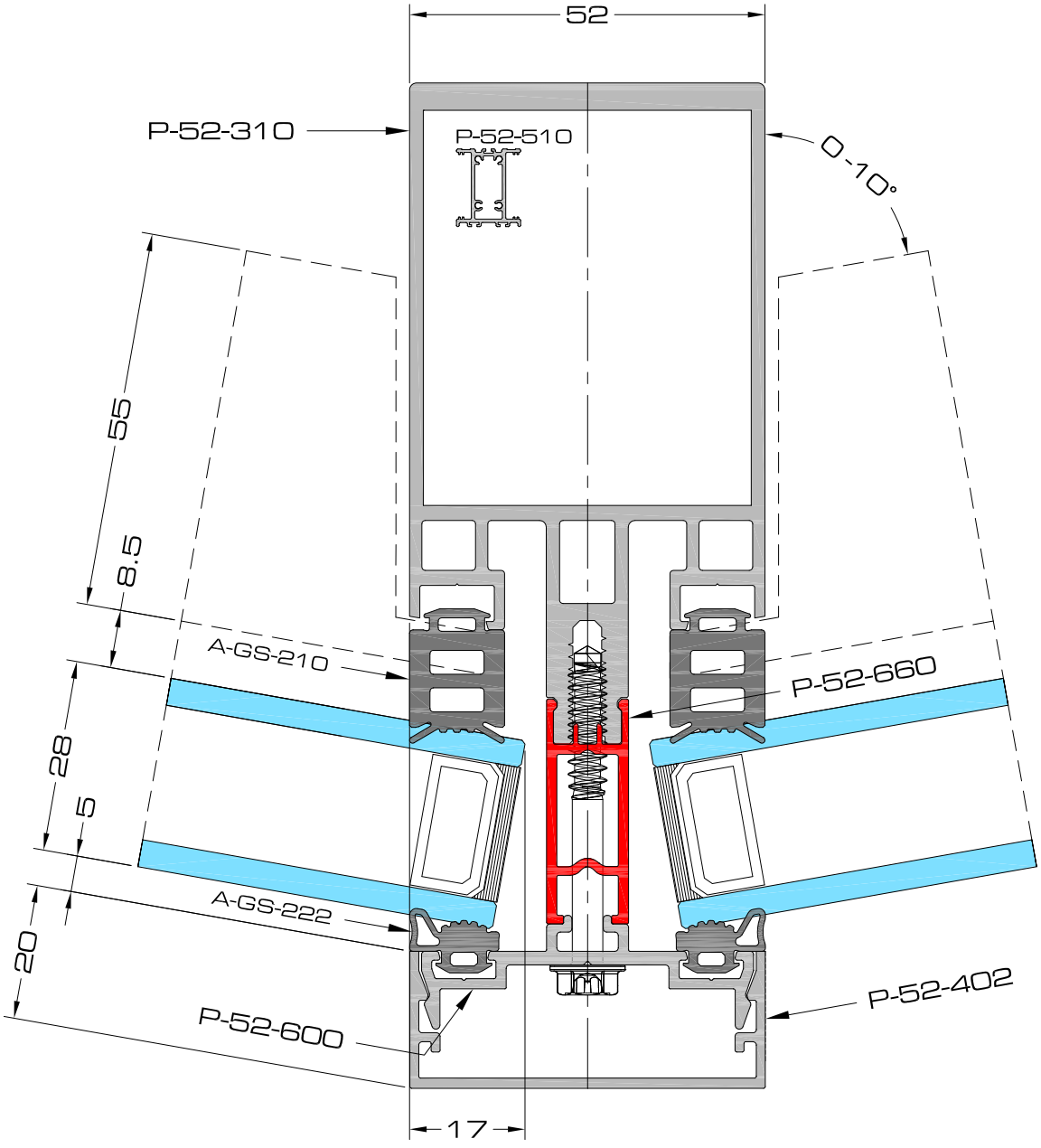


0 - 10 Degree External Angle

Scale 1:1

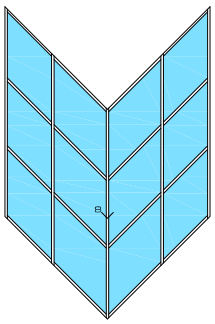


8a



0 - 10 Degree Internal Angle

Scale 1:1



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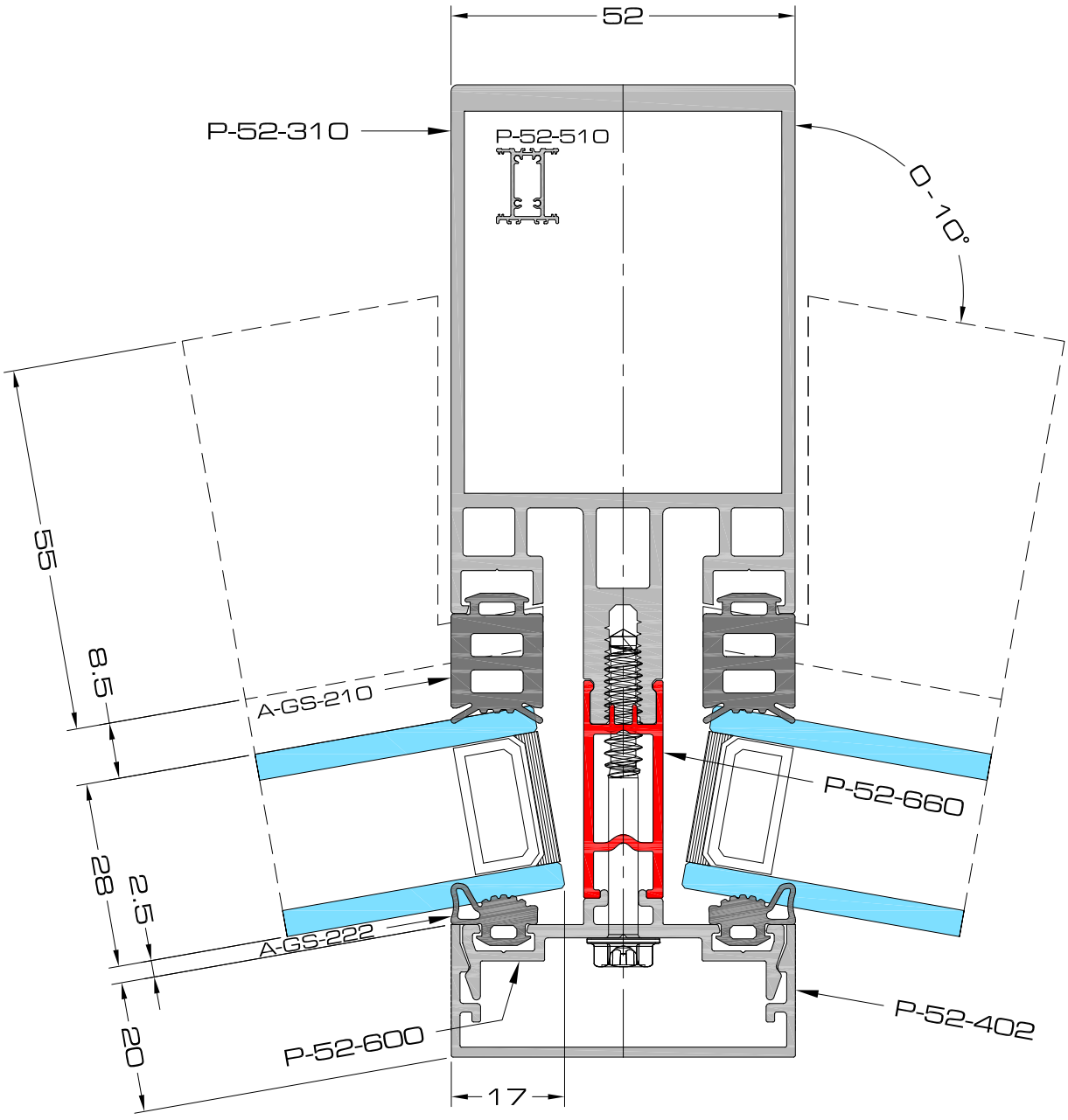
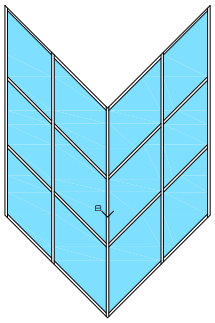
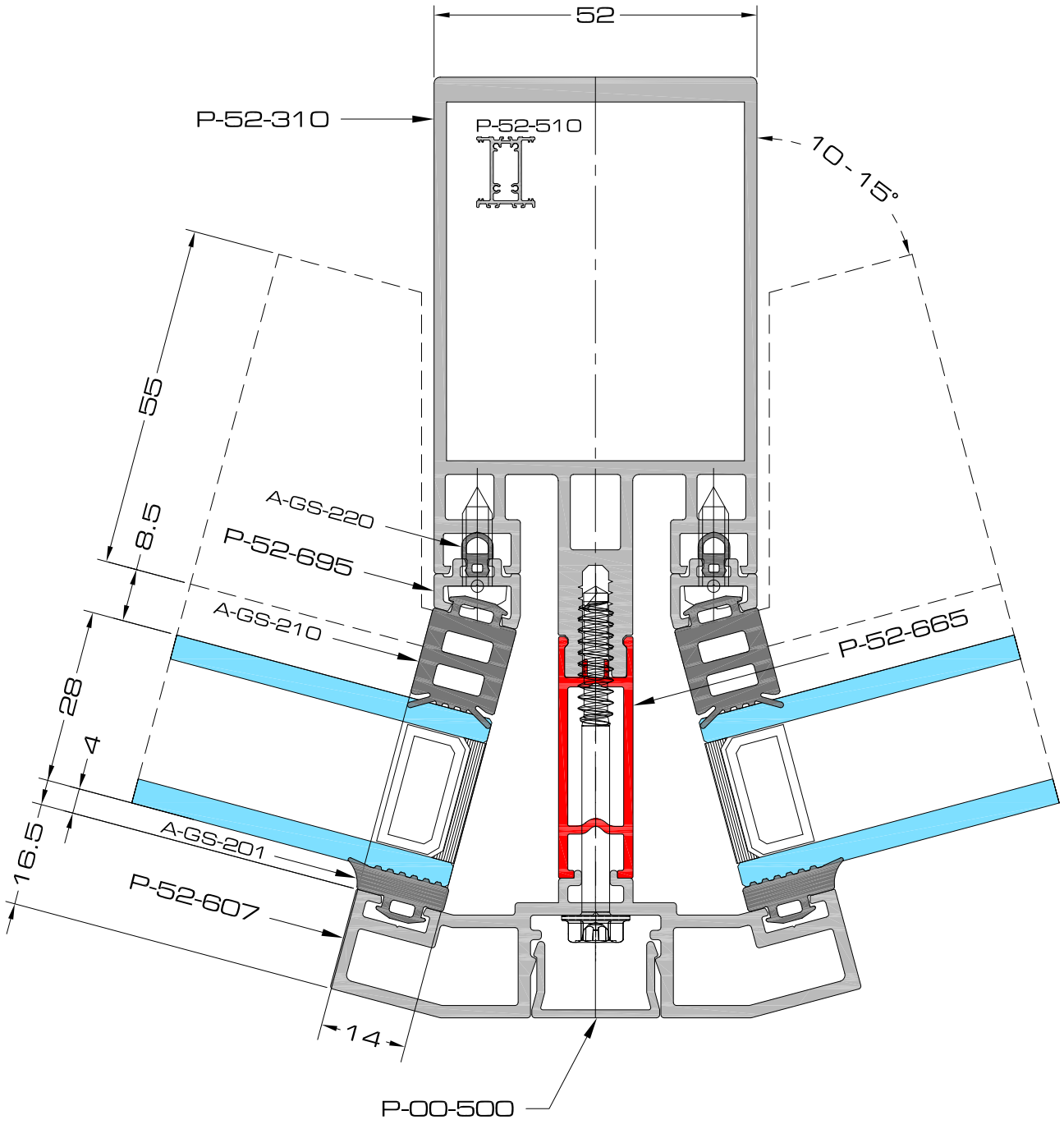


10 - 15 Degree External Angle

Scale 1:1

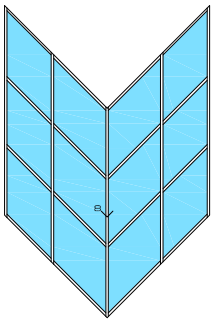


8c



10 - 15 Degree Internal Angle

Scale 1:1



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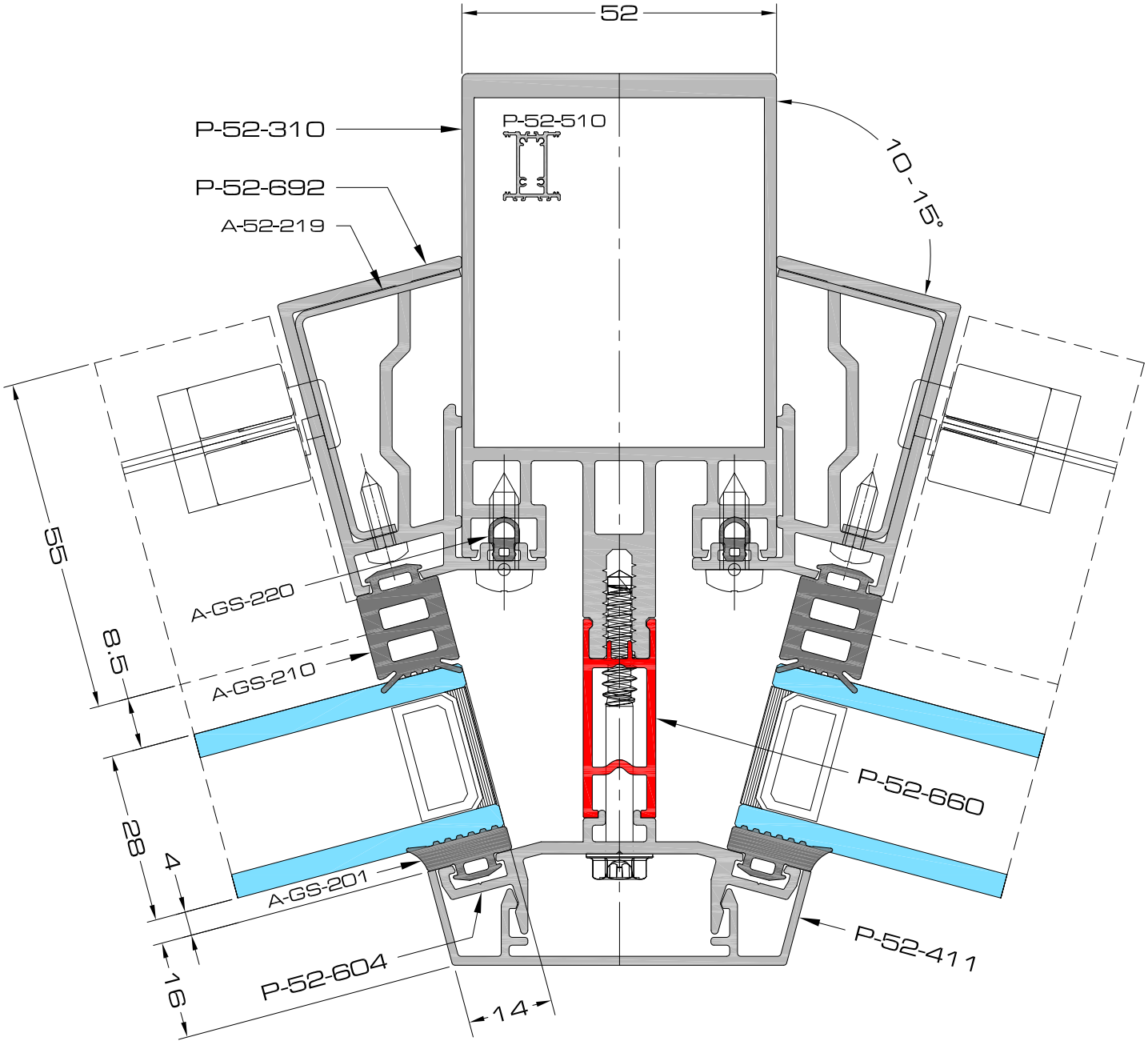
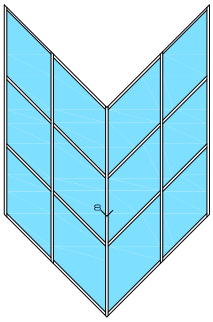


15 - 30 Degree External Angle

Scale 1:1



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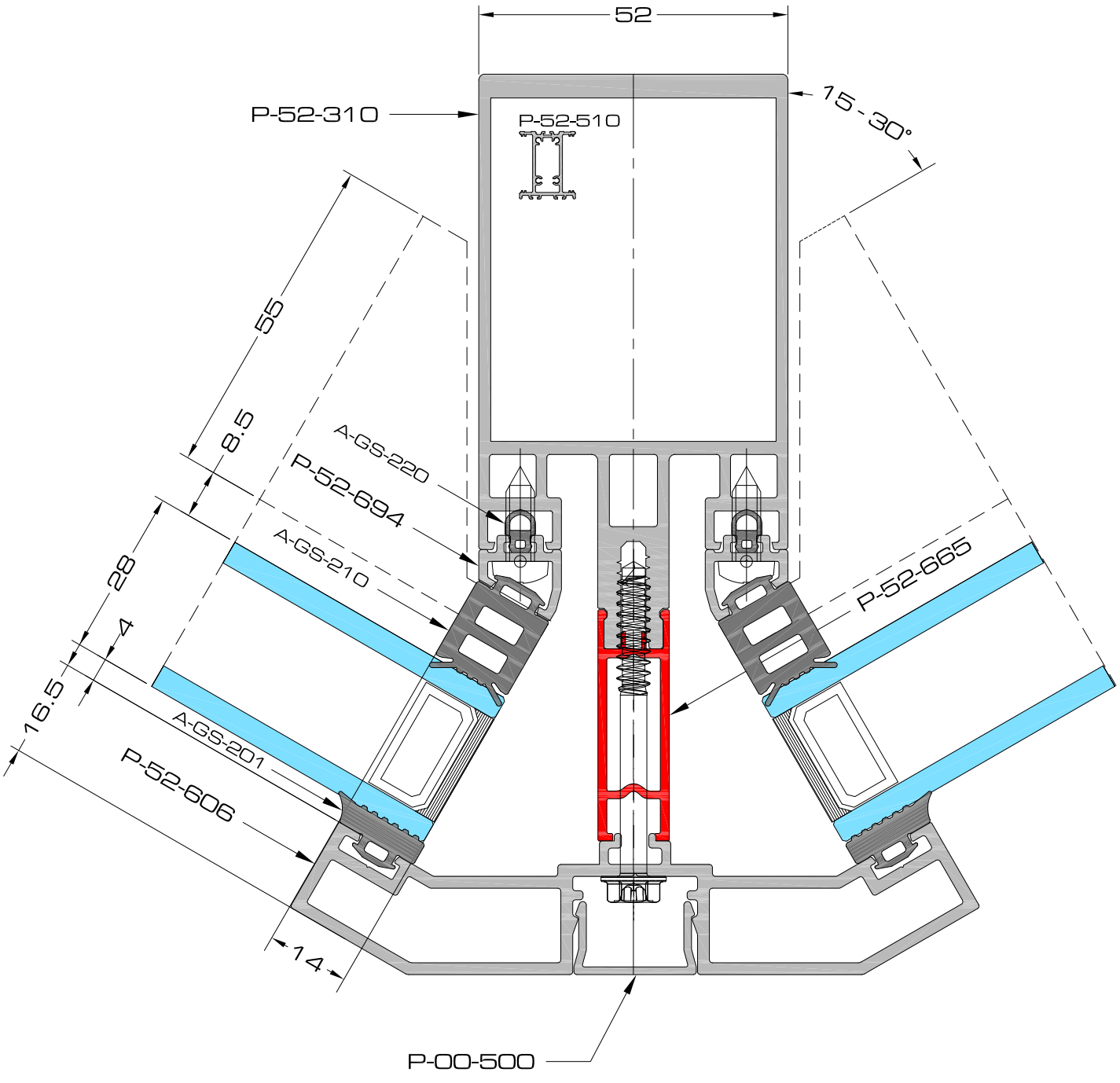
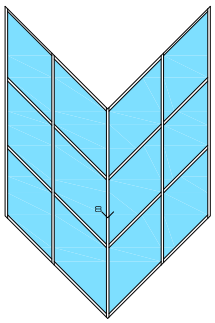
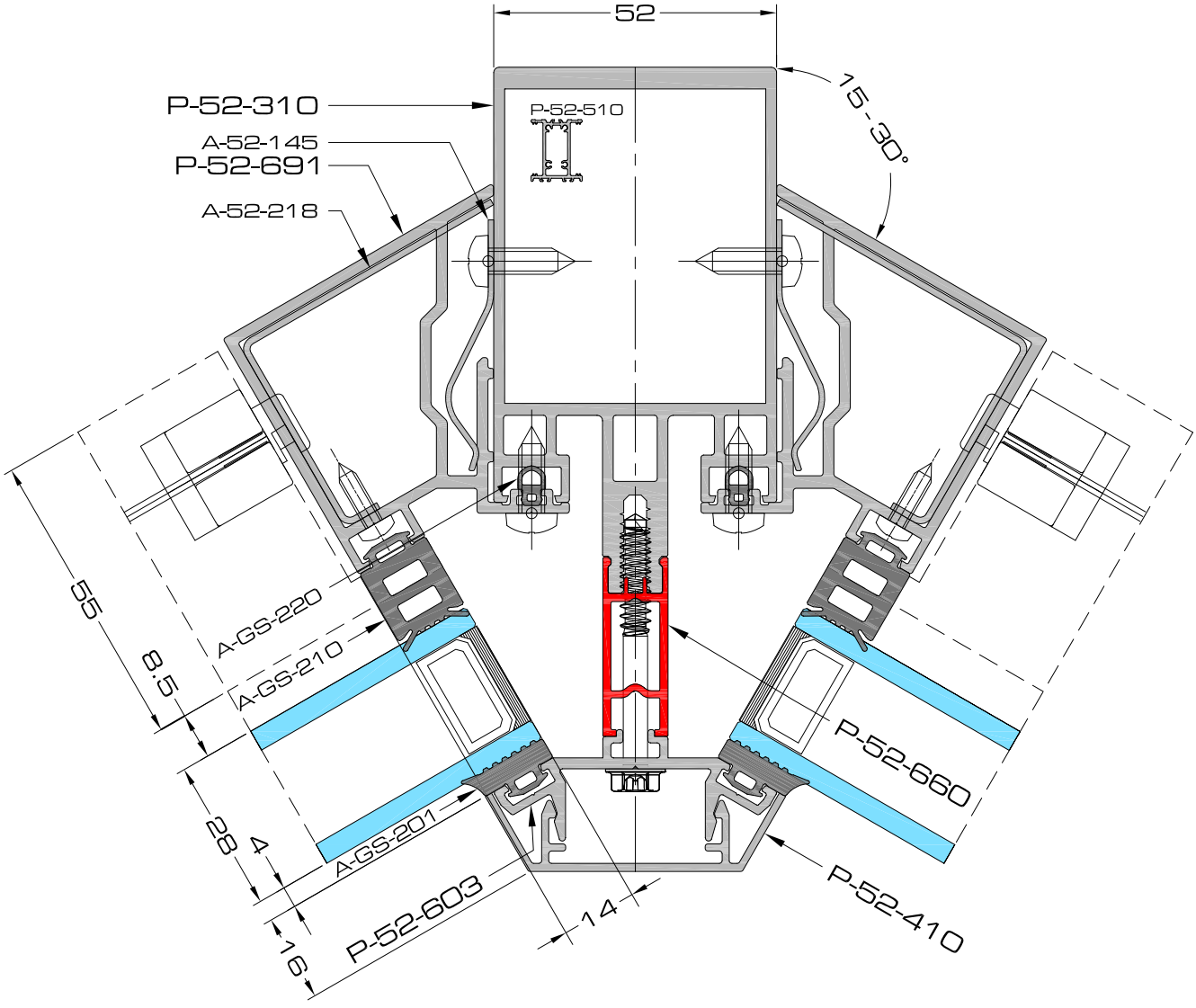


15 - 30 Degree Internal Angle

Scale 1:1.25

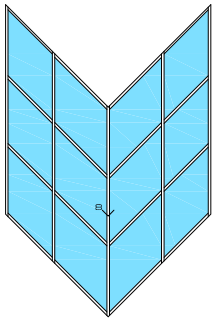


8f

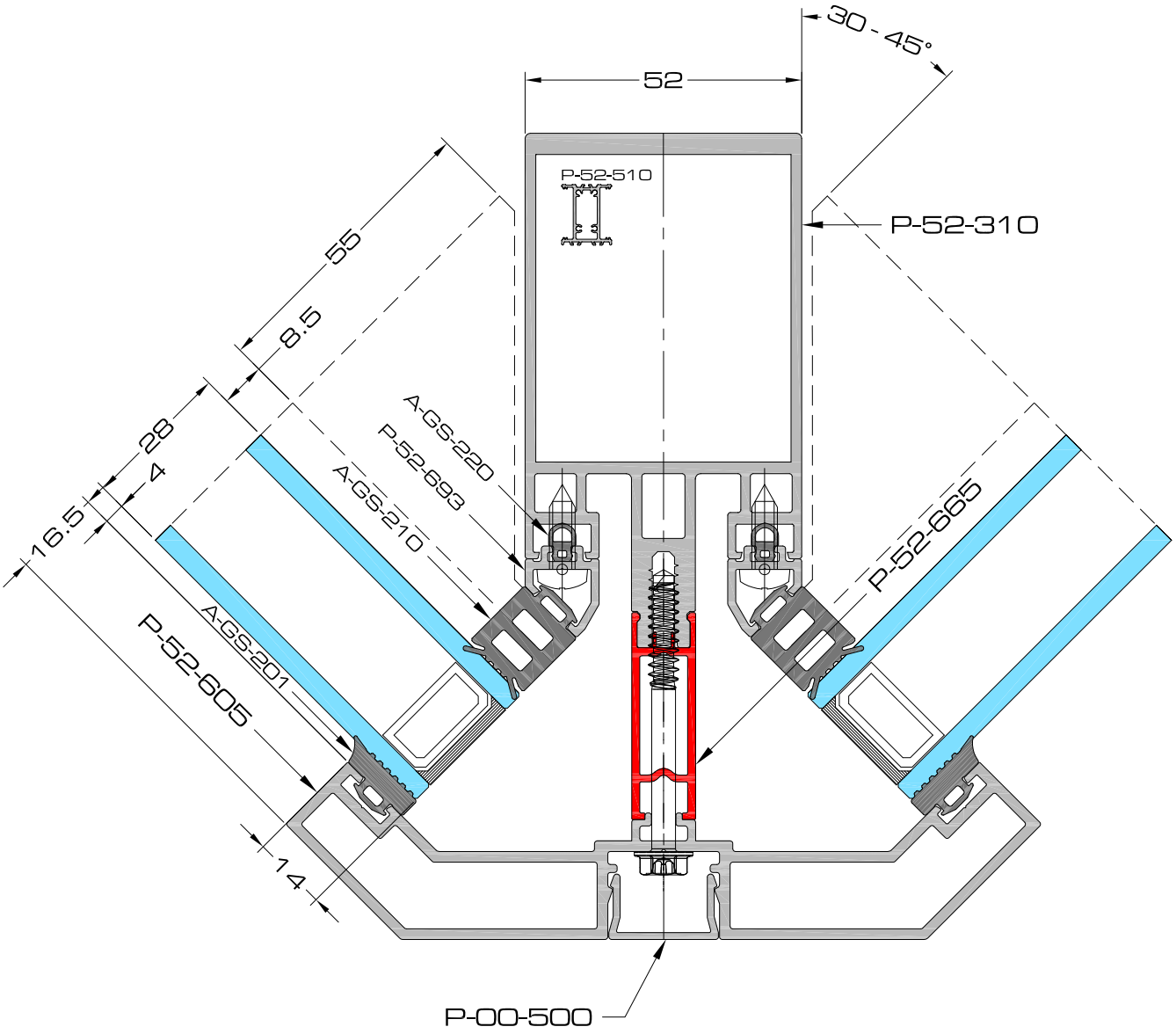


30 - 45 Degree External Angle

1:1.25

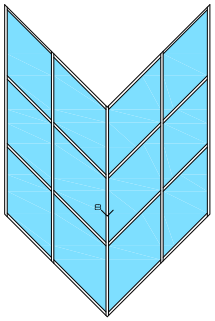


8g

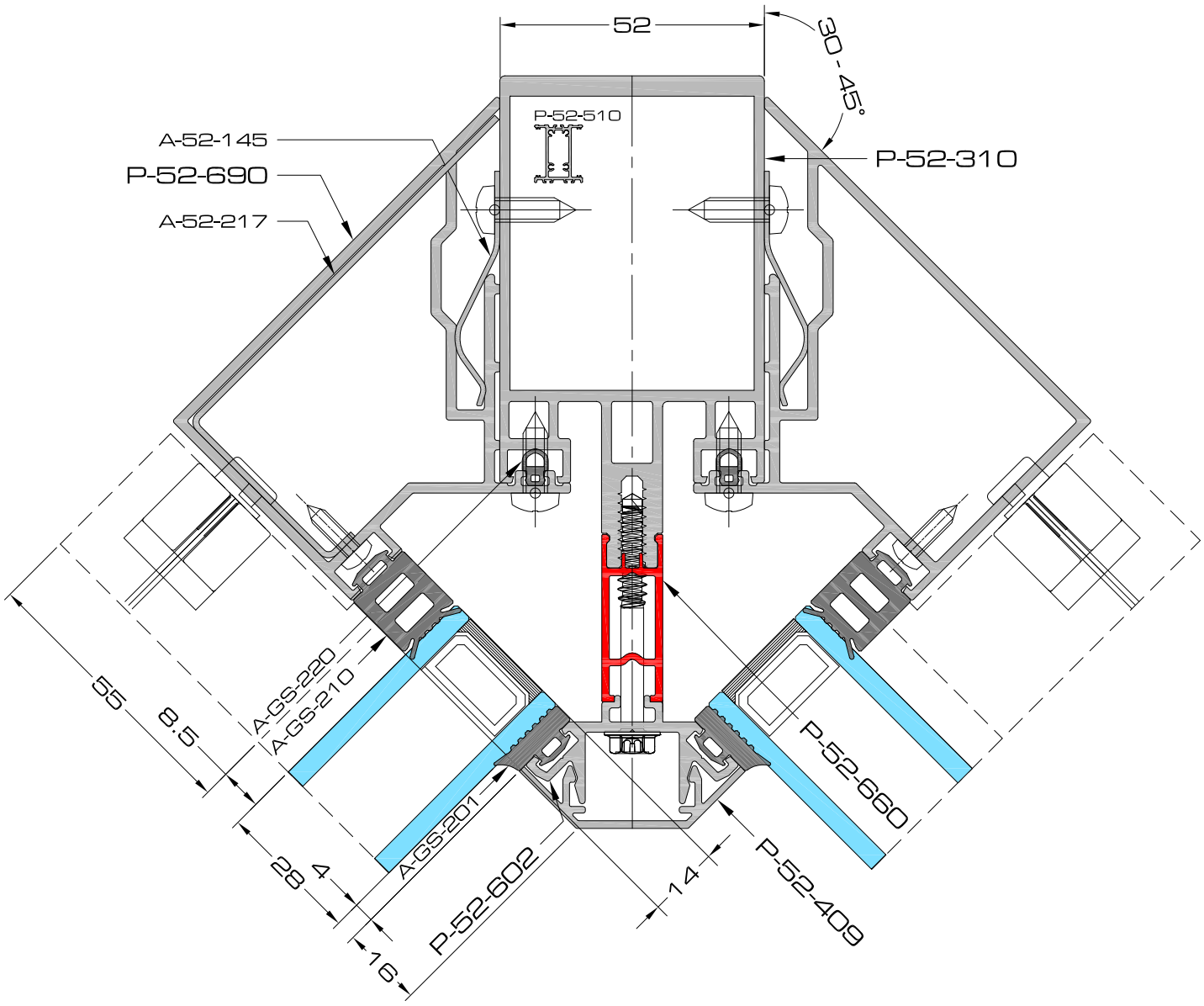


30 - 45 Degree Internal Angle

Scale 1:1.25

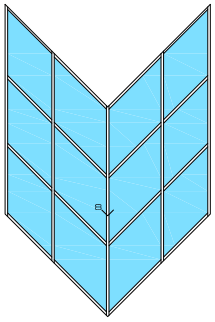


8h

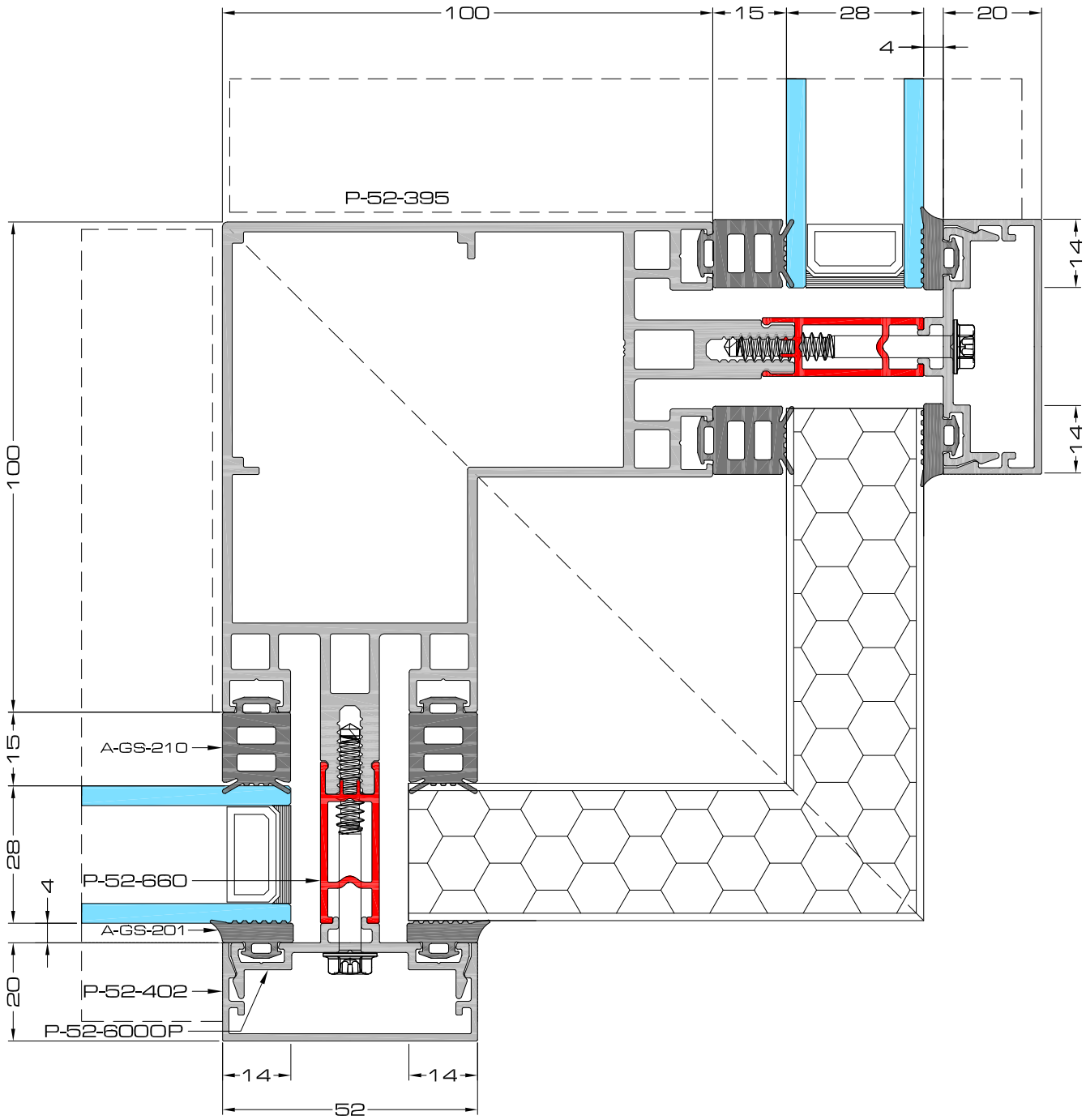


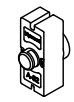
90 Degree Corner Post

Scale 1:1.25

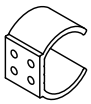


8i

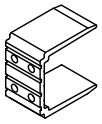




A-52-140/141



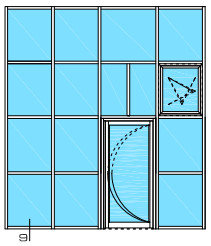
A-52-122



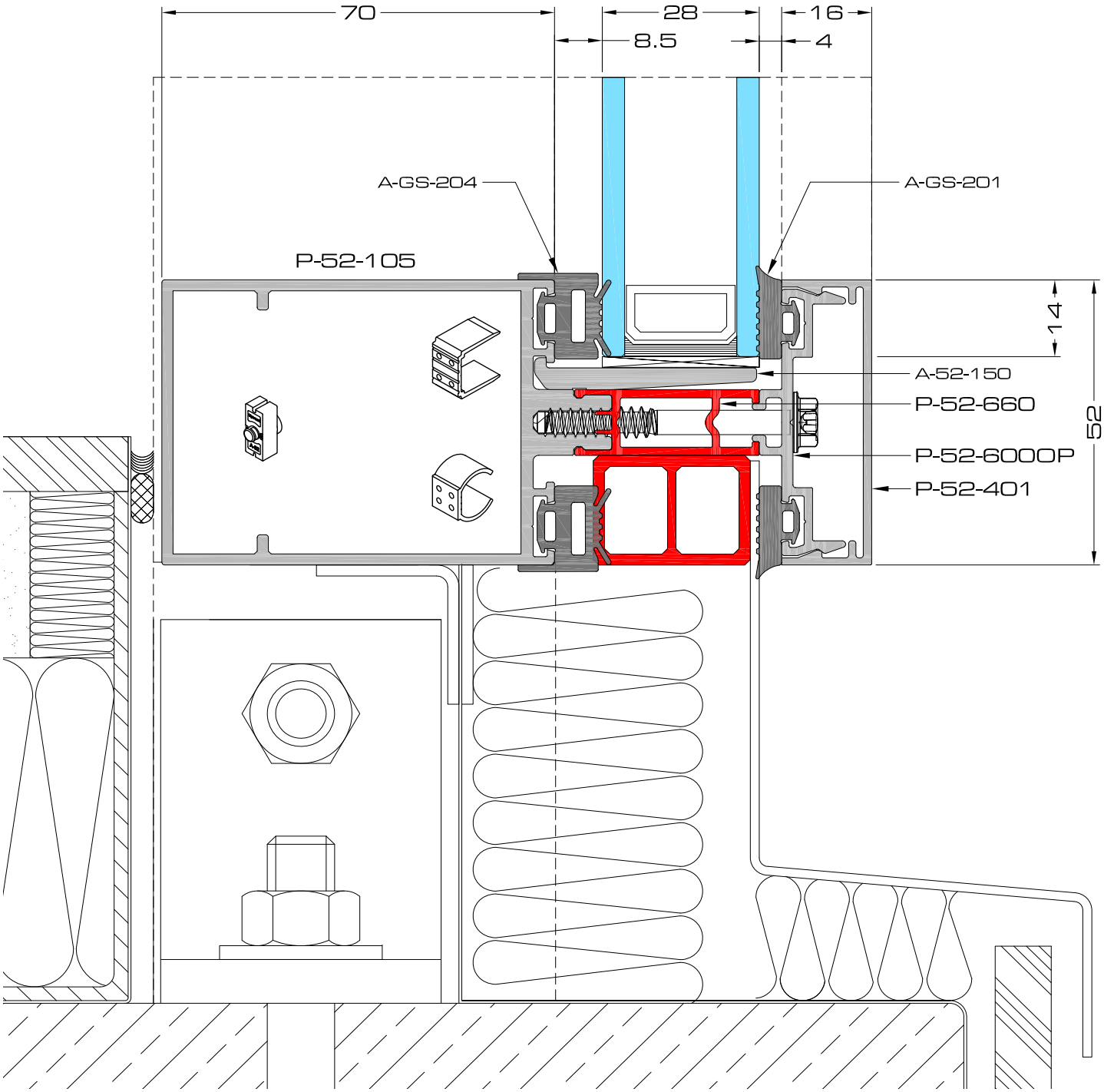
A-52-102

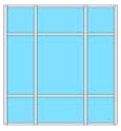
Cill Detail

Scale 1:1

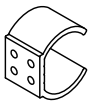


9a

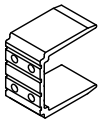




A-52-140/141



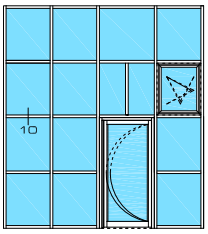
A-52-122



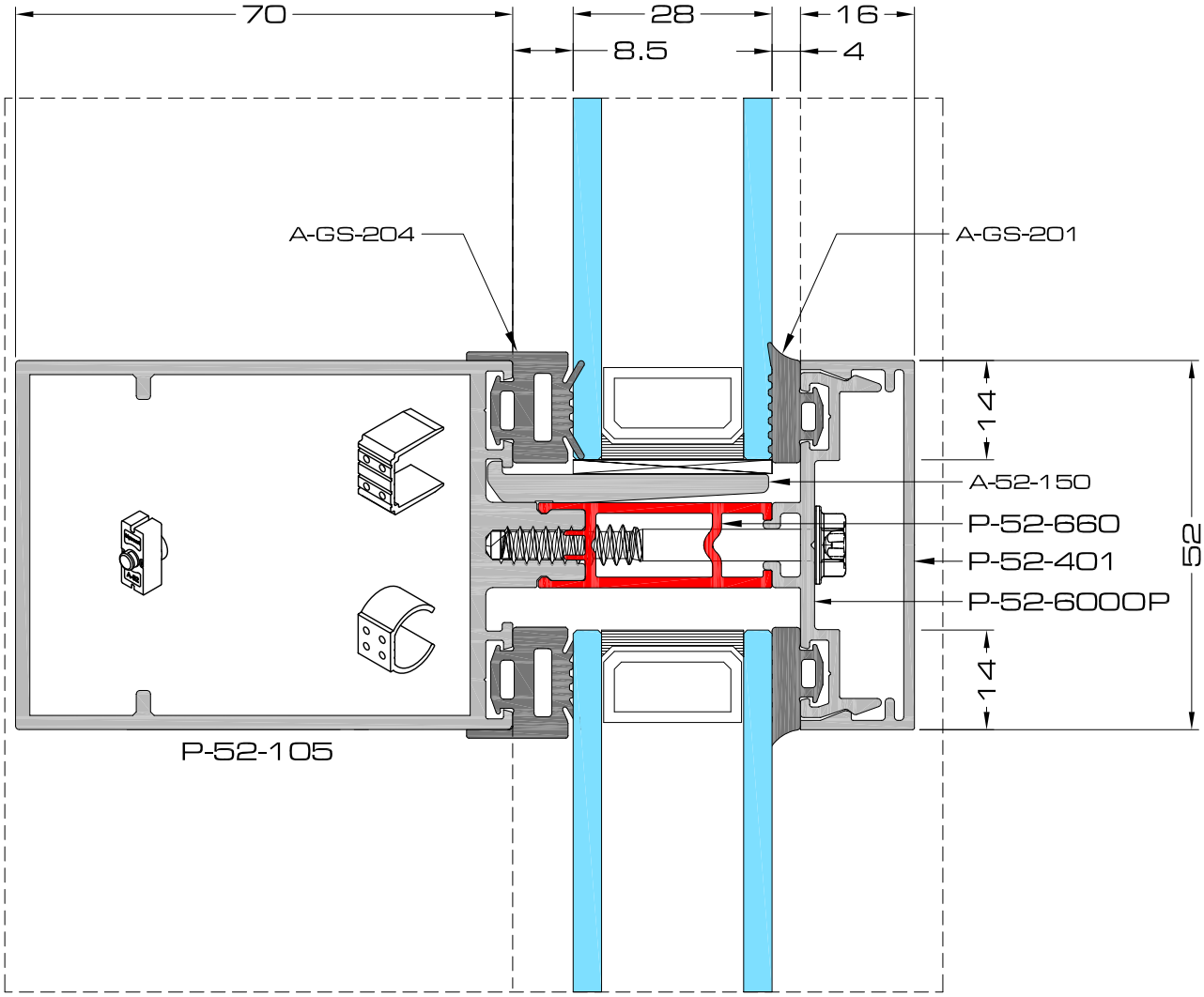
A-52-102

Transom

Scale 1:1

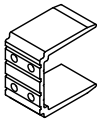


10a



A-52-140/141

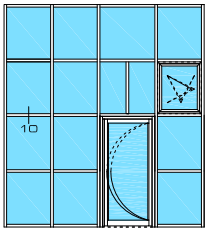
A-52-121



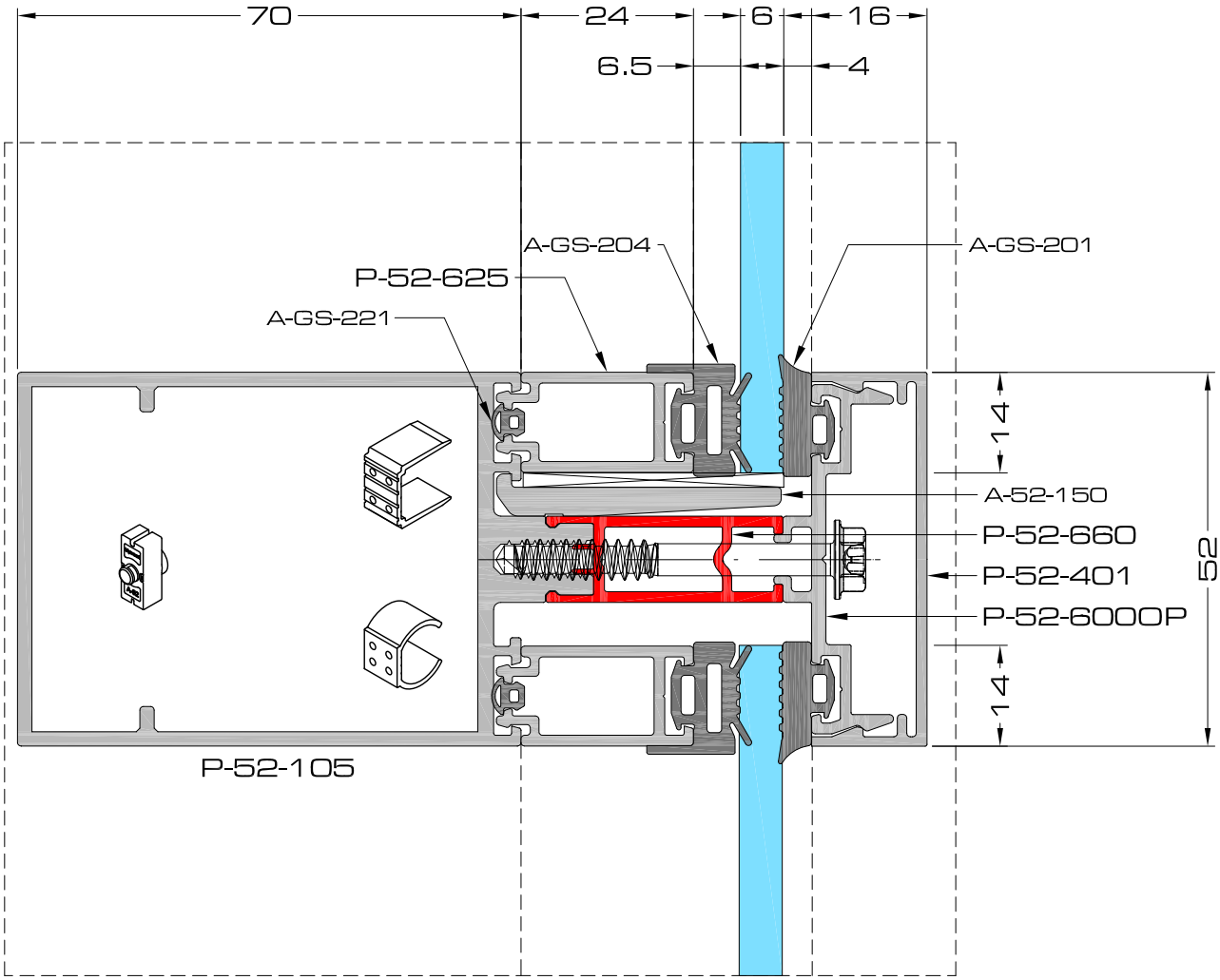
A-52-101

Transom With Glazing Adaptor

Scale 1:1

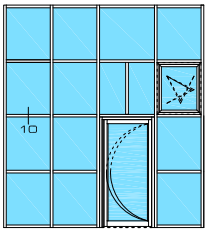


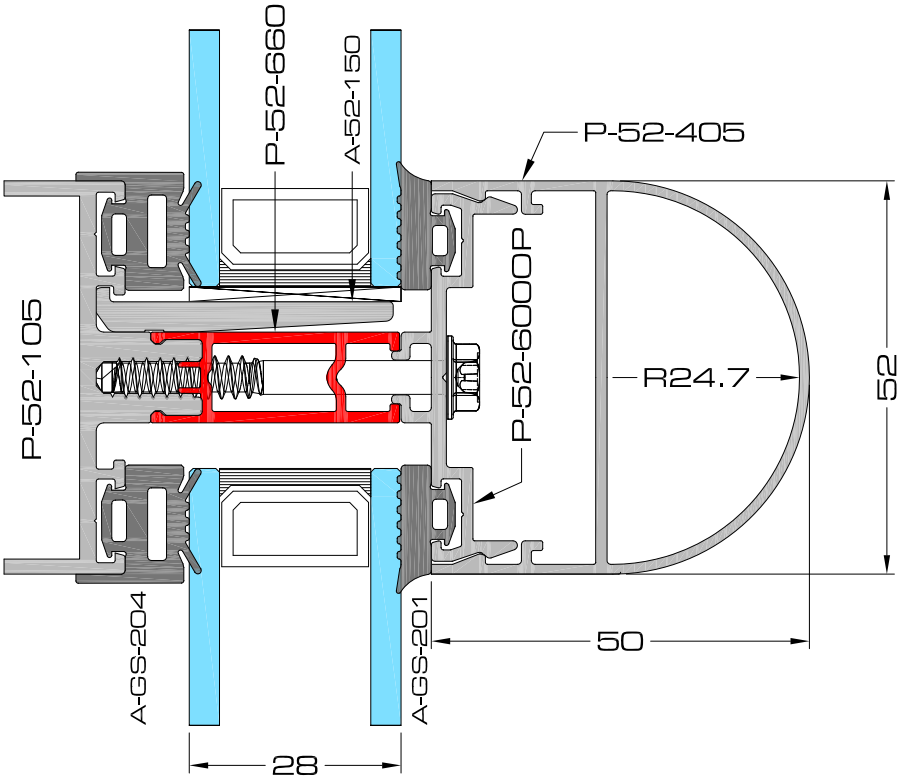
10b

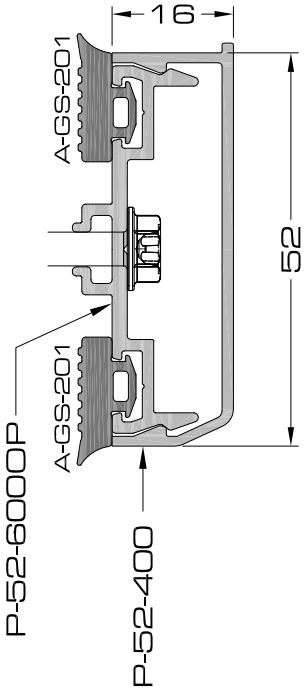


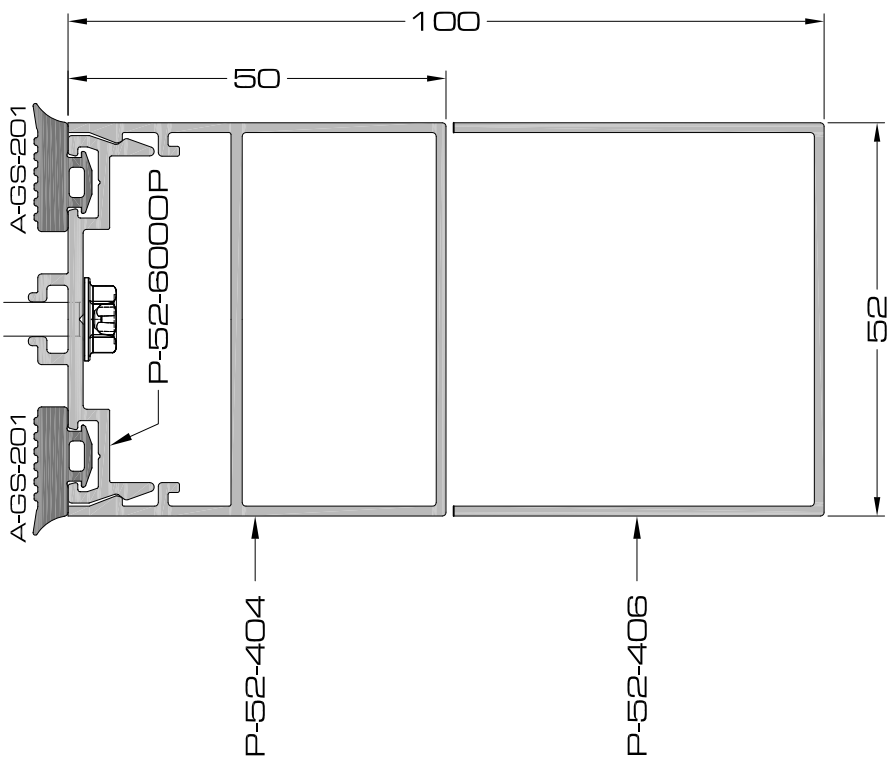
Transom Facecap Options

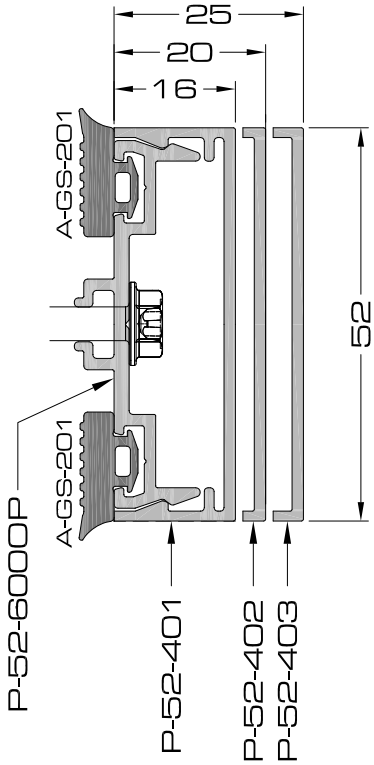
Scale 1:1







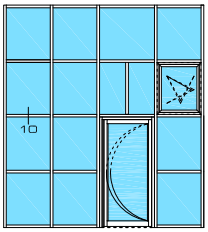




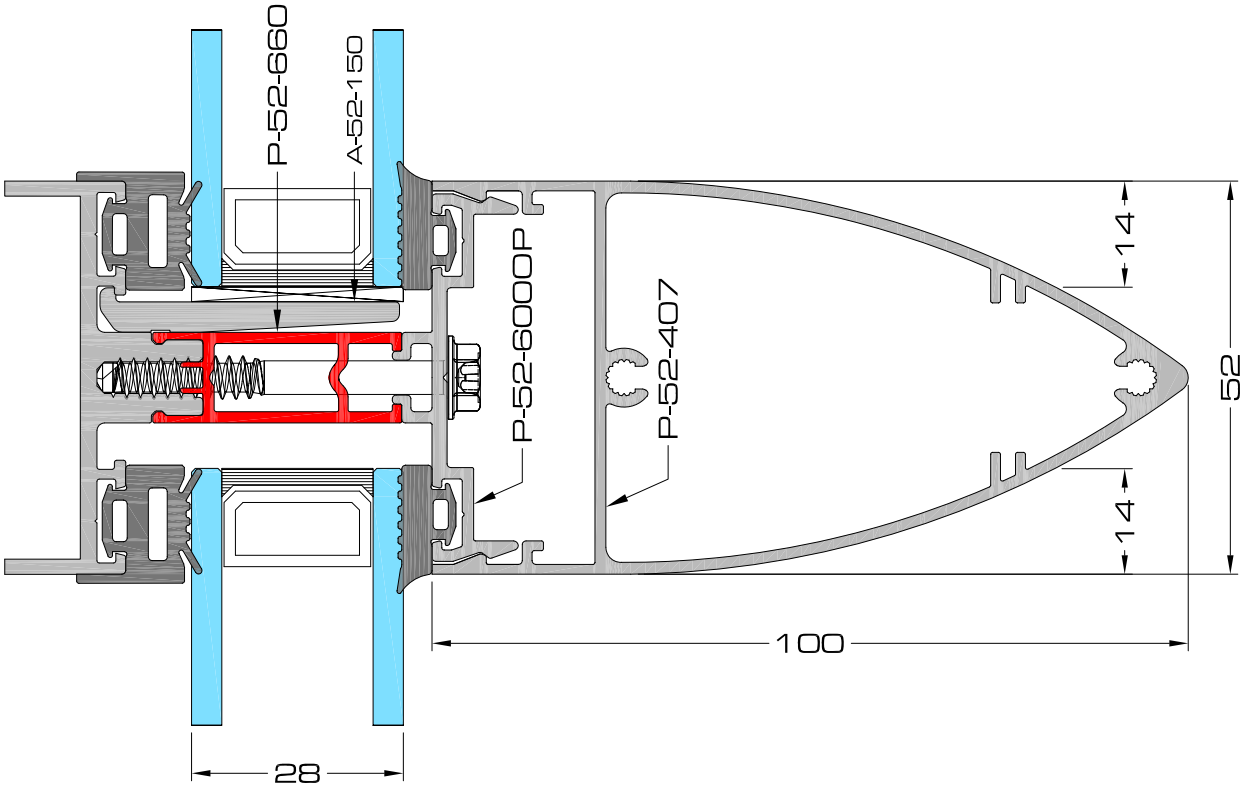
Kratos P52

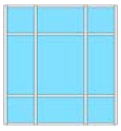
Transom Facecap Options

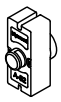
Scale 1:1



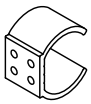
10c



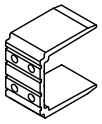




A-52-140/141



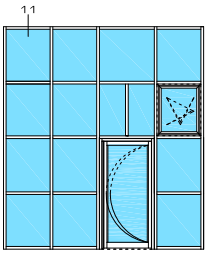
A-52-122



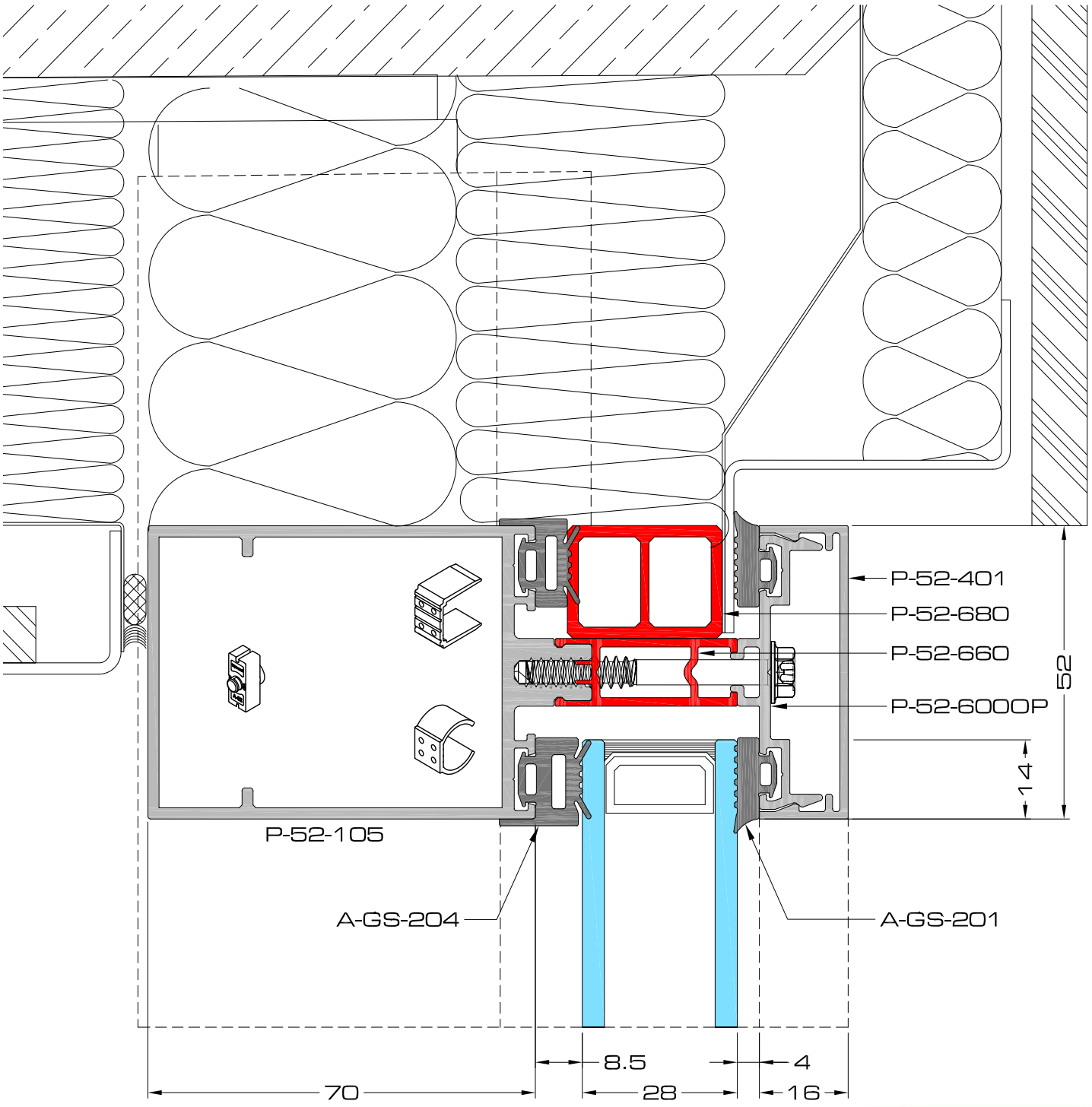
A-52-102

Head Detail

Scale 1:1

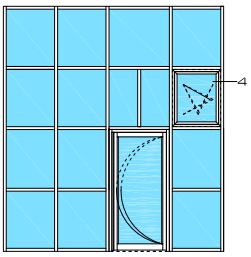


11a

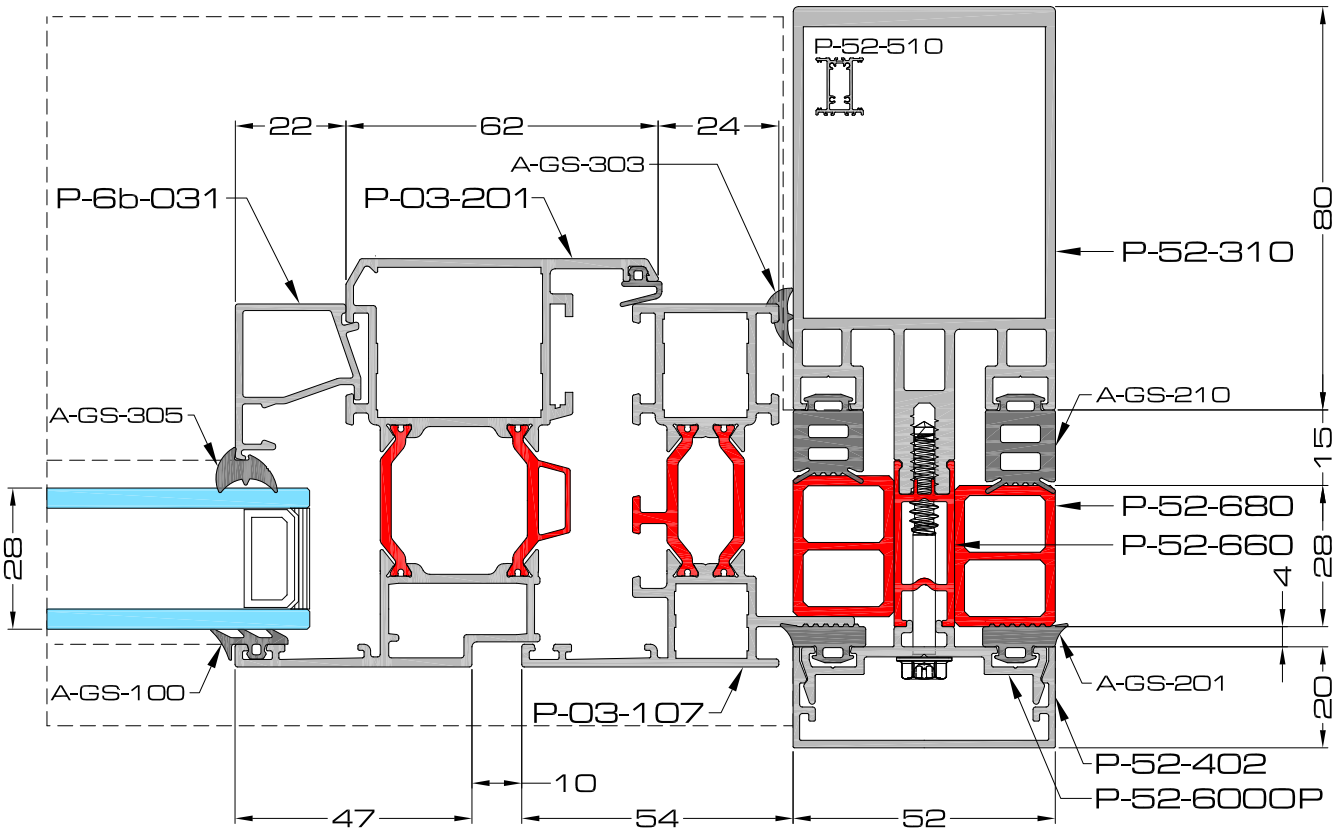


Triton Window
(Open In)

Scale 1:1.5



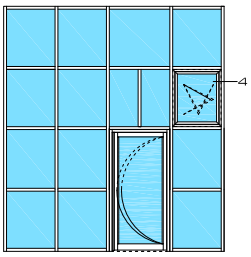
4a



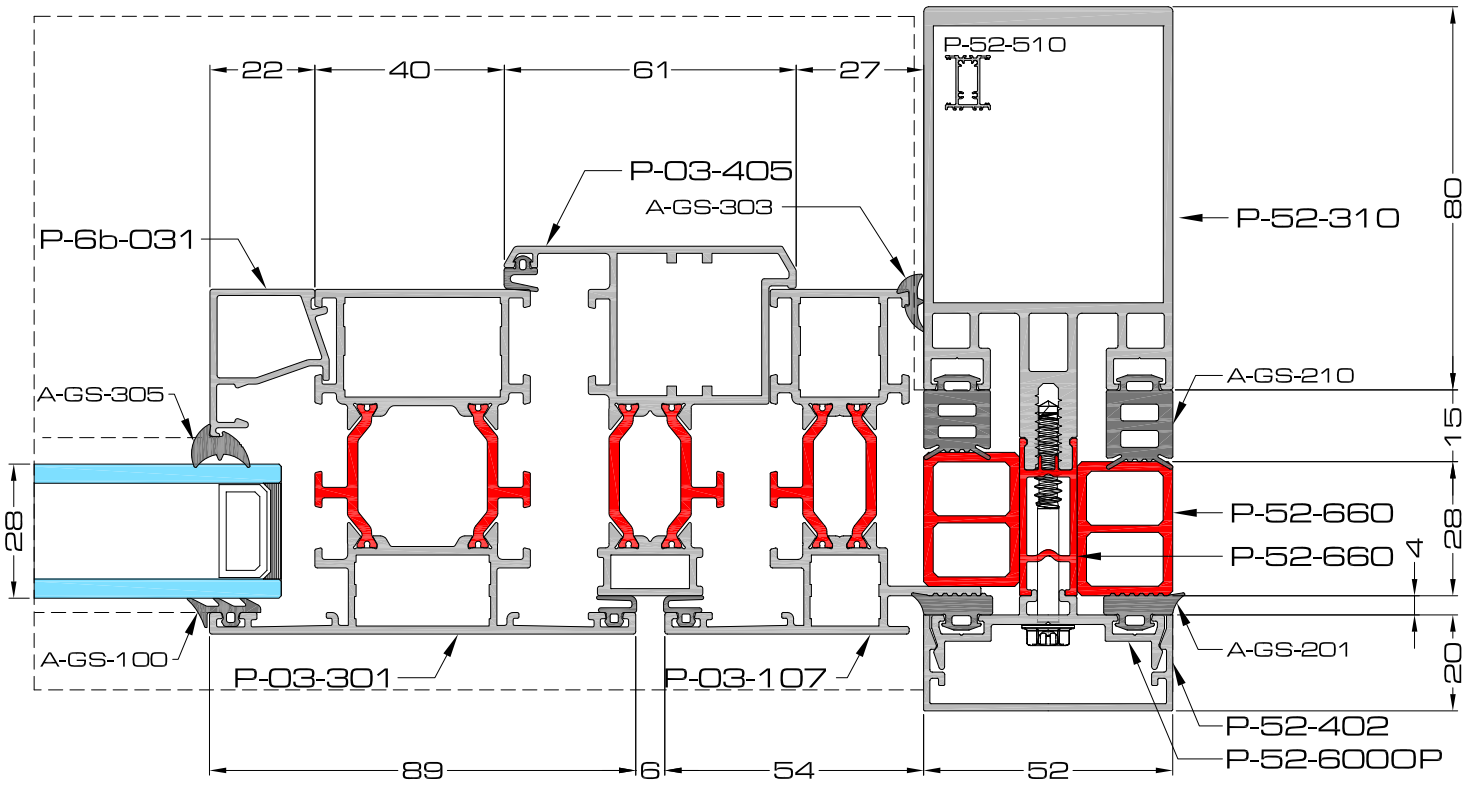
Kratos P52

Triton Pivot Window

Scale 1:5



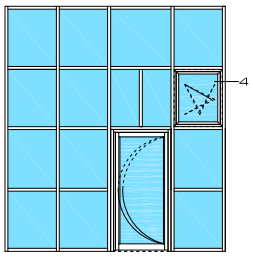
4b



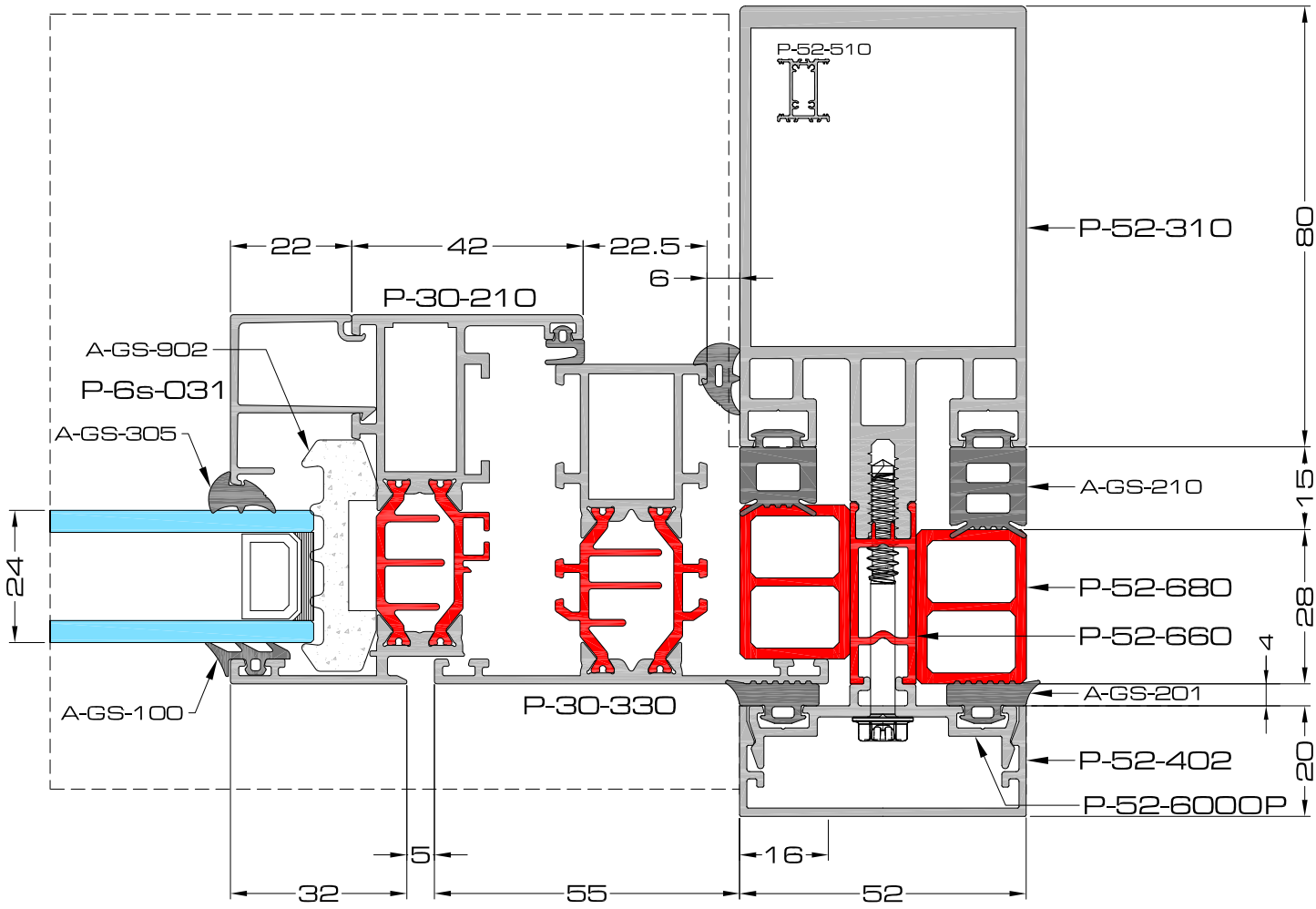
Kratos P52

Athena Window

Scale 1:1.25

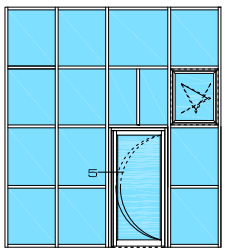


4c

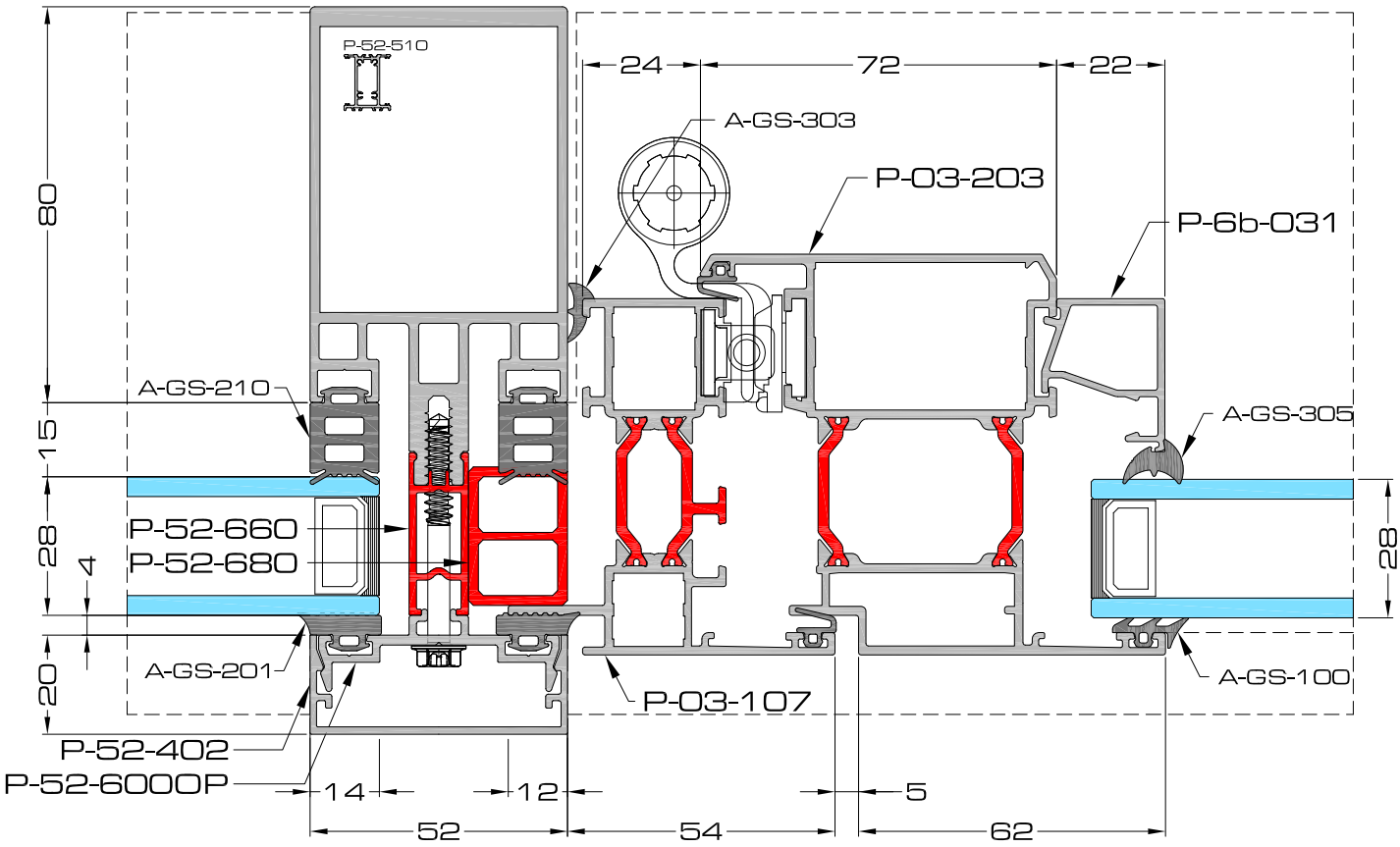


Triton Door
(Open In)

Scale 1:1.5

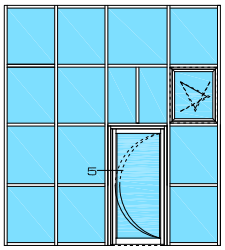


5a

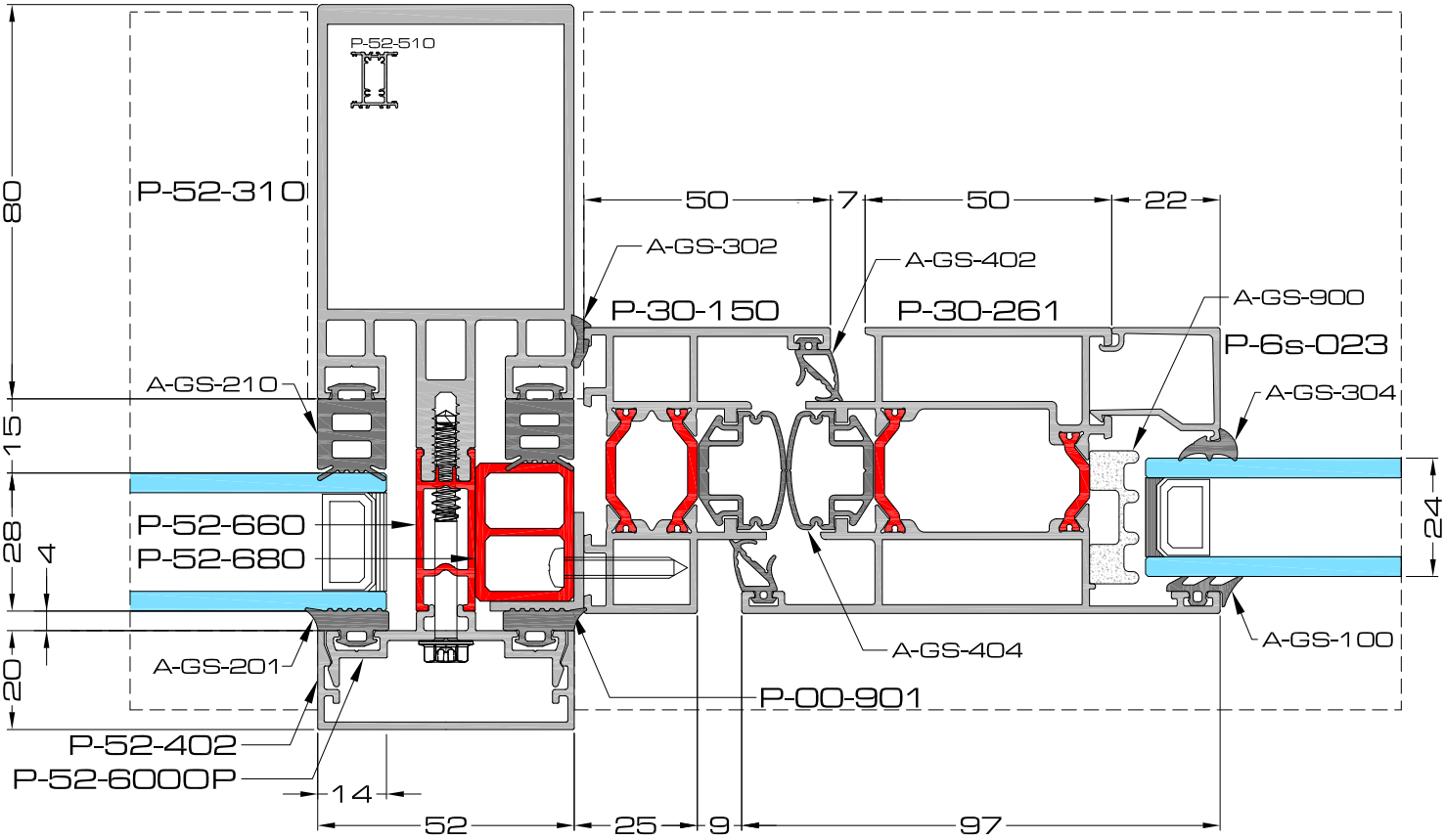


Athena Door Jamb
(OpenOut)

Scale 1:1.5

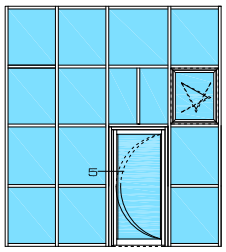


5b

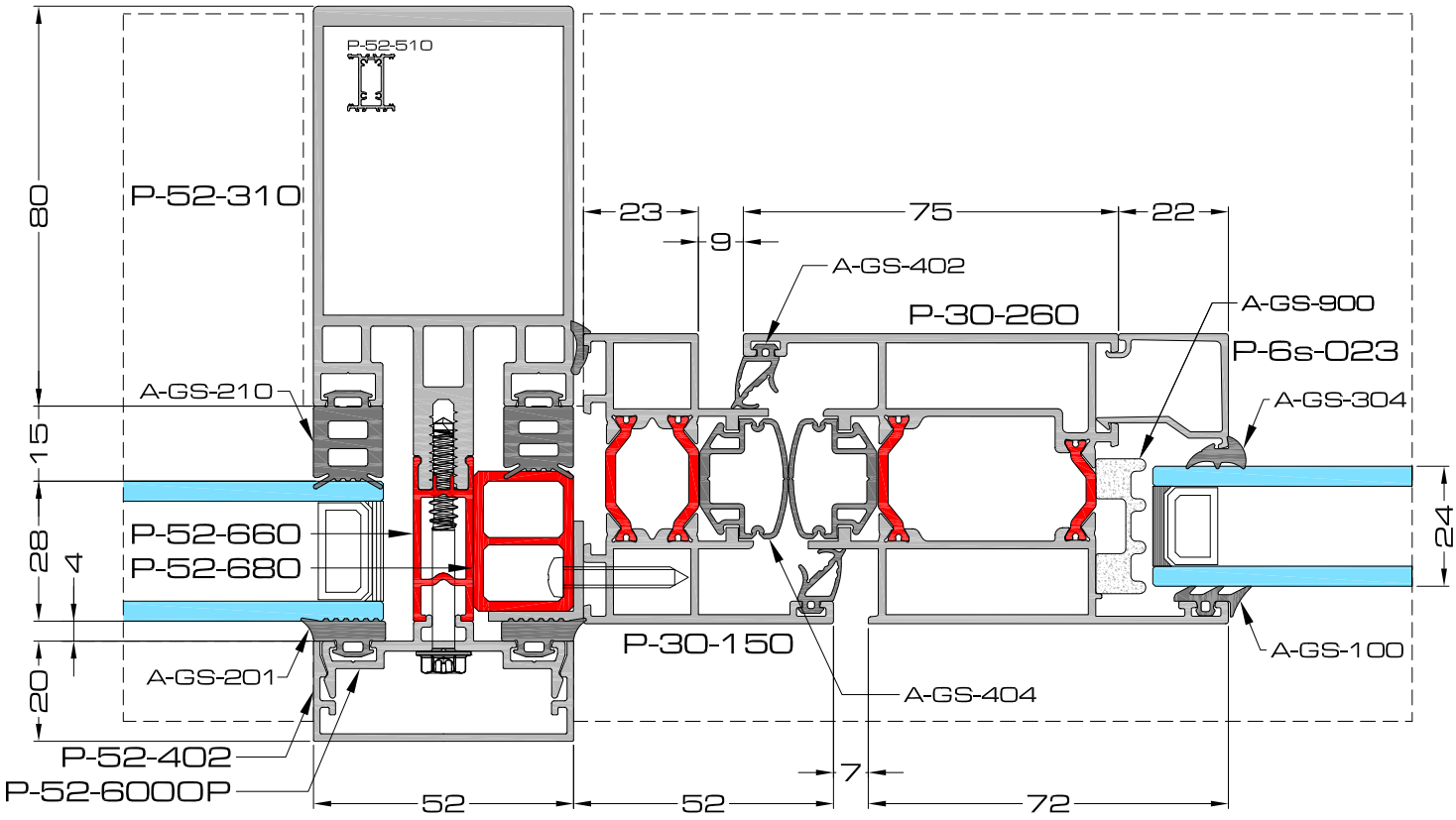


Athena Door Jamb
(Open In)

Scale 1:1.5



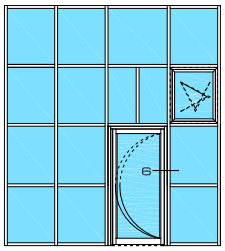
5c



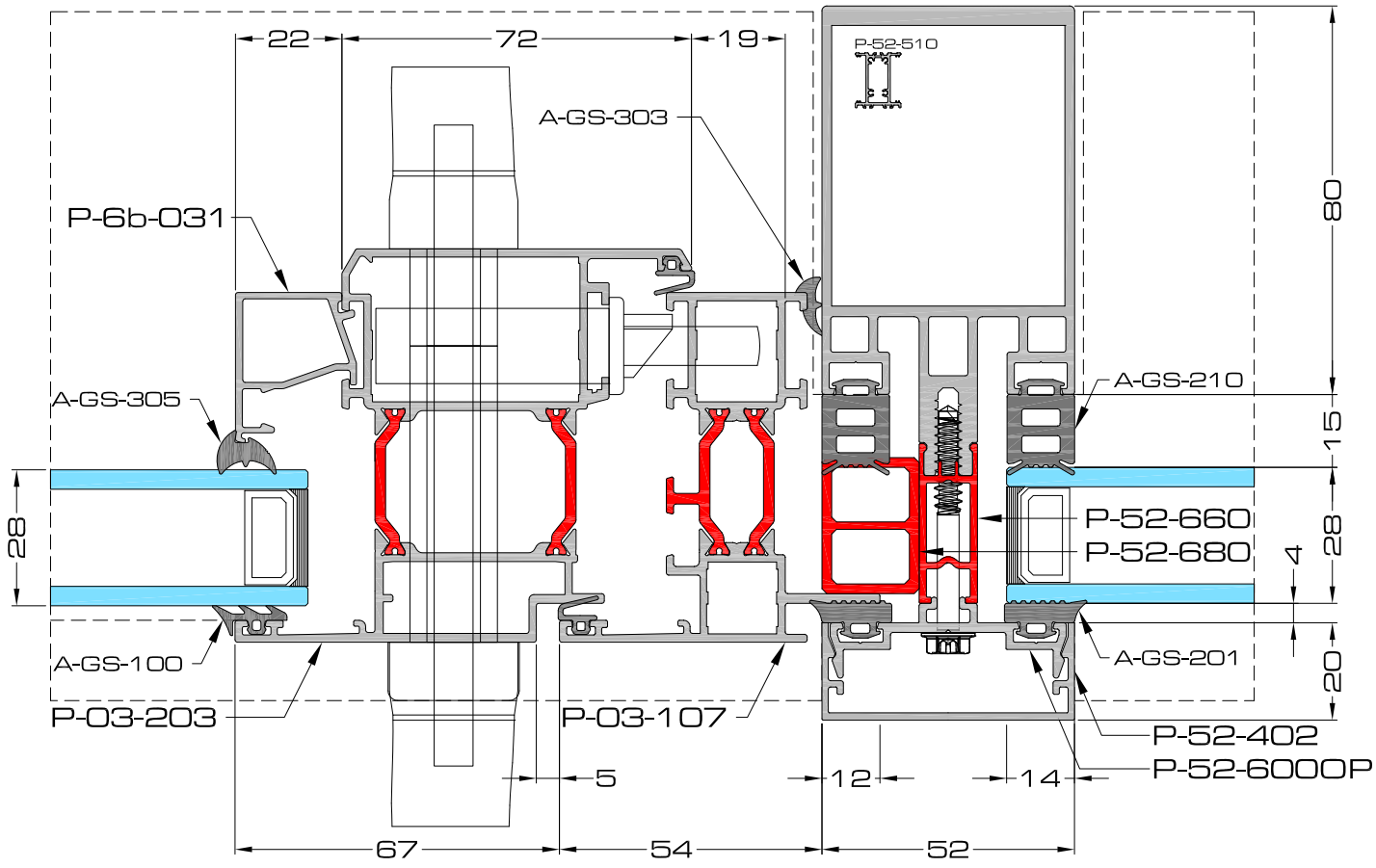
blyweert aluminium exactly your profile

Triton Door
(Open In)

