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**Architectural Aluminum Systems**  
**Technical Catalogue - 2024**







**Alumroll Novin co.**

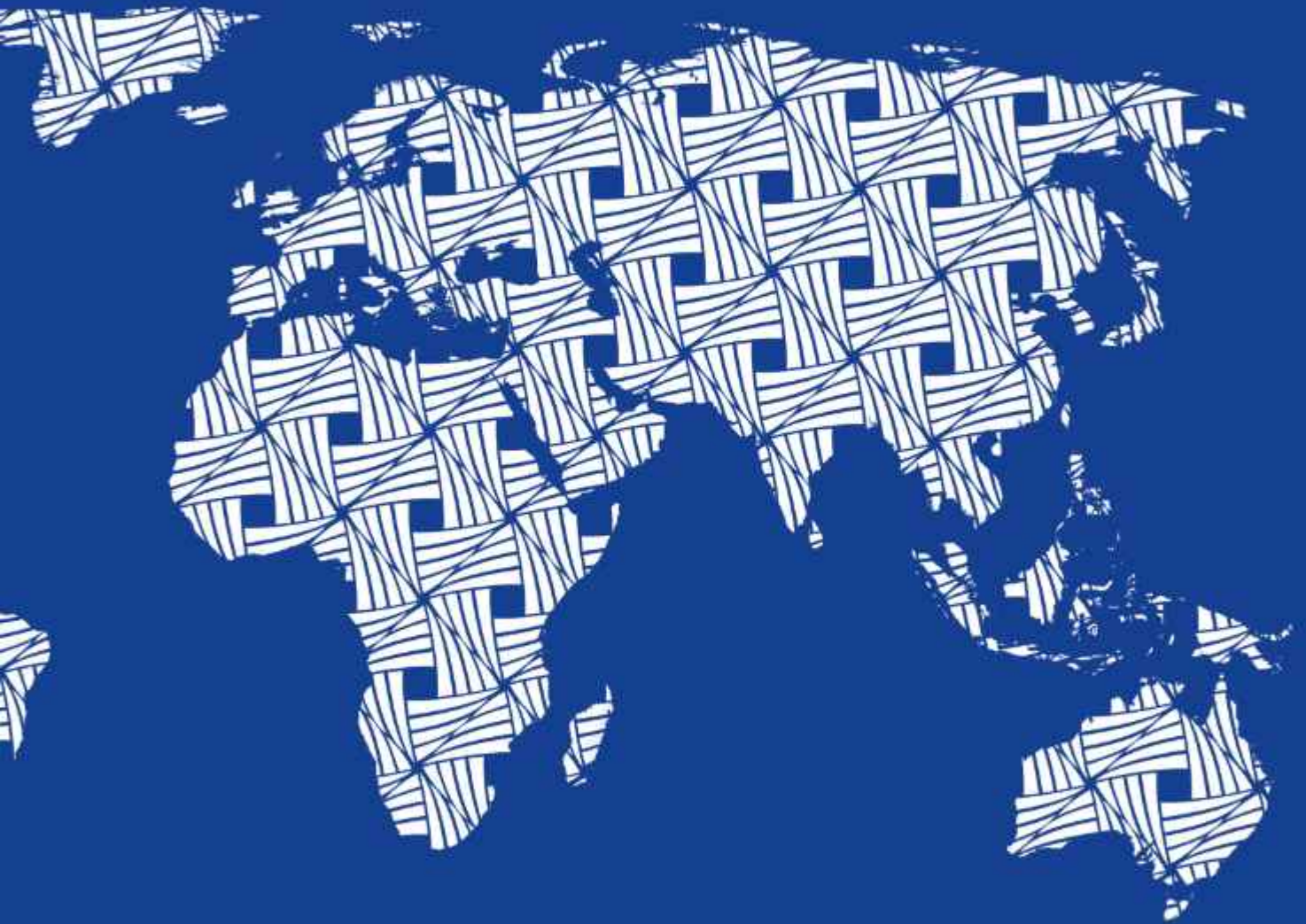
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- ۱- دارای گواهینامه فنی از مرکز تحقیقات راه، مسکن و شهرسازی
- ۲- دارای علامت استاندارد ایران
- ۳- واحد نمونه صنعتی استان مرکزی در سال ۱۴۰۰
- ۳- واحد نمونه صنعتی کشوری سال ۹۶
- ۴- واحد نمونه صنعتی استان مرکزی در سال ۹۵
- ۵- واحد مبای و تلاشگر استان مرکزی در سال ۹۴
- ۶- واحد نمونه صنعتی استان مرکزی در سال ۹۳
- ۷- واحد نمونه صنعتی استان مرکزی در سال ۹۲
- ۸- واحد نمونه صنعتی استان مرکزی در سال ۹۰

صادرات محصولات به کشورهای مختلف

Exporting to Several Countries



## صنایع آلوم—رول نوین

- بزرگترین صادر کننده مقاطع آلومینیومی ایران
- اولین و بزرگترین صادر کننده مقاطع آلومینیومی به کشورهای مشترک المنافع (CIS)
- رشد ۱۰۰ درصدی صادرات در سال ۱۴۰۱ نسبت به سال گذشته
- تنها صادر کننده مقاطع آلومینیومی به آفریقا و اروپا
- تنها صادر کننده محصولات آلومینیومی به سوریه
- عضویت در اتاقهای مشترک بازرگانی

## ALUMROLL NOVIN CO.

- The biggest Aluminum Profile Exporter of Iran
- The First and the Biggest Aluminum Exporter to CIS Countries
- 100 percent growth of Export Rate of 2022 in compare to the last year
- The Solo Exporter of Aluminum Profiles to Europe and Africa
- The Solo Exporter of Aluminum Products to Syria
- Member of Joint Chambers of Commerce (between Iran and other countries)



|                |             |
|----------------|-------------|
| • Italy        | • ایتالیا   |
| • Germany      | • آلمان     |
| • Iraq         | • عراق      |
| • Turkey       | • ترکیه     |
| • Bahrain      | • بحرین     |
| • Afghanistan  | • افغانستان |
| • Turkmenistan | • ترکمنستان |
| • Armenia      | • ارمنستان  |



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صنایع آلومرول نوین

ALUMROLL NOVIN CO.

بزرگترین تولید کننده انواع محصولات آلومینیومی کشور

تداعی قدرت و صلابت بخش خصوصی



سابقه فعالیت شرکت صنایع آلومرول نوین در حوزه صنعت آلومینیوم کشور به حدود سال ۱۳۵۲ شمسی و احداث کارخانه آلومرول در اراک باز می‌گردد. در آن زمان، کارخانه آلومرول با بکارگیری مدرن‌ترین و به روزترین سیستم‌های ریخته گری و هموژنایزینگ بیلت آلومینیوم و نیز پرسهای مدرن اکستروژن Schloemann، یکی از بزرگترین تولید کنندگان مقاطع آلومینیومی در ایران و خاورمیانه لقب گرفت و سالها بعنوان برترین تولید کننده مقاطع آلومینیومی ساختمانی در کل کشور مطرح بود. اما با افزایش تقاضای کیفی و کمی مقاطع آلومینیومی در صنایع مختلف، امکانات موجود در این شرکت نتوانست پاسخگوی تمام این نیازها باشد. لذا گوی رقابت را به برخی از رقبای داخلی و خارجی واگذار کرد. با واگذاری کارخانه آلومرول به بخش خصوصی در سال ۱۳۸۶ و با بهره‌گیری از توان فنی و بازرگانی صنایع آلومینیوم پردیس و نیز بهینه سازی و بهبود شرایط کیفی و فنی خطوط تولید قدیمی و همچنین افزودن خطوط تولید رنگ پودری و اکستروژن جدید به مجموعه، این شرکت تحت عنوان صنایع آلومرول نوین، نه تنها در بخش ساختمان، که در سایر صنایع دیگر نیز توانست مجدداً به سطح اول تولید کنندگان محصولات آلومینیومی باز گردد.

با این حال با توجه به گسترش روزافزون استفاده از فلز آلومینیوم در صنایع گوناگون و لزوم افزایش کیفیت محصولات آلومینیومی و کاهش بهای تمام شده این محصولات از طریق استقرار خطوط تولید پیشرفته و به روز دنیا و ورود فن‌آوری‌های نوین این صنعت، بمنظور تأمین نیازمندی‌های بازارهای داخلی و خارجی، جلوگیری از خام فروشی، ایجاد ارزش افزوده بالا و دستیابی به توان رقابت در بازارهای صادراتی و توجه به این نکته که محل فعلی شرکت در محدوده شهری واقع شده و امکان توسعه فضاهای تولیدی برای آن وجود نداشت، از سال ۱۳۸۸ مطالعات اولیه مربوط به به احداث اولین و بزرگترین شهرک اختصاصی صنعت آلومینیوم کشور را در زمینی به مساحت ۳۶ هکتار در شهرک صنعتی شماره ۳ اراک آغاز نمود که ۲۵ هکتار از آن به عنوان سایت شرکت صنایع آلومرول نوین و ۱۱ هکتار آن نیز جهت طرح توسعه شرکت روان گداز پردیس اختصاص داده شده است که فاز اول مجموعه صنایع آلومرول نوین تا ۷۰٪ به بهره برداری رسیده و ادامه پروژه نیز در حال انجام می‌باشد. همچنین، عملیات ساخت شرکت روان گداز پردیس در فاز اول با زیربنایی به مساحت ۲۱۰,۰۰۰ متر مربع و در همین رابطه، پس از مذاکره با بزرگترین و معتبرترین تأمین کنندگان انواع ماشین‌آلات و فن‌آوری‌های صنعت آلومینیوم در دنیا و انجام بازدیدهای متعدد فنی و بازرگانی، اقدام به واردات ماشین‌آلات گوناگون در قالب طرح توسعه هولدینگ آلومرول نمود. این طرح، شامل بروزرسانی و نوسازی واحدهای مختلف از جمله ریخته‌گری، قالب‌سازی، اکستروژن، آنودایزینگ، رنگ پودری و طرح چوب و انتقال تکنولوژی در بخش‌های مختلف می‌گردد که براساس آن، فاز اول طرح اجرا شده و هم اکنون به بهره‌برداری رسیده‌است.





## Introduction of ALUMROLL NOVIN CO.

The background of Sanaye Alumroll Novin Co. in field of aluminium dates back to 1973, when the Alumroll factory was established in Arak. At that time, Alumroll factory used to be named as one of the greatest producers of aluminium profiles in Iran and middle east for many years, by using the best and latest aluminium billetcasting and homogenizing systems and SCHOLEAMANN modern extrusion presses.

However, with increasing the market's quality/quantity demand, the existing facilities of the company was not sufficient to meet the expectations of the customers and it ceded a part of the market to its competitors.

After Iranian government cession of the company to the private sector in 2008, the technical and commercial facilities of Paradise Aluminium Industries – new owner – was utilized to restart the production lines, modernization of machineries and adding new production equipment including powder coating lines and extrusion presses, the company regained its position in production of aluminum products, not only in architectural applications, but also in industrial and non-constructional sections, under the new name of 'Sanaye Alumroll Novin Co.'.

Anyway, due to expanding of using aluminium metal in different industries and vital need to enhance the quality of aluminium products by means of establishing modern and up-to-date production lines and latest technologies in order to meet the local and international market demands, preventing raw-sale, increasing value-added and obtaining the capability of competition in international markets, and since the company was located in an urban area and it was not possible to develop the production spaces, the initial studies of construction of the first and the biggest exclusive aluminum industrial town of the country started in an area of 36 hectares. Around 25 hectares of this area is allocated to Sanaye Alumroll Novin company and the rest is for Ravan Godaz Pardis company. The first phase of Sanaye Alumroll Novin Company has 70% progress and the rest of the project is underway. Furthermore, after technical and commercial negotiations with a large number of reputable global suppliers of machineries and technologies in the field of Aluminium, the first phase of Ravan Godaz Pardis company was started with construction of 21,000 square meter of production halls, and importing various machineries and production lines afterwards. This plan included updating and upgrading production plants including cast house, die shop, extrusion, anodizing, powder coating and sublimation and know-how transfer in different fields based on which the first phase has been completed and is in operation.





## واحد ریخته گری Casting Plant



فاز اول طرح توسعه شامل راهاندازی کوره‌های ذوب و نگهدارنده کچ‌شونده ۳۰ و ۵۰ تنی آلومینیوم، سیستم ریخت بیلت آلومینیومی به روش ایراسلیپ (airslip) به ظرفیت ۱۶۰ تن در روز، واحد هموژنایزینگ بیلت‌های آلومینیومی به ظرفیت ۲۴۰ تن در روز و سیستم کامل جابجایی، برش، مارکینگ، بسته بندی و توزین بیلت‌های ریخت شده در این واحد است.

ماشین‌آلات راهاندازی شده در این بخش از جدیدترین فناوری‌های روز دنیا بهره می‌برند که از آن جمله می‌توان به استفاده از مشعل‌های Regenerative، سیستم کنترل اتمسفر کوره و گاززدایی از کف کوره (Porous Plugs) برای کوره‌های ذوب و نگهداری، یگارگیری دستگاه ریخت بیلت آلومینیوم به روش ایراسلیپ برای اولین بار در کشور با قابلیت ریخت بیلت‌های ۶ تا ۱۰ اینچ، تجهیزات انبارش و جابجایی بیلت آلومینیوم به صورت کاملاً اتوماتیک، کوره‌های هموژنایزینگ بیلت آلومینیوم به روش Batch Type هر یک به ظرفیت ۴۰ تن به همراه سیستم خنک کننده و تثبیت کننده عملیات هموژنایزینگ و سیستم‌های برش در طول‌های بلند و کوتاه، بسته بندی، مارکینگ و توزین کاملاً اتوماتیک اشاره کرد.

In the framework of the first phase of development plan, the 30 ton and 50 ton capacity tiltable melting/holding furnaces, 160 ton/day capacity airslip billet casting system, 240 ton/day capacity aluminium billet homogenizing plant with automatic stackers and de-stackers, cutting, marking, bundling and packing and weighting systems were installed.

The machineries of this plant use the latest technology in the world, including:

- Regenerative burners for better thermal performance and saving energy up to 30%
- Furnace atmosphere control system
- Porous plugs for degassing from the bottom of the furnaces
- Airslip casting system for 6 to 10 inch billets which has been used for the first time in Iran
- Fully automatic billet stackers and de-stackers
- Batch type 40 ton/batch capacity homogenizing furnaces
- Homogenizing stabilizer system with 40 ton/batch capacity cooling cabinets
- Long and short billet cutting systems
- Robotic bundling section
- Automatic marking and weighing devices



واحد طراحی، ساخت و عملیات حرارتی قالب‌های اکستروژن  
Extrusion Die Designing, Manufacturing and Heat  
Treatment Plant



واحد ساخت قالب‌های اکستروژن این مجموعه، از نظر وسعت، امکانات و ظرفیت یکی از واحدهای کم نظیر در کشور است که با بهره‌گیری از برترین فولادهای گرم‌کار اروپایی (ویژه ساخت قالب‌های اکستروژن که بطور مستقیم توسط واحد بازرگانی خارجی مجموعه تأمین می‌گردد)، ابزارآلات و نرم افزارهای پیشرفته طراحی، شبیه‌سازی و اصلاح قالب و تجهیزات مدرن CNC و با استفاده از تخصص واحد مهندسی، قادر به طراحی، ساخت و نگهداری انواع قالب‌های صنعتی و ساختمانی مورد نیاز صنعت اکستروژن تا قطر ۶۰۰ میلیمتر است. همچنین، با توجه به اهمیت انجام صحیح فرایند عملیات حرارتی و نیتراسیون بر روی قالب‌های اکستروژن و تأثیر آن بر کیفیت و طول عمر آنها، عملیات حرارتی با استفاده از کوره‌های مدرن بر روی قالب‌ها انجام می‌شود. ضمن آنکه به منظور بهبود کیفیت سطحی پروفیل‌های اکستروژنی و افزایش طول عمر قالب‌ها، فرایند نیتراسیون با استفاده از مدرن‌ترین کوره‌های نیتراسیون منطبق بر آخرین فن‌آوری و استانداردهای روز دنیا در داخل خود مجموعه صورت می‌پذیرد.

The company's die shop is unique in the country in terms of work space, equipment and capacity. Using high quality European hot work tool steel bars (especial for making extrusion dies) purchased directly by foreign trade department of the company, modern software for designing, simulating the dies and CNC machineries, together with the expertise of the engineering department, the company is capable to design, manufacture and maintain all kind of industrial and architectural extrusion dies, required in the field of extrusion industry, up to a diameter of 600 mm.

Furthermore, taking the importance of correct heat treatment and nitration process on extrusion dies and its essential effect on their quality and lifetime into consideration, the heat treatment process is done on extrusion dies by modern furnaces. In addition, to reach the surface hardness of extrusion dies the nitriding process is performed by the most modern gas nitration furnace inside the company in accordance with the latest international standards.





## واحد اکستروژن Extrusion Plant



از تجهیزات موجود در این بخش می‌توان به کوره‌های پیش‌گرم بیلت با طول بلند، سیستم برش گرم بیلت (Hot Shear, Hot Sow) کوره‌های پیش‌گرم قالب بصورت Batch Type، مجموعه‌ای از پرس‌های اکستروژن اروپایی شامل دو دستگاه پرس اکستروژن ۱۴۵۰ تنی ۵ و ۶ اینچ، دو دستگاه پرس اکستروژن ۲۰۰۰ تنی ۷ و ۸ اینچ، یک دستگاه پرس اکستروژن ۲۵۰۰ تنی ۸ و ۱۰ اینچ و یک دستگاه پرس اکستروژن ۳۱۵۰ تنی ۱۰ و ۱۲ اینچ، مجهز به جدیدترین سیستم‌های هیدرولیک و اتوماسیون، سیستم کولنچینگ مقاطع تولیدی، کنترل دمای پروفیل خروجی و بکارگیری میزهای اکستروژن مجهز به دبل پولر، دستگاه‌های استرچ و برش نیمه اتوماتیک اشاره کرد. خطوط اکستروژن این مجموعه قادر به تولید مقاطع آلومینیومی در گروه‌های آلیاژی ۱۰۰۰ تا ۷۰۰۰ تا عرض ۴۰۰ میلی‌متر می‌باشند.

همچنین کوره‌های ایجینگ به ظرفیت ۲۴ تن برای پروفیل‌های آلومینیومی تا طول ۱۴ متر در مجموعه مستقر شده و در حال بهره‌برداری می‌باشند.

Log preheating furnaces with hot shears/hot saws, batch type die heating ovens, complete set of European extrusion presses including 2 x 1450 ton 5-6 inch, 2 x 2000 ton 7-8 inch, 1 x 2500 ton 8-10 inch and 1 x 3150 ton 10-12 inch machines equipped with latest hydraulic and automation systems, quenching systems, run-out tables equipped with double pullers, semi-automatic stretcher and cold saw machines are used in extrusion lines in order to produce aluminium sections in alloy groups 1000-7000 with the maximum width of 400 mm. in addition, the ageing process is done in 24 ton/batch capacity ageing ovens for the profiles to the length of 14 m.



## واحد عملیات حرارتی و کار سرد Heat Treatment and Cold Working Plant



واحد عملیات حرارتی و کار سرد با دراختیار داشتن سه دستگاه کوره عمودی عملیات حرارتی انحلالی (Solution Treatment) مجهز به سیستم کوئنچ با سرعت بالا، پیشرفته‌ترین روشهای گردش هوا و اندازه‌گیری کنترل یکنواختی دما، سیستم جدایش گازهای احتراق از محفظه بارگیری کوره، قادر به انجام انواع عملیات حرارتی انحلالی پرروی کلیه مقاطع از آلیاژهای نوردی و ریختگی آلومینیوم تا طول ۳/۵ متر و عرض ۱ متر می‌باشد و همچنین در این واحد کوره‌های ایجینگ برقی و گازی با سیستم گردش هوای یکنواخت و کنترل دقیق دما به منظور انجام پیرسختی انواع آلیاژهای آلومینیوم مورد استفاده قرار می‌گیرد.