Scale 1:1.5



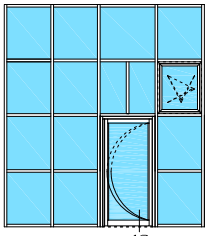
6a



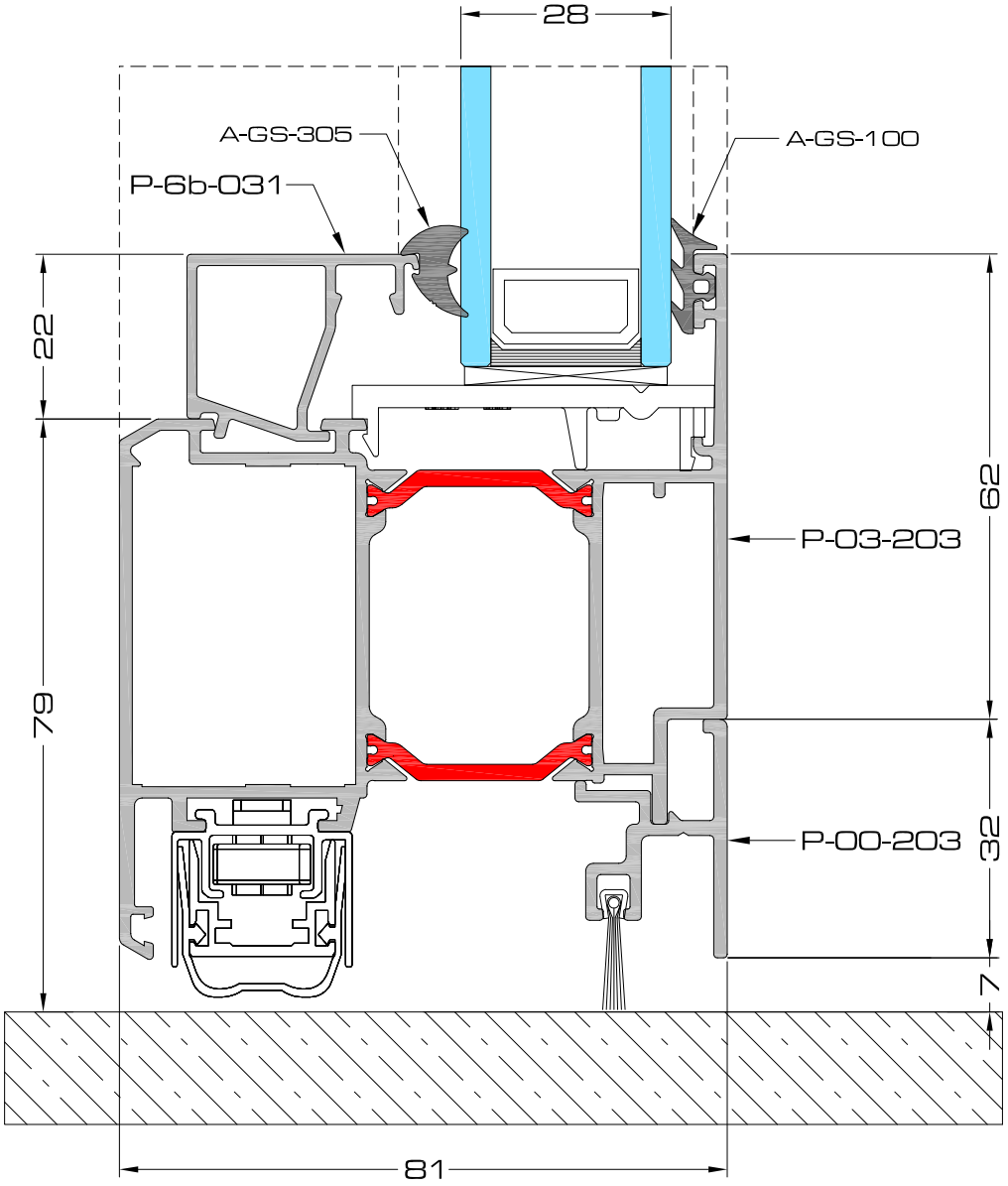
blyweert aluminium exactly your profile

Triton Door
(Open In)

Scale 1:1

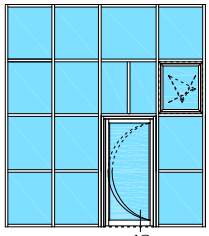


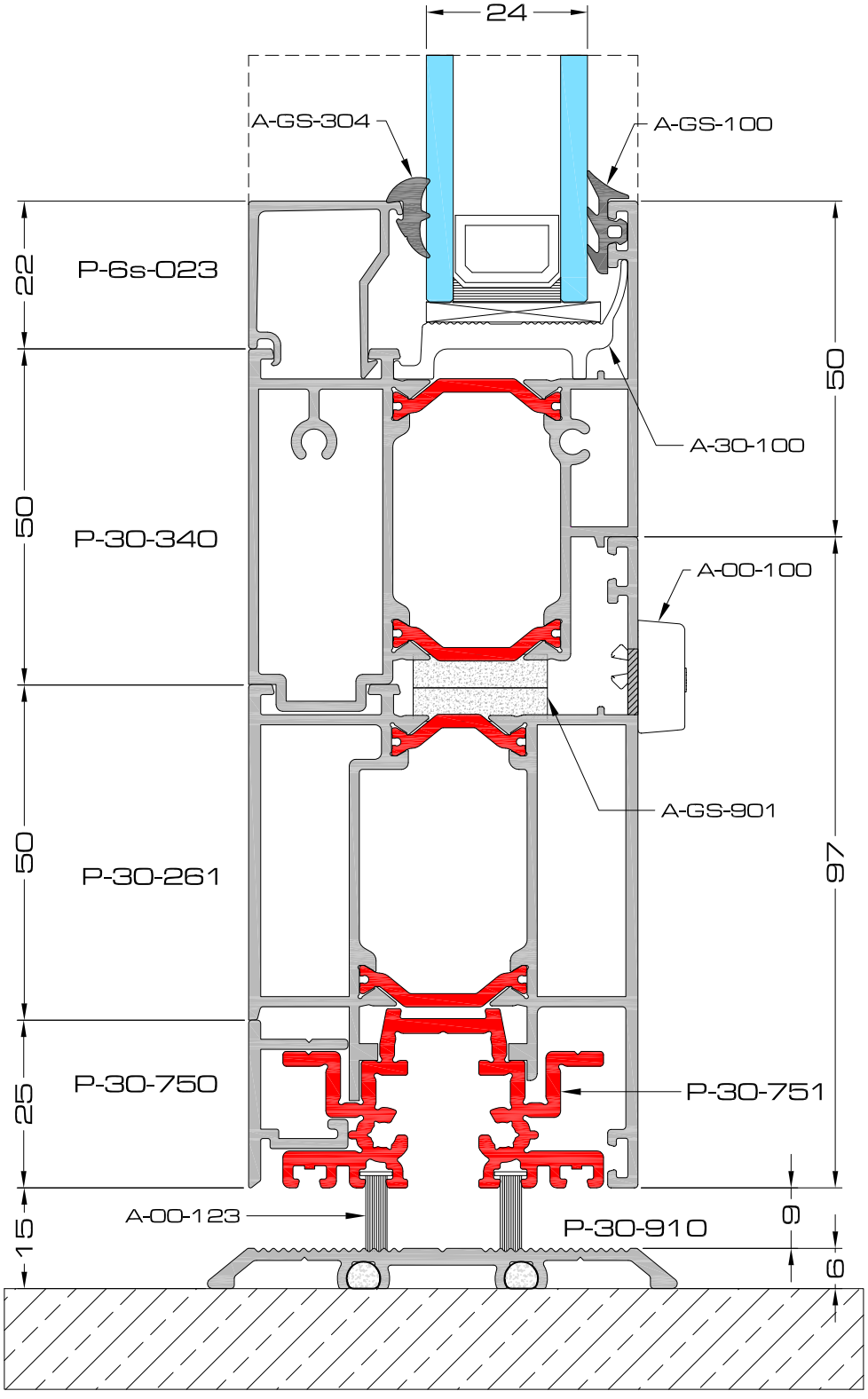
12a



Athena Door Cil
(Open Out)

Scale 1:1

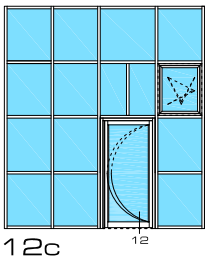




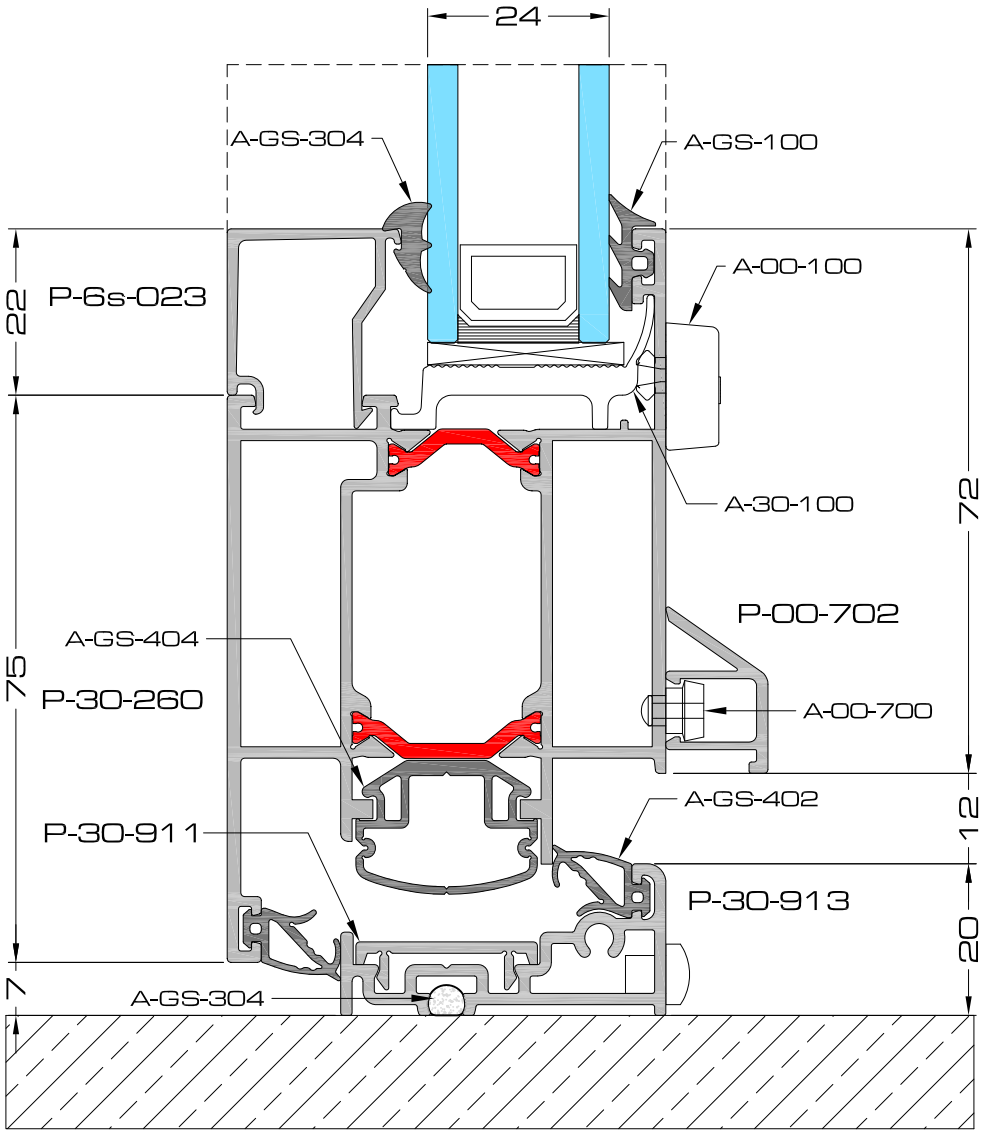
Kratos P52

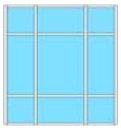
Athena Door Cil
(Open In)

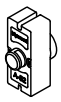
Scale 1:1



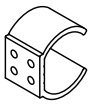
12c



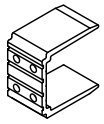




A-52-140/141



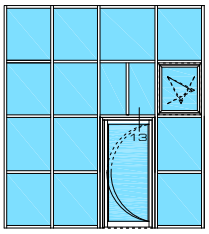
A-52-122



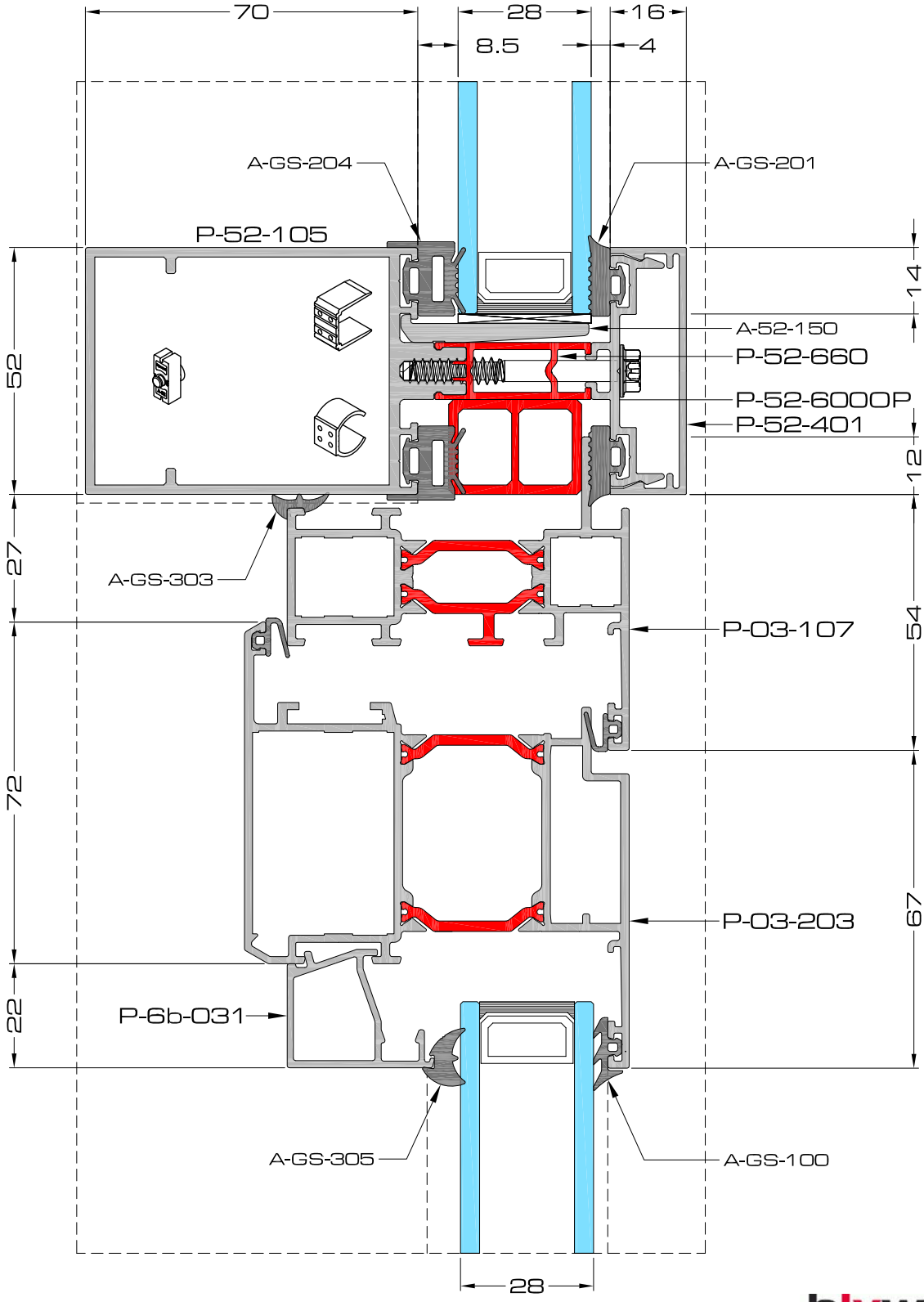
A-52-102

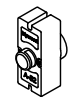
Triton Door
(Open In)

Scale 1:1.25

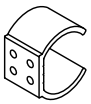


13a

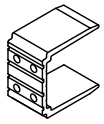




A-52-140/141



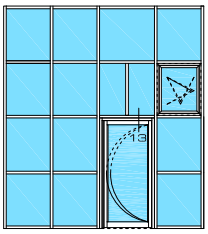
A-52-122



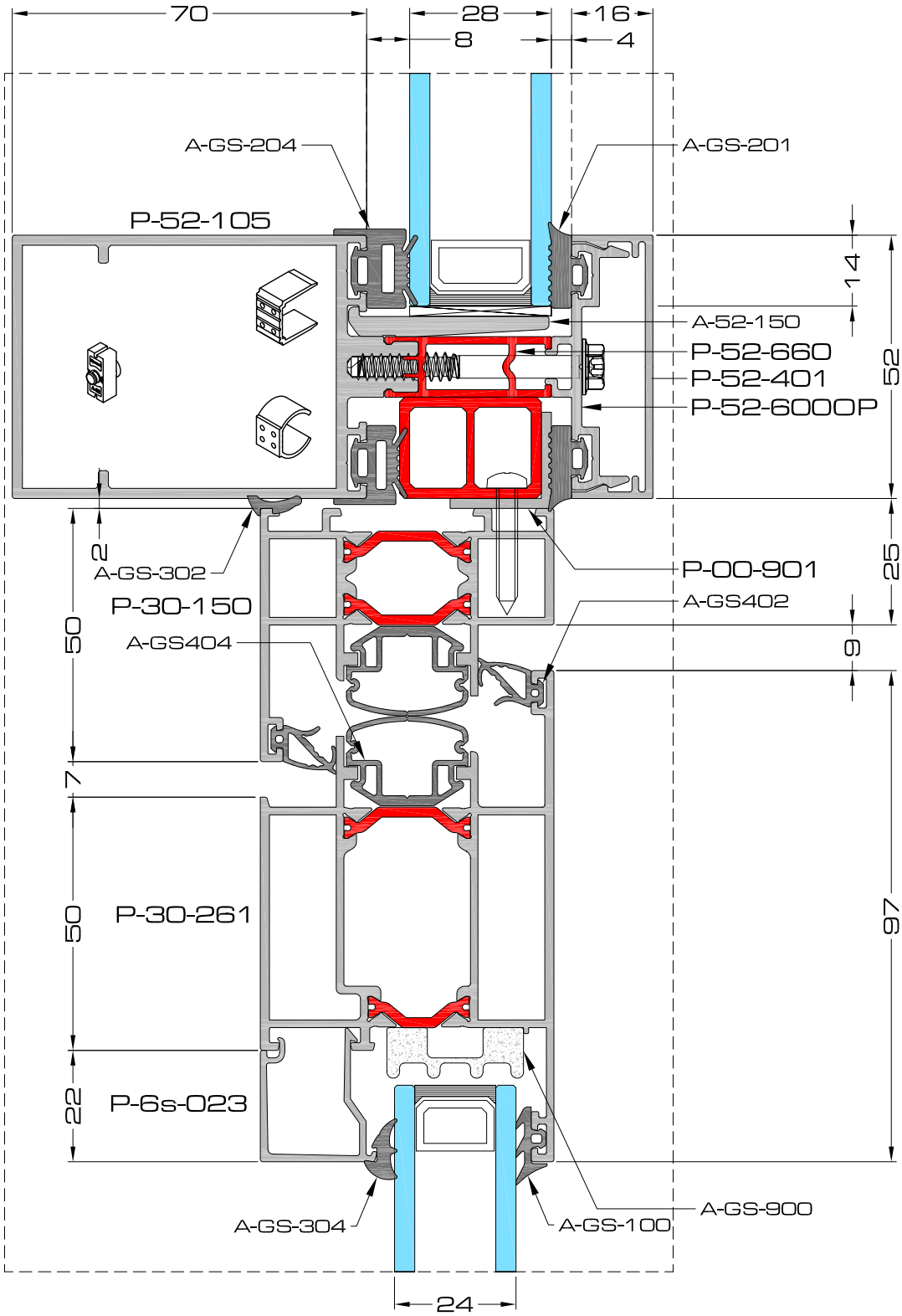
A-52-102

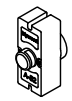
Athena Door Head
(Open Out)

Scale 1:1.25

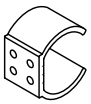


13b

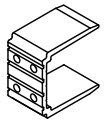




A-52-140/141



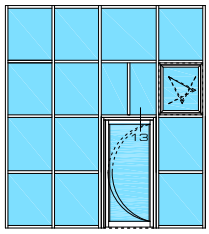
A-52-122



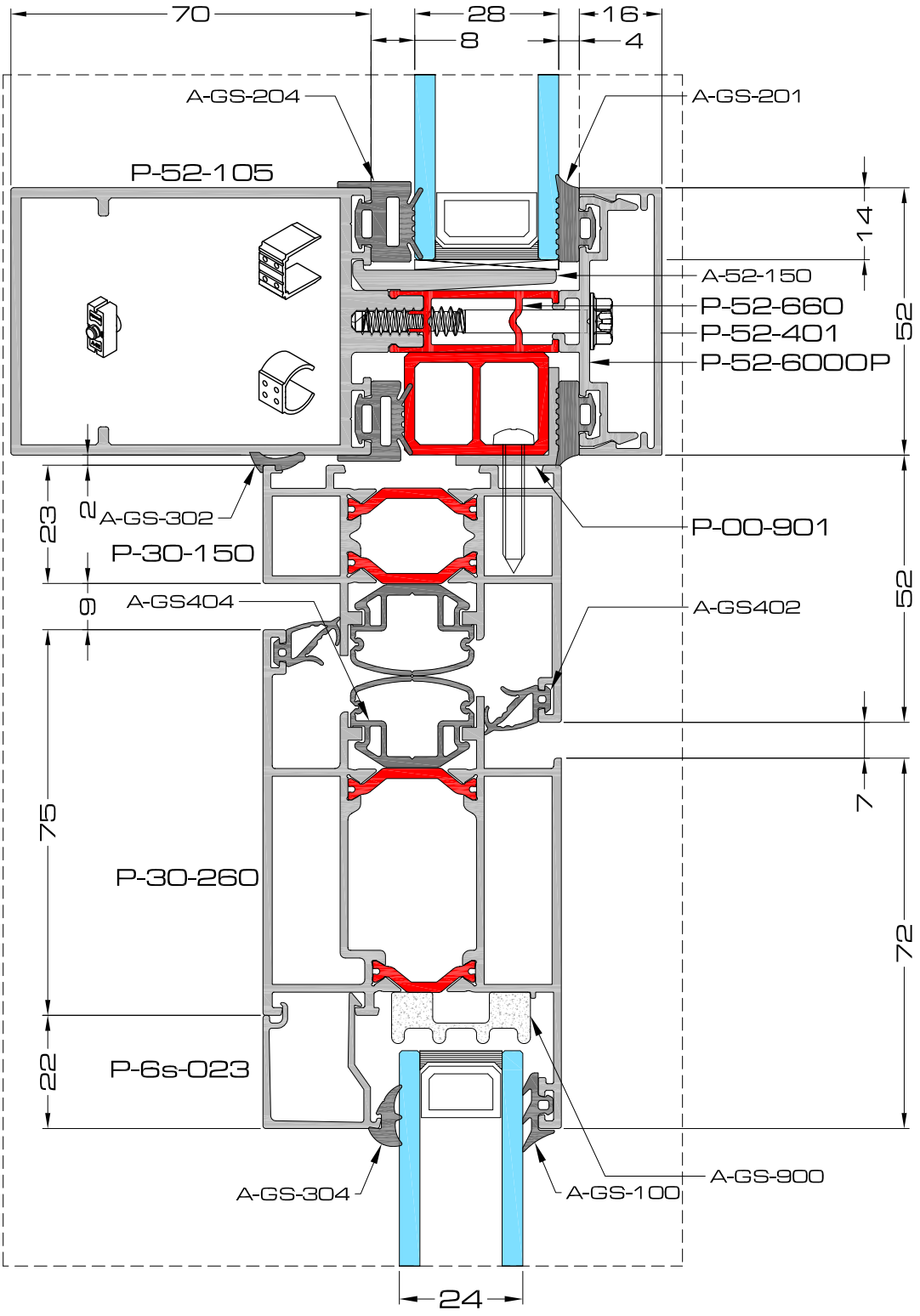
A-52-102

Athena Door Head
(Open In)

Scale 1:1.25



13c



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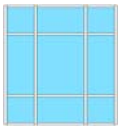
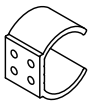
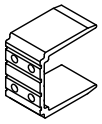


A-52-140/141



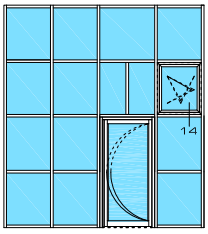
A-52-122



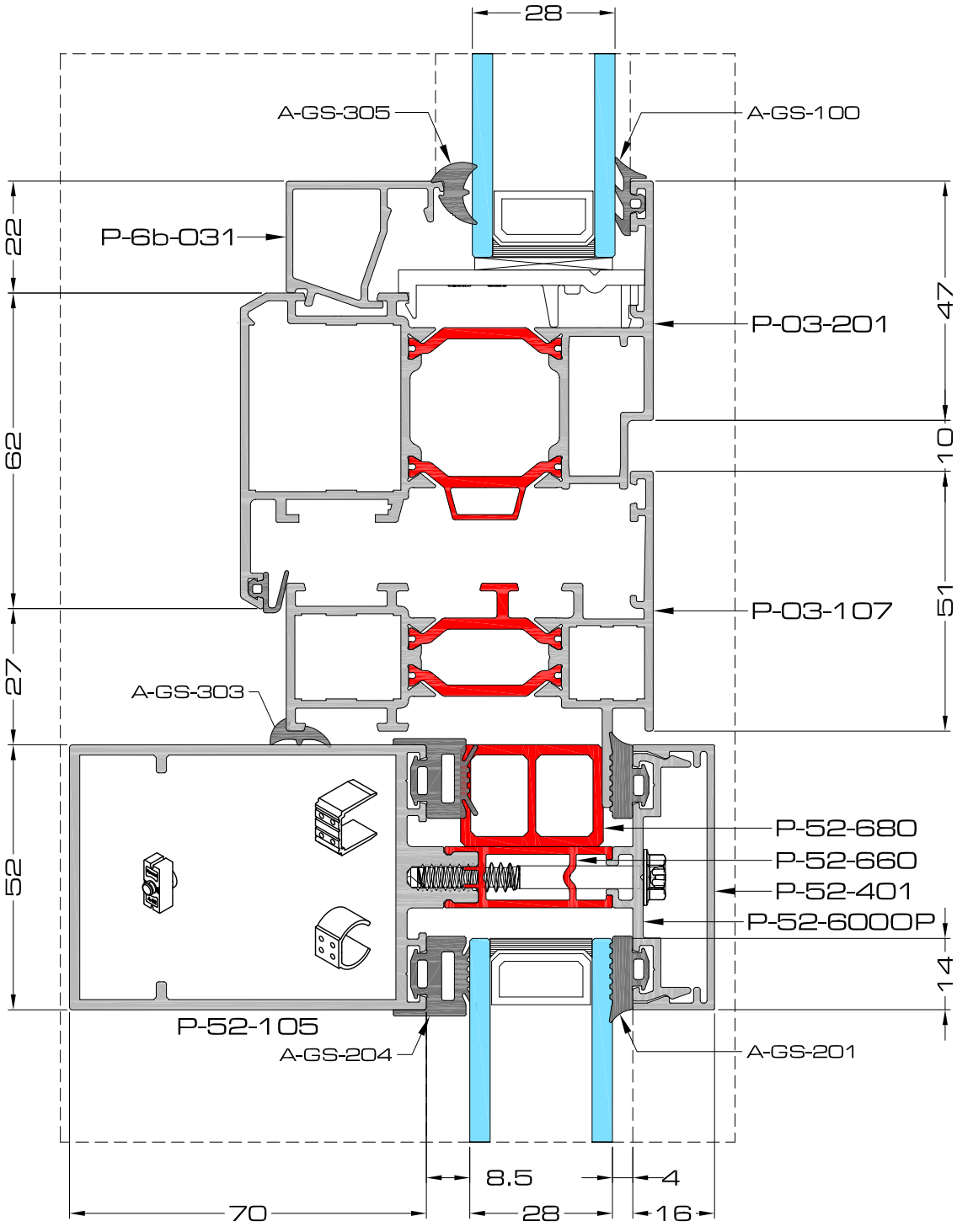
A-52-102

Triton Window
(Open In)

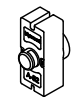
Scale 1:1.25



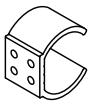
14a



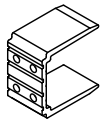
Kratos P52



A-52-140/141



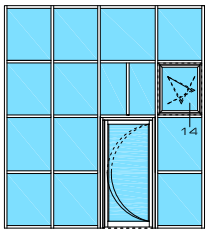
A-52-122



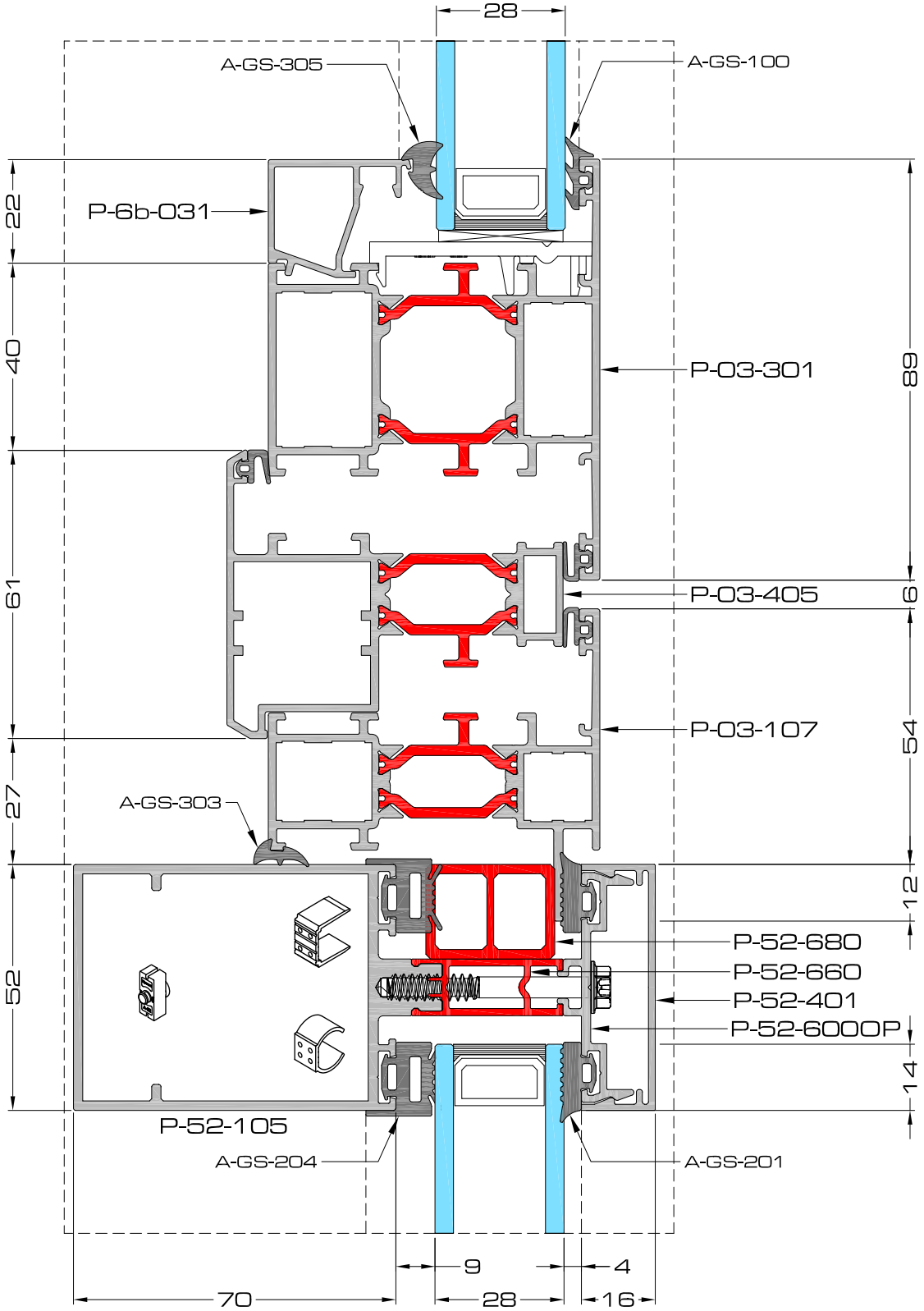
A-52-102

Triton Pivot Window

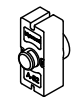
Scale 1:1.25



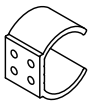
14b



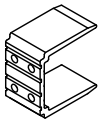
Kratos P52



A-52-140/141



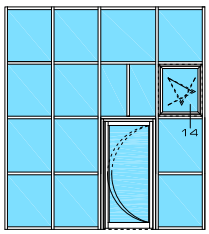
A-52-122



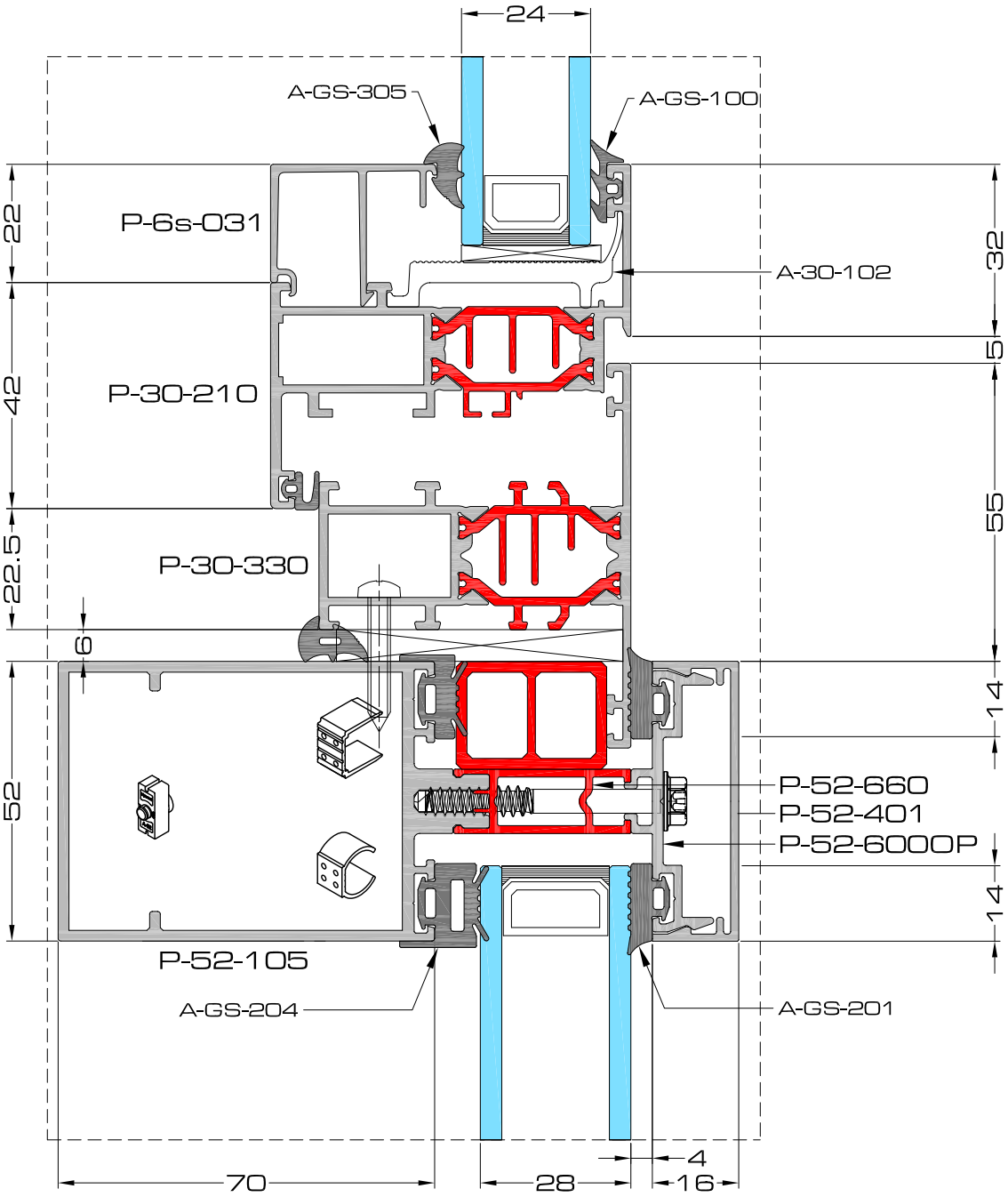
A-52-102

Athena Window

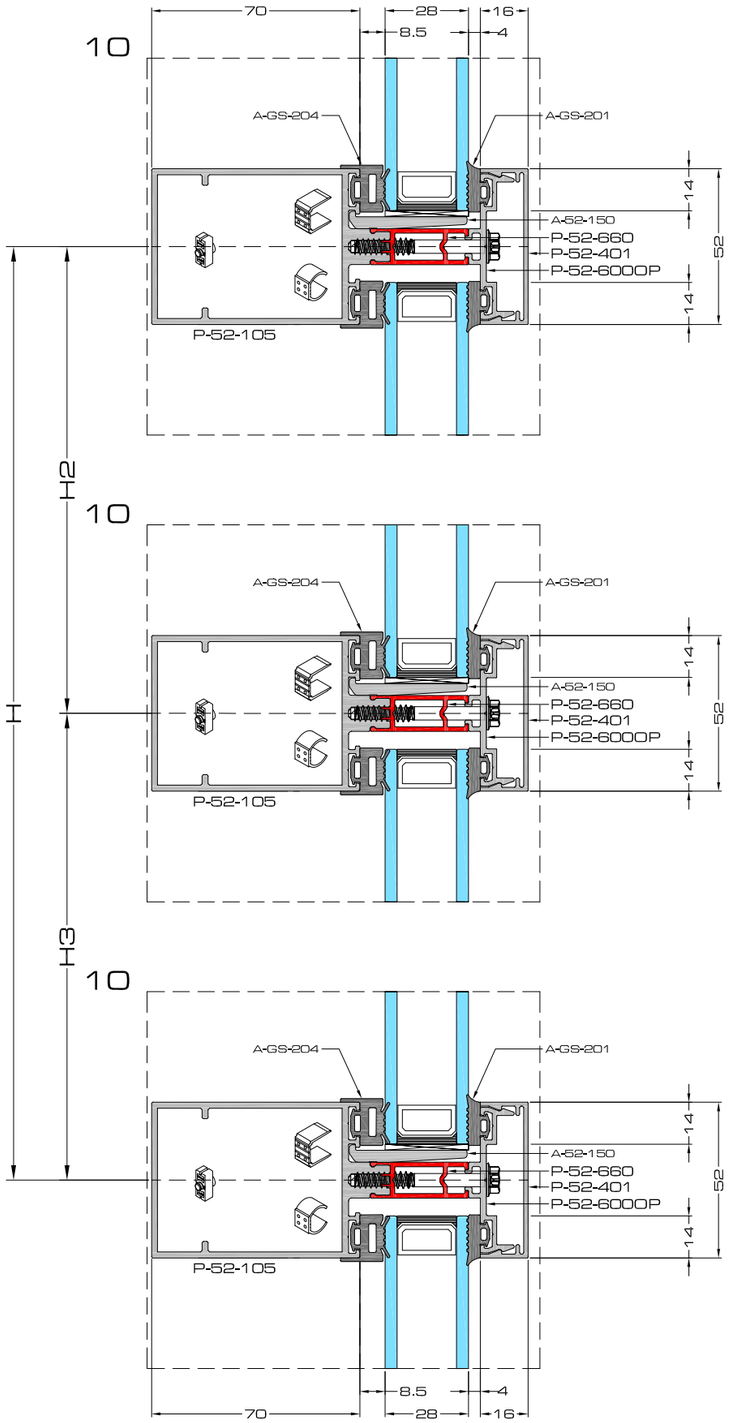
Scale 1:1.25



14c



Kratos P52



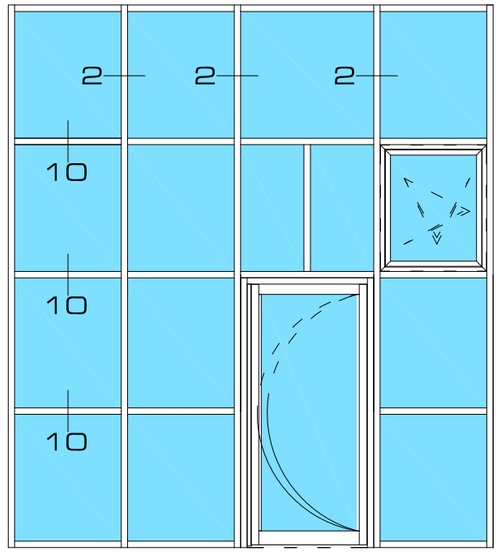
.	.	B	#
P-52-105		B2 - 24	3
P-52-310		-	-
P-52-401		B2 - 52	3
P-52-402		-	-
P-52-6000P		B2 - 52	3
P-52-660		B2 - 24	3

H	#
-	-
H	3
-	-
H	3
H	3
H	3

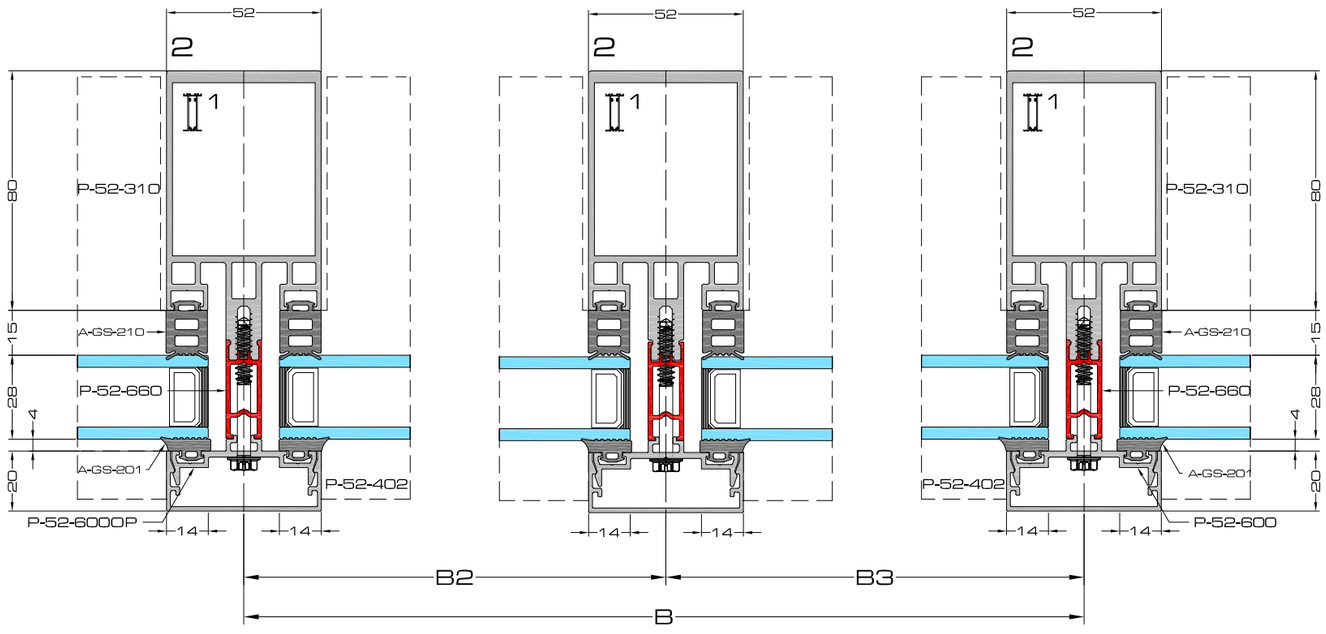
B	H
B2 - 24	H2 - 24
B3 - 24	H3 - 24
-	-

			#
1	A-52-100 - 107	P-52-500 -	-
2	A-52-120 - 127	P-52-550	3
3	A-52-140 / 141		-

		B / H	#
1	A-GS-201	H	12
2	A-GS-201	(B2 - 52) +1%	12
3	A-GS-204	(B2 - 24) +1%	12
4	A-GS-210	(H2 - 52) +1%	12



MULLION/TRANSOM CUTTING DEDUCTIONS



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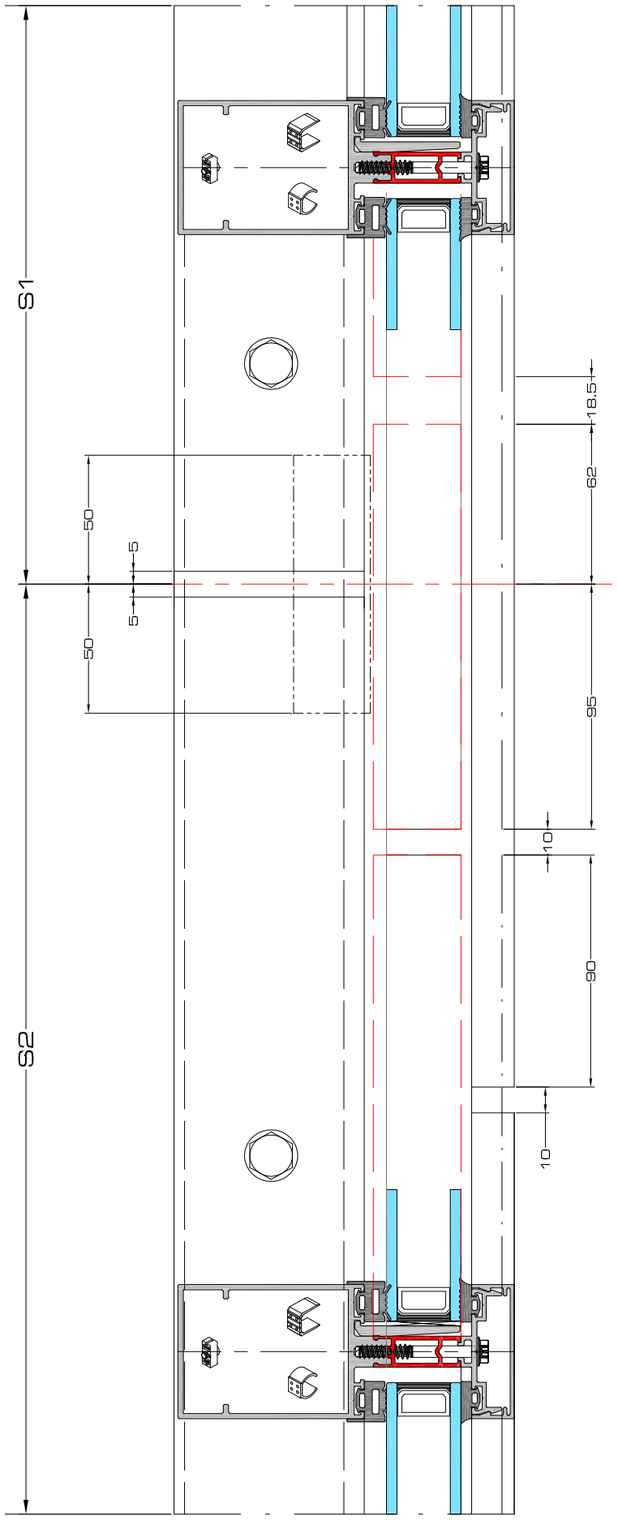
Kratos P52



.	.	B	#
P-52-215		-	-
P-52-310		-	-
P-52-402		-	-
P-52-500 *		-	-
P-52-6000P		-	-
P-52-660		-	-

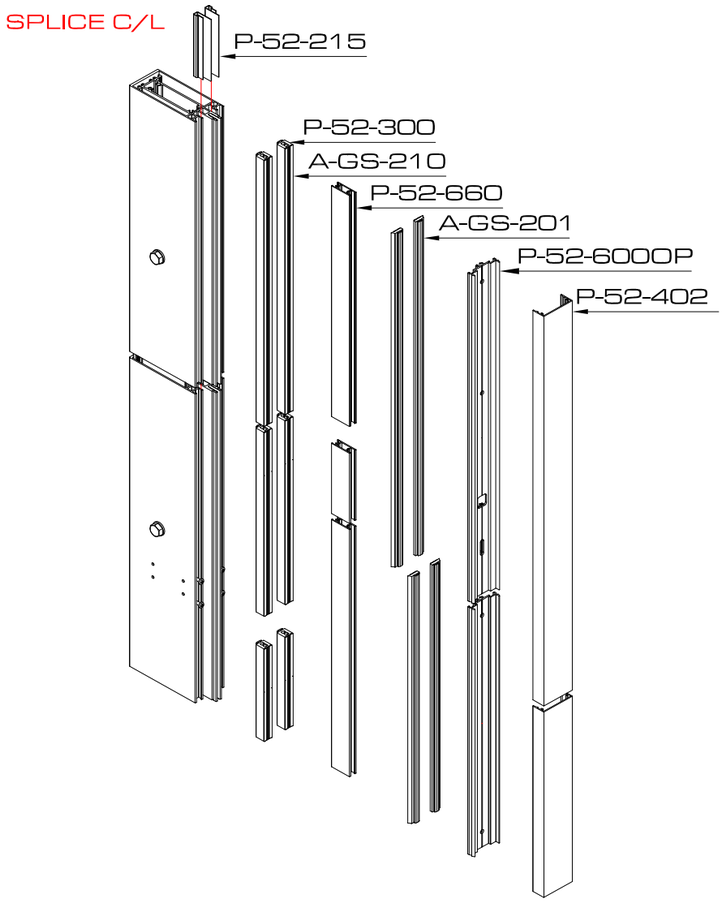
H	#
+100 = S C/L	1
S2 - 5	1
S2 - 190	1
+ 300 = S C/L	1
S2 - 95	1
S2 - 95	1

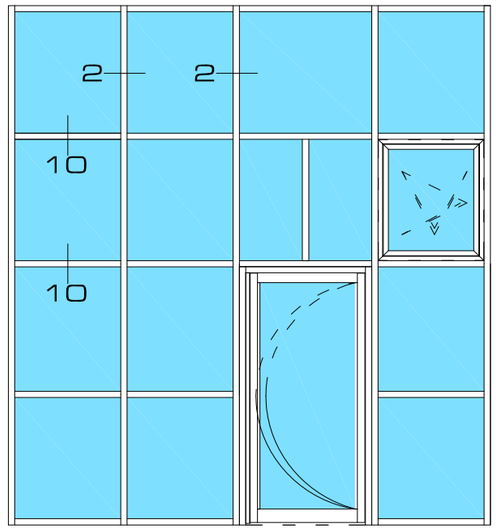
	B	H
	B2 - 28	H2 - 28
	-	-
	-	-

		*	#
1	A-52-100 - 107	P-52-500 -	-
2	A-52-120 - 127	P-52-550	3
3	A-52-140 / 141		-

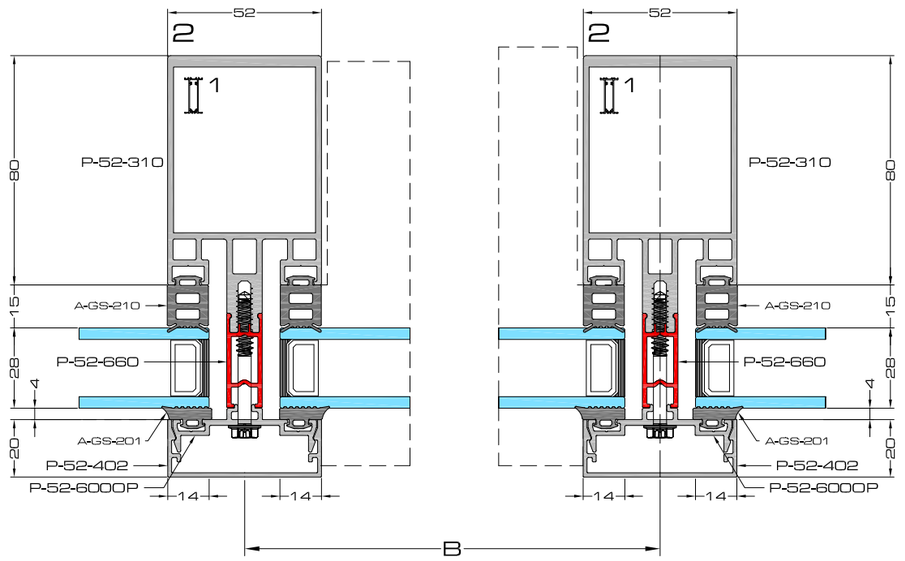
		B / H	#
1	A-GS-201	(H - 10) +1%	1
2	A-GS-210	(H - 10) +1%	1

H * - DESIGN POSITION OR BAR LENGTH

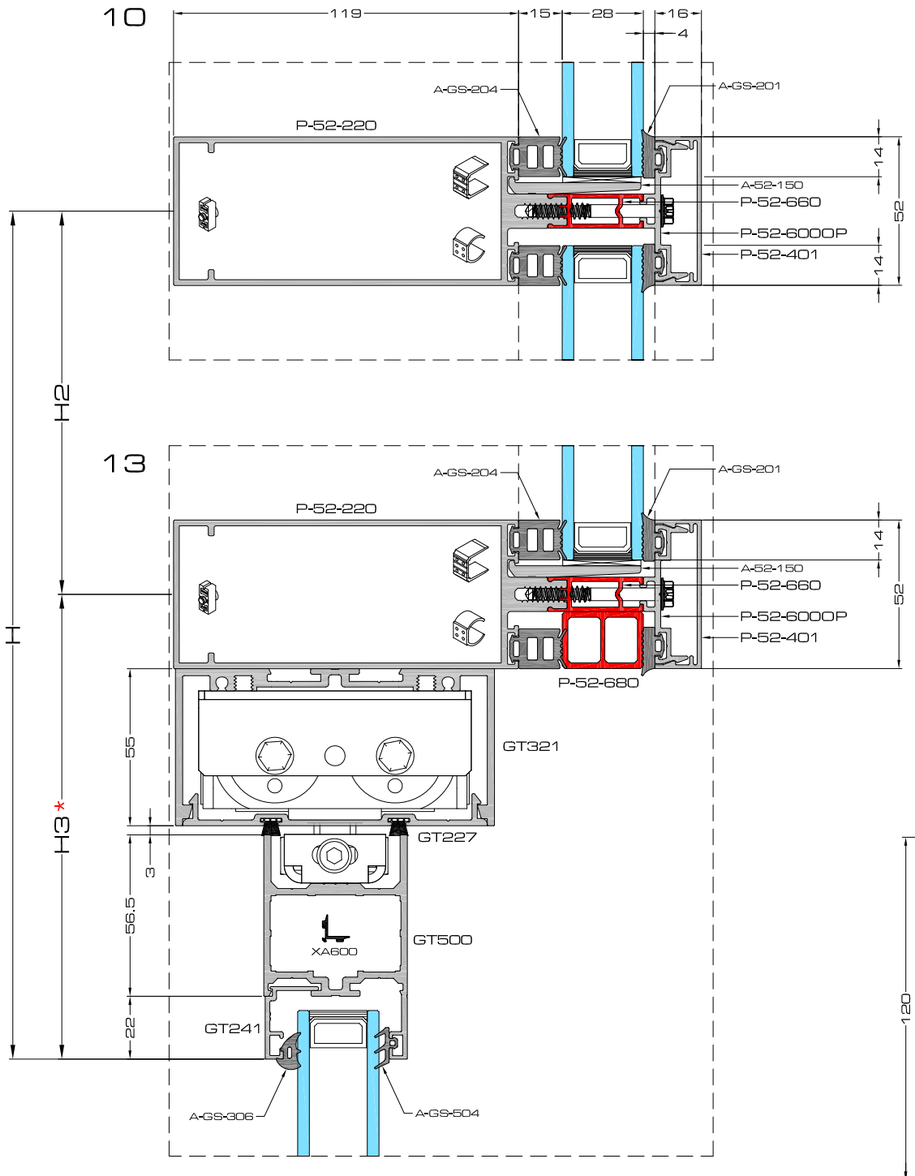




SPLICE JOINT CUTTING DEDUCTIONS



Kratos P52



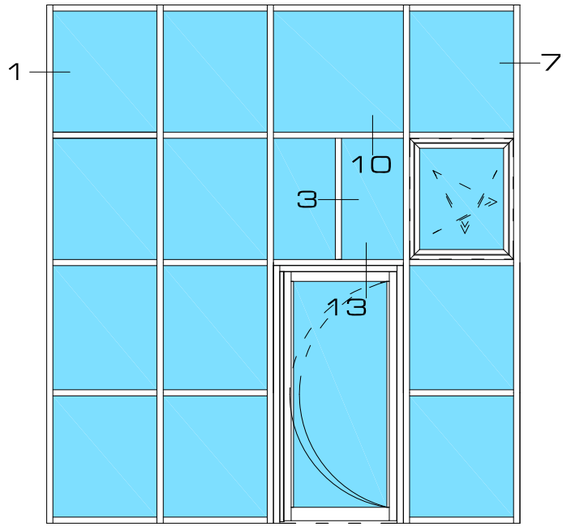
·	·	B	#
P-52-110		-	-
P-52-220		B - 24	2
P-52-320		-	-
P-52-401		B2 - 52	2
P-52-402		-	-
P-52-402		-	-
P-52-6000P		-	-
P-52-6000P		B2 - 52	2
P-52-660		B2 - 24	4
P-52-680		B2 - 12	1

H	#
H2 - 24	1
-	-
H	2
-	-
H	2
H2 - 52	1
H - 52	1
H	2
H2 - 24	1
H	2

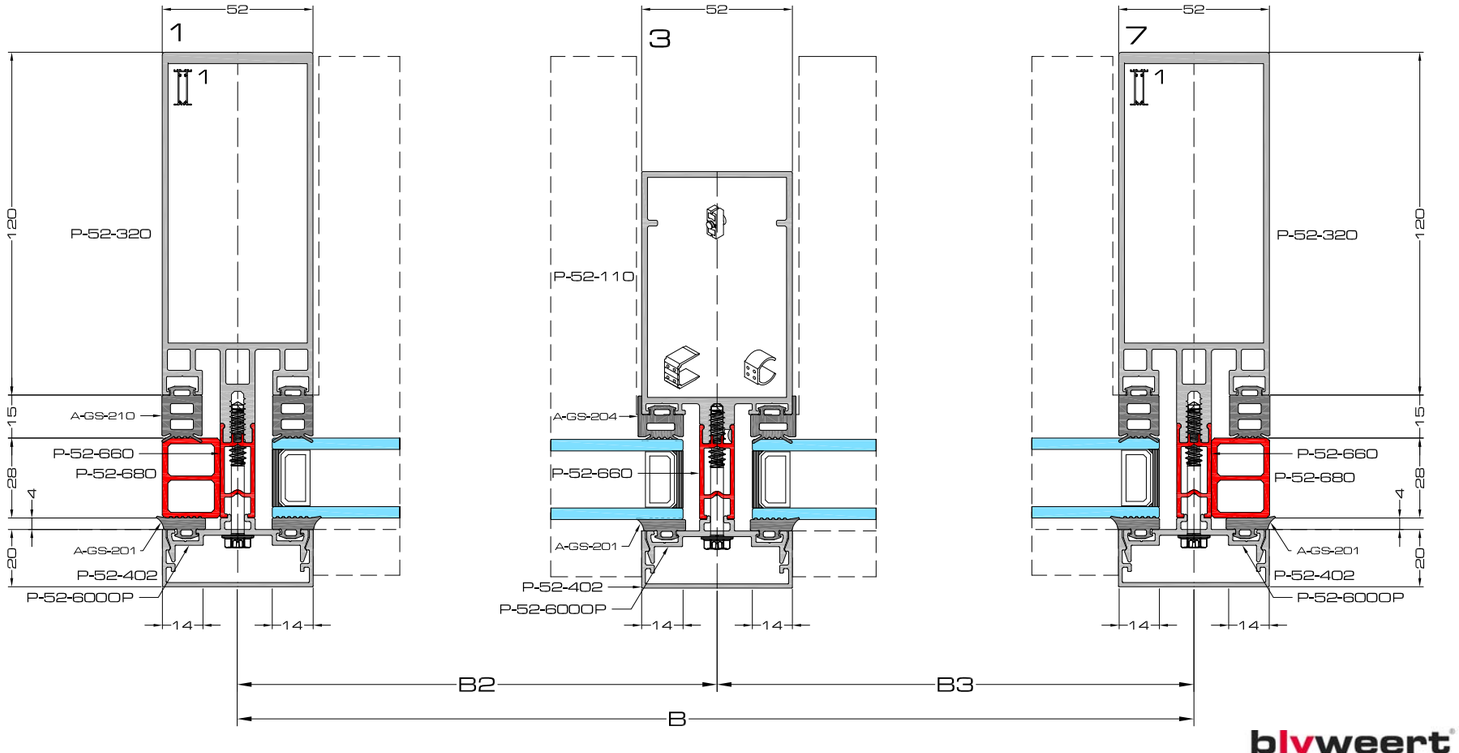
B	H
B2 - 24	H2 - 24
B3 - 24	-
-	-

			#
1	A-52-100 - 107	P-52-500 -	-
2	A-52-120 - 127	P-52-550	2
3	A-52-140 / 141		-

		B / H	#
1	A-GS-201	(H) +1%	4
2	A-GS-201	(B2 - 52) +1%	2
3	A-GS-210	(B2 - 52) +1%	8
4	A-GS-210	(H2 - 52) +1%	6



LEVEL 1 - LEVEL 2 CUTTING DEDUCTIONS



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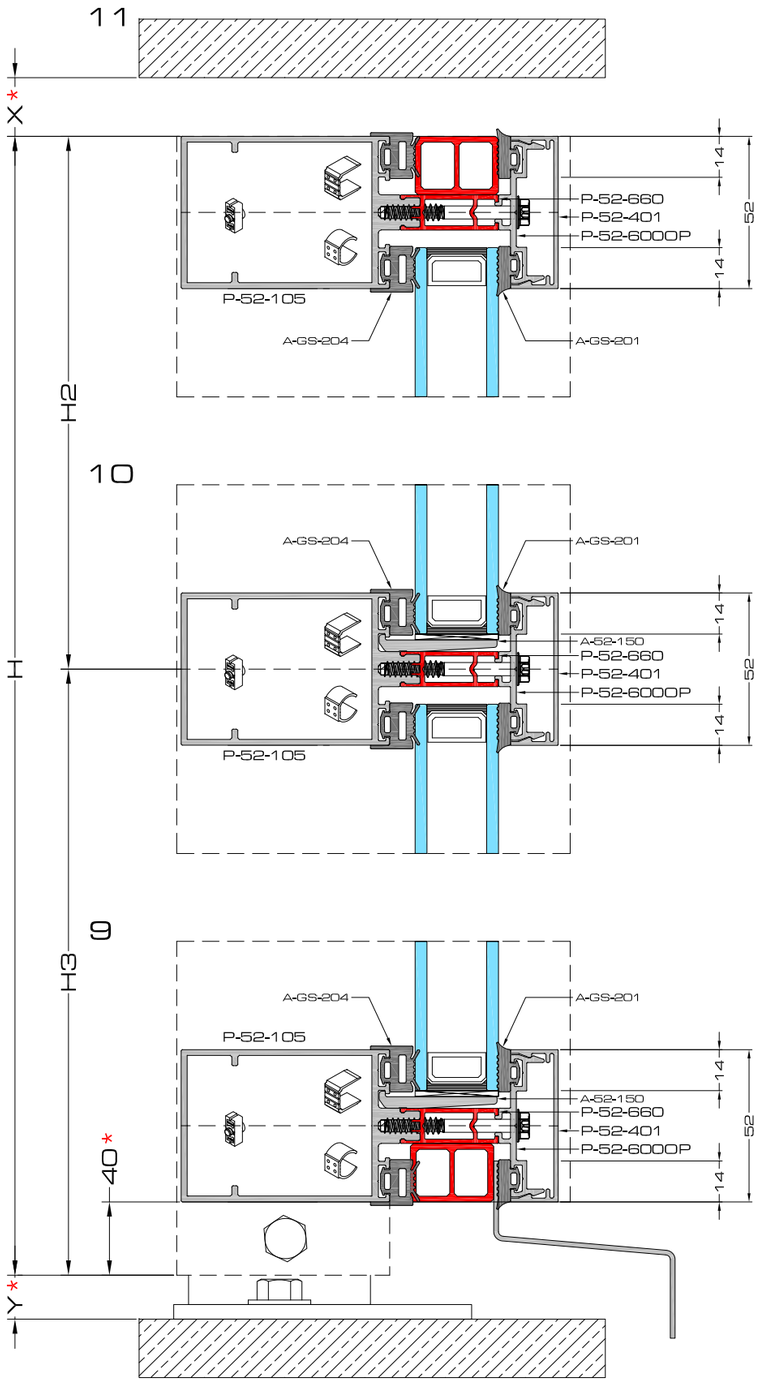
Kratos P52



.	.	B	#
P-52-105		B2 - 24	6
P-52-310		-	-
P-52-401		B2 - 52	6
P-52-402		-	-
P-52-6000P		B2 - 52	6
P-52-660		B2 - 24	6
P-52-680		B2 - 24	4

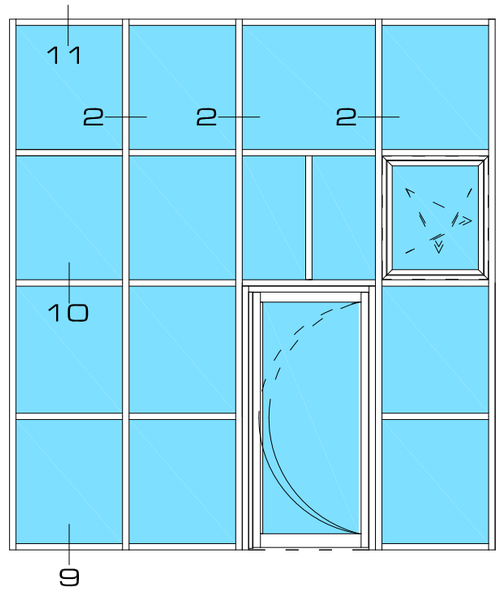
H	#
-	-
H	3
-	-
H - 40 *	3
H - 40 *	3
H - 40 *	3
H	-

B	H
B2 - 24	H2 - 50
B3 - 24	H3 - 90
-	-

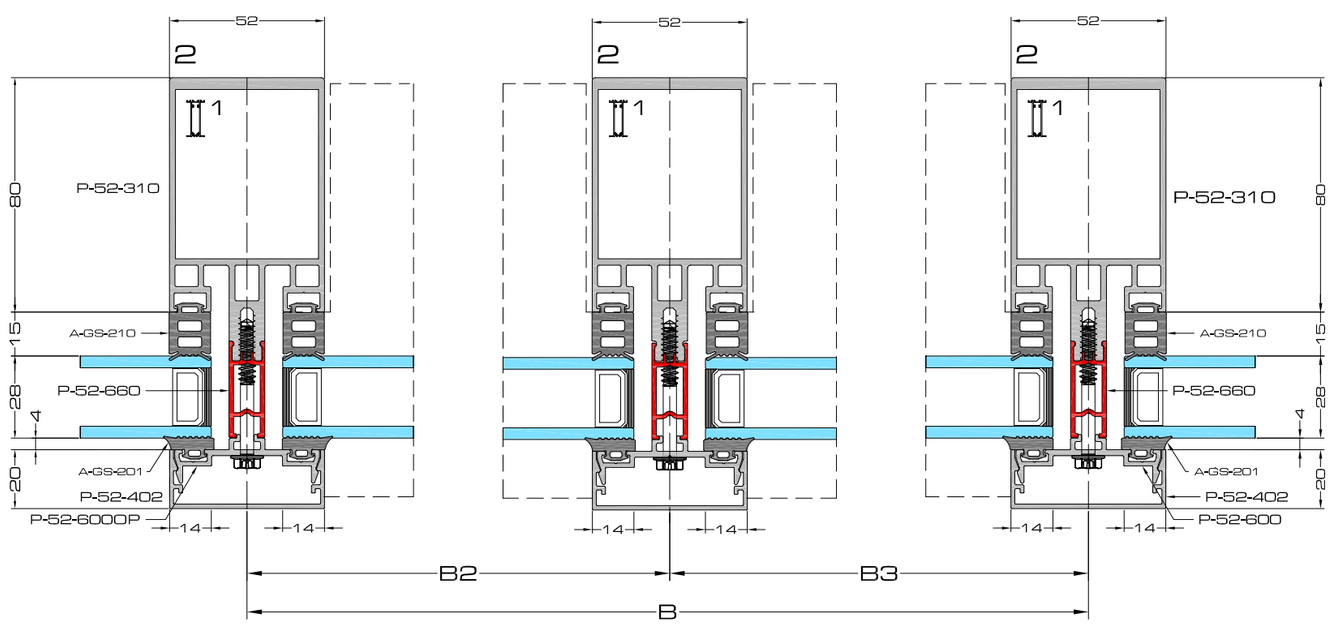
			#
1	A-52-100 - 107	P-52-500 -	~
2	A-52-120 - 127	P-52-550	3
3	A-52-140 / 141		-

		B / H	#
1	A-GS-201	H	12
2	A-GS-201	(B2 - 52) +1%	12
3	A-GS-204	(B2 - 24) +1%	12
4	A-GS-210	(H2 - 52) +1%	12

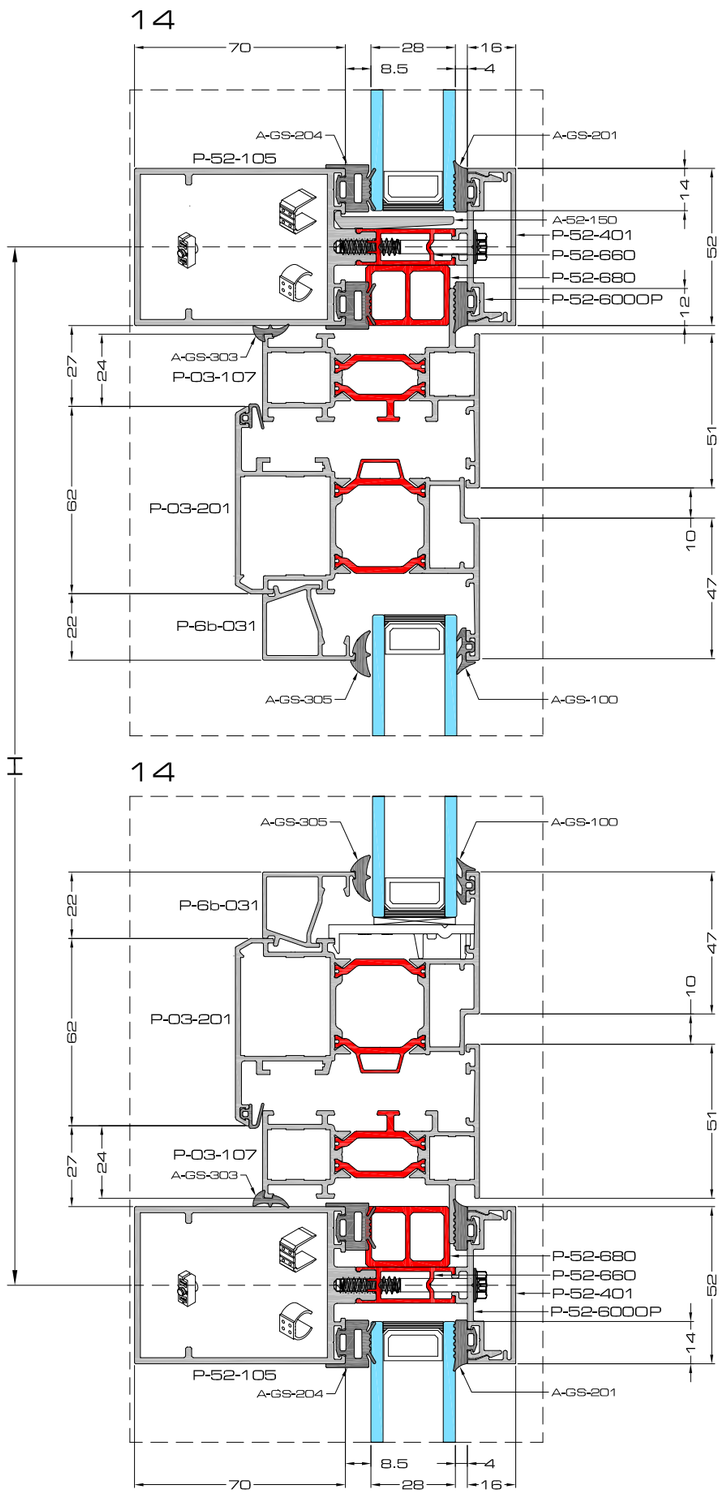
* Project Specific Dimension



SCREEN CUTTING DEDUCTIONS



Kratos P52



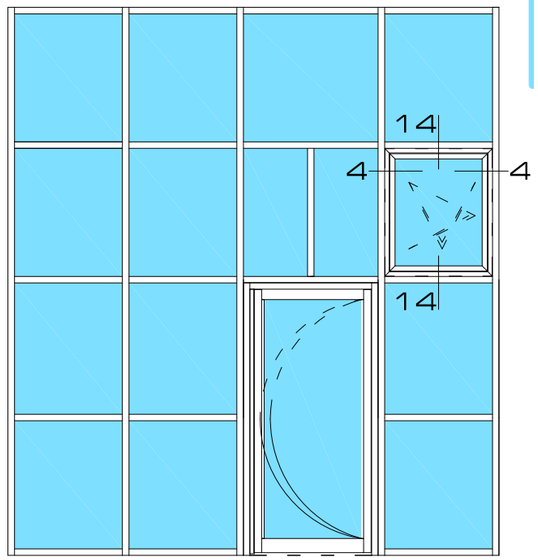
.	.	B	#
P-52-105		B - 24	2
P-03-107		B - 28	2
P-52-310		-	-
P-52-401		B - 52	2
P-52-402		-	-
P-52-6000P		B - 52	2
P-52-660		B - 24	2
P-52-680		B - 12	2

H	#
-	-
H - 28	2
H	2
-	-
H	2
H	2
H	2
H - 12	3

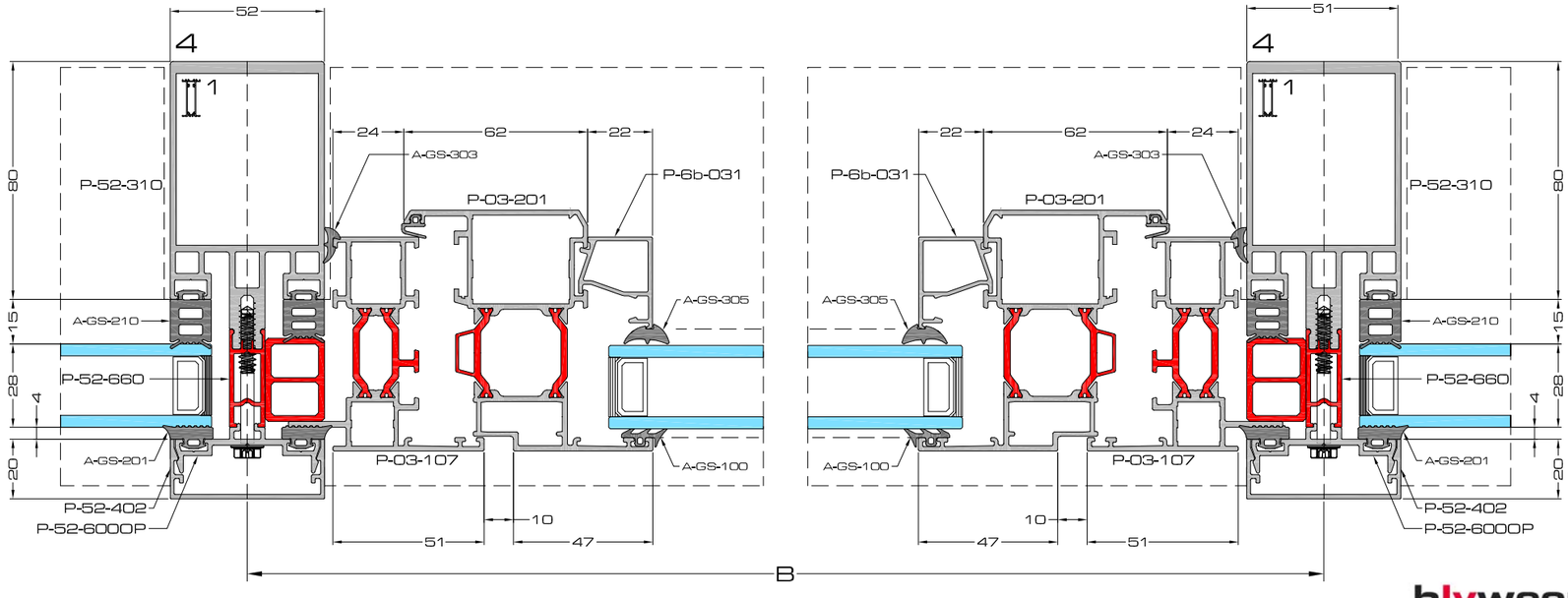
	B	H
	B-264	H-264

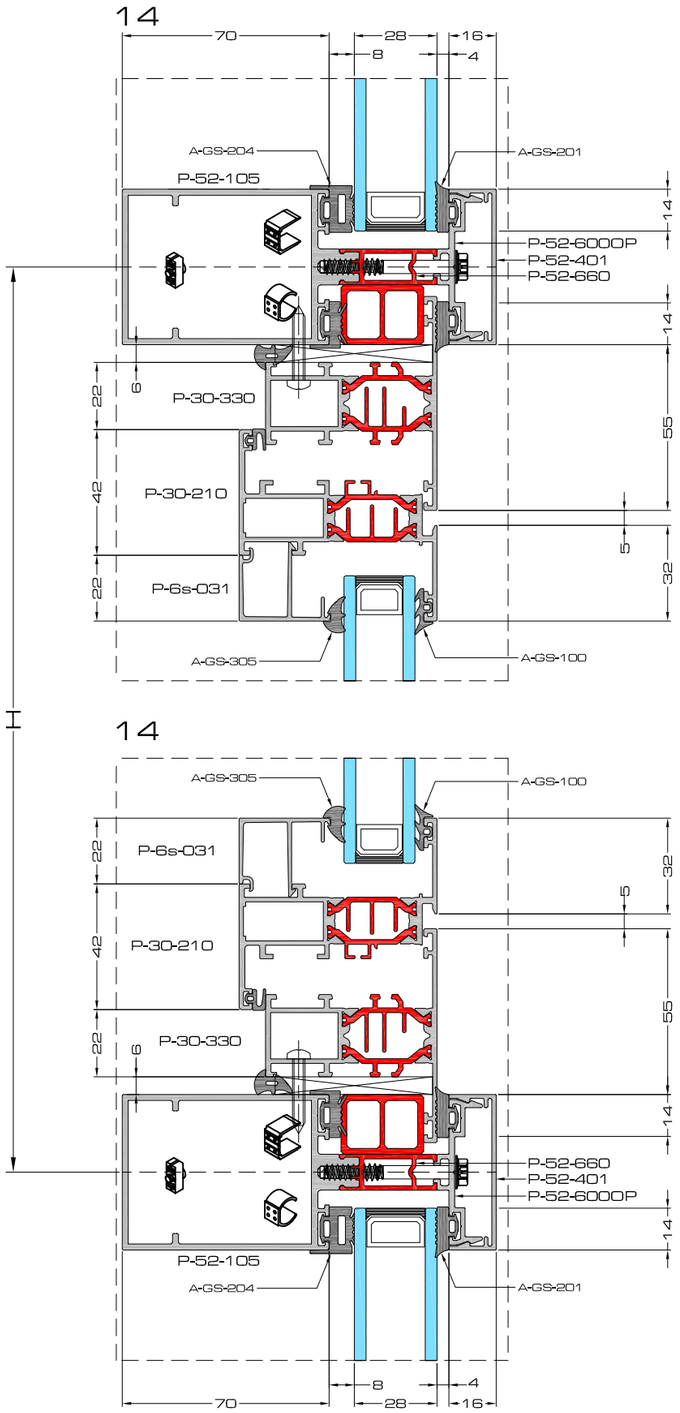
			#
1	A-52-100 - 107	P-52-500 -	-
2	A-52-120 - 127	P-52-550	2
3	A-52-140 / 141		-

		B / H	#
1	A-GS-201	H	4
2	A-GS-201	(B - 52) +1%	4
3	A-GS-204	(B - 24) +1%	4
4	A-GS-210	(H - 52) +1%	4
5	A-GS-303	(B - 52) +1%	2
6	A-GS-303	(H - 52) +1%	2



TRITON WINDOW CUTTING DEDUCTIONS





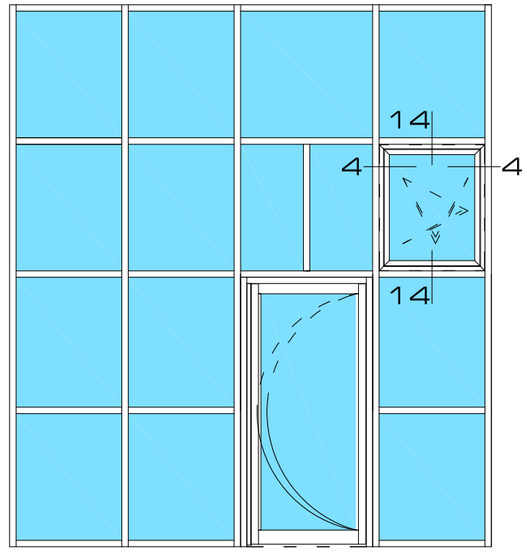
·	·	B	#
P-52-105		B - 24	2
P-52-310		-	-
P-52-401		B - 52	
P-52-402		-	2
P-52-6000P		B - 52	2
P-52-660		B - 24	2
P-52-680		B - 12	2
P-30-330		B - 20	2
P-30-210		B - 109	2
P-6s-031		B - 193	2

H	#
-	-
H	2
-	-
H	2
H	2
H	2
H - 12	3
H - 20	2
H - 109	2
H - 237	2

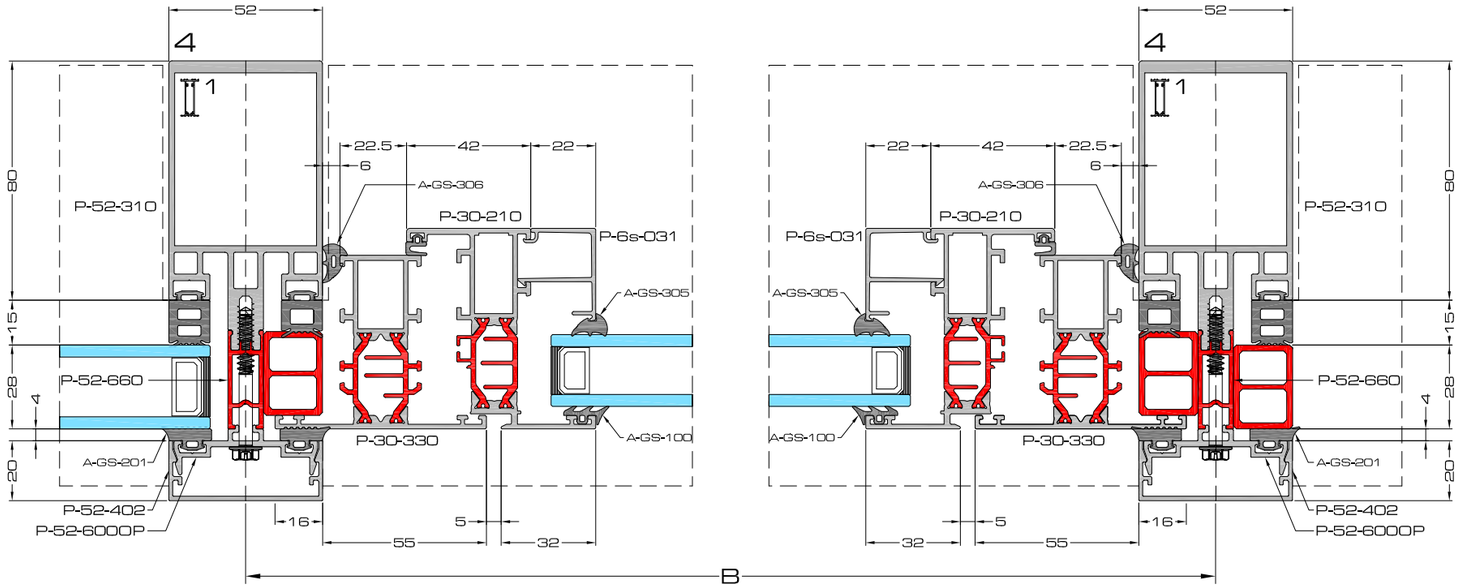
	B	H
	B-206	H-206

			#
1	A-52-100 - 107	P-52-500 -	-
2	A-52-120 - 127	P-52-550	2
3	A-52-140 / 141		-

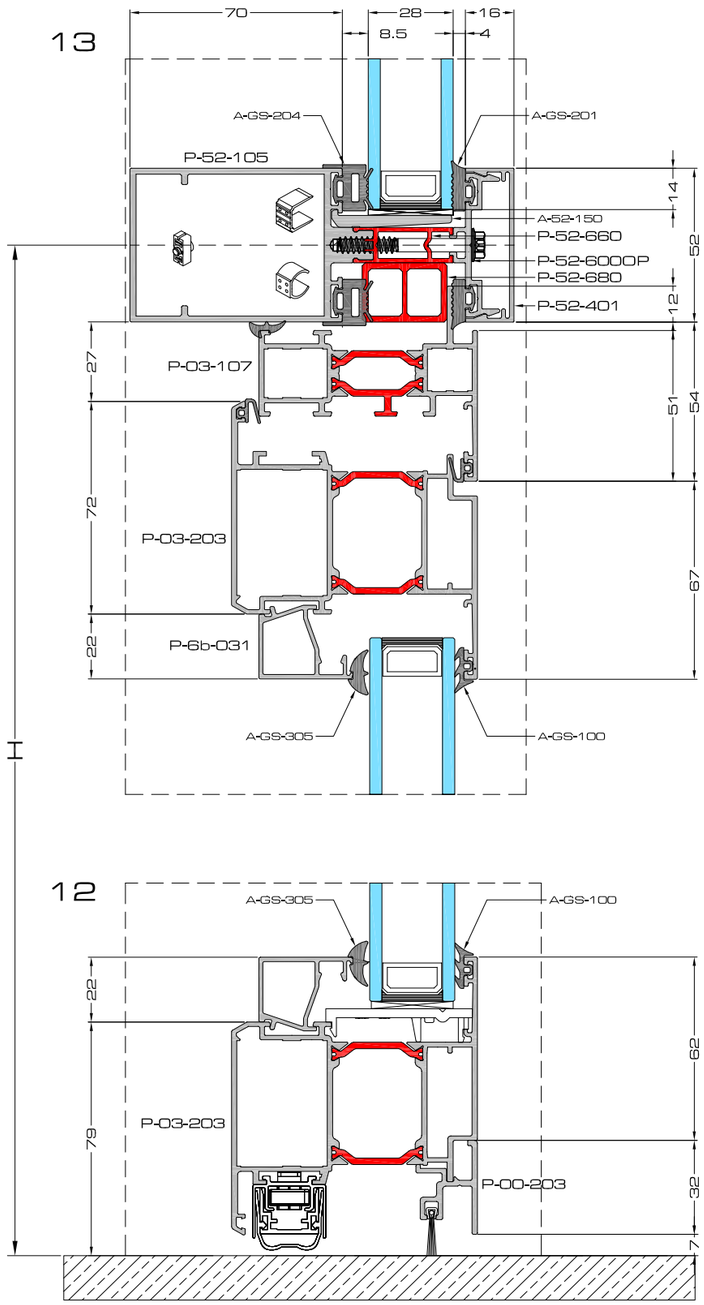
		B / H	#
1	A-GS-201	H	4
2	A-GS-201	(B - 52) +1%	4
3	A-GS-204	(B - 24) +1%	4
4	A-GS-210	(H - 52) +1%	4
5	A-GS-306	(B - 52) +1%	2
6	A-GS-306	(H - 52) +1%	2



ATHENA WINDOW CUTTING DEDUCTIONS



Kratos P52



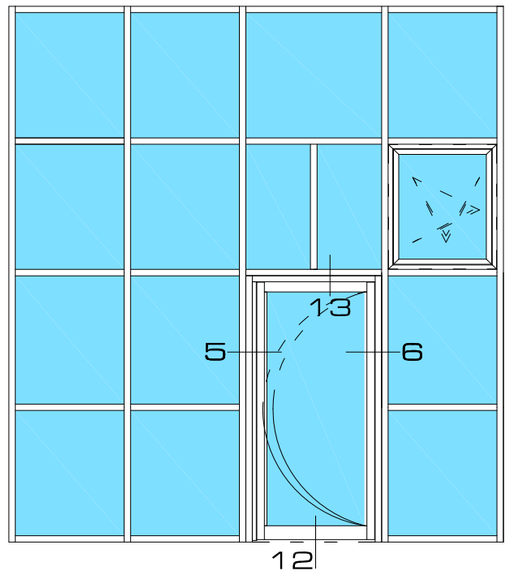
.	.	B	#
P-52-105		B - 24	1
P-03-107		B - 28	1
P-52-310		-	-
P-52-401		B - 52	1
P-52-402		-	-
P-52-6000P		B - 52	1
P-52-660		B - 24	1
P-52-680		B - 12	1

H	#
-	-
H - 14	2
H	2
-	-
H	2
H	2
H-6	2
H - 26	2

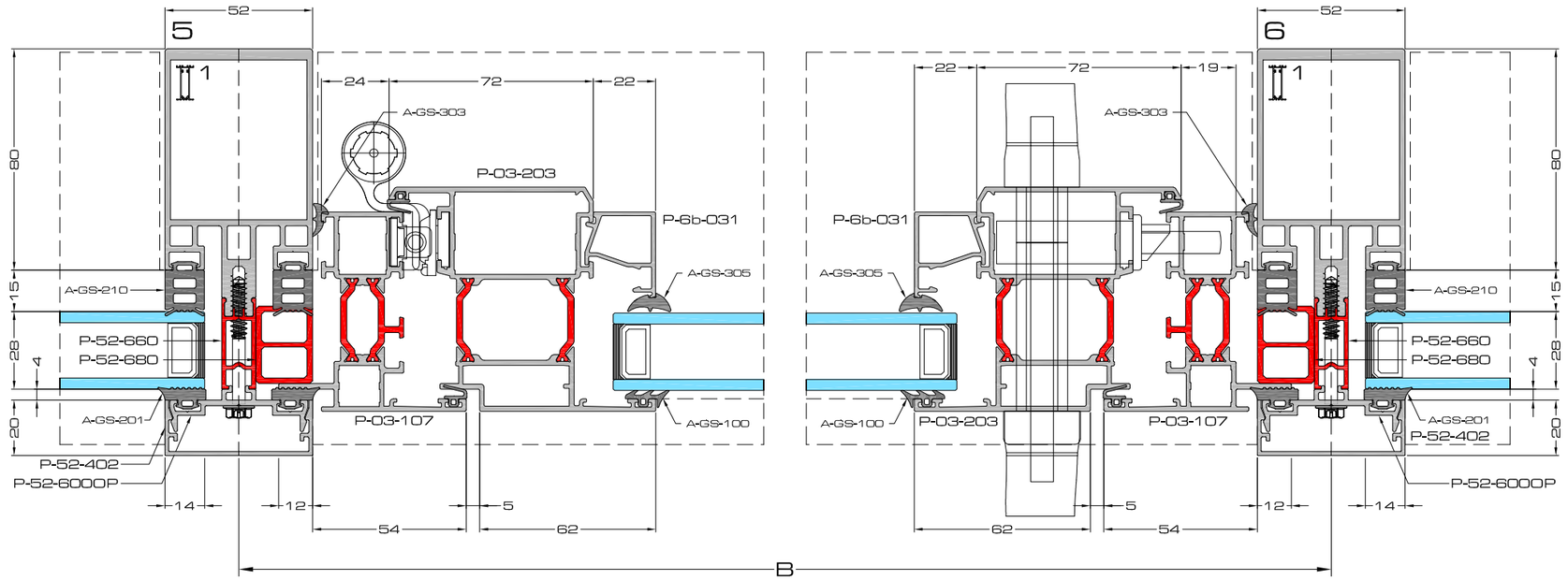
	B	H
	B-264	H-218

			#
1	A-52-100 - 107	P-52-500 -	-
2	A-52-120 - 127	P-52-550	2
3	A-52-140 / 141		-

		B / H	#
1	A-GS-201	H	4
2	A-GS-201	(B - 52) +1%	2
3	A-GS-204	(B - 24) +1%	2
4	A-GS-210	(H -26) +1%	4
5	A-GS-303	(B - 52) +1%	1
6	A-GS-303	(H - 52) +1%	2



TRITON DOOR CUTTING DEDUCTIONS



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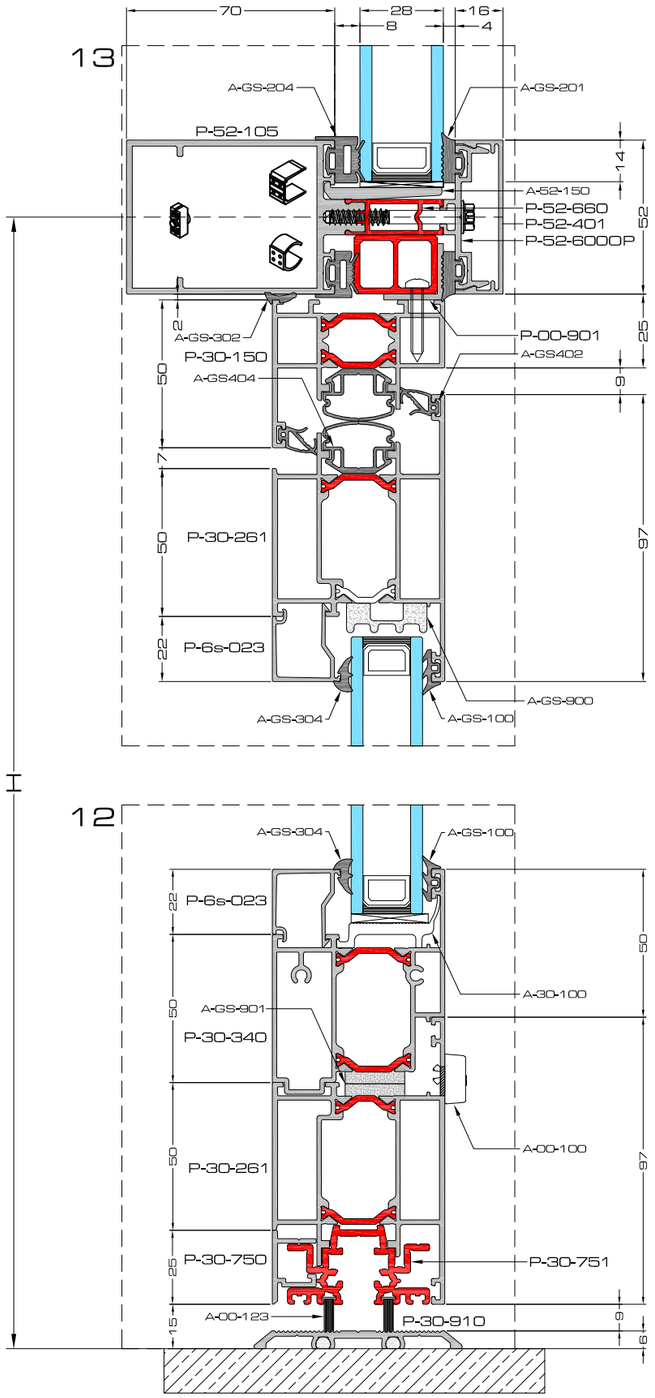
Kratos P52



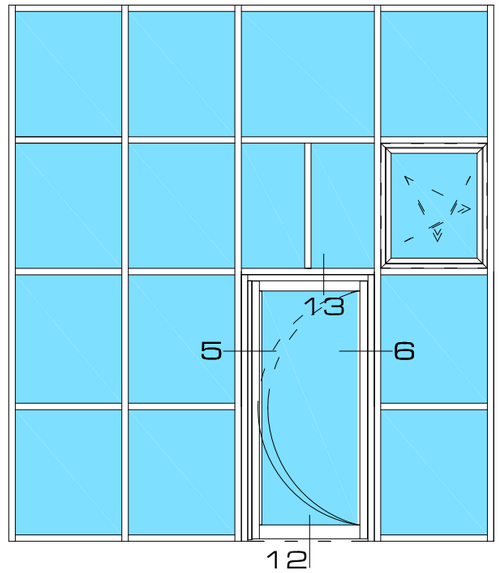
.	.	B	#
P-52-105		B - 24	1
P-52-310		-	-
P-52-401		B - 52	1
P-52-402		-	-
P-52-6000P		B - 52	1
P-52-660		B - 24	1
P-52-680		B - 12	1
P-00-901		B - 18	1
P-30-150		B - 56	1
P-30-261		B - 120	1
P-6s-023		B - 270	1
P-30-910		B - 52	1

H	#
-	-
H	2
-	-
H	2
H	2
H - 6	2
H - 26	2
H - 9	2
H - 28	2
H - 75	2
H - 319	2
-	-

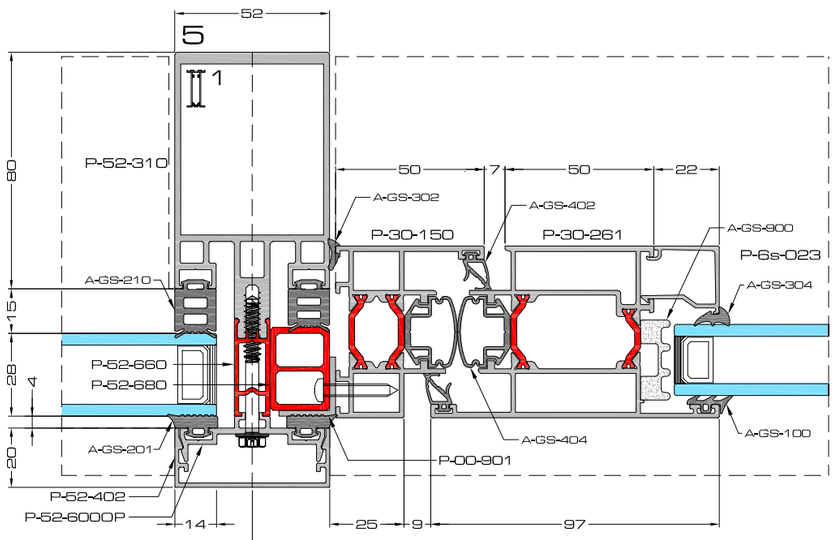
	B	H
	B-284	H-289

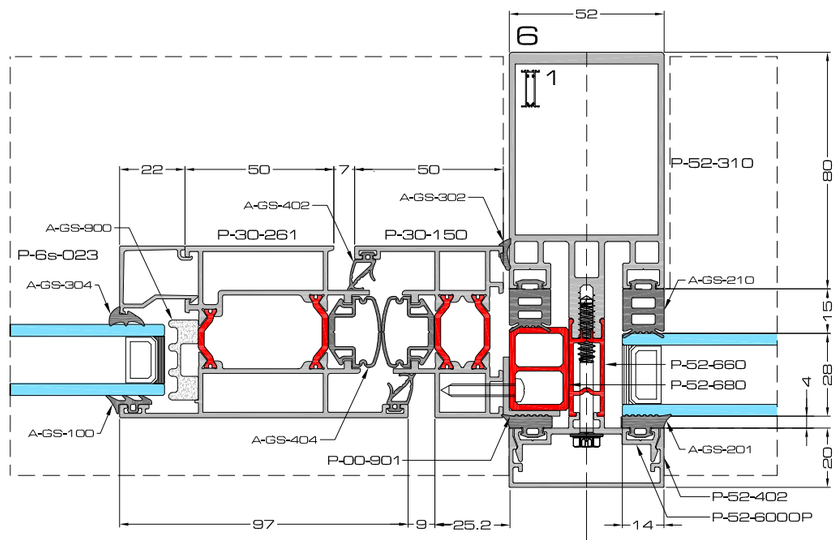
			#
1	A-52-100 - 107	P-52-500 -	-
2	A-52-120 - 127	P-52-550	2
3	A-52-140 / 141		-

		B / H	#
1	A-GS-201	H	4
2	A-GS-201	(B - 52) +1%	2
3	A-GS-204	(B - 24) +1%	2
4	A-GS-210	(H -26) +1%	4
5	A-GS-302	(B - 52) +1%	1
6	A-GS-302	(H - 52) +1%	2



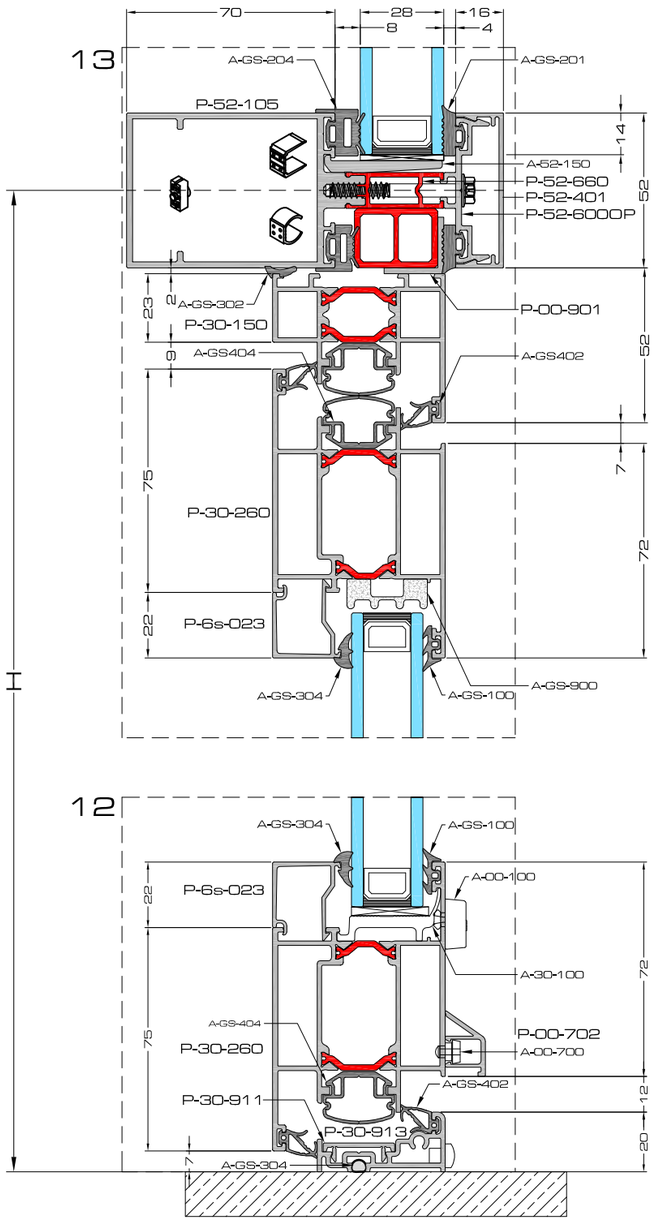
ATHENA OPEN OUT DOOR CUTTING DEDUCTIONS





B

Kratos P52

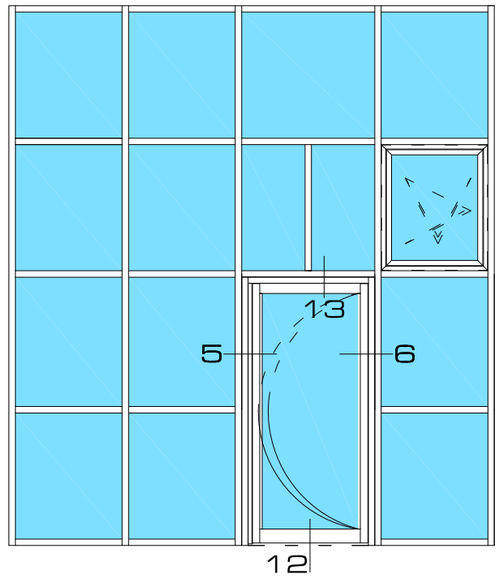


·	·	B	#	H	#
P-52-105		B - 24	1	-	-
P-52-310		-	-	H	2
P-52-401		B - 52	1	-	-
P-52-402		-	-	H	2
P-52-6000P		B - 52	1	H	2
P-52-660		B - 24	1	H - 6	2
P-52-680		B - 12	1	H - 26	2
P-00-901		B - 18	1	H - 9	2
P-30-150		B - 56	1	H - 28	2
P-30-260		B - 120	1	H - 67	2
P-6s-023		B - 270	1	H - 261	2
P-30-911		B - 140	1	-	-
P-30-913		B - 156	1	-	-

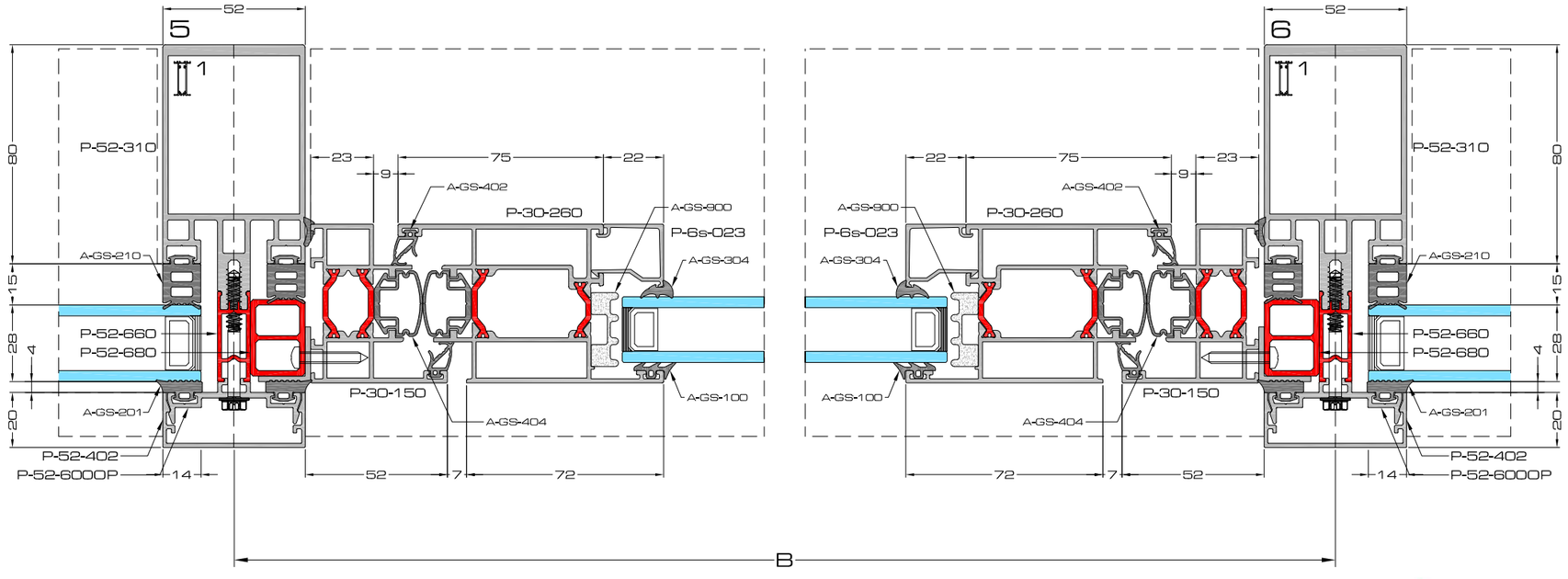
	B	H
	B-284	H-231

		B / H	#
1	A-GS-201	H	4
2	A-GS-201	(B - 52) +1%	2
3	A-GS-204	(B - 24) +1%	2
4	A-GS-210	(H -26) +1%	4
5	A-GS-302	(B - 52) +1%	1
6	A-GS-302	(H - 52) +1%	2

			#
1	A-52-100 - 107	P-52-500 -	-
2	A-52-120 - 127	P-52-550	2
3	A-52-140 / 141		-



ATHENA OPEN IN DOOR CUTTING DEDUCTIONS



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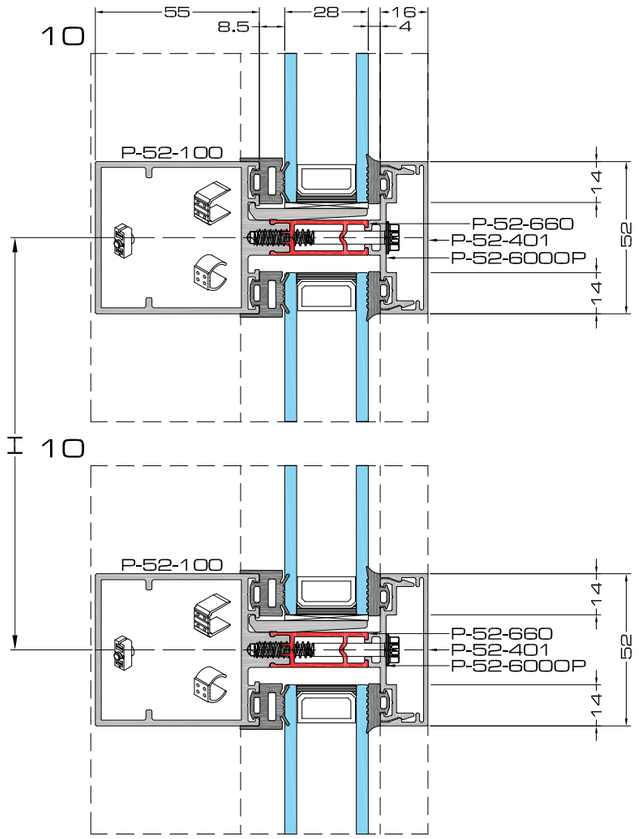


·	·	B	#
P-52-310		-	-
P-52-100		* (C+50.8)	2
P-52-401		B - 28	2
P-52-411		-	-
P-52-6000P		B - 28	2
P-52-604		-	-
P-52-660		B	2
P-52-692		-	-

H	#
H	2
-	-
-	-
H	2
-	-
H	2
H	2
H	2

	B	H
	B	H - 24

			#
1	A-52-100 - 107	P-52-500 -	-
2	A-52-120 - 127	P-52-550	2
3	A-52-140 / 141		-

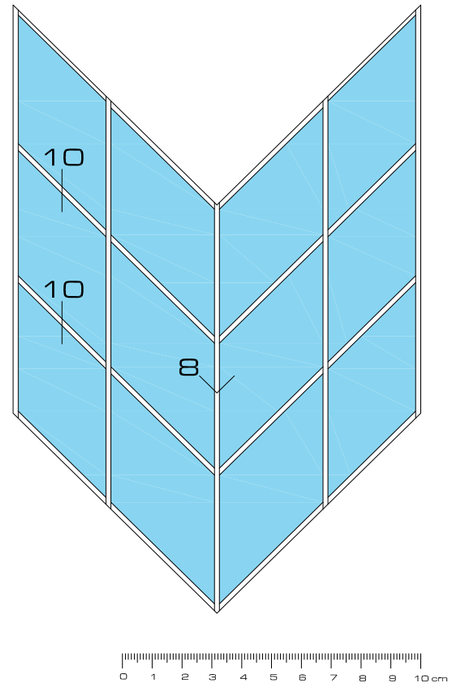
		B / H	#
1	A-GS-201	H	4
2	A-GS-201	(B - 28) +1%	2
3	A-GS-204	(B - 28) +1%	2
4	A-GS-210	(H -52) +1%	4

* Formula to calculate deduction from mullion C/L:
TAN 15 = A / C
TAN 15 x A = C

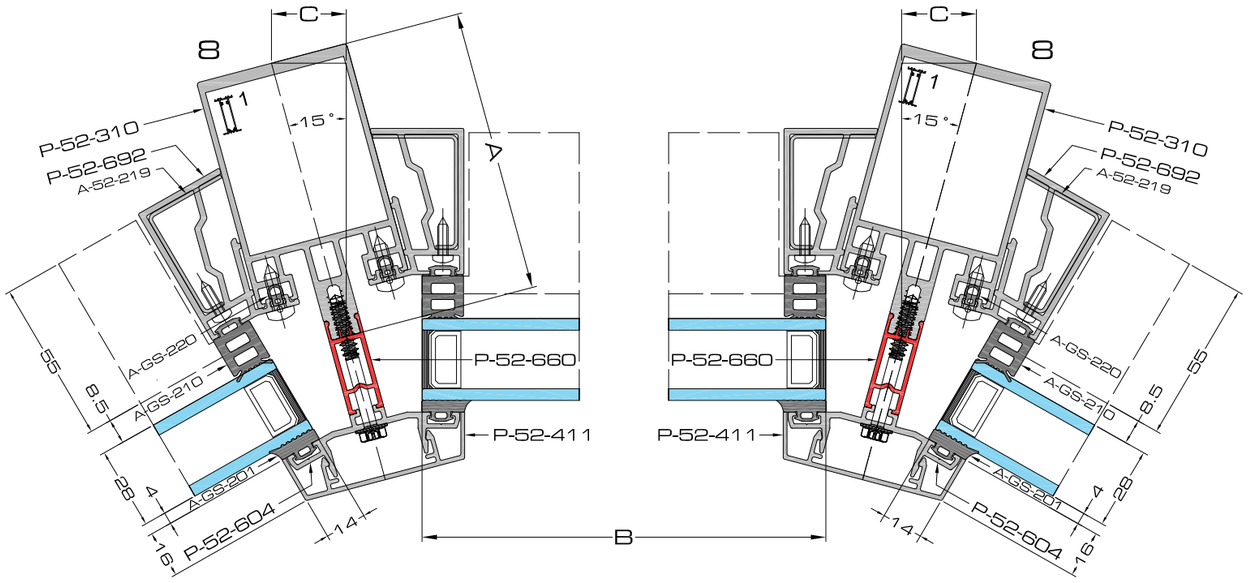
Therefore:

Mullion C/L - (C + 25.4) x 2 = B

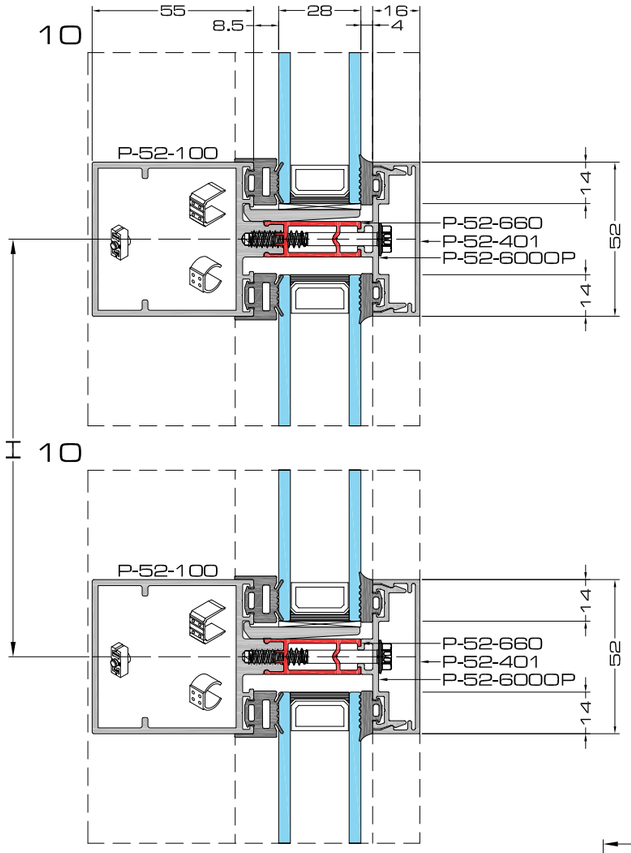
P-52-100 Transom Only



15 DEGREE FACET CUTTING DEDUCTIONS



15° Cutting Dimsension	
Profile No.	'A'
P-52-300	67
P-52-305	82
P-52-310	97
P-52-311	97
P-52-315	117
P-52-316	117
P-52-320	137
P-52-321	137
P-52-325	157
P-52-326	157
P-52-330	177
P-52-335	197
P-52-340	217
P-52-345	247
P-52-350	277



·	·	B	#
P-52-310		-	-
P-52-100		* (C+56.2)	2
P-52-401		B - 28	2
P-52-410		-	-
P-52-6000P		B - 28	2
P-52-603		-	-
P-52-660		B	2
P-52-691		-	-

H	#
H	2
-	-
-	-
H	2
-	-
H	2
H	2
H	2

	B	H
	B	H - 24

		B / H	#
1	A-GS-201	H	4
2	A-GS-201	(B - 28) +1%	2
3	A-GS-204	(B - 28) +1%	2
4	A-GS-210	(H -52) +1%	4

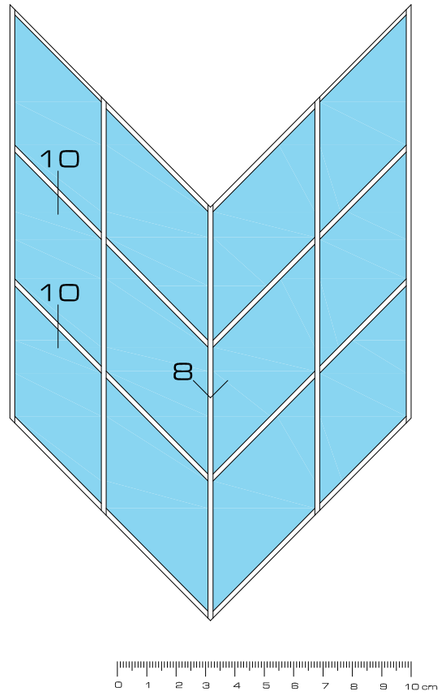
			#
1	A-52-100 - 107	P-52-500 -	-
2	A-52-120 - 127	P-52-550	2
3	A-52-140 / 141		-

* Formula to calculate deduction from mullion C:
TAN 15 = A / C
TAN 15 x A = C

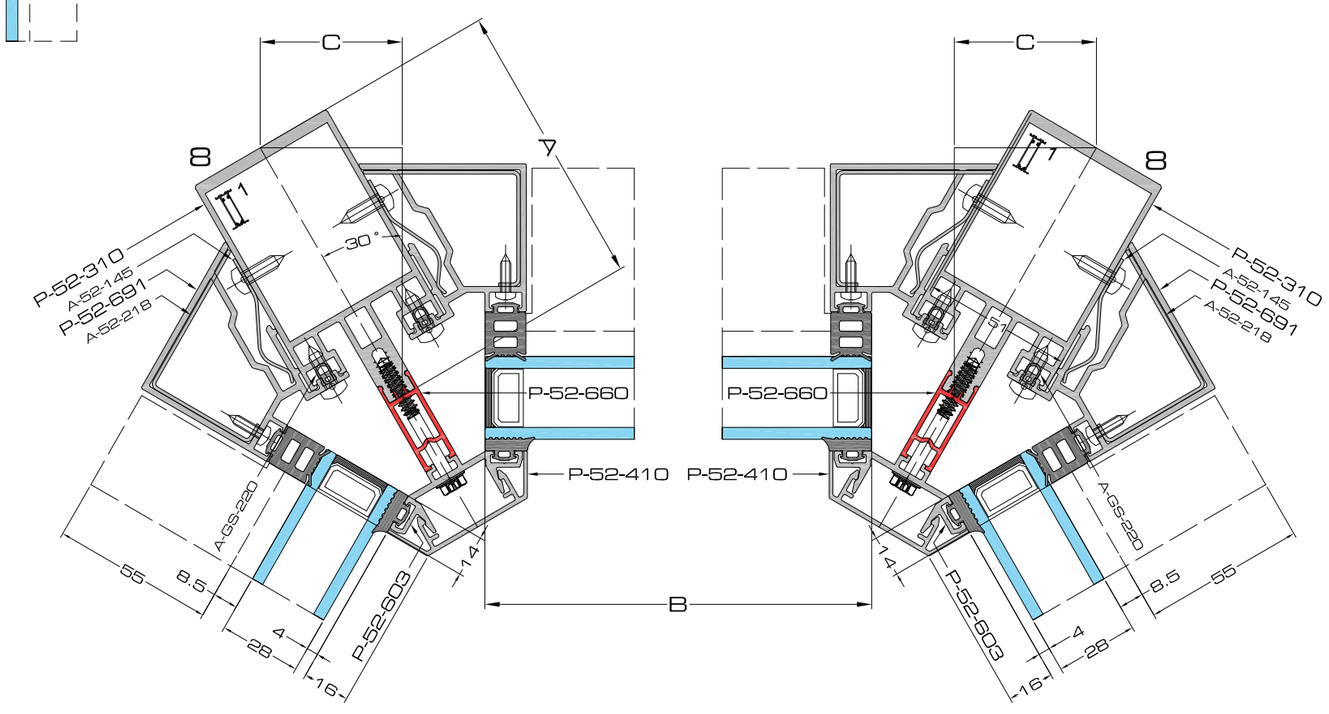
Therefore:

Mullion C/L - (C + 28.1) x 2 = B

P-52-100 Transom Only

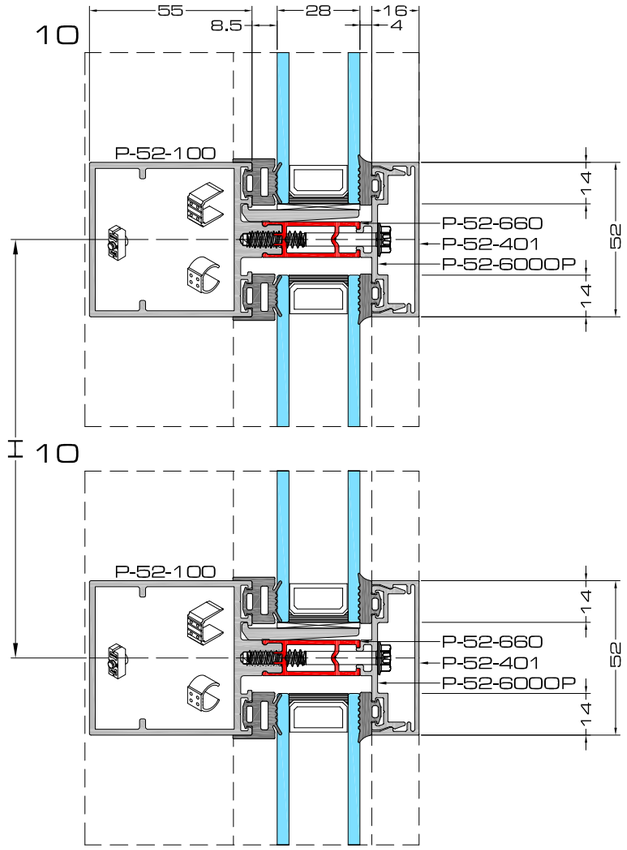


30 DEGREE FACET CUTTING DEDUCTIONS



30° Cutting Dimensions	
Profile No.	'A'
P-52-300	67
P-52-305	82
P-52-310	97
P-52-311	97
P-52-315	117
P-52-316	117
P-52-320	137
P-52-321	137
P-52-325	157
P-52-326	157
P-52-330	177
P-52-335	197
P-52-340	217
P-52-345	247
P-52-350	277

Kratos P52



·	·	B	#
P-52-310		-	-
P-52-100		* (C+59)	2
P-52-401		B - 28	2
P-52-409		-	-
P-52-6000P		B - 28	2
P-52-603		-	-
P-52-660		B	2
P-52-690		-	-

H	#
H	2
-	-
-	-
H	2
-	-
H	2
H	2
H	2

	B	H
	B	H - 24

		B / H	#
1	A-GS-201	H	4
2	A-GS-201	(B - 28) +1%	2
3	A-GS-204	(B - 28) +1%	2
4	A-GS-210	(H -52) +1%	4

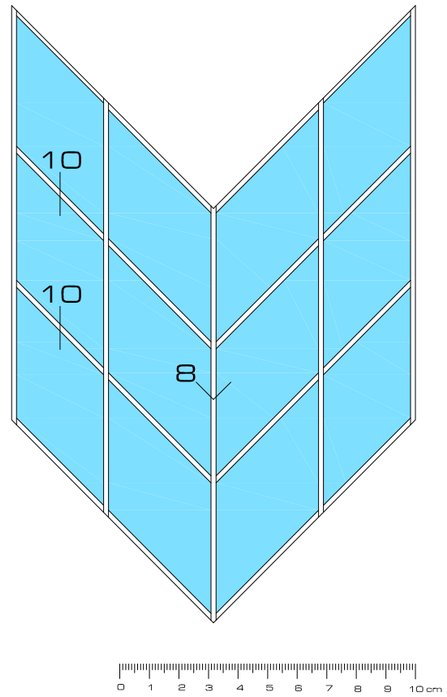
			#
1	A-52-100 - 107	P-52-500 -	-
2	A-52-120 - 127	P-52-550	2
3	A-52-140 / 141		-

* Formula to calculate deduction from mullion C:
TAN 15 = A / C
TAN 15 x A = C

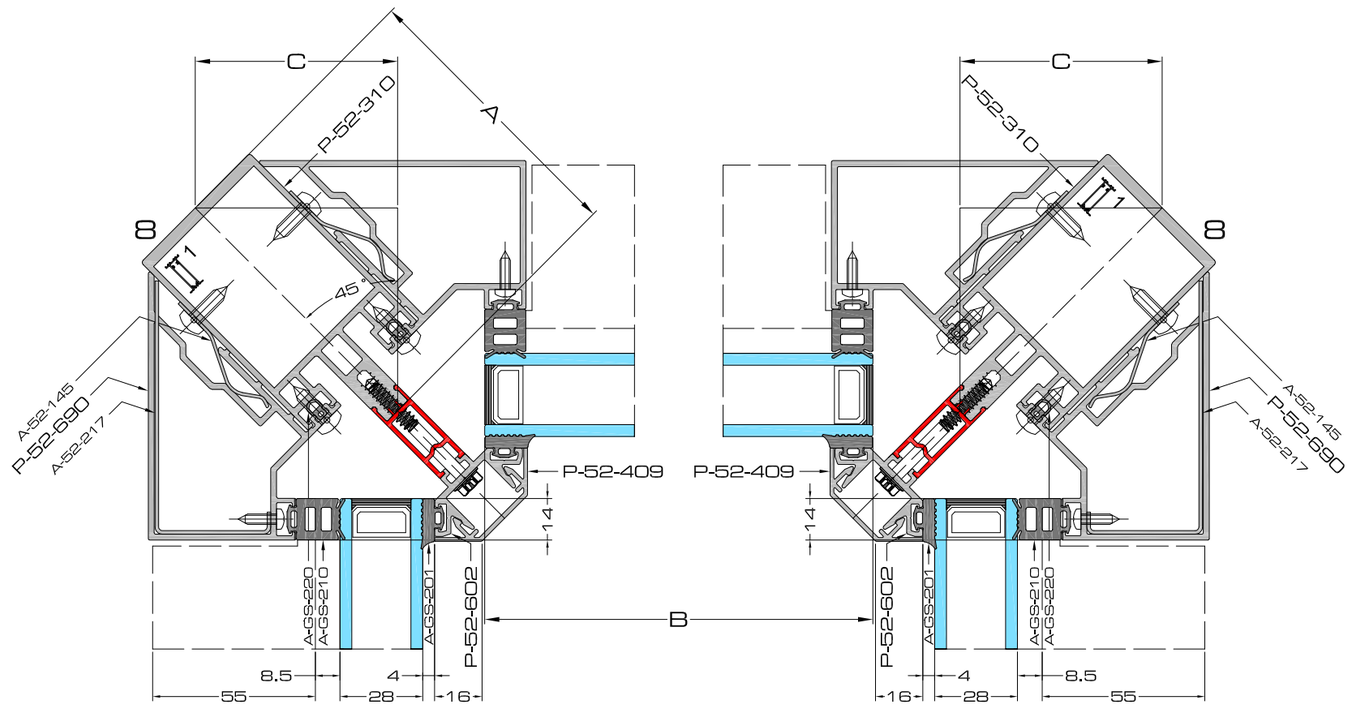
Therefore:

Mullion C/L - (C + 29.5) x 2 = B

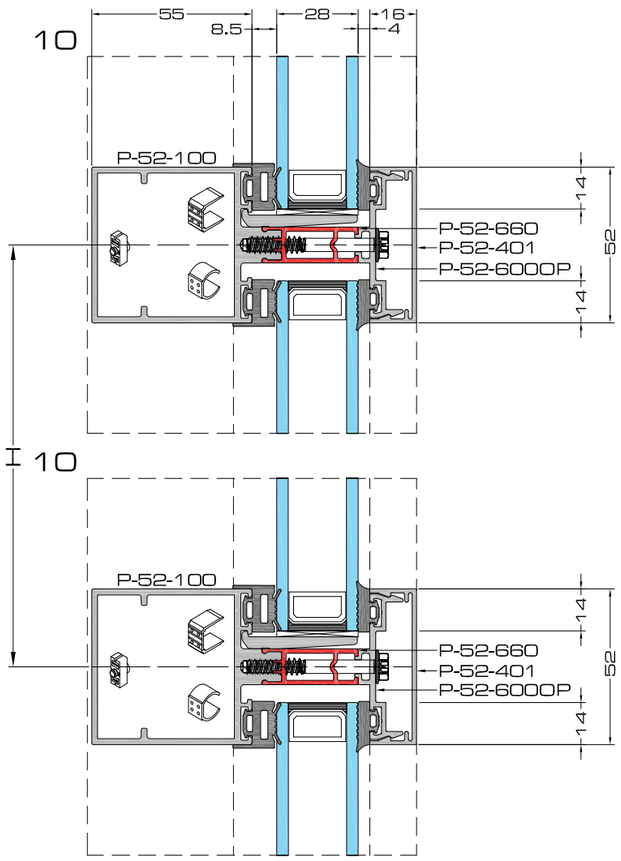
P-52-100 Transom Only



45 DEGREE FACET CUTTING DEDUCTIONS



45° Cutting Dimensions	
Profile No.	'A'
P-52-300	67
P-52-305	82
P-52-310	97
P-52-311	97
P-52-315	117
P-52-316	117
P-52-320	137
P-52-321	137
P-52-325	157
P-52-326	157
P-52-330	177
P-52-335	197
P-52-340	217
P-52-345	247
P-52-350	277



.	.	B	#
P-52-310		-	-
P-52-100		* (C - 28)	2
P-52-401		B - 28	2
P-52-6000P		B - 28	2
P-52-607		-	-
P-52-660		B	2
P-52-665		-	-
P-52-695		-	-
P-00-500		-	-

H	#
H	2
-	-
-	-
-	-
H	2
-	-
H	2
H	4
H	2

	B	H
	B	H - 24

		B / H	#
1	A-GS-201	H	4
2	A-GS-201	(B - 28) +1%	2
3	A-GS-204	(B - 28) +1%	2
4	A-GS-210	(H -52) +1%	4

			#
1	A-52-100 - 107	P-52-500-550	-
2	A-52-120 - 127		2
3			-

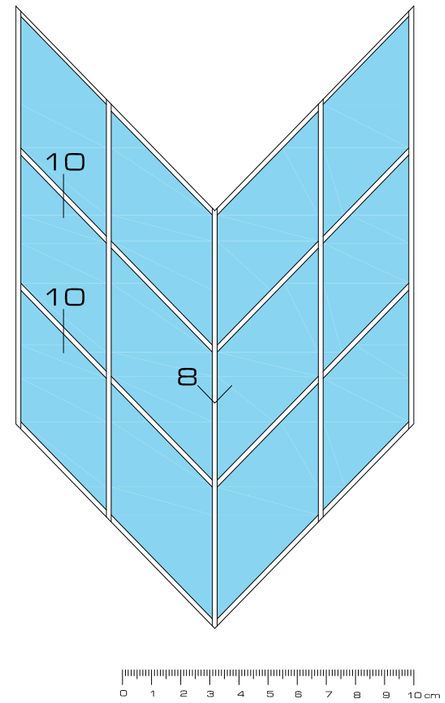
* Formula to calculate deduction from mullion C/L:

SIN 15 = A / C
SIN 15 x A = C

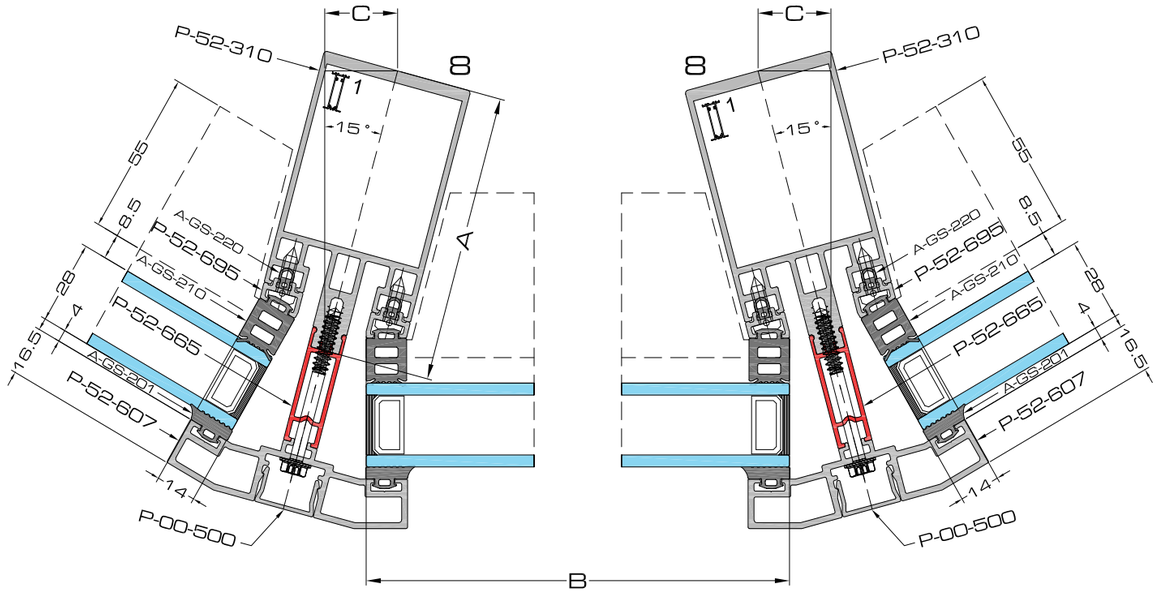
Therefore:

B = Mullion C/L + (C - 14) x 2

Shear Block Only

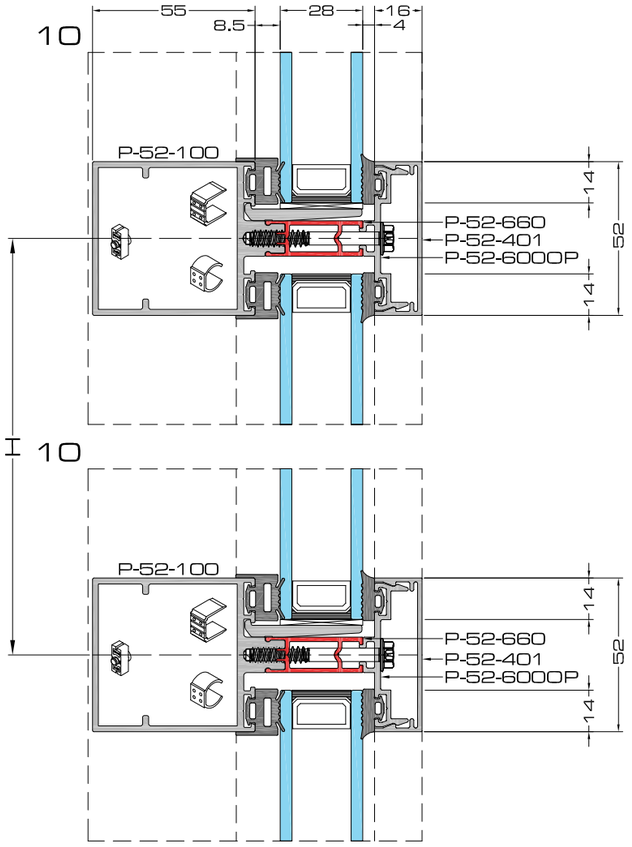


15 DEGREE FACET CUTTING DEDUCTIONS



15° Cutting Dimsension	
Profile No.	'A'
P-52-300	67
P-52-305	82
P-52-310	97
P-52-311	97
P-52-315	117
P-52-316	117
P-52-320	137
P-52-321	137
P-52-325	157
P-52-326	157
P-52-330	177
P-52-335	197
P-52-340	217
P-52-345	247
P-52-350	277

Kratos P52



·	·	B	#
P-52-310		-	-
P-52-100		* (C - 29)	2
P-52-401		B - 28	2
P-52-6000P		B - 28	2
P-52-606		-	-
P-52-660		B	2
P-52-665		-	-
P-52-694		-	-
P-00-500		-	-

H	#
H	2
-	-
-	-
-	-
H	2
-	-
H	2
H	4
H	2

	B	H
	B	H - 24

		B / H	#
1	A-GS-201	H	4
2	A-GS-201	(B - 28) +1%	2
3	A-GS-204	(B - 28) +1%	2
4	A-GS-210	(H -52) +1%	4

			#
1	A-52-100 - 107	P-52-500-550	-
2	A-52-120 - 127		2
3			-

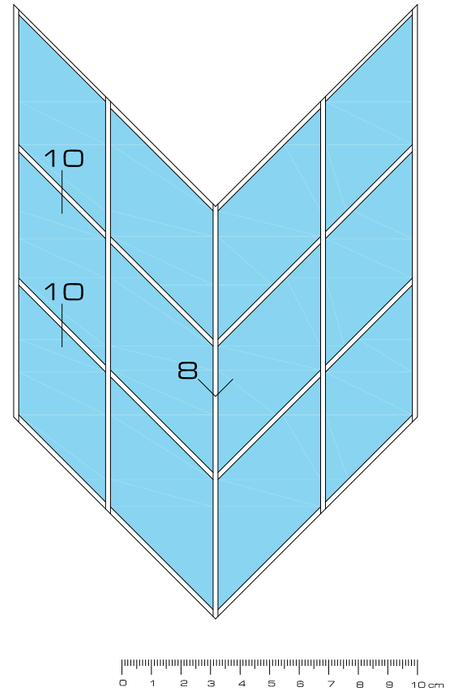
* Formula to calculate deduction from mullion C/L:

SIN 15 = A / C
SIN 15 x A = C

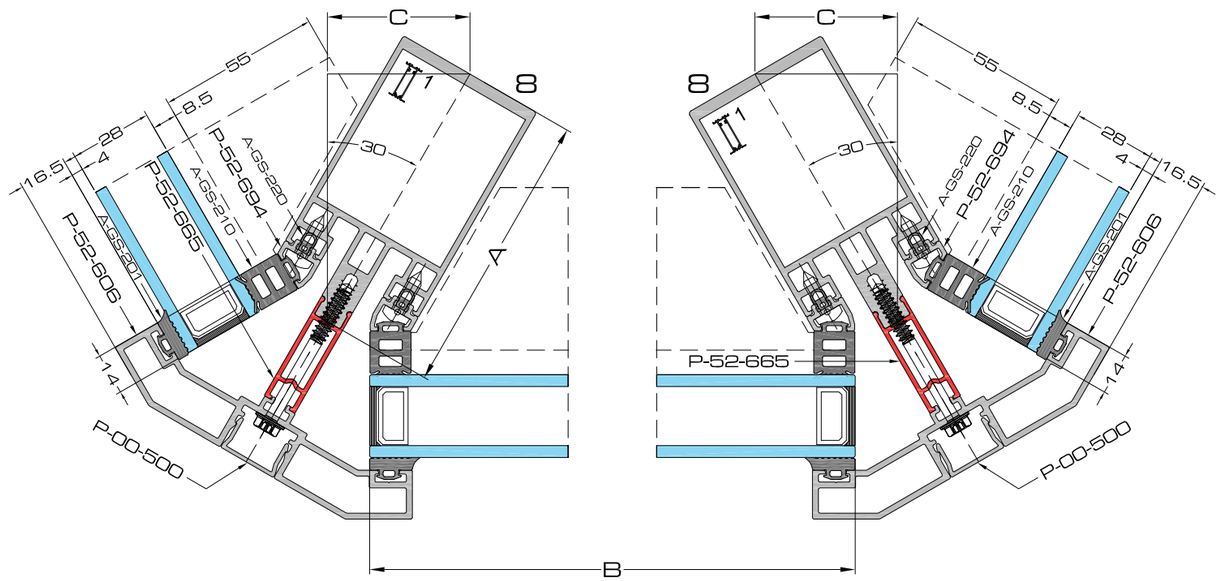
Therefore:

B = Mullion C/L + (C - 14.5) x 2

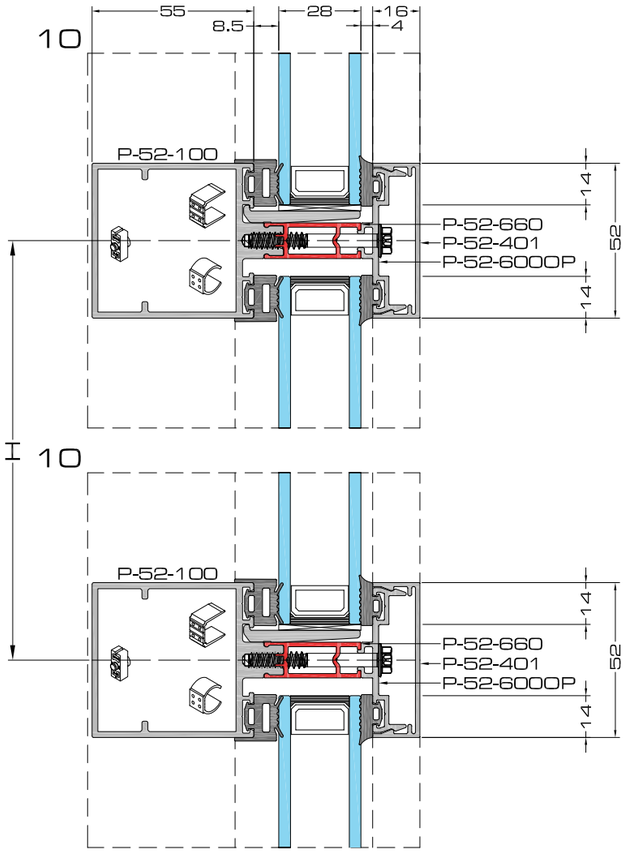
Shear Block Only



30 DEGREE FACET CUTTING DEDUCTIONS



30° Cutting Dimension	
Profile No.	'A'
P-52-300	67
P-52-305	82
P-52-310	97
P-52-311	97
P-52-315	117
P-52-316	117
P-52-320	137
P-52-321	137
P-52-325	157
P-52-326	157
P-52-330	177
P-52-335	197
P-52-340	217
P-52-345	247
P-52-350	277



.	.	B	#
P-52-310		-	-
P-52-100		* (C - 26)	2
P-52-401		B - 28	2
P-52-6000P		B - 28	2
P-52-605		-	-
P-52-660		B	2
P-52-665		-	-
P-52-693		-	-
P-00-500		-	-

H	#
H	2
-	-
-	-
-	-
H	2
-	-
H	2
H	4
H	2

	B	H
	B	H - 24

			#
1	A-52-100 - 107	P-52-500-550	-
2	A-52-120 - 127		2
3			-

		B / H	#
1	A-GS-201	H	4
2	A-GS-201	(B - 28) +1%	2
3	A-GS-204	(B - 28) +1%	2
4	A-GS-210	(H -52) +1%	4

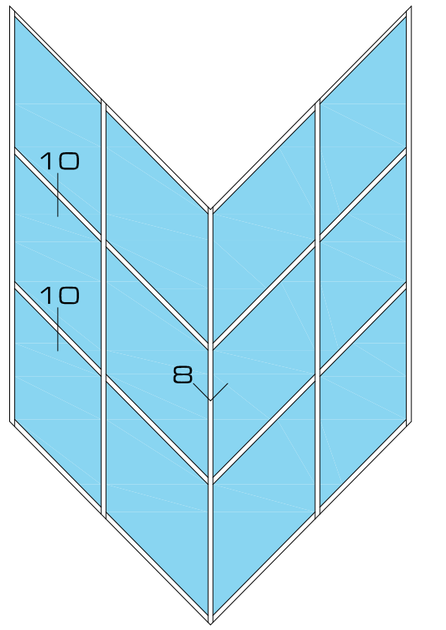
* Formula to calculate deduction from mullion C/L:

SIN 15 = A / C
SIN 15 x A = C

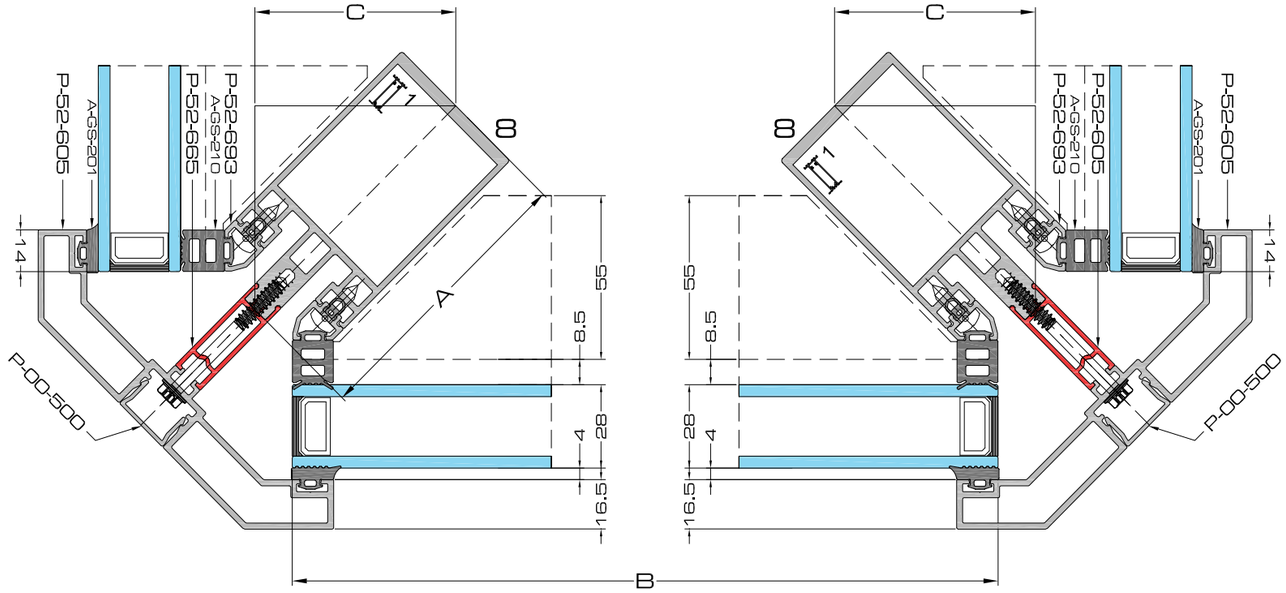
Therefore:

B = Mullion C/L + (C - 13) x 2

Shear Block Only



45 DEGREE FACET CUTTING DEDUCTIONS



45° Cutting Dimension	
Profile No.	'A'
P-52-300	67
P-52-305	82
P-52-310	97
P-52-311	97
P-52-315	117
P-52-316	117
P-52-320	137
P-52-321	137
P-52-325	157
P-52-326	157
P-52-330	177
P-52-335	197
P-52-340	217
P-52-345	247
P-52-350	277

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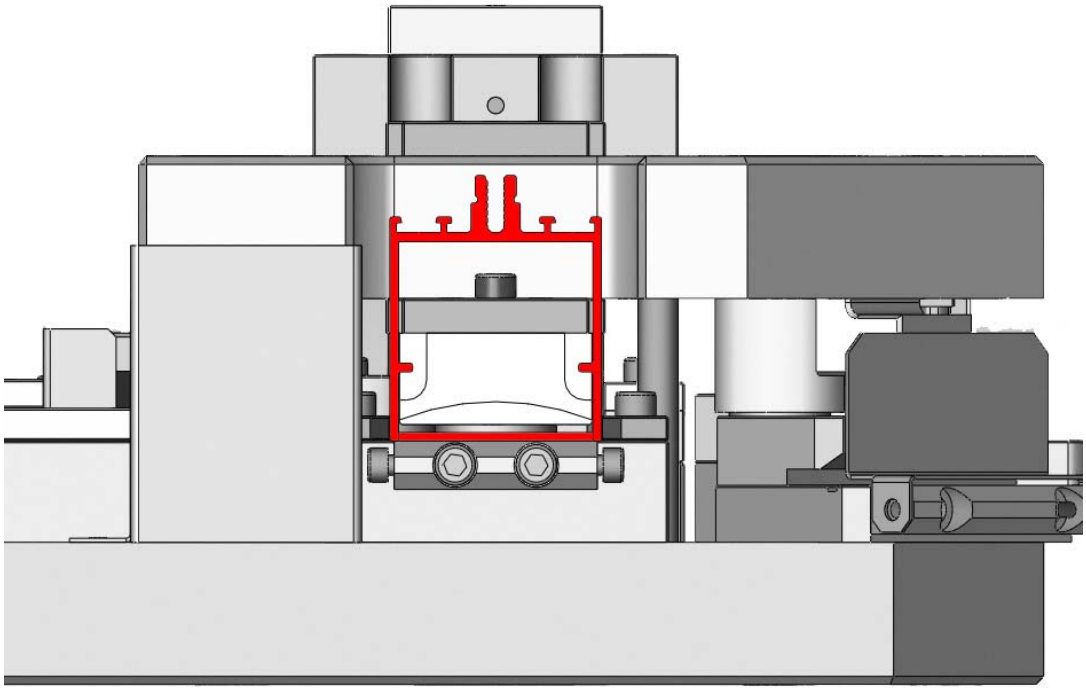
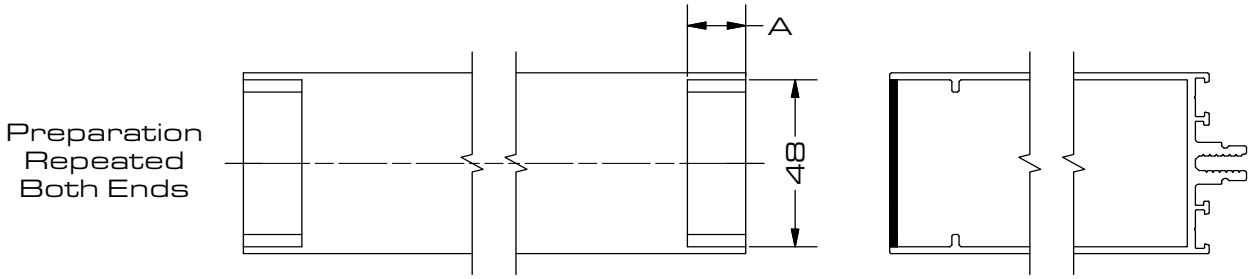
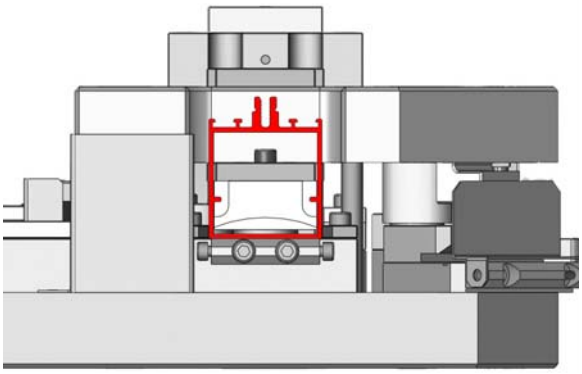
Preparation
Voorbereiding
Préparation



Transom End Preparation - Level 1 Transom

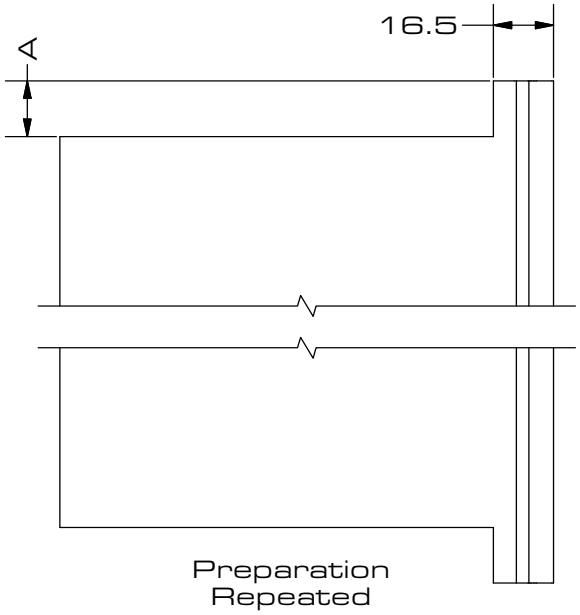


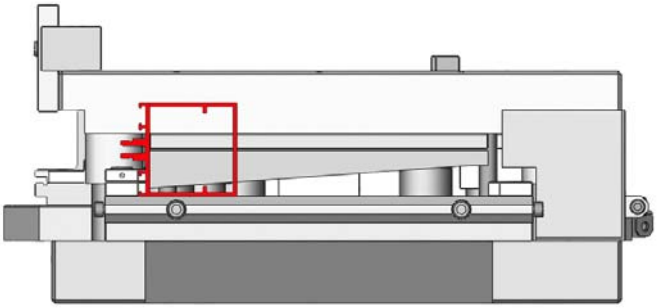
A-KM-461 1
Station 1



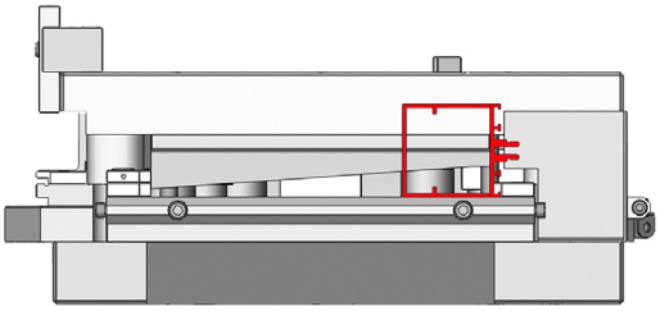
Transom End Sealing Method	
Part No.	Dimension 'A'
A-52-206	16mm
A-52-208	16mm
None/Angled	14mm

Transom Side Preparation - Level 1 Transom





A-KM-461 1
Station 2



A-KM-461 1
Station 2

Notes:

1) Preparations Applicable to all Level 1 Transom Profiles

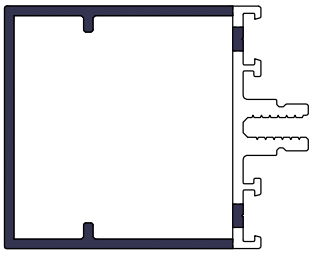
Transom End Preparation - Level 1 Transom

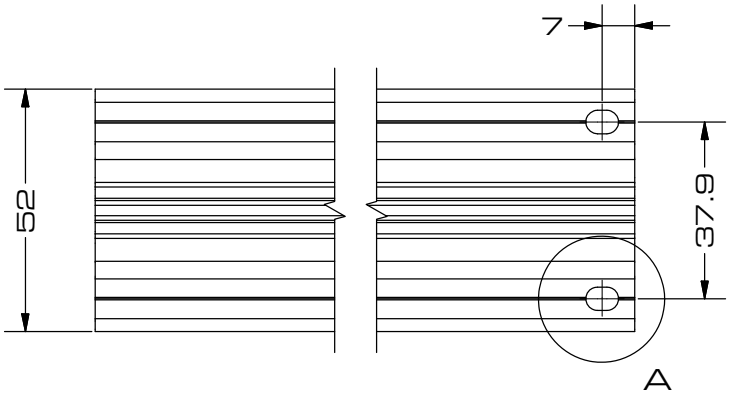
15 Degree Facetted Transom

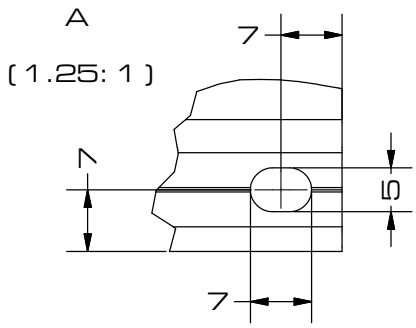
Preparations applicable to all L1 transoms.

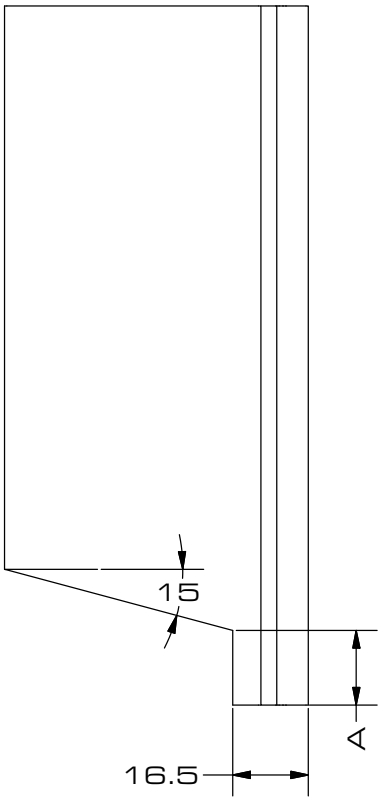
Transom End Sealing Method	
Part No.	Dimension 'A'
A-52-208	16mm
None/Angled	14mm

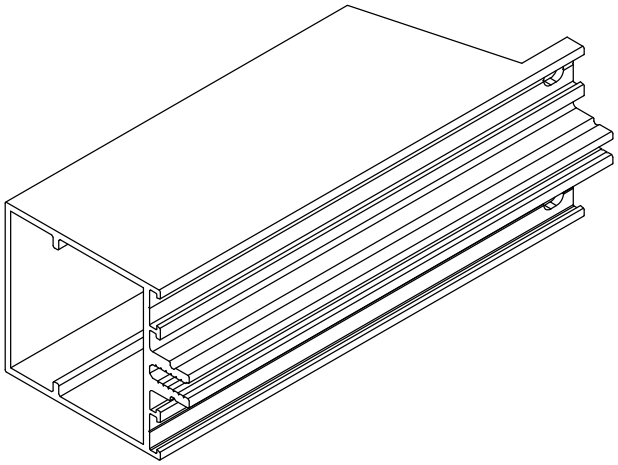
P-52-100











NB: 15 degree cut back used in combination with P-52-607 and P-52-695.

Preparation can not be preformed using press tool A-KM-4611 , all facetted machining details to be done using CNC or notching saws.

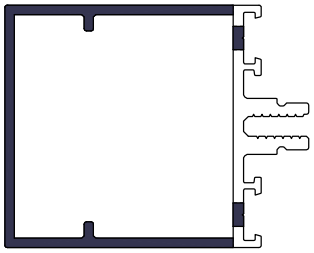
Transom End Preparation - Level 1 Transom

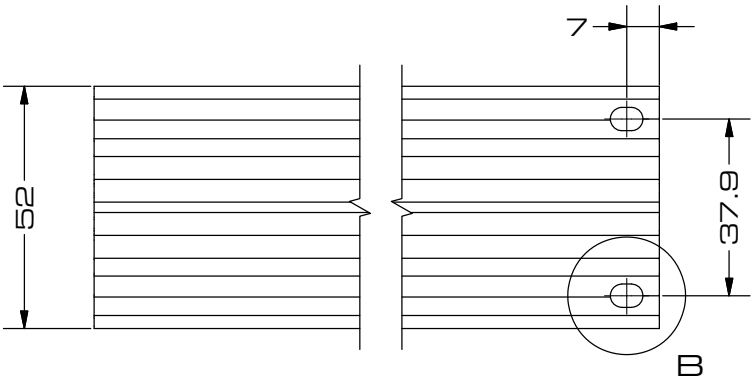
30 Degree Facetted Transom

Preparations applicable to all L1 transoms.

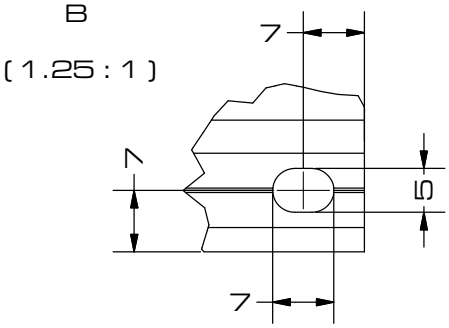
Transom End Sealing Method	
Part No.	Dimension 'A'
A-52-208	16mm
None/Angled	14mm

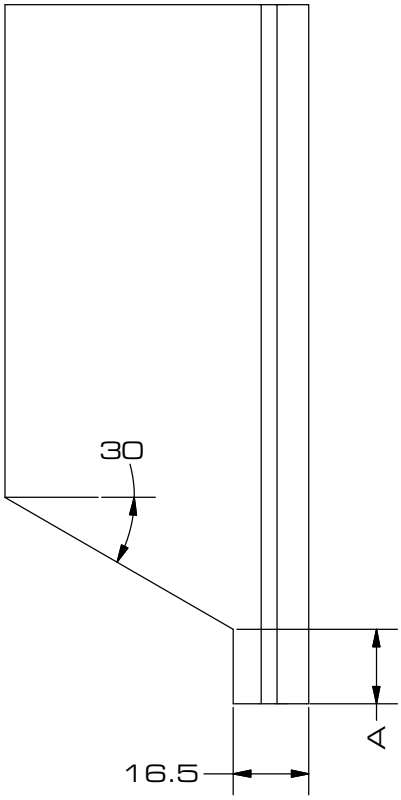
P-52-100

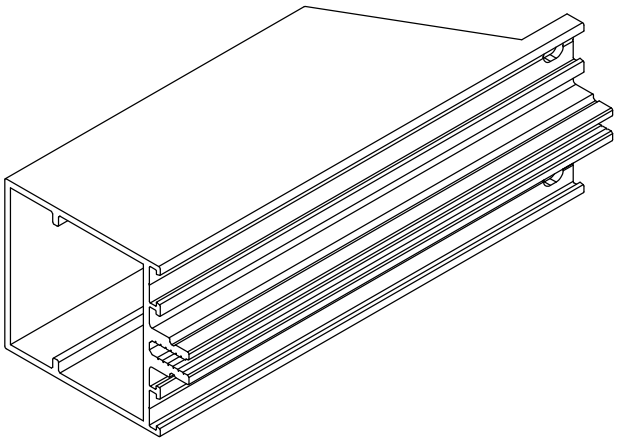




B
(1.25 : 1)







NB: 30 degree cut back used in combination with P-52-606 and P-52-694.

Preparation can not be preformed using press tool A-KM-4611, all facetted machining details to be done using CNC or notching saws.

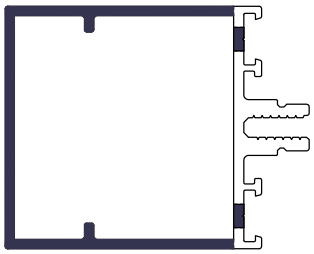
Transom End Preparation - Level 1 Transom

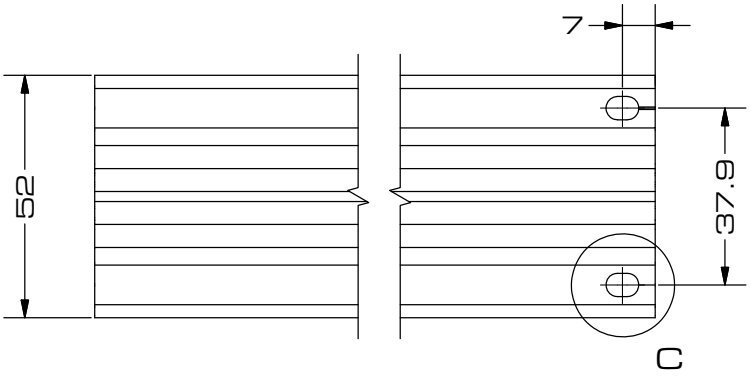
45 Degree Facetted Transom

Preparations applicable to all L1 transoms.

Transom End Sealing Method	
Part No.	Dimension 'A'
A-52-208	16mm
None/Angled	14mm

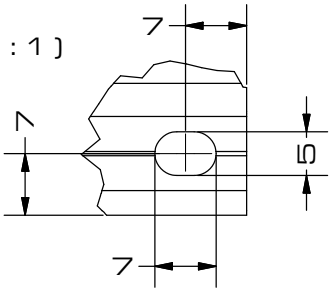
P-52-100

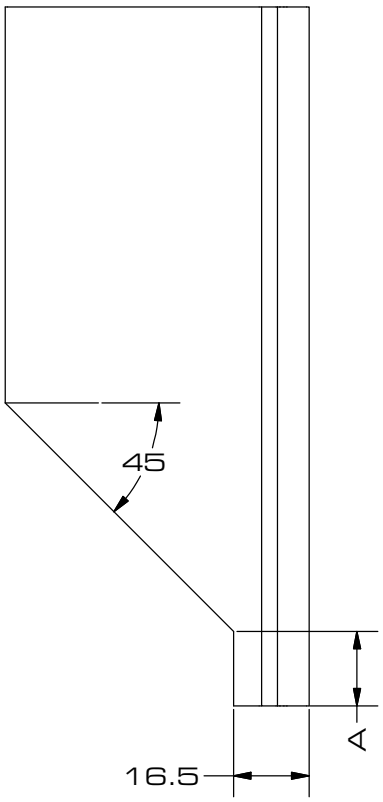


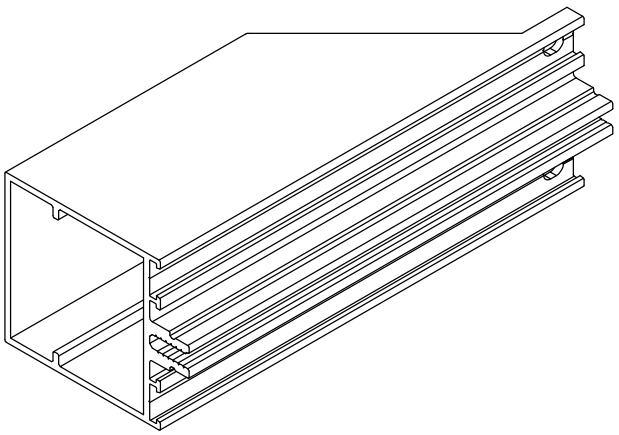


C

(1.25 : 1)







NB: 45 degree cut back used in combination with P-52-605 and P-52-693.

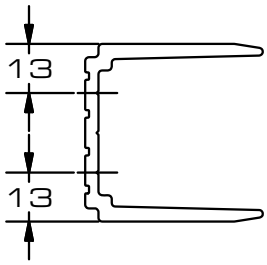
Preparation can not be preformed using press tool A-KM-4611, all facetted machining details to be done using CNC or notching saws.

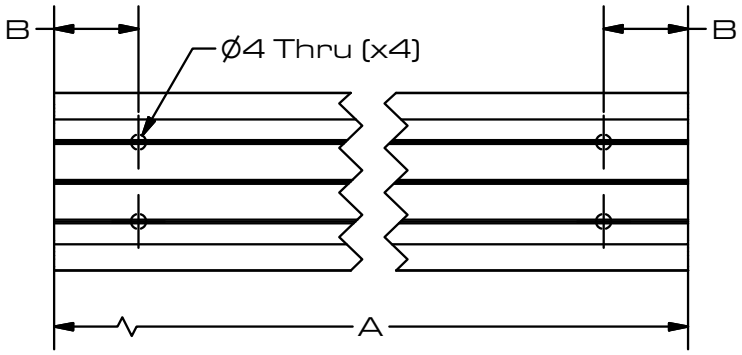
A-52-108
Shearblock Cutting Size

(Level 4 Drainage Cont.)

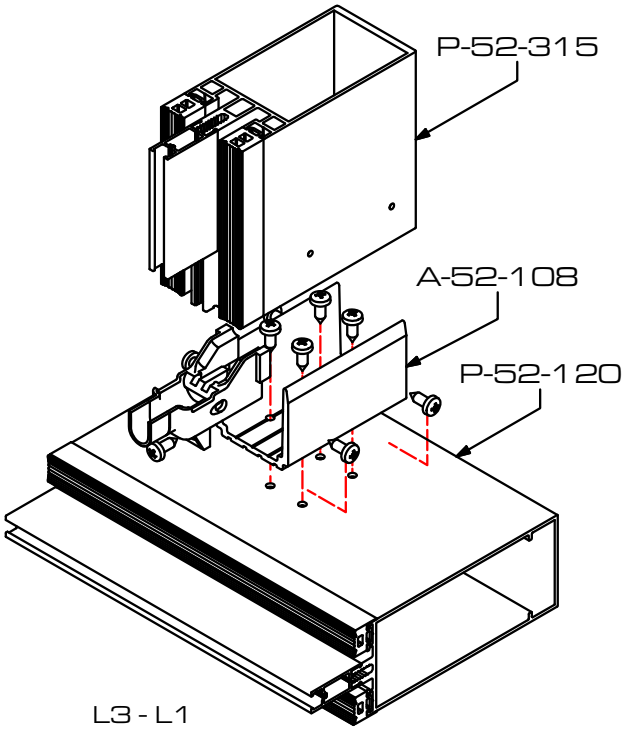
A-52-108

(1 : 2)



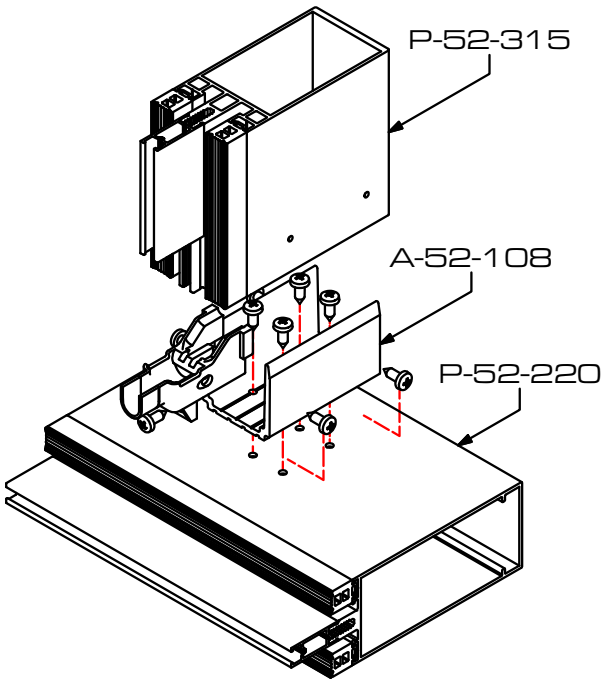


A-52-108 (Level 4 Drainage)			
Level 3 (Mullion)	Dim A	Dim B	No. of Holes
P-52-300	27.4	22.3	4
P-52-305	42.4	"	"
P-52-310	57.4	"	"
P-52-315	77.4	"	"
P-52-320	97.4	"	"
P-52-325	117.4	"	"
P-52-330	137.4	"	"



L3 - L1

Connection Detail



L3 - L2

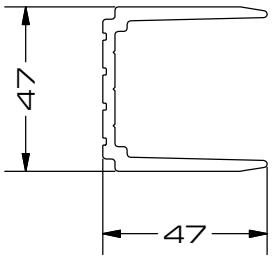
Connection Detail

A-52-108 Shear Block Preparation - Level 1 Transom

15 Degree Facetted Transoms

A-52-108

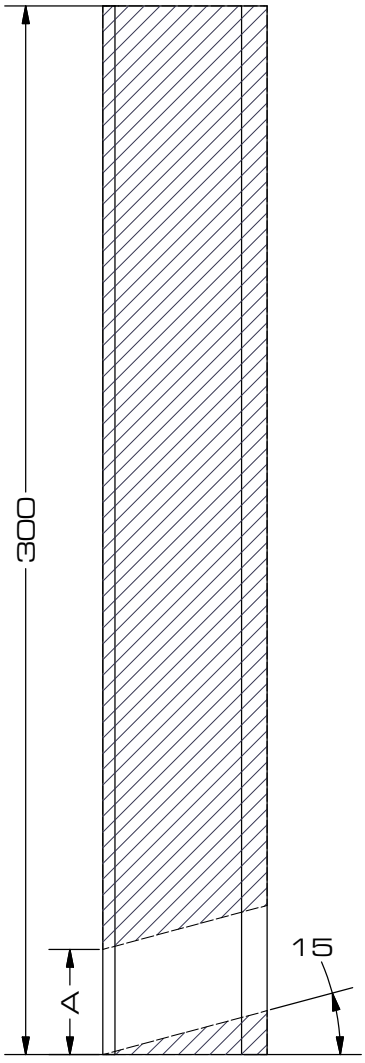
(1 : 2)



A-52-108 - Shear Block Cutting Sizes			
App. Transom	Cut Size (mm)	Angle	No. Holes
P-52-100	30.1	15	2
P-52-105	45.7	"	2
P-52-110	61.2	"	4
P-52-115	81.9	"	4
P-52-120	102.6	"	4
P-52-125	123.3	"	4
P-52-130	144	"	4
P-52-135	164.7	"	4

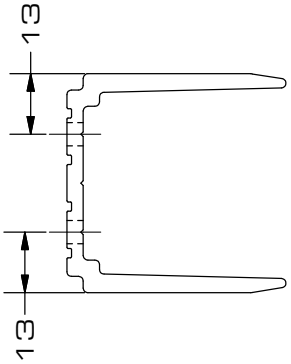
IMPORTANT: Cut dimesions are only applicable to L1 transoms cut at an angle of 15 degrees.

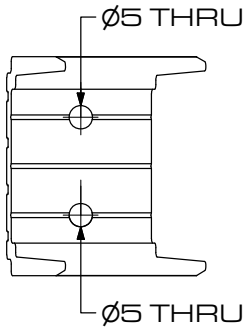
NB: Remember to allow for the cut width of the saw blade when machining the angle and dimension listed above.

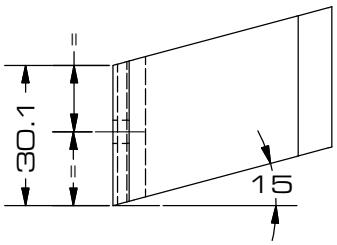


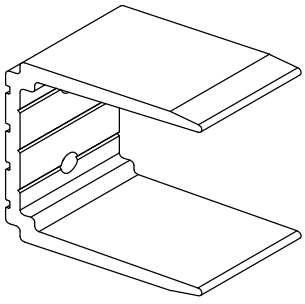
A-52-108

Preparation for P-52-100 Transom at 15 Degrees







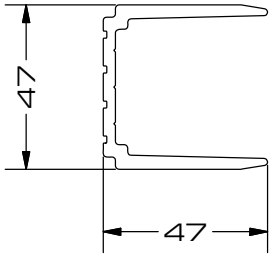


A-52-108 Shear Block Preparation - Level 1 Transom

30 Degree Facetted Transoms

A-52-108

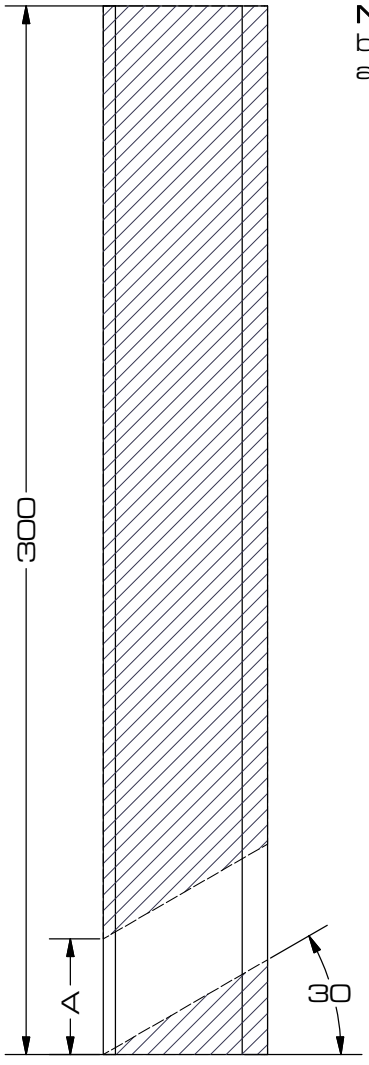
(1 : 2)



A-52-108 - Shear Block Cutting Sizes			
App. Transom	Cut Size (mm)	Angle	No. Holes
P-52-100	33.1	30	2
P-52-105	50.4	"	2
P-52-110	67.7	"	4
P-52-115	90.8	"	4
P-52-120	113.9	"	4
P-52-125	137	"	4
P-52-130	160.1	"	4
P-52-135	183.2	"	4

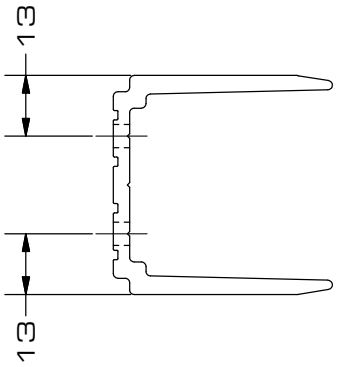
IMPORTANT: Cut dimesions are only applicable to L1 transoms cut at an angle of 30 degrees.