This plant utilizes 3 sets of vertical solution treatment furnaces, equipped with high speed quenching system, advanced air circulation and temperature uniformity controlling methods and combustion air separation system from load chamber, enabling it to perform solution heat treatment process on all roll milling and casting alloys to the length of 3.5 meters and width of 1 meter. In addition, electrical and gas heated ageing furnaces equipped with uniform air circulation and temperature precise control are used to perform ageing process on different aluminium alloys.

## Anodizing Plant





## واحد آنودایزینگ Anodizing Plant



امروزه با گسترش روزافزون استفاده از پروفیل‌های آلومینیومی بخصوص در صنایع ساختمانی و همچنین صنایع دیگر و تغییر ذائقه بازار و انتظار مشتریان برای برخورداری از بهترین کیفیت تولیدی، فرایند پوشش سطحی مقاطع آلومینیوم به روش آنودایزینگ طبیعی (تقره‌ای) و رنگی، به یکی از بخشهای اصلی چرخه تولید پروفیل‌های آلومینیومی مبدل شده است که علاوه بر نقش فنی و تکنیکی، آن را به یکی از جنبه‌های دکوراتیو و تزئینی مقاطع آلومینیومی مبدل ساخته است. برخورداری از یک واحد آنودایزینگ با فن‌آوری روز دنیا هنگامی اهمیت بیشتری پیدا می‌کند که انجام این فرایند، نیازمند کنترل دائمی کلیه پارامترهای مربوطه از جمله میزان جریان برق، ضخامت لایه پوششی، یکنواختی رنگ و لزوم استفاده از مواد شیمیایی با کیفیت بسیار بالا و کنترل ترکیب شیمیایی آن در آنودایزینگ مقاطع آلومینیومی می‌باشد. یکی از مشکلاتی که بسیاری از واحدهای آنودایزینگ با آن مواجه هستند، عدم امکان کنترل یکنواختی رنگ است که حتی با وجود بکارگیری فاکتورهای ثابت آنودایزینگ، به دلیل دستی بودن عملیات و وجود خطاهای انسانی، در بسیاری از موارد قابل کنترل نیست.

با درک این موضوع و بمنظور ارائه کیفیتی درخور انتظارات مشتریان و دستیابی به میزان تولید مورد نیاز، این شرکت نسبت به راه اندازی خط آنودایزینگ تمام اتوماتیک به ظرفیت ۶۰ تن در روز از معتبرترین سازنده اروپایی خطوط آنودایزینگ نموده است. این واحد، بزرگترین و پیشرفته‌ترین واحد آنودایزینگ مقاطع آلومینیومی در کشور و یکی از چند نمونه انگشت‌شمار این خط در منطقه خاورمیانه و غرب آسیا است، که با بهره‌گیری از جدیدترین فناوری روز دنیا، قادر به انجام عملیات الکتروکالرینگ، پولیش شیمیایی مقاطع آلومینیومی و عملیات آبکاری به روش غوطه‌وری در چهار رنگ مختلف بصورت همزمان می‌باشد. علاوه براین، با بهره‌گیری از تجهیزات گوناگون قادر به انجام پوشش آنودایز با طرح‌های مختلف بر روی مقاطع مختلف آلومینیومی می‌باشد.

Nowadays, with expanding the use of aluminium profiles in construction and other industries together with the evolution of aluminium market and extensive changes in taste and demands of customers, the natural anodizing and electro coloring surface treatment processes are considered as one of the most important parts of aluminium profile production chain. These procedures not only have technical and protective roles, but also are one of the decorative aspects of aluminium profiles. Having a modern anodizing plant becomes even more important when it is understood that achieving required quality needs permanent control on all relevant parameters like electric current, anodizing layer thickness and color uniformity and high quality chemicals together with chemical composition control.

One of the problems which many of anodizing plants face is the failure in controlling the color uniformity, which cannot be solved even with utilizing the anodizing fixed factors, due to the manual nature of the operations and human errors.

Realizing this and to meet the quality appropriate to the demand of customers and achieve the required production capacity, the company installed a fully automatic anodizing line with capacity of 60 tons per day, manufactured by most reliable European supplier. As the biggest and newest one, this QUALANOD authenticable plant is the pioneer of quality/quantity in the country and one of the few samples of this line in the middle east and west Asia regions, which can provide different surface treatment processes on aluminium profiles such as electro coloring, chemical polishing, immersion coloring in four different colors simultaneously. In addition, by utilizing various machineries / devices, it is able to perform anodization coating with various patterns on different sections.





## واحد رنگ پودری

### Powder Coating Plant

یکی دیگر از روشهای پوشش سطحی مقاطع آلومینیوم، استفاده از ترکیبات پلیمری به صورت پاشش پودرهای اپوکسی و اپوکسی پلی استر به روش الکترواستاتیک بر روی سطح و فراوری پودر در کوره های پخت در دمای ۱۸۰ تا ۲۰۰ درجه سانتی گراد است. باتوجه به تنوع بی نهایت رنگ ها و طرح های پودر، با این روش می توان گستره وسیعی از گزینه ها در پوشش سطحی را در اختیار مصرف کنندگان قرار داد. این مجموعه با در اختیار داشتن دو واحد پیشرفته رنگ پودری به روش الکترواستاتیک شامل تجهیزات مدرن پاشش و کوره های پخت رنگ، بزرگترین و مجهزترین واحد رنگ پودری کشور است که علمیات پوشش رنگ بر روی انواع مقاطع آلومینیومی تا طول ۱۴ متر و ظرفیت ۶۰ تن را در رنگ ها و طرح های مختلف اجراء می کند.

One of the other methods of surface coating of aluminium profiles is using polymer compositions by spraying polyester and epoxy polyester powders electrostatically on profile surfaces and processing the powder in baking furnaces in the temperature of 180~200°C. Due to unlimited variety of colors and designs of powders, this process offers a wide range of options to the customers. The 2 electrostatic powder coating plants of the company are the biggest and most equipped powder coating plants in the country and perform powder coating of aluminium profiles to the length of 14 meters and capacity of 60 tons per day in different colors and designs.



## واحد دکورال Sublimation Plant

به کارگیری مقاطع آلومینیومی در صنعت ساختمان و دکوراسیون داخلی، لزوم ایجاد تنوع در فرایند رنگ را ایجاب می‌نماید که در همین راستا می‌توان به فرایند ایجاد طرح‌ها و نقش‌های مختلف، همچون طرح چوب، مرمر، گل و حتی مناظر طبیعی اشاره کرد. در این روش ابتدا با استفاده از رنگی‌های پلی‌اورتان مقاوم در برابر هوازگی، پوششی بر روی سطح مورد نظر ایجاد گردیده و در مرحله بعد، درکوره‌هایی به دمای ۲۰۰ درجه در مدت ۱۰ دقیقه، طرح مورد نظر موجود بر روی فیلم کشیده شده روی پروفیل، یا استفاده از حرارت بر روی پوشش رنگ تثبیت می‌گردد. واحد دکورال مجموعه با به کارگیری جدیدترین و مدرن‌ترین تجهیزات تمام اتوماتیک دکورال ساخت شرکت SEF ITALIA قادر به تولید روزانه ۳۰ تن انواع مقاطع و صفحات آلومینیومی با طرح‌های متنوع می‌باشد.

The application of aluminium profiles in construction industry and interior architecture necessitates to create diversity in painting, among which wood, marble, flowers and even natural landscapes can be mentioned. This process is generally named as sublimation. In this method, the desired surface is first covered by polyurethane weathering resistant materials. Then the film containing the desired design is pulled over the profile. Profiles are heated for 10 minutes in 200°C in special furnaces, in order to stabilize the design on the powder coating layer. The sublimation unit of the company uses very modern fully automatic machineries made by SEF ITALIA, to produce 30 tons/day of various aluminium sections and plates with different designs.





## واحد تولید پروفیل های ترمال بریک

Thermal Break Profiles Production line



در این واحد تولید پروفیل های ترمال بریک که در صنعت ساختمان مورد استفاده قرار می گیرند، انجام می گردد. در این واحد، جای گذاری نوار پلی آمید در پروفیل های آلومینیومی و دوخت آن به صورت کاملاً اتوماتیک انجام می شود. از نکات مهم تولید پروفیل های ترمال بریک، کیفیت نوار پلی آمید بکاررفته و نیز کیفیت فرایند دوخت پروفیل است. بگونه ای که نوار پلی آمید بطور صحیح و محکم در پروفیل آلومینیومی قرار گرفته و دوخت می شود، این موضوع به کمک استفاده از ماشین آلات مدرن و مجهز و نوارهای پلی آمید با کیفیت بالا که توسط دستگاه های خریداری شده و در داخل خود مجموعه تولید می گردد، میسر شده است. کیفیت فرایند دوخت از طریق نمونه گیری مداوم از پروفیل های تولیدی و انجام آزمون در دستگاه های مخصوص از طریق اعمال فشار برشی بررسی و کنترل می گردد.

علاوه بر آن، به منظور حصول اطمینان از کیفیت نوار پلی آمید مورد نیاز، این مجموعه نسبت به خرید دو خط اکستروژن این نوع نوارها و قالب های مربوطه از یکی از تولیدکنندگان معتبر خارجی اقدام نموده و تولید آن در داخل مجموعه و با مرغوب ترین مواد اولیه انجام می گردد.

The thermal break profiles used in construction industry are produced in this line. The knurling, inserting polyamide strings and sewing process are done fully automatically. One of the most important factors in manufacturing thermal break profiles is the quality of the polyamide profiles and sewing process, so the polyamide string to be inserted inside aluminium profile correctly and tight. This advantage has been achieved by means of advanced machineries and improving the quality of the polyamide strips by producing them inside the holding, according to the international standards. The quality of sewing process is inspected through continuous sampling and testing in special devices by applying appropriate pressures and checking the results.

In addition, in order to ensure the quality of needed polyamide sections, the company installed two polyamide extrusion lines, purchased from one of the reliable suppliers. So the required sections are produced inside the company from the best raw materials.





جدا از تجهیزات تولیدی که برای دستیابی به ظرفیت و مرغوبیت مورد نیاز لازم است، کنترل کیفیت و بهبود مستمر آن نیز همواره از دغدغه‌های این مجموعه بوده‌است. به ویژه آنکه این مجموعه وظیفه تأمین مواد اولیه و محصولات مورد نیاز طیف وسیعی از صنایع گوناگون را براساس استانداردهای مختلف برعهده دارد که برآوردن این تعهدات، جز از طریق اجرای دستورالعمل‌های دقیق کیفی و نظارت دائمی برکلیه فرایندهای تولیدی ممکن نیست. در همین راستا، کارشناسان کنترل کیفی این مجموعه با استفاده از انواع تجهیزات لازم و ارتباط دائمی با آزمایشگاه مجموعه، هریک از فرایندهای تولید و محصولات آن را در چهارچوب استانداردهای مربوطه مورد بازرسی و کنترل دقیق قرار می‌دهند تا از تطابق آن با الزامات کیفی اطمینان حاصل گردد. به منظور حصول اطمینان از کیفیت محصولات تولیدی، واحد کنترل کیفی مجموعه از آزمایشگاه‌های مجهز متالورژی، شیمیایی و رنگ پودری برخوردار است که علاوه بر مواد اولیه ورودی به مجموعه، نسبت به کنترل کیفی کلیه محصولات تولید شده در خطوط تولید براساس استانداردهای بین‌المللی و مشخصات فنی مورد نیاز اقدام می‌نماید تا از کسب رضایت‌مندی مشتریان و تداوم بهبود کیفی محصولات تولیدی مجموعه اطمینان حاصل گردد.

آزمایشگاه متالورژی مجموعه یکی از مجهزترین آزمایشگاه‌های کشور در صنعت آلومینیوم است که با دراختیار داشتن تجهیزات زیر قادر به بررسی کلیه خواص متالورژیکی، فیزیکی و مکانیکی مواد فلزی می‌باشد:

- دستگاه اندازه‌گیری هیدروژن بصورت برخط (Online) ساخت معتبرترین سازنده اروپایی که برای اندازه‌گیری و کنترل میزان هیدروژن موجود در مذاب آلومینیوم بکار می‌رود
- دستگاه کوانتومتری با قابلیت شناسایی و اندازه‌گیری کمترین مقادیر بیش از ۳۰ عنصر مؤثر در آلیاژهای مختلف آلومینیوم
- دستگاه تست کشش، فشار و خمش به منظور اندازه‌گیری خواص مکانیکی آلیاژهای تولیدی
- دستگاه میکروسکوپ متالوگرافی و یلاریزاسیون جهت بررسی ساختار مواد و مقاطع تولیدی
- دستگاه برش و پولیش دوقلوی اتوماتیک جهت آماده‌سازی نمونه‌های متالوگرافی
- دستگاه آزمون اولتراسونیک جهت بررسی غیر مخرب عیوب داخلی مقاطع
- دستگاه اندازه‌گیری هدایت الکتریکی
- دستگاه سختی سنج ثابت و پرتابل جهت آزمون سختی مقاطع آلومینیومی
- دستگاه‌های متنوع و دقیق اندازه‌گیری ابعادی
- دستگاه میکروهاردنس برای اندازه‌گیری سختی سطحی قالب‌های اکستروژن
- دستگاه اسپری نمک به منظور بررسی میزان مقاومت سطح پوشش‌دهنده شده در برابر خوردگی
- دستگاه فام سنج به منظور بازرسی کیفیت رنگ
- دستگاه سنجش براقیت برای اندازه‌گیری میزان براقیت رنگ
- دستگاه کراس کات برای کنترل چسبندگی رنگ پودری روی سطح پروفیل
- دستگاه ضخامت سنج بابت کنترل ضخامت لایه رنگ

در آزمایشگاه شیمی واحد آنودایزینگ، عوامل مؤثر بر فرایند از جمله غلظت عناصر شیمیایی موجود در وان‌های مختلف بطور دائمی اندازه‌گیری می‌شود تا با کنترل پارامترهای فرایند، محصولی با کیفیت تولید شده و در اختیار مشتریان قرار گیرد. علاوه برآن، با استفاده از جدیدترین تجهیزات، طیف رنگ آنودایز رنگی، ضخامت لایه آنودایزینگ و همچنین کیفیت لایه سیل ایجاد شده مطابق با استاندارد QUALANOD به طور دائم اندازه‌گیری و کنترل می‌شود.

آزمایشگاه رنگ پودری نیز با در اختیار داشتن گان‌ها و کوره‌های آزمایشگاهی، رنگ‌های ورودی به شرکت را قبل از ارسال به خط تولید مورد بررسی قرار می‌دهد. از دیگر آزمایش‌های این قسمت می‌توان به کنترل ضخامت لایه رنگ‌پوشش شده، میزان براقیت و بررسی میزان چسبندگی رنگ به پروفیل بر اساس استاندارد QUALICOAT اشاره نمود که به کمک بهترین تجهیزات خریداری شده از معتبرترین شرکت‌های اروپایی، به صورت دائم تحت آزمایش و کنترل قرار می‌گیرد. در همین رابطه و با توجه به سطح کیفی محصولات، این مجموعه گواهی‌نامه‌های IMS، گواهی‌نامه فنی از وزارت راه و شهرسازی و همچنین گواهی‌نامه‌های ISO ۱۴۰۰۱، ISO ۹۰۰۱ و ISO ۴۵۰۰۱ را دریافت نموده‌است.



Beside the production facilities which are needed to achieve the desired capacity, quality control and continuous improvement has always been of the company's concerns. Especially, when this company is responsible for supplying materials and products to a wide range of industries, based on various standards. Fulfilling these expectations is possible only through implementation of precise quality instructions and permanent monitoring of production procedures. In this company, the quality control experts are responsible for monitoring and inspecting all production procedures and their products from beginning to the end in frame of appropriate standards, to ensure that any process and product comply with quality requirements. Considering the scope of company's production activities, the quality control unit employs advanced metallurgy, chemistry and powder coating laboratories in which in addition to the input raw materials, the quality of all produced products of production lines are inspected according to the international standards and customer requirements in order to ensure customers satisfaction and continuous improvement of production procedures.

The metallurgy laboratory of the company is one of the most advanced samples of the country in the field of aluminium which is able to investigate all metallurgical, physical and mechanical specifications of metallic materials, using the following equipment:

- Online hydrogen measuring device produced by one of the most reliable European manufacturers for measuring and controlling hydrogen content in liquid aluminium
- Advanced quantometer device able to identify and measure the lowest amount of more than 30 effective elements of aluminium alloys
- Tension, pressure and bending test device in order to check the mechanical specifications of casted alloys
- Metallography and polarization microscope to check the microstructure of produced materials and sections
- Automatic twin cutting and polishing device for preparation of metallography samples
- Ultrasonic test device for nondestructive test of internal defects
- Electrical conductivity measuring device
- Stationary and portable hardness testers for checking the hardness of aluminium sections
- Various and precise dimensional measuring equipment
- Microhardness device in order to control the hardness of surface of the aluminium dies
- The salt spray machine in order to control the quality of the powder coating layer against corrosion
- Color-meter device for inspection of the color quality and specifications
- Glossy-meter device for checking the gloss of the colors
- The cross-cut device to check the stickiness of the powder coating to the aluminium profile surface
- The thickness-meter device for measuring the thickness of the powder coating layer

In Chemistry laboratory, the effective factors of the process especially the content of chemicals in the tanks is measured continuously to meet the quality demanded by customer and required by the standards. In addition, the electro anodizing color spectrum, the anodizing layer thickness and the quality of sealing layer is controlled continuously by means of advanced equipment and according to QUALANOD standard requirements.

Furthermore, in the powder coating laboratory, the quality of the input powders is controlled by laboratory spraying guns and ovens before sending to production lines. Moreover, the thickness of powder coating layer, gloss value and powder adhesion to the metal surface according to the QUALICOAT standard are other tests performed in this laboratory.

Due to the high quality of the products, this holding, as an IMS qualified complex, this holding has been able to achieve technical certification of the ministry of roads and urban development ISO 9001, ISO 14001 and ISO 45001 standards.

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## واحد ماشین سازی

### Parts and Machineries Manufacturing Plant



یکی از اهدافی که در عقد قرارداد خرید ماشین آلات و تجهیزات با تأمین کنندگان خارجی دنبال می‌شود، علاوه بر بهره‌گیری از دانش فنی موجود برای ساخت و استفاده از ماشین آلات و یکارگیری تجربه کارشناسان مجموعه در اجراء و تأمین تجهیزات با بهترین کیفیت، اجراء این پروژه‌ها بصورت مشترک با تأمین کنندگان خارجی است. به این معنا که تنها بخش‌هایی از خطوط تولید و ماشین آلات که در داخل کشور قابل ساخت نبوده و یا تجهیزاتی که در داخل کشور یافت نمی‌شود توسط طرف خارجی تأمین و دیگر بخش‌ها از جمله سازه فلزی و تجهیزات گوناگون توسط شرکت صنایع آلومرول نوین و مطابق با مشخصات فنی و نظارت تأمین کننده اصلی ساخته می‌شود که انجام این موضوع موجب انتقال تکنولوژی طراحی و ساخت این تجهیزات و افزایش توان فنی شرکت می‌گردد. در همین راستا، مجموعه از سال ۱۳۹۶، اقدام به راه‌اندازی واحد ماشین‌سازی خود نمود. بایره‌گیری از مهندسين مجرب و متخصص، علاوه بر واحد طراحی مهندسی پیشرفته، با به کارگیری انواع تجهیزات ساخت سازه های فلزی، اعم از دستگاههای برش، تراش، اره، جوش، سنگ‌زنی و تست و یک واحد رنگ‌کاری مستقل، امکان طراحی و ساخت بخش‌های گوناگون مربوط به پروژه‌های ساخت و نوسازی تجهیزات را فراهم نموده است.