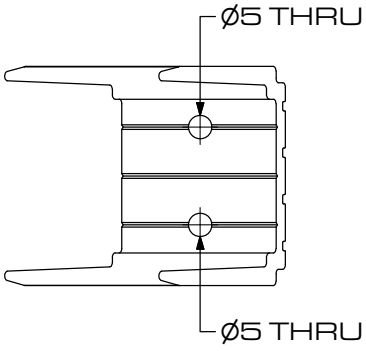
NB: Remember to allow for the cut width of the saw blade when machining the angle and dimension listed above.

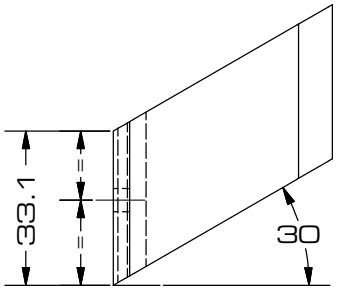


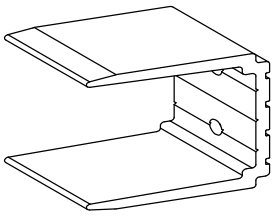
A-52-108

Preparation for P-52-100 Transom at 30 Degrees







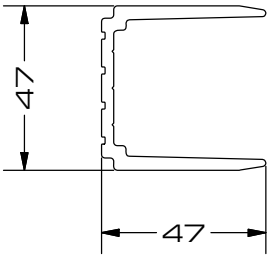


A-52-108 Shear Block Preparation - Level 1 Transom

45 Degree Facetted Transoms

A-52-108

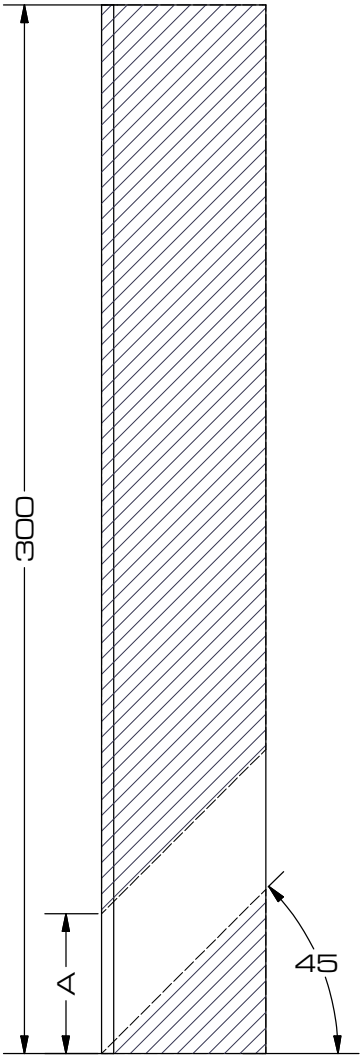
(1 : 2)



A-52-108 - Shear Block Cutting Sizes			
App. Transom	Cut Size (mm)	Angle	No. Holes
P-52-100	40	45	2
P-52-105	61.2	"	2
P-52-110	82.4	"	4
P-52-115	110.7	"	4
P-52-120	138.9	"	4
P-52-125	167.2	"	4
P-52-130	195.5	"	4
P-52-135	223.8	"	4

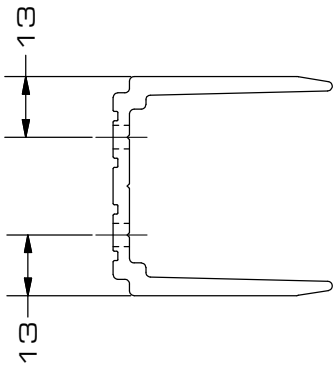
IMPORTANT: Cut dimesions are only applicable to L1 transoms cut at an angle of 45 degrees.

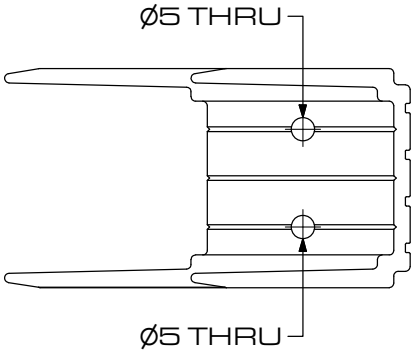
NB: Remember to allow for the cut width of the saw blade when machining the angle and dimension listed above.

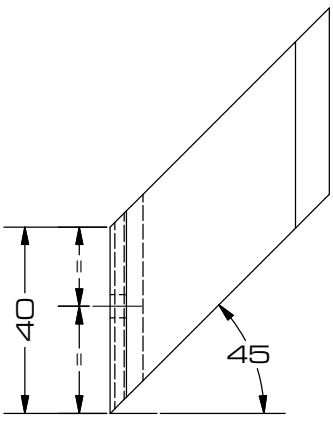


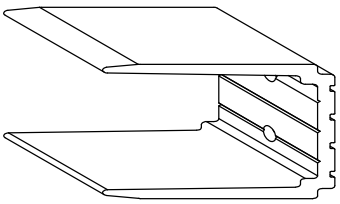
A-52-108

Preparation for P-52-100 Transom at 45 Degrees

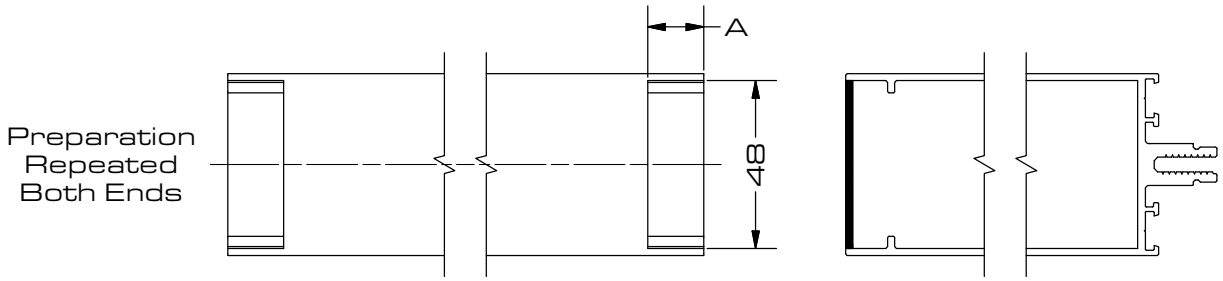




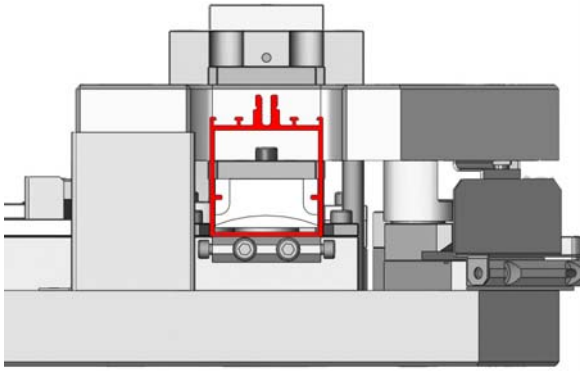




Transom End Preparation - Level 2 Transom

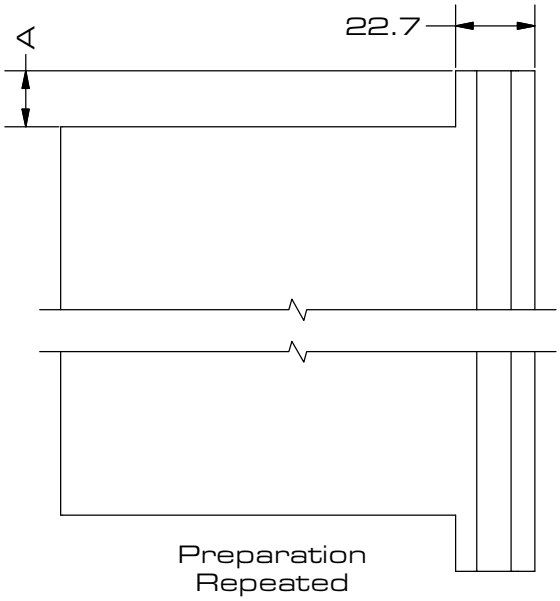


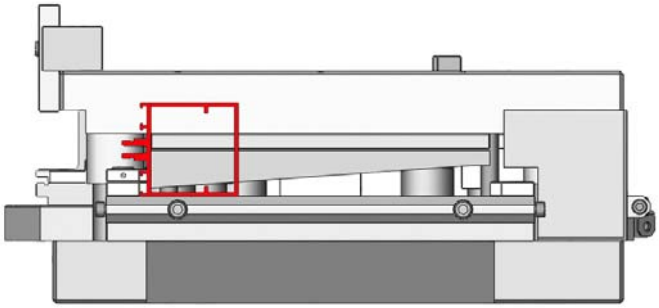
A-KM-461 1
Station 1



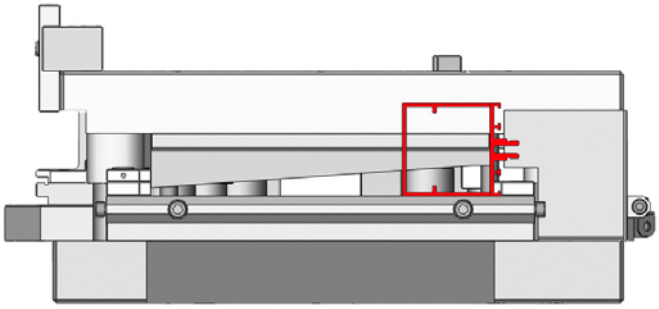
Transom End Sealing Method	
Part No.	Dimension 'A'
A-52-207	16mm
A-52-209	16mm
None/Angled	14mm

Transom Side Preparation - Level 2 Transom





A-KM-461 1
Station 2

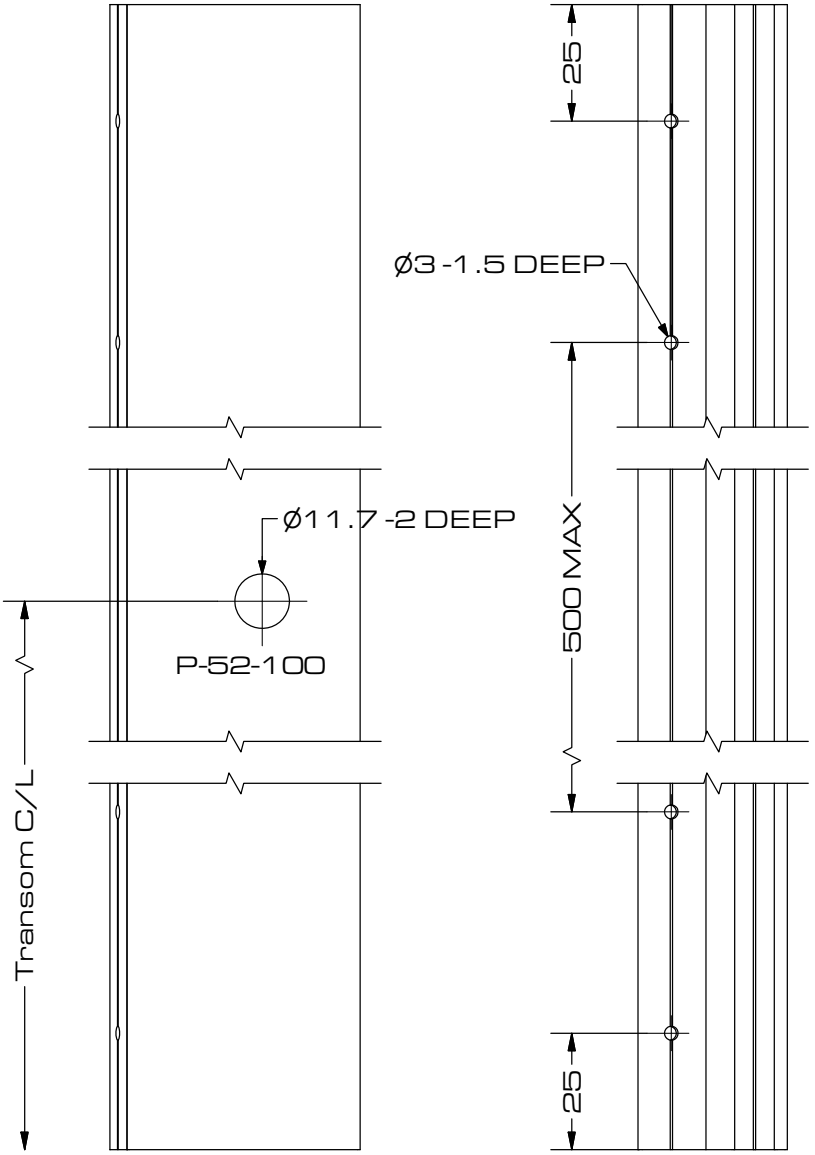


A-KM-461 1
Station 2

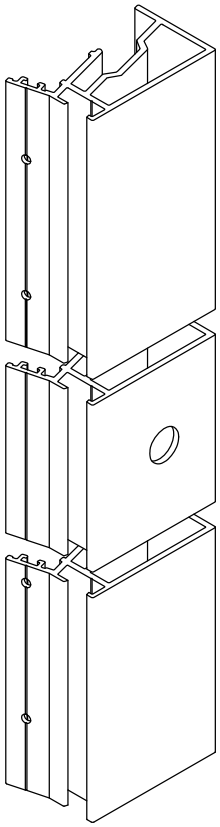
Notes:

1) Preparations Applicable to all Level 2 Transom Profiles

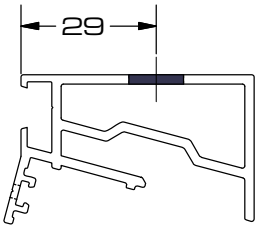
P-52-100 - Level 1 to Level 3 Mullion - Sprung Cleat & Fastening Preparation

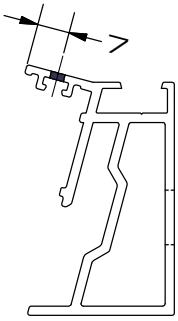


P-52-692



P-52-692





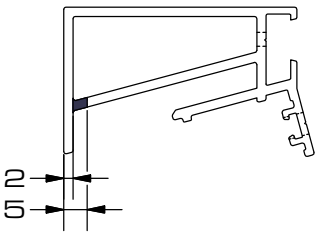
NB: Preparation details also applicable to P-52-691 & P-52-690.

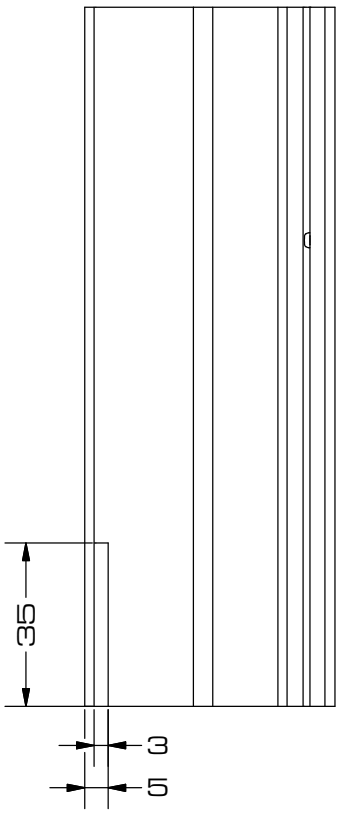
IMPORTANT: P-52-690/691/692 can only be used with P-52-100 Transom.

P-52-692/691/690 - Splice Preparation

P-52-692

Splice Machining Detail





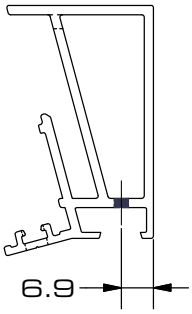
Splice / Bar End

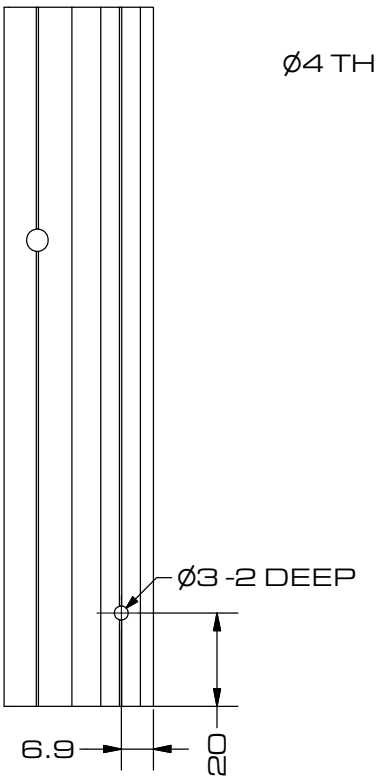
Aplicable to part ref:

A-52-219/218/217

P-52-692

Splice Bracket Fixing Detail





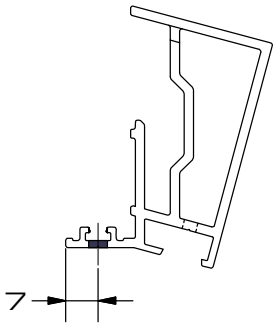
Splice / Bar End

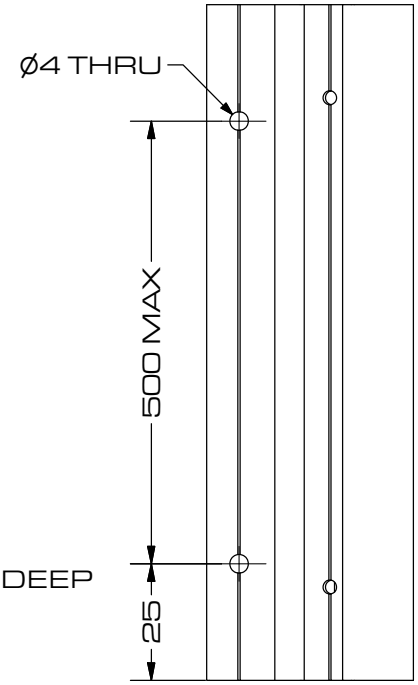
Applicable to part ref:

A-52-219/218/217

P-52-692

Fixing Detail





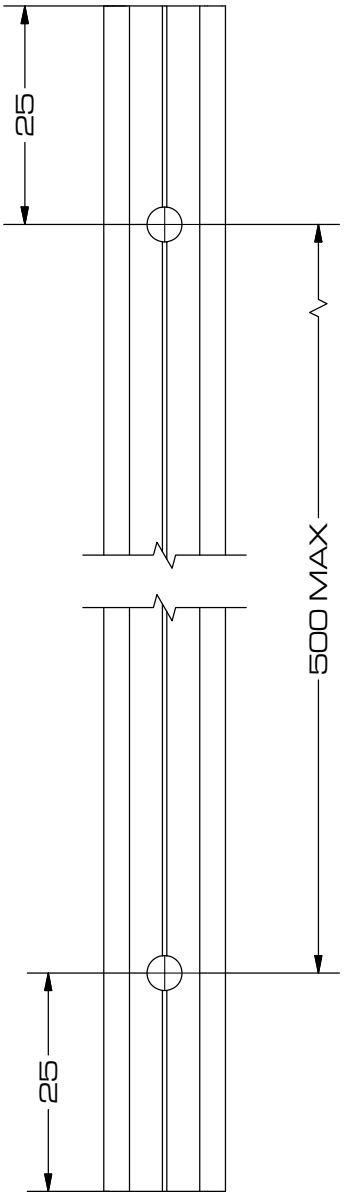
Splice / Bar End

Applicable to part ref:

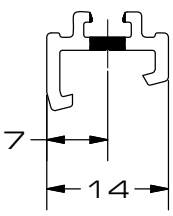
P-52-692/691/690

P-52-695/694/693 - Level 1 to Level 3 Mullion Fastening Preparation

Bar End

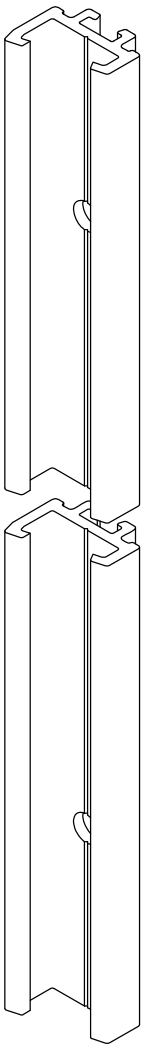


Bar End



P-52-695

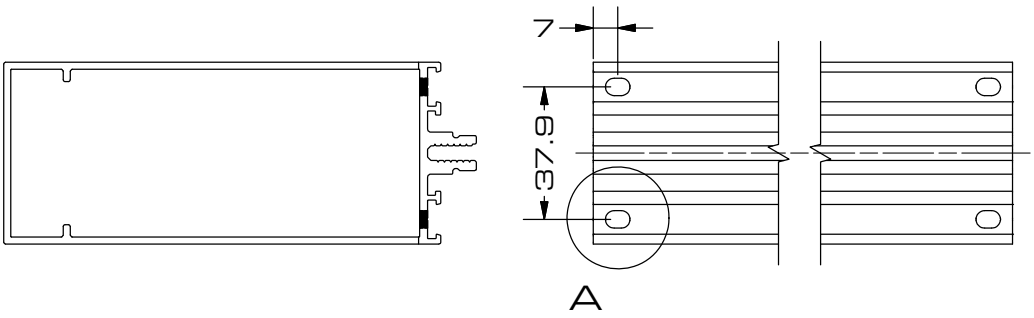
15 Degree Internal Angle Adaptor



NB: Preparation detail also applicable to the following profiles:

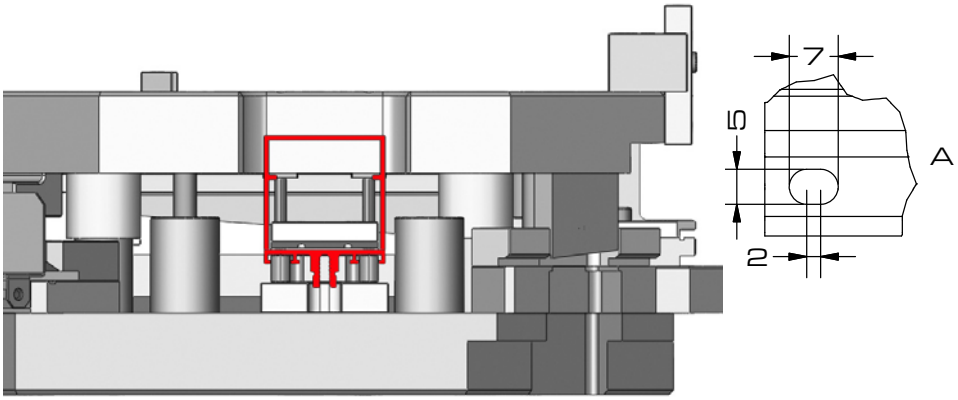
P-52-694 & P-52-693

Transom Fixing Preparation

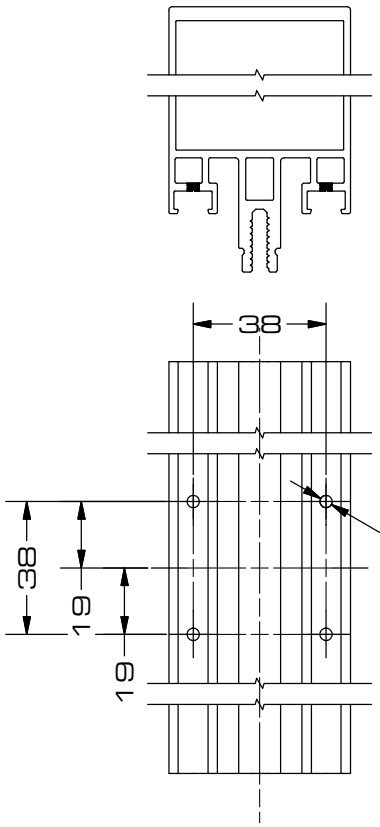


Preparation Repeated Both Ends

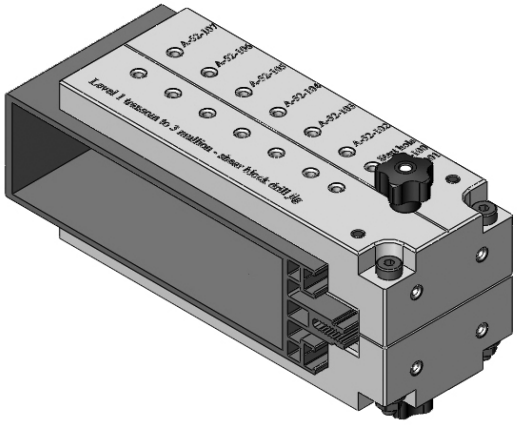
A-KM-4611 Station 3



Mullion Fixing Preparation



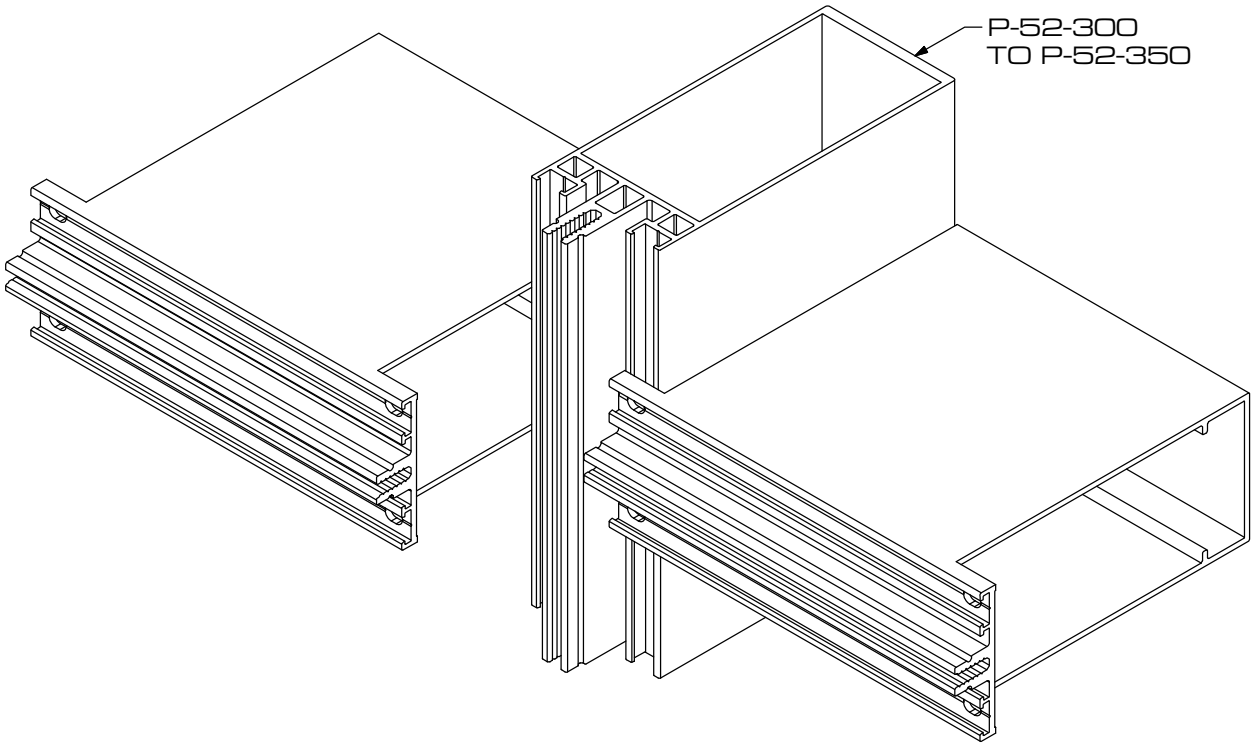
Preparation to occur at the centreline for each transom

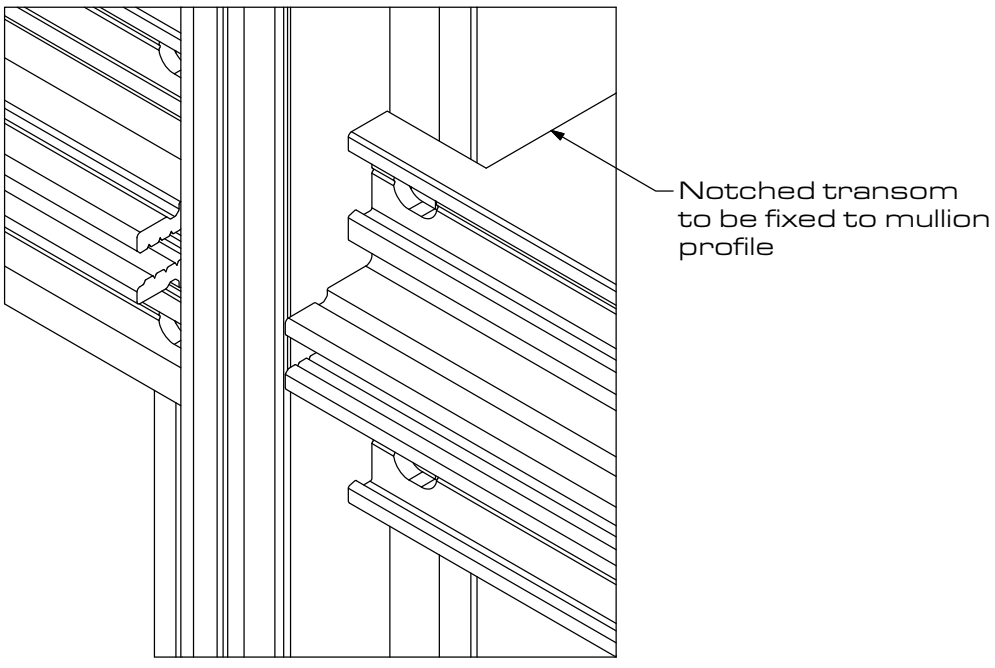


A-KM-4619
NB: Holes can be drilled using all hand jigs

Preparations applicable to all mullion profiles (P-52-300 to P-52-350)

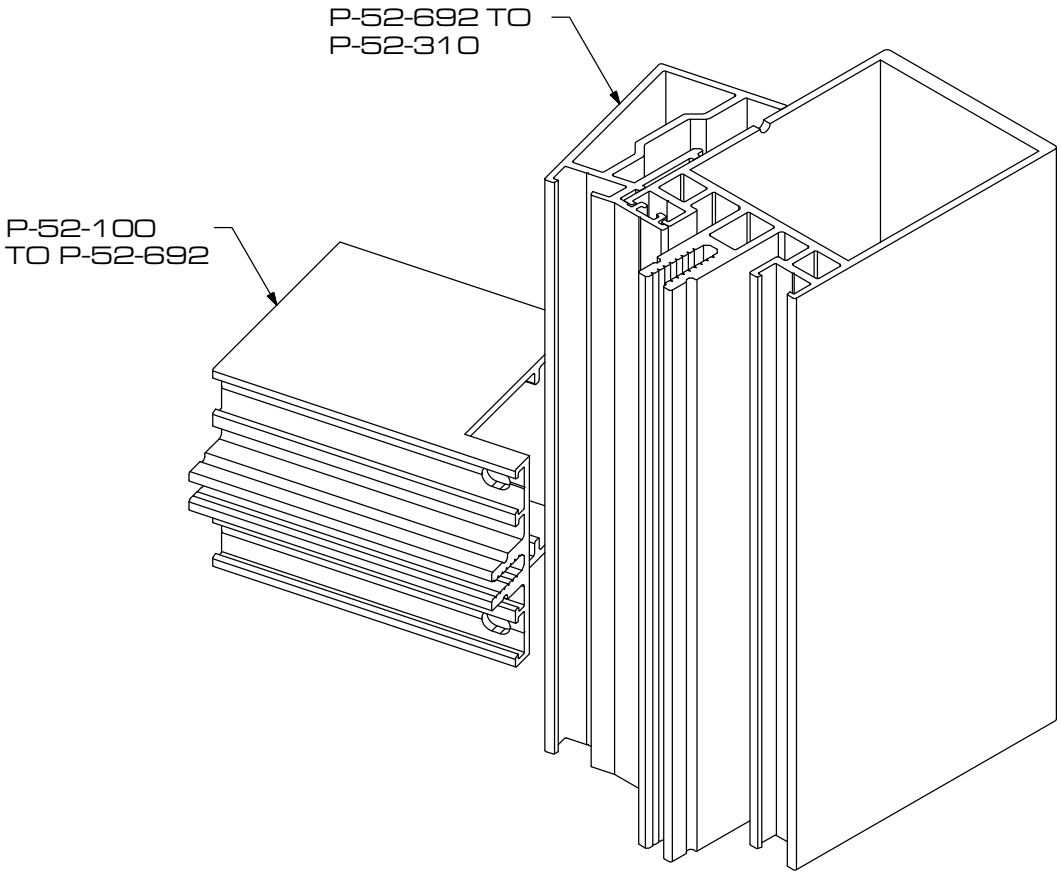
Level 1 Transom to Mullion Fixing Detail

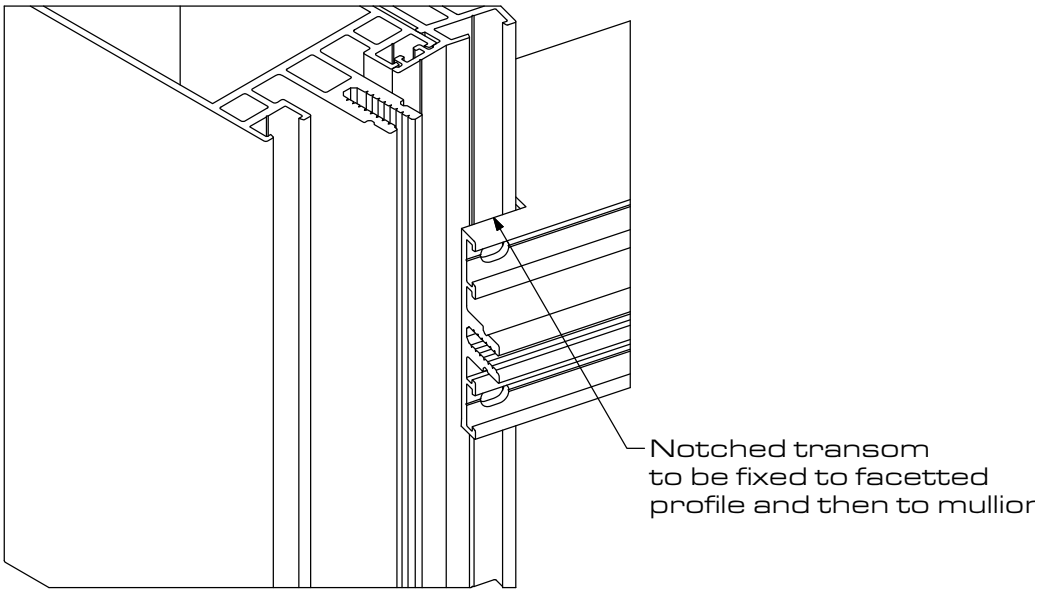




Level 1 Transom to Mullion Facetted Profile Fixing Detail

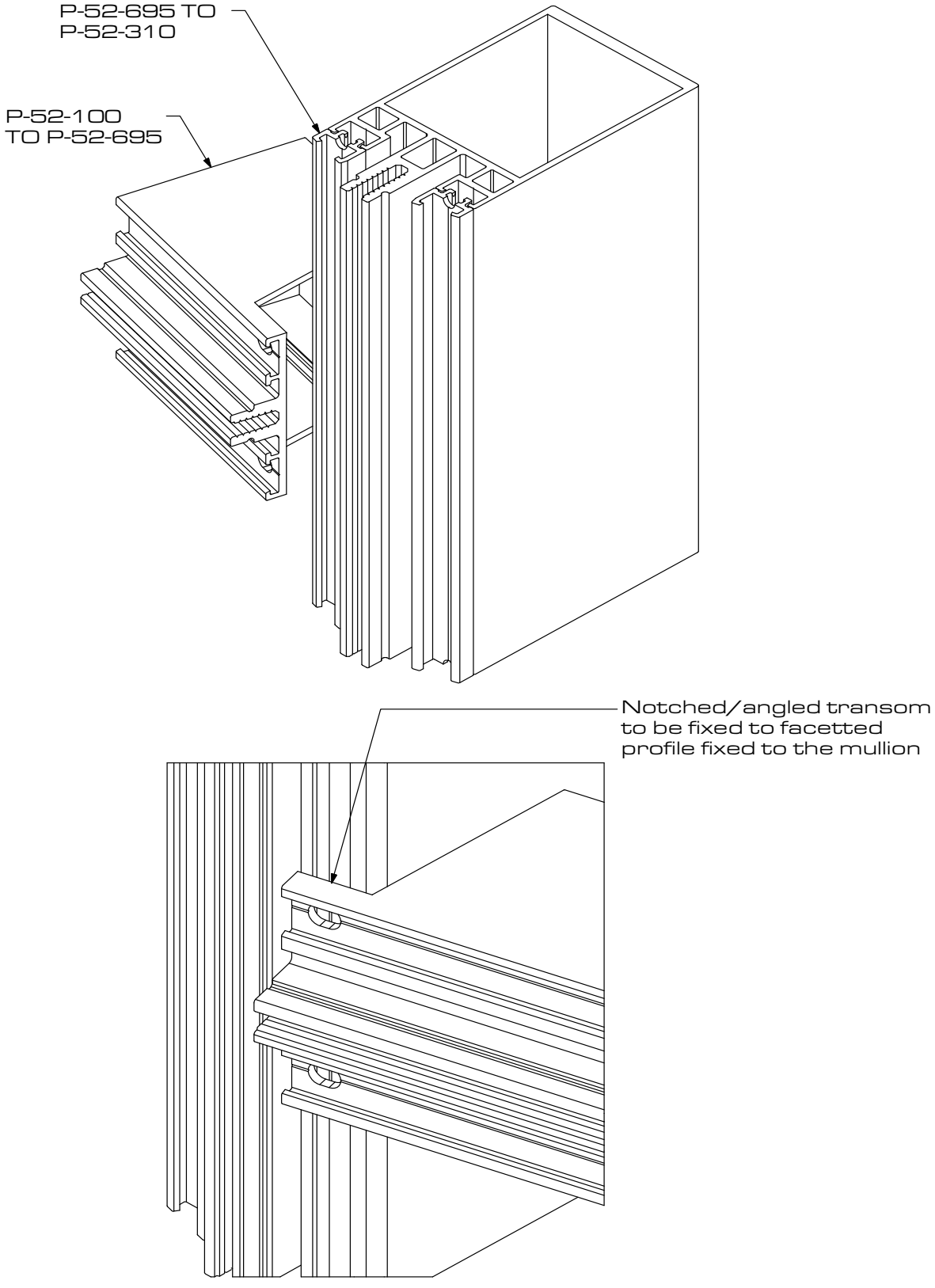
15/30/45 Degree External Corner





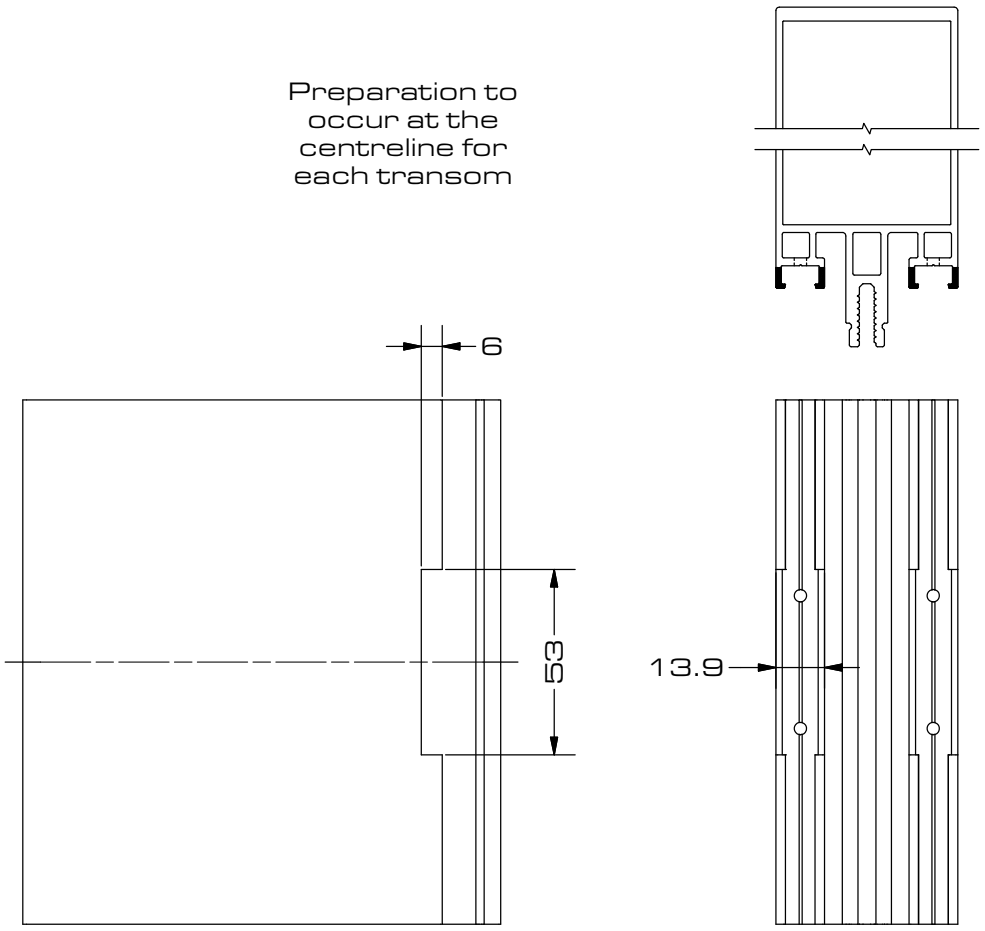
Level 1 Transom to Mullion Facetted Profile
Fixing Detail

15/30/45 Degree Internal Corner

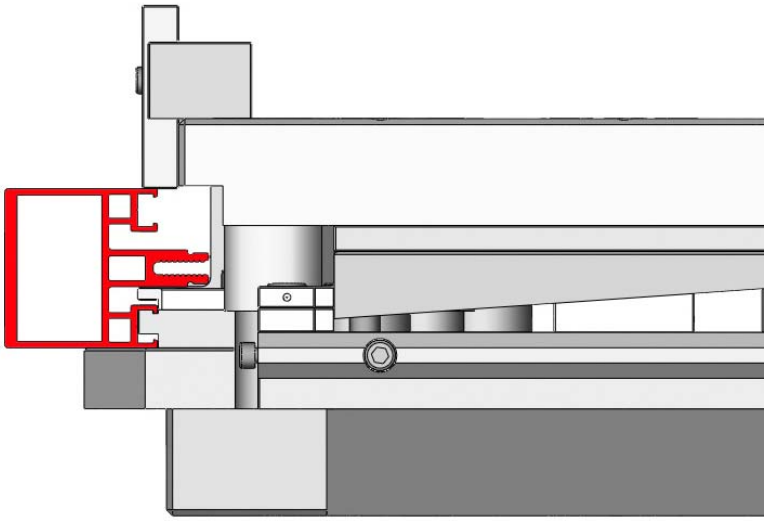


Level 2 Mullion Side Preparation

Preparation to occur at the centreline for each transom



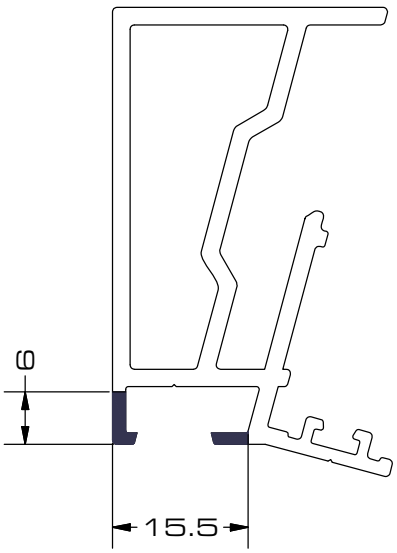
A-KM-4611
Station 4



Level 2 Facetted Side Preparation

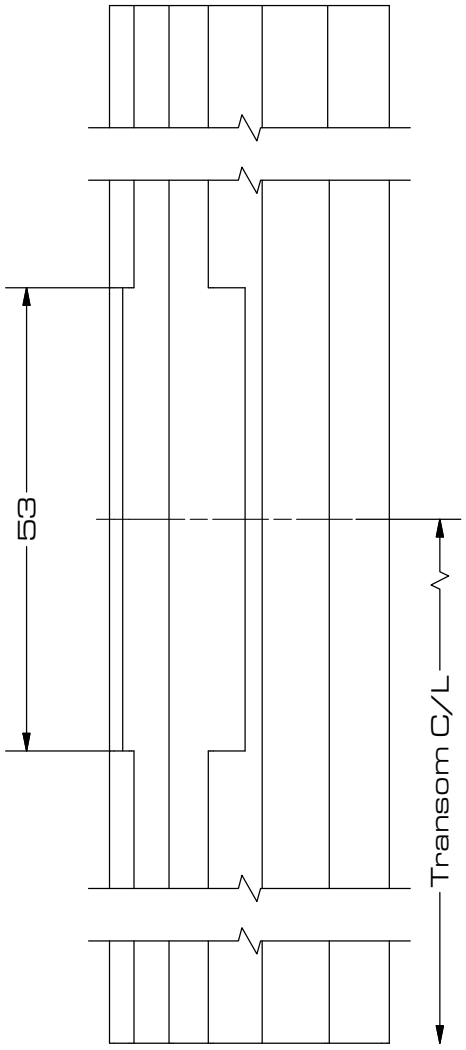
P-52-692/691/690

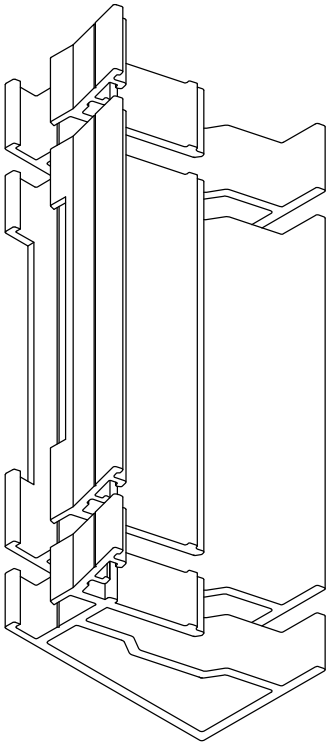
P-52-692



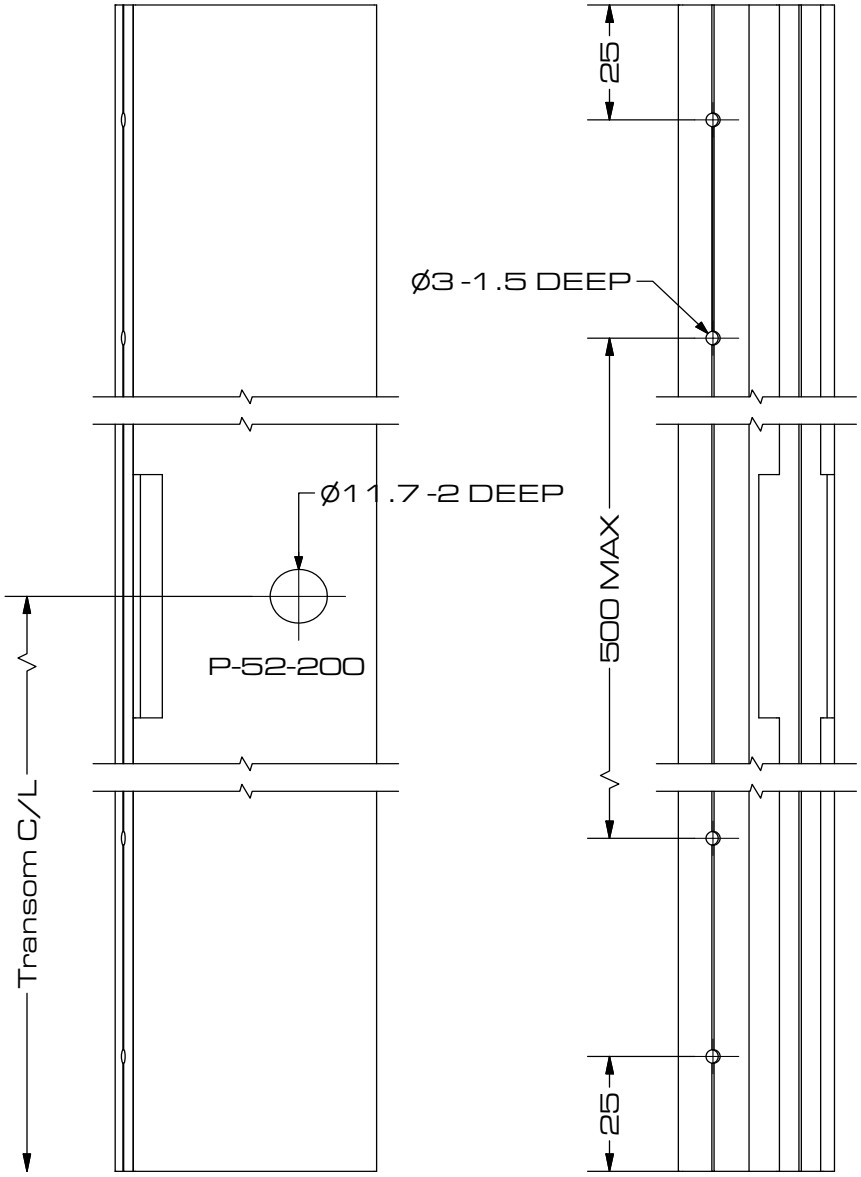
NB: Preparation can not be preformed using press tool A-KM-4614.

All facetted machining details to be done using CNC or notching saws.

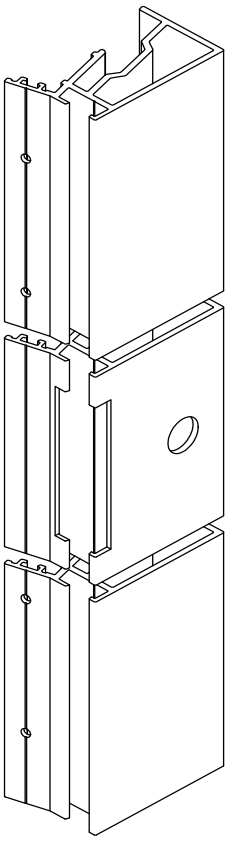


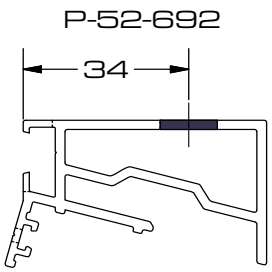


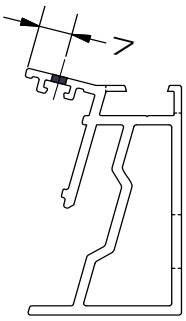
P-52-200 - Level 2 to Level 3 Mullion - Sprung Cleat & Fastening Preparation



P-52-692



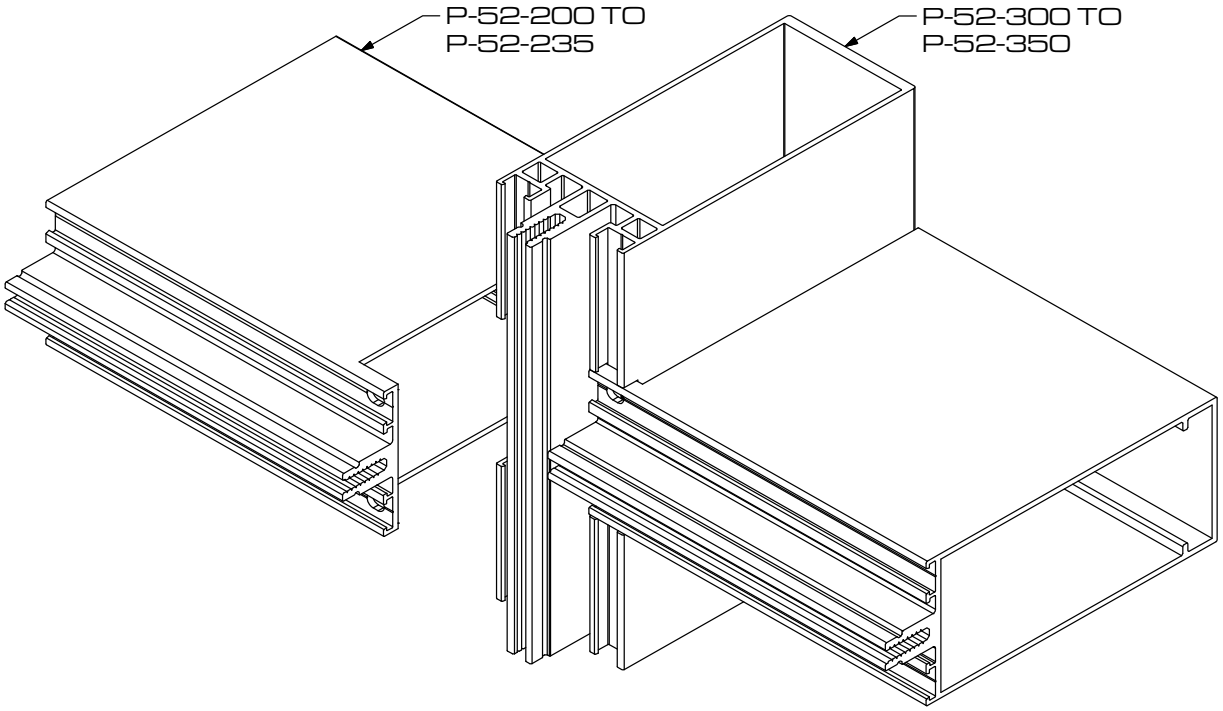


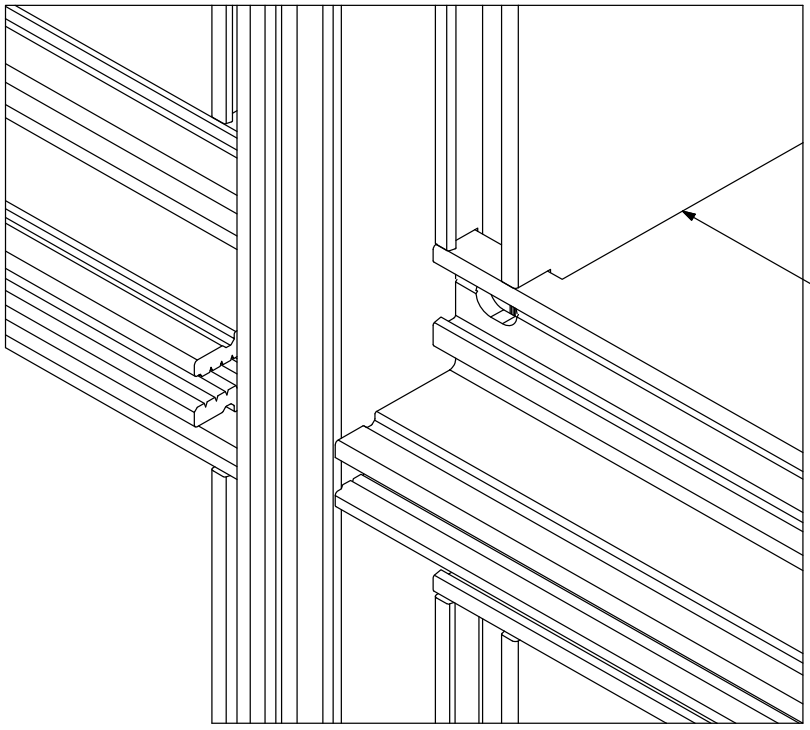


NB: Preparation details also applicable to P-52-691 & P-52-690.

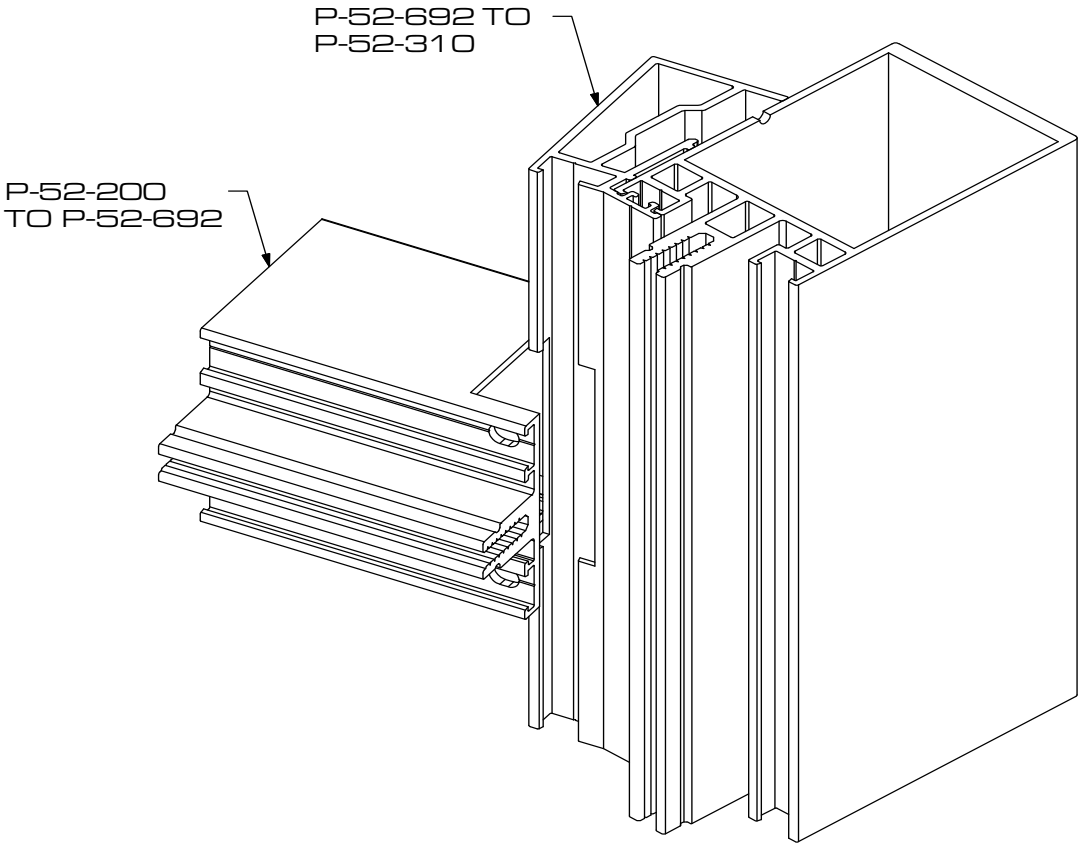
IMPORTANT: P-52-690/691/692 can only be used with P-52-200 Transom.

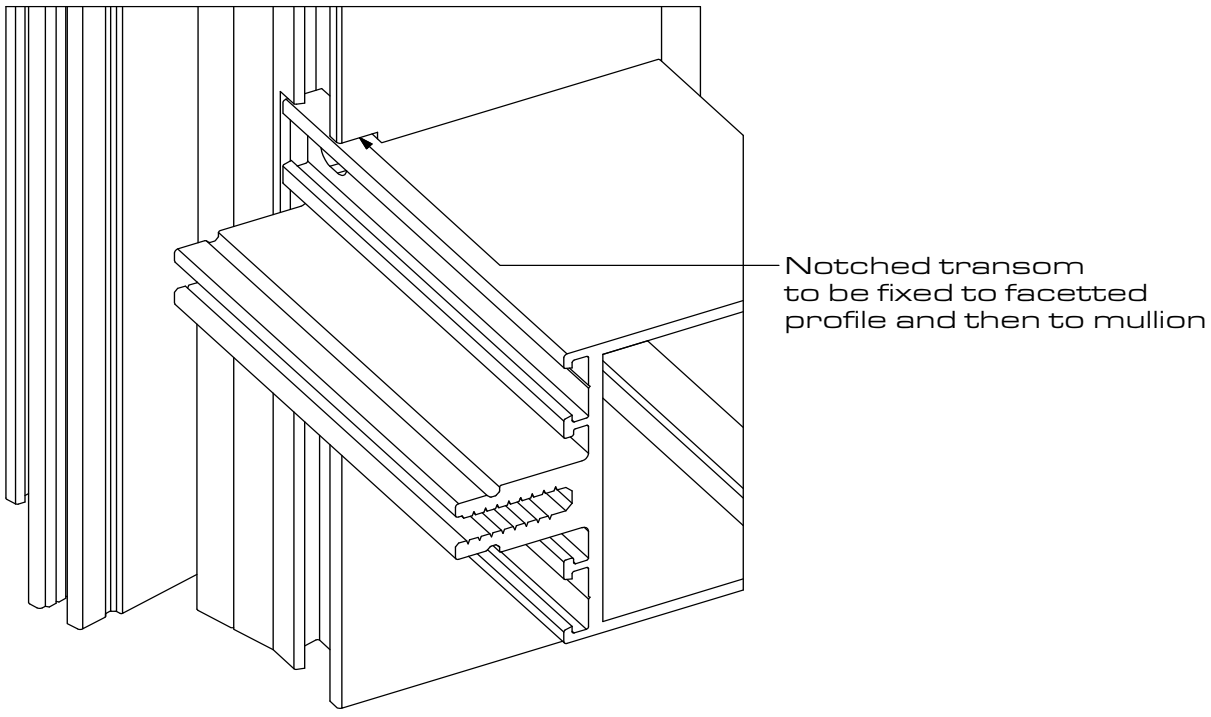
Level 2 Transom to Mullion Fixing Detail



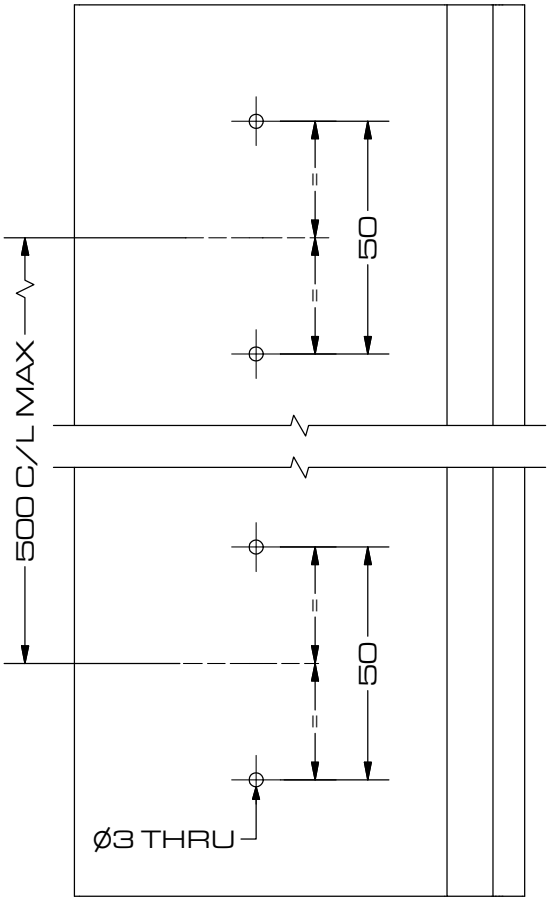


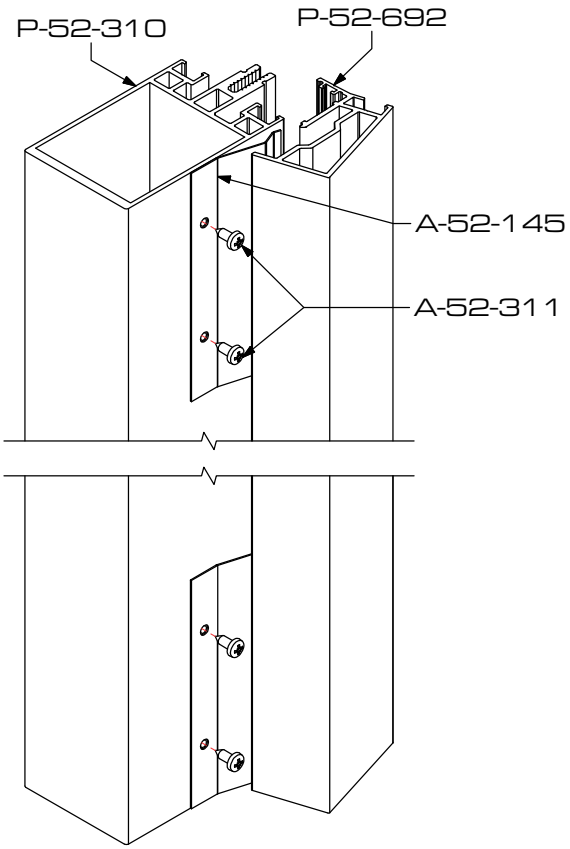
Level 2 Transom to Mullion Facetted Profile Fixing Detail

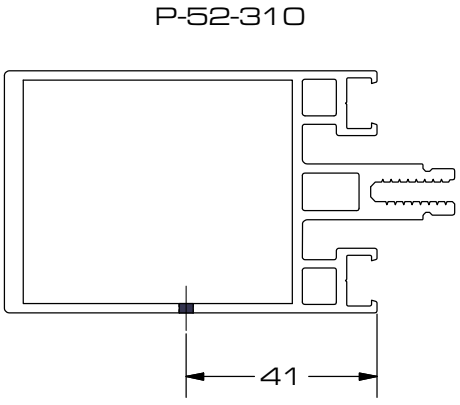


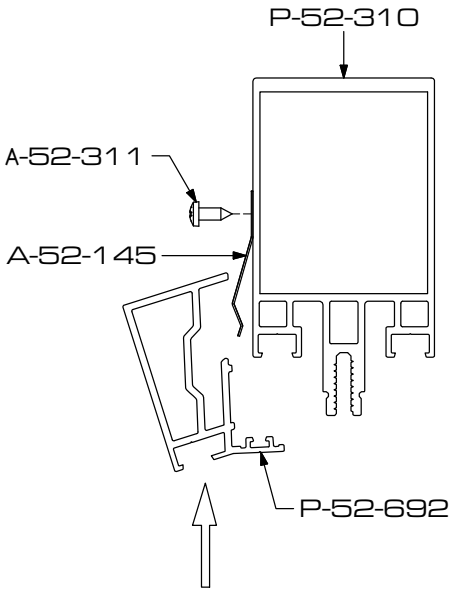


P-52-692/691/690 to Level 3 Mullion - Profile
Clip Preparation



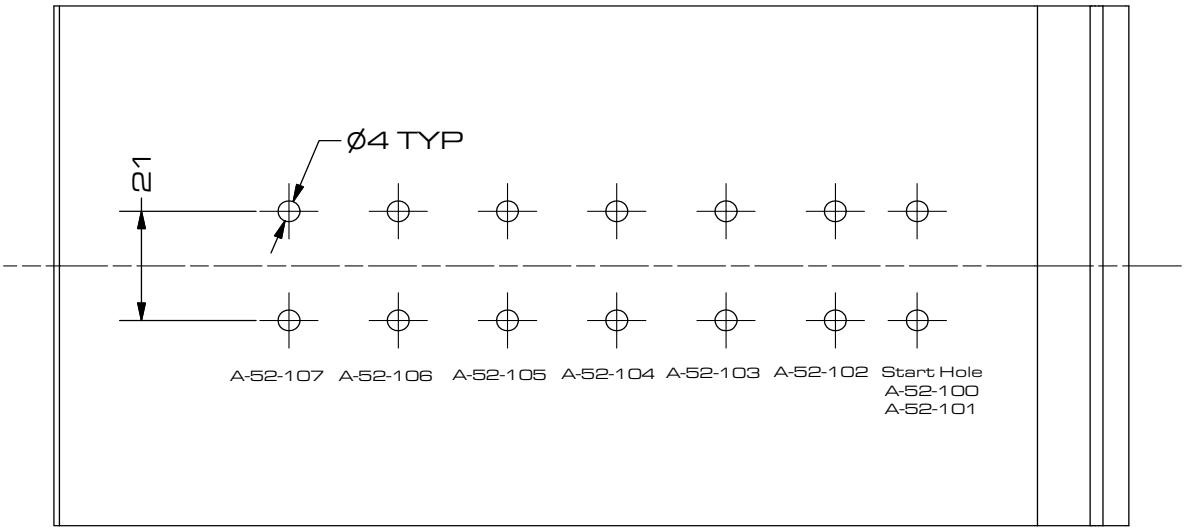


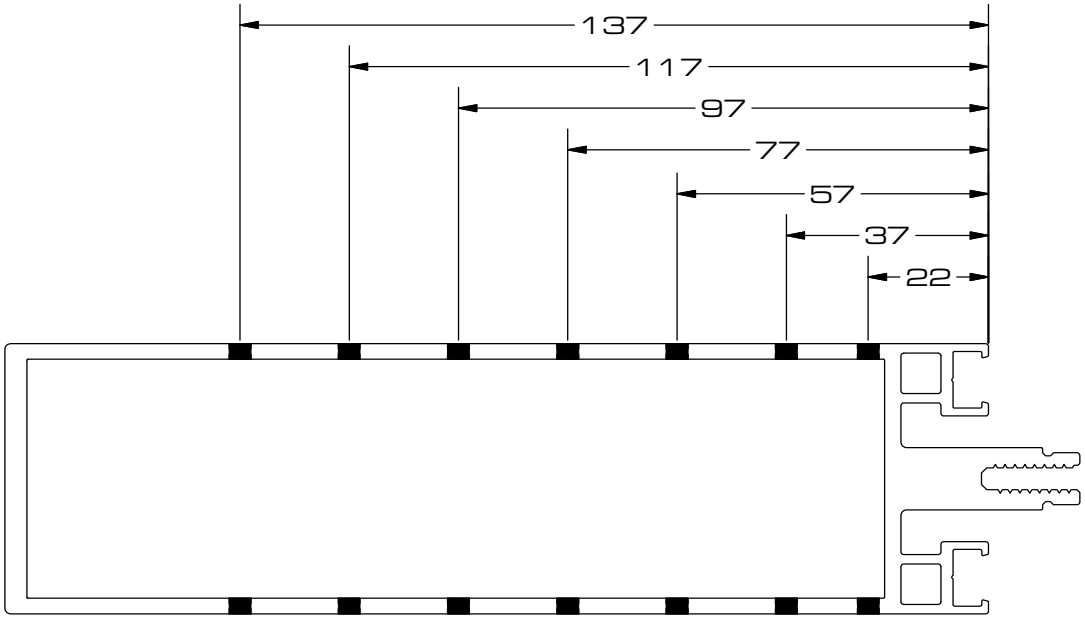




NB: Preparation also applicable to P-52-300 - 340.

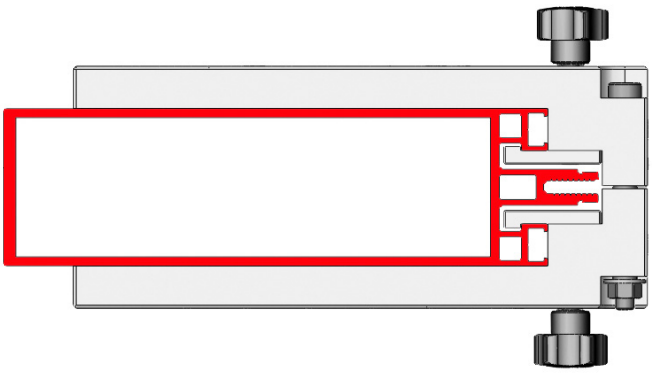
Level 1 Transom to Level 3 Mullion - Shear Block Preparations

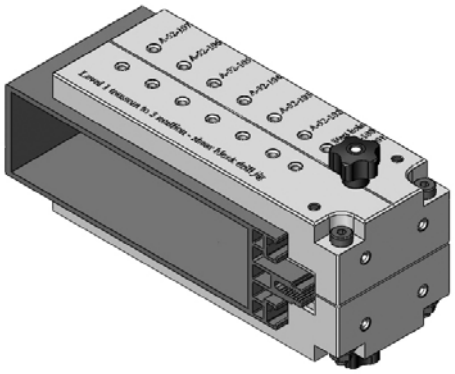




Note:

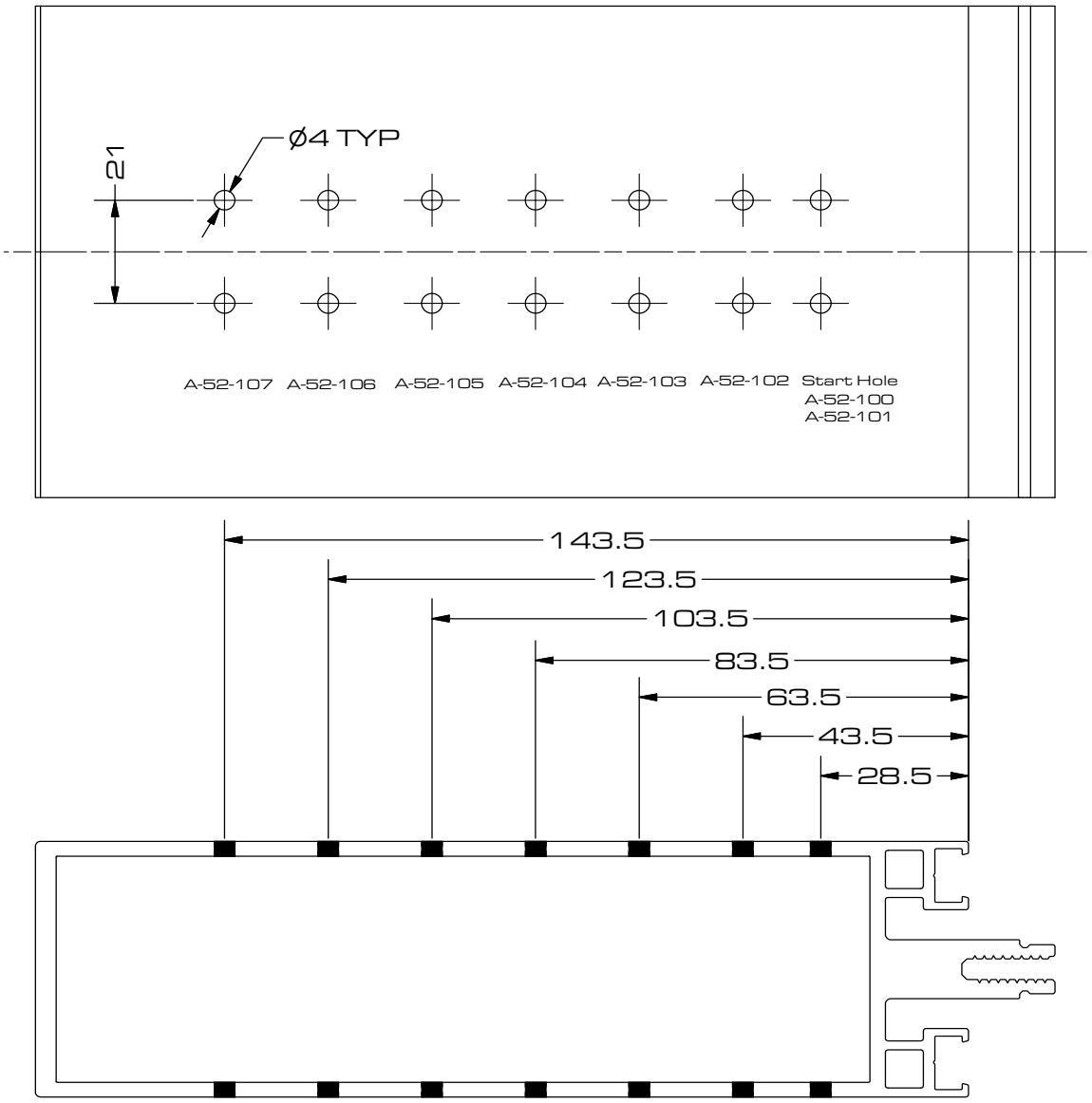
1) Always use start hole and then corresponding holes for the shear block fixing





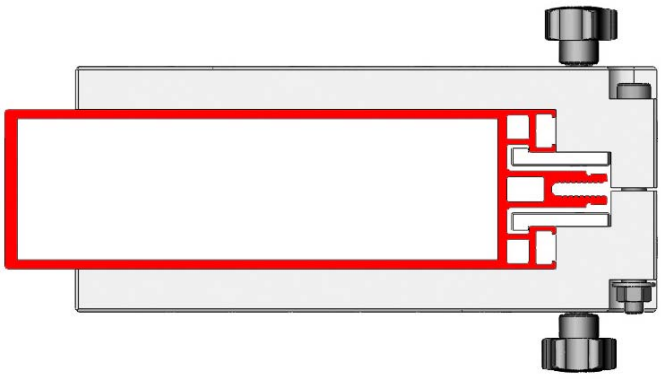
A-KM-4619

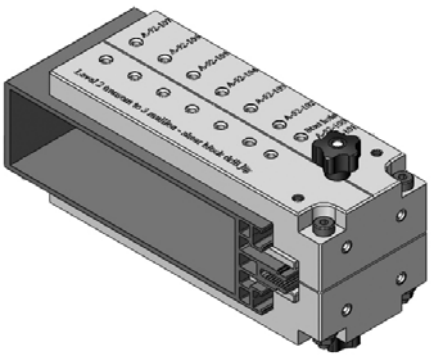
Level 2 Transom to Level 3 Mullion - Shear Block Preparations



Note:

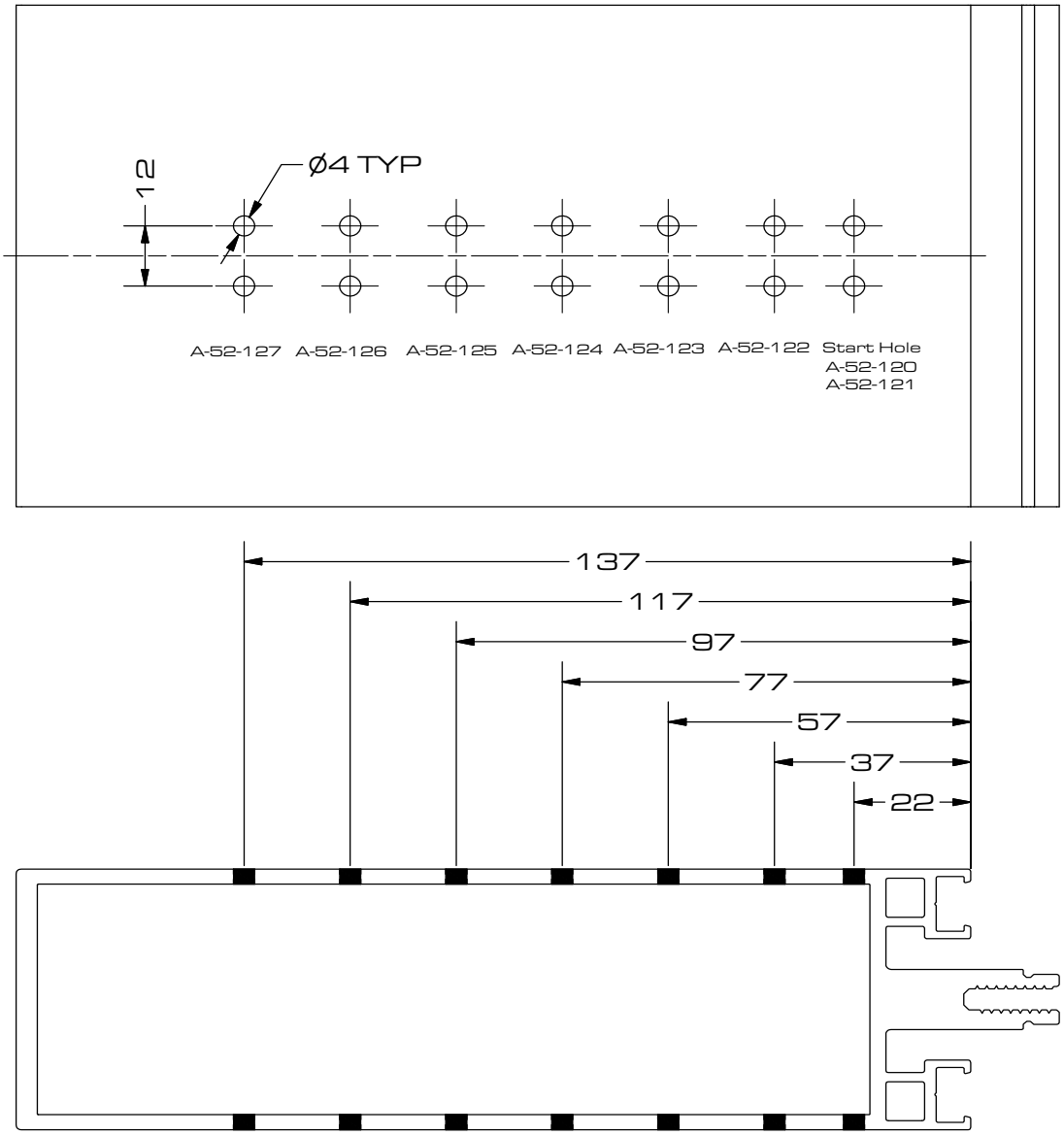
1) Always use start hole and then corresponding holes for the shear block fixing





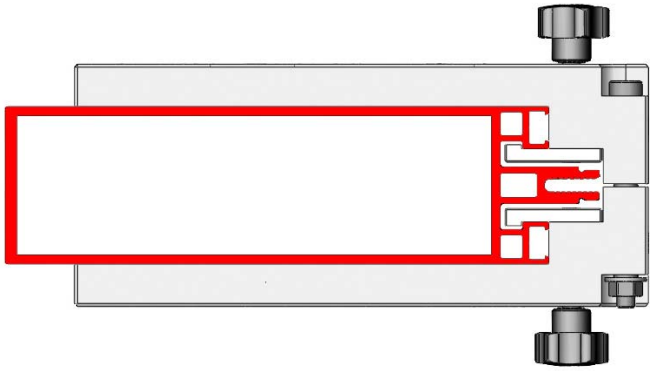
A-KM-4622

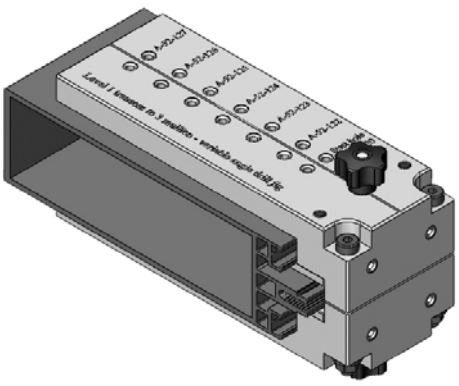
Level 1 Transom to Level 3 Mullion - Variable Angle Block Preparations



Note:

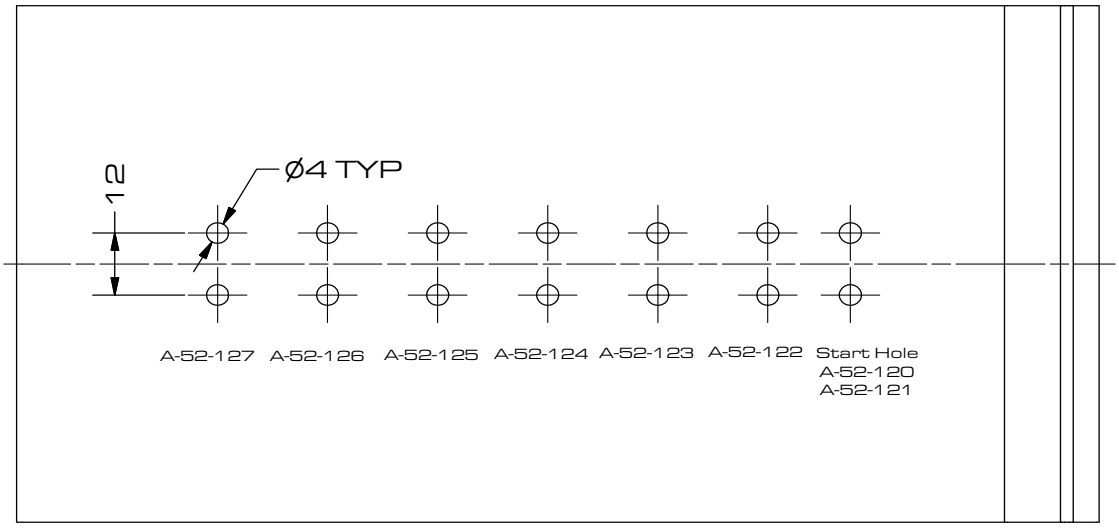
1) Always use start hole and then corresponding holes for the shear block fixing

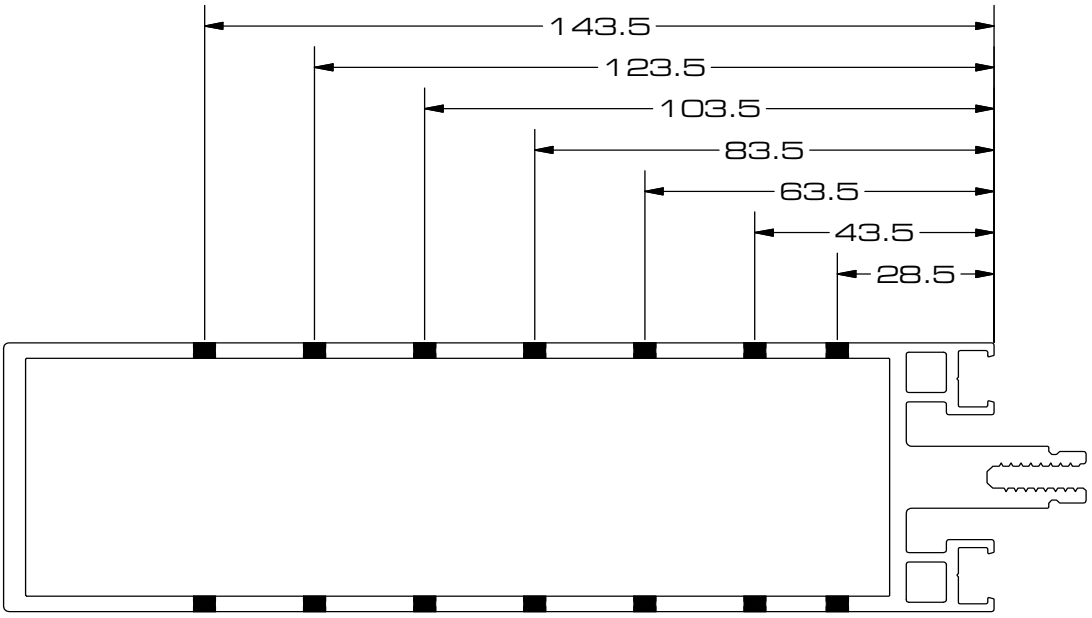




A-KM-4618

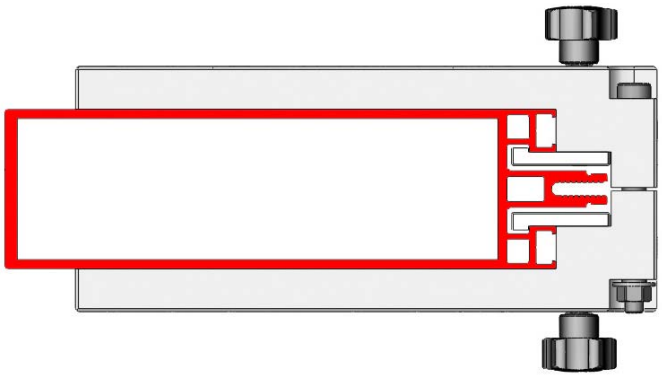
Level 2 Transom to Level 3 Mullion - Variable Angle Block Preparations

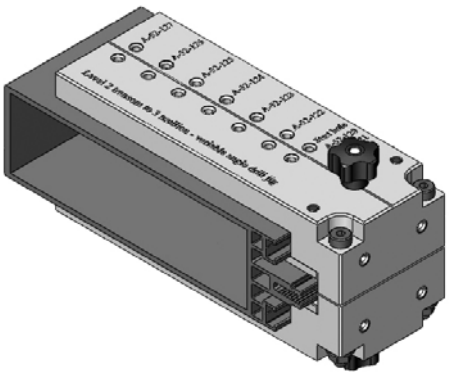




Note:

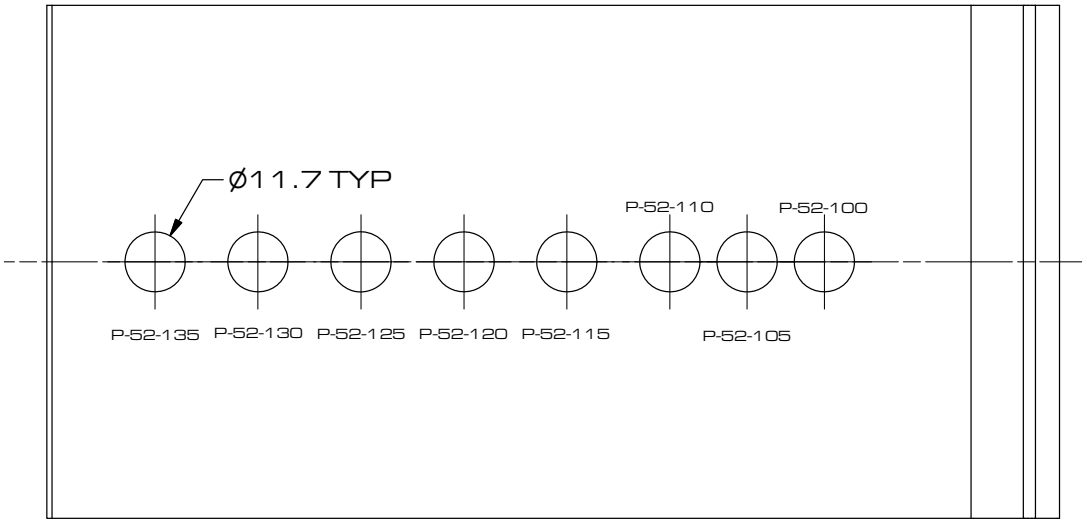
1) Always use start hole and then corresponding holes for the shear block fixing

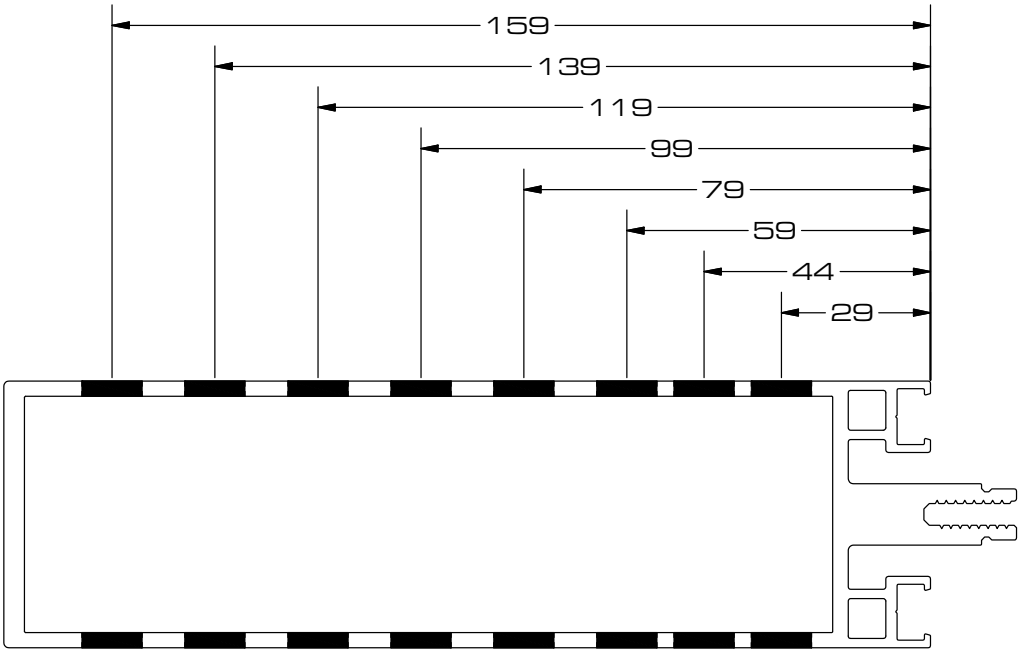


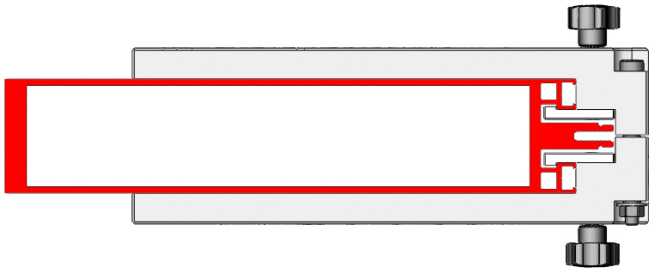


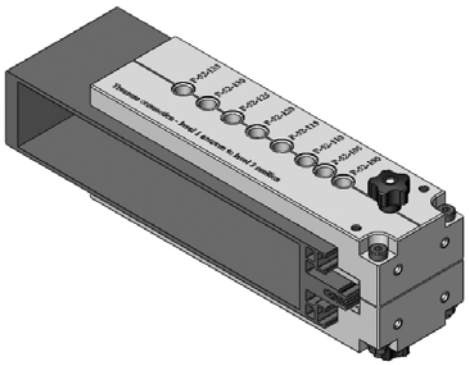
A-KM-4621

Level 1 Transom to Level 3 Mullion - Sprung Cleat Preparations



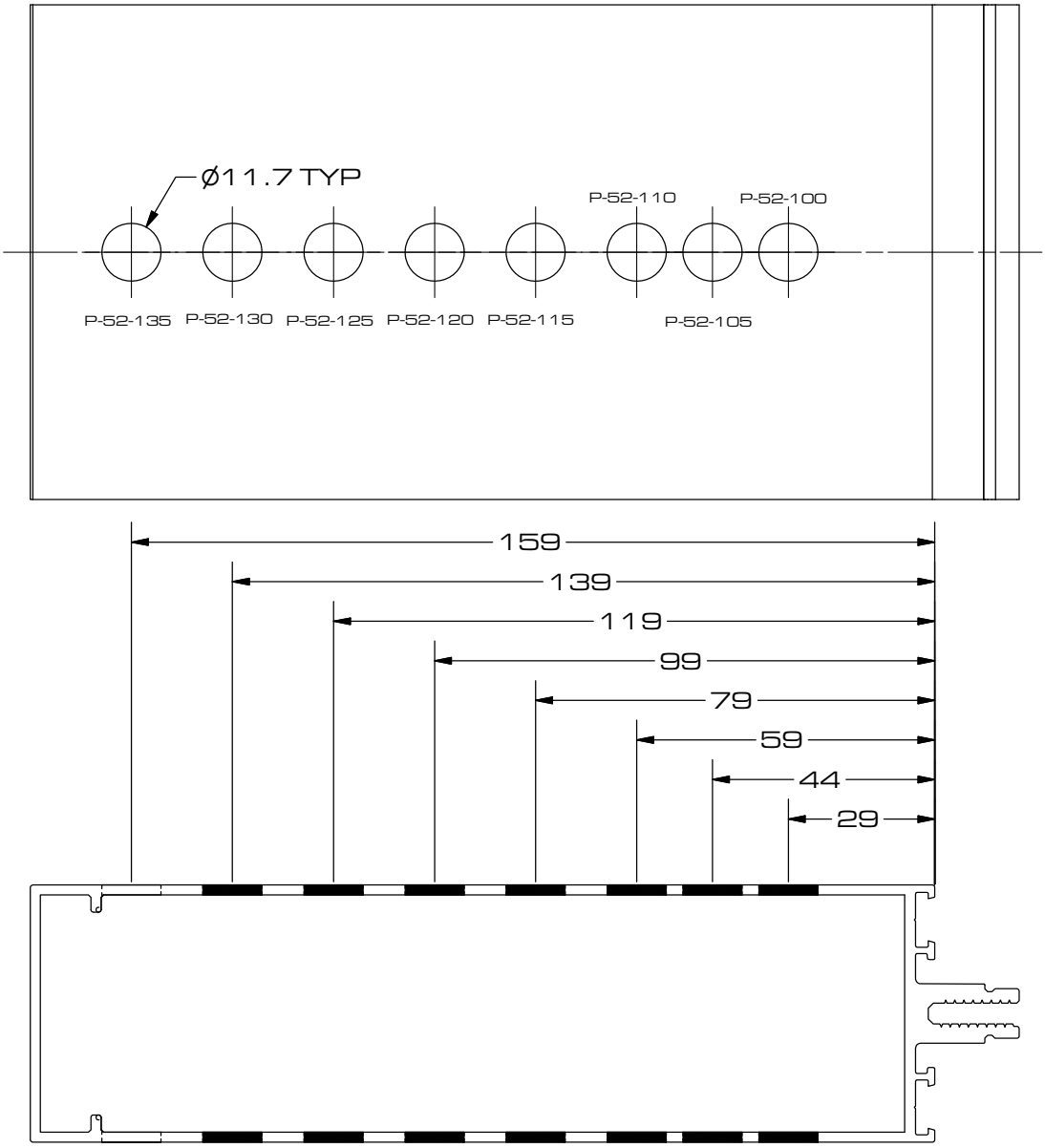


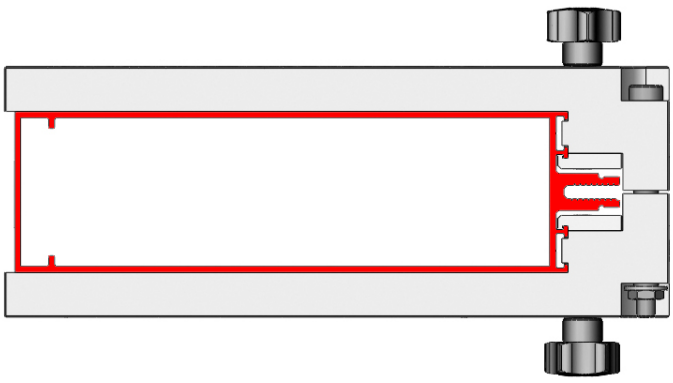


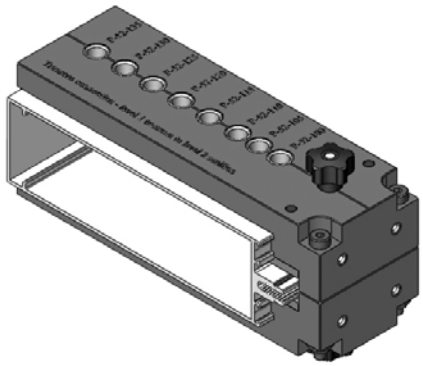


A-KM-4616

Level 2 Transom to Level 1 Mullion - Sprung Cleat Preparations

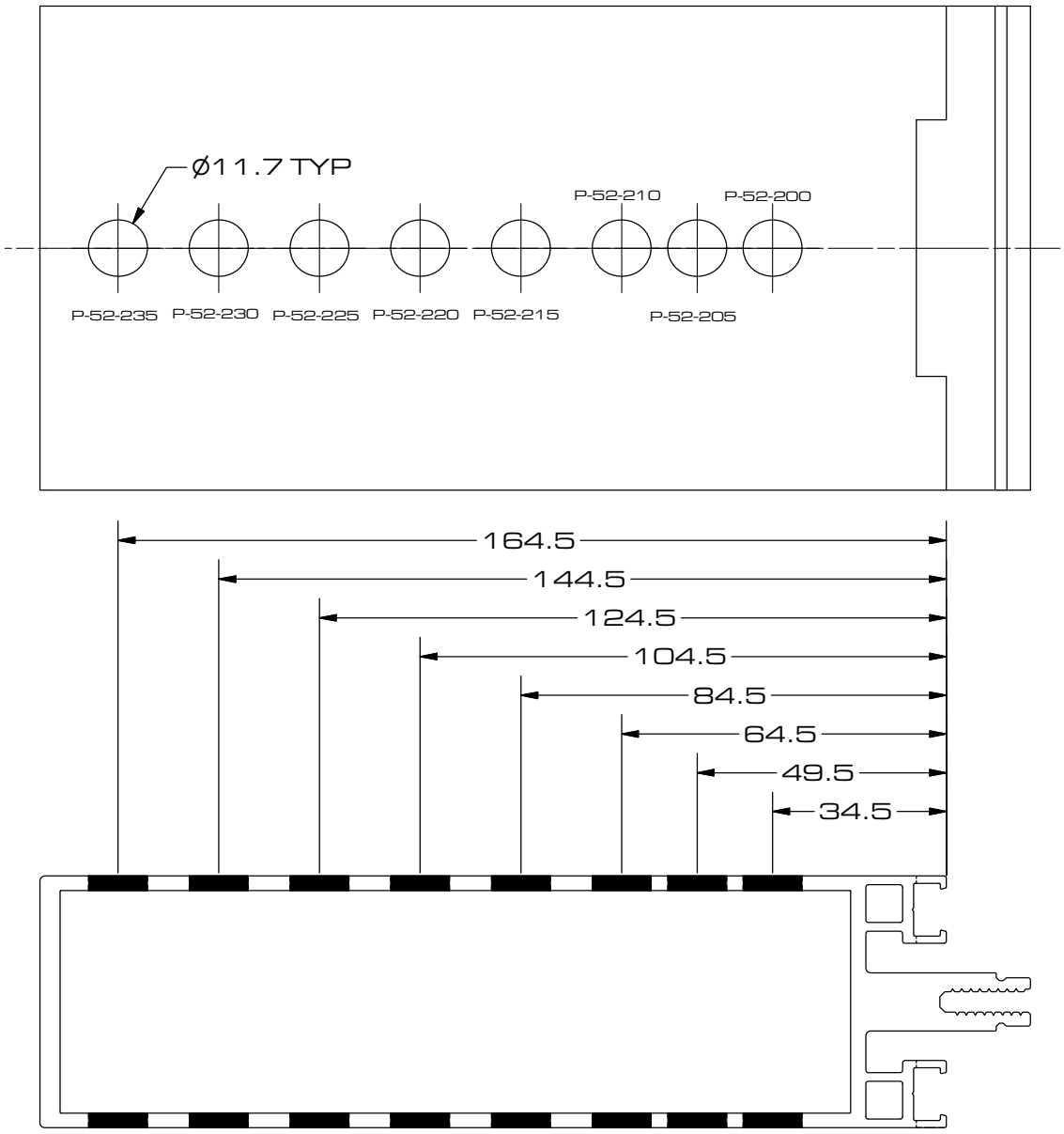


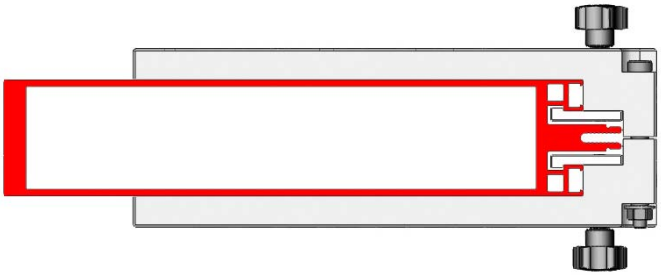


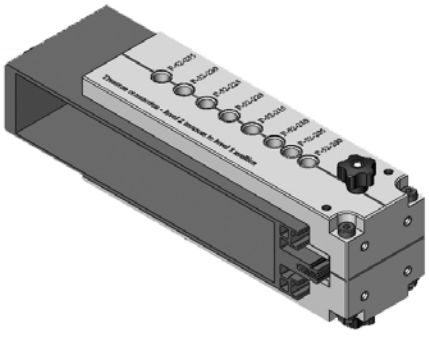


A-KM-4615

Level 2 Transom to Level 3 Mullion - Sprung Cleat Preparations



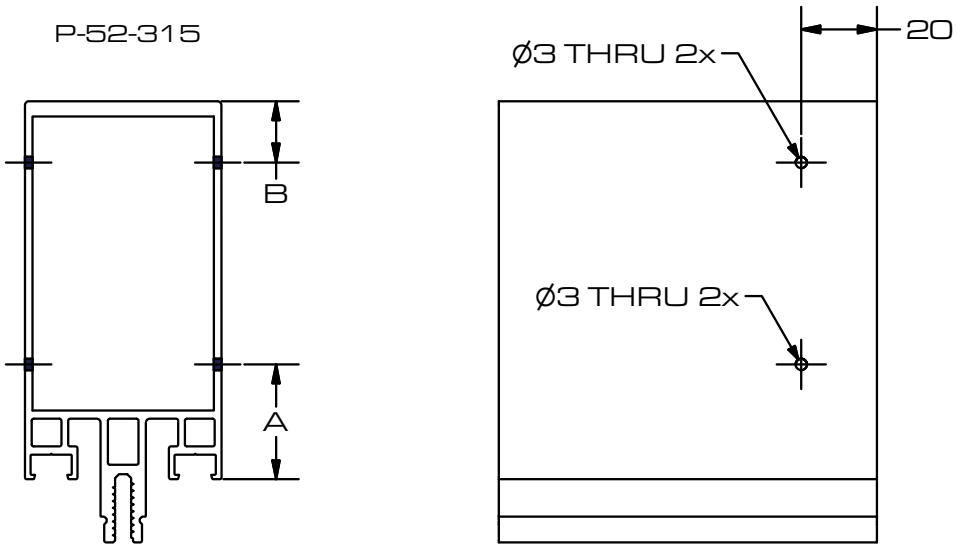




A-KM-4617

Mullion L3 - Transom Joint L1

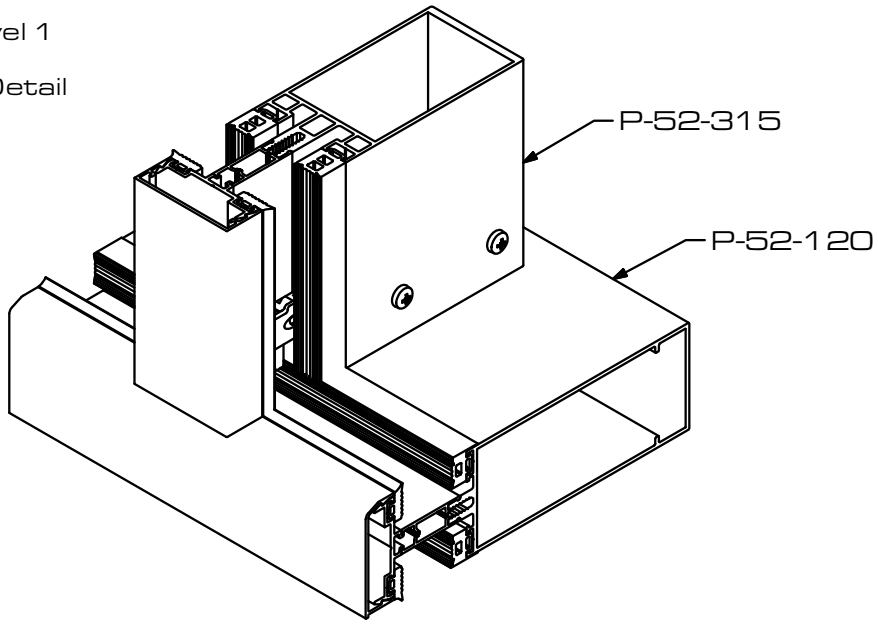
(Level 4 Drainage)



Level 3 to Level 1 (Dim A & B)			
Level 3 (Mullion)	Dim A	Dim B	App. Level 1 (Transom)
P-52-300	30.4	16.2	P-52-105
P-52-305	"	"	P-52-110
P-52-310	"	"	P-52-115
P-52-315	"	"	P-52-120
P-52-320	"	"	P-52-125
P-52-325	"	"	P-52-130
P-52-330	"	"	P-52-135

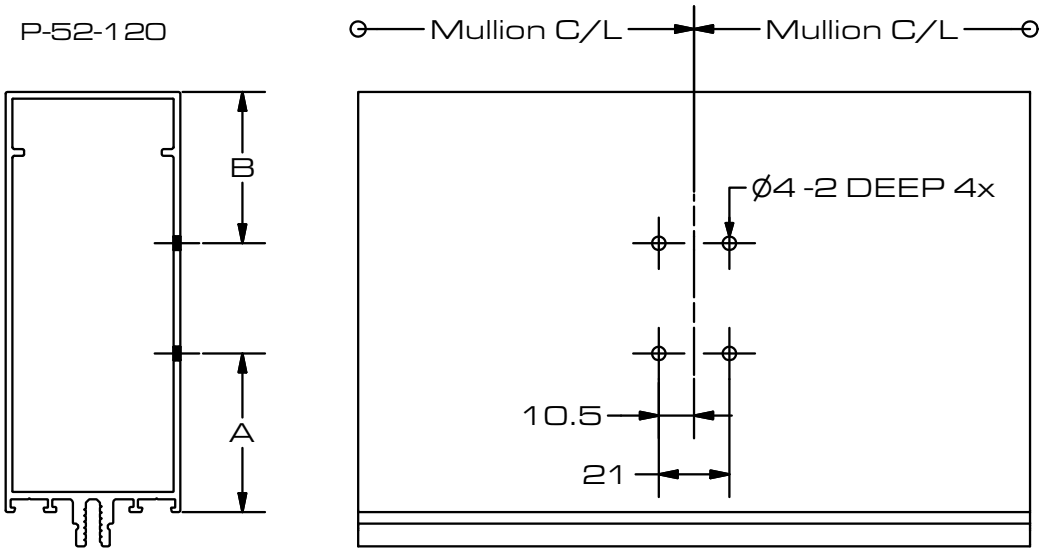
Level 3 to Level 1

Connection Detail



Mullion L3 - Transom Joint L1

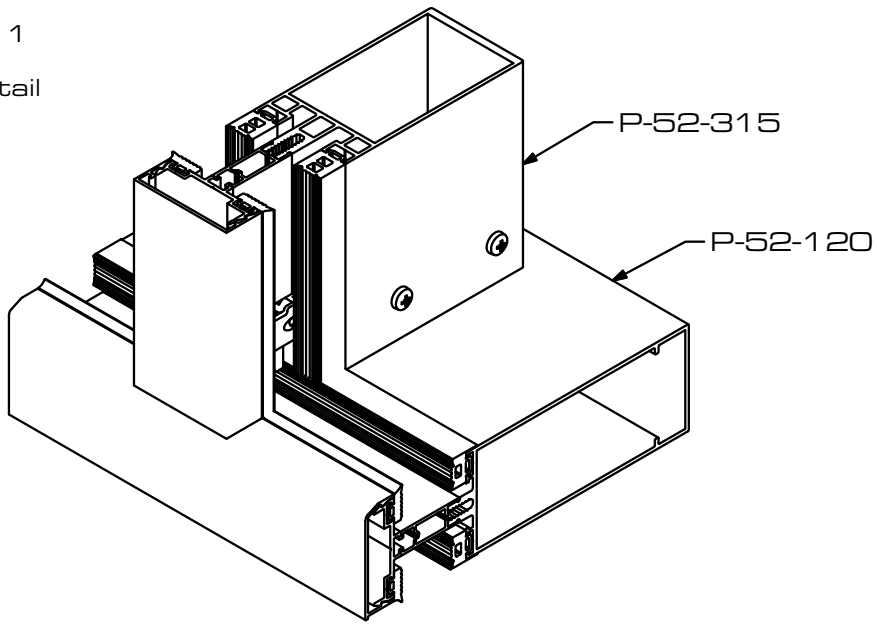
(Level 4 Drainage Cont.)



Level 3 to Level 1 (Dim A & B)			
Level 3 (Mullion)	Dim A	Dim B	App. Level 1 (Transom)
P-52-300	47.2	45	P-52-105
P-52-305	"	"	P-52-110
P-52-310	"	"	P-52-115
P-52-315	"	"	P-52-120
P-52-320	"	"	P-52-125
P-52-325	"	"	P-52-130
P-52-330	"	"	P-52-135

Level 3 to Level 1

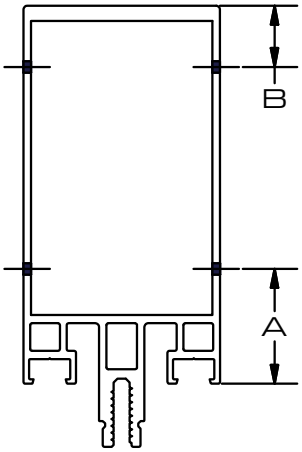
Connection Detail

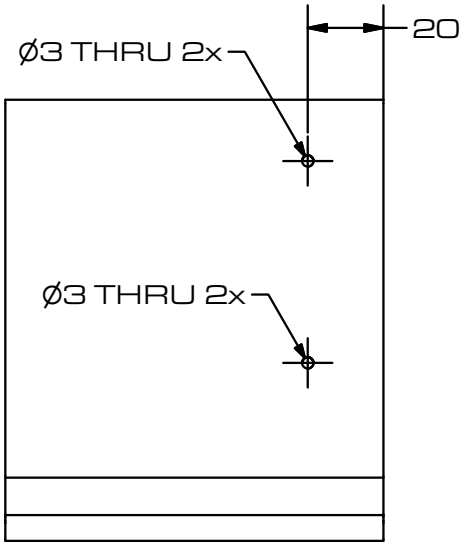


Mullion L3 - Transom Joint L2

(Level 4 Drainage)

P-52-315

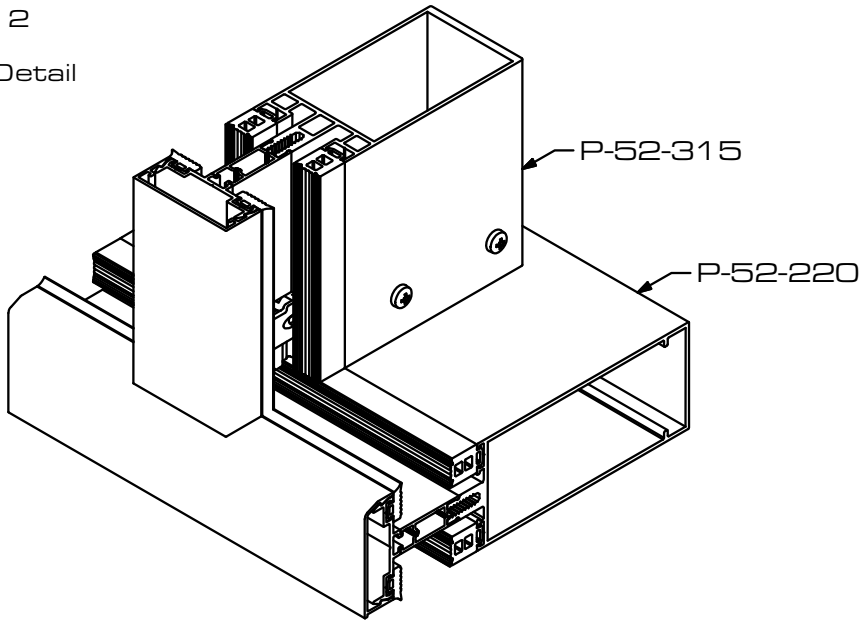




Level 3 to Level 2 (Dim A & B)			
Level 3 (Mullion)	Dim A	Dim B	App. Level 1 (Transom)
P-52-300	30.4	16.2	P-52-205
P-52-305	"	"	P-52-210
P-52-310	"	"	P-52-215
P-52-315	"	"	P-52-220
P-52-320	"	"	P-52-225
P-52-325	"	"	P-52-230
P-52-330	"	"	P-52-235

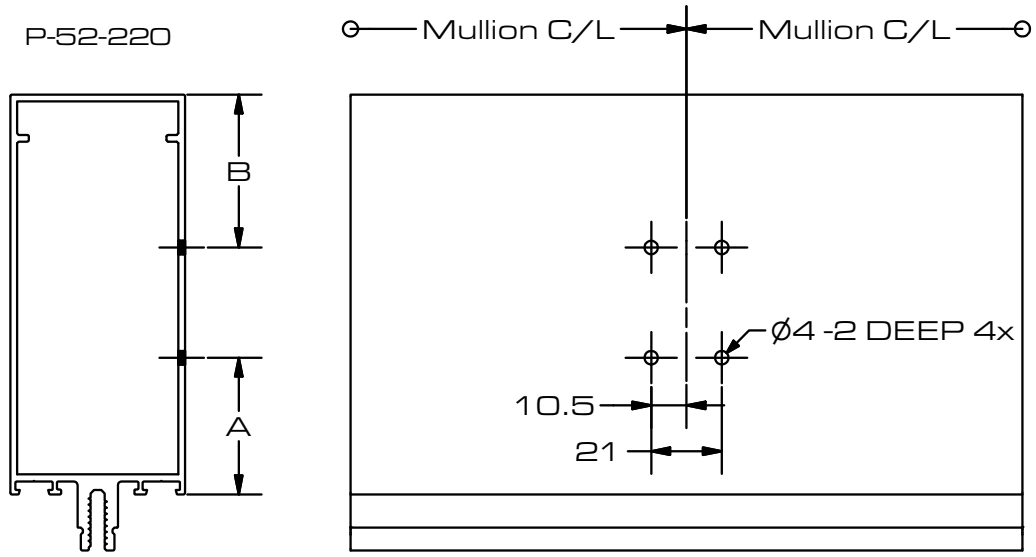
Level 3 to 2

Connection Detail



Mullion L3 - Transom Joint L2

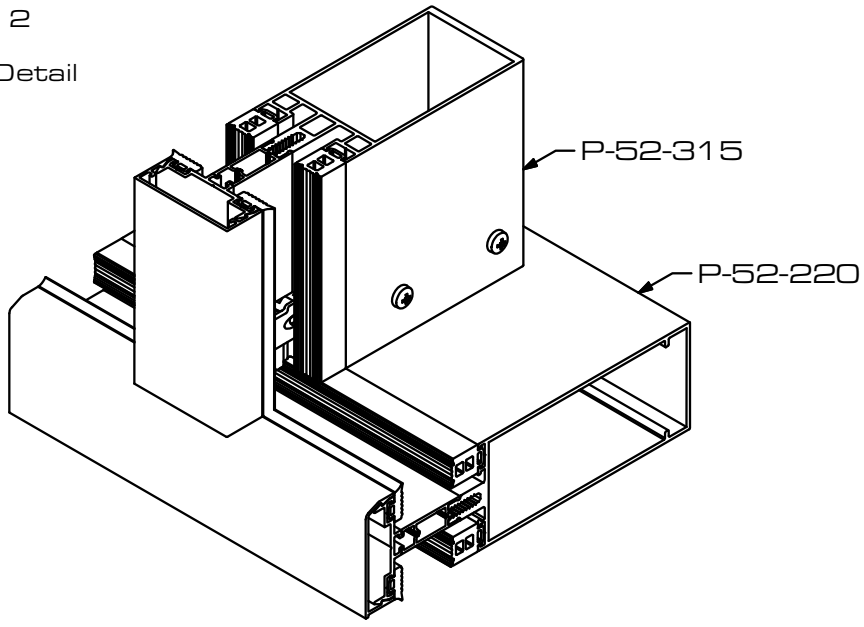
(Level 4 Drainage Cont.)



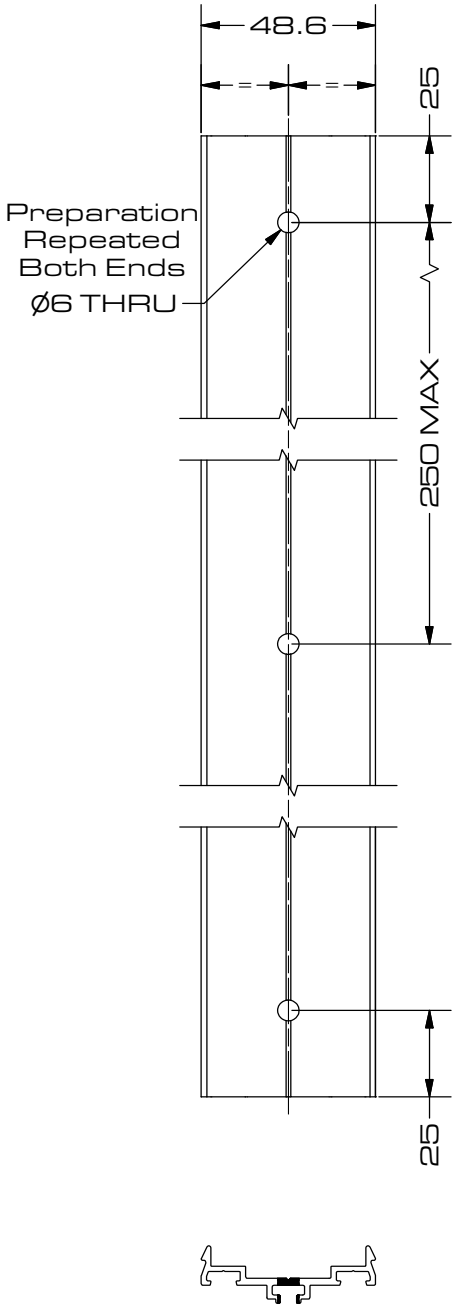
Level 3 to Level 2 (Dim A & B)			
Level 3 (Mullion)	Dim A	Dim B	App. Level 1 (Transom)
P-52-300	40.7	45.5	P-52-205
P-52-305	"	"	P-52-210
P-52-310	"	"	P-52-215
P-52-315	"	"	P-52-220
P-52-320	"	"	P-52-225
P-52-325	"	"	P-52-230
P-52-330	"	"	P-52-235

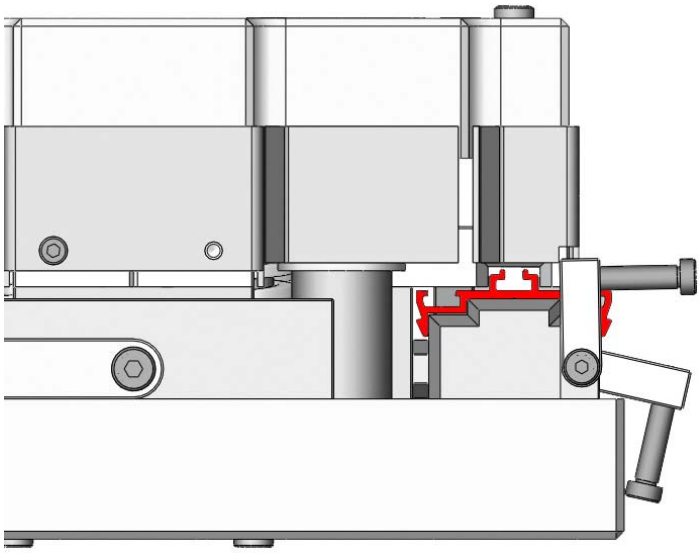
Level 3 to 2

Connection Detail



Pressure Plate Fixing Preparation

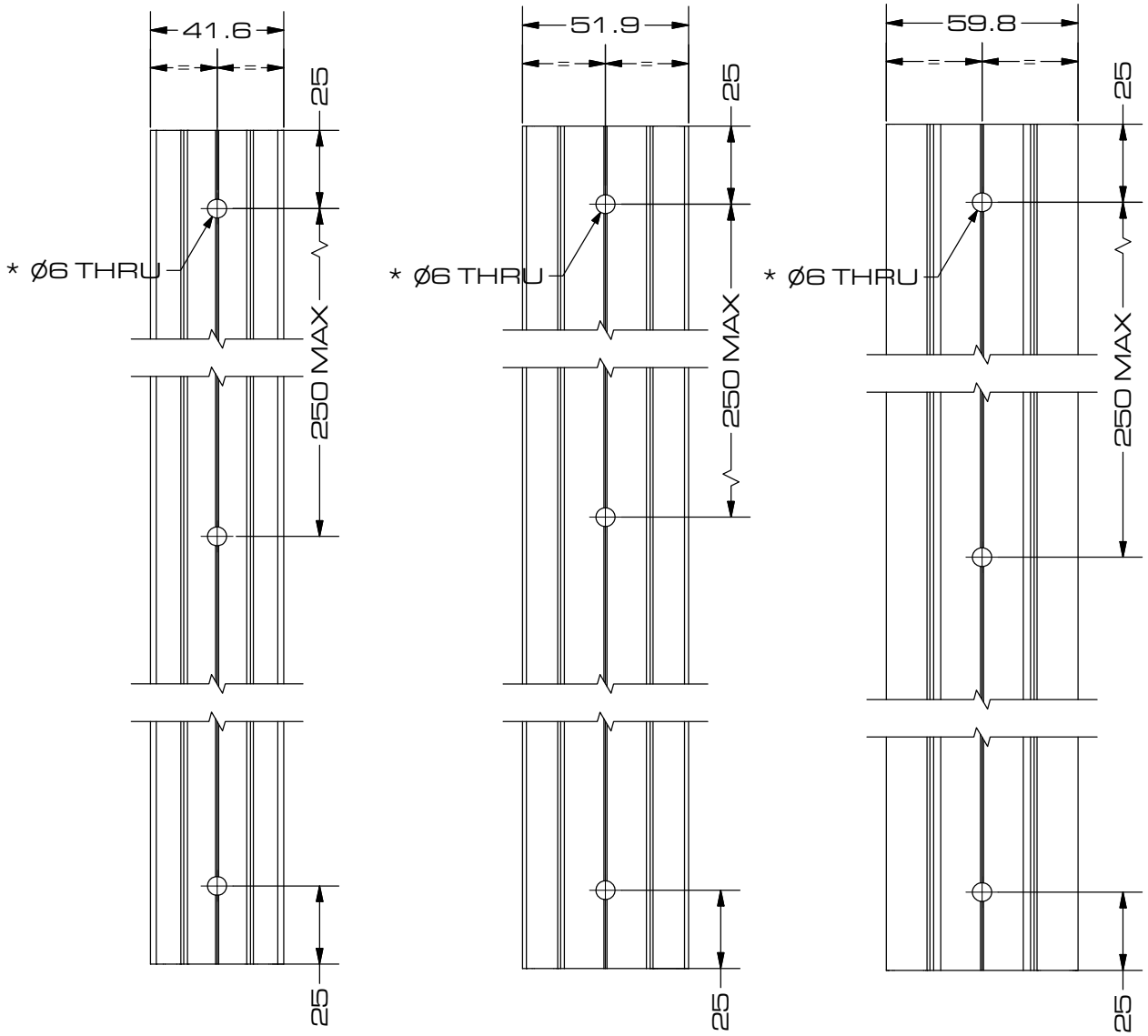


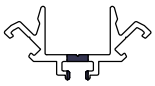


A-KM-4614
Station 2

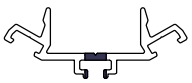
Pressure Plate Fixing Preparation

P-52-602/603/604

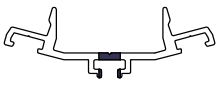




P-52-602



P-52-603

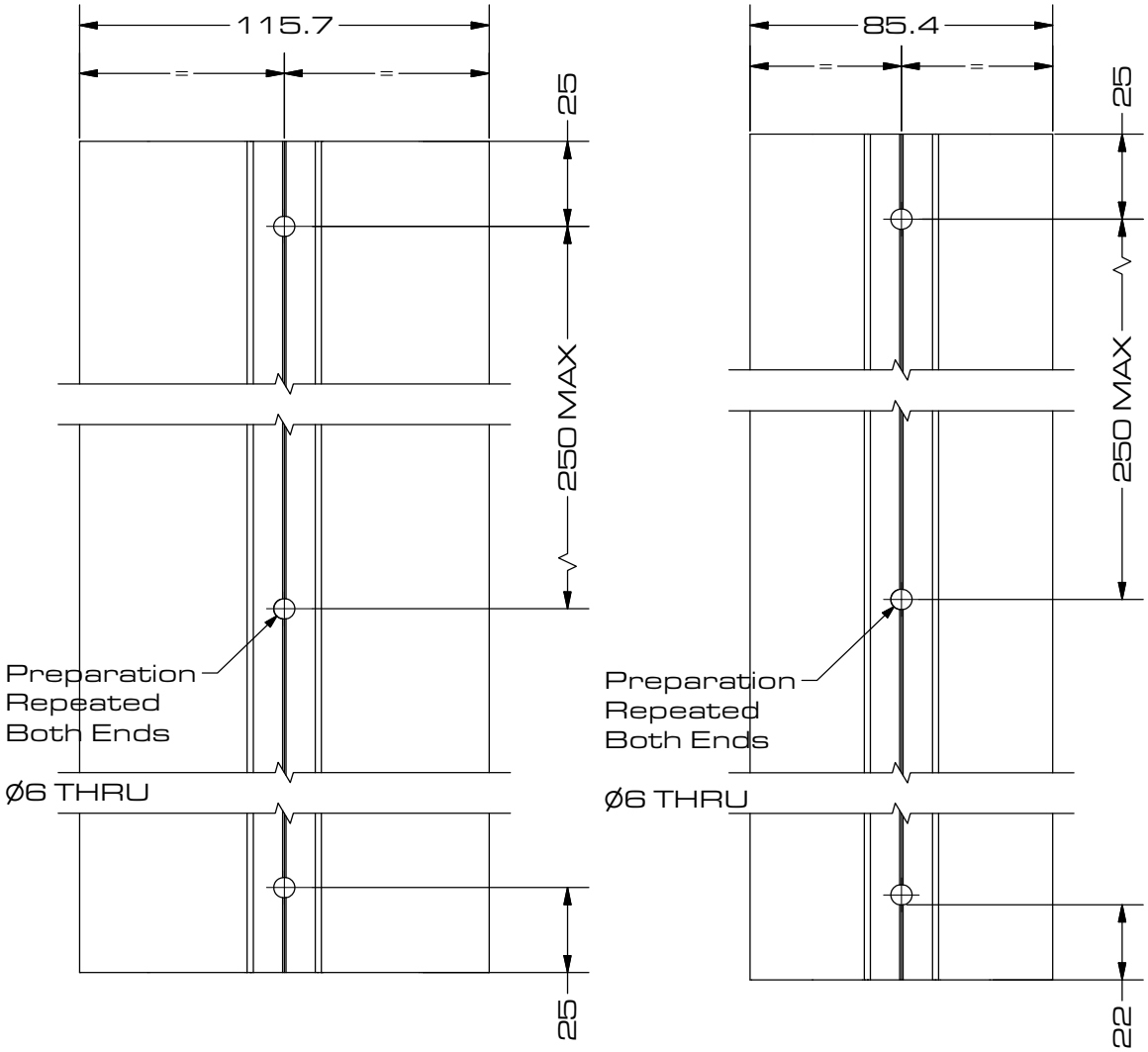


P-52-604

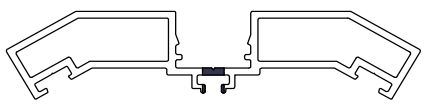
NB: Preparation can not be preformed using press tool A-KM-4614, all facetted machining details to be done using CNC or notching saws.

Pressure Plate Fixing Preparation

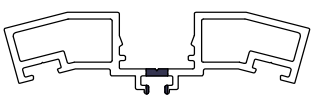
P-52-606/607



P-52-606



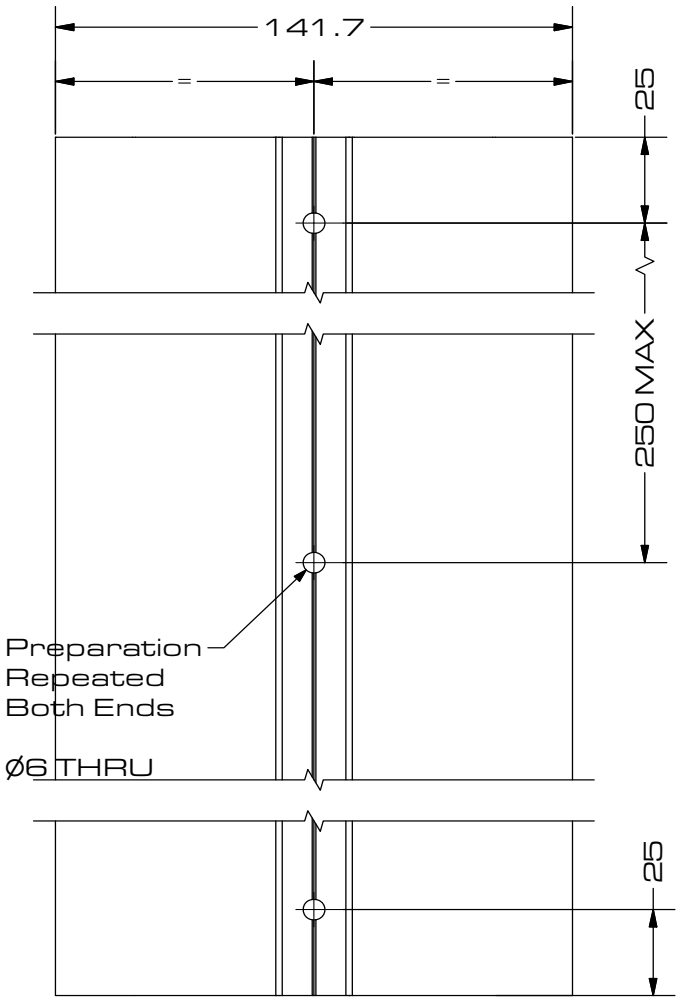
P-52-607

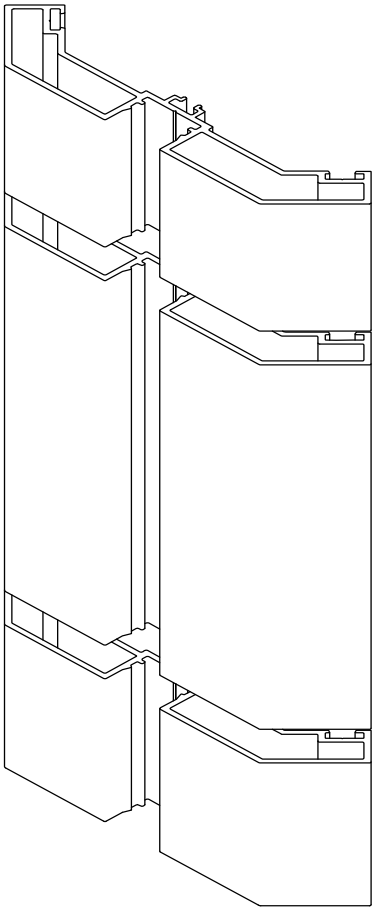


NB: Preparation can not be preformed using press tool A-KM-4614, all facetted machining details to be done using CNC or notching saws.

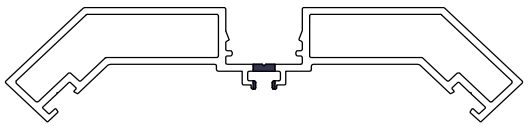
Pressure Plate Fixing Preparation

P-52-605



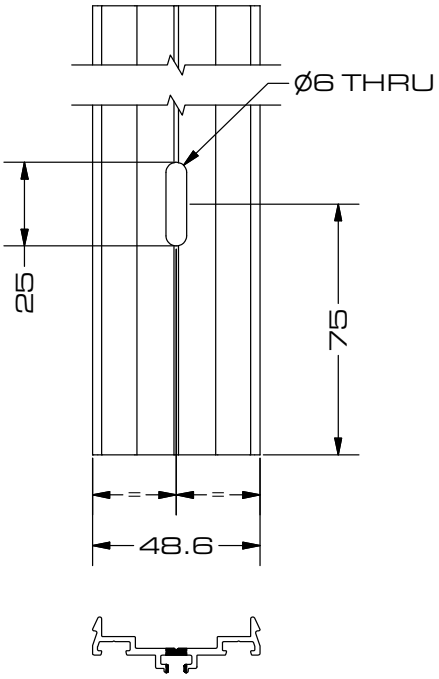


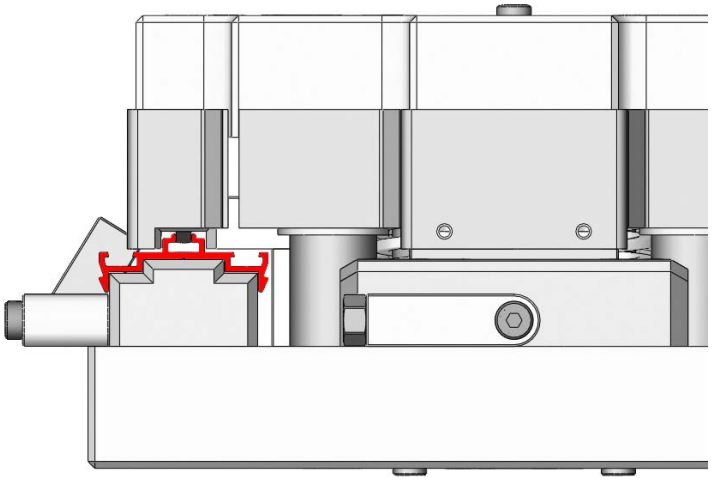
P-52-605



NB: Preparation can not be preformed using press tool A-KM-4614, all facetted machining details to be done using CNC or notching saws.

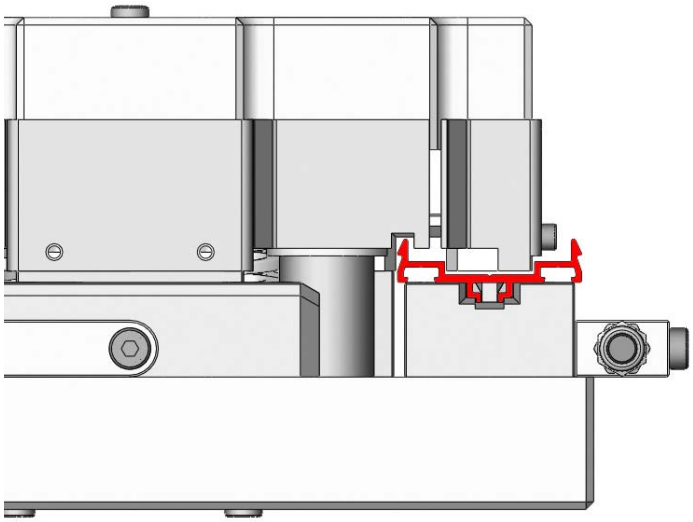
Pressure Plate Expansion Preparation



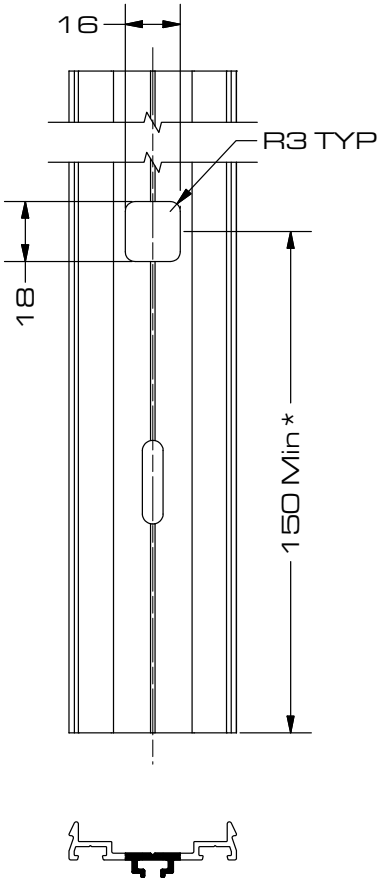


A-KM-4614
Station 3

Pressure Plate Drainage Deflector Preparation



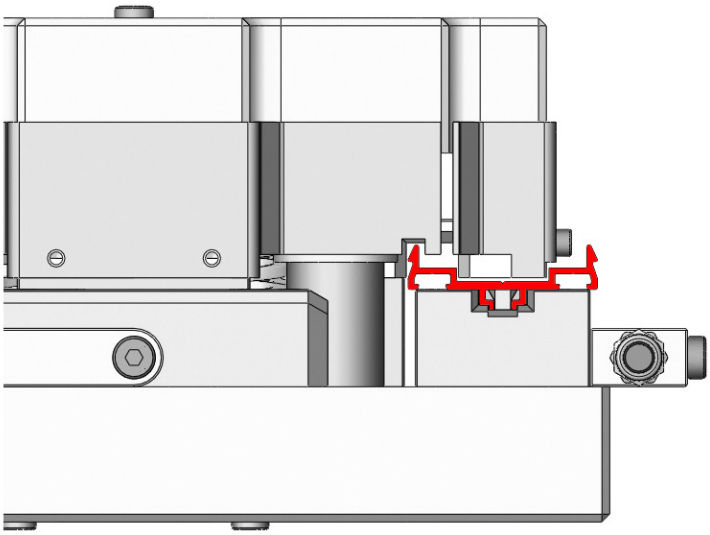
A-KM-4614
Station 4



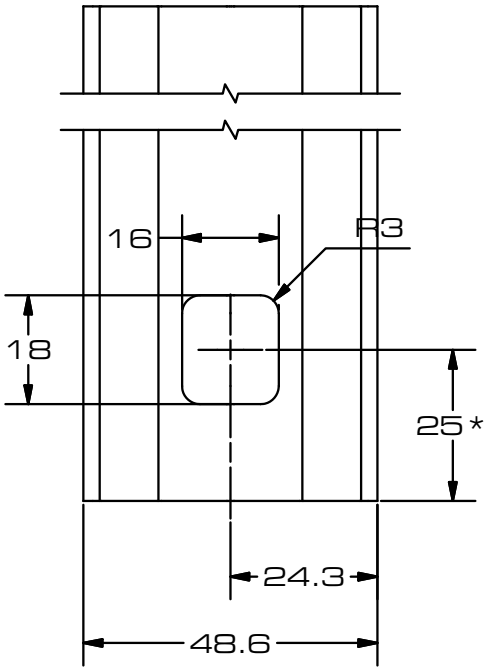
* Project specific dimension

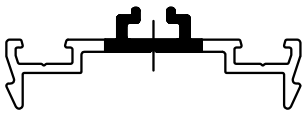
P-52-600

(Level 4 Drainage Cont.)



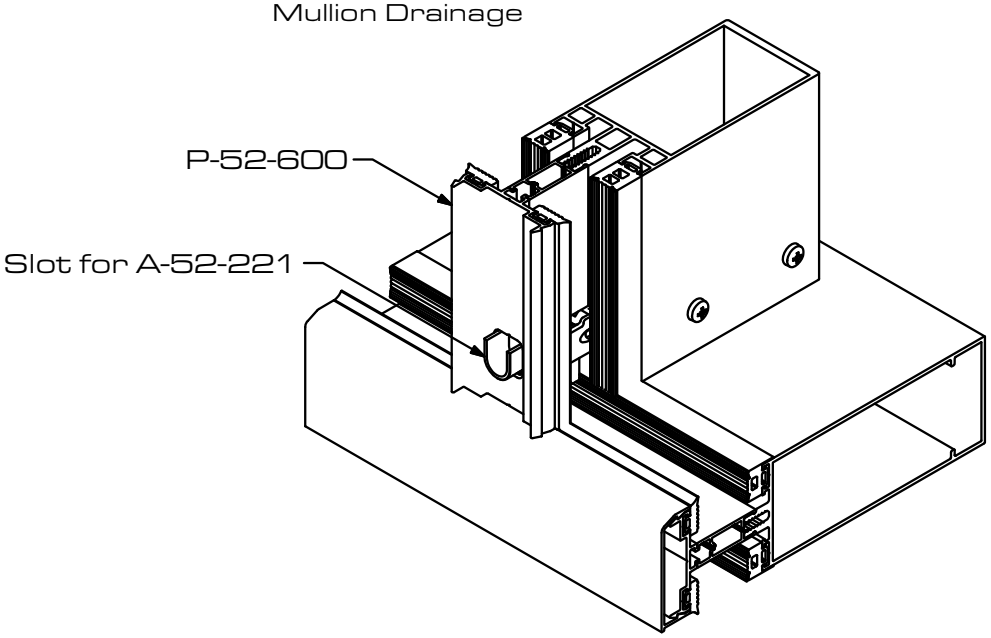
A-KM-4614
Station 4





Level 4

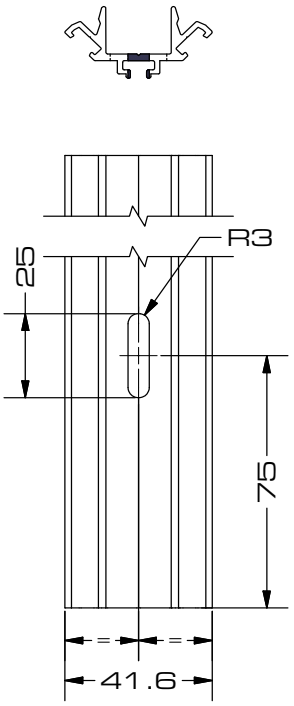
Mullion Drainage



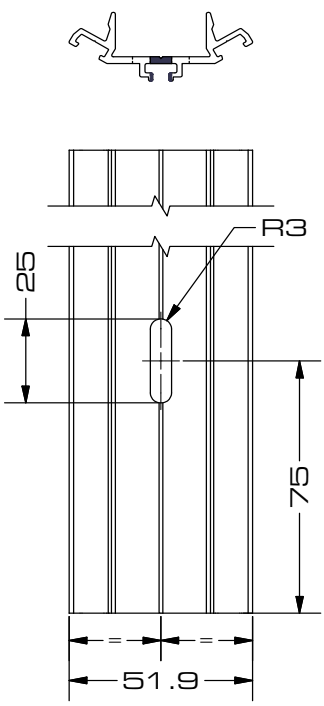
Pressure Plate Expansion Preparation

P-52-602/603/604

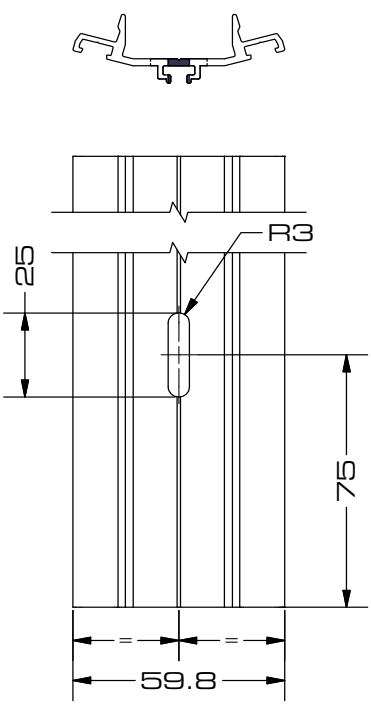
P-52-602



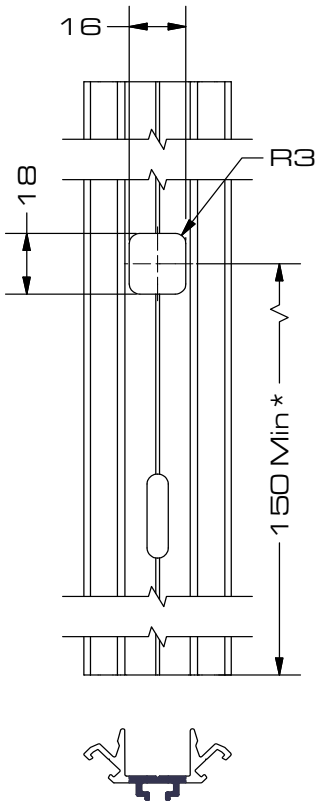
P-52-603

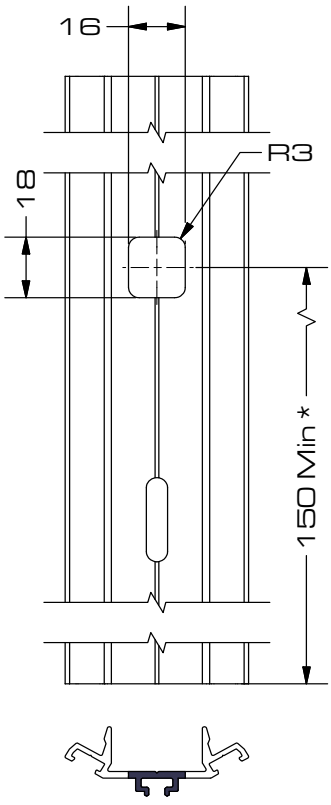


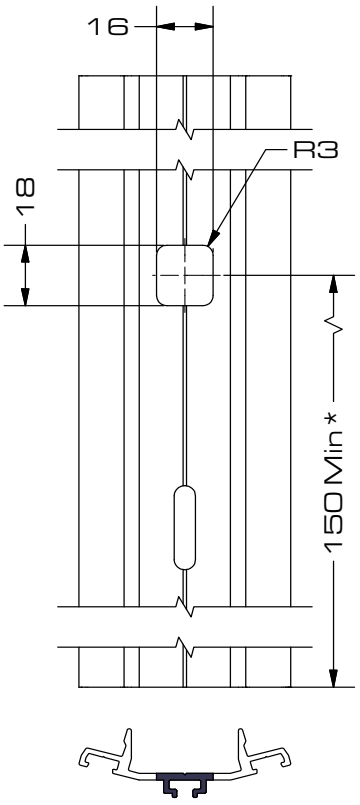
P-52-604



NB: Preparation can not be preformed using press tool A-KM-4614, all facetted machining details to be done using CNC or notching saws.



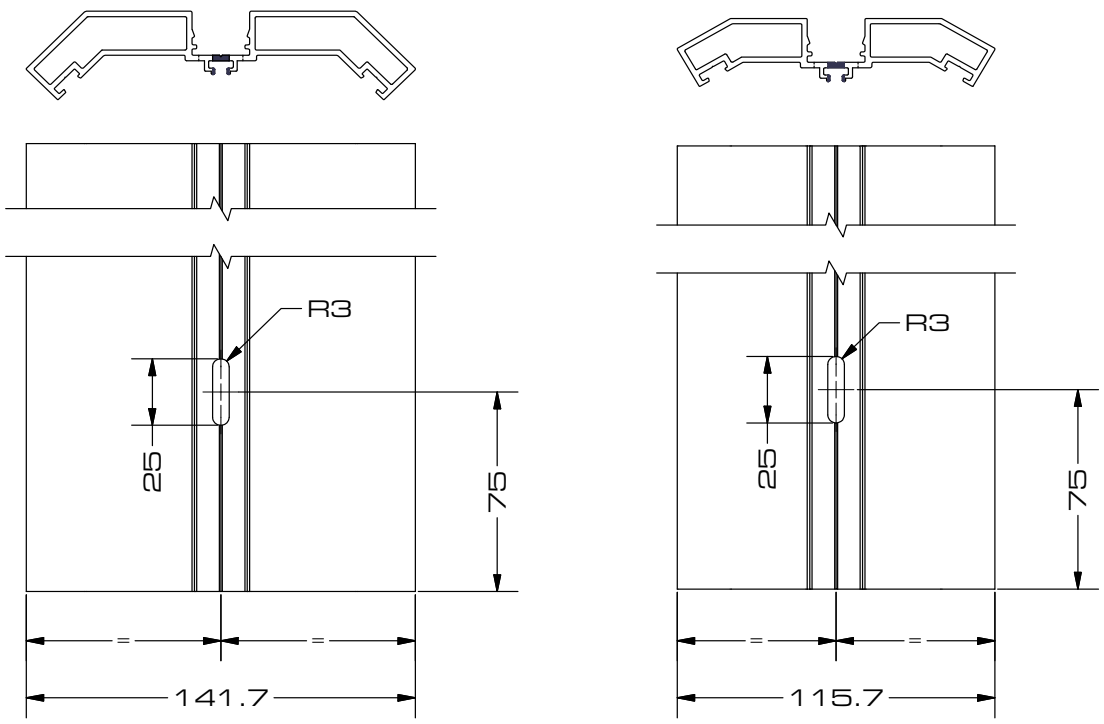




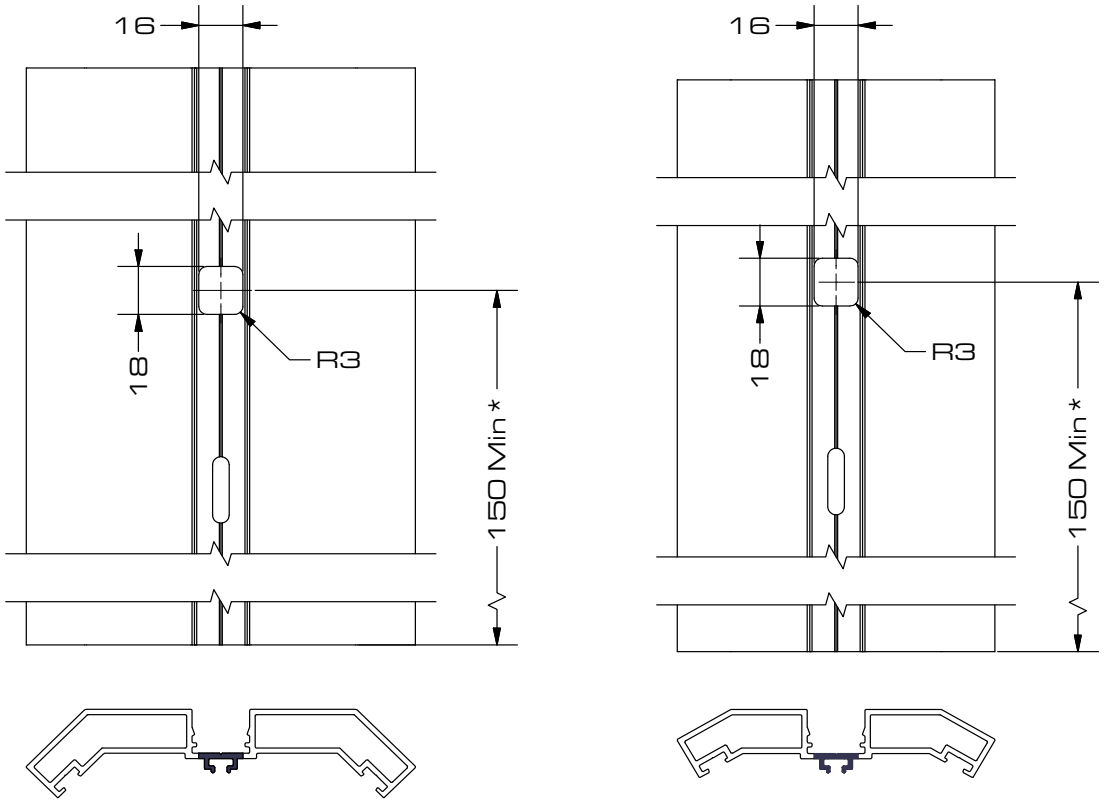
* Project specific dimension

Pressure Plate Expansion Preparation

P-52-605 P-52-605/606 P-52-606



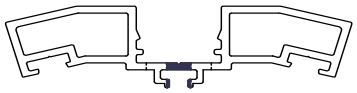
NB: Preparation can not be preformed using press tool A-KM-4614, all facetted machining details to be done using CNC or notching saws.

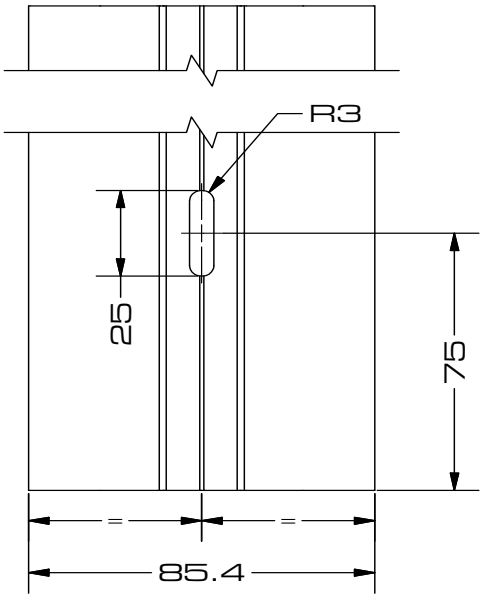


* Project specific dimension

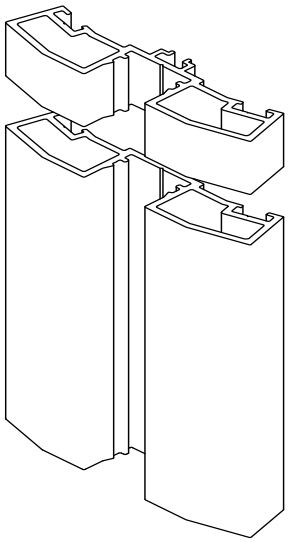
Pressure Plate Expansion Preparation - P-52-607

P-52-607

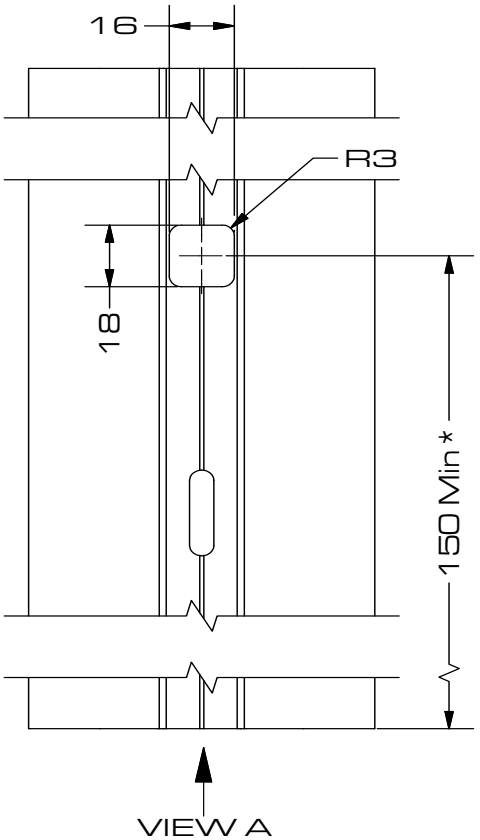




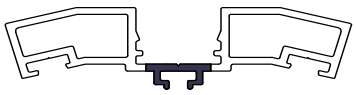
P-52-607

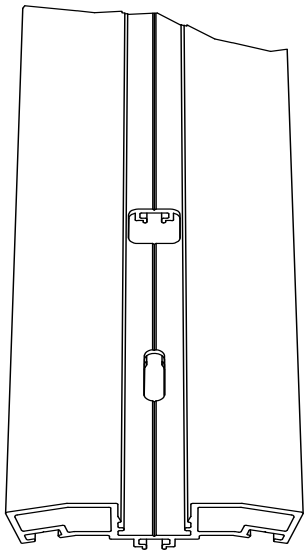


NB: Preparation can not be preformed using press tool A-KM-4614, all facetted machining details to be done using CNC or notching saws.



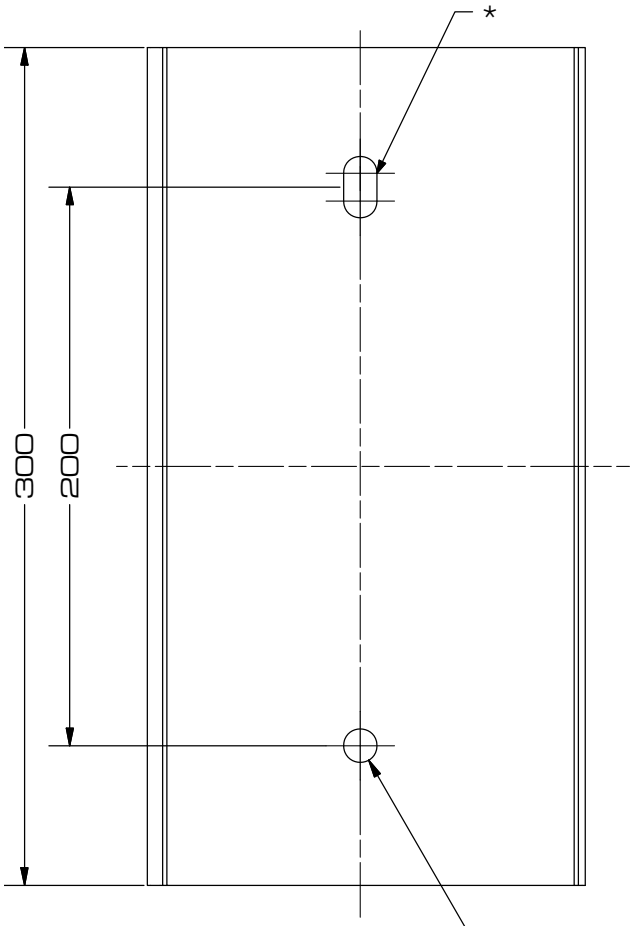
VIEW A

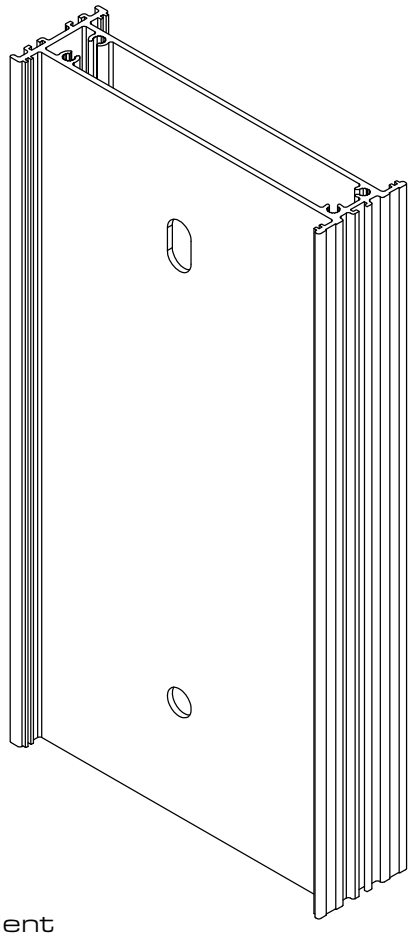


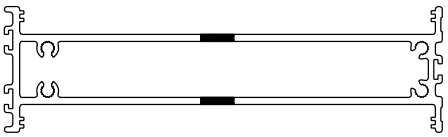


* Project specific dimension

Splice Joint Preparation



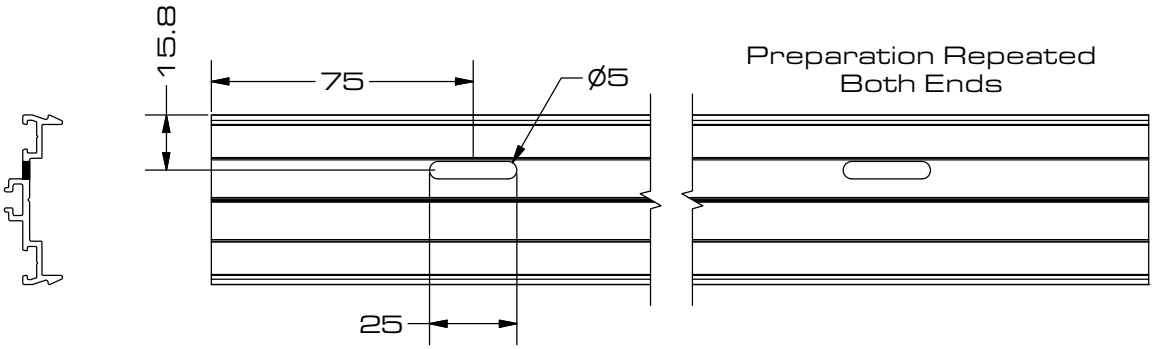


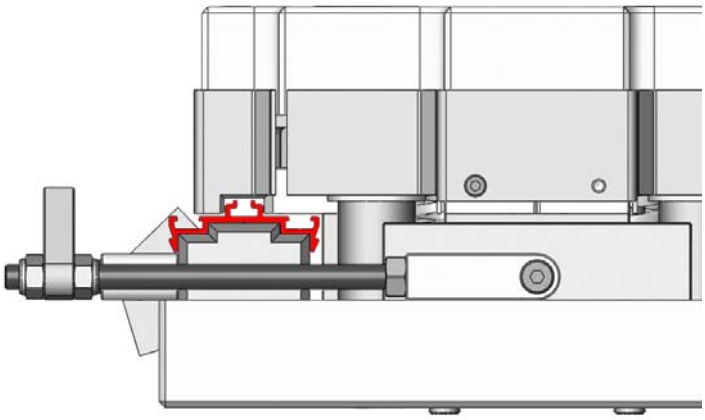


Preparation applicable for
all reinforcing sections
(P-52-500 to P-52-550)

* Slot at the Top if pinning at bottom
Slot the bottom prep if pinned at head

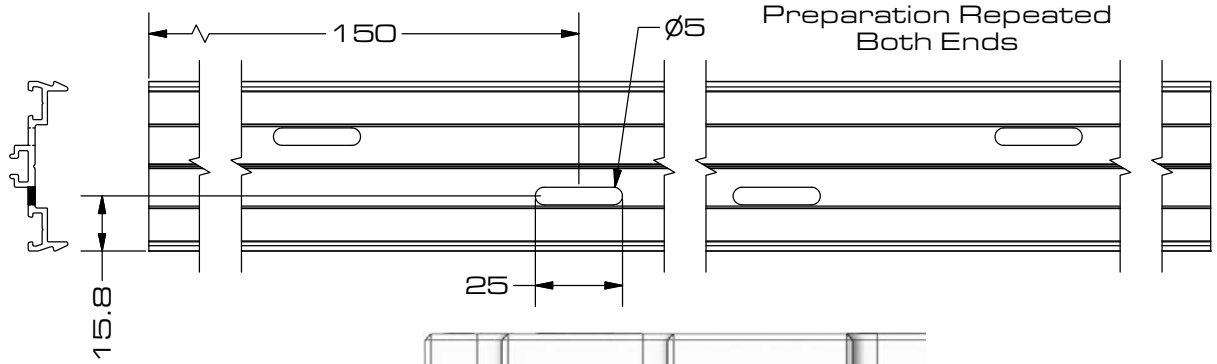
Pressure Plate Drainage Preparation

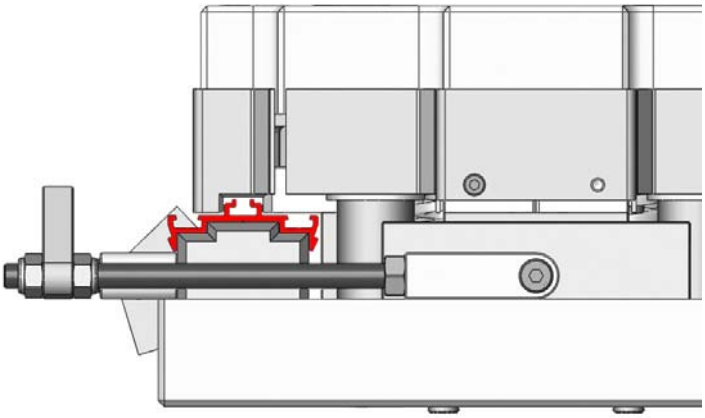




A-KM-4614
Station 1

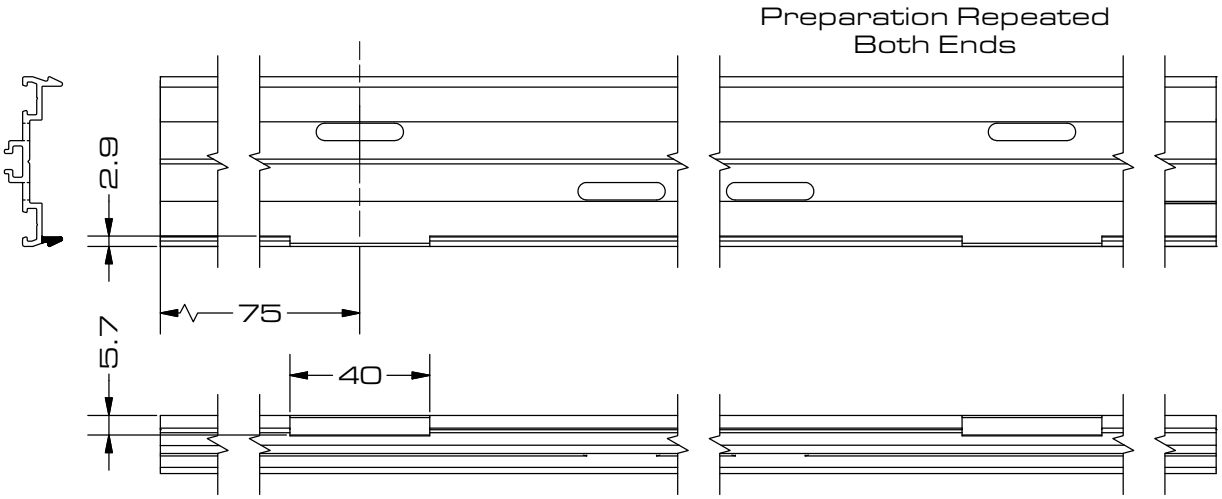
Pressure Plate Ventilation Preparation

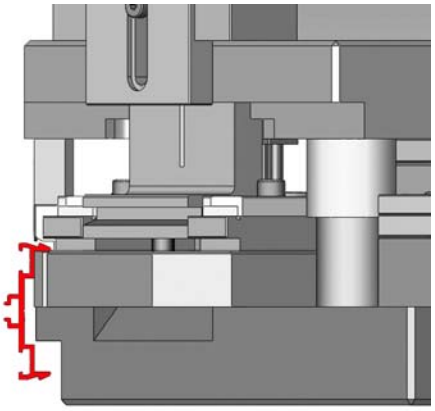




A-KM-4614
Station 1

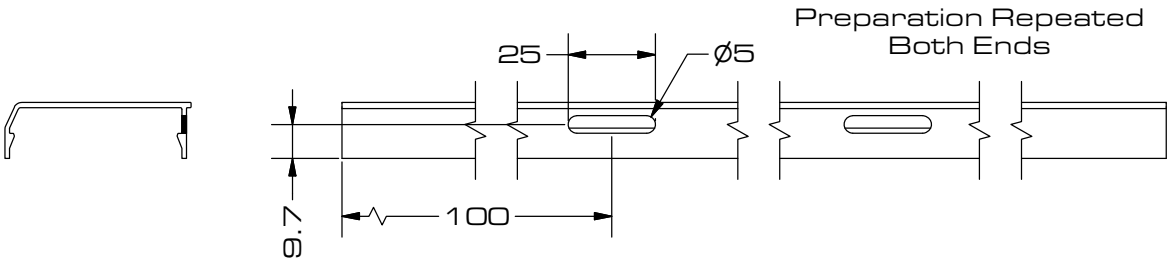
Pressure Plate Drainage Crop Preparation



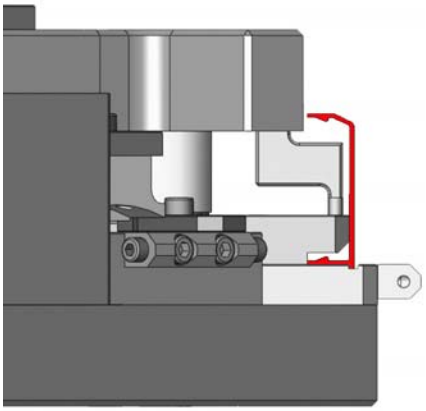


A-KM-4611
Station 5

Transom Capping Drainage Crop Preparation

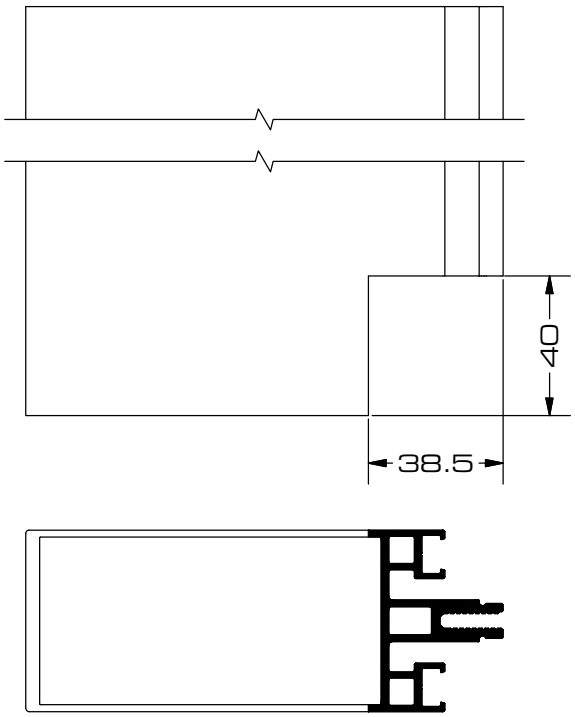


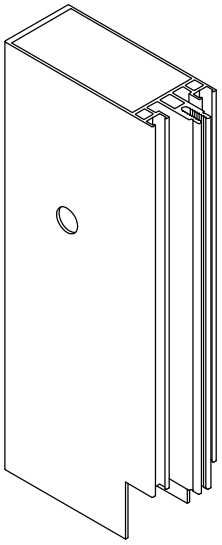
Note: Preparation applicable to all transom capping profiles
(P-52-400 to P-52-408)



A-KM-4611
Station 6

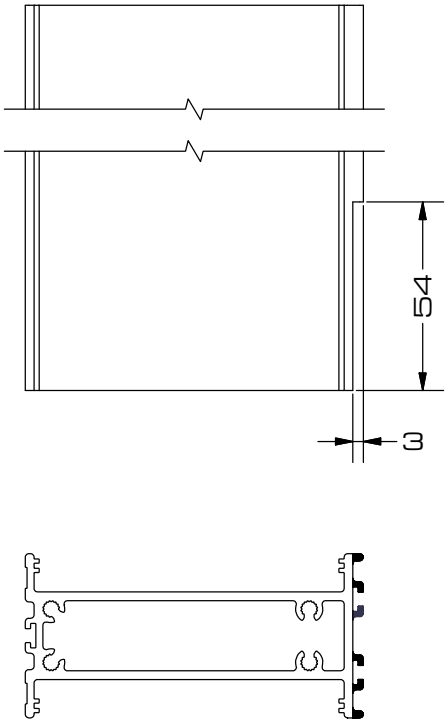
Mullion Cill Preparation

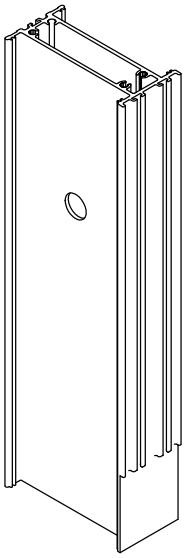




Preparation applicable
for all mullion sections
(P-52-300 to P-52-350)

Mullion Reinforcer Cill Preparation

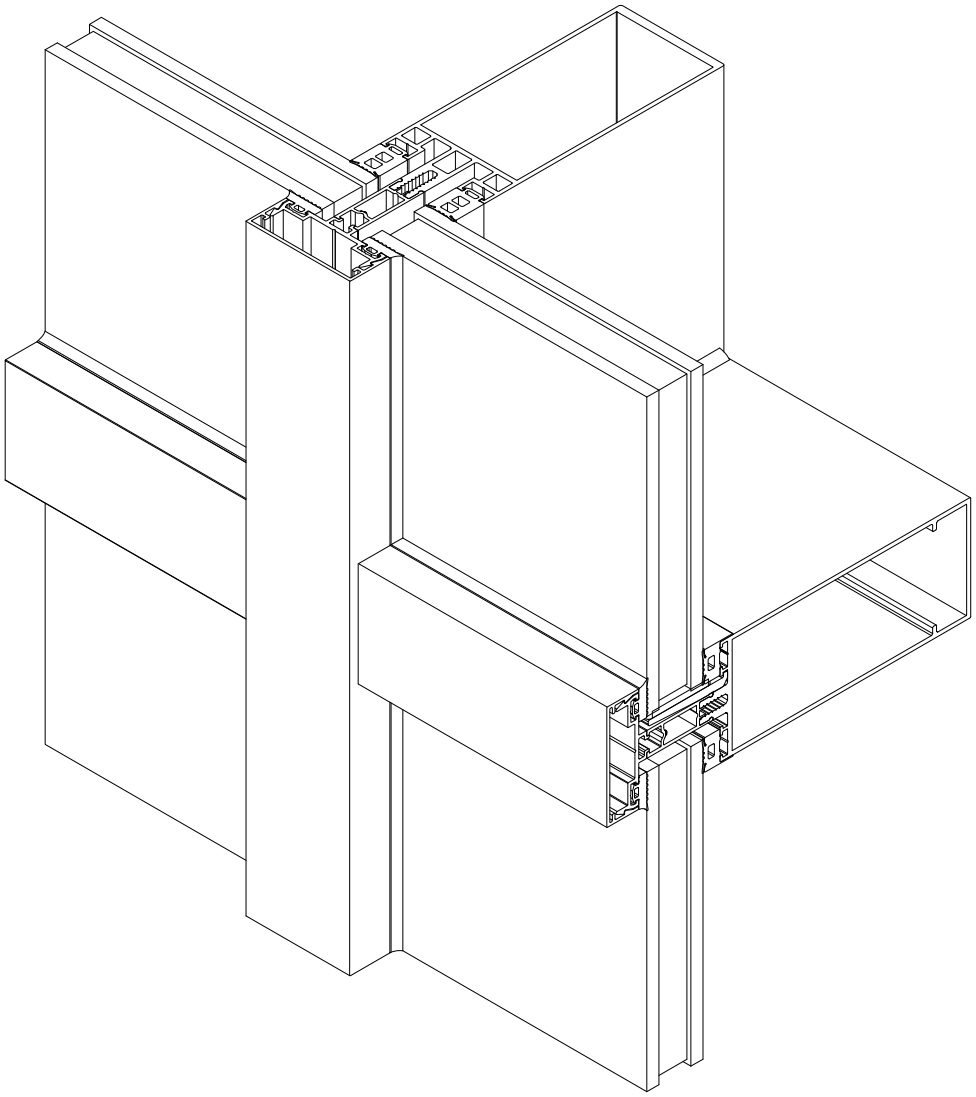




Preparation applicable for
all reinforcing sections
(P-52-500 to P-52-550)

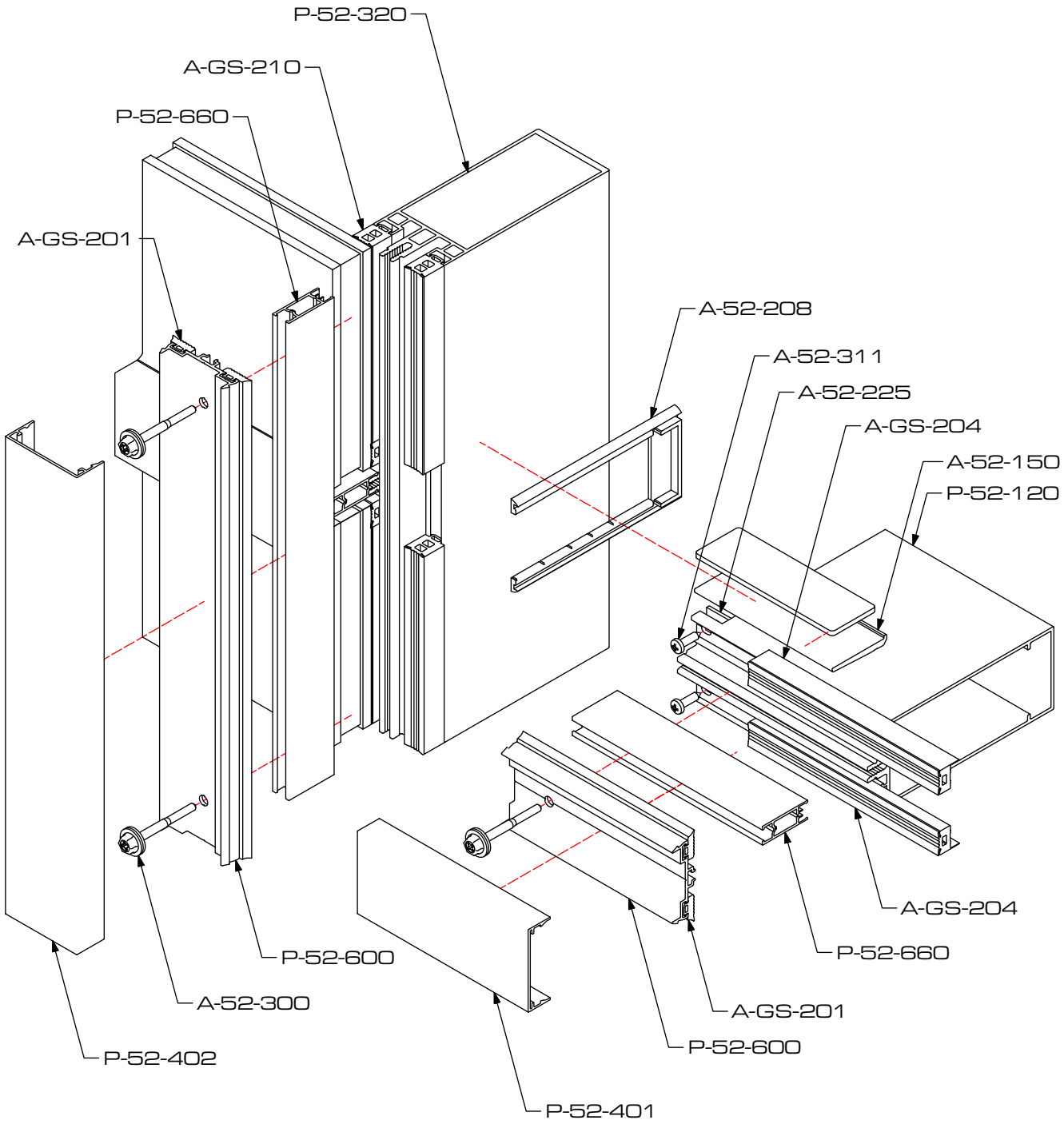
INTENTIONALLY LEFT BLANK

Construction
Werktekningen
Construction



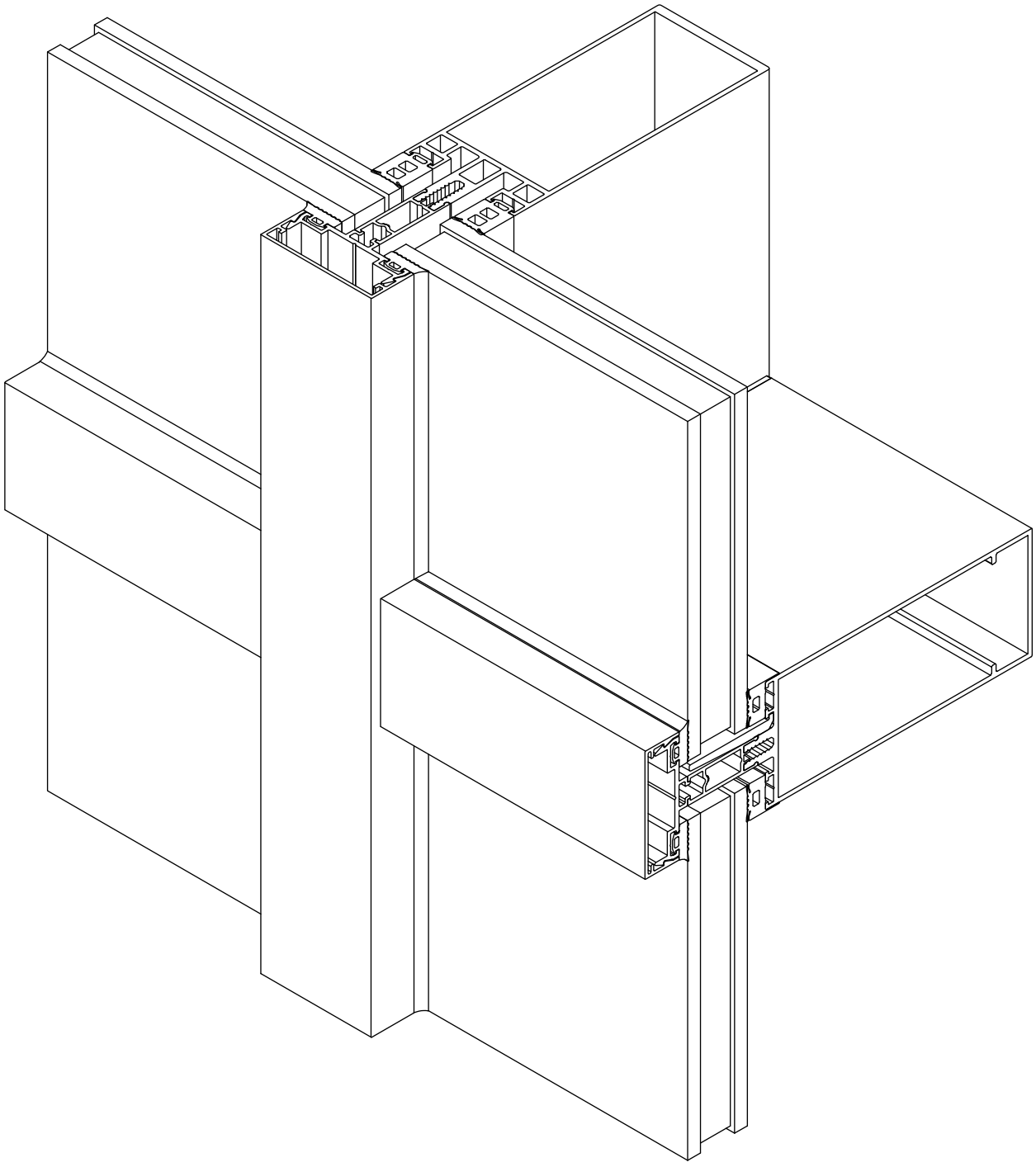
Screw Fixing

Level 3 Mullion to Level 1 Transom



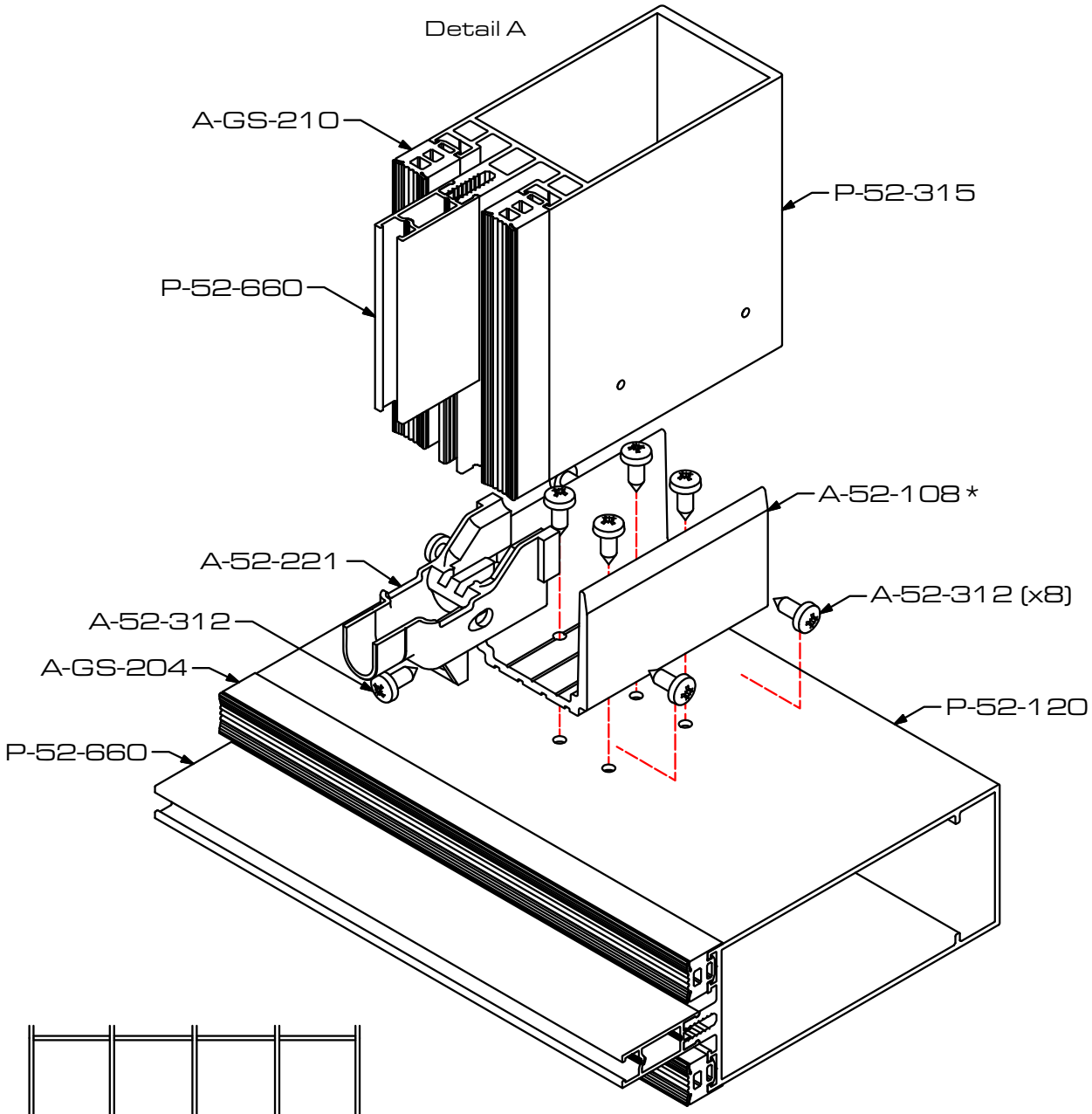
Screw Fixing

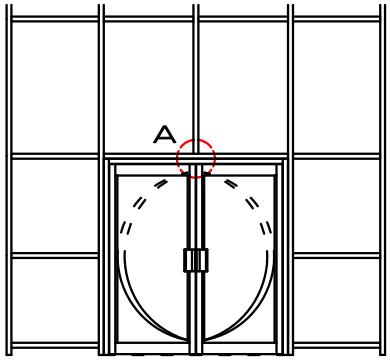
Level 3 Mullion to Level 1 Transom



Level 4 Drainage

Level 3 Mullion to Level 1 Transom



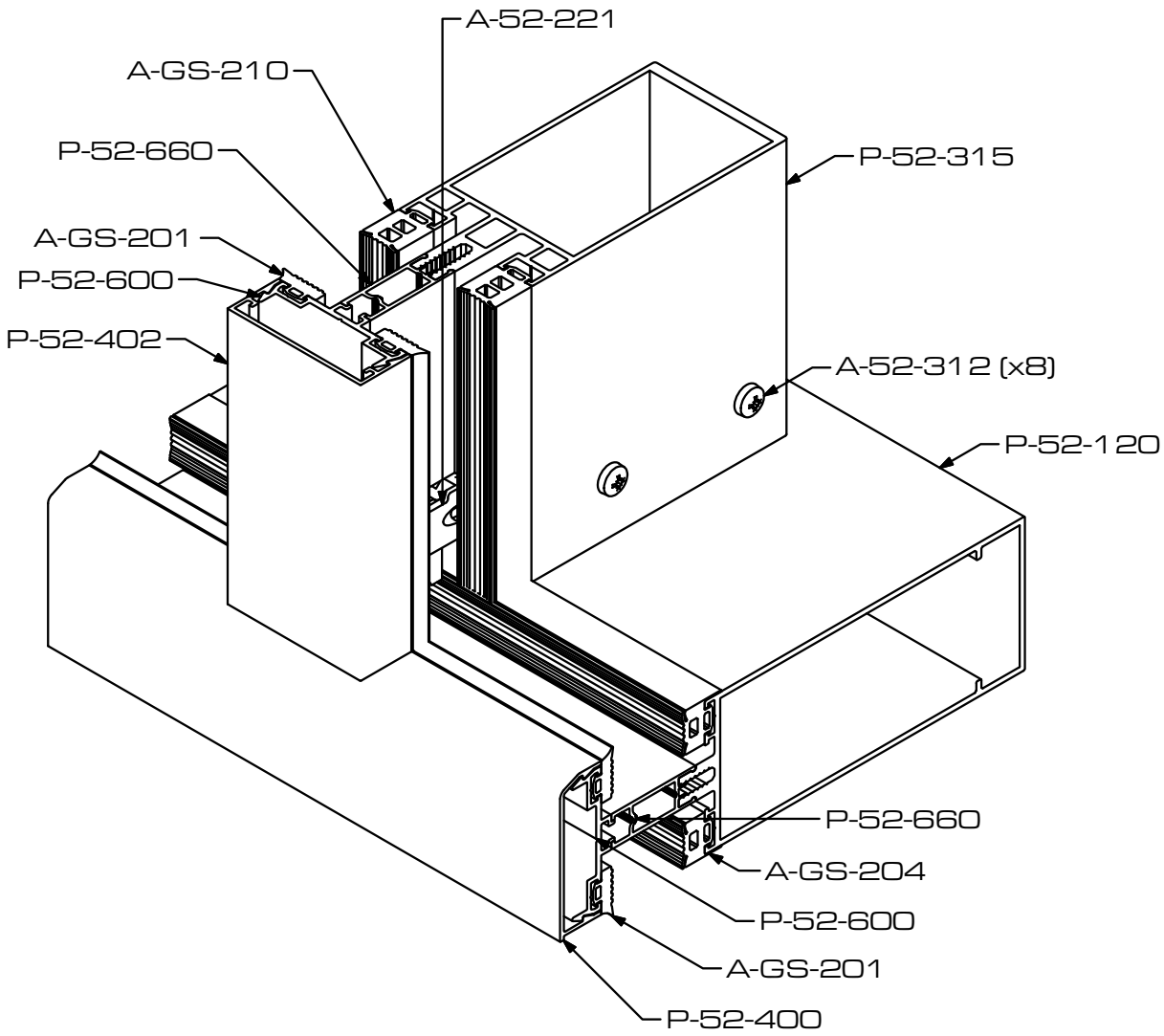


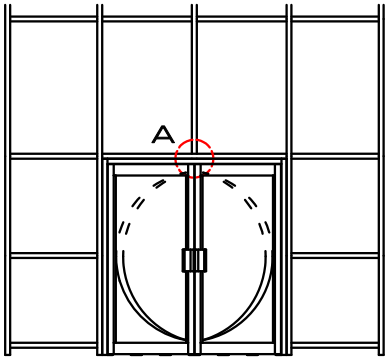
* See cut sizes in section 2

Level 4 Drainage

Level 3 Mullion to Level 1 Transom

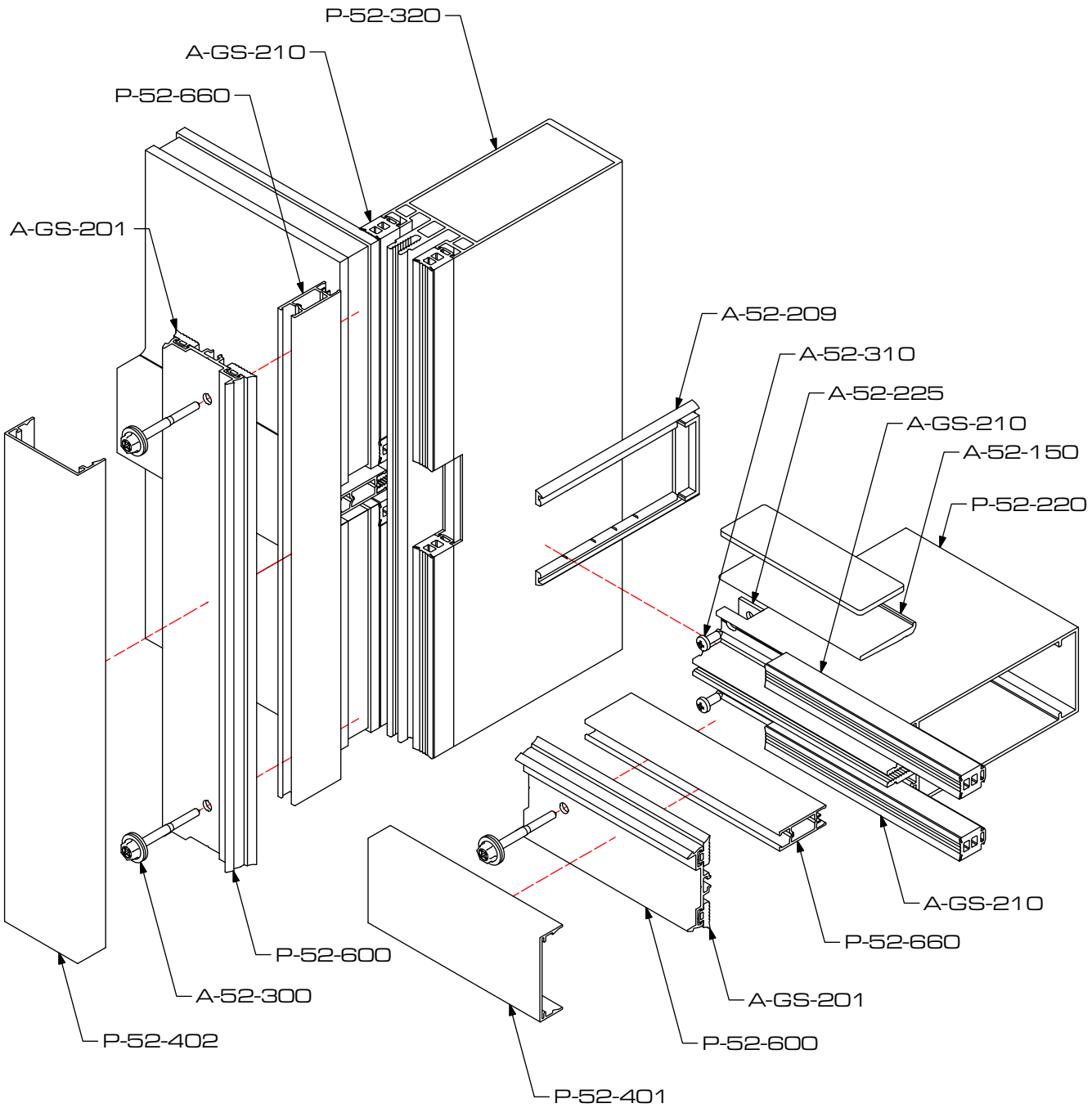
Detail A





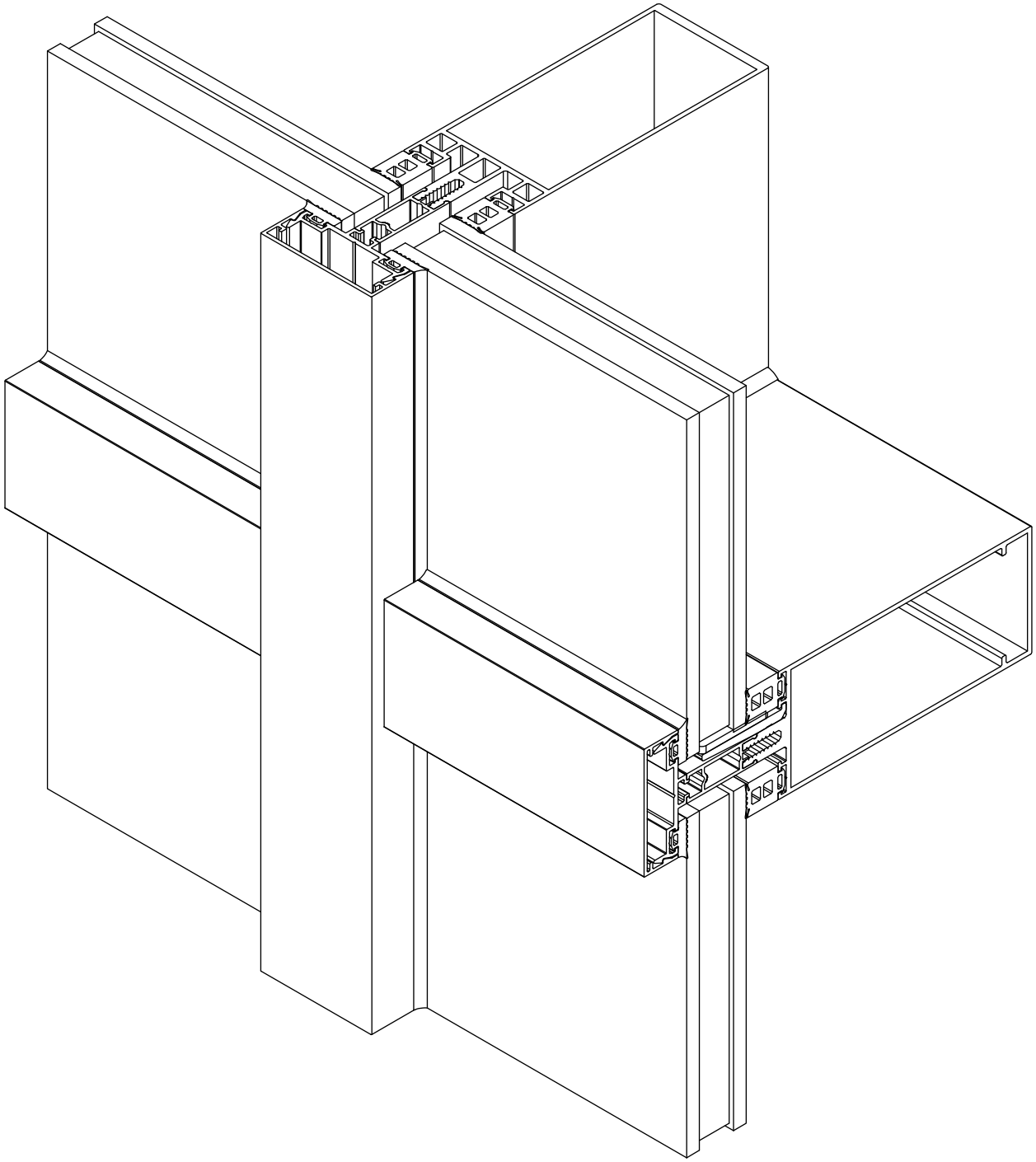
Screw Fixing

Level 3 Mullion to Level 2 Transom



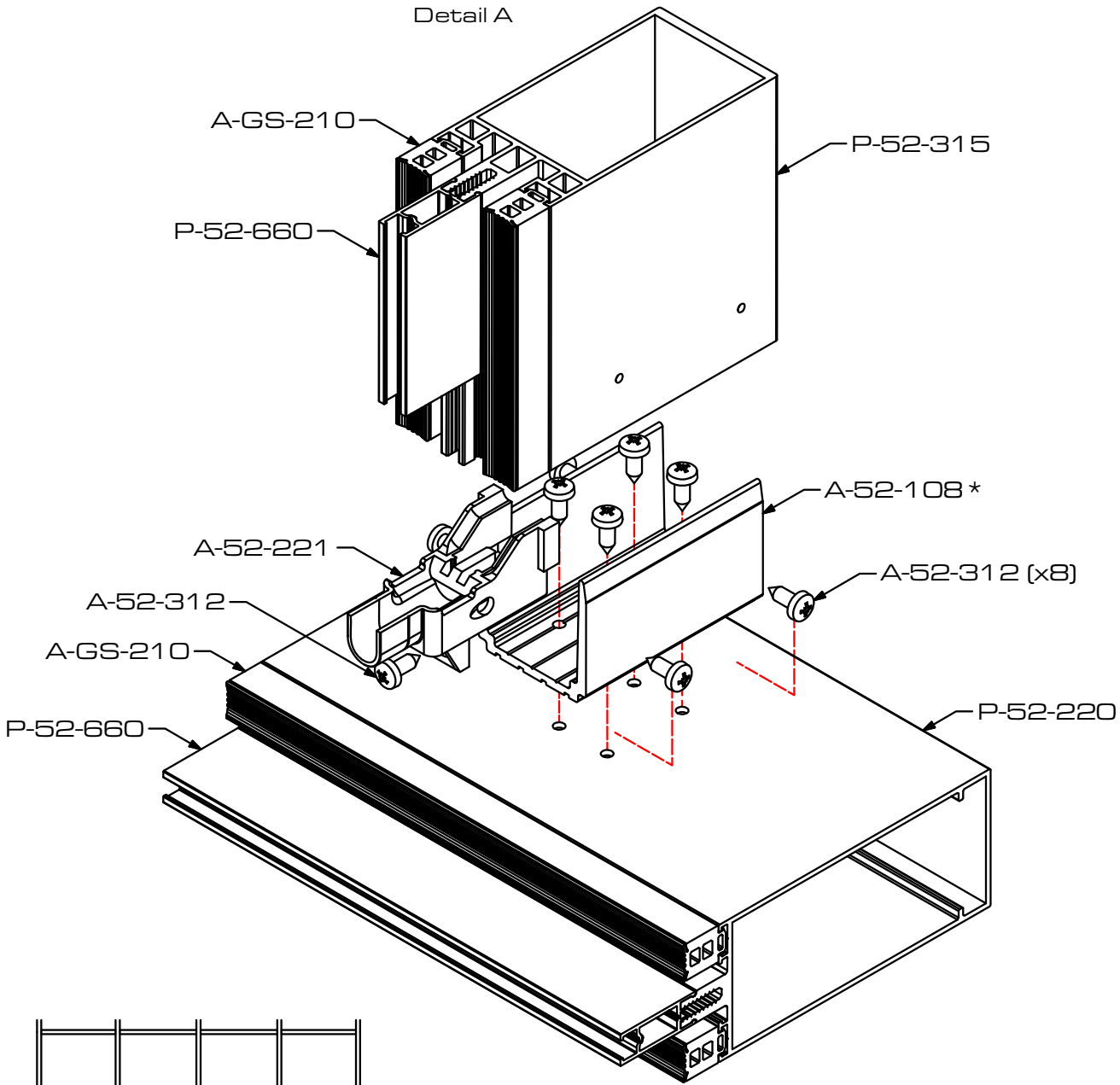
Screw Fixing

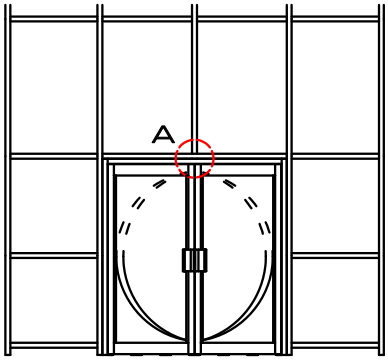
Level 3 Mullion to Level 2 Transom



Level 4 Drainage

Level 3 Mullion to Level 2 Transom

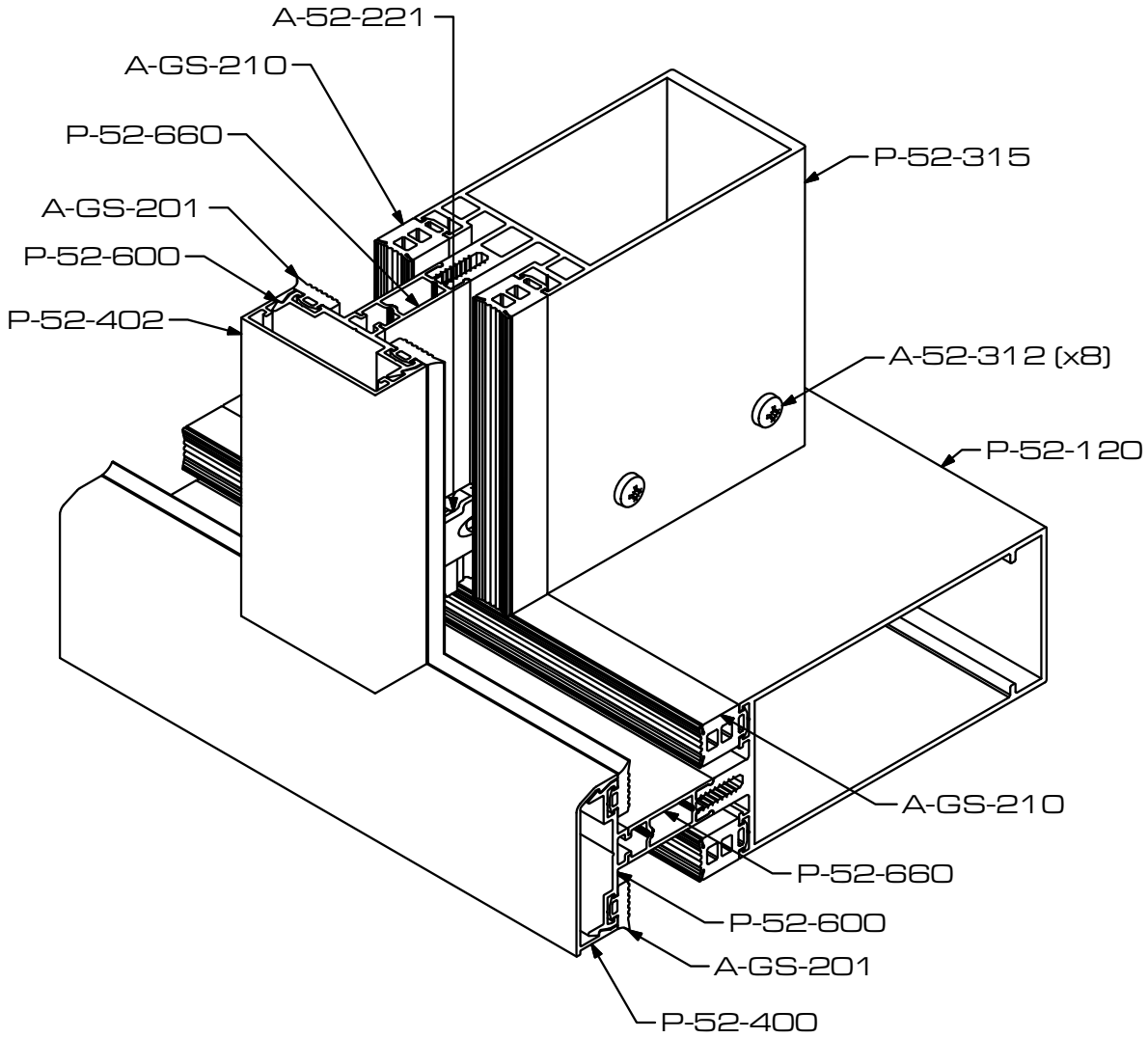


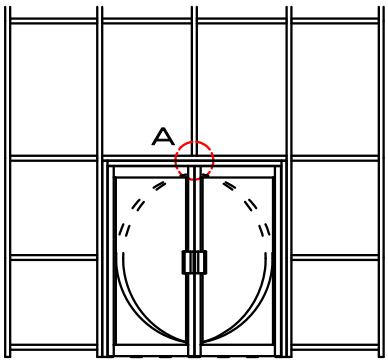


* See cut sizes in section 2

Level 4 Drainage

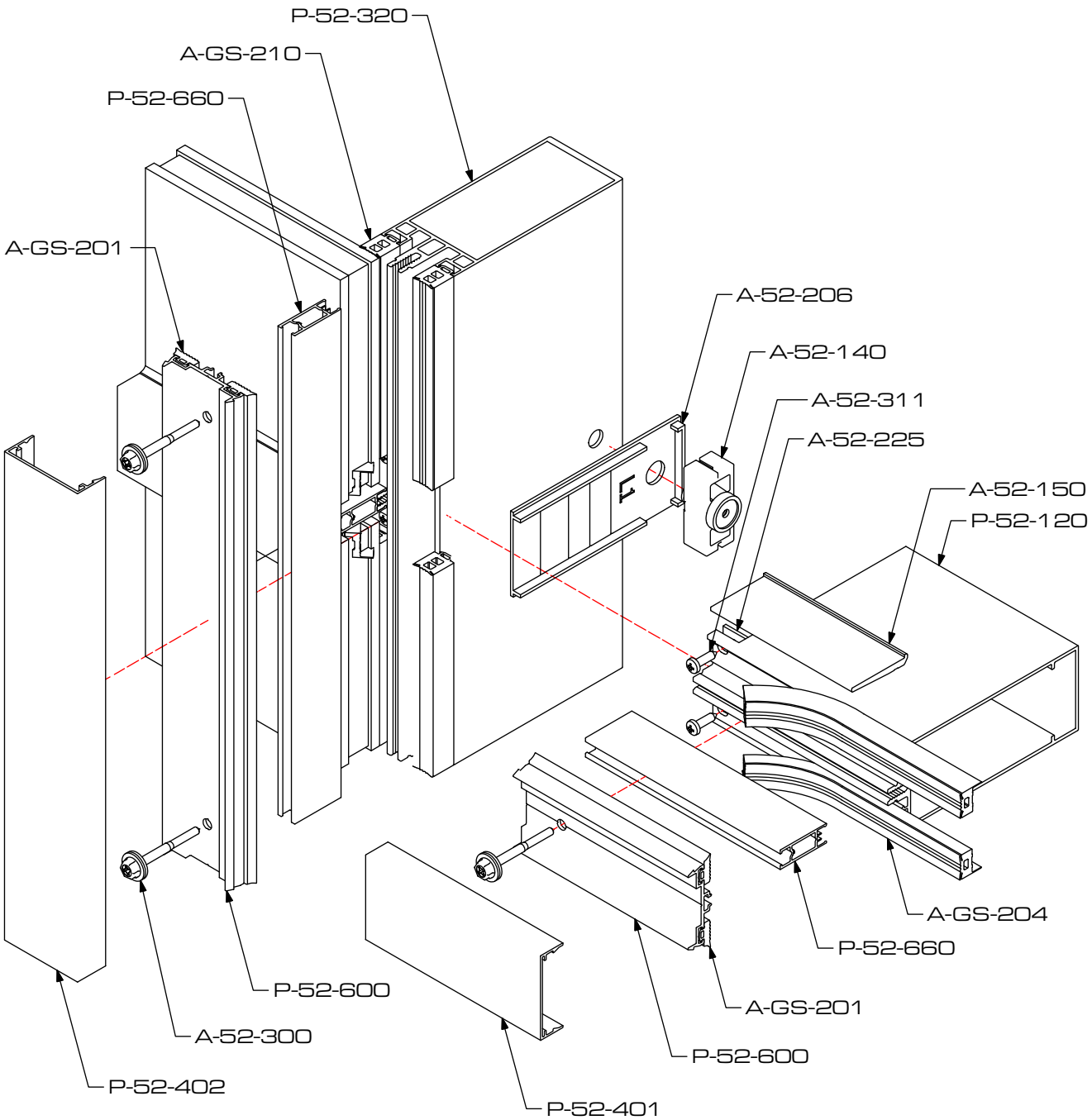
Level 3 Mullion to Level 2 Transom





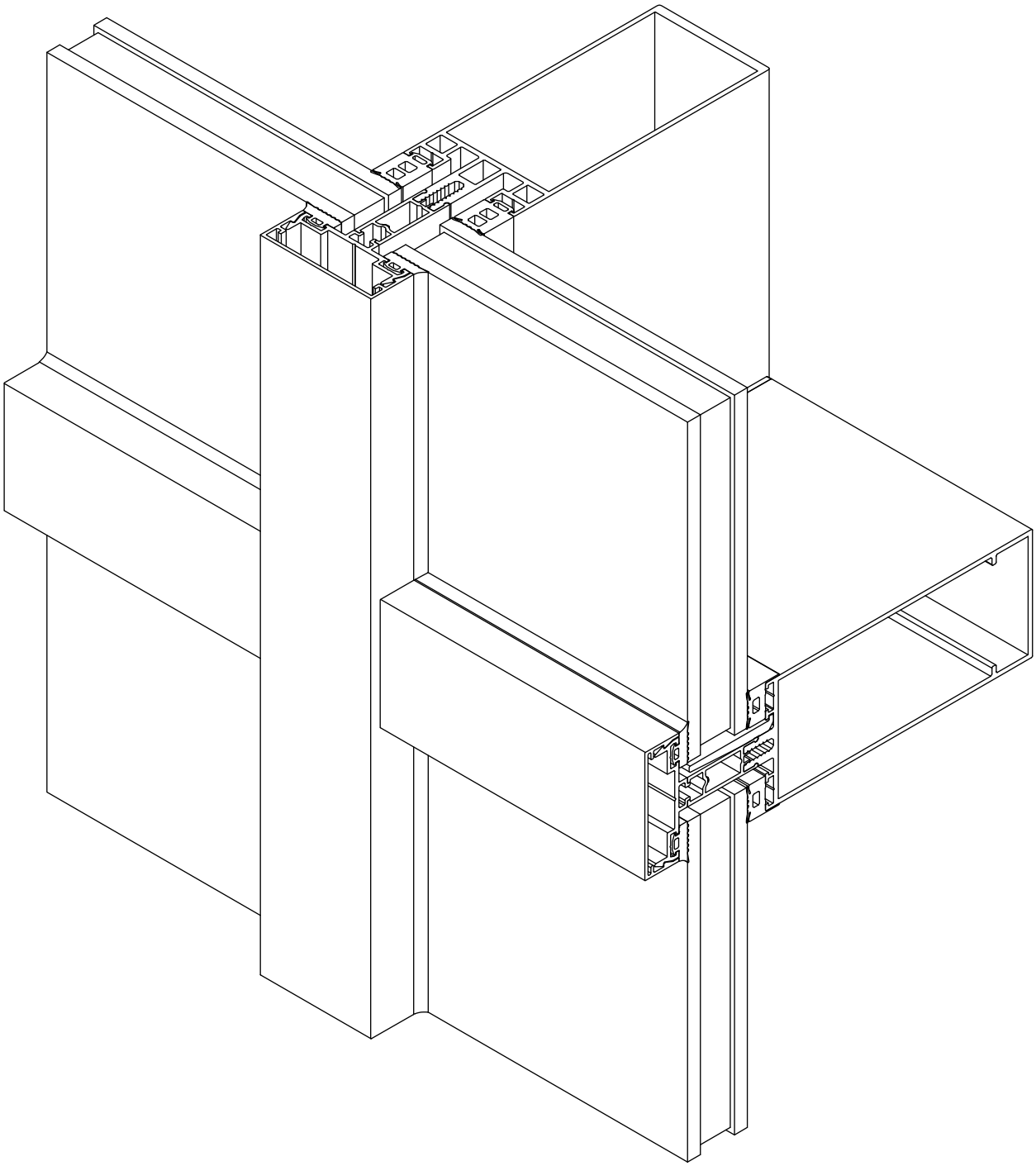
Sprung Cleat Fixing

Level 3 Mullion to Level 1 Transom



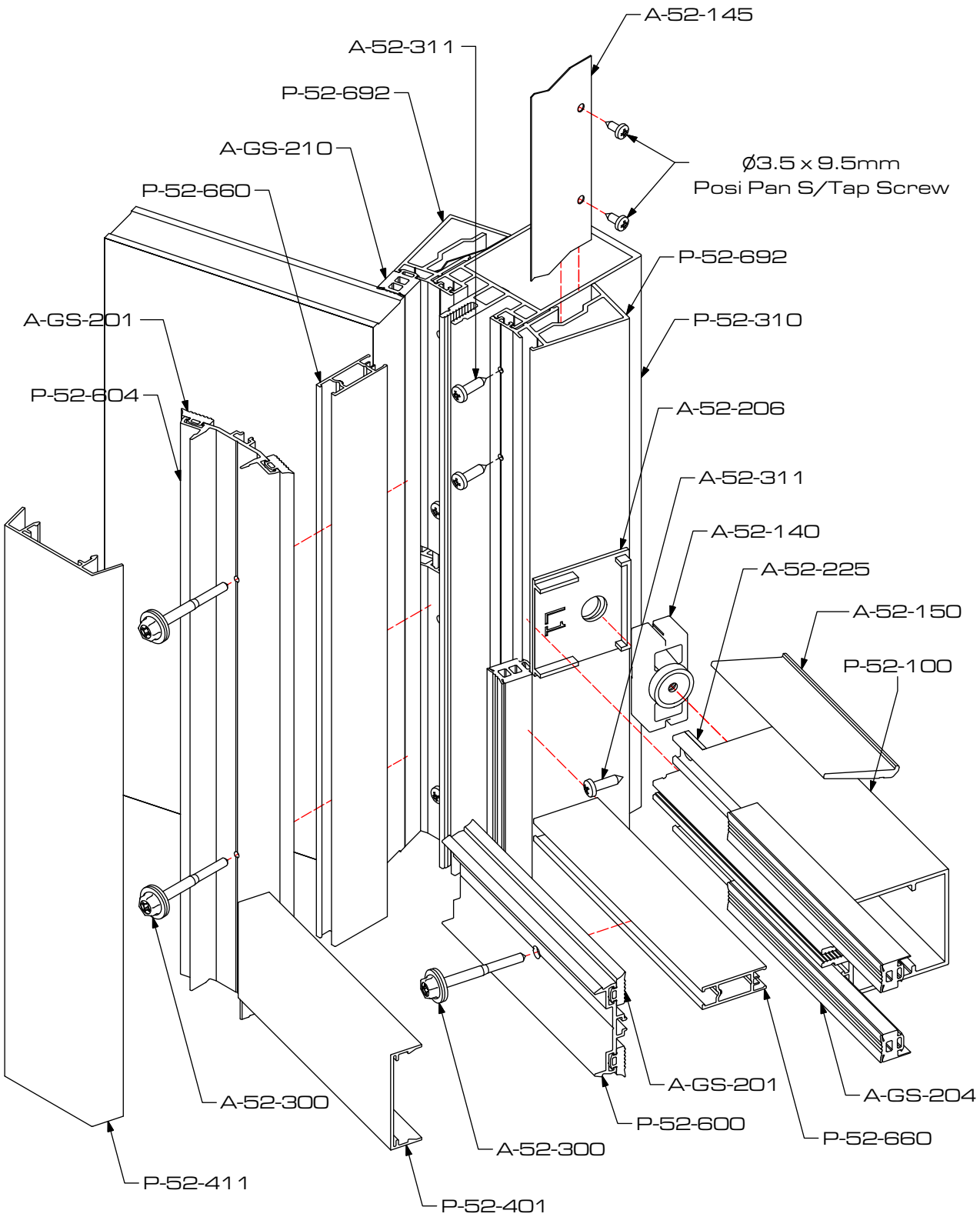
Sprung Cleat Fixing

Level 3 Mullion to Level 1 Transom



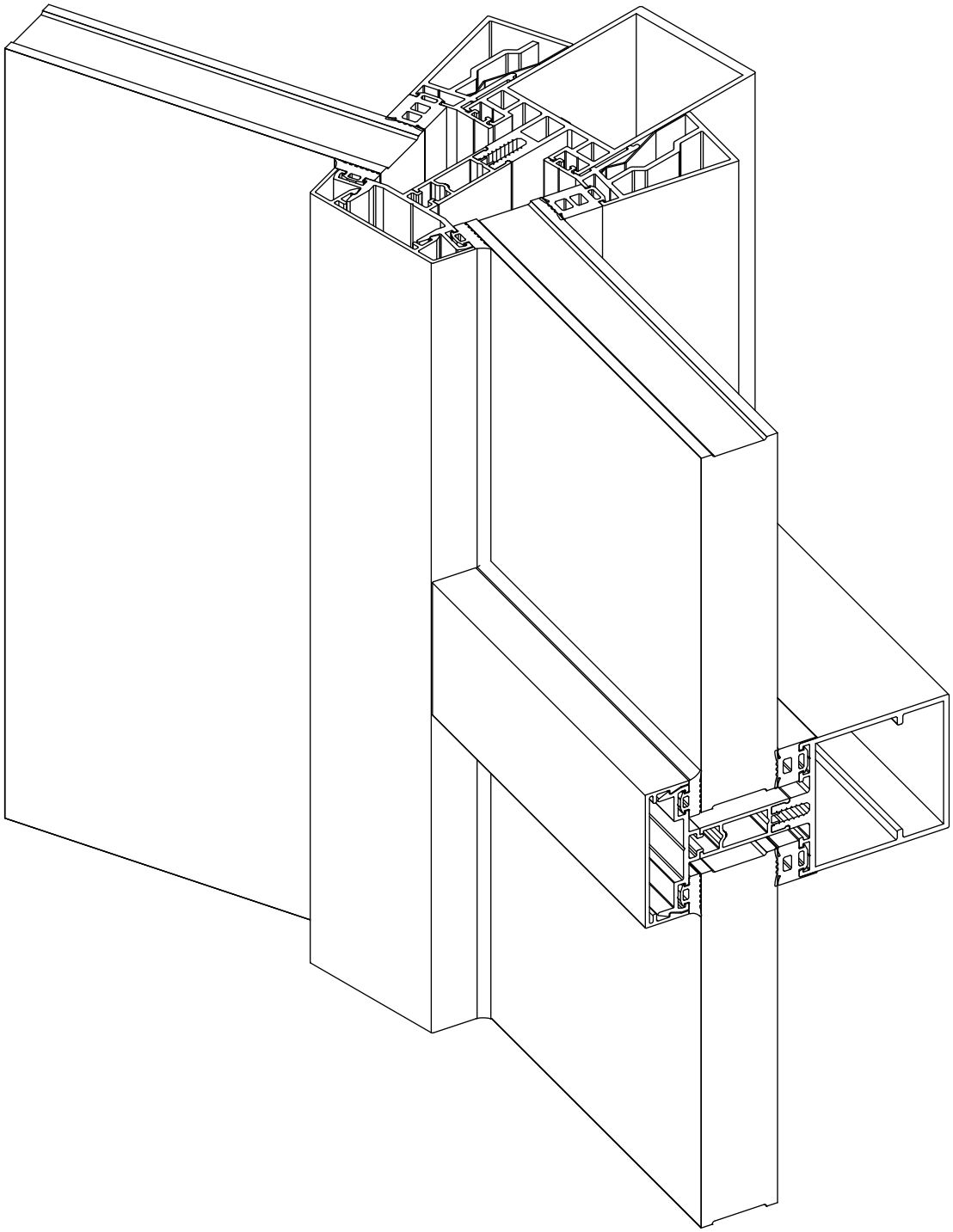
Sprung Cleat Fixing

Facetted 15 - 45 Degrees Level 3 to Level 1 Transom



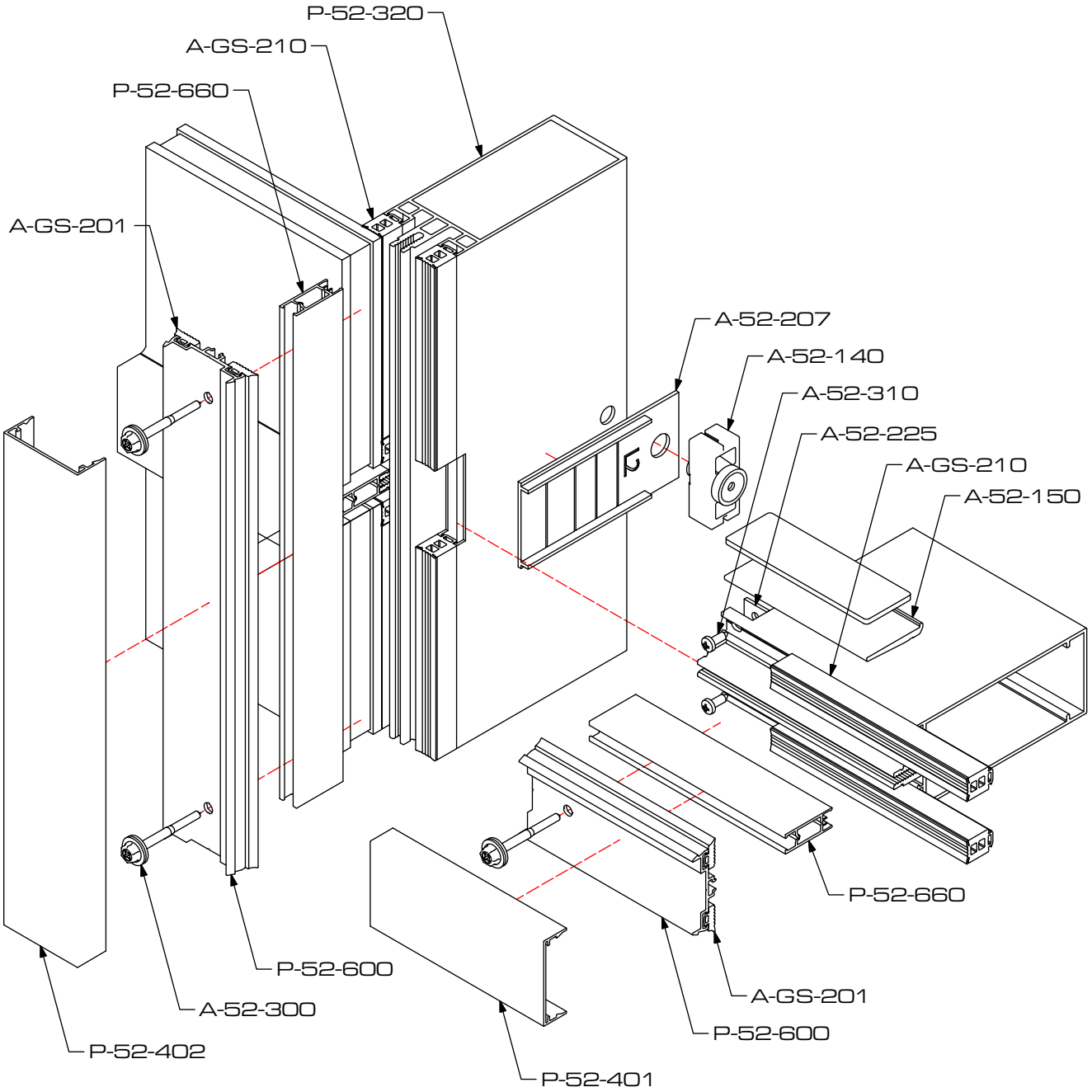
Sprung Cleat Fixing

Facetted 15 - 45 Degrees Level 3 to Level 1 Transom



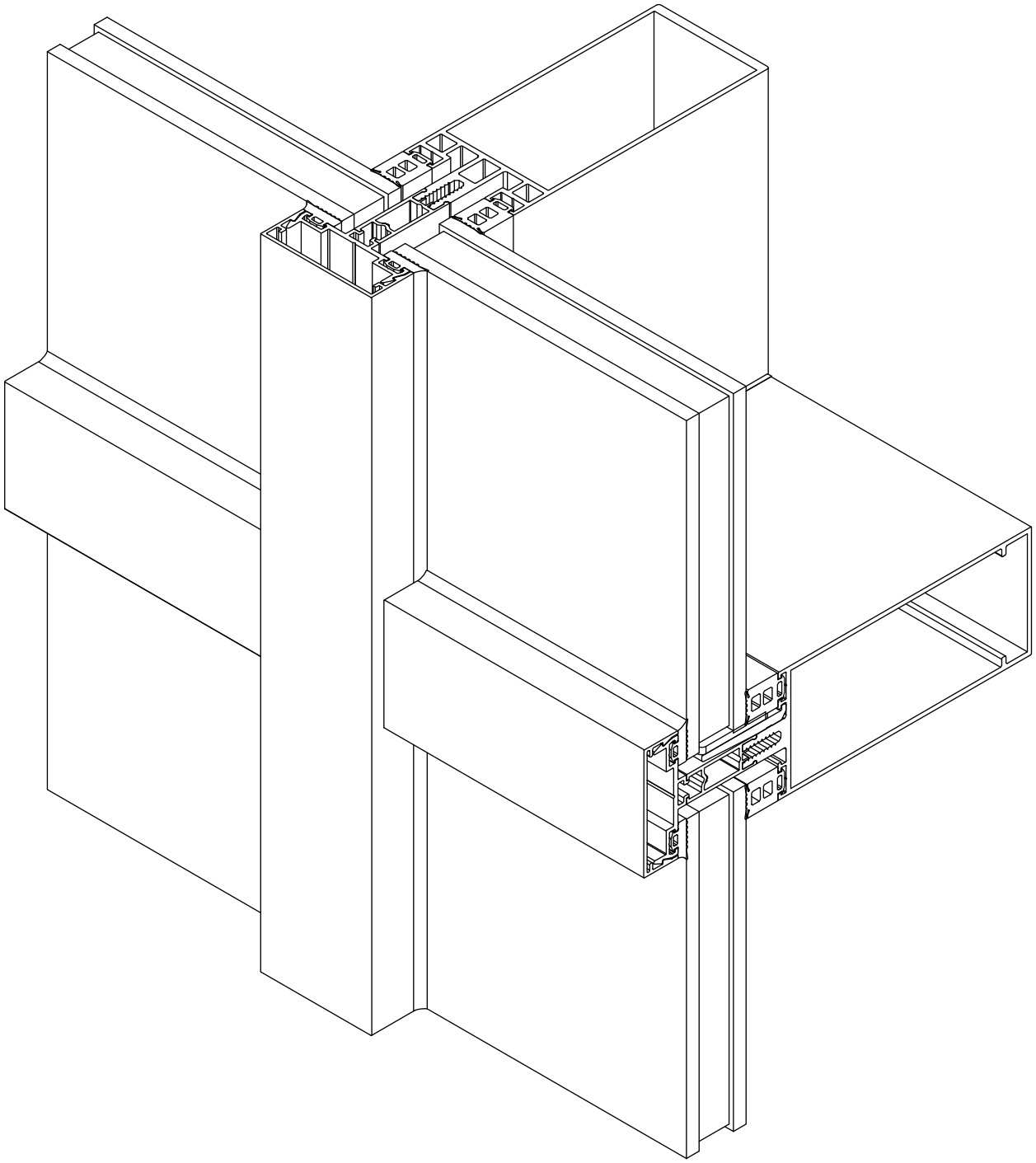
Sprung Cleat Fixing

Level 3 Mullion to Level 2 Transom



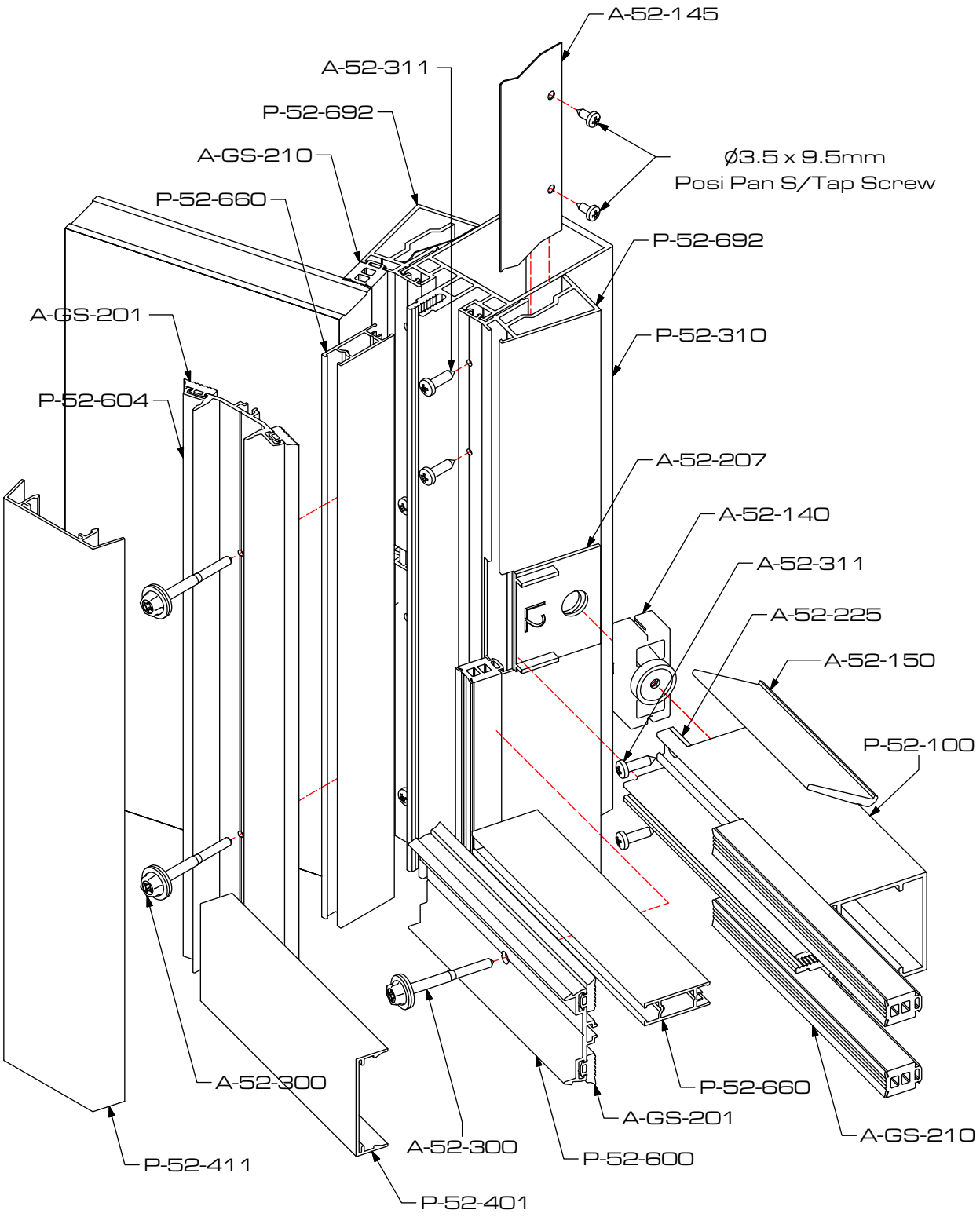
Sprung Cleat Fixing

Level 3 Mullion to Level 2 Transom



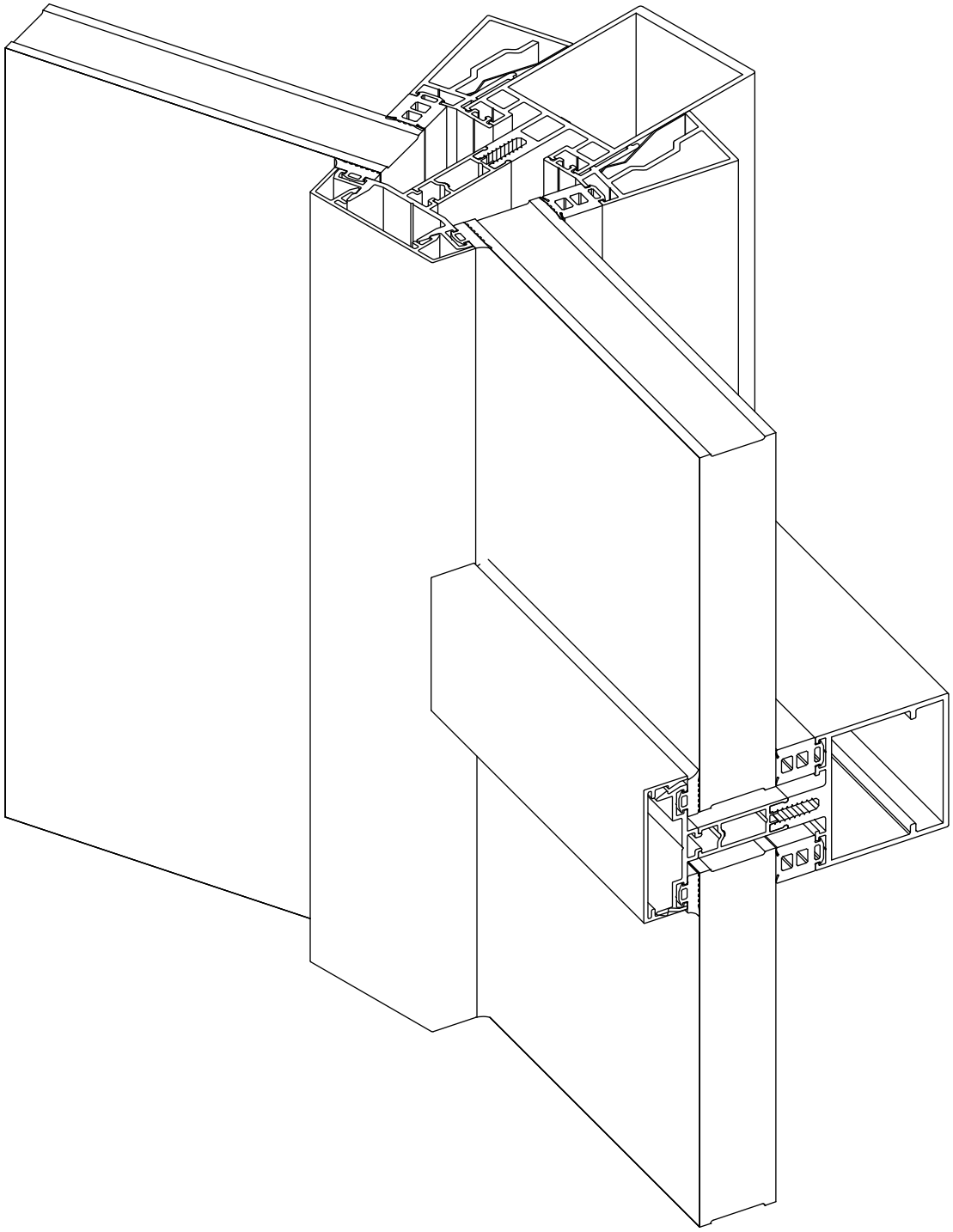
Sprung Cleat Fixing

Facetted 15 - 45 degrees Level 3 Mullion to Level 2 Transom



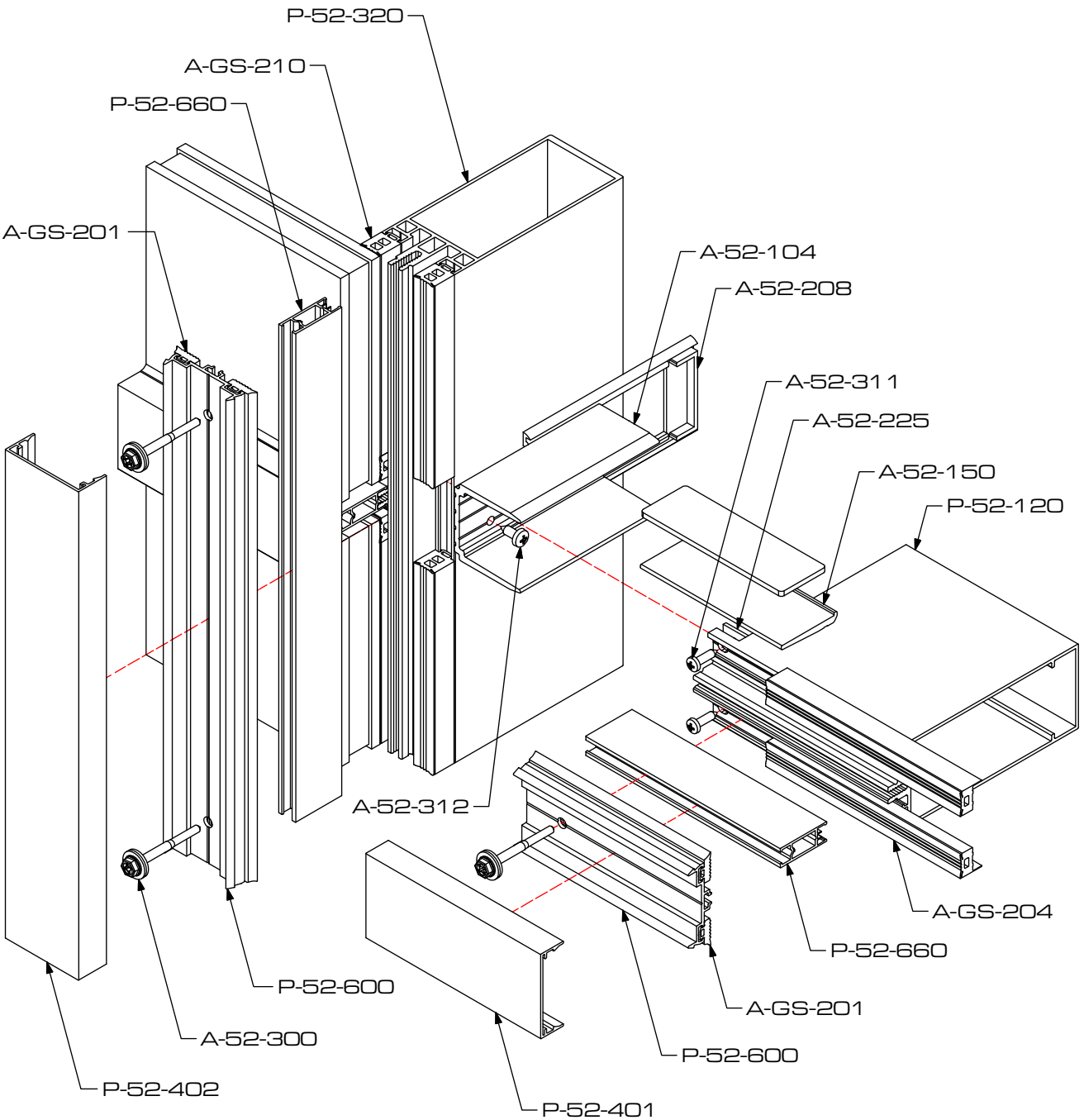
Sprung Cleat Fixing

Facetted 15 - 45 Degrees Level 3 Mullion to Level 2 Transom



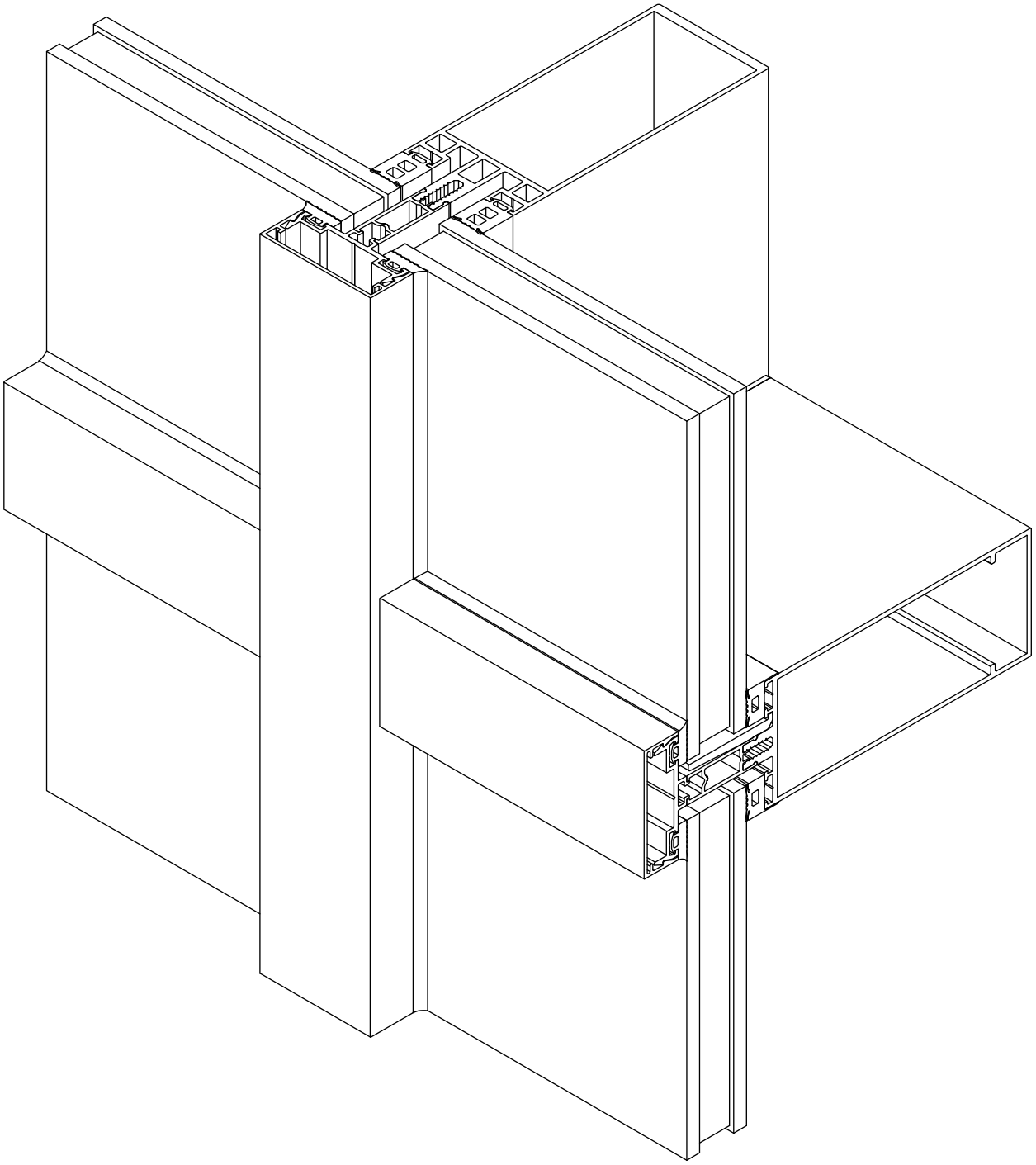
Shear Block Fixing

Level 3 Mullion to Level 1 Transom



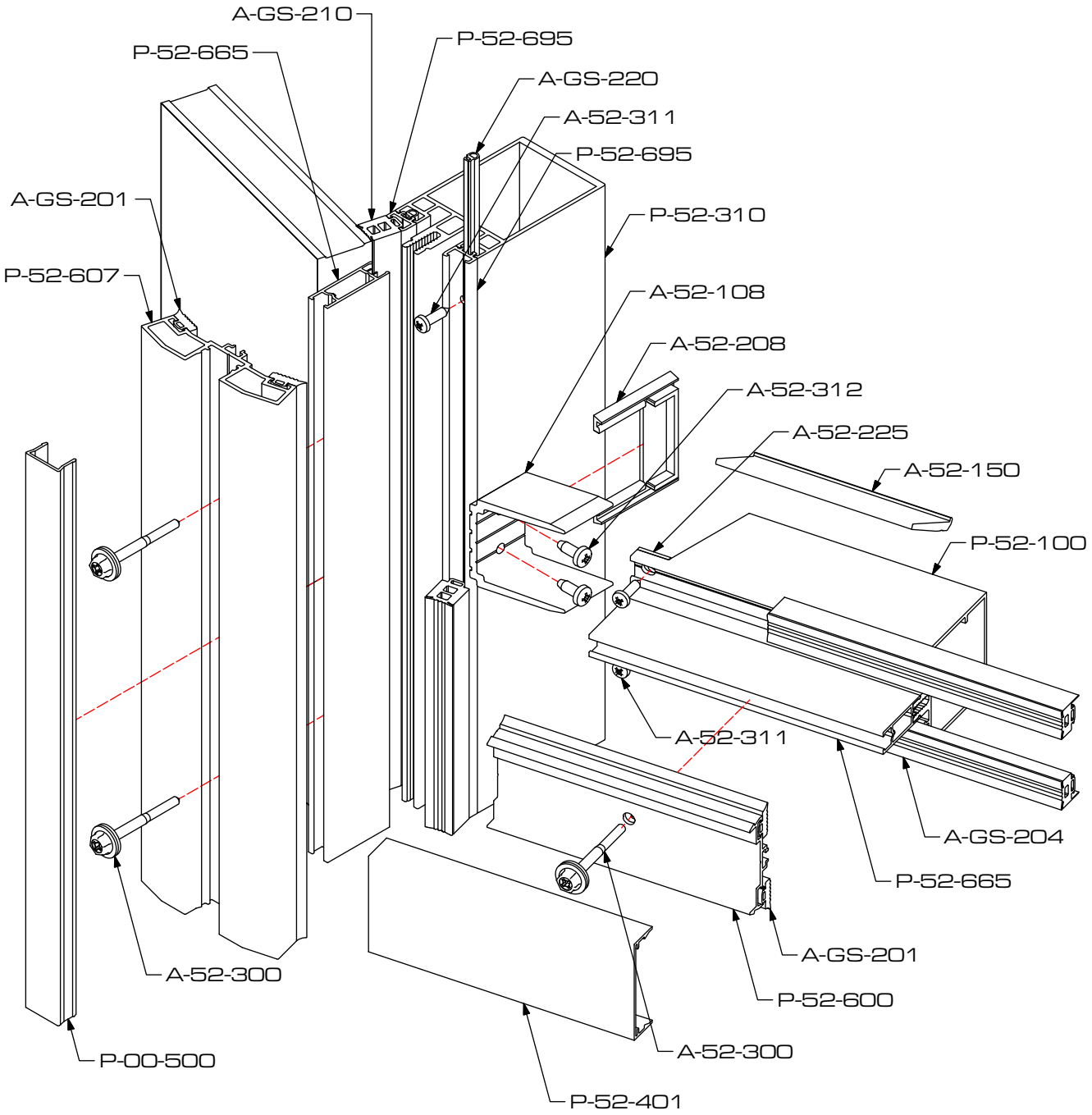
Shear Block Fixing

Level 3 Mullion to Level 1 Transom



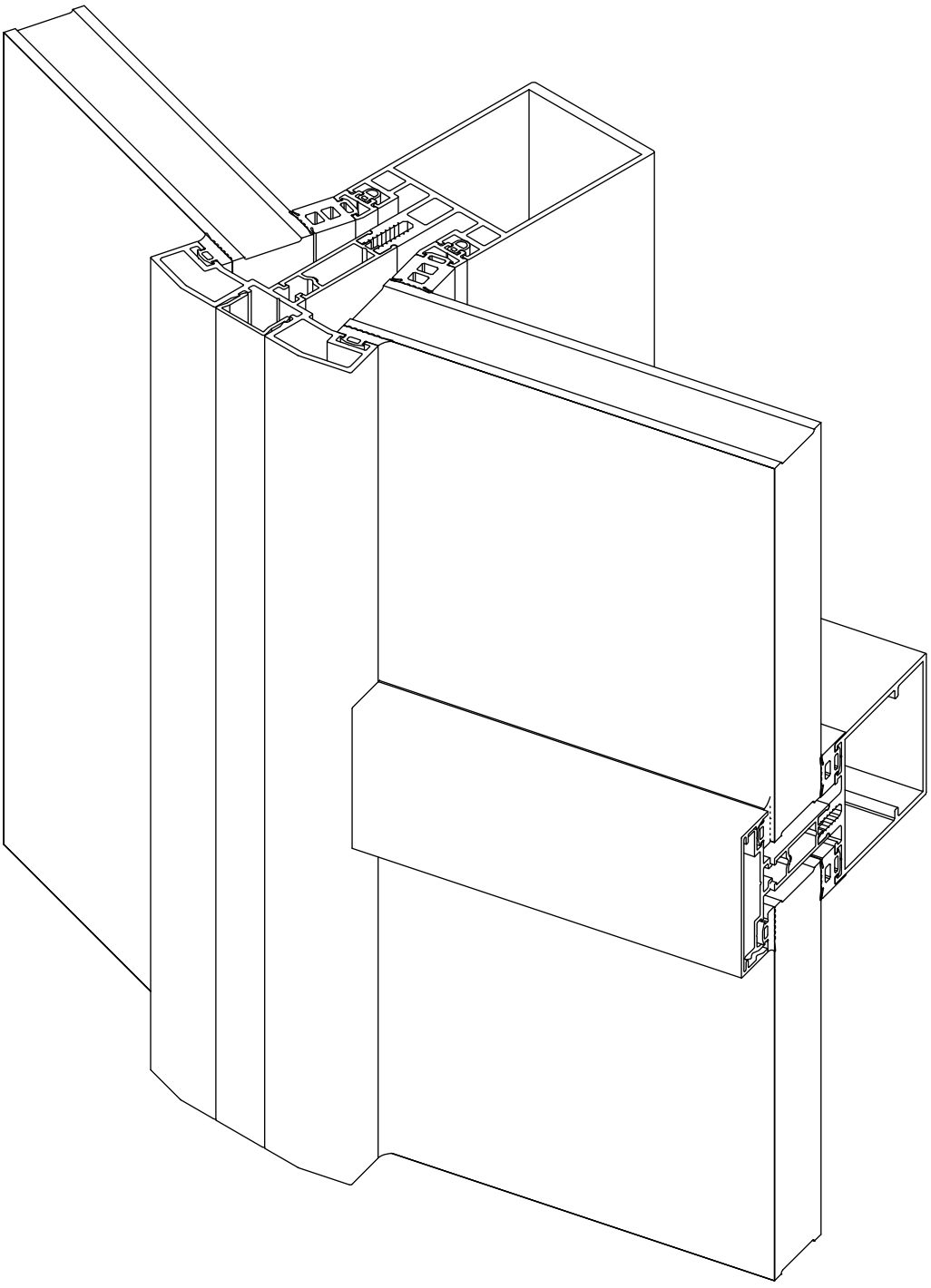
Shear Block Fixing

Facetted 15 - 45 Degree Level 3 Mullion to Level 1 Transom



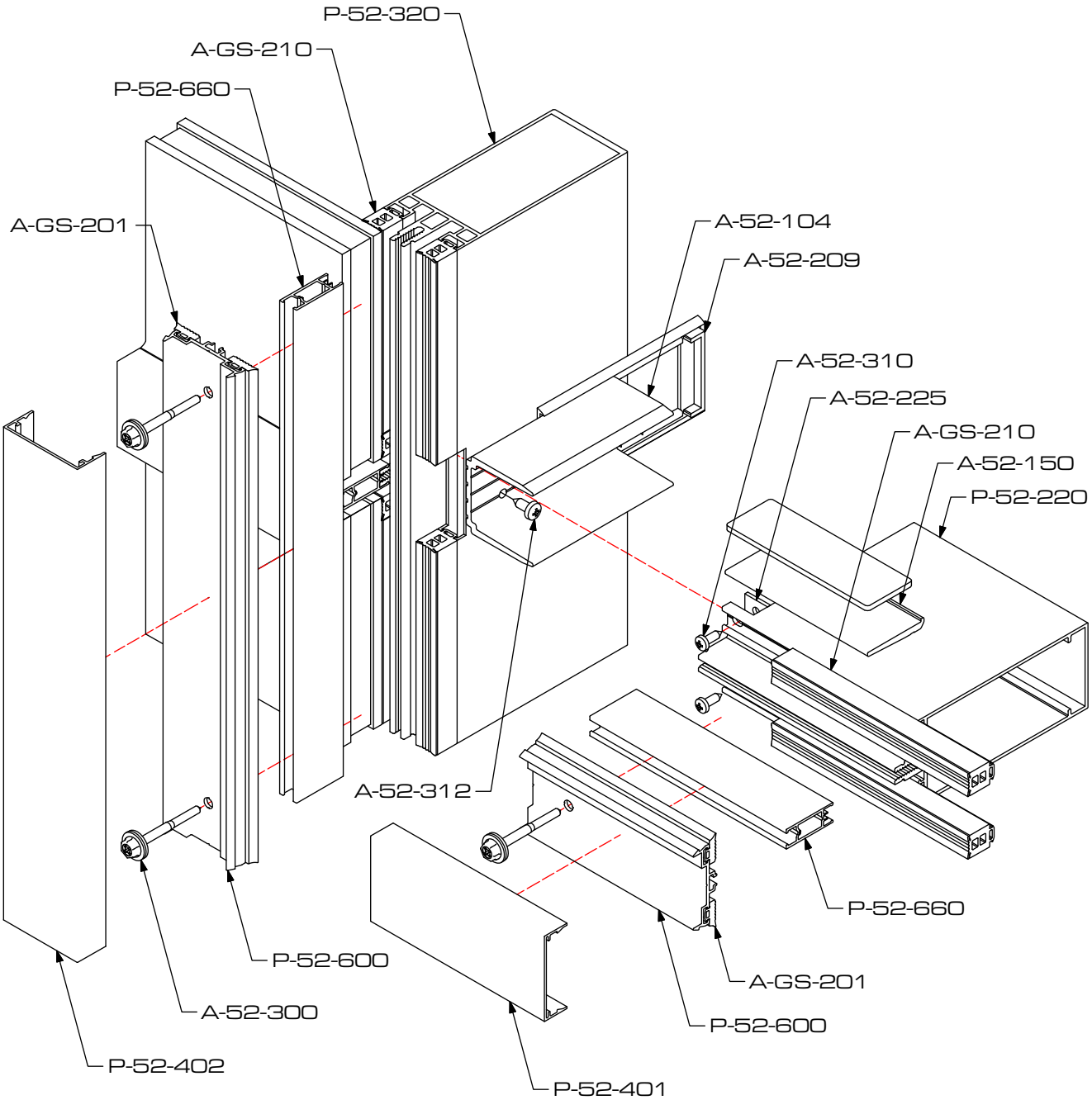
Shear Block Fixing

Facetted 15 - 45 Degree Level 3 Mullion to Level 1 Transom



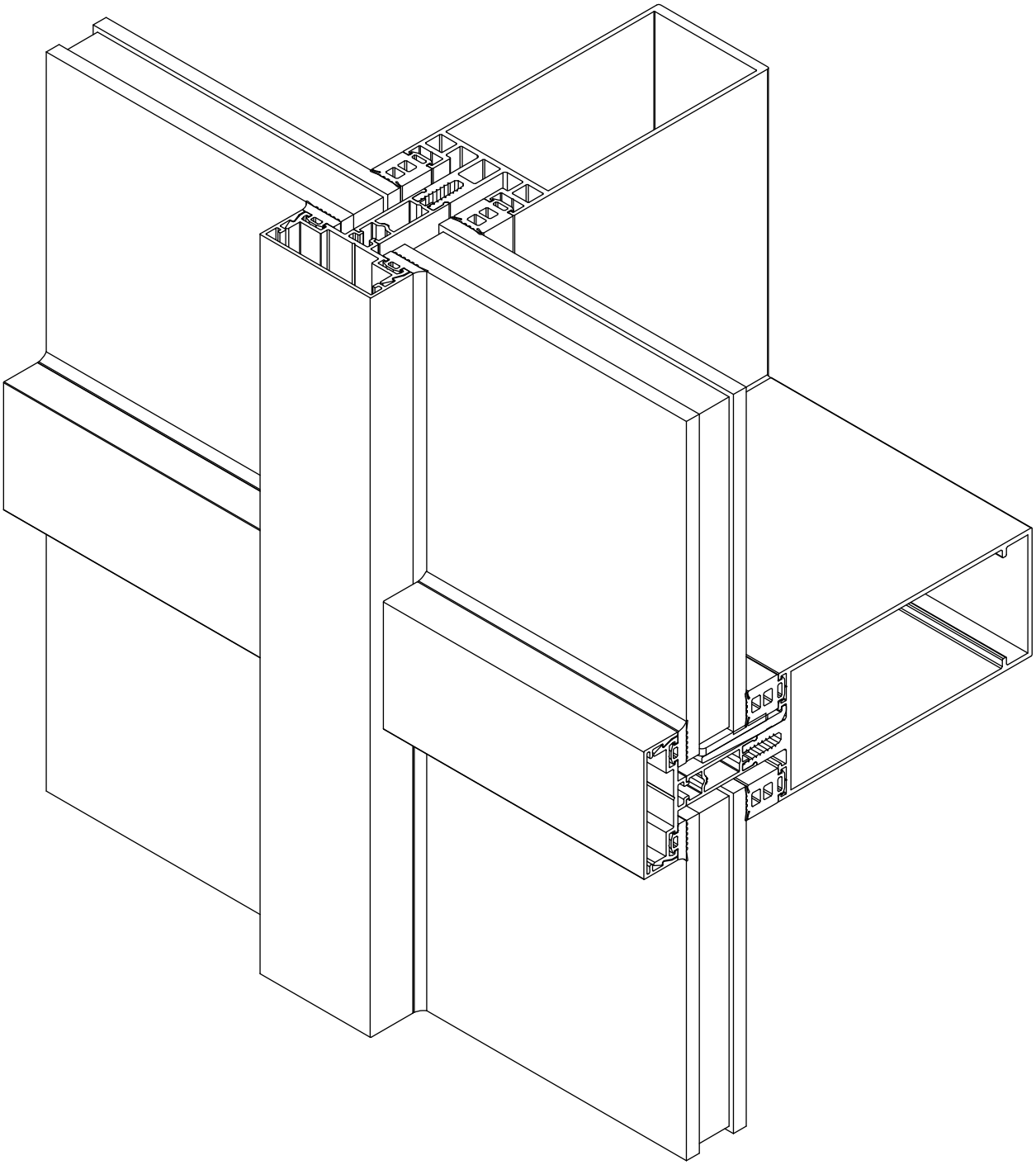
Shear Block Fixing

Level 3 Mullion to Level 2 Transom



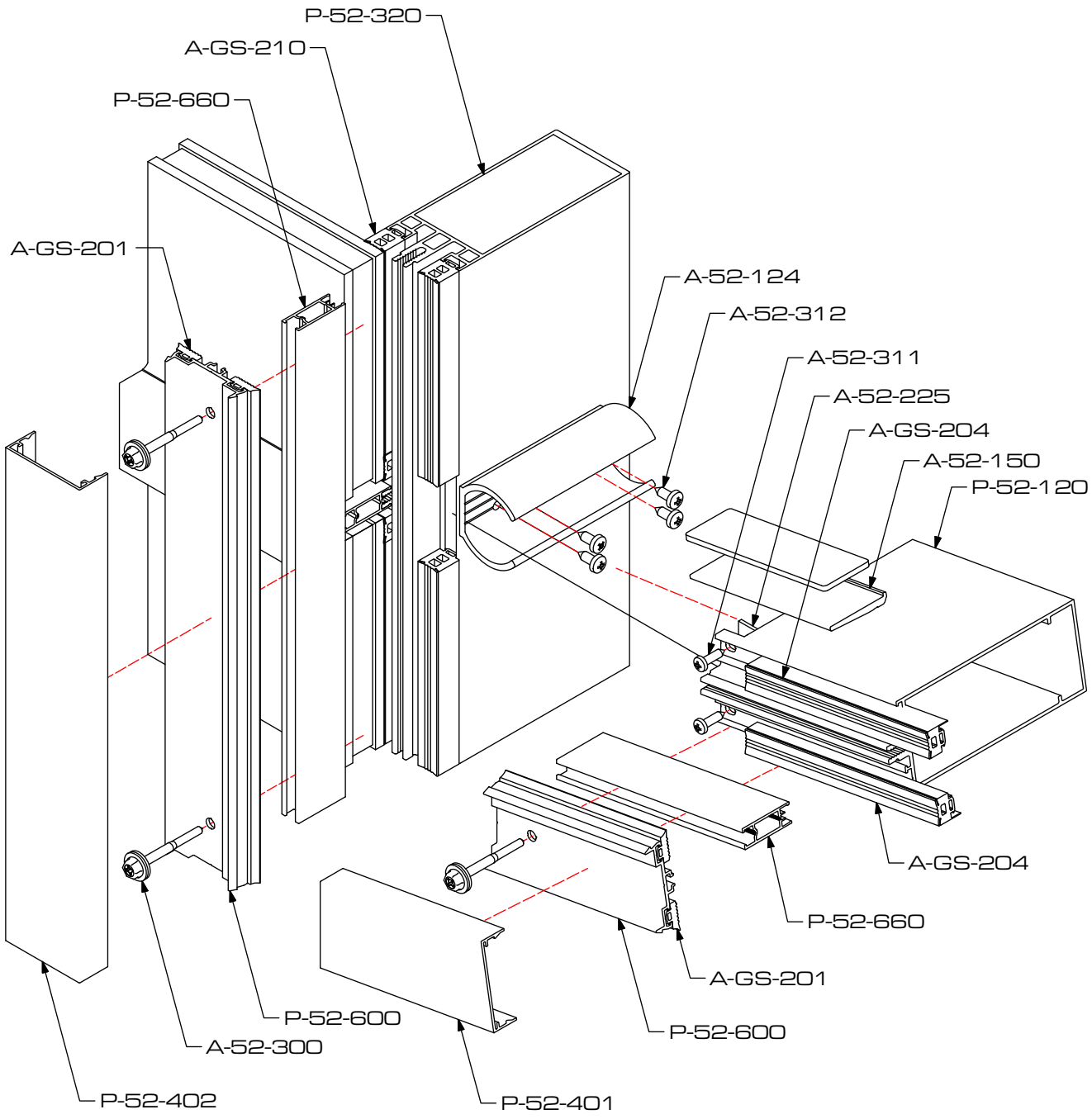
Shear Block Fixing

Level 3 Mullion to Level 2 Transom



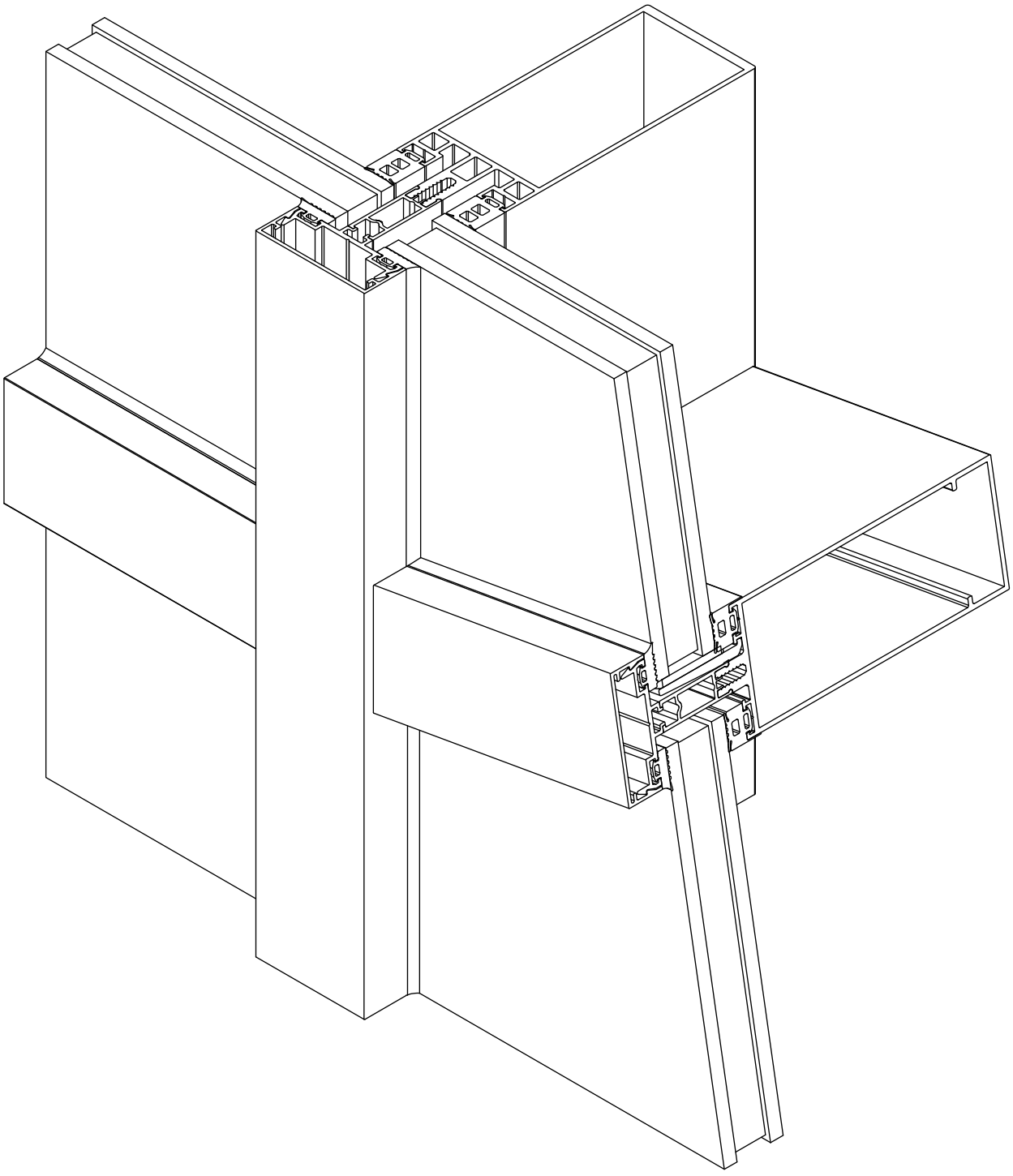