One of the desired goals of implementing production lines through international non-Iranian suppliers, in addition to the improve the know-how of construction of the machineries and using the existing knowledge in the holding, in order to procure the best and highest quality machineries, is to create joint projects, through which only those critical parts and accessories that cannot be manufactured or found locally are supplied by foreign supplier and other parts such as steel structures and different components will be provided by Alumroll, according to technical specifications and under supervision of supplier. That facilitates designing and manufacturing know-how transfer and increasing technical capability of this company. For this purpose, this company launched its parts and machineries manufacturing plant, in 2017. This plant performs all designing and manufacturing activities for different parts of its construction and renovation projects, using a wide range of facilities like cutting, lathe, welding, grinding, test and painting machineries.





## لجستیک Logistics

In order to maintain an on time delivery and prevent any damage to the products during transportation, the company uses its wide transportation network including trailers, trucks and pickups not only for covering domestic deliveries, but also for sending the products to different countries such as Iraq, Afghanistan, Turkey, Armenia, Turkmenistan and ...

به منظور تحویل به موقع محصولات و جلوگیری از بروز هرگونه آسیب حین حمل و نقل آن، مجموعه با استفاده از شبکه گسترده لجستیک خود شامل انواع تریلر، کامیون و کامیونت علاوه بر پوشش مشتریان داخل کشور، حمل محصولات صادراتی خود را به کشورهای مختلف از جمله عراق، افغانستان، ترکیه، ارمنستان، ترکمنستان و ... به انجام می‌رساند.

## تحقیق و توسعه Research and Development

In addition to achieving the latest machineries, equipment and technologies around the world in the field of producing aluminium sections, the R&D department of the company try to provide the customers with the best services through constant connection with reputable production companies and the provider centers of technical knowledge and know-how transfer, around the world.

One of the company main goals within the framework of the R&D activities is providing new systems for constructional and architectural profiles and their accessories based on climate, geography and culture of Iran and according to the latest international standards. To this end, a team of experts of the company was assigned to conduct extensive studies for designing and executing of those systems in consultation with most reliable Iranian and non-Iranian companies, led to design of a series of new profile systems. In the near future, the manufacturing, production and standard tests will be completed and the systems will be available for construction companies and other end-users via ORGADATA software.

علاوه بر دستیابی به جدیدترین تجهیزات، ماشین‌آلات و فن‌آوری‌های روز دنیا در زمینه تولید مقاطع آلومینیومی کارشناسان بخش تحقیق و توسعه این مجموعه در راستای ارائه بهترین خدمات به مشتریان بطور مستمر با معتبرترین شرکت‌های تولیدی و مجموعه‌های ارائه‌کننده دانش فنی و انتقال تکنولوژی در سراسر دنیا در ارتباط بوده و همواره در تلاش برای بهبود مستمر تکنولوژی و محصولات تولیدی مجموعه می‌باشند.

یکی از اهدافی که در چهارچوب تحقیق و توسعه در این مجموعه مدنظر بوده‌است، ارائه سیستم‌های پروفیل ساختمانی شامل مقاطع در و پنجره و نمای ساختمان و سایر مقاطع وابسته با توجه شرایط جغرافیایی، اقلیم و فرهنگ ایرانی و البته منطبق با آخرین استانداردهای بین‌المللی می‌باشد. در همین راستا، تیمی از متخصصین مجموعه مطالعات گسترده‌ای را برای طراحی و اجرای سیستم‌های جدید با مشاوره معتبرترین شرکت‌های داخلی و خارجی آغاز نمود که نهایتاً به طراحی سری جدید سیستم‌های پروفیل منتهی شده است. که به زودی مراحل ساخت و تولید و انجام تست‌های استاندارد آن انجام و به منظور تسهیل در امر ساخت و اجرای این سیستم‌ها از طریق نرم‌افزار Orgadata به سازندگان سیستم‌های ساختمانی ارائه می‌گردد.



## Aluminium as material

آلومینیوم یک فلز بسیار جوان (نو ظهور) است که برای اولین بار در سال ۱۸۵۴ استخراج شد. به طور تجاری از سال ۱۸۸۶ به عنوان یک فلز گرانبها تولید شد و تولید صنعتی آن برای برنامه های عمرانی در دهه ۱۹۵۰ گسترش یافت. امروزه آلومینیوم نقش کلیدی در پایداری ساختمان های جدید و نوسازی واحدهای قدیمی ایفا می کند و با توجه به خواص عملکردی خود در بحث انرژی، ایمنی و راحتی ساختمان های جدید نقش آفرینی می کند.

Aluminium is a very young metal, extracted for the first time in 1854. Commercially produced as a precious metal from 1886, its industrial production for civil applications only achieved wide use in the 1950's. Now aluminium plays a key role for the sustainability of new buildings and the renovation of existing ones. Thanks to its performance properties aluminium contributes to the energy performance, safety and comfort of new buildings.



## مزایای آلومینیوم

### The advantages of aluminium



#### Design flexibility

The extrusion process offers an almost infinite range of forms and sections, allowing designers to integrate numerous functions into one profile.

#### Long service life

Aluminium building products are made from alloys that are weatherproof, corrosion-resistant and immune to the harmful effects of UV rays, ensuring optimal performance over a very long period of time

#### High strength-to-weight ratio

Thanks to the metal's inherent strength and stiffness, aluminium window and curtain wall frames can be very narrow. Material's light weight makes it easier to transport and handle on-site, reducing the risk of work related injury.

#### انعطاف پذیری در طراحی

فرآیند اکستروژن طیف وسیعی از اشکال و مقاطع را ارائه می دهد و به طراحان اجازه می دهد تا کاربردهای متعددی را در یک پروفیل ادغام کنند.

#### طول عمر بالا

محصولات ساختمانی آلومینیوم از آلیاژهایی ساخته شده اند که مقاومت به خوردگی در برابر آب و هوا و همچنین مقاومت بالا در برابر اثرات مضر اشعه ماوراء بنفش داشته که عملکرد مطلوبی را در مدت زمان طولانی تضمین می کند.

#### نسبت استحکام به وزن بالا

به لطف استحکام و سختی ذاتی این فلز، پنجره ها و پروفیل های نمای ساختمان آلومینیومی می توانند بسیار ظریف طراحی گردند. که این امر سبب کاهش وزن سازه، حمل و نقل و جابجایی آسان تر و کاهش خطر صدمات ناشی از کار می شود.



## High-reflectivity

This characteristic feature makes aluminium a very efficient material for light management. Aluminium shading devices can be used to reduce the need for air conditioning in summer.

## Fire safety

Aluminium does not burn and therefore is classified as a noncombustible construction material (European Fire Class A1). Aluminium alloys will nevertheless melt at around 650 °C, but without releasing harmful gases.

## No release of dangerous substances

Several studies have proved that aluminium building products do not present a hazard to occupants or the surrounding environment. Aluminium building products have no negative impact, either on indoor air quality or on soil, surface and groundwater.

## Optimal security

Where high security is required, specially designed, strengthened aluminium frames can be used. While the glass for such applications may well be heavy, the overall weight of the structure remains manageable thanks to the light weight of the aluminium frames.

## Alloys

Aluminium in its pure form is a very soft metal. Thanks to the addition of alloying elements such as copper, manganese, magnesium, zinc, etc. and thanks to suitable production processes, the physical and mechanical properties can be varied in a wide range to satisfy the requirements of a large number of different applications. AKROLL profiles are extruded from the following alloys:

EN AW-1050 [Al 99.5]  
EN AW-6060 [Al Mg Si]  
EN AW-6063 [Al Mg<sub>0.7</sub> Si]  
EN AW-6061 [Al Mg<sub>1</sub> Si Cu]  
EN AW-6005 [Al Si Mg]  
EN AW-6082 [Al Si<sub>1</sub> Mg Mn]

The most common aluminium alloy which is used by AKROLL is EN AW 6063. Here are the properties of this alloy:

## MATERIAL PROPERTIES

Aluminium alloy EN AW 6063 T5

Ultimate tensile strength  $R_m = 175 \text{ MPa}$

Yield strength  $R_{0.2} = 130 \text{ MPa}$

Modulus of elasticity  $E_{0.1} = 70 \text{ GPa}$

Coefficient of thermal expansion  $\alpha = 23,4 \times 10^{-6} / ^\circ\text{K}$

## قابلیت بازتاب بالا

این ویژگی مشخص، آلومینیوم را به یک ماده بسیار کارآمد برای مدیریت نور تبدیل می‌کند. می‌توان از سیستم سایه‌بان آلومینیومی برای کاهش نیاز به تهویه مطبوع در تابستان استفاده کرد.

## ایمنی آتش

آلومینیوم نمی‌سوزد بنابراین به عنوان یک مصالح ساختمانی غیر قابل احتراق دسته‌بندی می‌شود (کلاس اروپایی آتش-A1). با این وجود، آلیاژهای آلومینیوم در دمای ۶۵۰ درجه سانتیگراد بدون انتشار گازهای خطرناک ذوب می‌شوند.

## عدم آلودگی محیط زیستی

مطالعات متعدد ثابت کرده است که محصولات ساختمانی آلومینیومی خطری برای ساکنان یا محیط اطراف ندارند. این محصولات هیچ تأثیر منفی چه بر کیفیت هوای داخل خانه و چه بر روی خاک و آبهای سطحی و زیرزمینی ندارند.

## امنیت مطلوب

در مواردی که امنیت بالایی مورد نیاز است، می‌توان از فریم‌های آلومینیومی تقویت شده با طراحی خاص استفاده کرد. در حالی که شیشه برای چنین کاربردهایی ممکن است سنگین باشد، اضافه وزن سازه را می‌توان با وزن کم فریم‌های آلومینیومی کنترل کرد.

## آلیاژها

آلومینیوم به صورت خالص یک فلز بسیار نرم است. به لطف افزودن عناصر آلیاژی مانند مس، منگنز، منیزیم، روی و غیره و با بهره‌گیری فرآیندهای مناسب تولید، می‌توان خواص فیزیکی و مکانیکی را در طیف وسیعی تغییر داد تا نیاز رنج وسیعی از کاربردهای مختلف را برآورده سازد. پروفیل‌های مورد استفاده برای اکستروژن آکرویل از آلیاژهای ذیل می‌باشد:

رایج‌ترین آلیاژ آلومینیوم که توسط آکرویل استفاده می‌شود EN AW ۶۰۶۳ است. در اینجا خواص این آلیاژ آمده است:



**Alumroll Novin co.**

Architectural  
Aluminum Systems



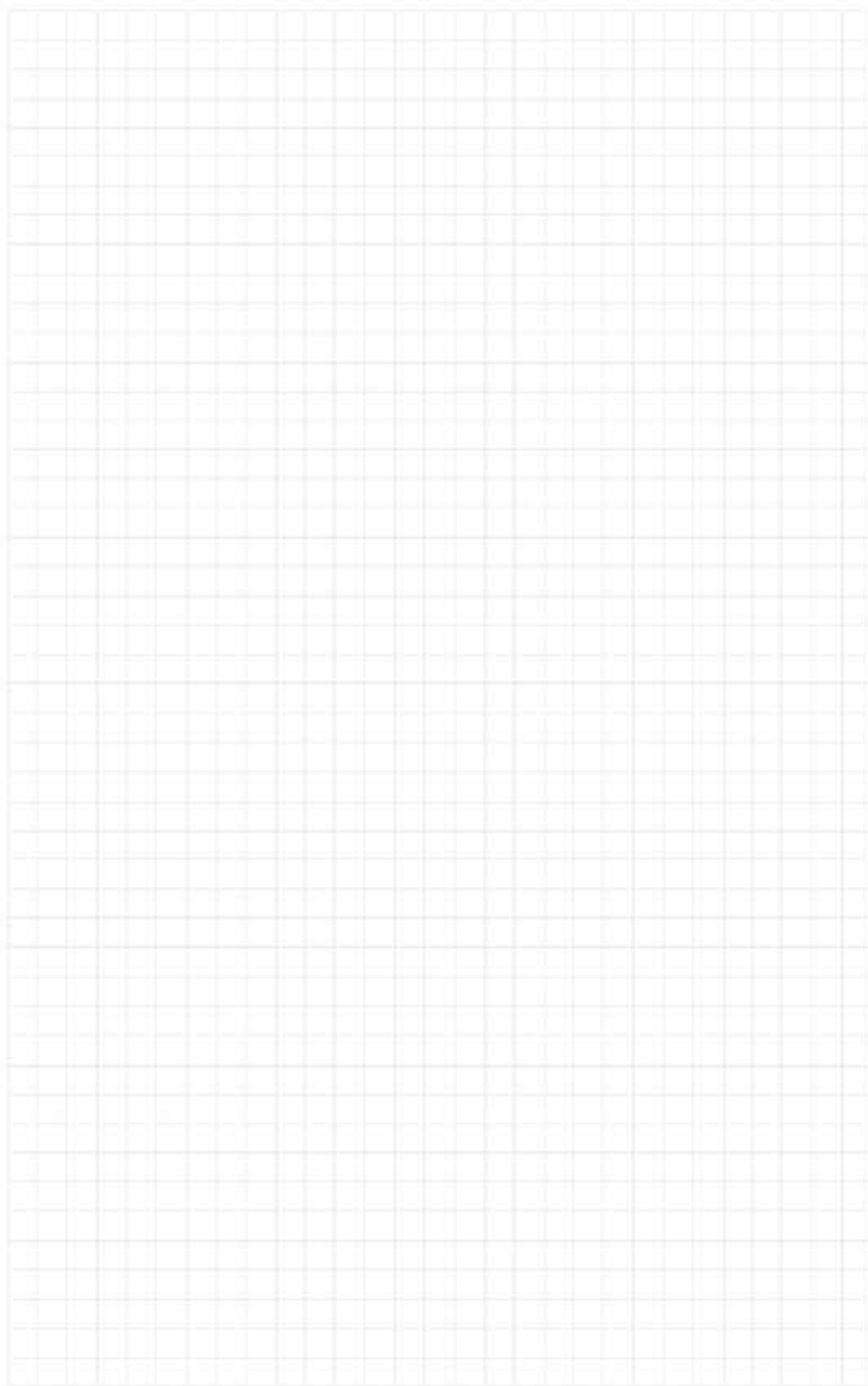
**Thermal Break Systems**  
ALN 400 & ALN 500 Series





**AKROLL**

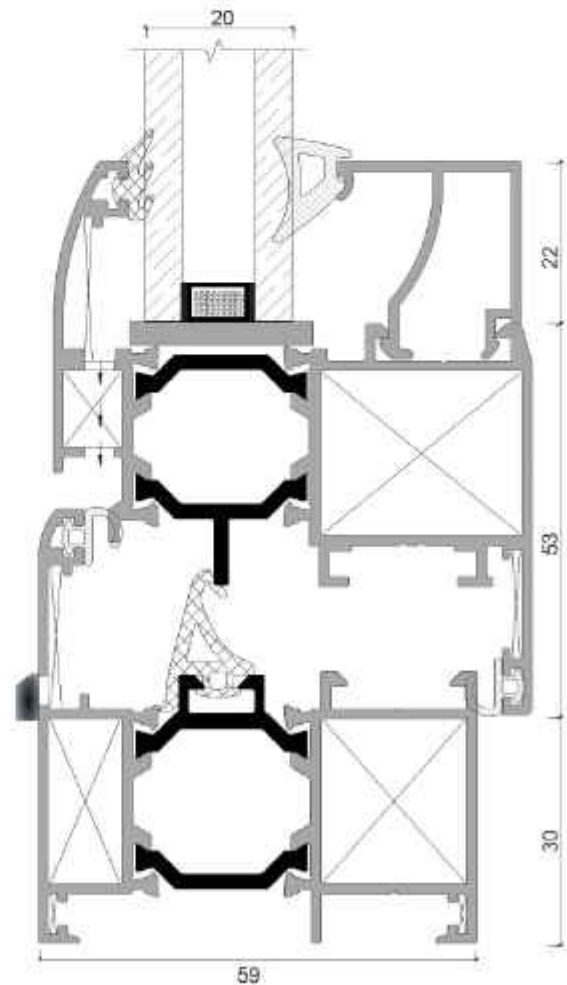
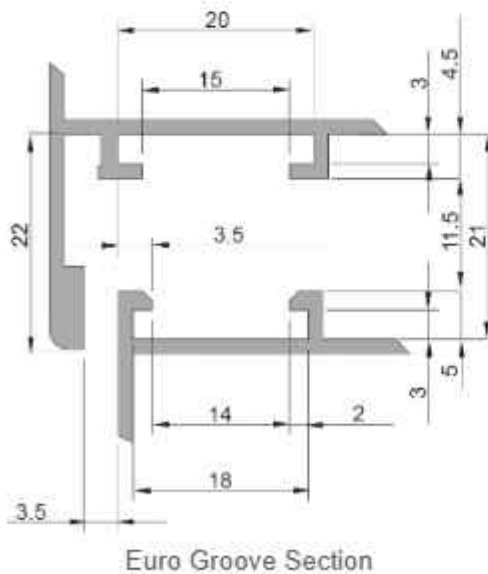
Product of Alumroll Novin Co.