Variable Shear Block Fixing

Level 3 Mullion to Level 1 Transom



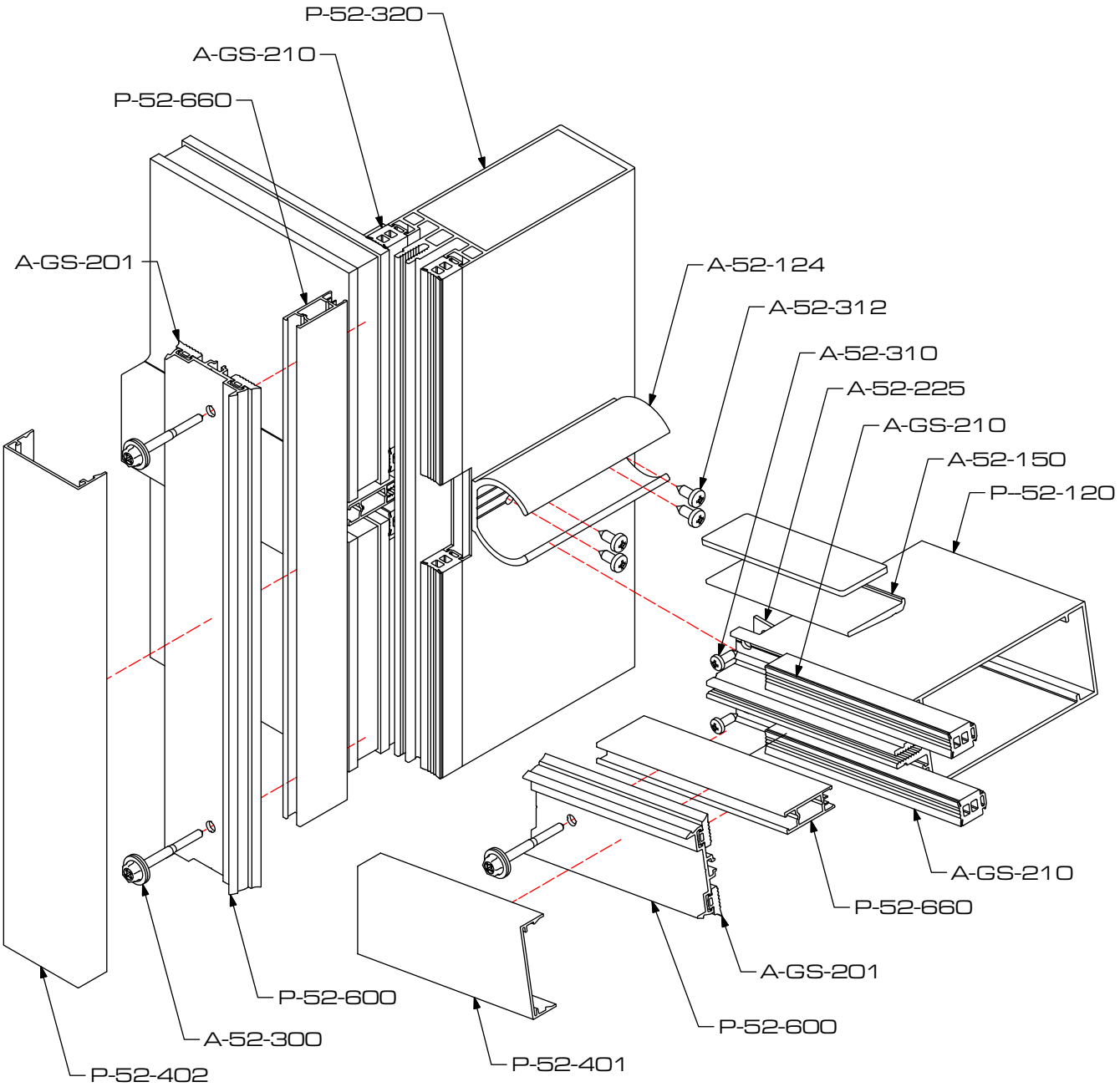
Variable Shear Block Fixing

Level 3 Mullion to Level 1 Transom



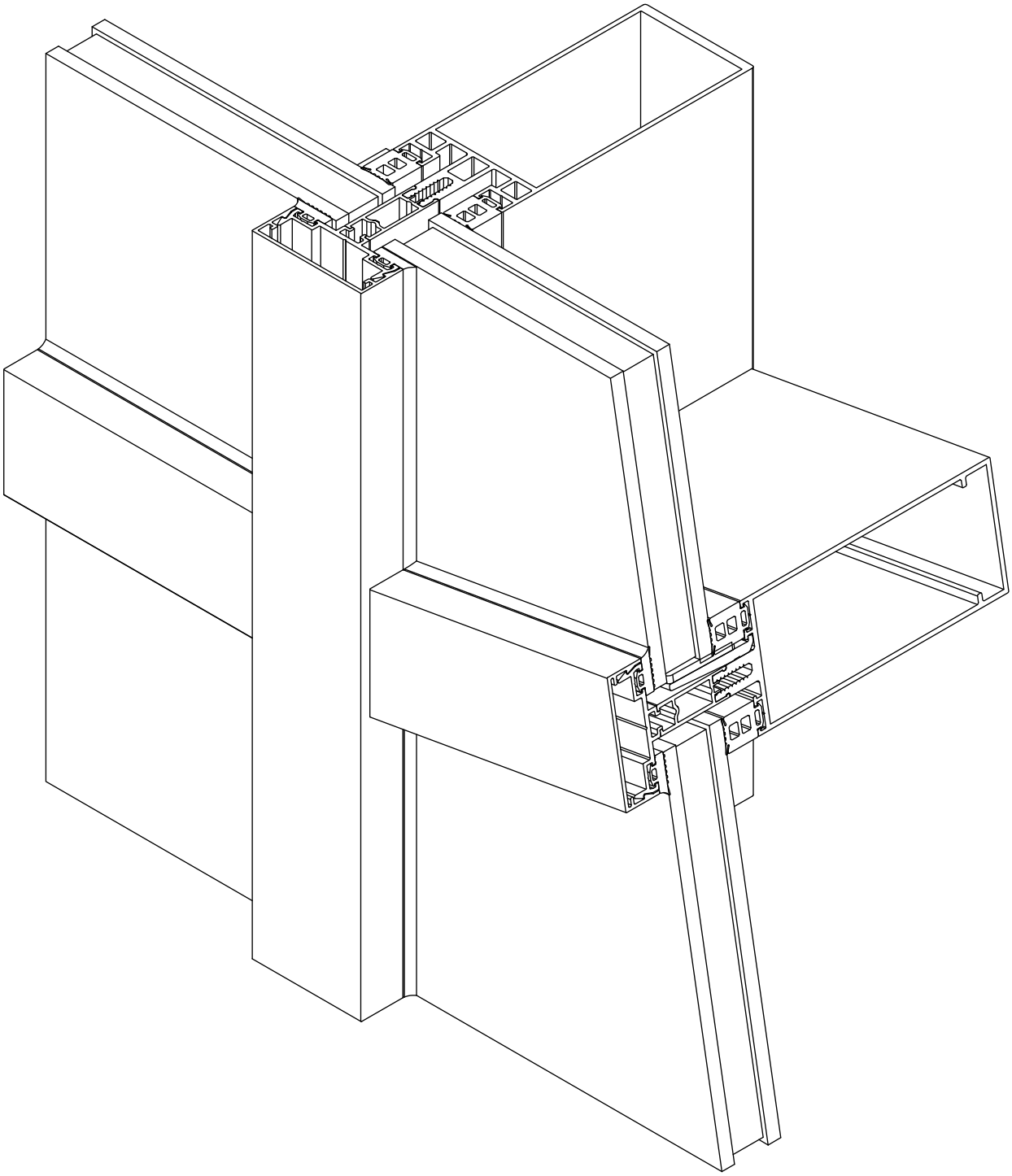
Variable Shear Block Fixing

Level 3 Mullion to Level 2 Transom



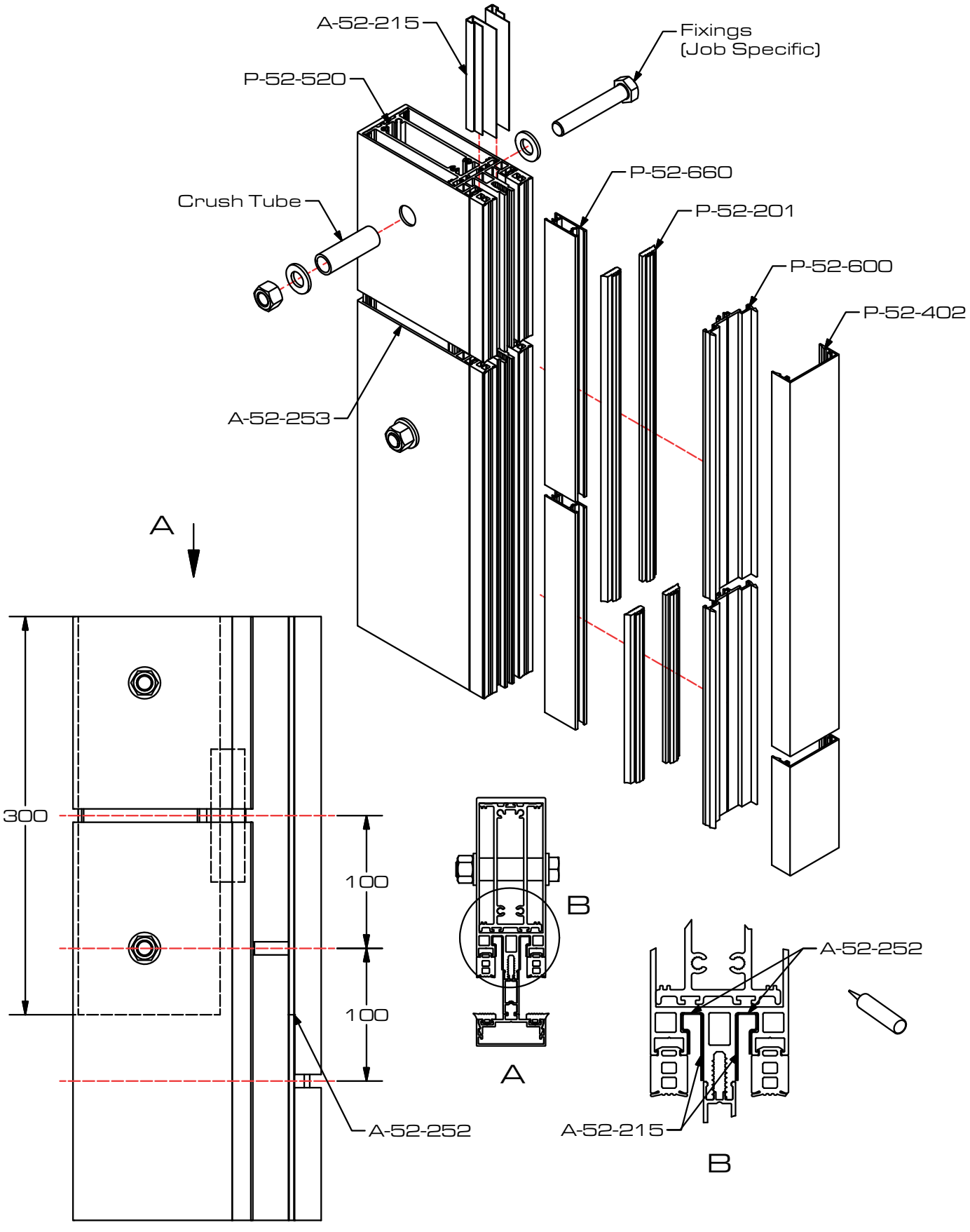
Variable Shear Block Fixing

Level 3 Mullion to Level 2 Transom



Kratos P52

Splice Joint Details



Facetted Splice Joint Details

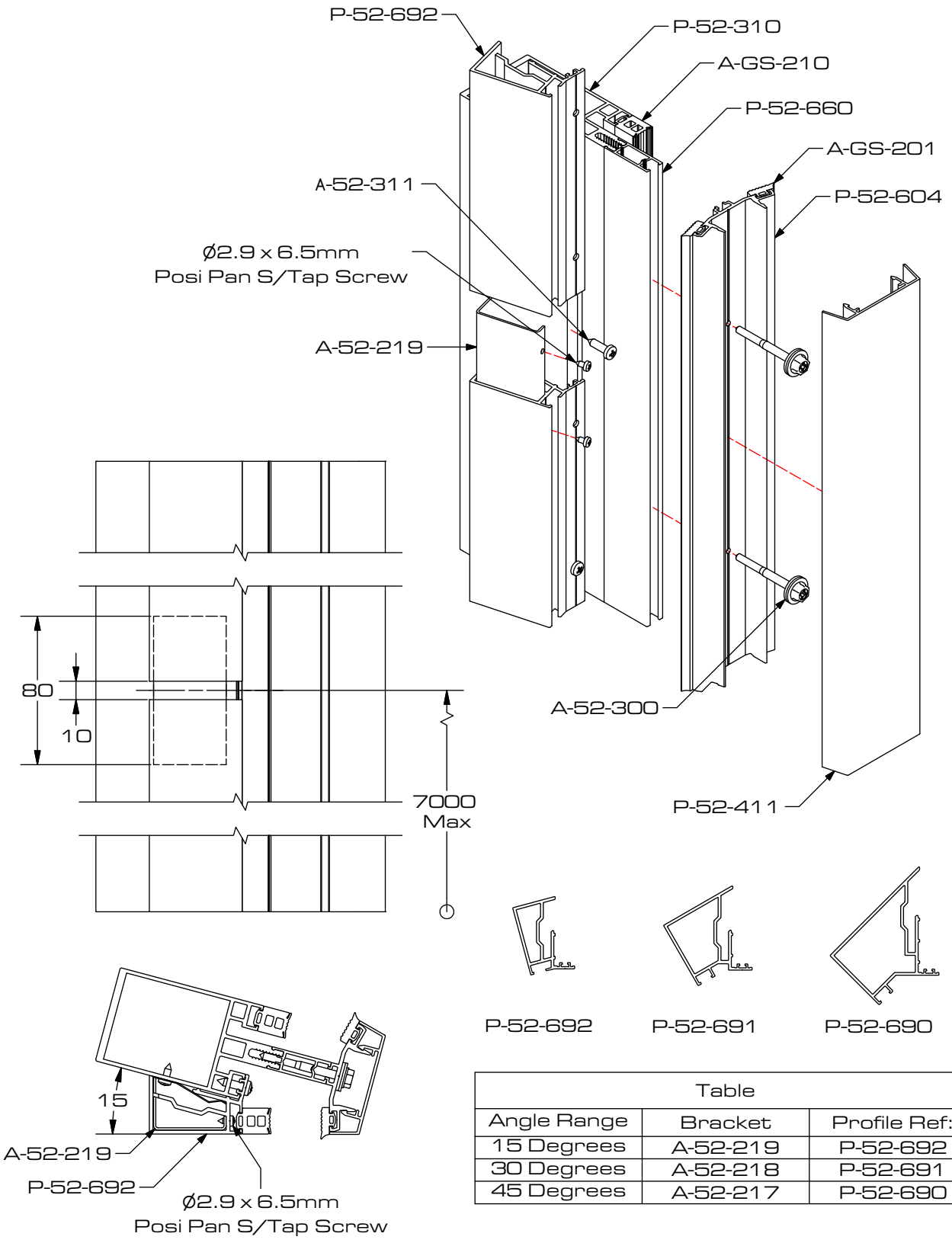
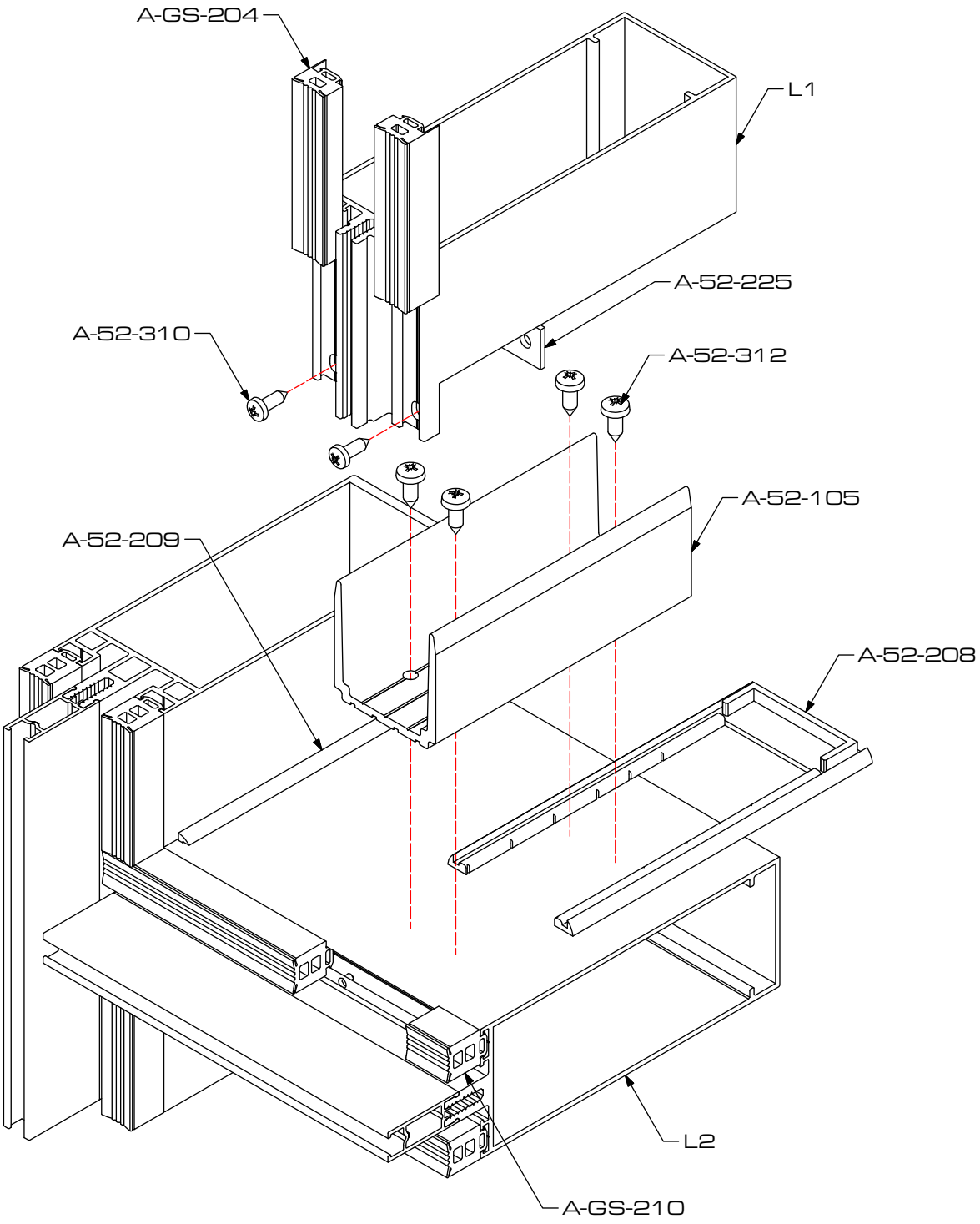
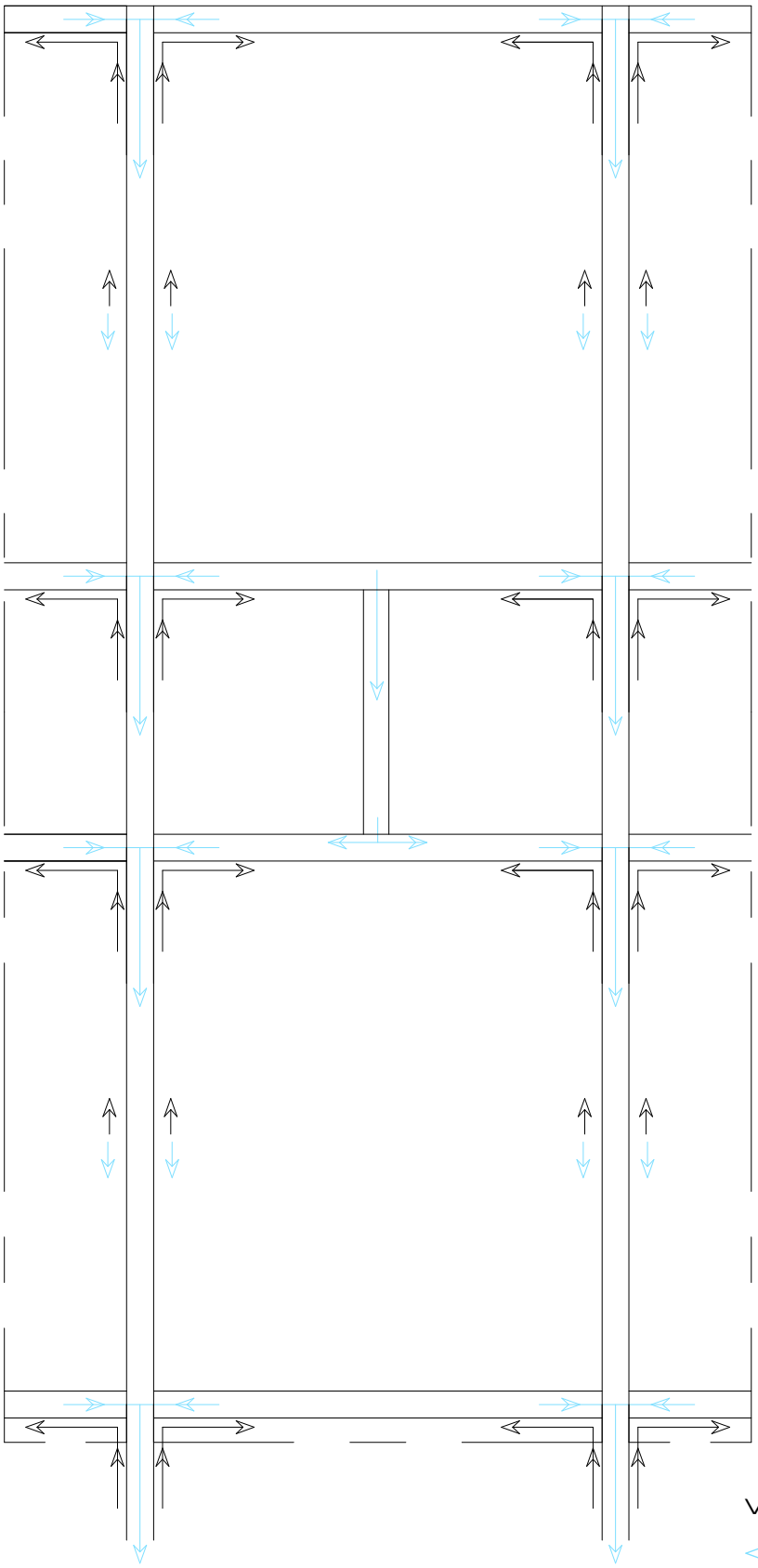


Table		
Angle Range	Bracket	Profile Ref:
15 Degrees	A-52-219	P-52-692
30 Degrees	A-52-218	P-52-691
45 Degrees	A-52-217	P-52-690

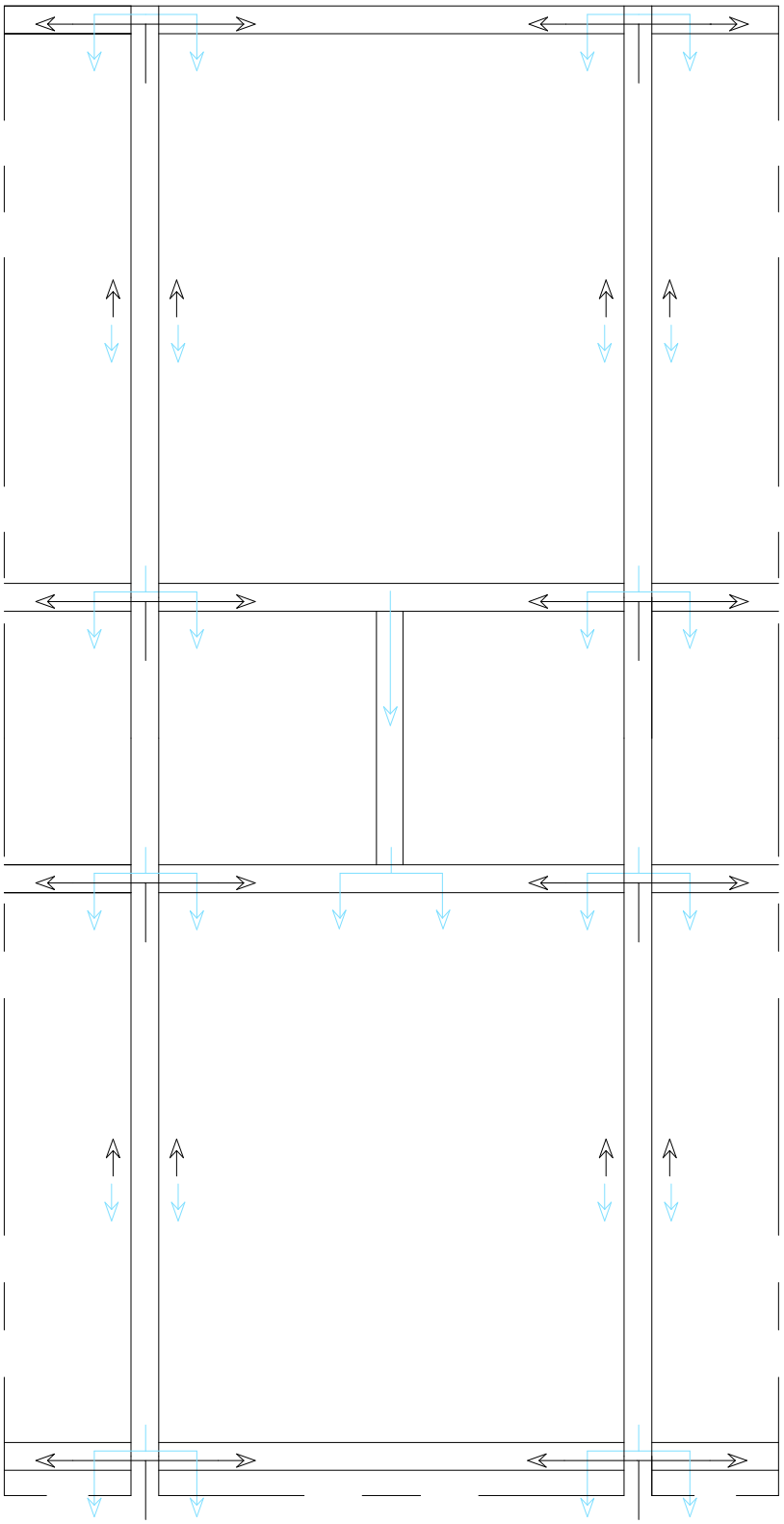
L1 to L2 Construction Details



Mullion Drainage Methodology



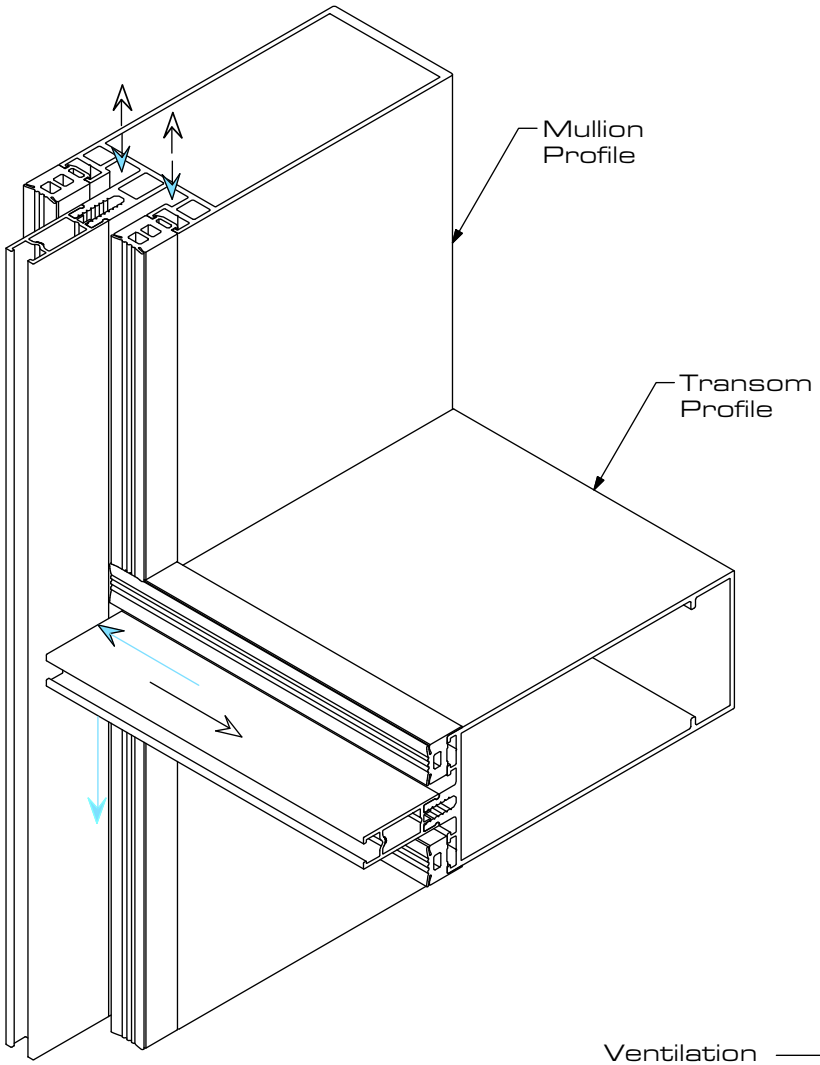
Compartmental Drainage Methodology

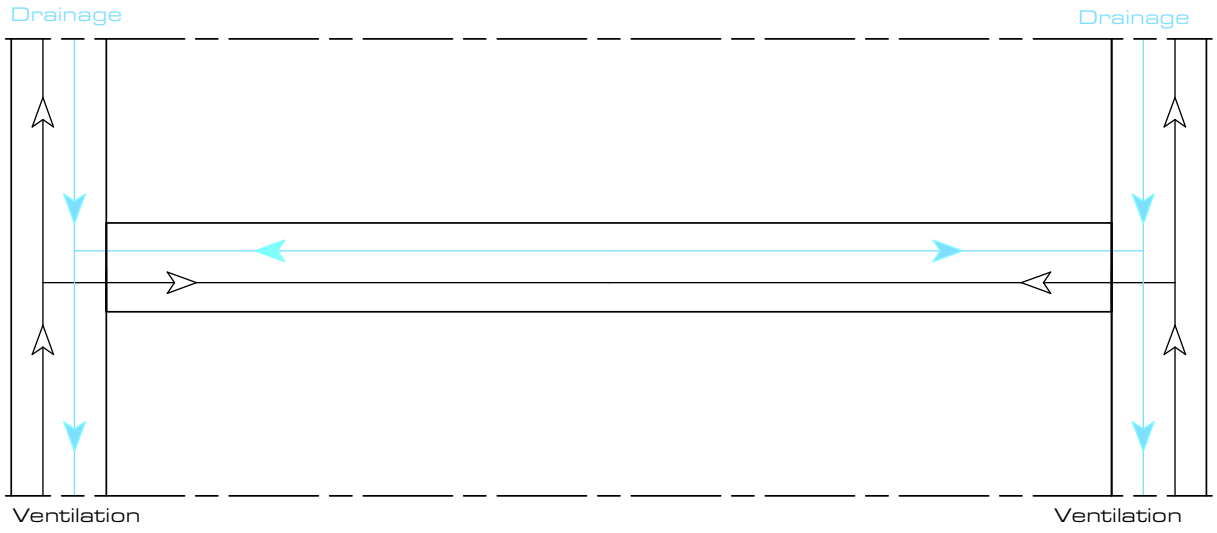


Ventilation

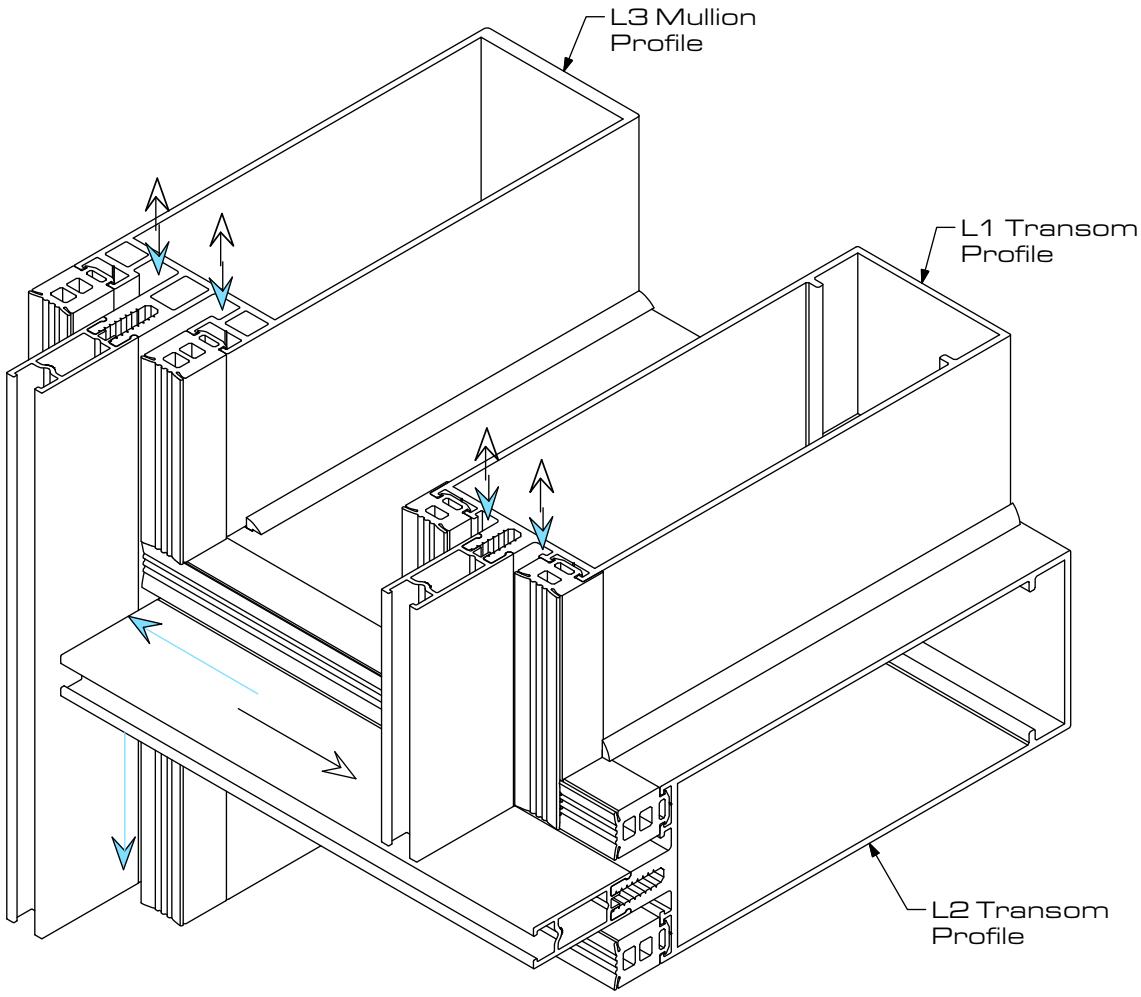
Drainage

Mullion Drainage



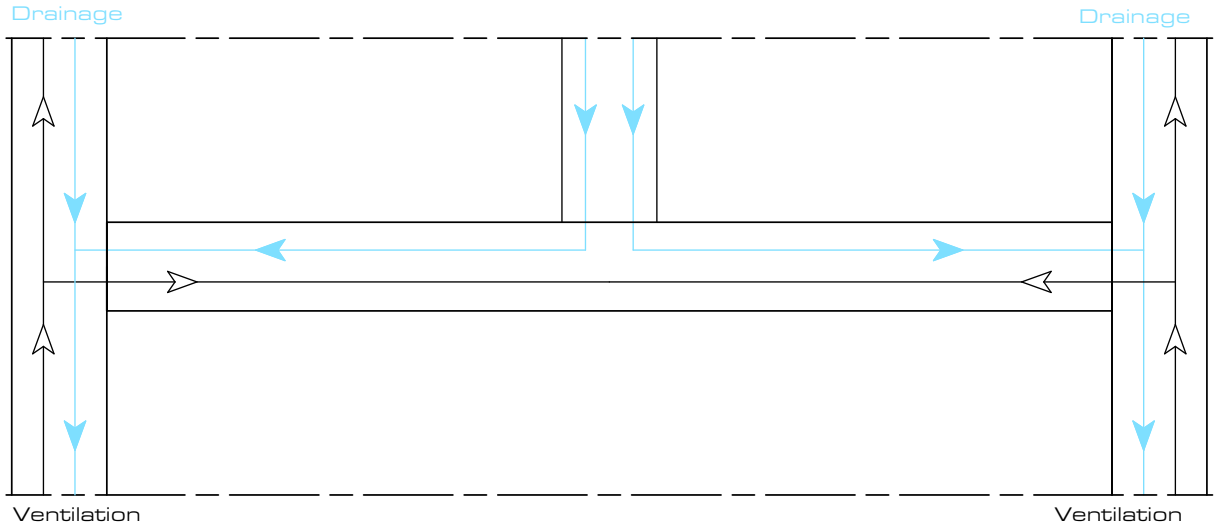


Level 2 Mullion Drainage

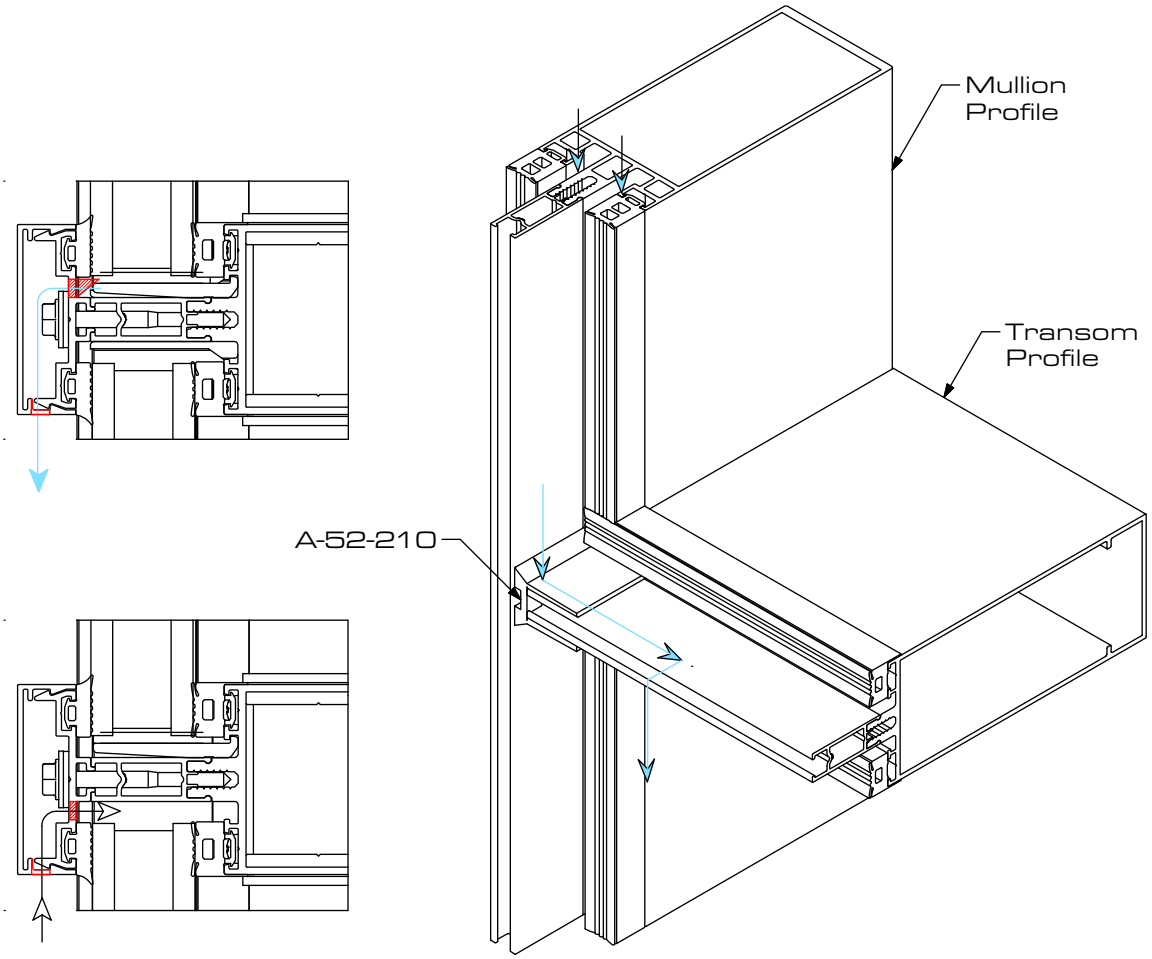


Ventilation →

← Drainage

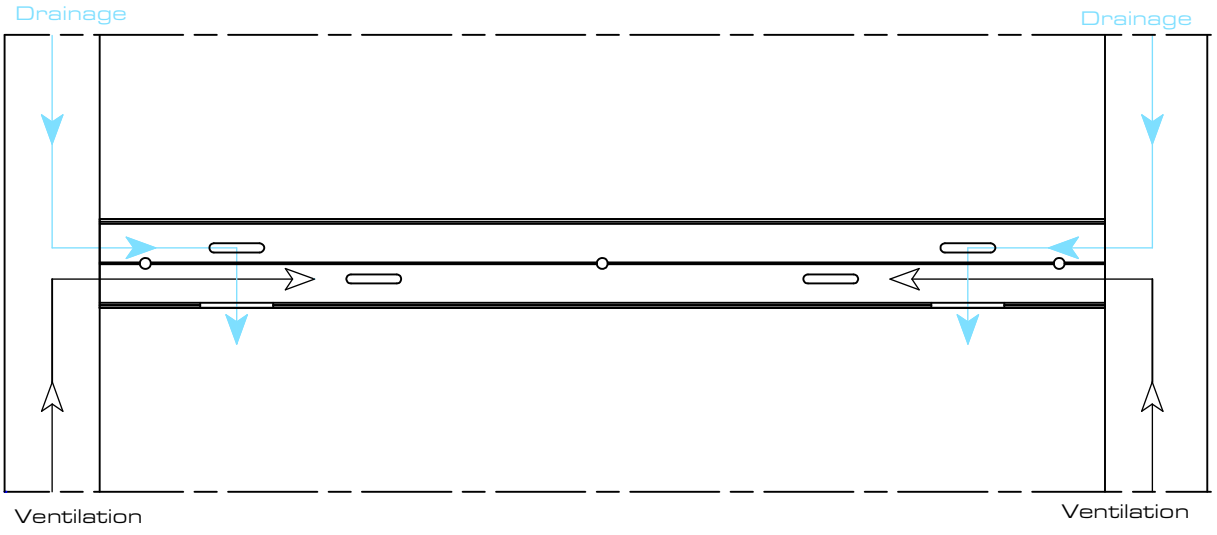


Compartmental Drainage

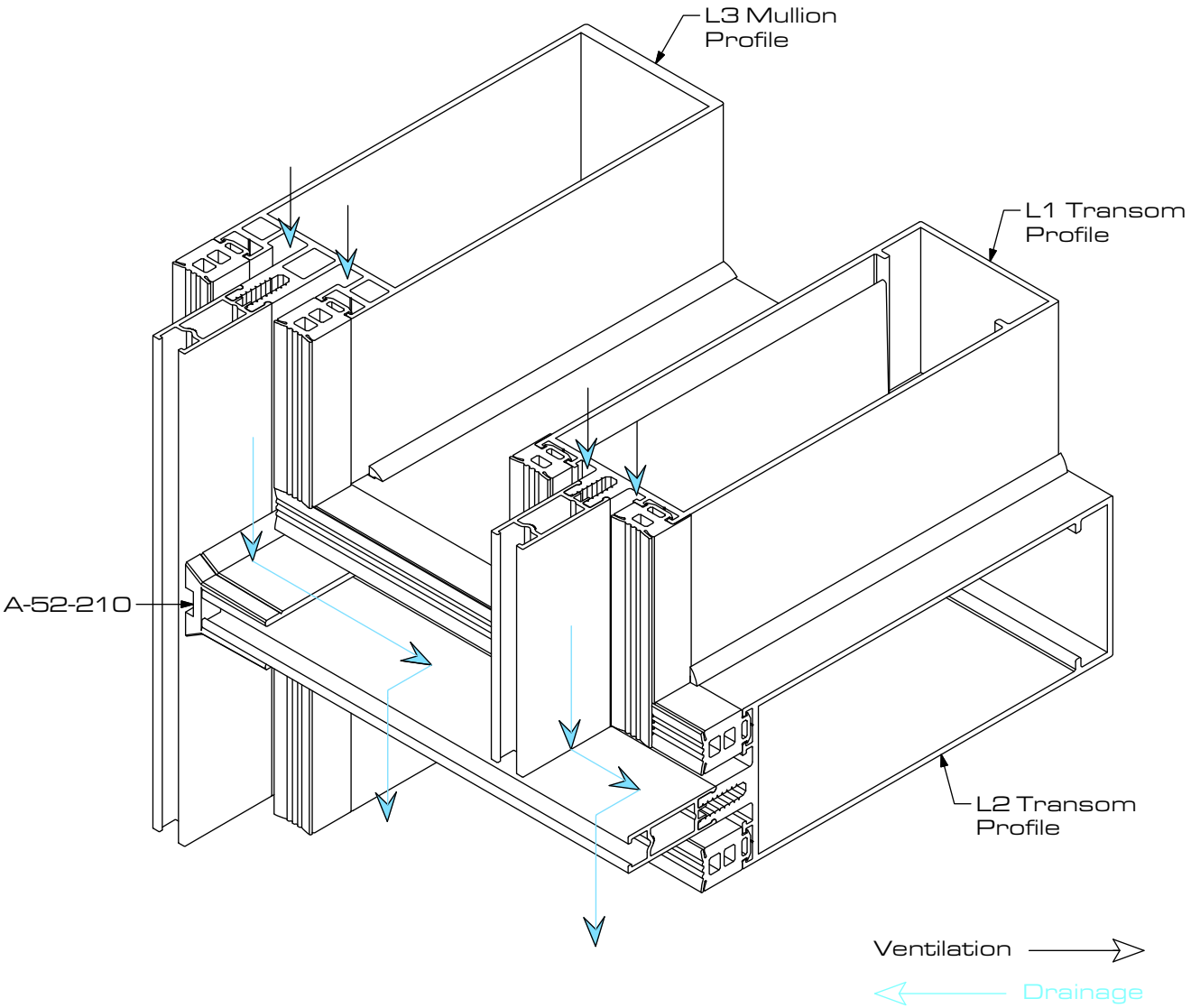


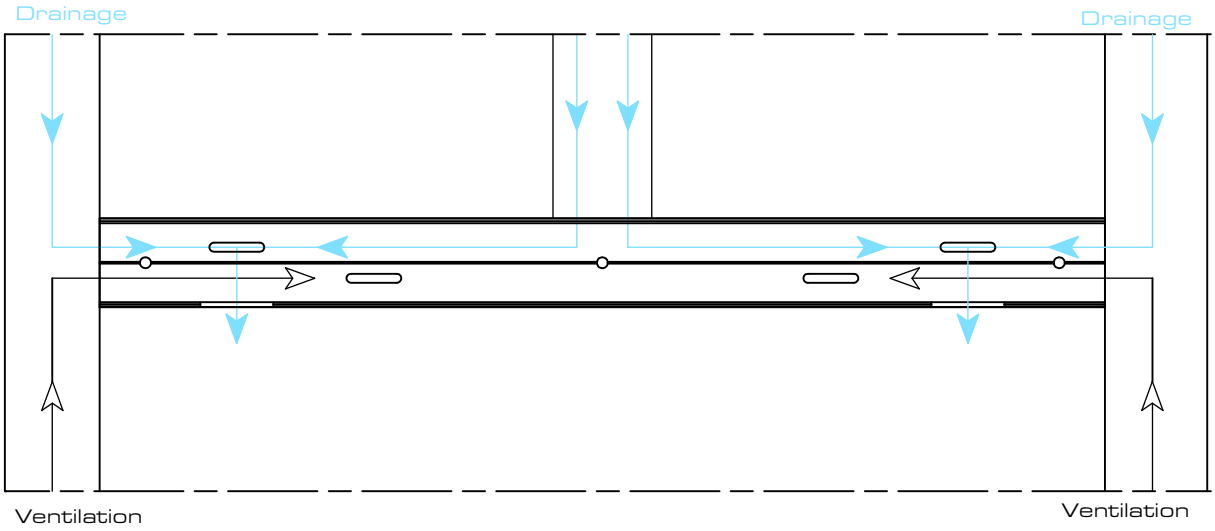
Ventilation

Drainage

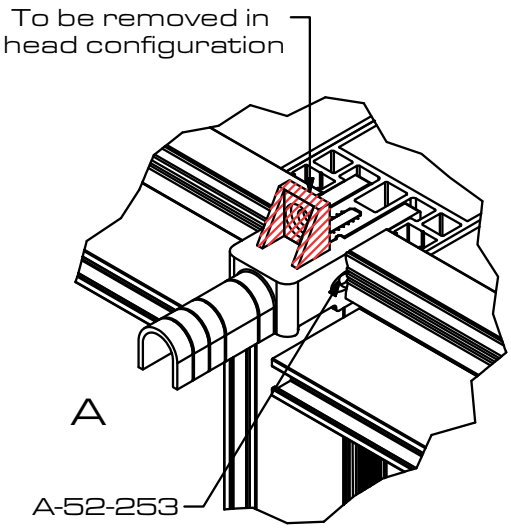


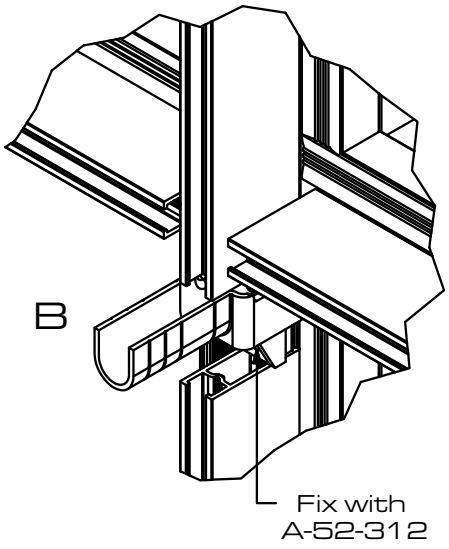
Level 2 Compartmental Drainage

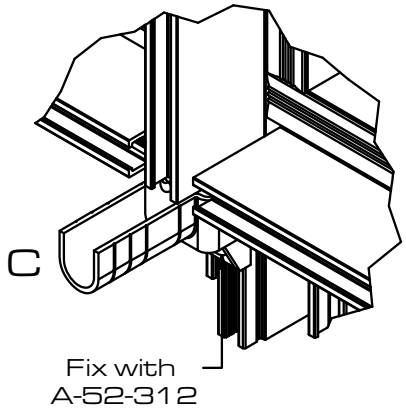




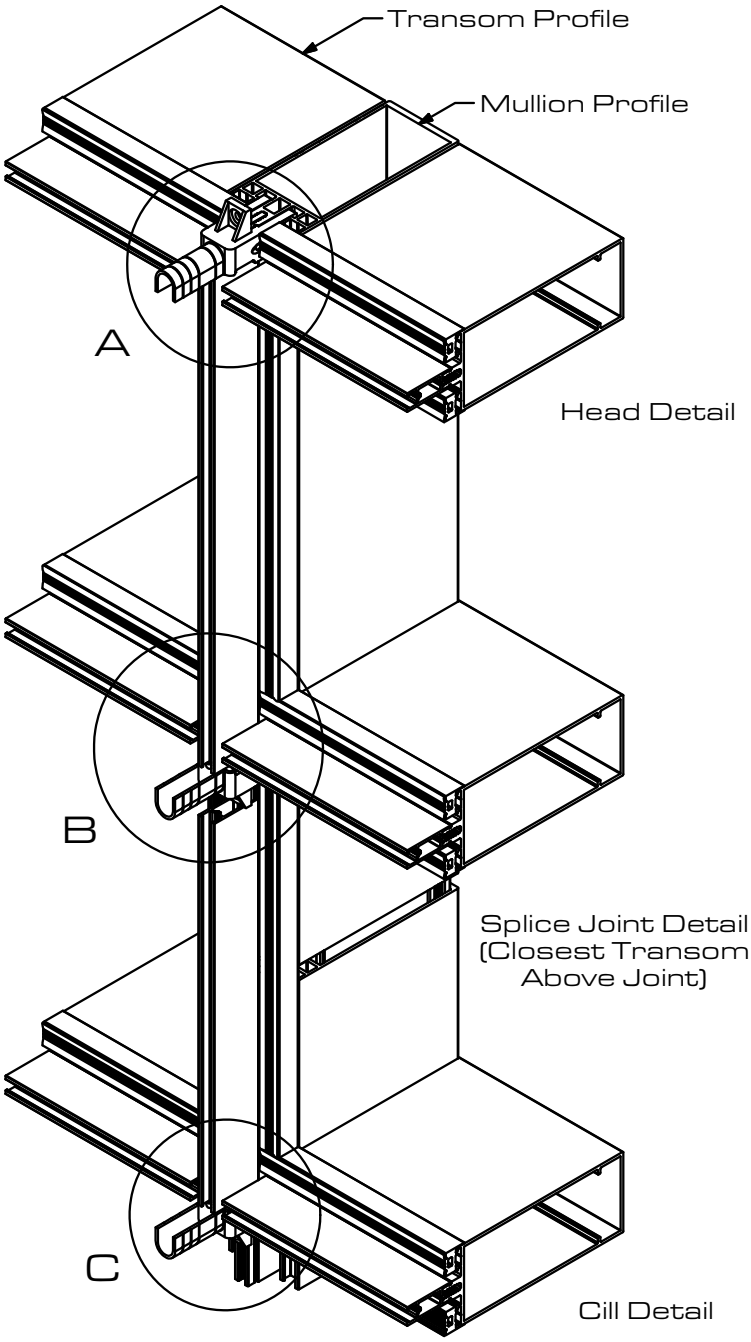
Drainage Deflector Details

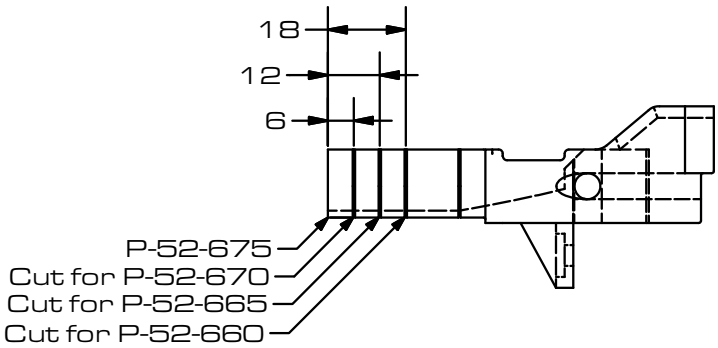






NB: Use A-52-222 when using P-52-311/316/321 & 326 Mullions.



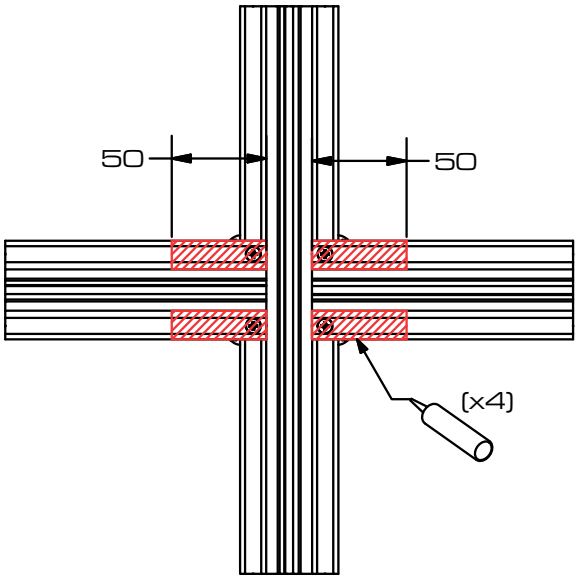


A-52-221 - Cutting sizes

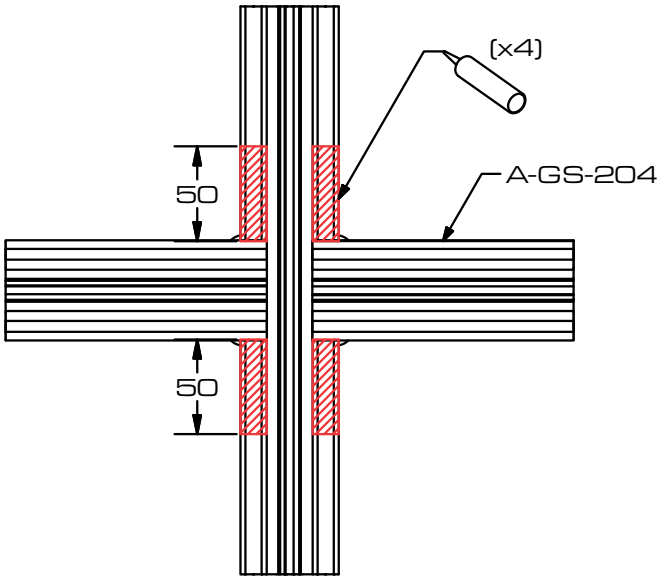
Kratos P52

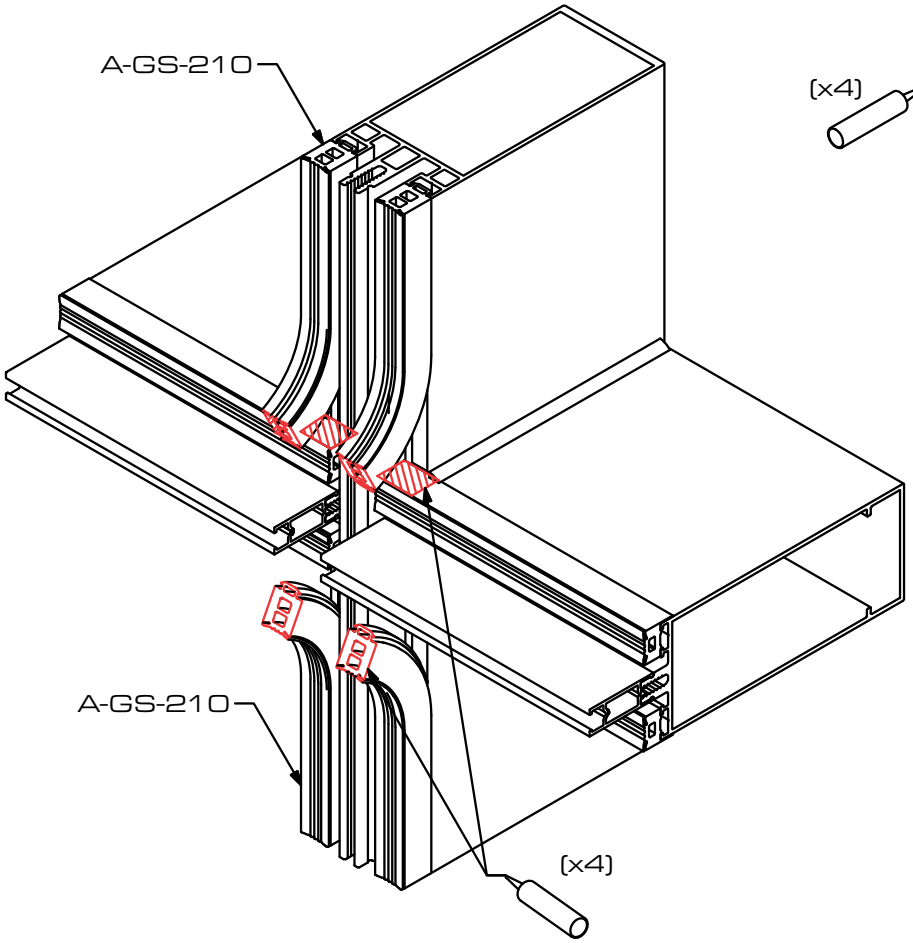
Mullion Gasket Sealing Details

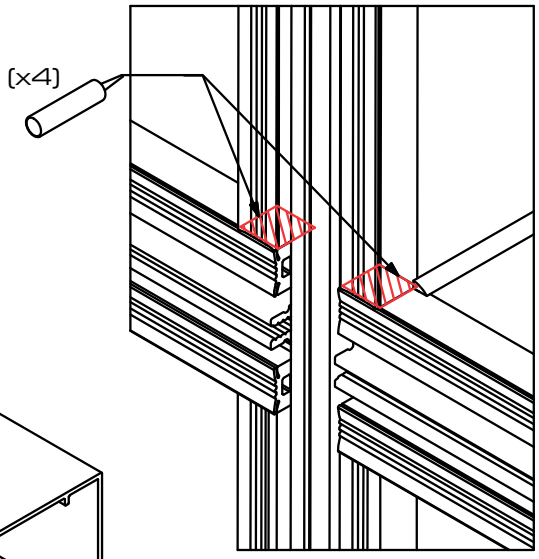
Stage 1

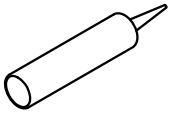


Stage 2 & 3



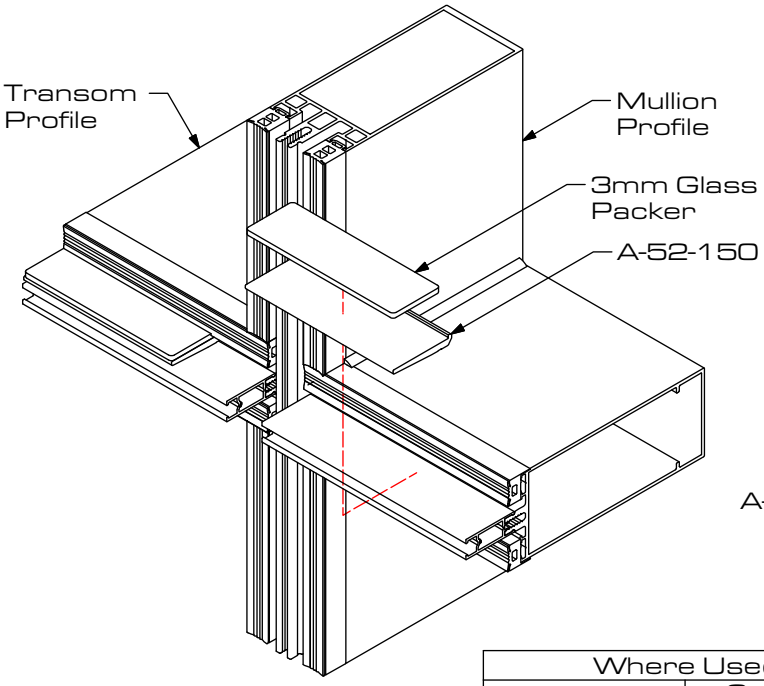


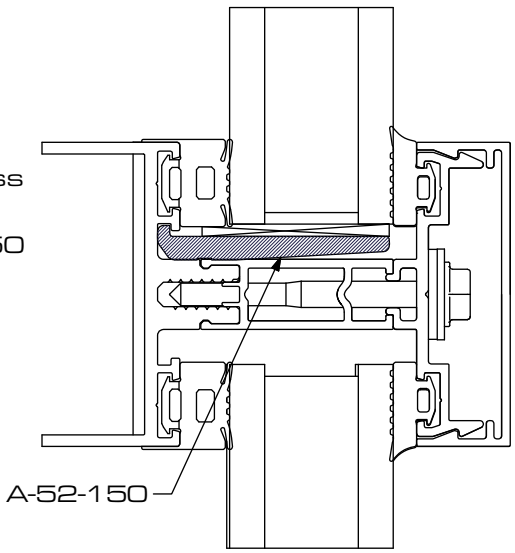




A-52-252

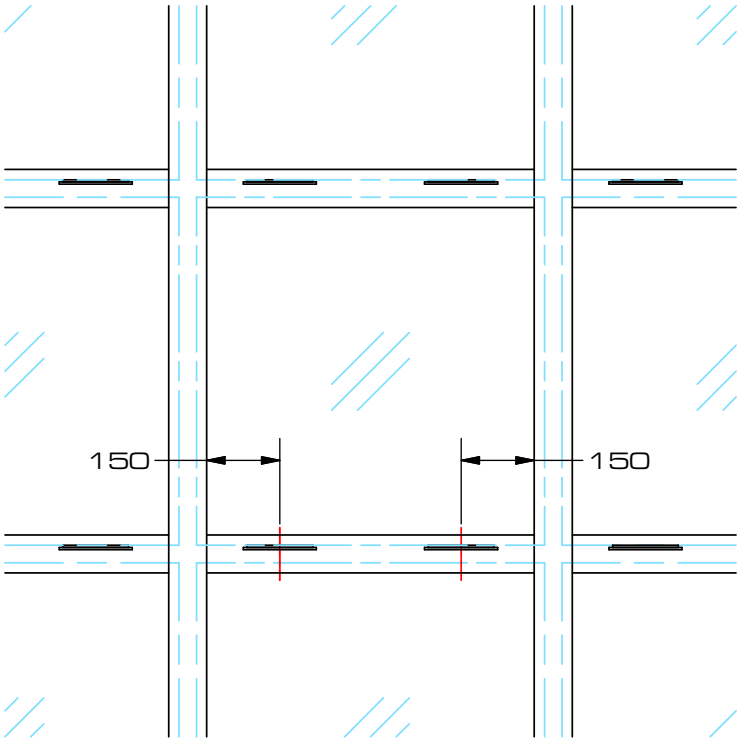
Glazing Support Details



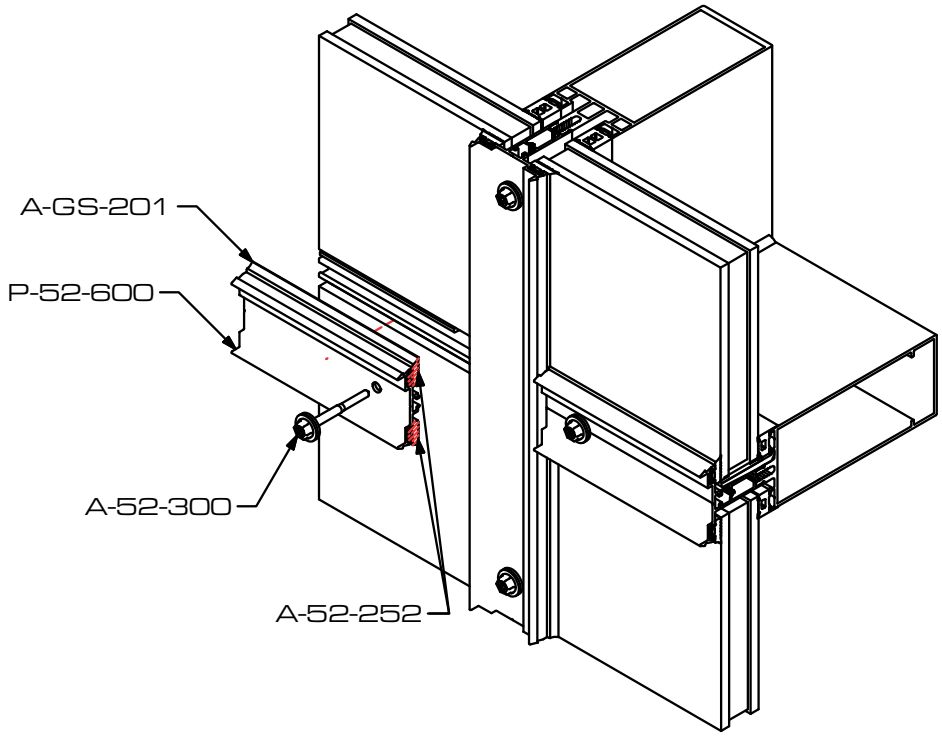


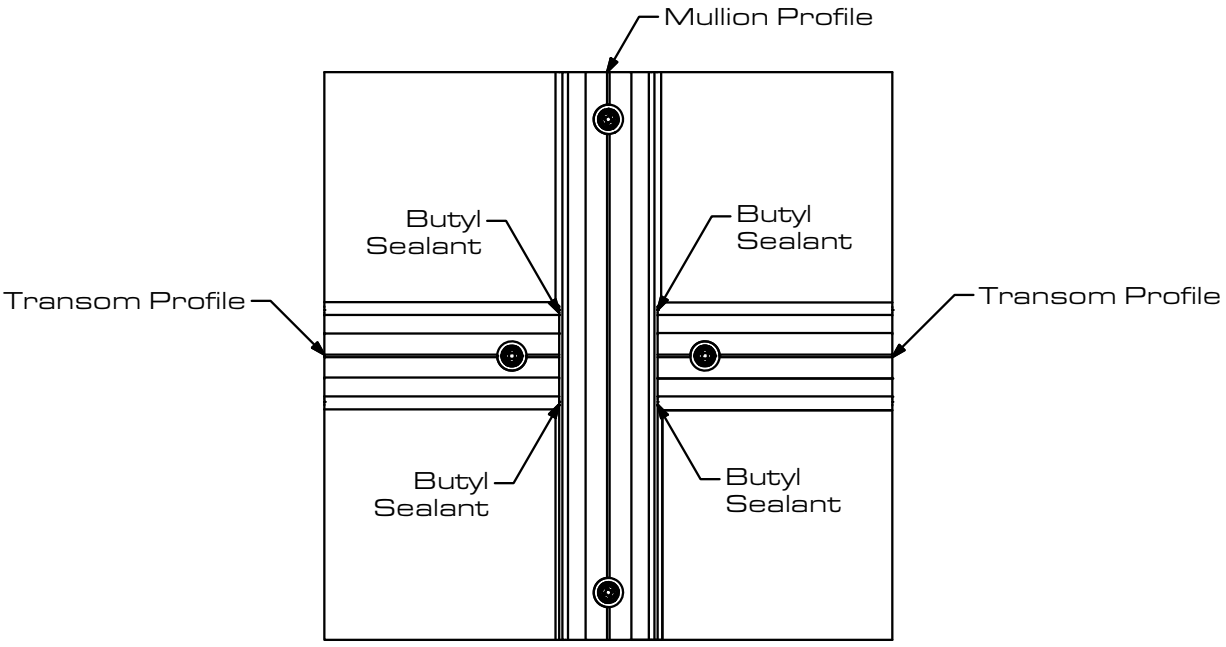
Detail View

Where Used	
Isolator	Support
P-52-660	A-52-150
P-52-665	A-52-151
P-52-670	A-52-152
P-52-675	A-52-153

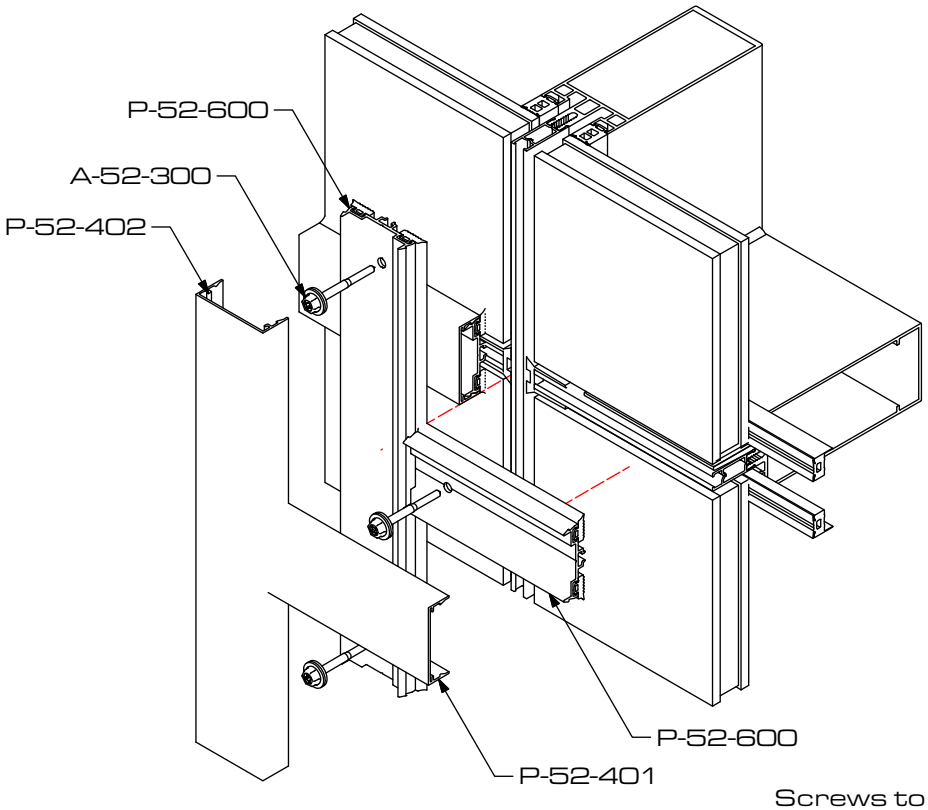


Pressure Plate Gasket Sealing Details

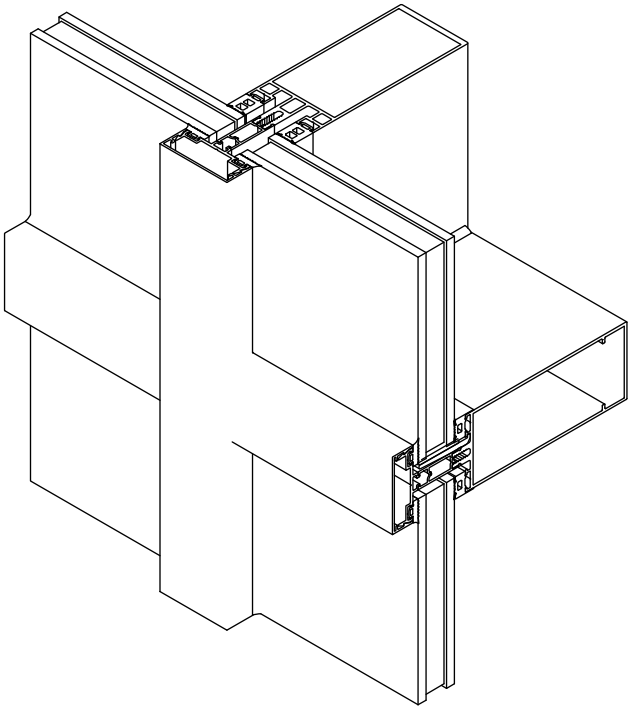




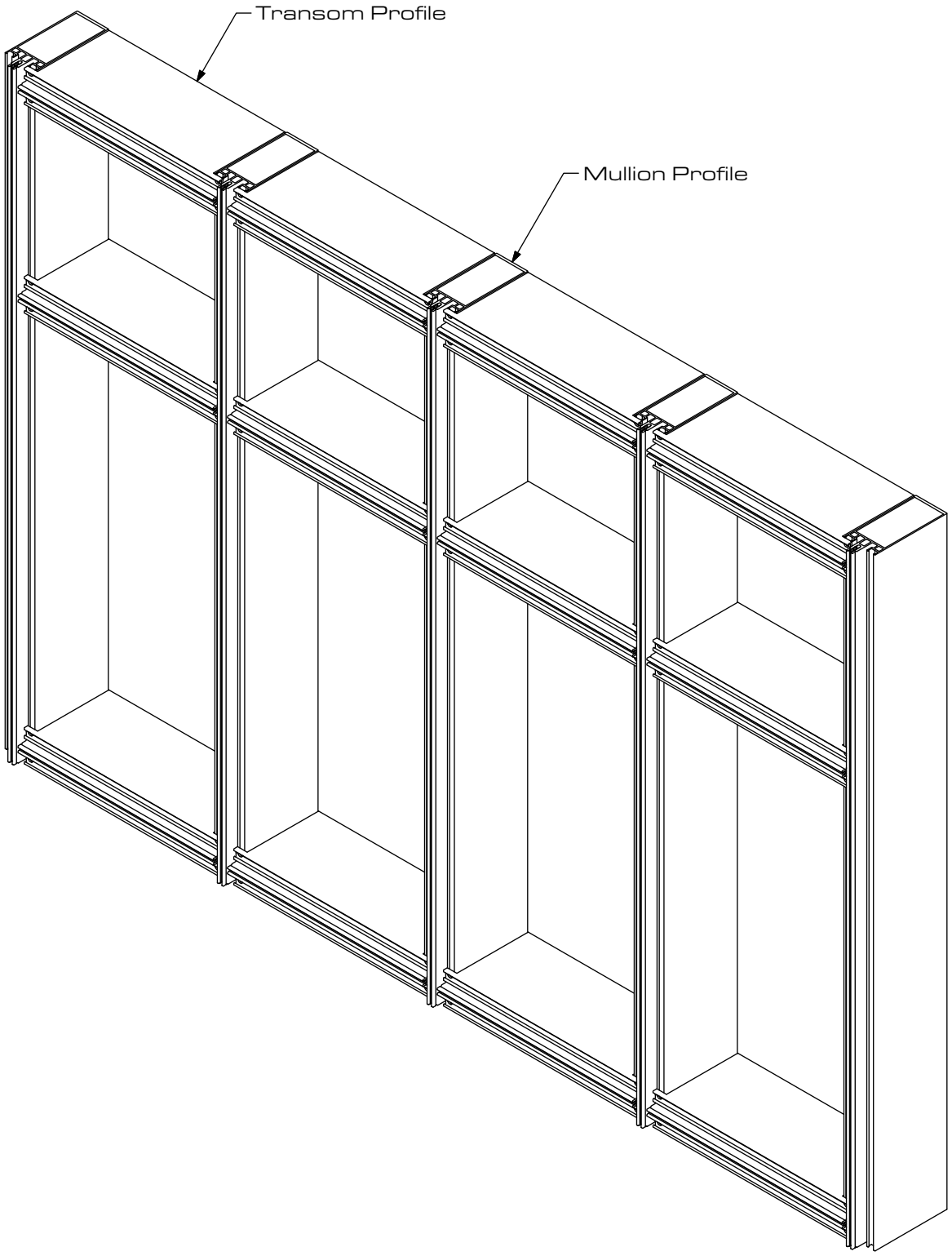
Pressure Plate Fixing Details



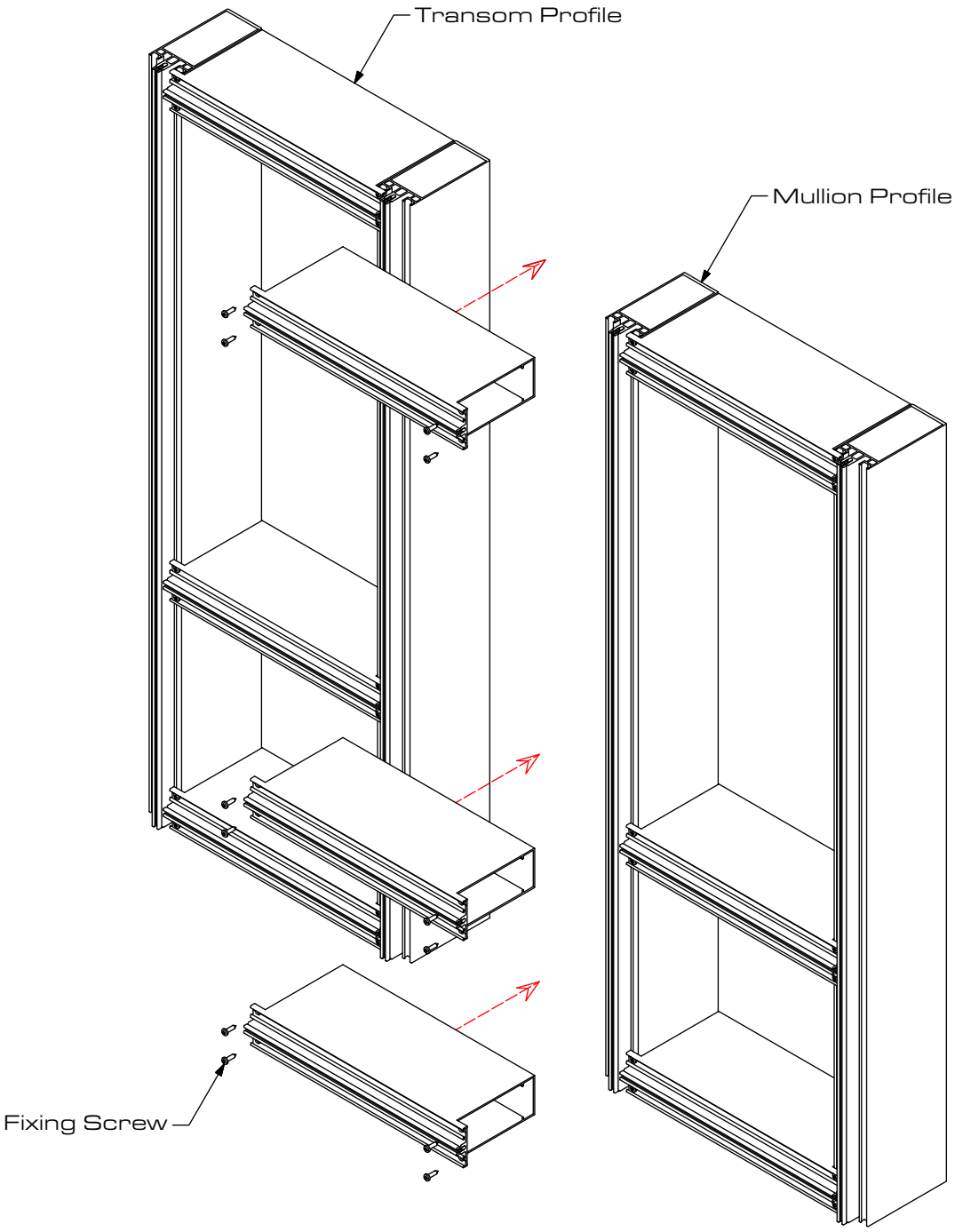
Screws to be fastened to a torque setting of 5.5Nm