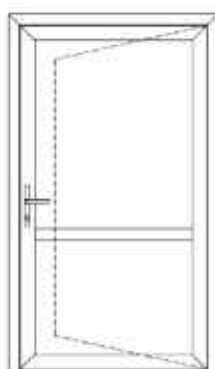
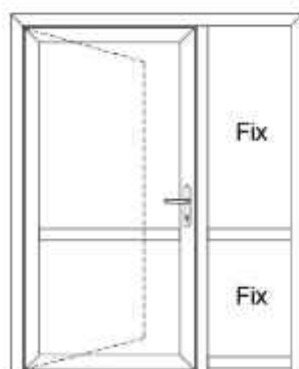
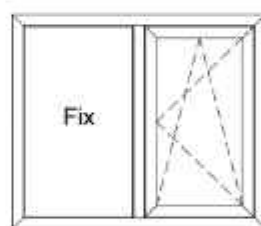
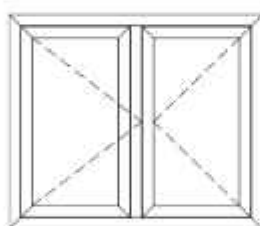
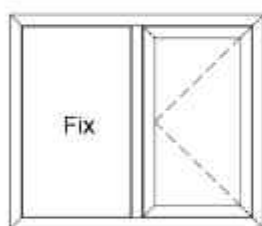
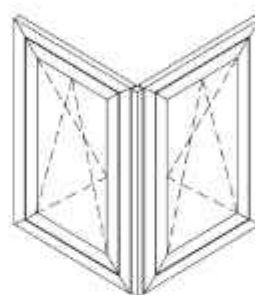
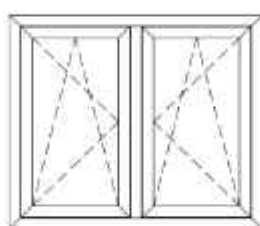
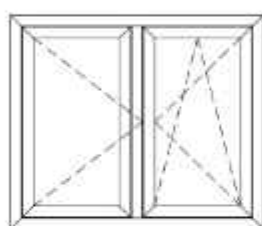
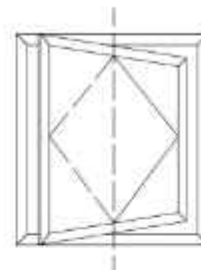
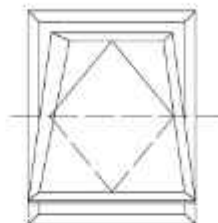
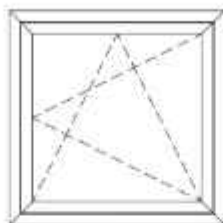
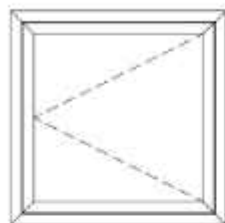


## Hinged System 60 Series

|                           |                                    |
|---------------------------|------------------------------------|
| Profile width:            | 60 - 77 mm                         |
| Vent width:               | 65 mm                              |
| Wall thickness:           | 1.3 - 1.4 mm                       |
| Rubber description:       | EPDM DIN 7863                      |
| Glass thickness:          | 18 - 40 mm                         |
| Aluminum alloy extrusion: | EN AW 6063 T5                      |
| Isulation bar :           | Polyamide Width 24 mm              |
| Thermal permability :     | $U_f = 2.58 \text{ w/m}^2\text{k}$ |
| Safety drainage system    |                                    |
| Various typologies        |                                    |

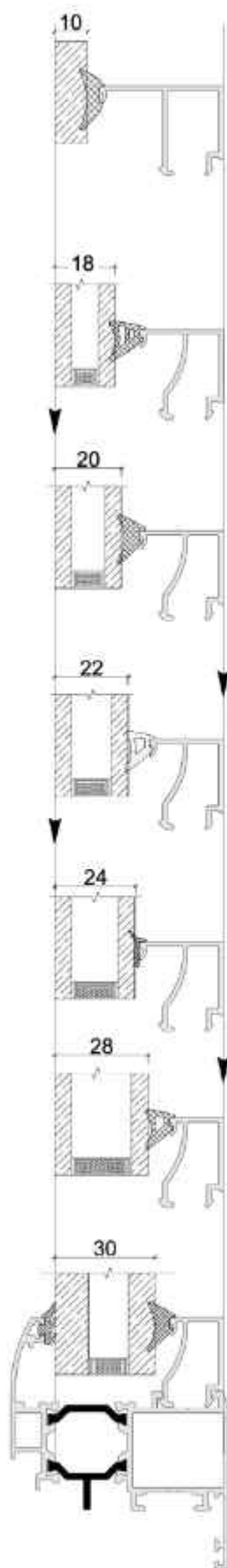


## Hinged System 60 Series Typologies

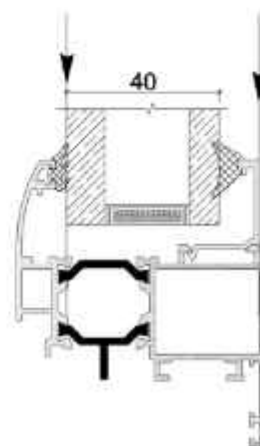
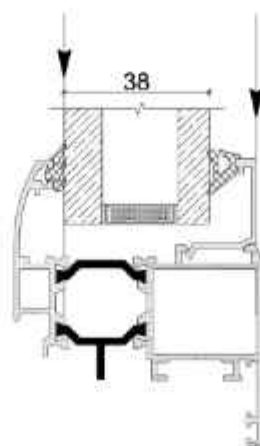
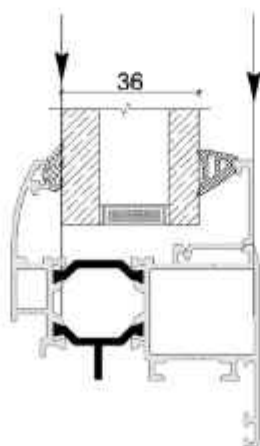


## Hinged System 60 Series

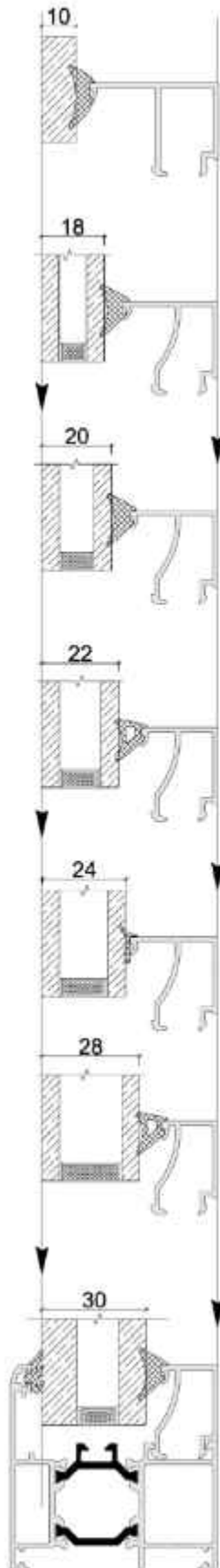
### Glazing Table



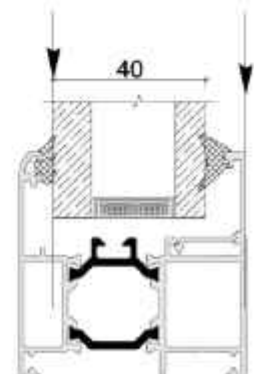
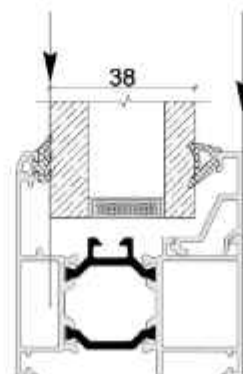
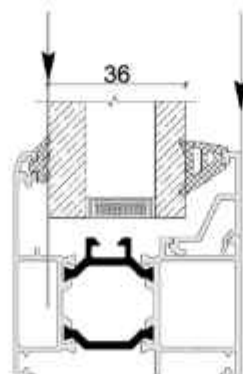
| Glazing Thickness | Gasket Inside                                                                                         | Gasket Outside                                                                                | Glazing Bead                                                                                     |
|-------------------|-------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|
| 10 mm             | <br>1008/Gasket 3 mm | <br>MO68   | <br>ALN-497   |
| 18 mm             | <br>EP-021           | <br>MO68   | <br>ALN-421   |
| 20 mm             | <br>EP-016           | <br>MO68   | <br>ALN-421   |
| 22 mm             | <br>EP-016           | <br>MO68   | <br>ALN-323   |
| 24 mm             | <br>EP-015           | <br>MO68   | <br>ALN-421   |
| 28 mm             | <br>EP-019         | <br>MO68 | <br>ALN-423 |
| 30 mm             | <br>EP-016         | <br>MO68 | <br>ALN-423 |
| 36 mm             | <br>EP-021         | <br>MO68 | <br>ALN-424 |
| 38 mm             | <br>EP-019         | <br>MO68 | <br>ALN-424 |
| 40 mm             | <br>EP-016         | <br>MO68 | <br>ALN-424 |



## Hinged System 60 Series Glazing Table

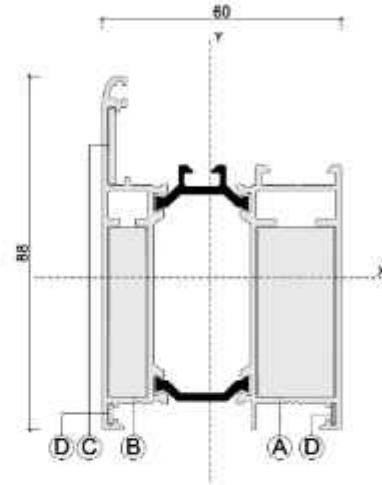
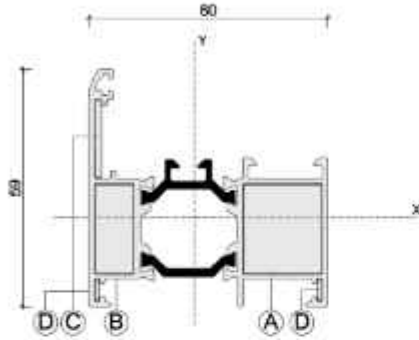


| Glazing Thickness | Gasket Inside    | Gasket Outside | Glazing Bead |
|-------------------|------------------|----------------|--------------|
| 10 mm             | 1008/Gasket 3 mm | MO68           | ALN-497      |
| 18 mm             | EP-016           | MO68           | ALN-422      |
| 20 mm             | EP-016           | MO68           | ALN-421      |
| 22 mm             | EP-019           | MO68           | ALN-323      |
| 24 mm             | EP-015           | MO68           | ALN-421      |
| 28 mm             | EP-019           | MO68           | ALN-423      |
| 30 mm             | EP-016           | MO68           | ALN-423      |
| 36 mm             | EP-021           | MO68           | ALN-322      |
| 38 mm             | EP-019           | MO68           | ALN-322      |
| 40 mm             | EP-016           | MO68           | ALN-424      |

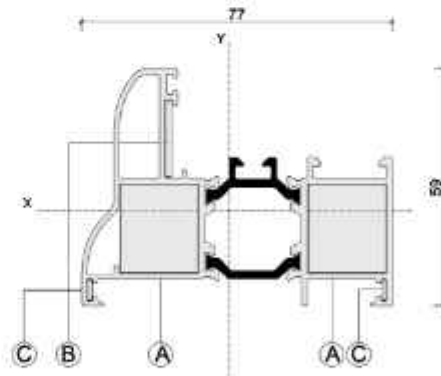
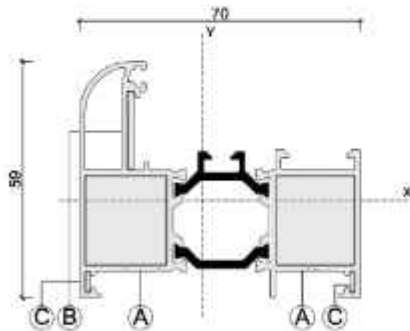


## Hinged System 60 Series

### Profile & Accessories Information



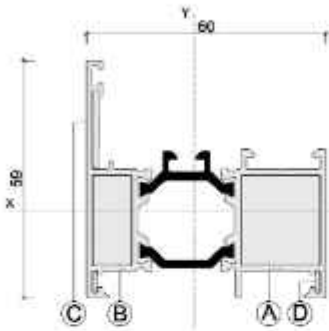
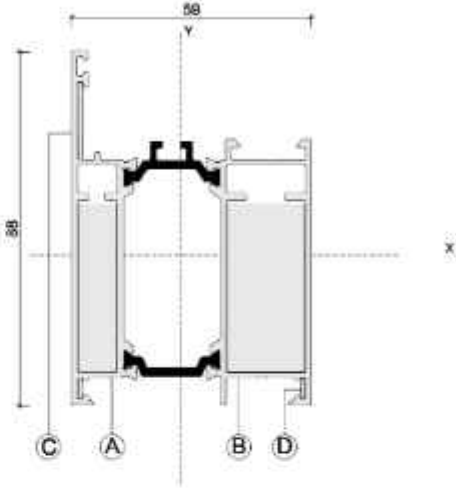
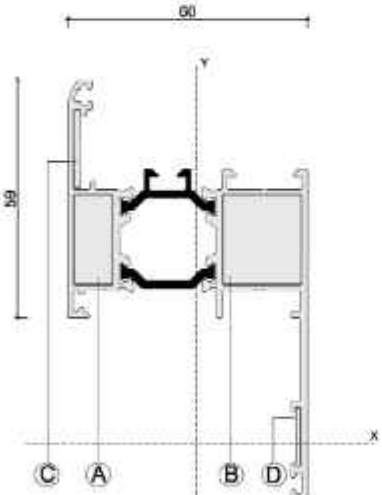
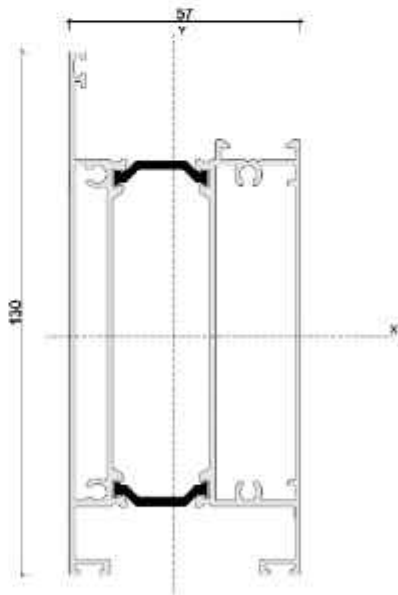
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|----------------------------|-----------------------------------|-----------------------------|-----------------------------------|
| $I_x$ : 8.15 $\text{cm}^4$ | $I_y$ : 18.2 $\text{cm}^4$        | $I_x$ : 31.86 $\text{cm}^4$ | $I_y$ : 28.06 $\text{cm}^4$       |
| Frame : ALN-400            | A: PCP-22/19 mm<br>B: PCP-22/9 mm | Frame : ALN-409             | A: PCP-42/19 mm<br>B: PCP-42/9 mm |
| Weight: 1210 gr/m          | C: fuji 2000<br>D: MO 19          | Weight: 1755 gr/m           | C: fuji 2000<br>D: MO 19          |



|                             |                                   |                             |                                   |
|-----------------------------|-----------------------------------|-----------------------------|-----------------------------------|
| $I_x$ : 11.37 $\text{cm}^4$ | $I_y$ : 27.09 $\text{cm}^4$       | $I_x$ : 11.62 $\text{cm}^4$ | $I_y$ : 29.73 $\text{cm}^4$       |
| Frame : ALN-408             | A: PCP-22 / 19 mm<br>B: fuji 2000 | Frame : ALN-466             | A: PCP-22 / 19 mm<br>B: fuji 2000 |
| Weight: 1397 gr/m           | D: MO 19                          | Weight : 1435 gr/m          | C: MO 19                          |

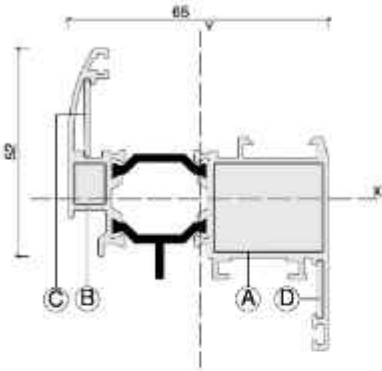
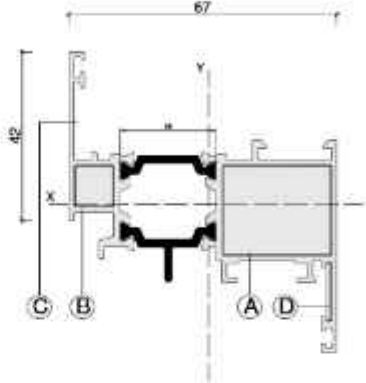
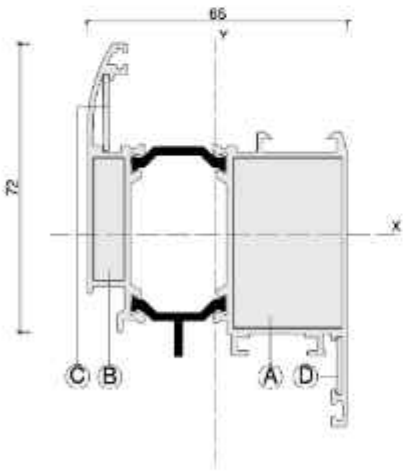
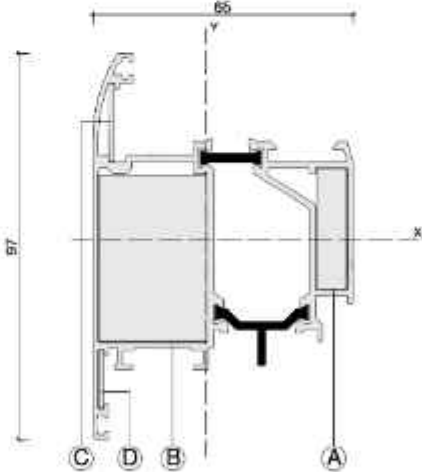
## Hinged System 60 Series

### Profile & Accessories Information

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|-------------------------------------------------------------------------------------|---------------------------------------|--------------------------------------------------------------------------------------|---------------------------------------|
|    |                                       |    |                                       |
| $I_x$ : 7.49 $cm^4$                                                                 | $I_y$ : 17.91 $cm^4$                  | $I_x$ : 30.52 $cm^4$                                                                 | $I_y$ : 27.72 $cm^4$                  |
| Frame : ALN-415                                                                     | A: PCP-22/19 mm<br>B: PCP-22/9 mm     | Frame : ALN-440                                                                      | A: PCP-42 / 9 mm<br>B: PCP-42 / 19 mm |
| Weight : 1191gr/m                                                                   | C: fuji 2000<br>D: MO 19              | Weight: 1760 gr/m                                                                    | C: fuji 2000<br>D: MO 19              |
|  |                                       |  |                                       |
| $I_x$ : 24.34 $cm^4$                                                                | $I_y$ : 25.25 $cm^4$                  | $I_x$ : 101.67 $cm^4$                                                                | $I_y$ : 37.42 $cm^4$                  |
| Frame : ALN-449                                                                     | A: PCP-22 / 9 mm<br>B: PCP-22 / 19 mm | Profile : ALN-410                                                                    | A: -                                  |
| Weight : 1440 gr/m                                                                  | C: fuji 2000<br>D: MM77               | Weight: 2335 gr/m                                                                    | B: -                                  |

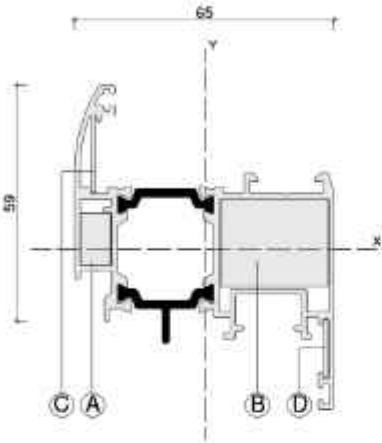
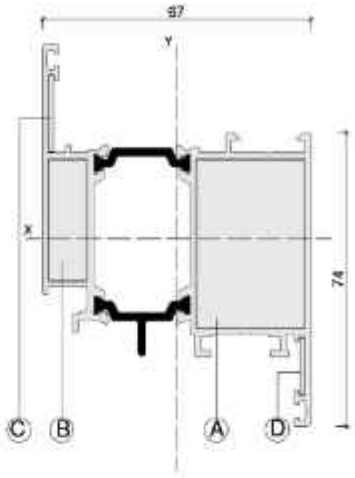
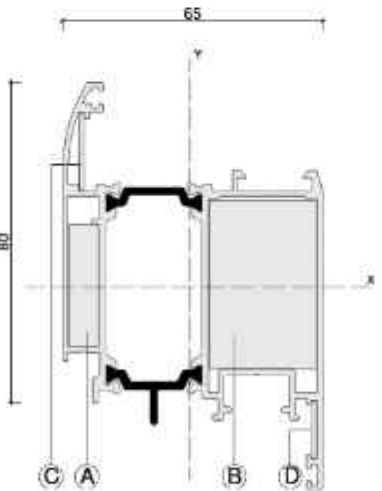
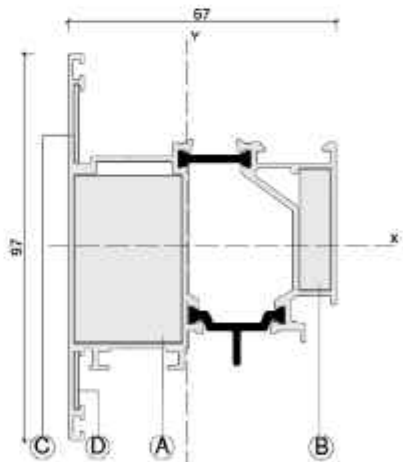
## Hinged System 60 Series

### Profile & Accessories Information

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|-------------------------------------------------------------------------------------|---------------------------------------|--------------------------------------------------------------------------------------|---------------------------------------|
|    |                                       |    |                                       |
| $I_x$ : 11.21 $\text{cm}^4$                                                         | $I_y$ : 24.05 $\text{cm}^4$           | $I_x$ : 10.27 $\text{cm}^4$                                                          | $I_y$ : 25.02 $\text{cm}^4$           |
| Sash : ALN-401                                                                      | A: PCP-22 / 26 mm<br>B: PCP-10 / 7 mm | Sash : ALN-416                                                                       | A: PCP-22 / 26 mm<br>B: PCP-10 / 9 mm |
| Weight: 1334 gr/m                                                                   | C: fuji 2000<br>D: MM77               | Weight : 1337 gr/m                                                                   | C: fuji 2000<br>D: MM77               |
|  |                                       |  |                                       |
| $I_x$ : 27.62 $\text{cm}^4$                                                         | $I_y$ : 30.97 $\text{cm}^4$           | $I_x$ : 29.94 $\text{cm}^4$                                                          | $I_y$ : 30.41 $\text{cm}^4$           |
| Sash : ALN-402                                                                      | A: PCP-42 / 26 mm<br>B: PCP-30 / 7 mm | Sash : ALN-403                                                                       | A: PCP-30 / 7 mm<br>B: PCP-42 / 26 mm |
| Weight: 1640 gr/m                                                                   | C: fuji 2000<br>D: MM77               | Weight: 1706 gr/m                                                                    | C: fuji 2000<br>D: MM77               |

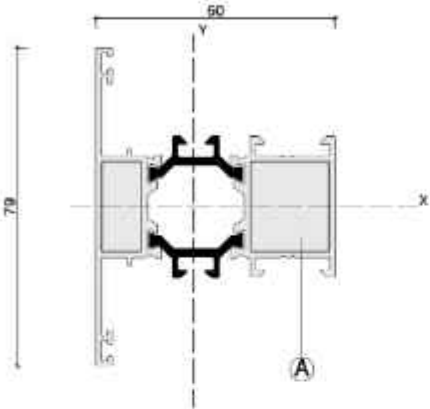
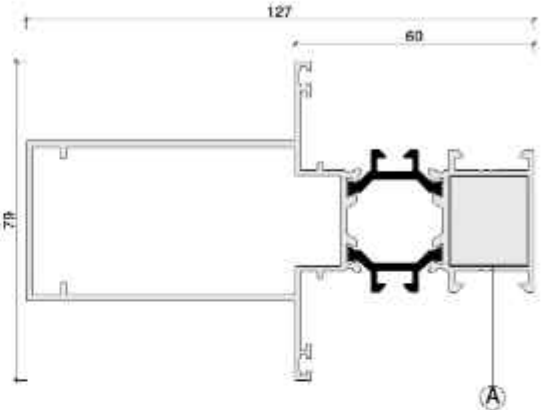
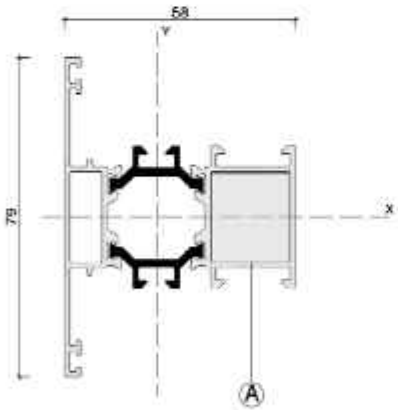
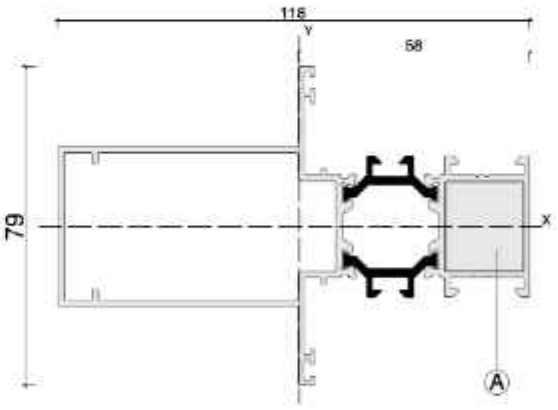
## Hinged System 60 Series

### Profile & Accessories Information

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|    |                                       |    |                                       |
| $I_x$ : 14.95 cm <sup>4</sup>                                                       | $I_y$ : 26.89 cm <sup>4</sup>         | $I_x$ : 25.70 cm <sup>4</sup>                                                        | $I_y$ : 32.28 cm <sup>4</sup>         |
| Sash : ALN-498                                                                      | A: PCP-13 / 7 mm<br>B: PCP-22 / 26 mm | Sash : ALN-441                                                                       | A: PCP-42 / 26 mm<br>B: PCP-30 / 9 mm |
| Weight : 1499 gr/m                                                                  | C: fuji 2000<br>D: MM77               | Weight : 1640 gr/m                                                                   | C: fuji 2000<br>D: MM77               |
|  |                                       |  |                                       |
| $I_x$ : 35.97 cm <sup>4</sup>                                                       | $I_y$ : 12.70 cm <sup>4</sup>         | $I_x$ : 28.23 cm <sup>4</sup>                                                        | $I_y$ : 32.79 cm <sup>4</sup>         |
| Sash : ALN-499                                                                      | A: PCP-30 / 7 mm<br>B: PCP-42 / 26 mm | Sash : ALN-447                                                                       | A: PCP-42 / 26 mm<br>B: PCP-30 / 7 mm |
| Weight : 1827 gr/m                                                                  | C: fuji 2000<br>D: MM77               | Weight : 1701 gr/m                                                                   | C: fuji 2000<br>D: MM77               |

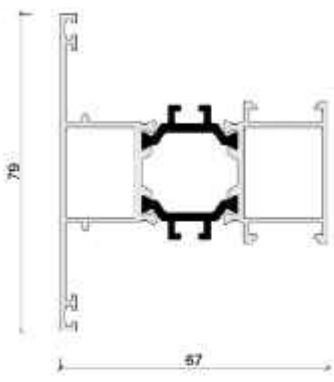
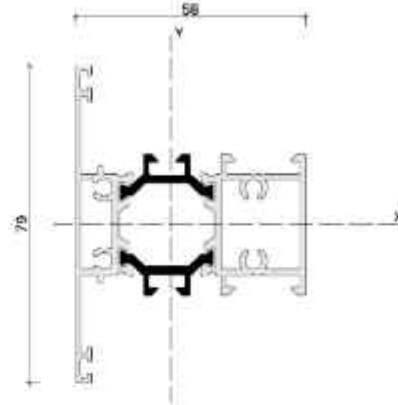
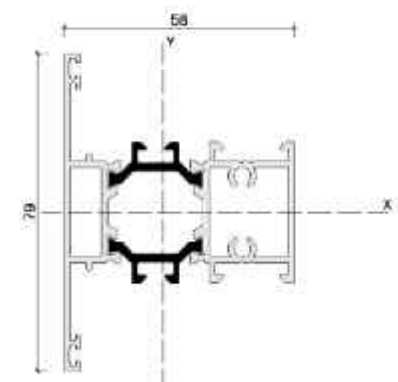
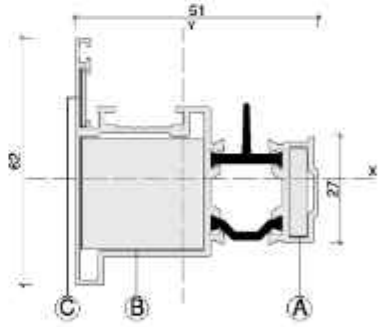
## Hinged System 60 Series

### Profile & Accessories Information

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|    |                               |    |                               |
| $I_x$ : 11.04 cm <sup>4</sup>                                                       | $I_y$ : 19.22 cm <sup>4</sup> | $I_x$ : 19.27 cm <sup>4</sup>                                                        | $I_y$ : 100.3 cm <sup>4</sup> |
| Flat Transome : ALN-417                                                             | A: ALN-445                    | Flat Transome : ALN-465                                                              | A: ALN-445                    |
| Weight : 1092 gr/m                                                                  |                               | Weight : 1938 gr/m                                                                   | B: —                          |
|  |                               |  |                               |
| $I_x$ : 10.97 cm <sup>4</sup>                                                       | $I_y$ : 17.85 cm <sup>4</sup> | $I_x$ : 18.41 cm <sup>4</sup>                                                        | $I_y$ : 82.72 cm <sup>4</sup> |
| Transome : ALN-406                                                                  | A: ALN-445                    | Transome : ALN-420                                                                   | A: ALN-445                    |
| Weight : 1275 gr/m                                                                  |                               | Weight : 1867 gr/m                                                                   | B: —                          |

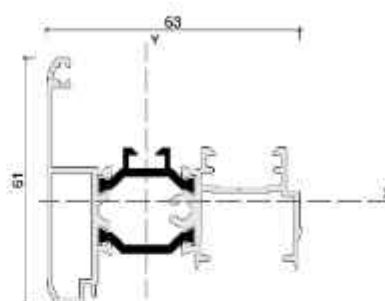
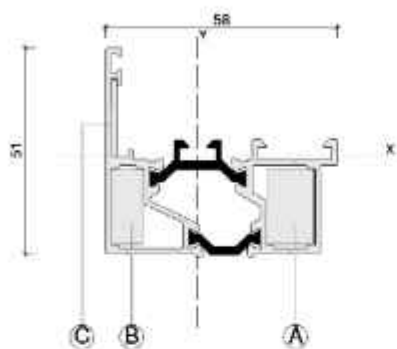
## Hinged System 60 Series

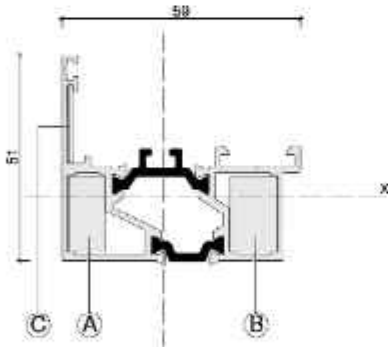
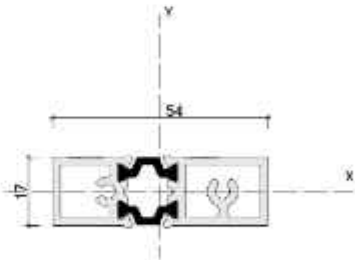
### Profile & Accessories Information

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|-------------------------------------------------------------------------------------|-----------------------------|--------------------------------------------------------------------------------------|-----------------------------|
|    |                             |    |                             |
| $I_x$ : 11.32 $\text{cm}^4$                                                         | $I_y$ : 25.23 $\text{cm}^4$ | $I_x$ : 11.33 $\text{cm}^4$                                                          | $I_y$ : 19.67 $\text{cm}^4$ |
| Transom : ALN-494                                                                   | A: -                        | Transom : ALN-407                                                                    | A: -                        |
| Weight : 1355 gr/m                                                                  | B: -                        | Weight : 1406 gr/m                                                                   | B: -                        |
|  |                             |  |                             |
| $I_x$ : 11.20 $\text{cm}^4$                                                         | $I_y$ : 19.08 $\text{cm}^4$ | $I_x$ : 8.61 $\text{cm}^4$                                                           | $I_y$ : 17.92 $\text{cm}^4$ |
| Transom : ALN-404                                                                   | A: -                        | Transom : ALN-411                                                                    | A: PCP-22 / 4 mm            |
| Weight: 1353 gr/m                                                                   | B: -                        | Weight : 1232 gr/m                                                                   | B: PCP-28 / 30 mm           |
|                                                                                     |                             |                                                                                      | C: MM77 (AKW-810)           |

## Hinged System 60 Series

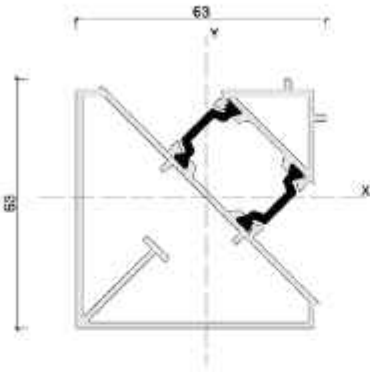
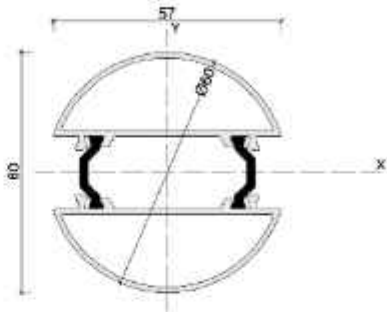
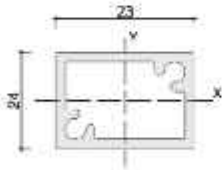
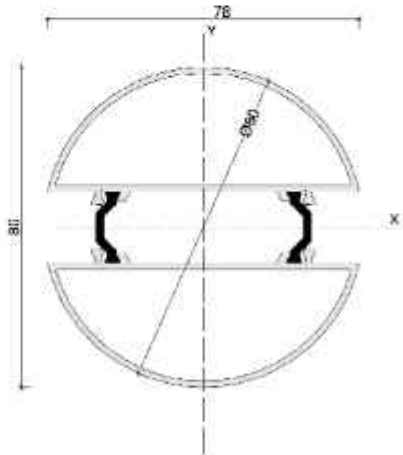
### Profile & Accessories Information



|                                                                                     |                                                                                                       |                                                                                      |                             |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|-----------------------------|
| $I_x$ : 5.52 $\text{cm}^4$                                                          | $I_y$ : 13.29 $\text{cm}^4$                                                                           | $I_x$ : 6.85 $\text{cm}^4$                                                           | $I_y$ : 16.75 $\text{cm}^4$ |
| Profile : ALN-418                                                                   | A: PCP-19 / 11 mm  | Profile : ALN-405                                                                    |                             |
| Weight : 1101 gr/m                                                                  | B: PCP-19 / 7 mm   | Weight : 1196 gr/m                                                                   |                             |
|                                                                                     | C: fuji 2000       |                                                                                      |                             |
| <br>                                                                                |                                                                                                       |                                                                                      |                             |
|  |                                                                                                       |  |                             |
| $I_x$ : 5.54 $\text{cm}^4$                                                          | $I_y$ : 14.03 $\text{cm}^4$                                                                           | $I_x$ : 1.19 $\text{cm}^4$                                                           | $I_y$ : 10.46 $\text{cm}^4$ |
| Transome : ALN-448                                                                  | A: PCP-19 / 9 mm   | Profile : ALN-419                                                                    | A:                          |
| Weight : 1128 gr/m                                                                  | B: PCP-19 / 11 mm  | Weight : 1016 gr/m                                                                   | B:                          |
|                                                                                     | C: fuji 2000       |                                                                                      | C:                          |

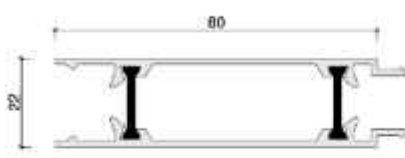
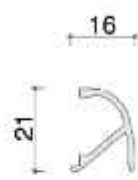
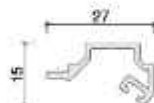
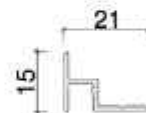
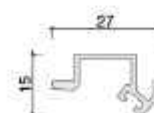
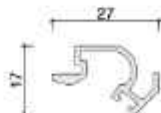
## Hinged System 60 Series

### Profile & Accessories Information

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|-------------------------------------------------------------------------------------|-------------------------------|--------------------------------------------------------------------------------------|-------------------------------|
|    |                               |    |                               |
| $I_x$ : 22.95 cm <sup>4</sup>                                                       | $I_y$ : 22.95 cm <sup>4</sup> | $I_x$ : 12.02 cm <sup>4</sup>                                                        | $I_y$ : 12.13 cm <sup>4</sup> |
| Coupling : ALN 468                                                                  | A: -                          | Coupling : ALN 413                                                                   | A: -                          |
| Weight : 1714 gr/m                                                                  | B: -                          | Weight : 1214 gr/m                                                                   | B: -                          |
|  |                               |  |                               |
| $I_x$ : — cm <sup>4</sup>                                                           | $I_y$ : — cm <sup>4</sup>     | $I_x$ : 30.79 cm <sup>4</sup>                                                        | $I_y$ : 33.53 cm <sup>4</sup> |
| Coupling : ALN 469                                                                  | A: -                          | Coupling : ALN 414                                                                   | A: -                          |
| Weight : 337 gr/m                                                                   | B: -                          | Weight : 1720 gr/m                                                                   | B: -                          |

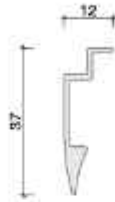
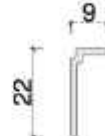
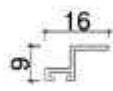
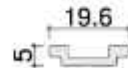
## Hinged System 60 Series

### Profile & Accessories Information

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|-------------------------------------------------------------------------------------|---------|---------------------------------------------------------------------------------------|-----------|-----------|---------|----------|----------|
|    |         |    |           |           |         |          |          |
| Profile :                                                                           | ALN-425 | Weight:                                                                               | 1057 gr/m | Profile : | ALN-229 | Weight : | 192 gr/m |
|  |         |  |           |           |         |          |          |
| profile:                                                                            | ALN-426 | Weight :                                                                              | 208 gr/m  | profile:  | ALN-228 | Weight : | 135 gr/m |
|  |         |   |           |           |         |          |          |
| profile:                                                                            | ALN-427 | Weight :                                                                              | 208 gr/m  | Profile : | ALN-429 | Weight : | 235 gr/m |

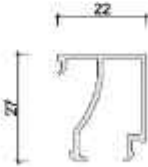
## Hinged System 60 Series

### Profile & Accessories Information

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|    |         |    |          |           |         |          |           |
| Profile :                                                                           | ALN-428 | Weight :                                                                              | 219 gr/m | Profile : | ALN-442 | Weight : | 118 gr/m  |
|  |         |  |          |           |         |          |           |
| Profile :                                                                           | ALN-430 | Weight :                                                                              | 230 gr/m | Profile : | ALN-443 | Weight : | 75,6 gr/m |
|  |         |  |          |           |         |          |           |
| Transom bar profile:                                                                | ALN-445 | Weight :                                                                              | 742 gr/m | Profile : | ALN-331 | Weight:  | 140 gr/m  |

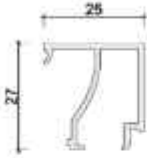
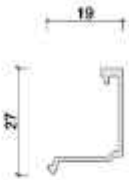
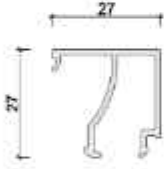
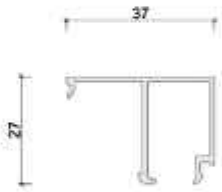
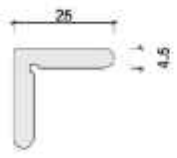
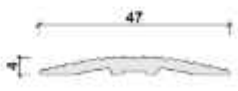
## Hinged System 60 Series

### Profile & Accessories Information

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|-------------------------------------------------------------------------------------|-------------------|---------------------------------------------------------------------------------------|-------------------|
|    |                   |     |                   |
| Flange profile: ALN-219                                                             | Weight : 362 gr/m | Glazing beads: ALN-423                                                                | Weight : 281 gr/m |
|   |                   |  |                   |
| Flange profile: ALN-221                                                             | Weight : 302 gr/m | Glazing beads: ALN-321                                                                | Weight : 224 gr/m |
|  |                   |   |                   |
| Flange profile: ALN-222                                                             | Weight : 254 gr/m | Glazing beads: ALN-323                                                                | Weight : 302 gr/m |