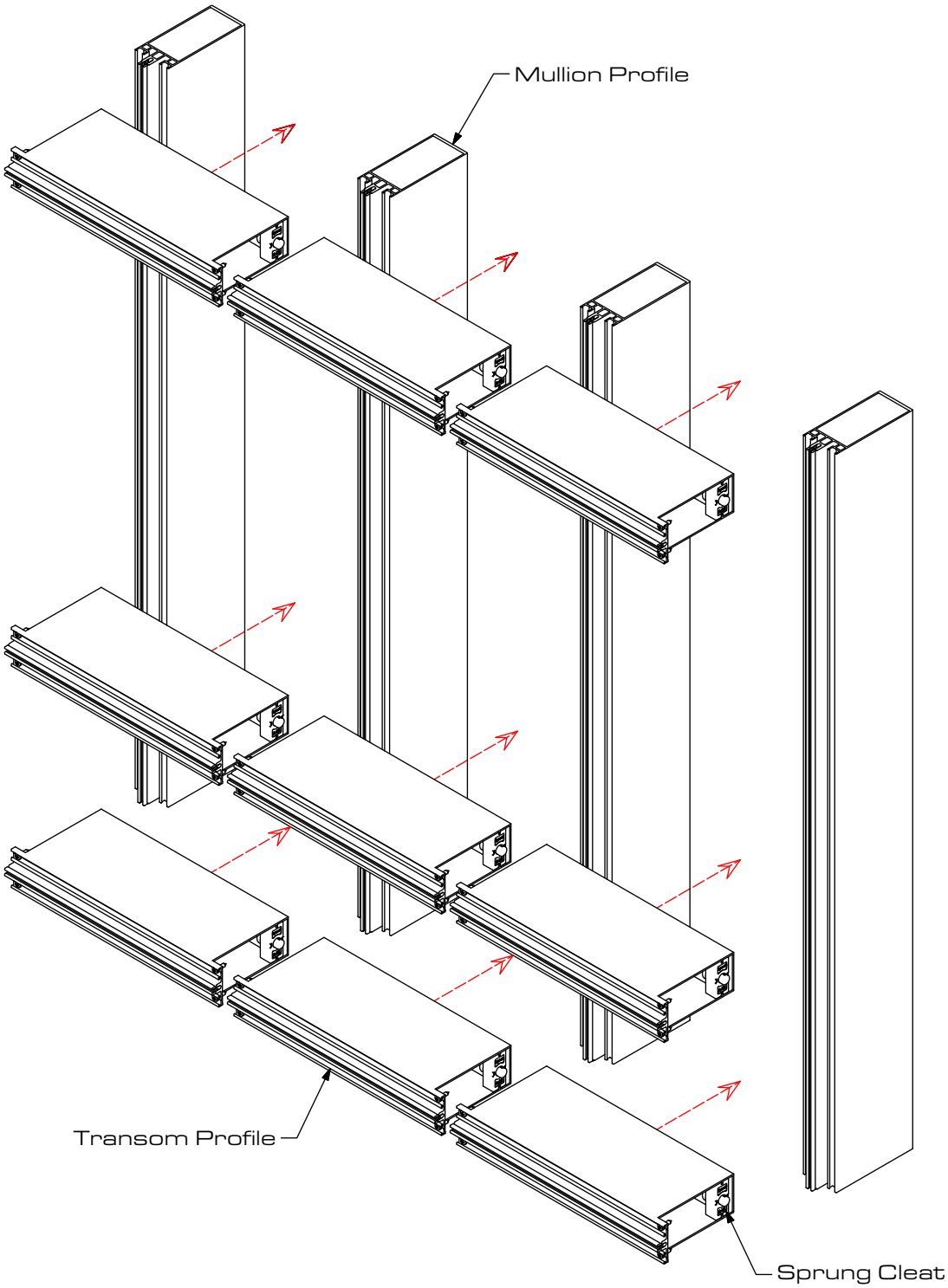
Wall Assembly



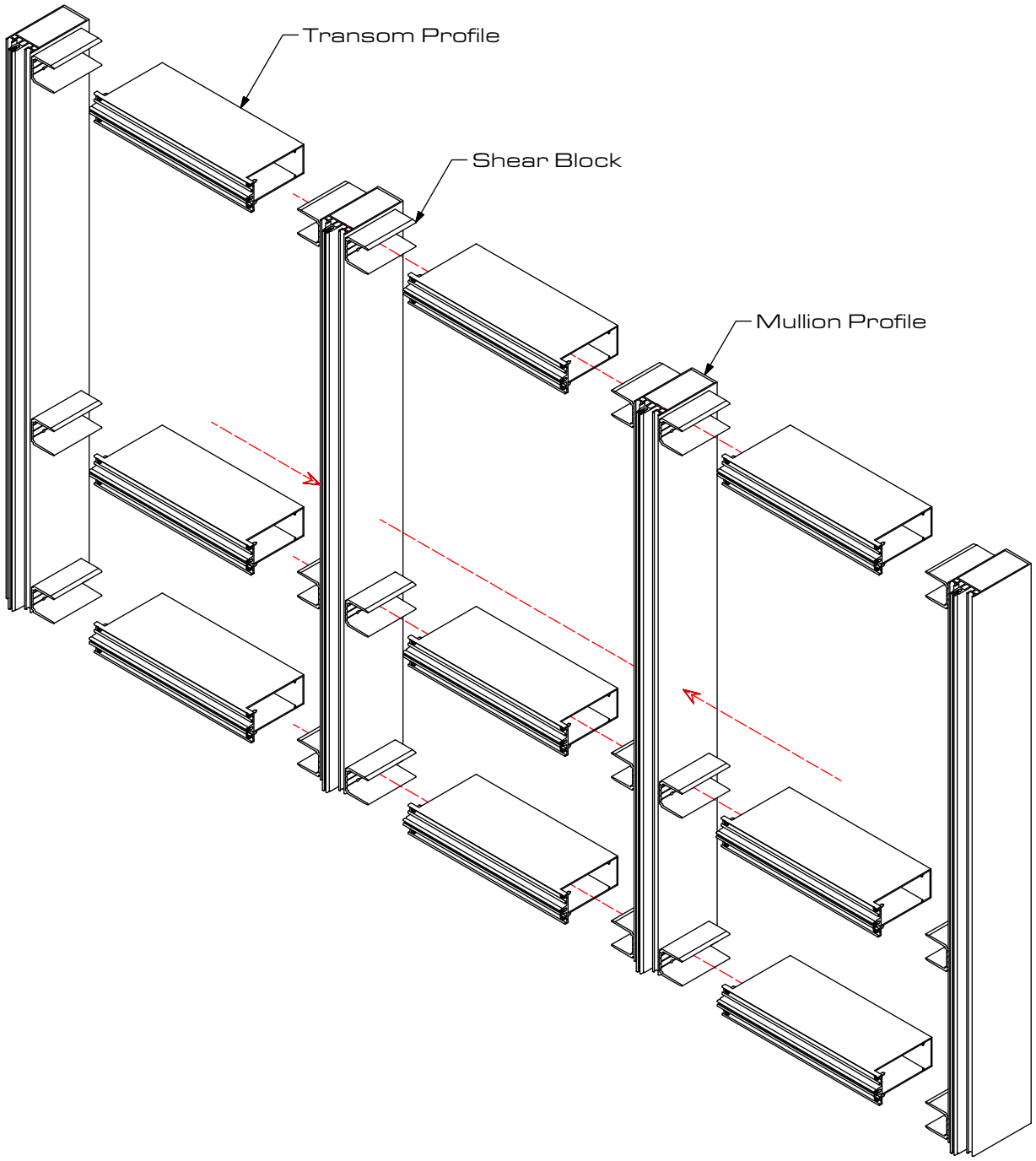
Screw Fixing Assembly



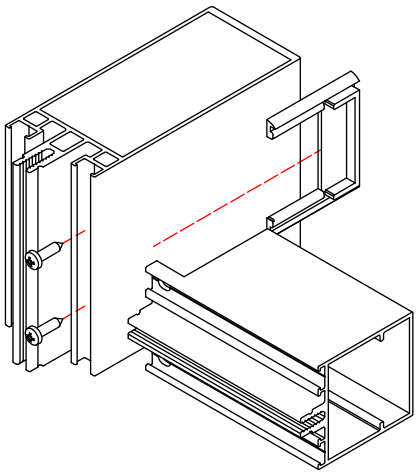
Sprung Cleat Fixing Assembly



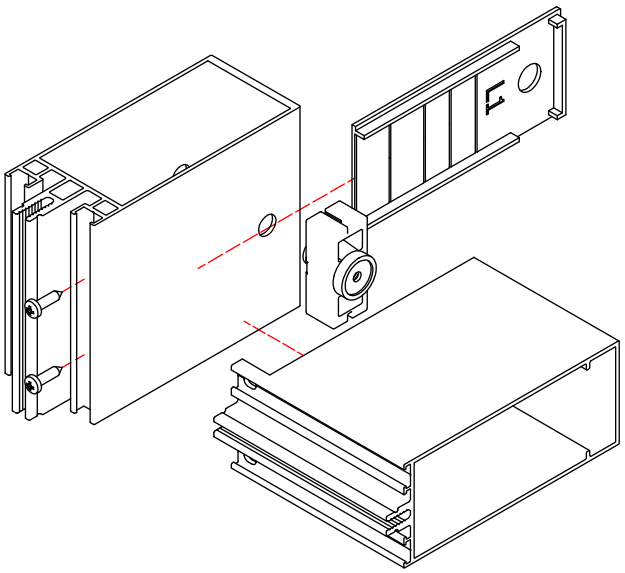
Shear Block Fixing Assembly



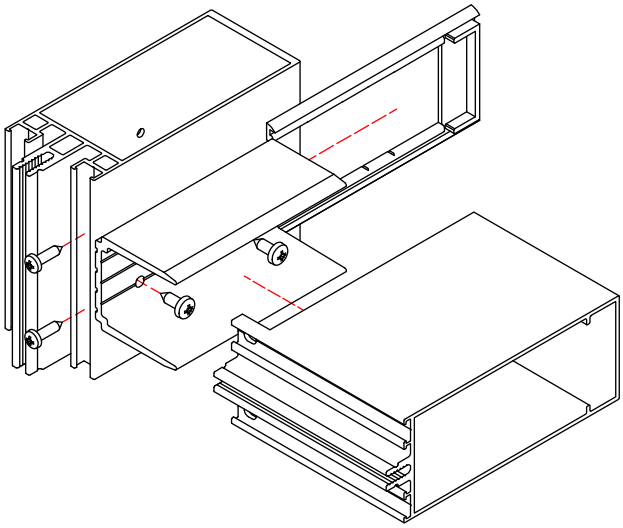
Connection Details



Screw Fixing Details



Sprung Cleat Fixing Details

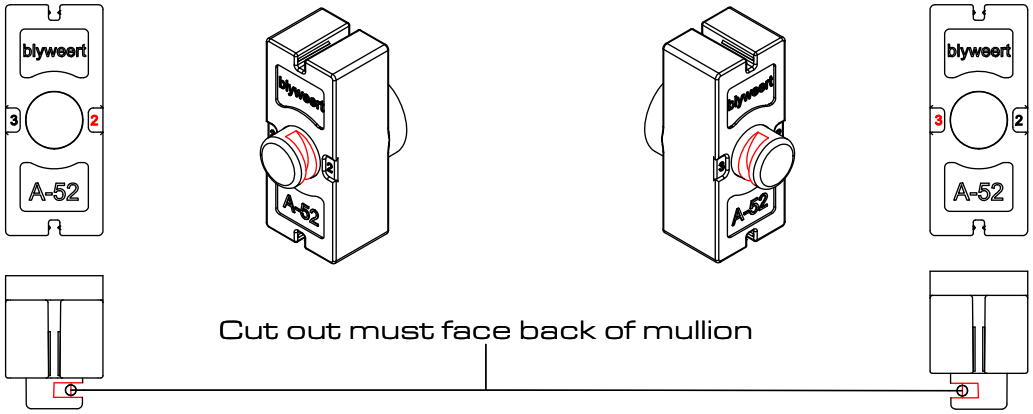


Shear Block Fixing Details

Sprung Cleat Usage

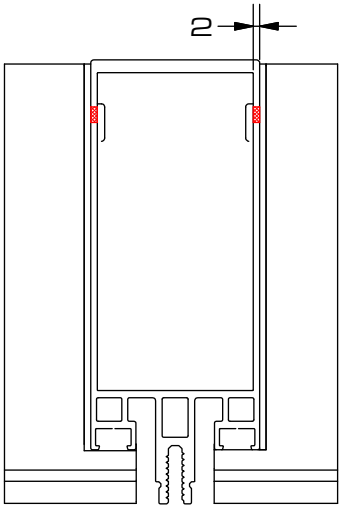
A-52-140
Slot Faces '2'

A-52-141
Slot Faces '3'

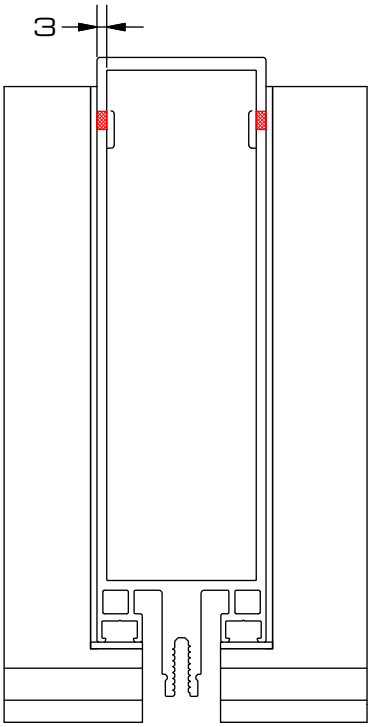


Cut out must face back of mullion

Back of Mullion



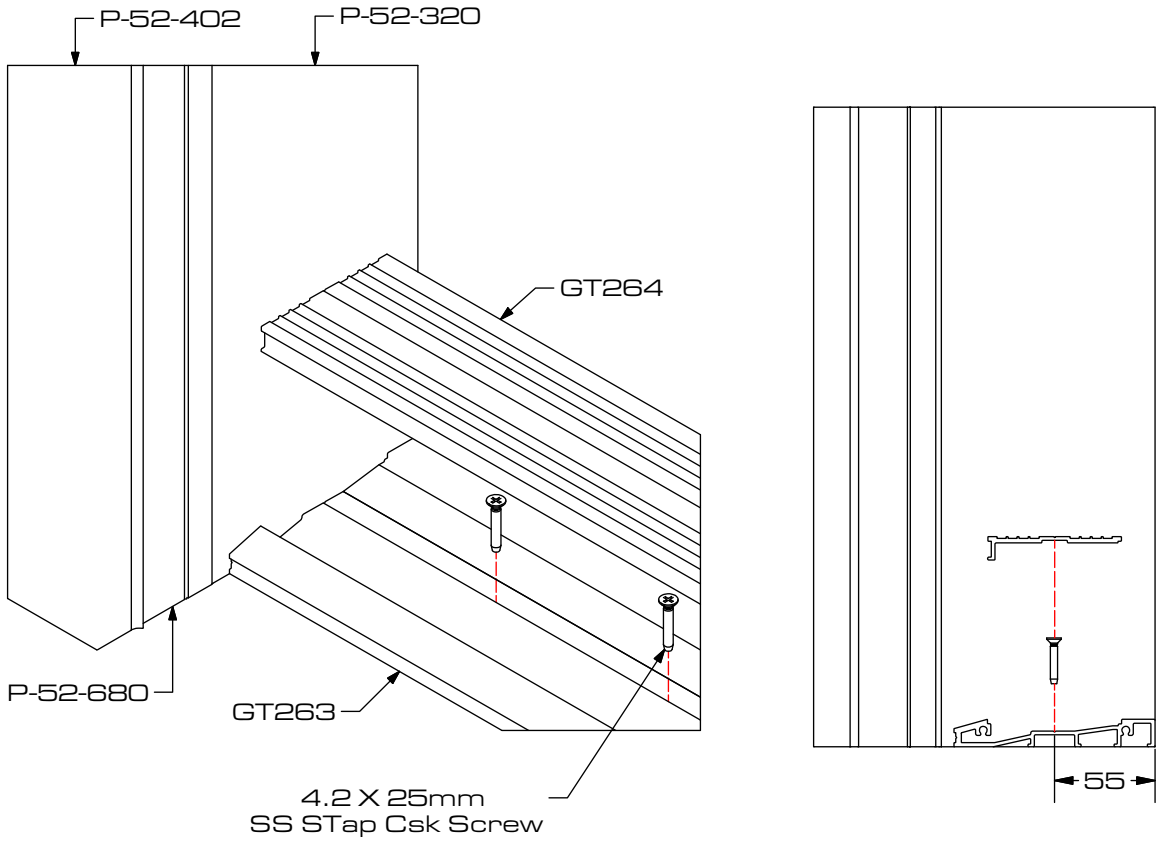
Front of Mullion

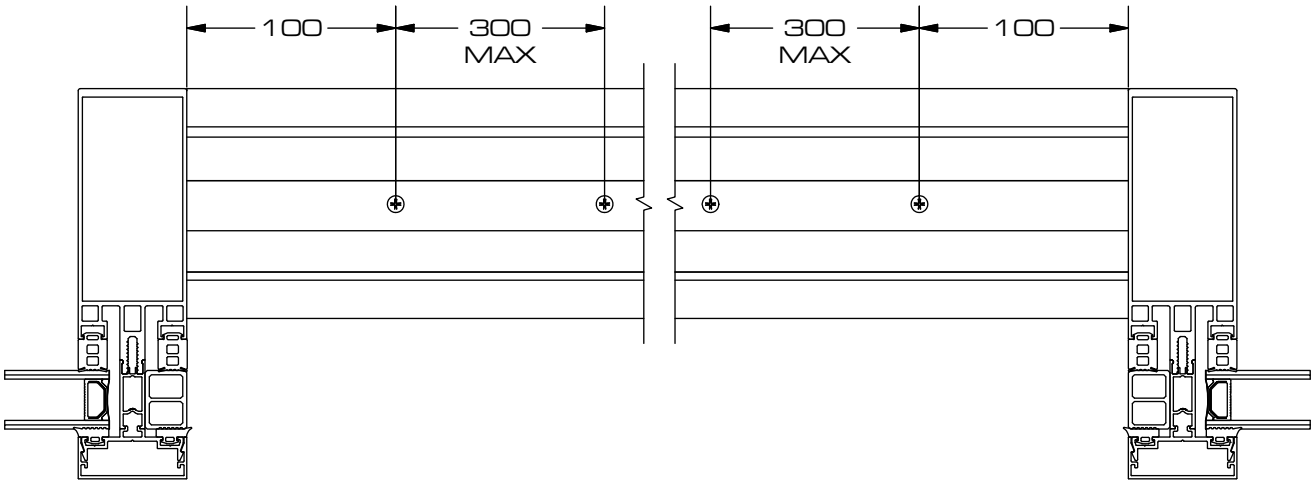


A-52-140 Sprung Cleat
P-52-300
P-52-300
P-52-305
P-52-310
P-52-315
P-52-320
P-52-325
P-52-330

A-52-141 Sprung Cleat
P-52-335
P-52-340
P-52-345
P-52-350

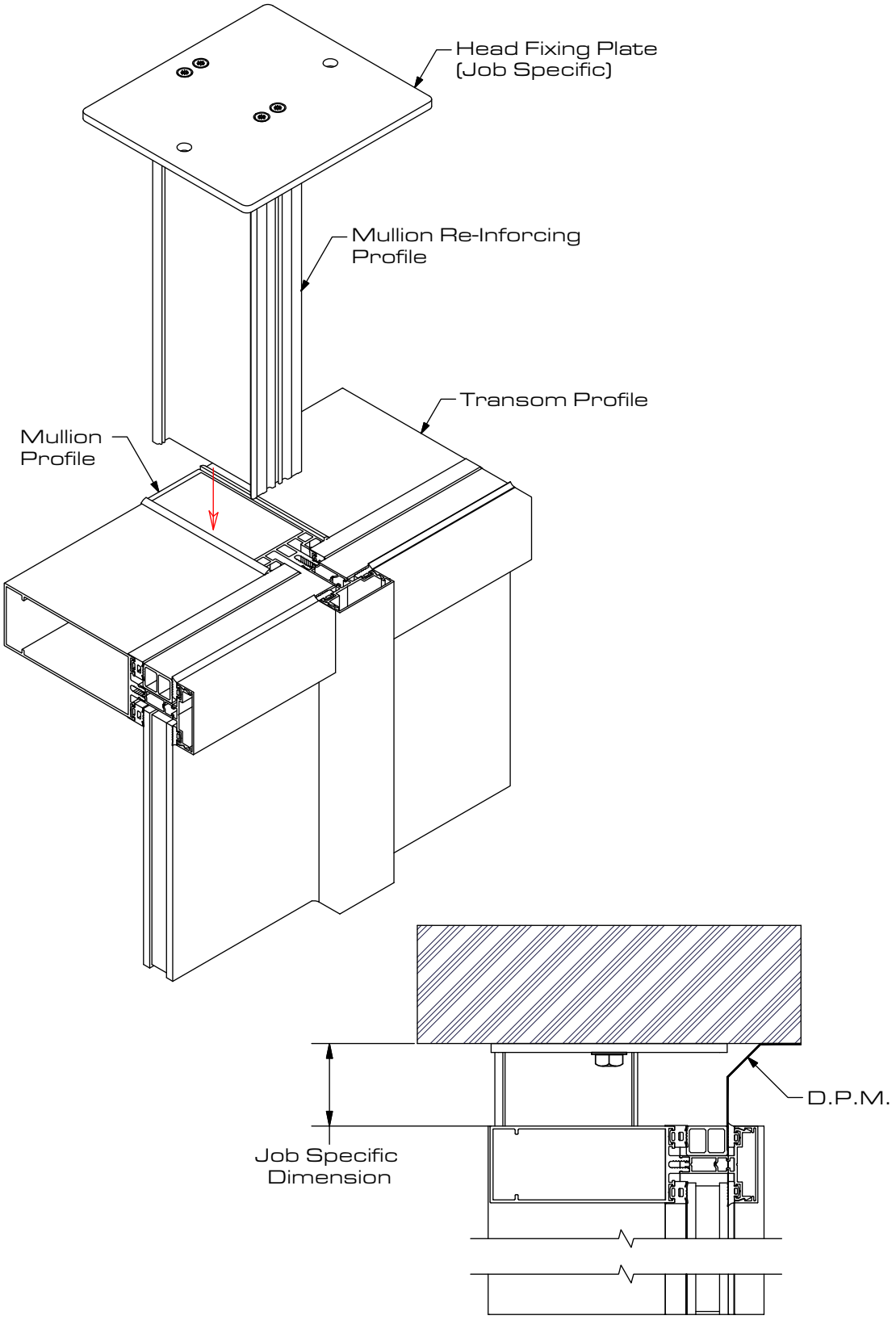
Krios Door Insert Assembly



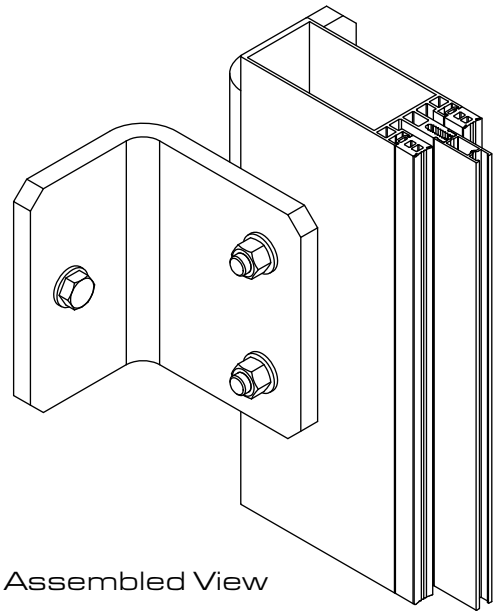


NB: For full door assembly and installation details please refer to the Krios Manual

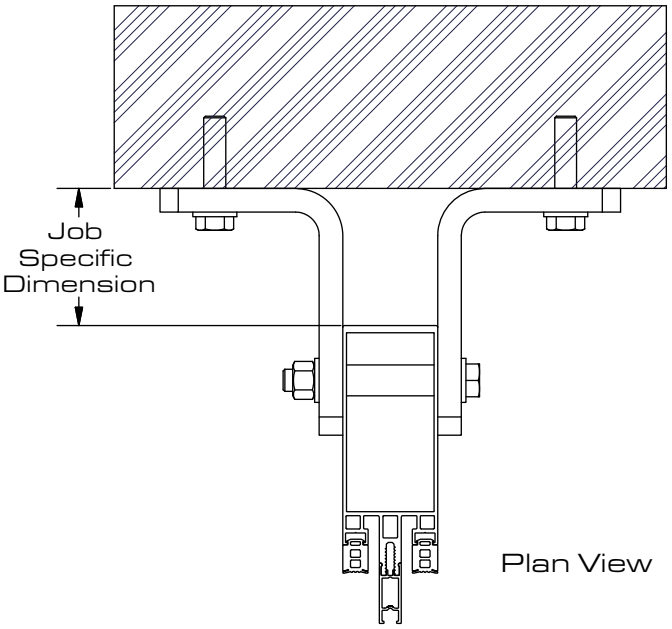
Head Fixing Details



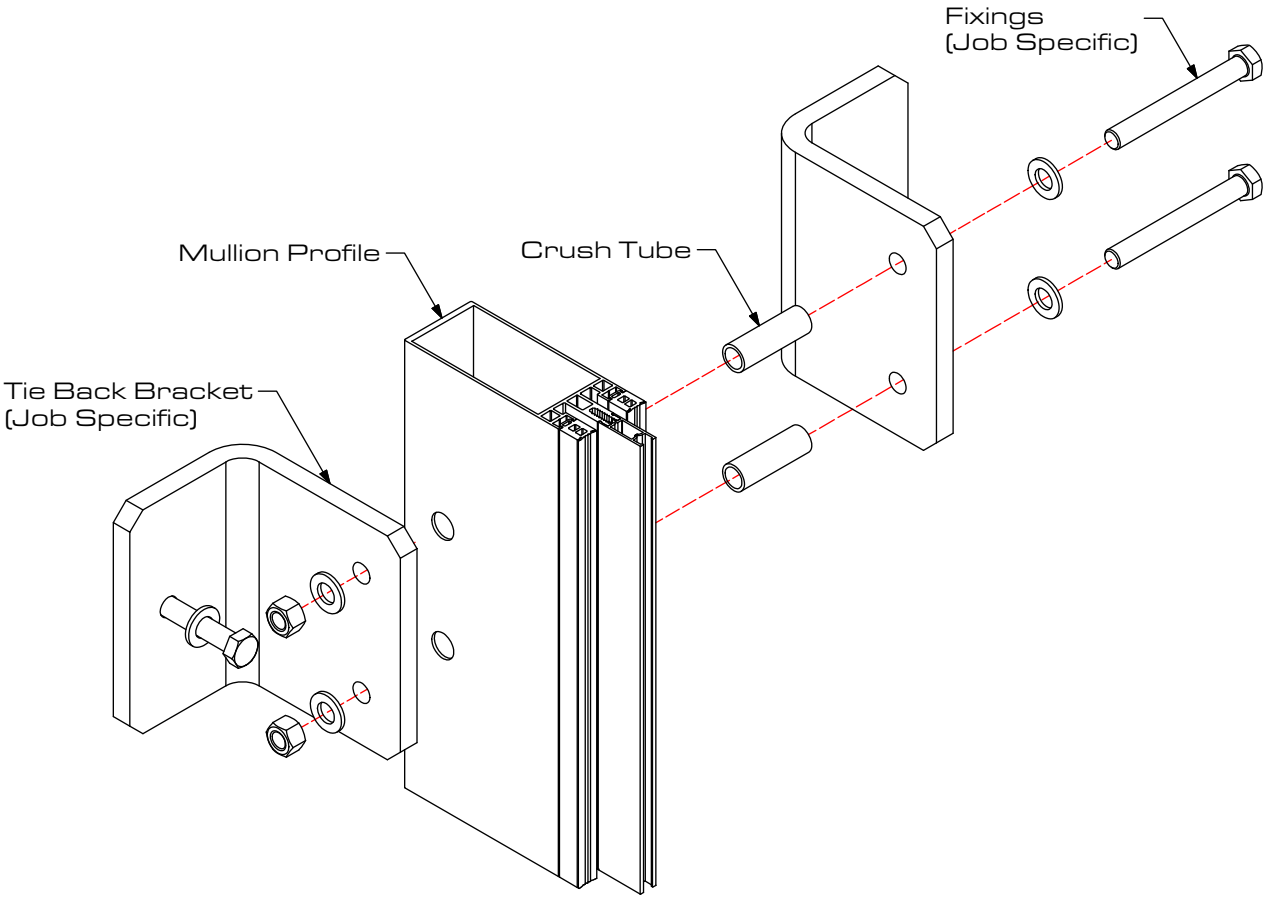
Intermediate Fixing Details



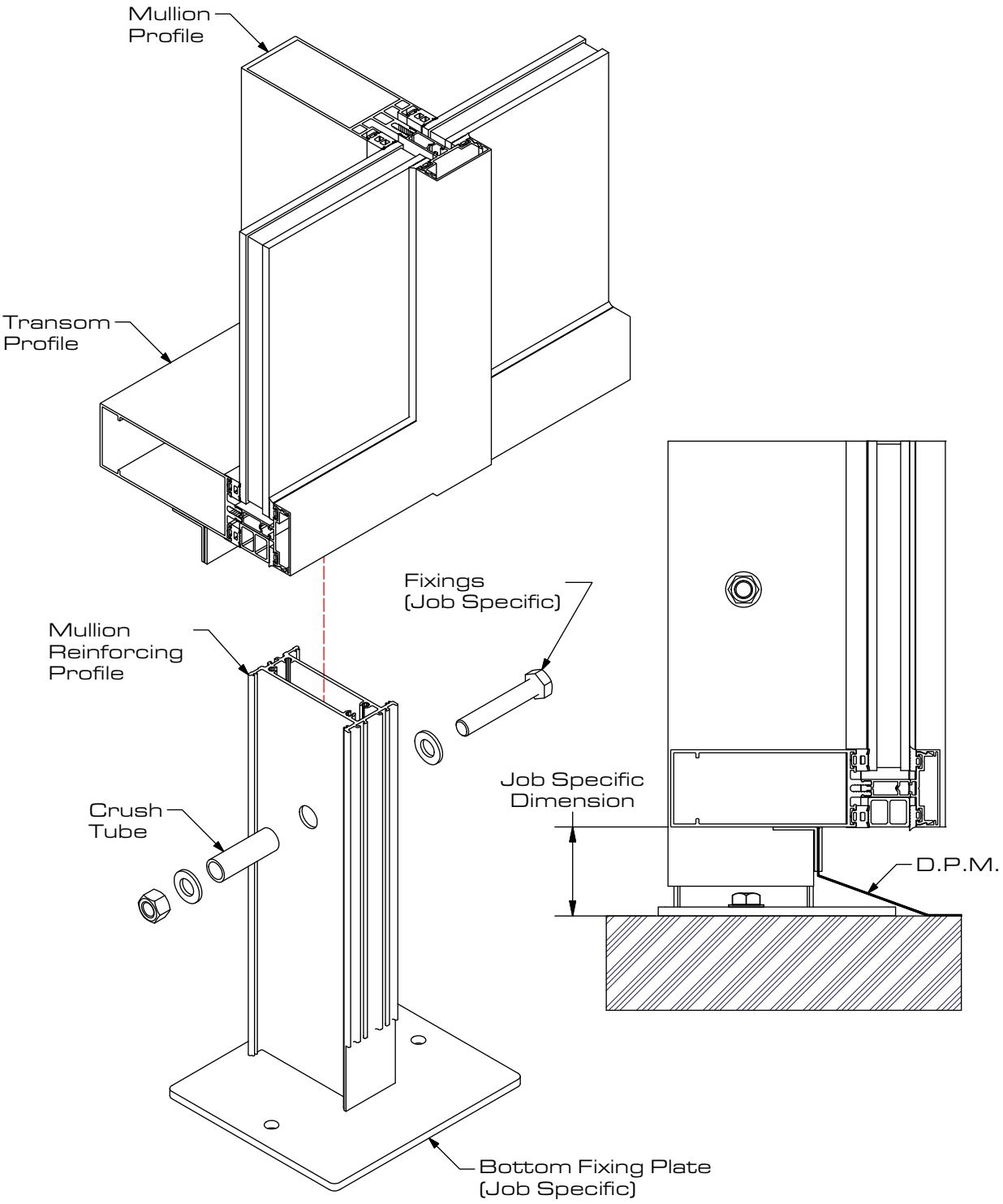
Assembled View



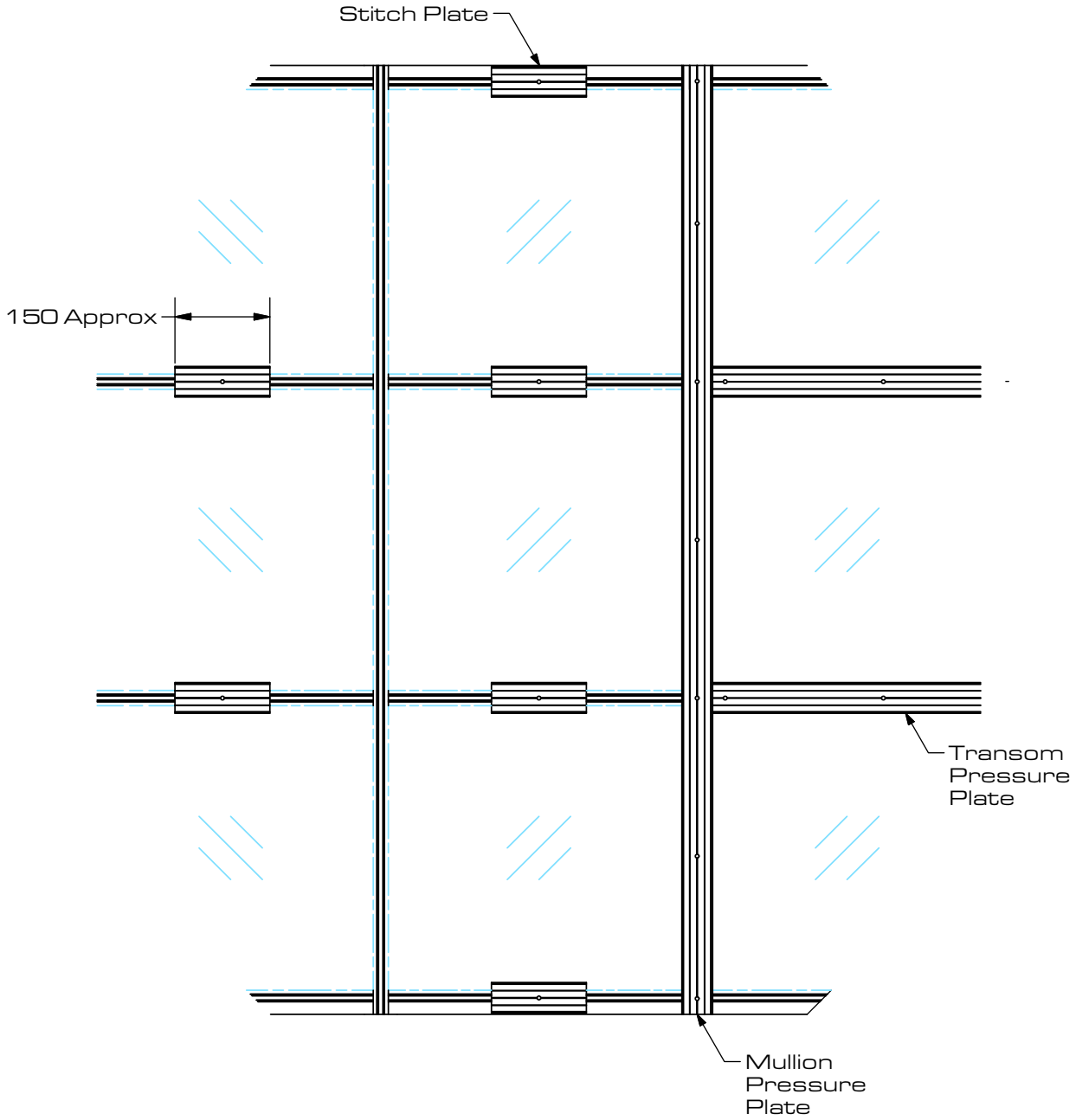
Plan View



Bottom Fixing Details

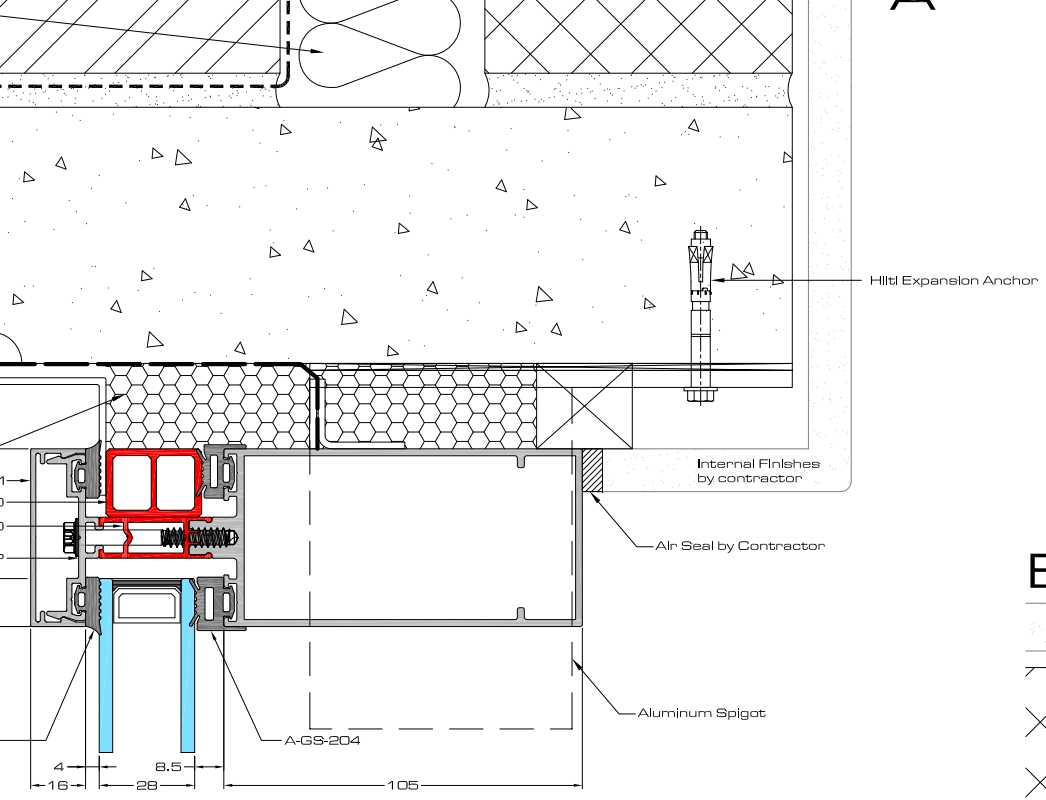


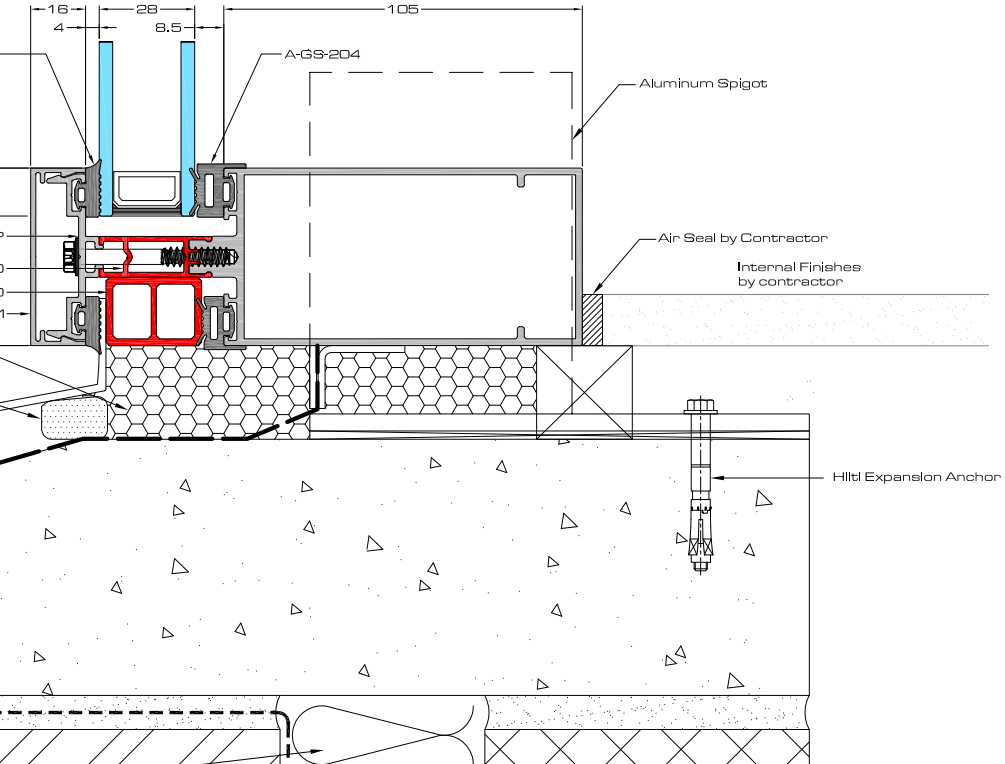
Glazing Details - Stitch Glazing



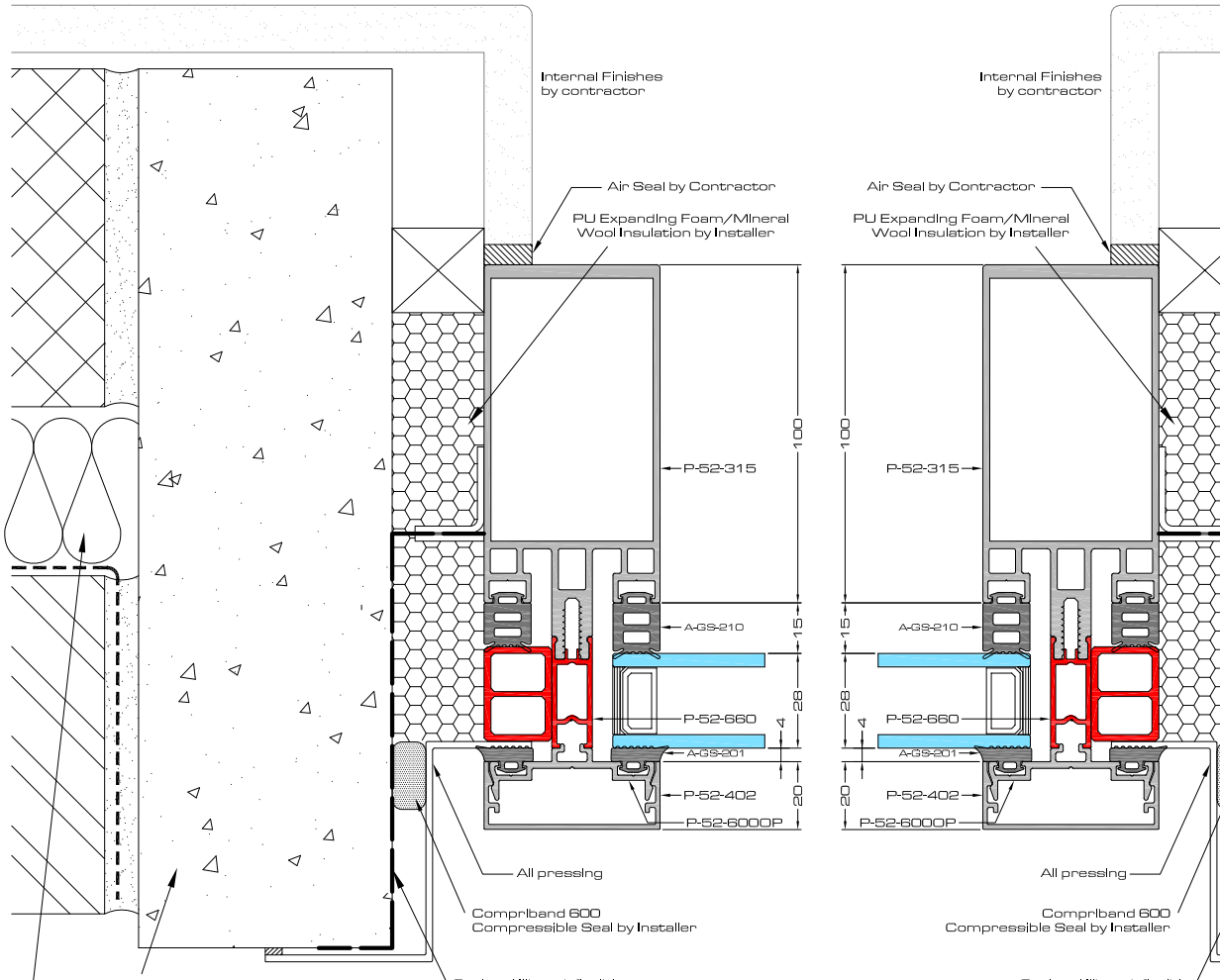
1) Stitch Plates to be applied to centreline of transom to secure glass in place.
2) Once all transom stitch plates have been applied a full mullion pressure plate can be fastened.
3) Once all mullion pressure plates are secured, full transom pressure plates can be applied.
4) On larger pane sizes it is recommended to use stitch plates on mullions as well as transoms to ensure glass is secured in place.

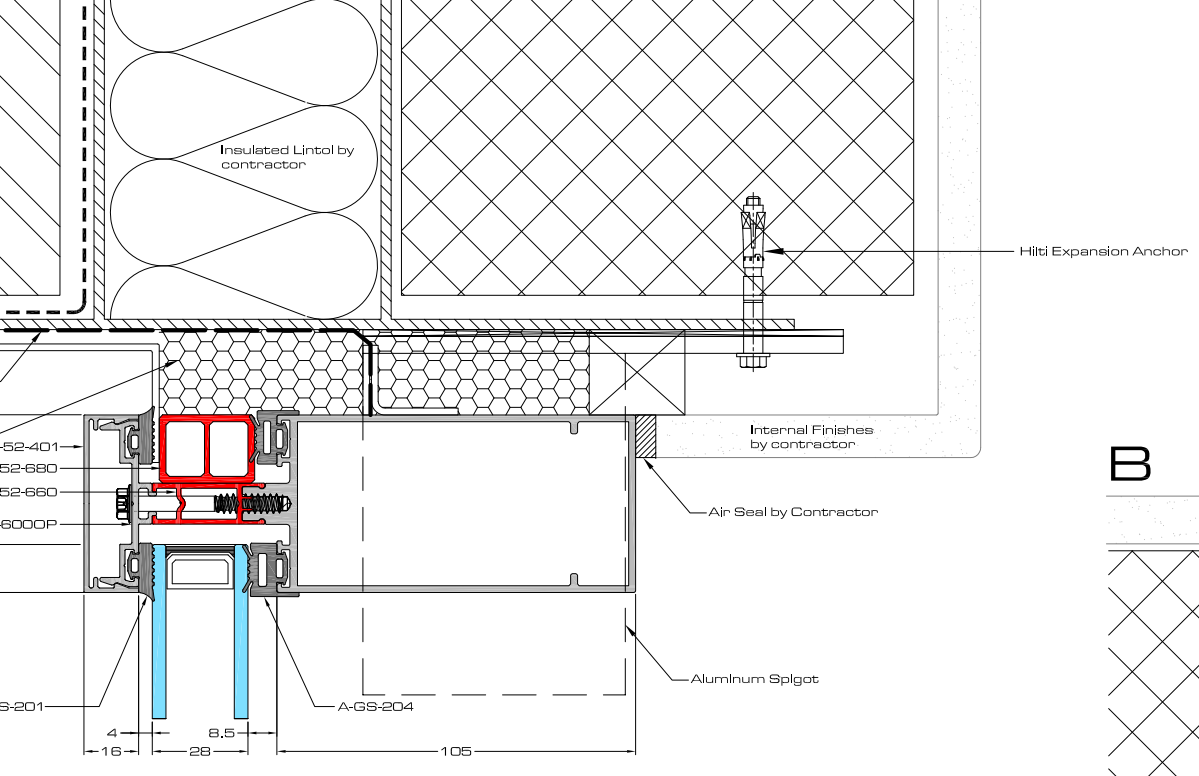
A

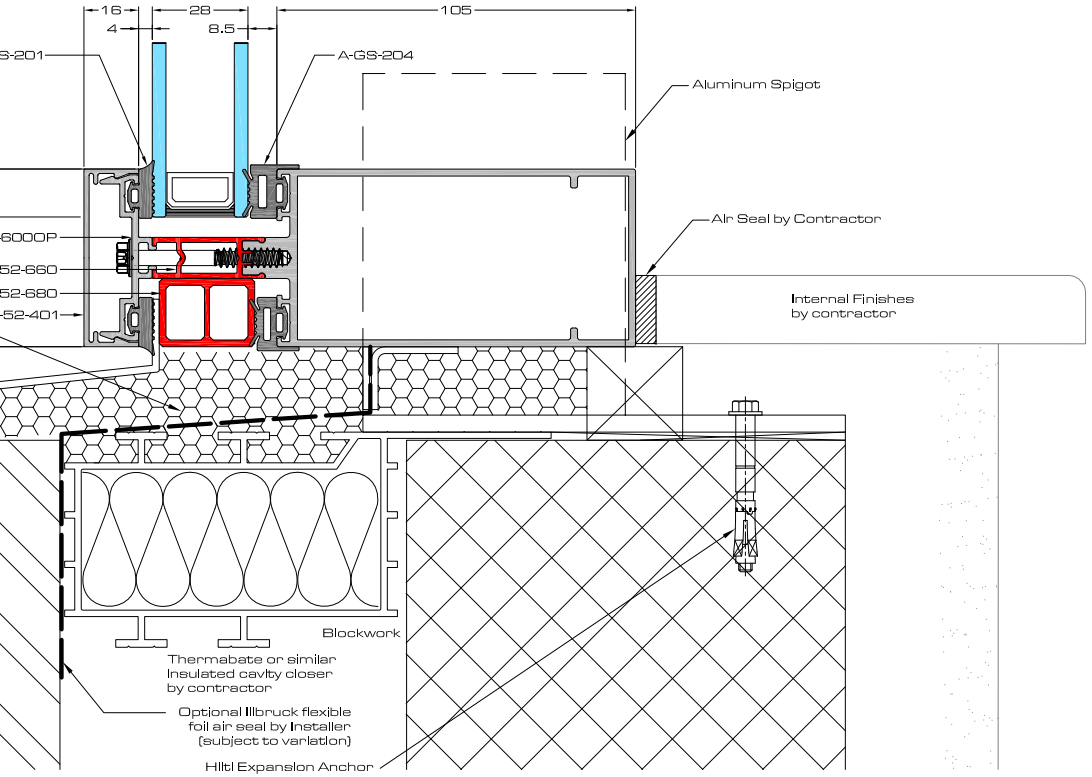

Hilti Expansion Anchor
Internal Finishes
by contractor
Air Seal by Contractor
Aluminum Spigot
A-GS-204
4
8.5
16
28
105


16
28
105
4
8.5
A-GS-204
Aluminum Spigot
Air Seal by Contractor
Internal Finishes
by contractor
Hilti Expansion Anchor

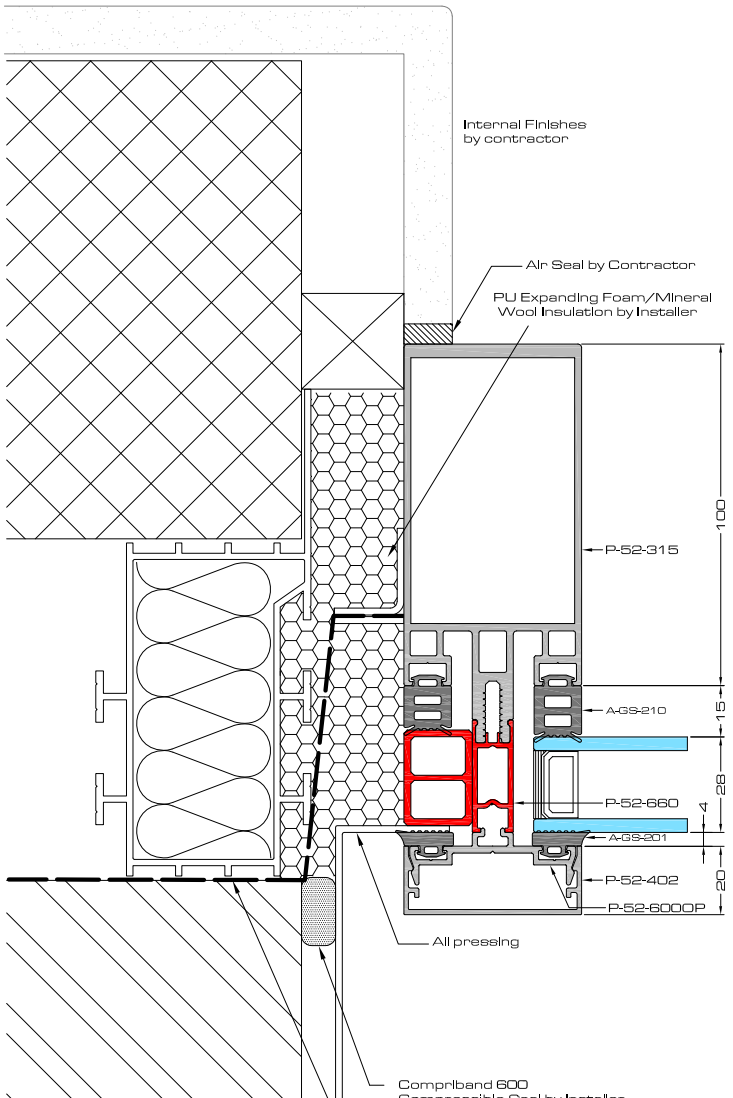
B

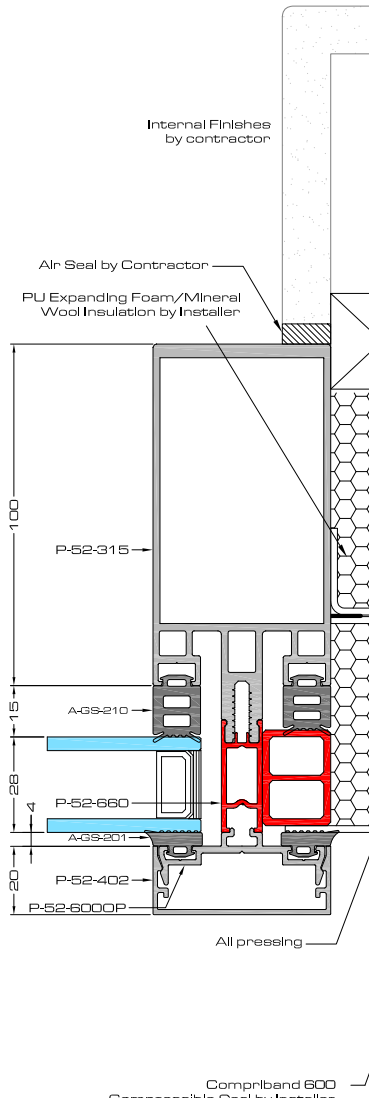

Internal Finishes
by contractor
Air Seal by Contractor
PU Expanding Foam/Mineral
Wool Insulation by Installer
P-52-315
100
A-GS-210
15
P-52-660
28
4
A-GS-201
P-52-402
20
P-52-6000P
All pressing
Comprband 600
Compressible Seal by Installer
Internal Finishes
by contractor
Air Seal by Contractor
PU Expanding Foam/Mineral
Wool Insulation by Installer
100
P-52-315
15
A-GS-210
28
P-52-660
4
A-GS-201
20
P-52-402
P-52-6000P
All pressing
Comprband 600
Compressible Seal by Installer


Insulated Lintol by contractor
Hilti Expansion Anchor
Internal Finishes by contractor
Air Seal by Contractor
Aluminum Spigot
A-GS-204
4
8.5
16
28
105

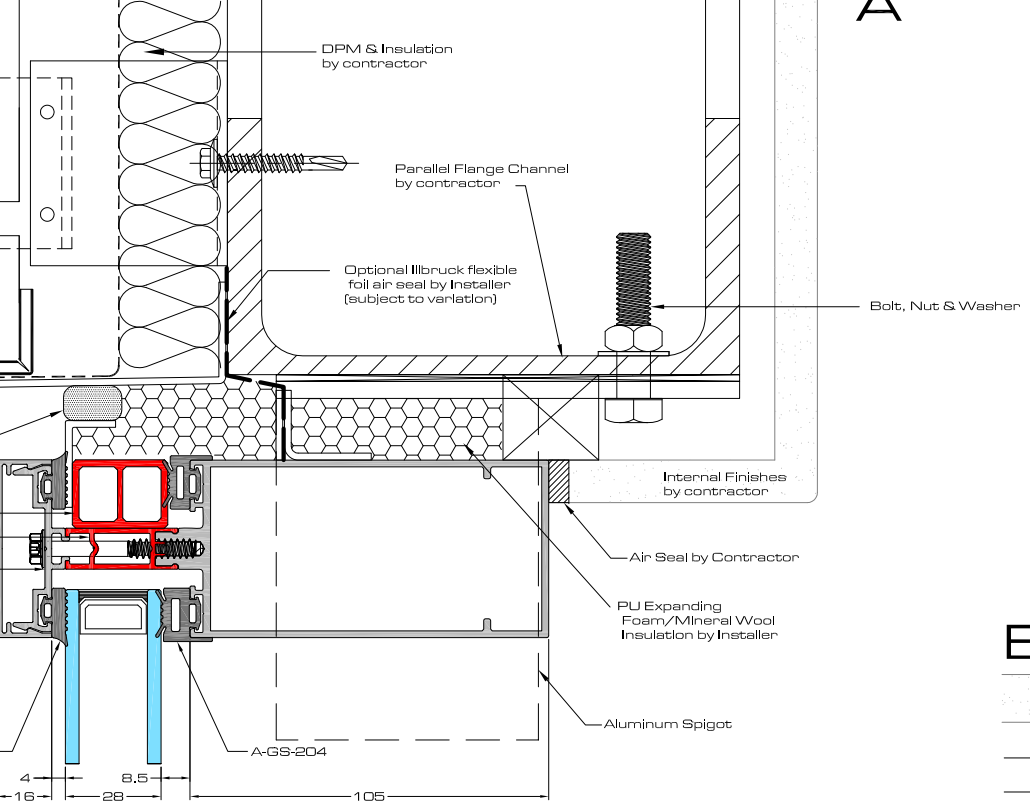

16
28
105
4
8.5
A-GS-204
Aluminum Spigot
Air Seal by Contractor
Internal Finishes by contractor
Blockwork
Thermabate or similar Insulated cavity closer by contractor
Optional Illbruck flexible foil air seal by Installer (subject to variation)
Hilti Expansion Anchor

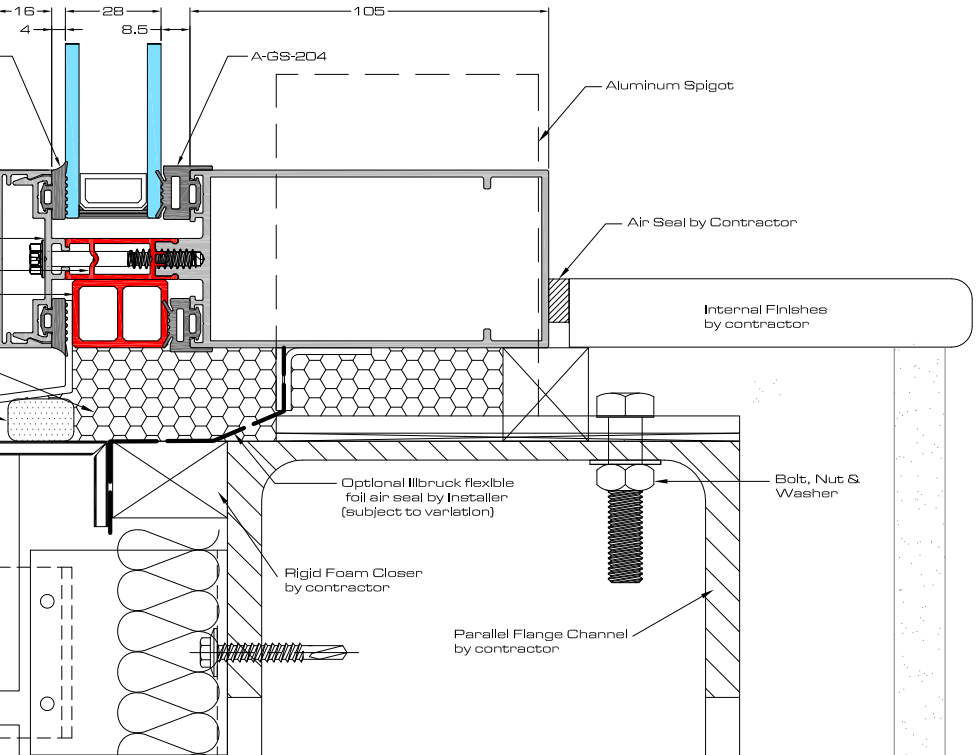
B


Internal Finishes by contractor
Air Seal by Contractor
PU Expanding Foam/Mineral Wool Insulation by Installer
P-52-315
100
A-GS-210
15
P-52-660
28
4
A-GS-201
P-52-402
20
P-52-6000P
All pressing
Compriband 600

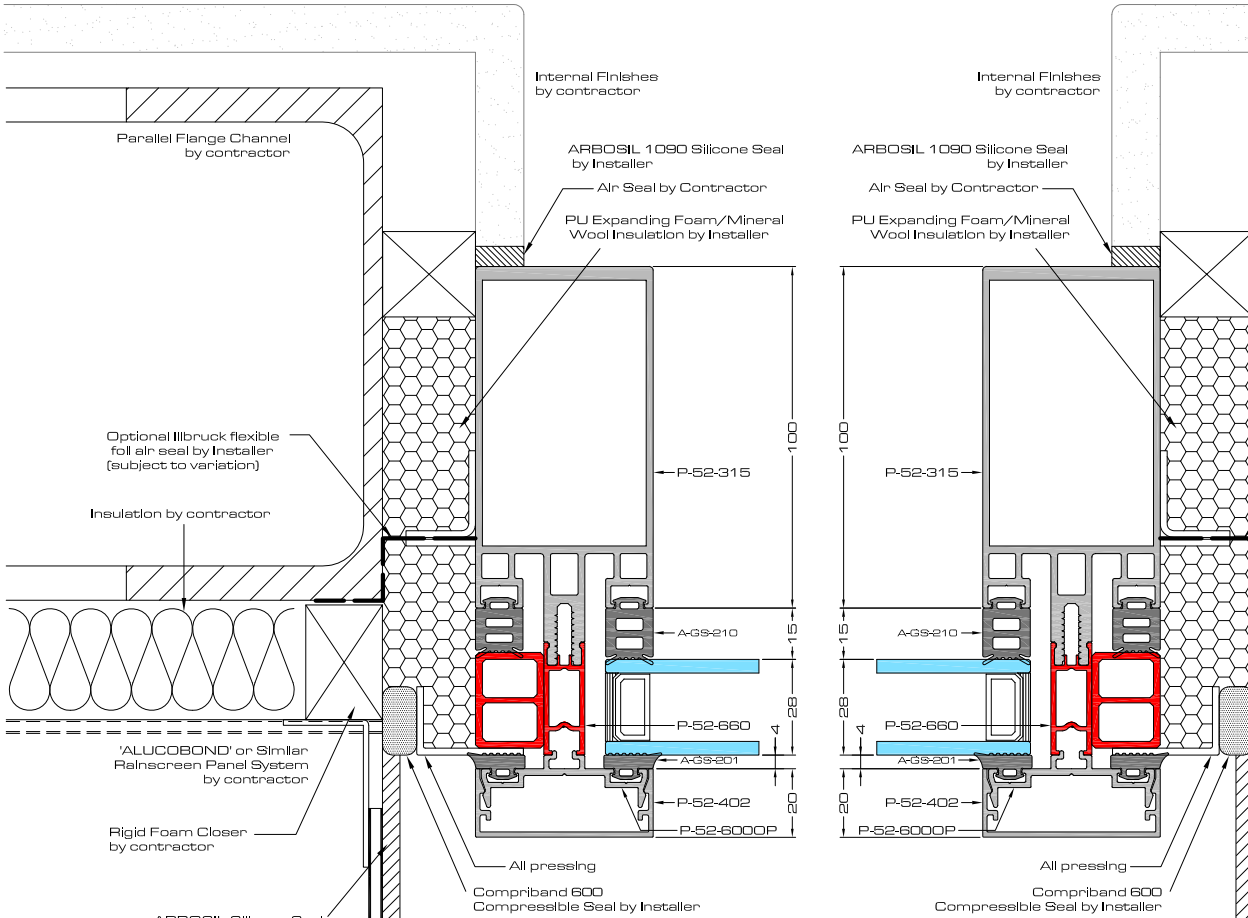

Internal Finishes by contractor
Air Seal by Contractor
PU Expanding Foam/Mineral Wool Insulation by Installer
100
P-52-315
15
A-GS-210
28
4
P-52-660
A-GS-201
20
P-52-402
P-52-6000P
All pressing
Compriband 600

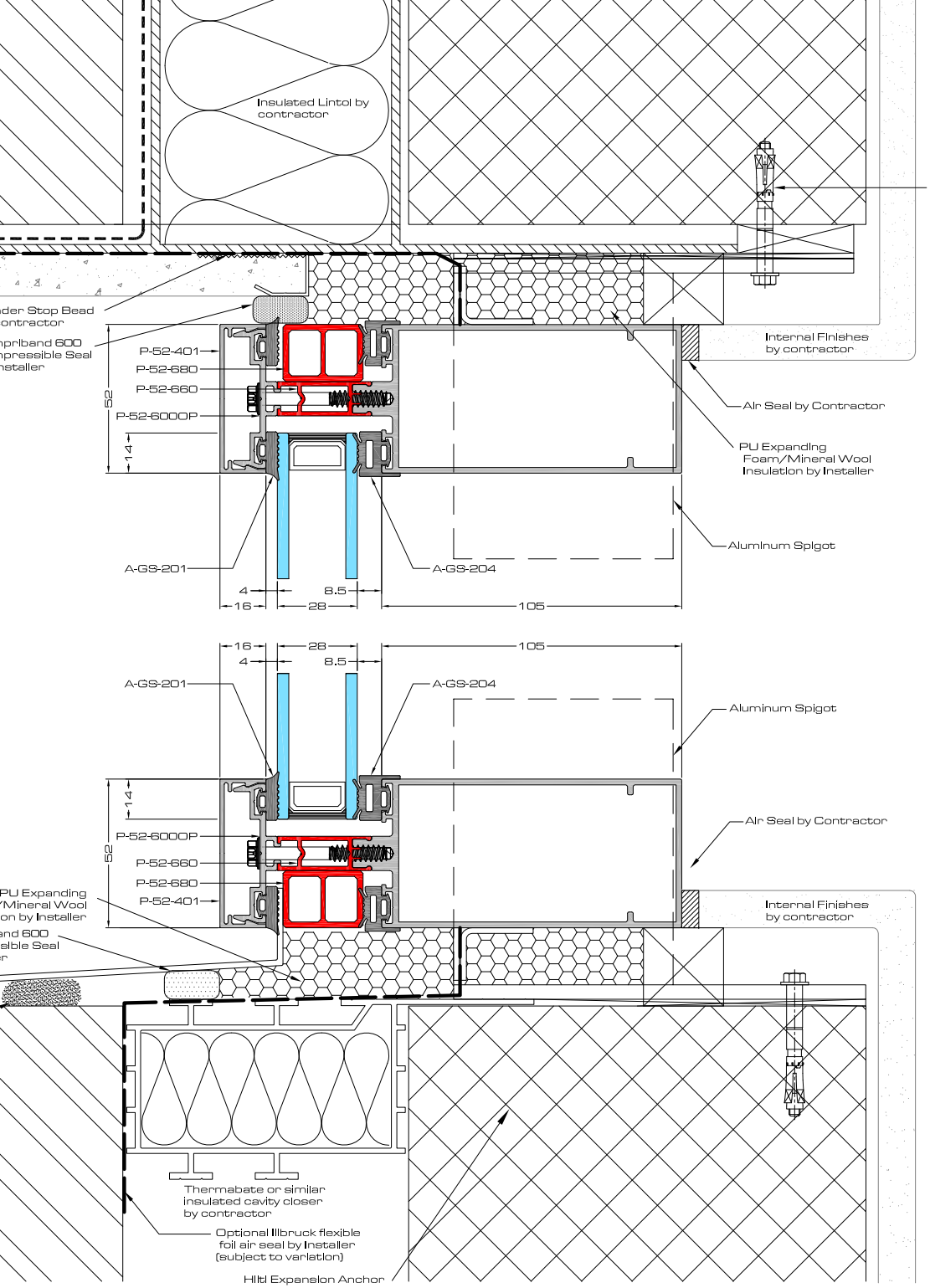
A


DPM & Insulation
by contractor
Parallel Flange Channel
by contractor
Optional Illbruck flexible
foil air seal by Installer
(subject to variation)
Bolt, Nut & Washer
Internal Finishes
by contractor
Air Seal by Contractor
PU Expanding
Foam/Mineral Wool
Insulation by Installer
Aluminum Spigot
A-GS-204
4
8.5
16
28
105

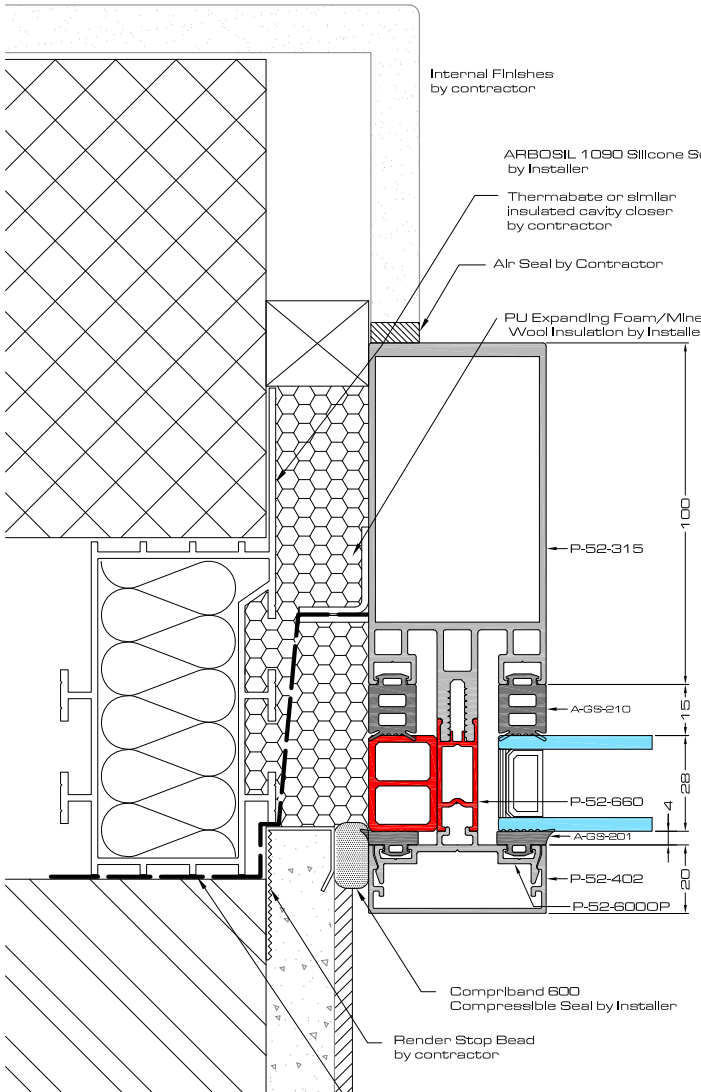

16
28
105
4
8.5
A-GS-204
Aluminum Spigot
Air Seal by Contractor
Internal Finishes
by contractor
Optional Illbruck flexible
foil air seal by Installer
(subject to variation)
Bolt, Nut &
Washer
Rigid Foam Closer
by contractor
Parallel Flange Channel
by contractor

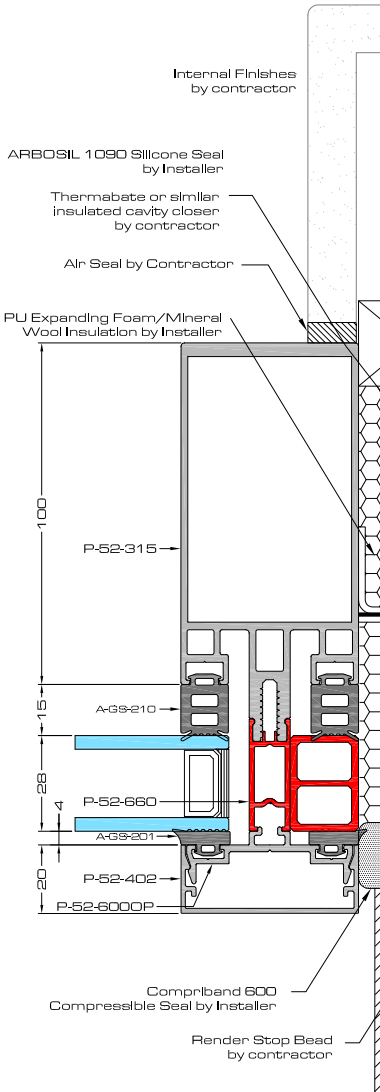
B

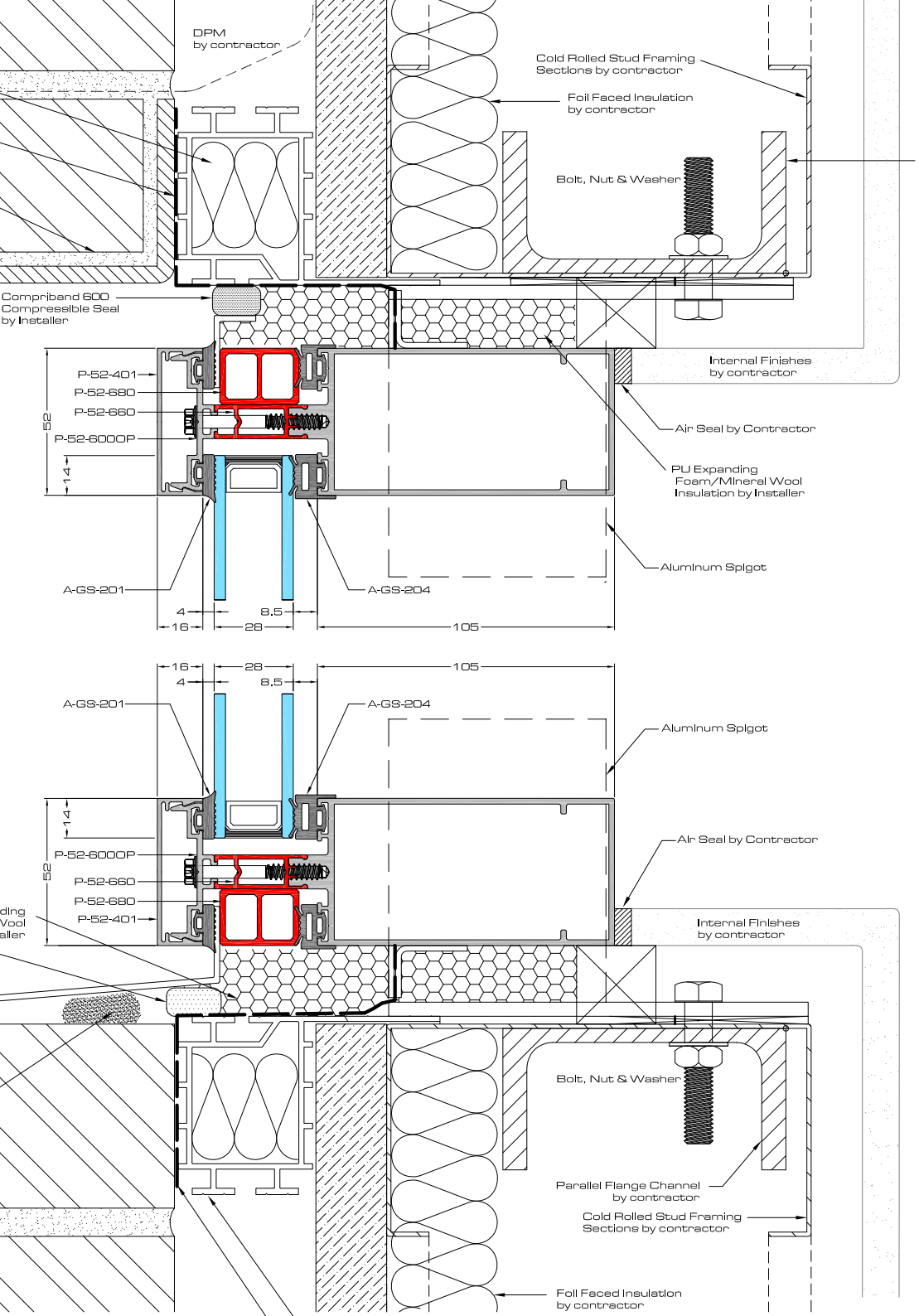

Internal Finishes
by contractor
Parallel Flange Channel
by contractor
ARBOSIL 1090 Silicone Seal
by Installer
Air Seal by Contractor
PU Expanding Foam/Mineral
Wool Insulation by Installer
Optional Illbruck flexible
foil air seal by Installer
(subject to variation)
Insulation by contractor
P-52-315
100
A-GS-210
15
P-52-660
4
28
A-GS-201
P-52-402
20
P-52-6000P
'ALUCOBOND' or Similar
Rainscreen Panel System
by contractor
Rigid Foam Closer
by contractor
All pressing
Compriband 600
Compressible Seal by Installer
Internal Finishes
by contractor
ARBOSIL 1090 Silicone Seal
by Installer
Air Seal by Contractor
PU Expanding Foam/Mineral
Wool Insulation by Installer
100
P-52-315
15
A-GS-210
28
4
P-52-660
A-GS-201
20
P-52-402
P-52-6000P
All pressing
Compriband 600
Compressible Seal by Installer


Insulated Lintol by contractor
Hilti Expansion Anchor
Internal Finishes by contractor
Air Seal by Contractor
PU Expanding Foam/Mineral Wool Insulation by Installer
Aluminum Spigot
P-52-401
P-52-680
P-52-660
P-52-6000P
A-GS-201
A-GS-204
52
14
4
8.5
16
28
105
Thermabate or similar insulated cavity closer by contractor
Optional Illbruck flexible foil air seal by Installer (subject to variation)

B

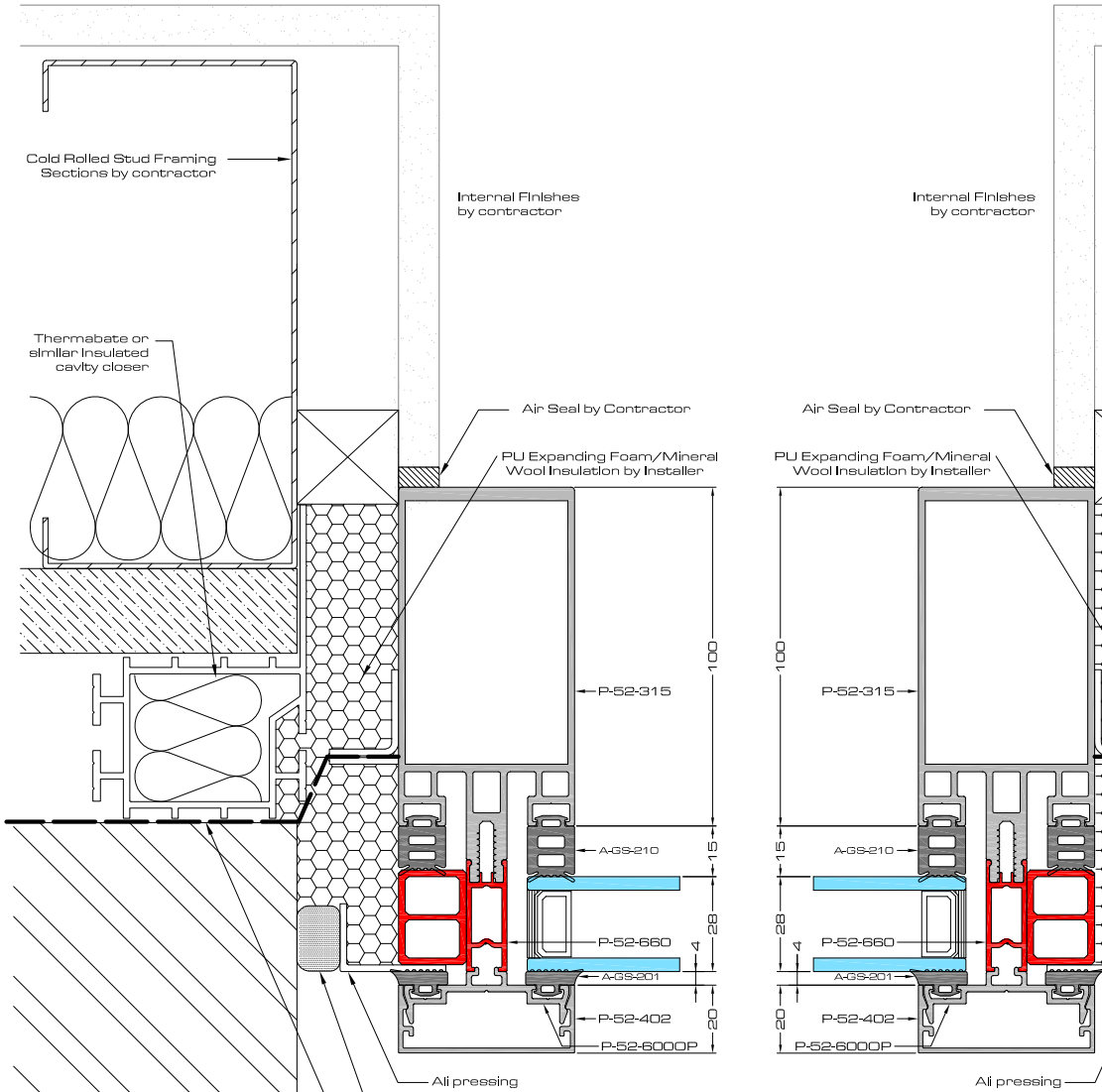

Internal Finishes by contractor
ARBOSIL 1090 Silicone Seal by Installer
Thermabate or similar insulated cavity closer by contractor
Air Seal by Contractor
PU Expanding Foam/Mineral Wool Insulation by Installer
P-52-315
A-GS-210
P-52-660
A-GS-201
P-52-402
P-52-6000P
100
15
28
4
20
Compriband 600 Compressible Seal by Installer
Render Stop Bead by contractor
Optional Illbruck flexible

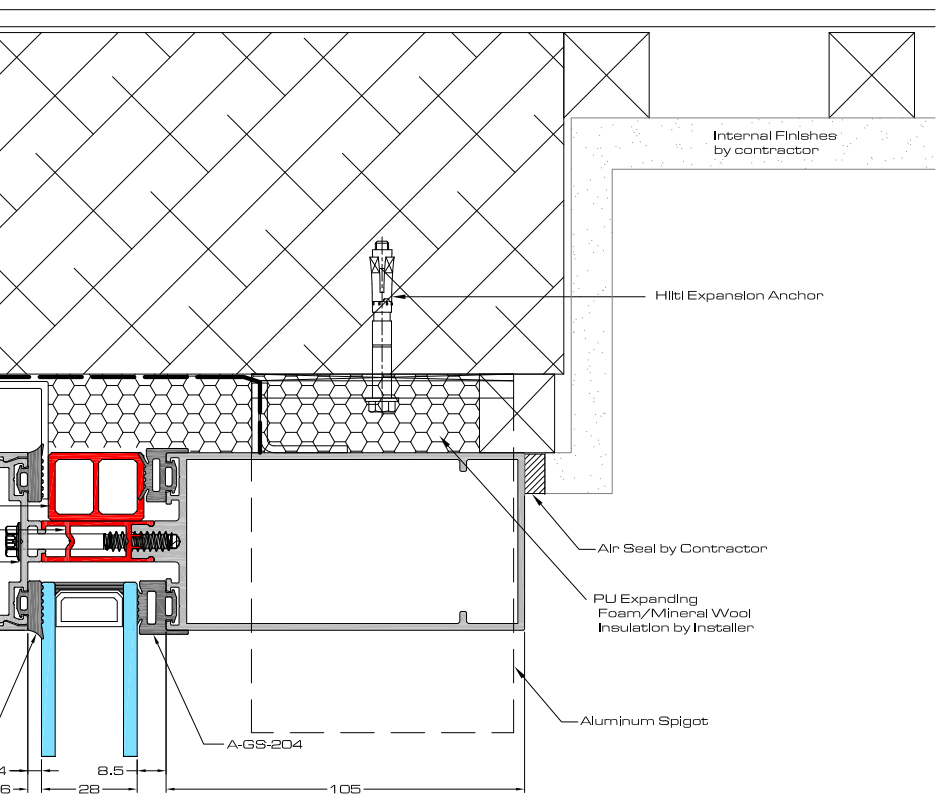

Internal Finishes by contractor
ARBOSIL 1090 Silicone Seal by Installer
Thermabate or similar insulated cavity closer by contractor
Air Seal by Contractor
PU Expanding Foam/Mineral Wool Insulation by Installer
P-52-315
A-GS-210
P-52-660
A-GS-201
P-52-402
P-52-6000P
100
15
28
4
20
Compriband 600 Compressible Seal by Installer
Render Stop Bead by contractor
Optional Illbruck flexible

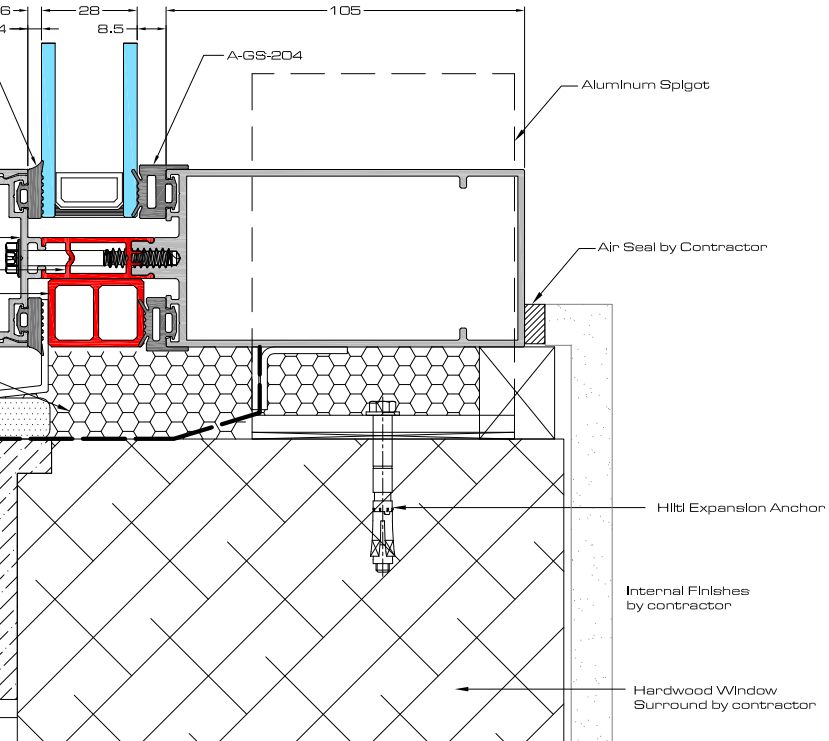

DPM
by contractor
Cold Rolled Stud Framing
Sections by contractor
Foil Faced Insulation
by contractor
Parallel Flange Channel
by contractor
Bolt, Nut & Washer
Compriband 600
Compressible Seal
by Installer
Internal Finishes
by contractor
P-52-401
P-52-680
P-52-660
P-52-6000P
52
14
Air Seal by Contractor
PU Expanding
Foam/Mineral Wool
Insulation by Installer
Aluminum Spigot
A-GS-201
A-GS-204
4
8.5
16
28
105
Air Seal by Contractor
Internal Finishes
by contractor
Bolt, Nut & Washer
Parallel Flange Channel
by contractor
Cold Rolled Stud Framing
Sections by contractor
Foil Faced Insulation
by contractor

A

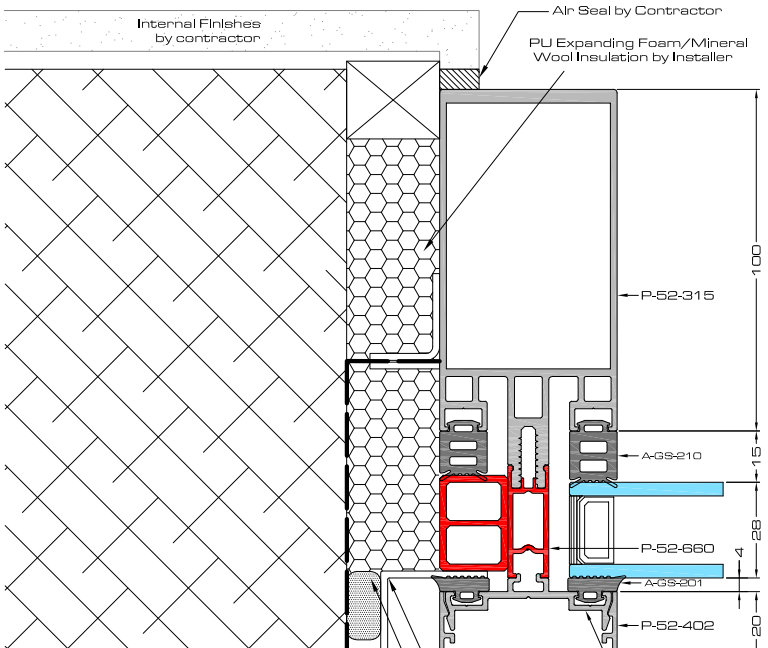
B

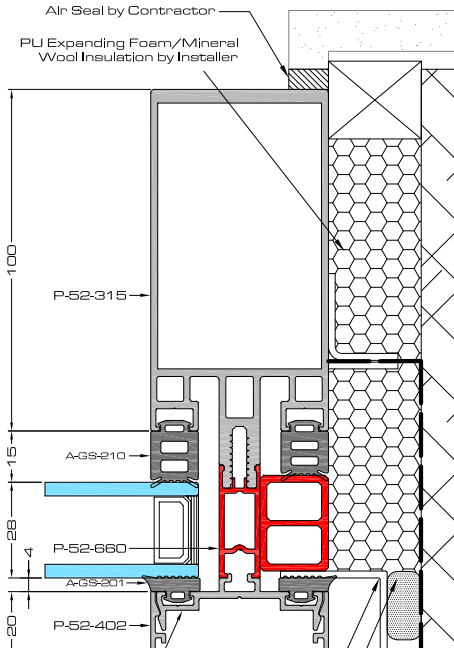

Cold Rolled Stud Framing
Sections by contractor
Internal Finishes
by contractor
Thermabate or
similar insulated
cavity closer
Air Seal by Contractor
PU Expanding Foam/Mineral
Wool Insulation by Installer
P-52-315
100
A-GS-210
15
28
P-52-660
4
A-GS-201
P-52-402
20
P-52-6000P
Ali pressing
Internal Finishes
by contractor
Air Seal by Contractor
PU Expanding Foam/Mineral
Wool Insulation by Installer
100
P-52-315
15
A-GS-210
28
P-52-660
4
A-GS-201
20
P-52-402
P-52-6000P
Ali pressing


Internal Finishes
by contractor
Hilti Expansion Anchor
Air Seal by Contractor
PU Expanding
Foam/Mineral Wool
Insulation by Installer
Aluminum Spigot
A-GS-204
8.5
28
105


105
28
8.5
A-GS-204
Aluminum Spigot
Air Seal by Contractor
Hilti Expansion Anchor
Internal Finishes
by contractor
Hardwood Window
Surround by contractor

B


Internal Finishes
by contractor
Air Seal by Contractor
PU Expanding Foam/Mineral
Wool Insulation by Installer
P-52-315
100
A-GS-210
15
P-52-660
28
4
A-GS-201
P-52-402
20


Air Seal by Contractor
PU Expanding Foam/Mineral
Wool Insulation by Installer
100
P-52-315
15
A-GS-210
28
4
P-52-660
A-GS-201
20
P-52-402