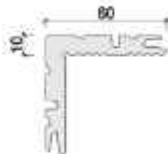
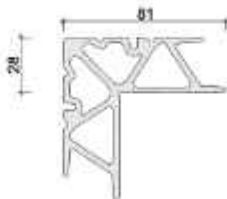
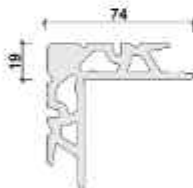
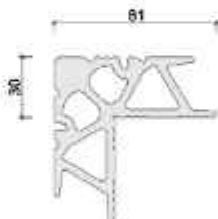
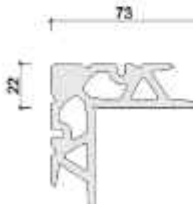
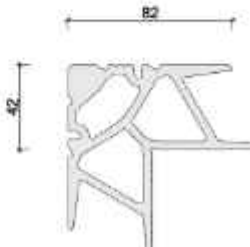
## Hinged System 60 Series

### Profile & Accessories Information

|                                                                                     |                   |                                                                                      |                   |
|-------------------------------------------------------------------------------------|-------------------|--------------------------------------------------------------------------------------|-------------------|
|    |                   |   |                   |
| Glazing beads: ALN-421                                                              | Weight : 313 gr/m | Glazing beads: ALN-424                                                               | Weight : 167 gr/m |
|  |                   |  |                   |
| Glazing beads: ALN-422                                                              | Weight : 321 gr/m | Glazing bead: ALN-497                                                                | Weight : 350 gr/m |
|  |                   |  |                   |
| Corner Joint: MO 19 399012                                                          | Weight : 533 gr/m | profile: ALN-444                                                                     | Weight : 344 gr/m |

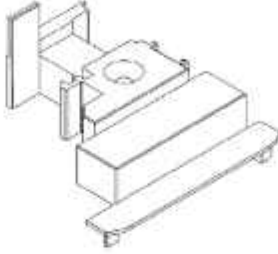
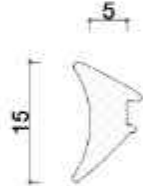
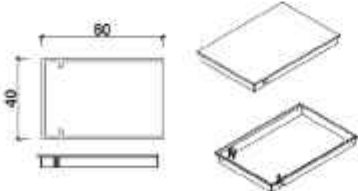
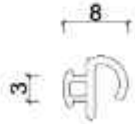
## Hinged System 60 Series

### Profile & Accessories Information

|                                                                                     |        |                                                                                      |           |               |        |          |           |
|-------------------------------------------------------------------------------------|--------|--------------------------------------------------------------------------------------|-----------|---------------|--------|----------|-----------|
|    |        |    |           |               |        |          |           |
| Corner Joint:                                                                       | PCP-10 | Weight :                                                                             | 2454 gr/m | Corner Joint: | PCP-28 | Weight : | 3429 gr/m |
|  |        |  |           |               |        |          |           |
| Corner Joint:                                                                       | PCP-19 | Weight :                                                                             | 3499 gr/m | Corner Joint: | PCP-30 | Weight : | 4539 gr/m |
|  |        |  |           |               |        |          |           |
| Corner Joint:                                                                       | PCP-22 | Weight :                                                                             | 3718 gr/m | Corner Joint: | PCP-42 | Weight : | 5133 gr/m |

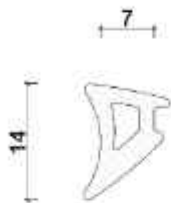
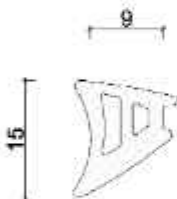
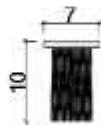
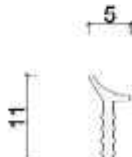
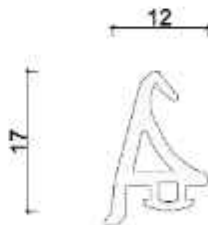
## Hinged System 60 Series

### Profile & Accessories Information

|                                                                                     |                   |                                                                                       |                  |
|-------------------------------------------------------------------------------------|-------------------|---------------------------------------------------------------------------------------|------------------|
|    |                   |     |                  |
| Corner Joint: Fuji 2000                                                             | Weight : —        | Cap: TS-60                                                                            | Weight : —       |
|  |                   |  |                  |
| Corner Joint : MM 77                                                                | Weight : --- gr/m | Gasket: EP-016                                                                        | Weight : 77 gr/m |
|  |                   |  |                  |
| Cap : AKW-904                                                                       | Weight: —         | Gasket: EP-018                                                                        | Weight: 27 gr/m  |

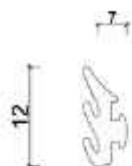
## Hinged System 60 Series

### Profile & Accessories Information

|                                                                                     |        |                                                                                       |         |                |          |          |          |
|-------------------------------------------------------------------------------------|--------|---------------------------------------------------------------------------------------|---------|----------------|----------|----------|----------|
|    |        |    |         |                |          |          |          |
| Gasket:                                                                             | EP-019 | Weight :                                                                              | 61 gr/m | PB7-3P-50-700  | Weight : | —        |          |
|  |        |  |         |                |          |          |          |
| Gasket:                                                                             | EP-021 | Weight :                                                                              | 80 gr/m | PB7-3P-70-1000 | Weight : | —        |          |
|  |        |   |         |                |          |          |          |
| Gasket:                                                                             | EP-015 | Weight :                                                                              | 21 gr/m | Gasket:        | TH60     | Weight : | 101 gr/m |

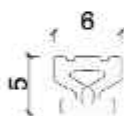
## Hinged System 60 Series

### Profile & Accessories Information



Gasket: MO68

Weight : 48 gr/m



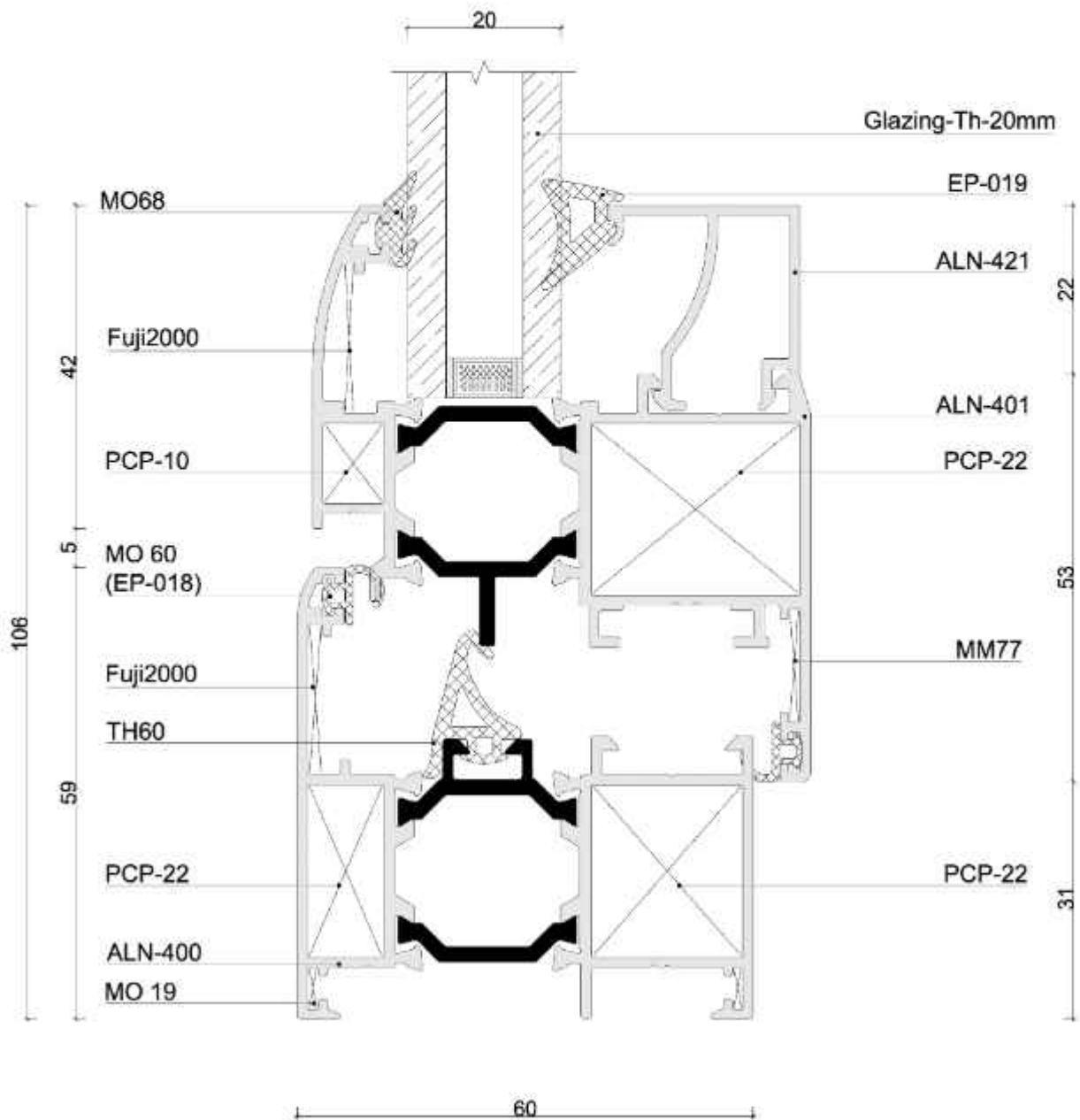
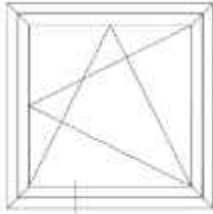
Gasket: mo 60-1

Weight: 26 gr/m

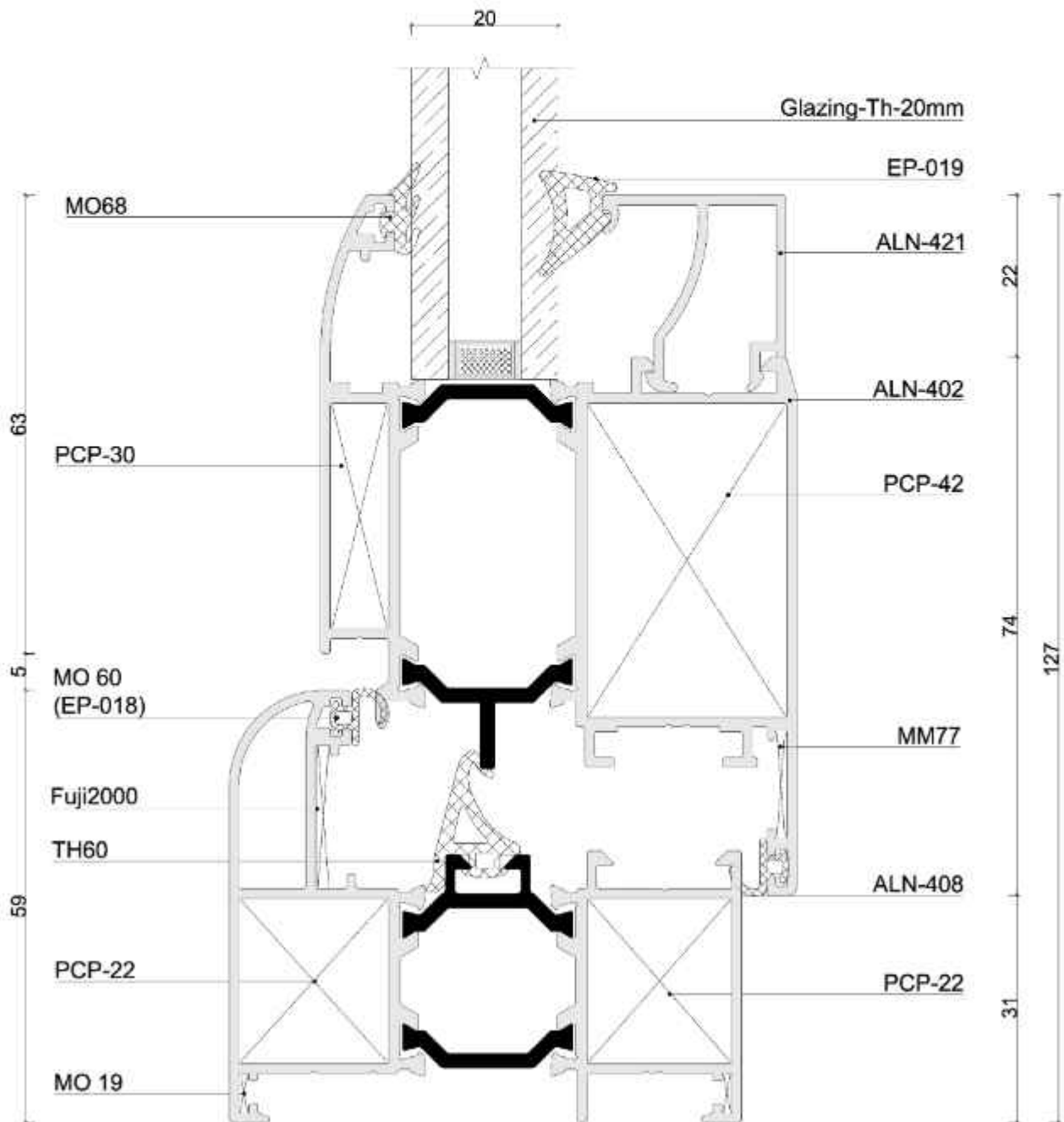
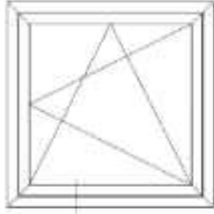


## Hinged System 60 Series

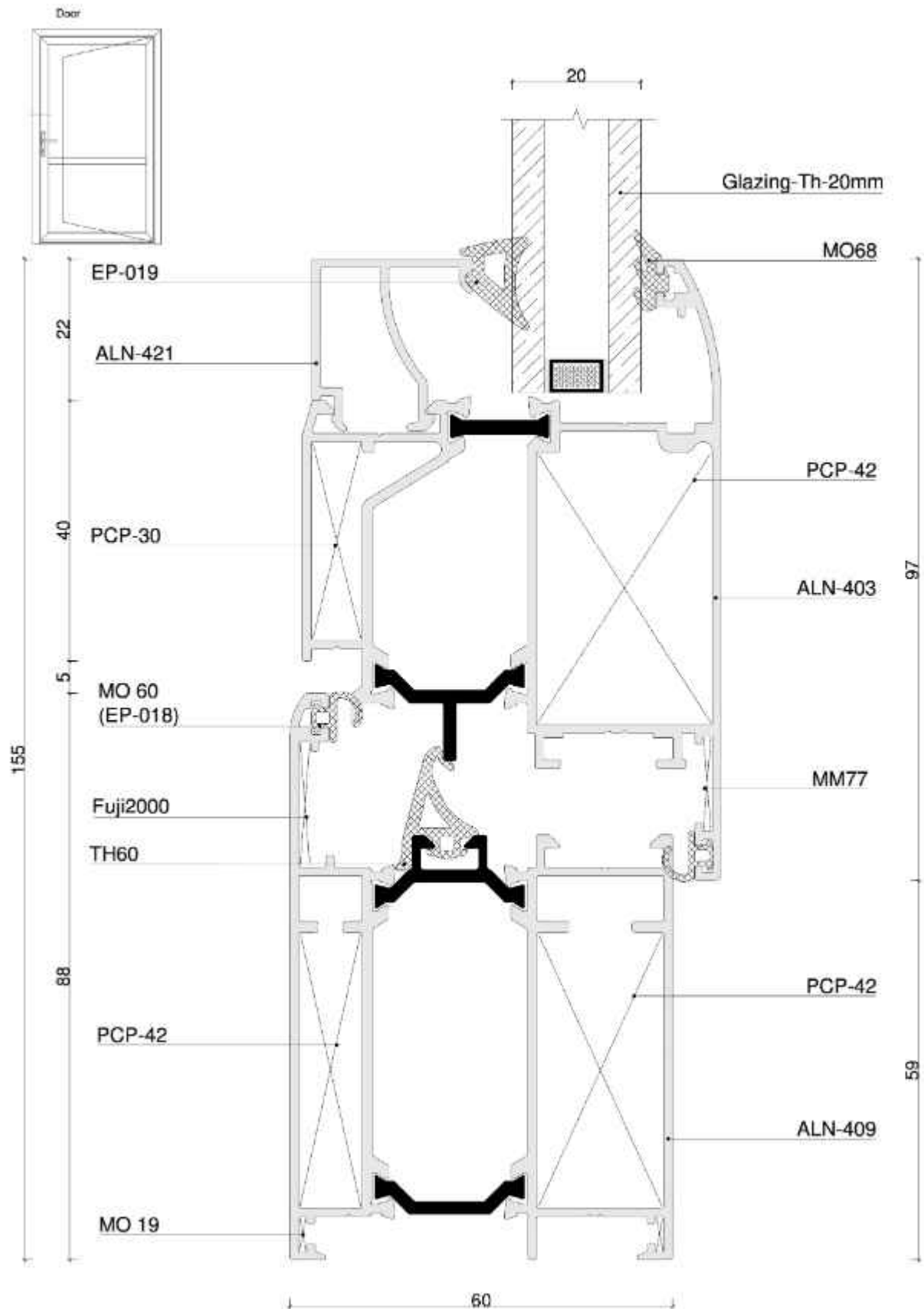
### Fabrication Details



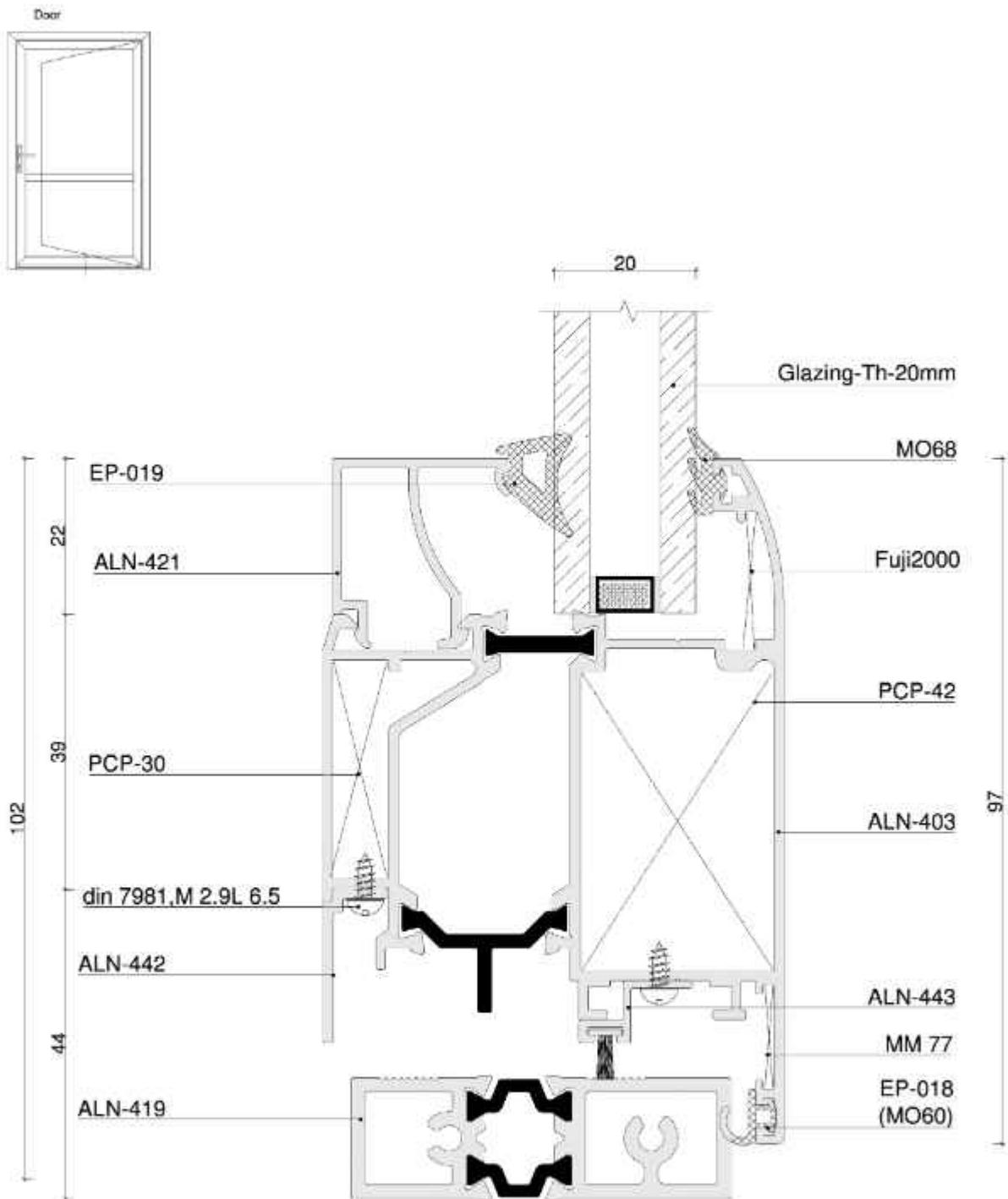
## Hinged System 60 Series Fabrication Details



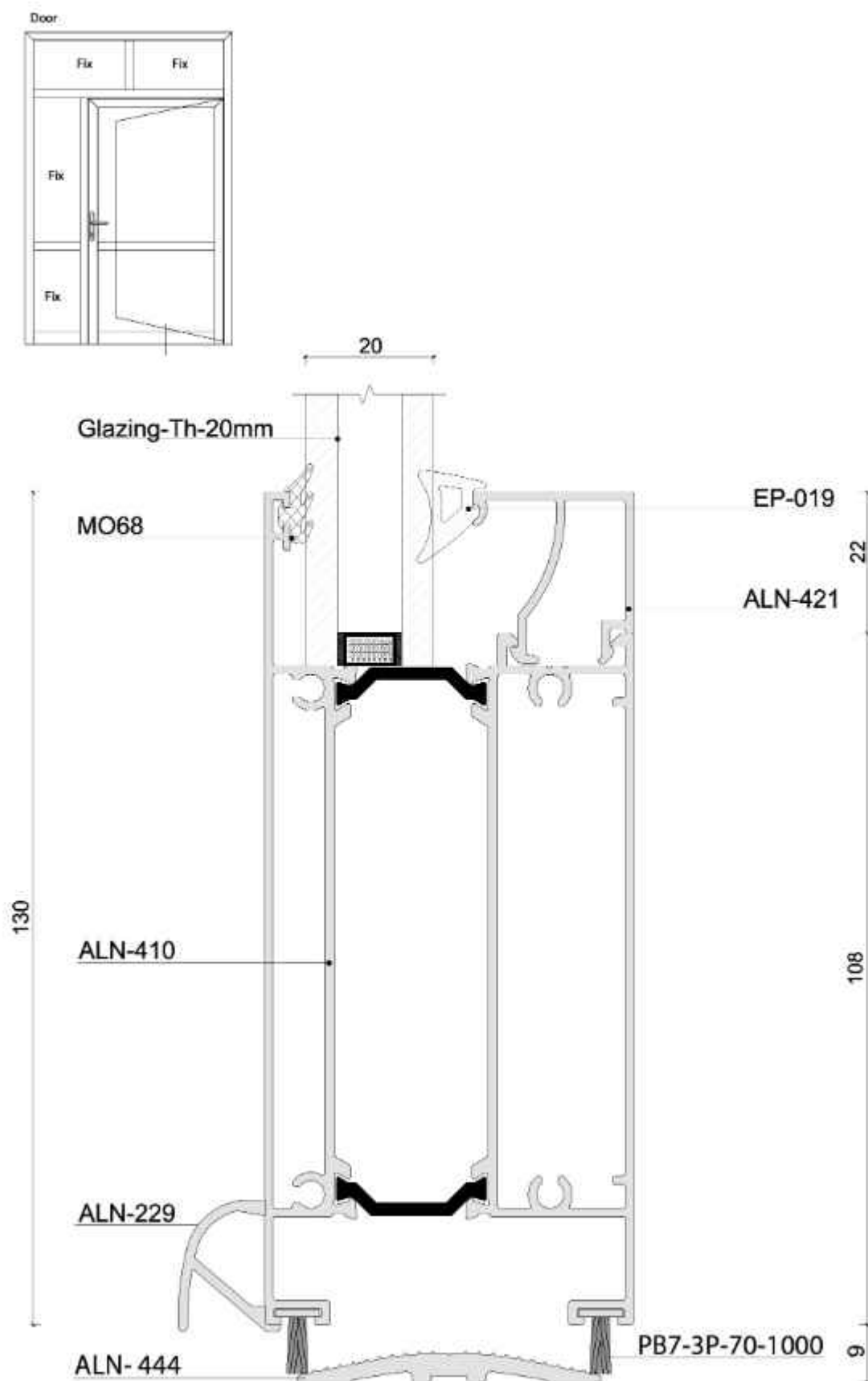
## Hinged System 60 Series Fabrication Details



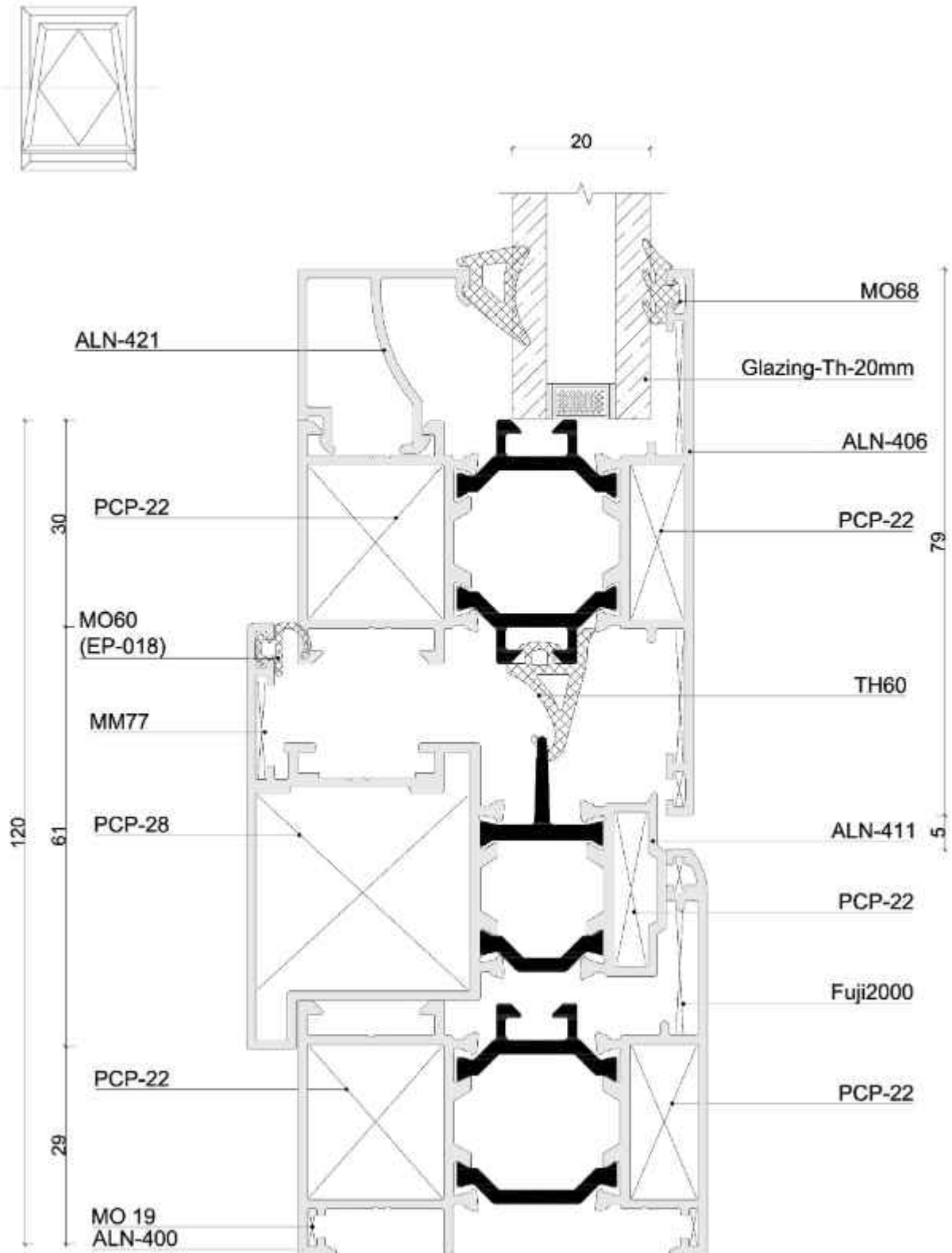
## Hinged System 60 Series Fabrication Details



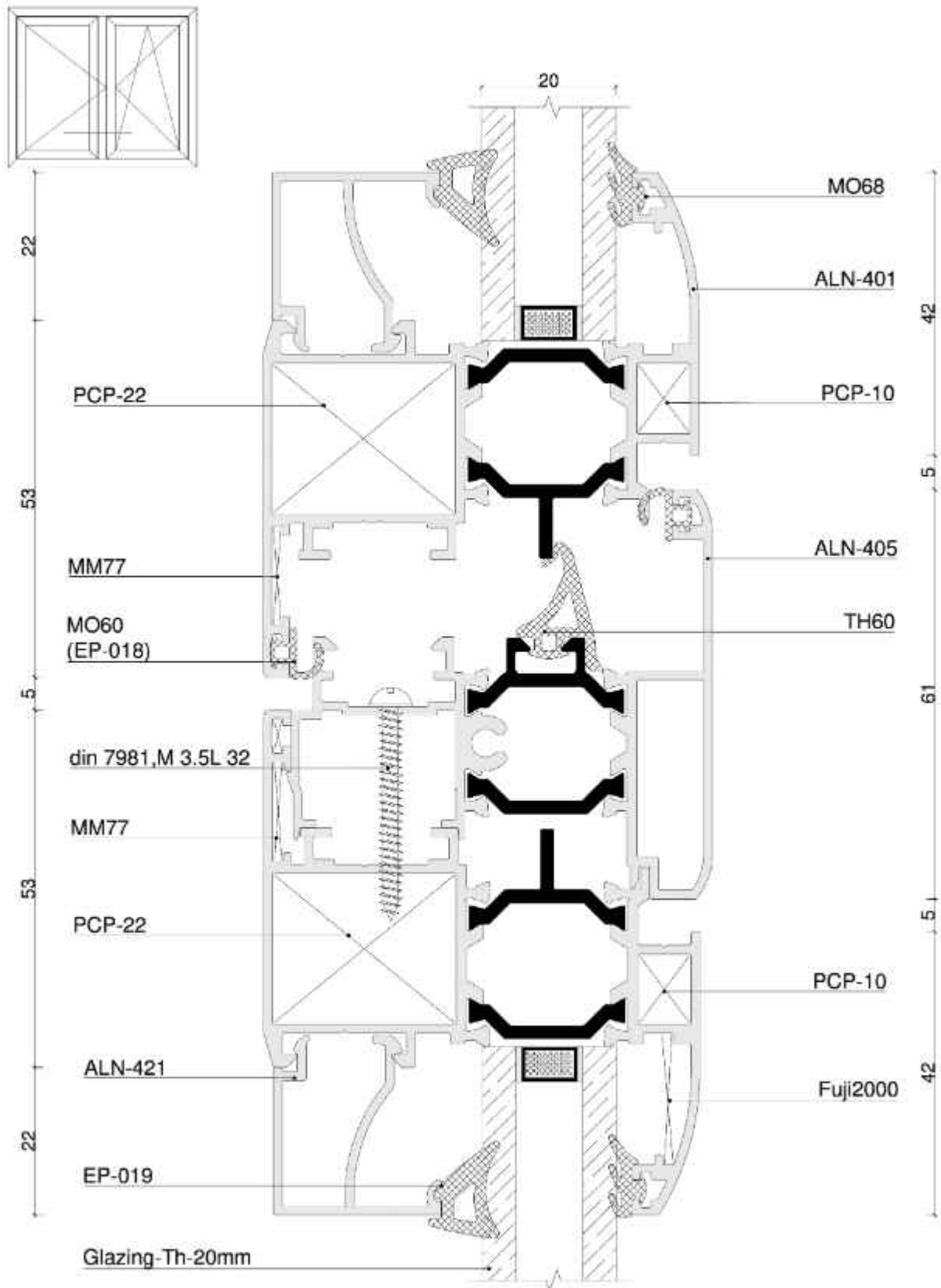
## Hinged System 60 Series Fabrication Details



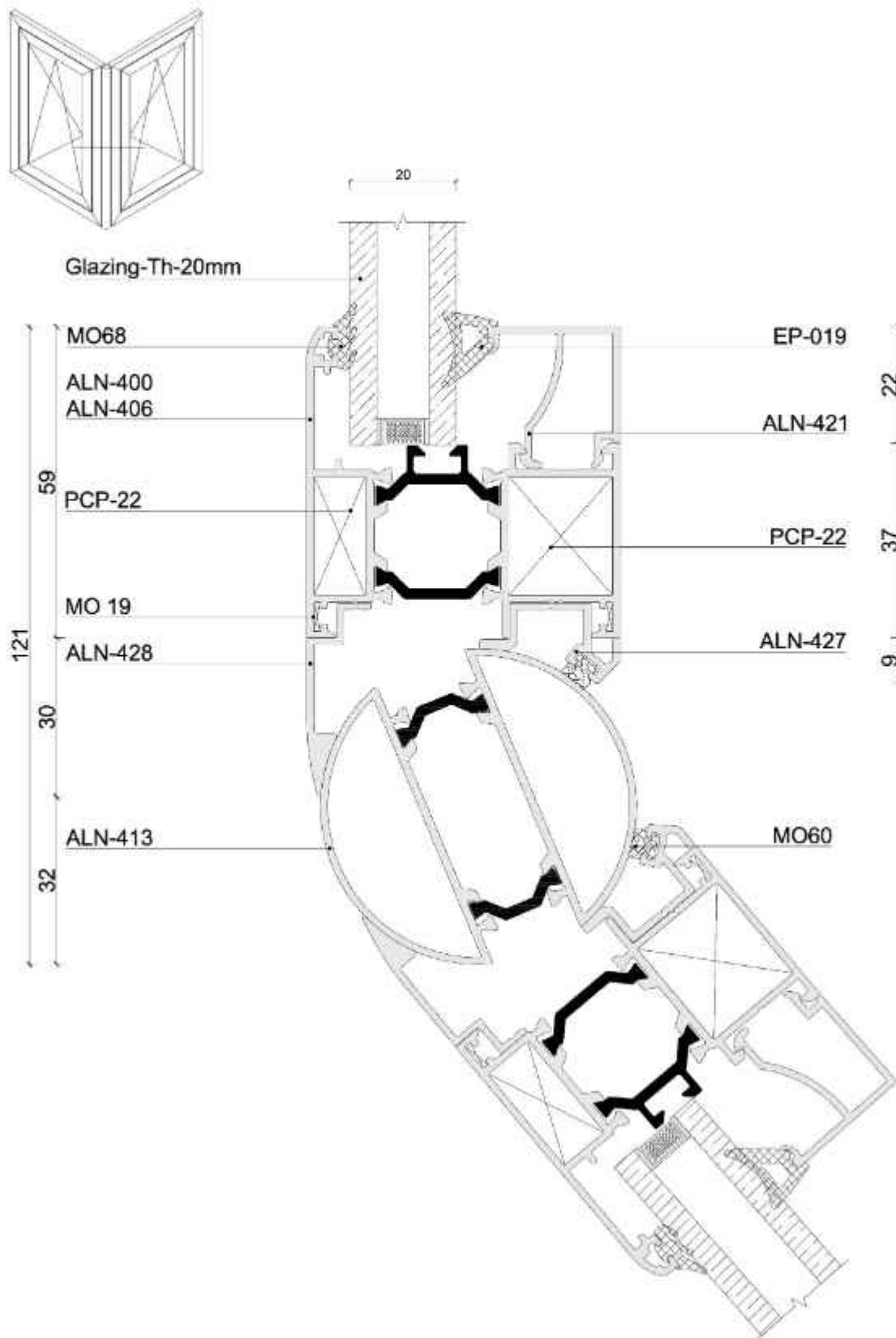
## Hinged System 60 Series Fabrication Details



## Hinged System 60 Series Fabrication Details

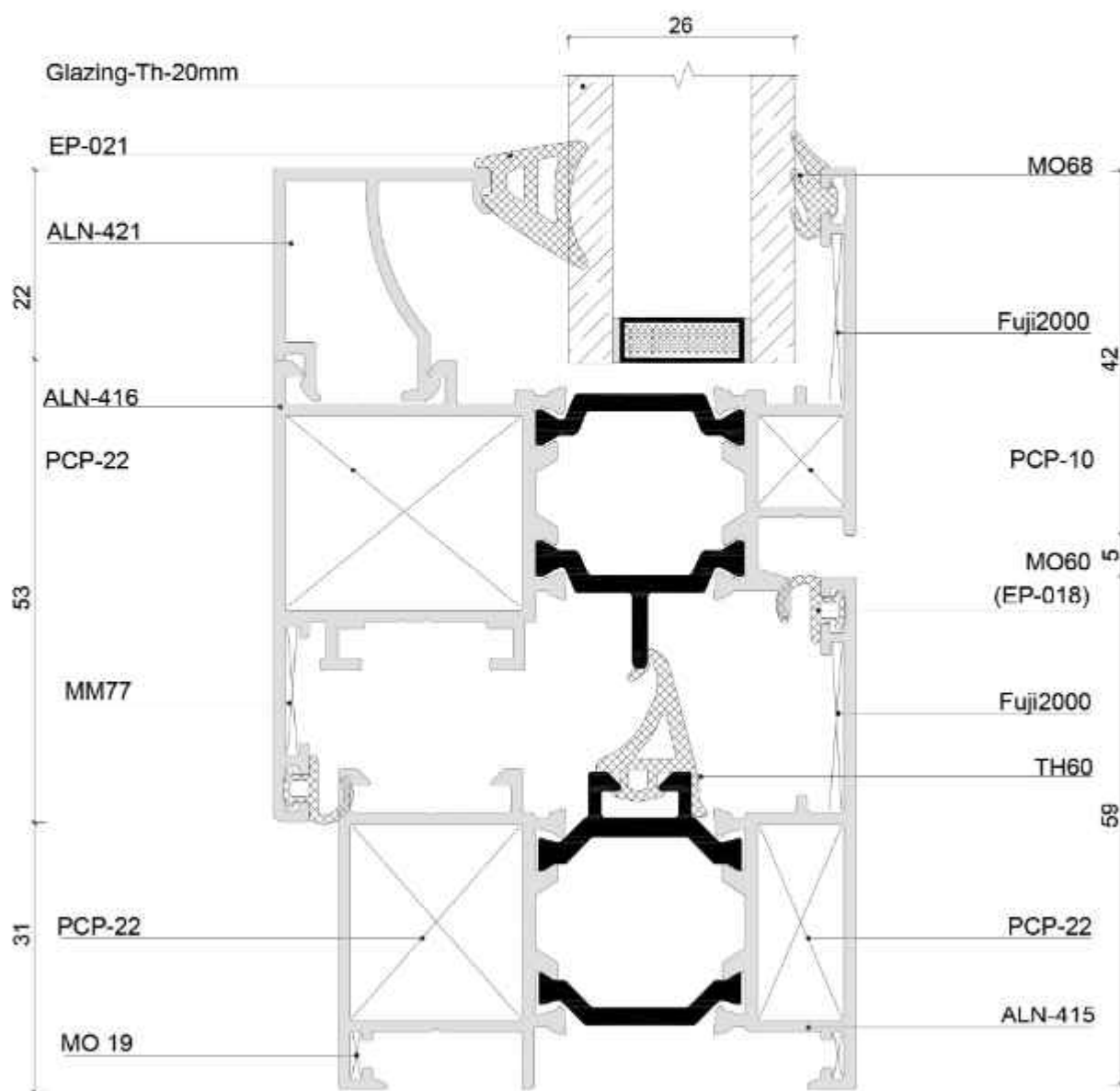
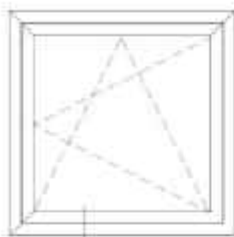


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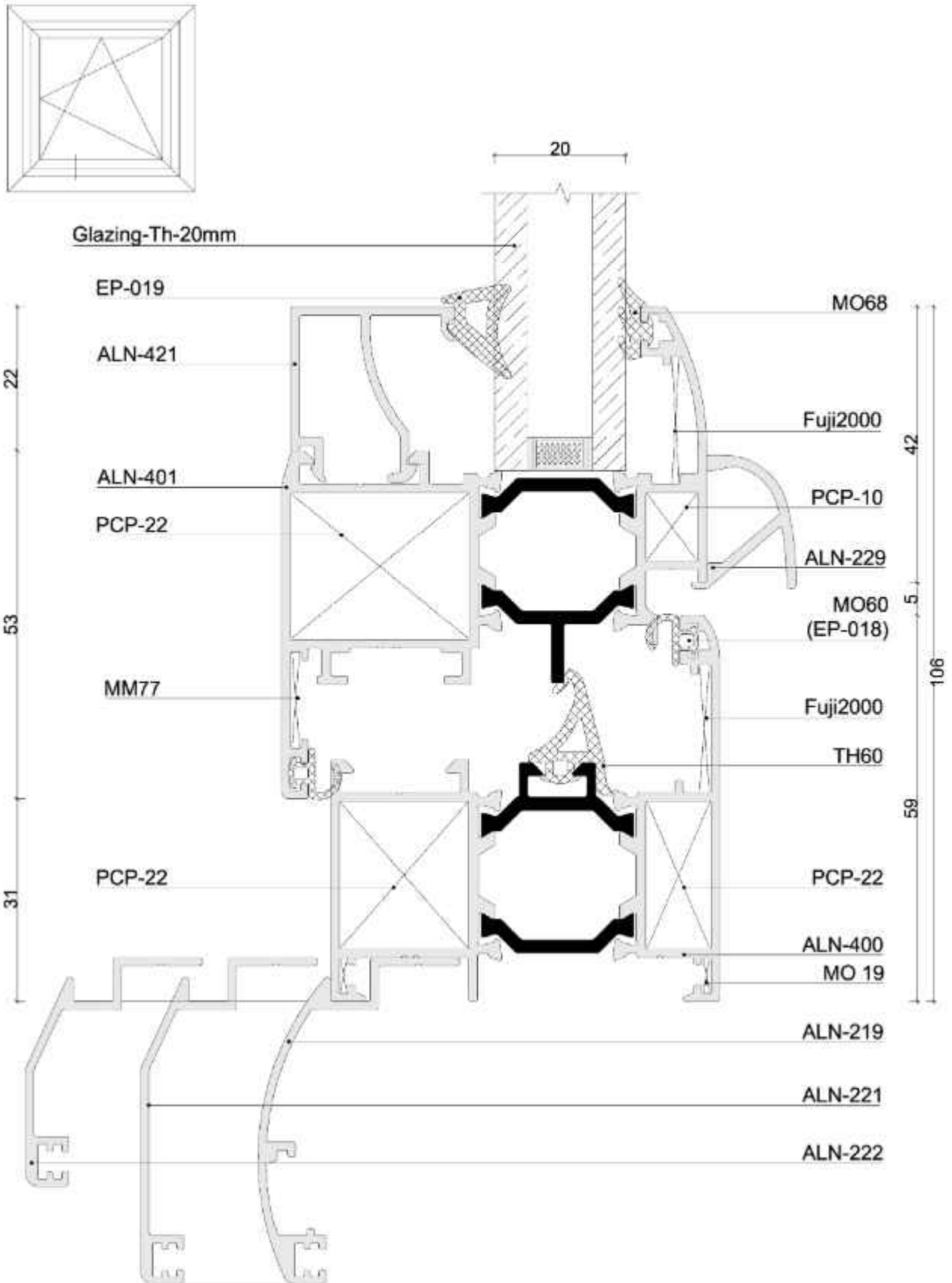


## Hinged System 60 Series

### Fabrication Details

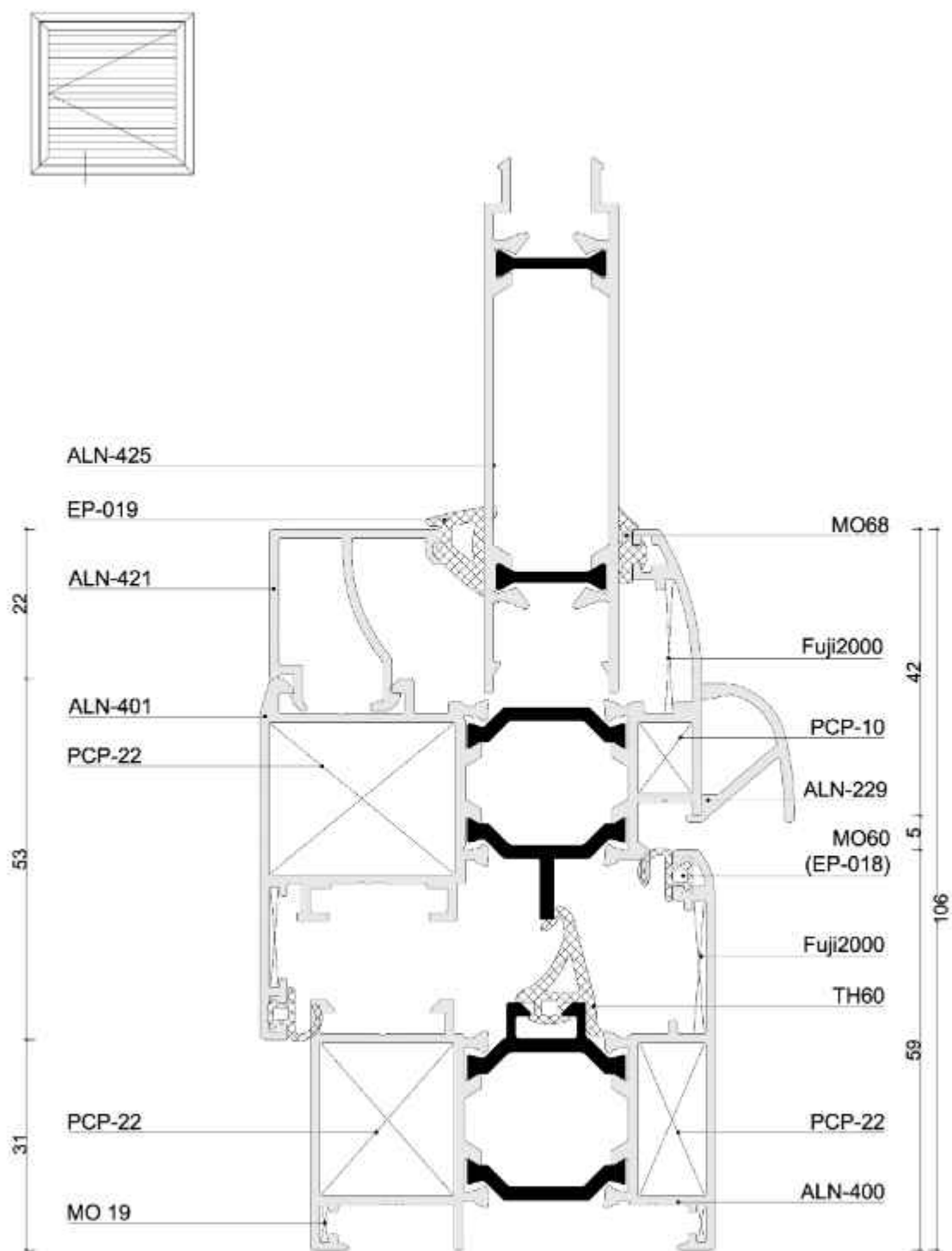


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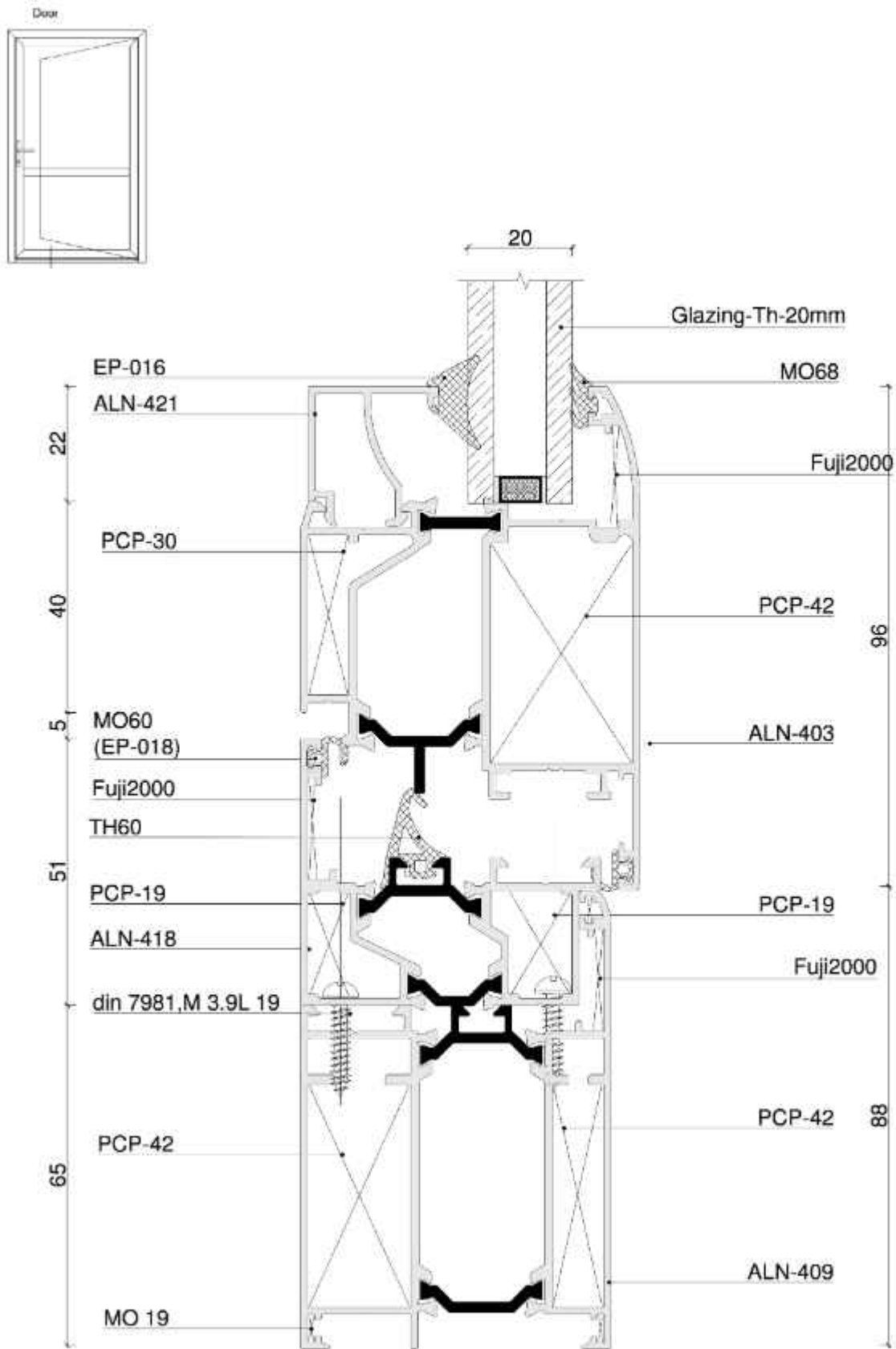


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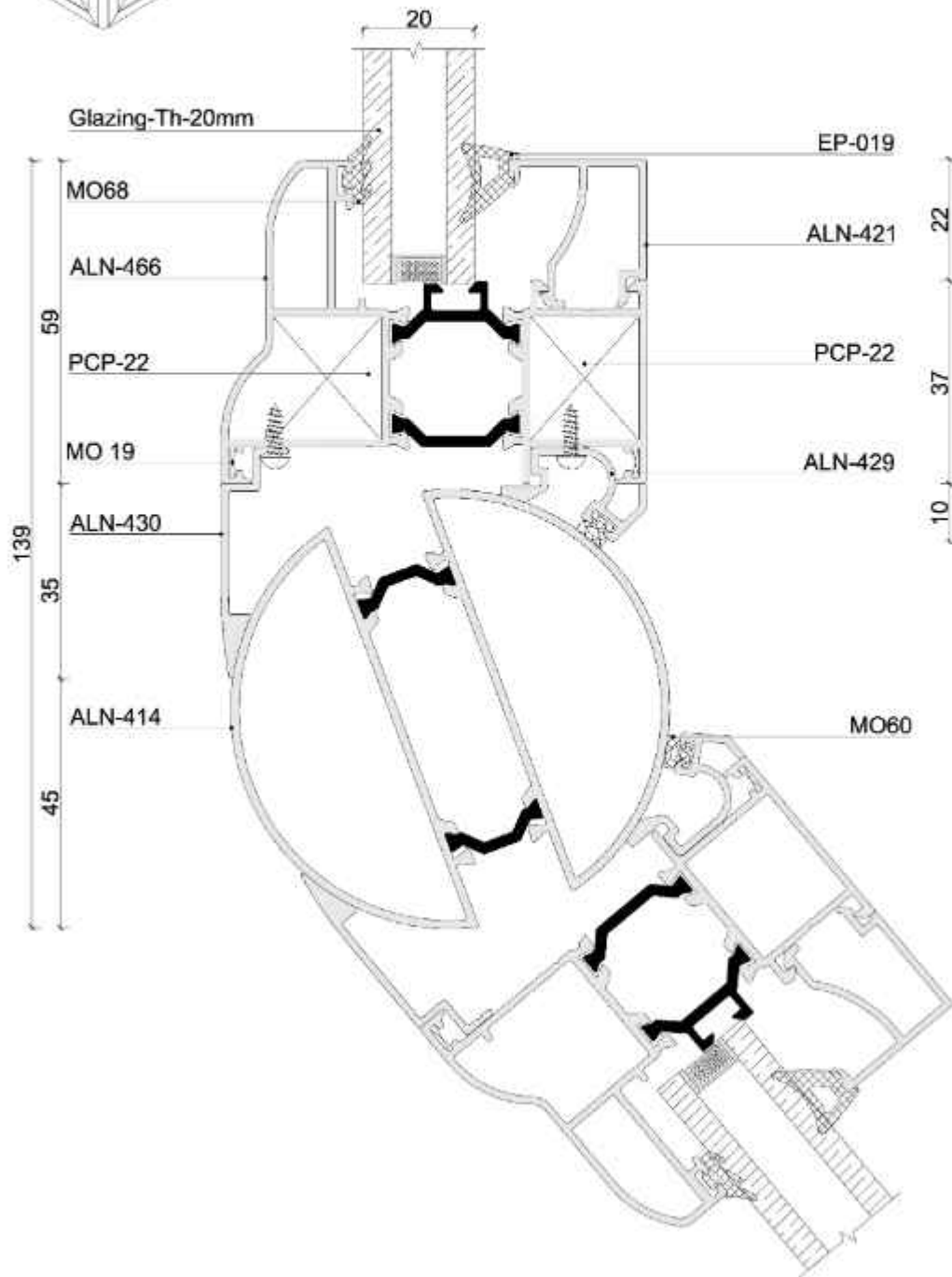
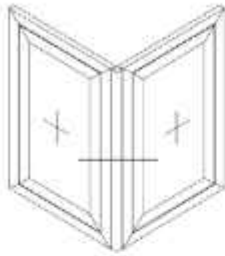
### Fabrication Details



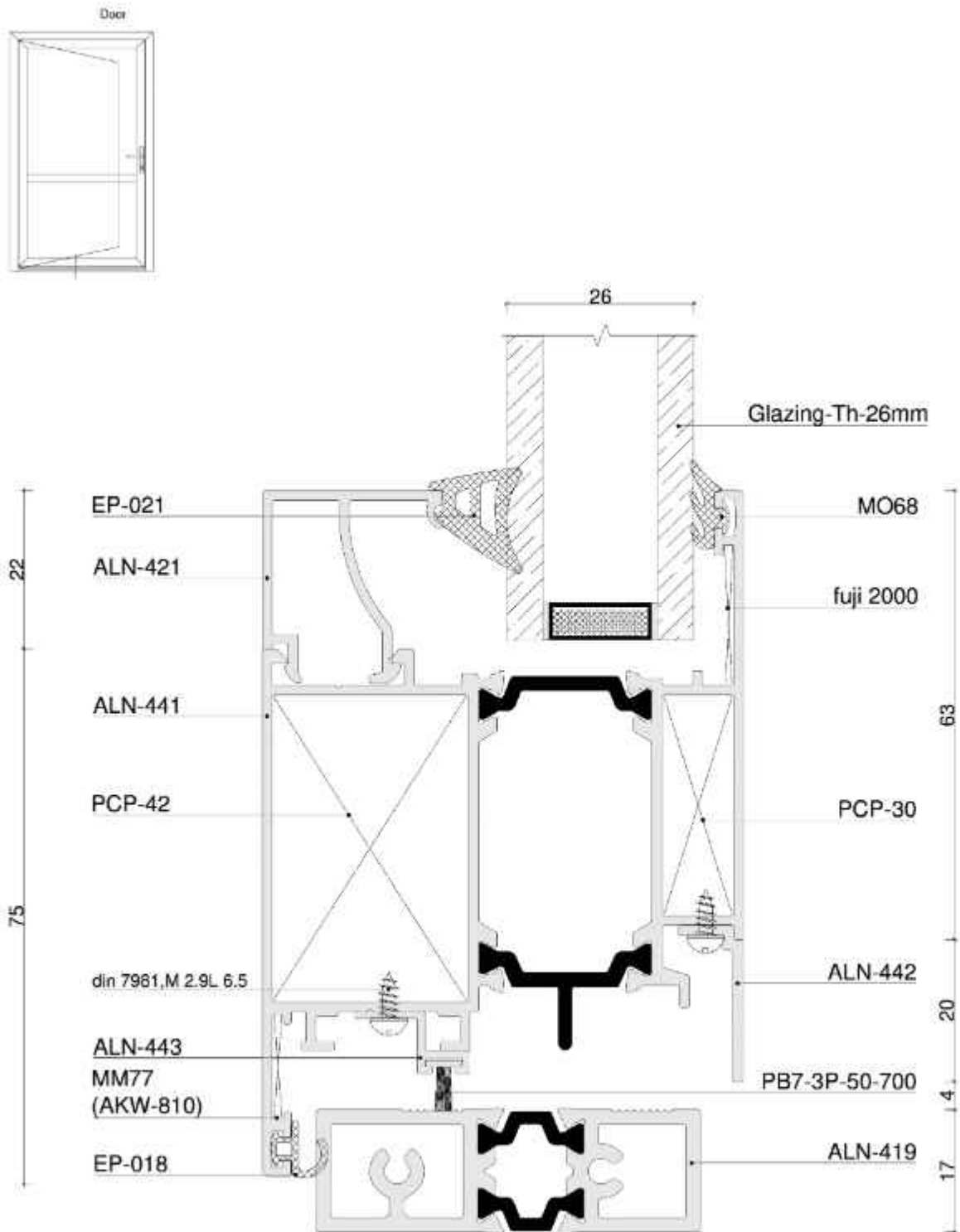
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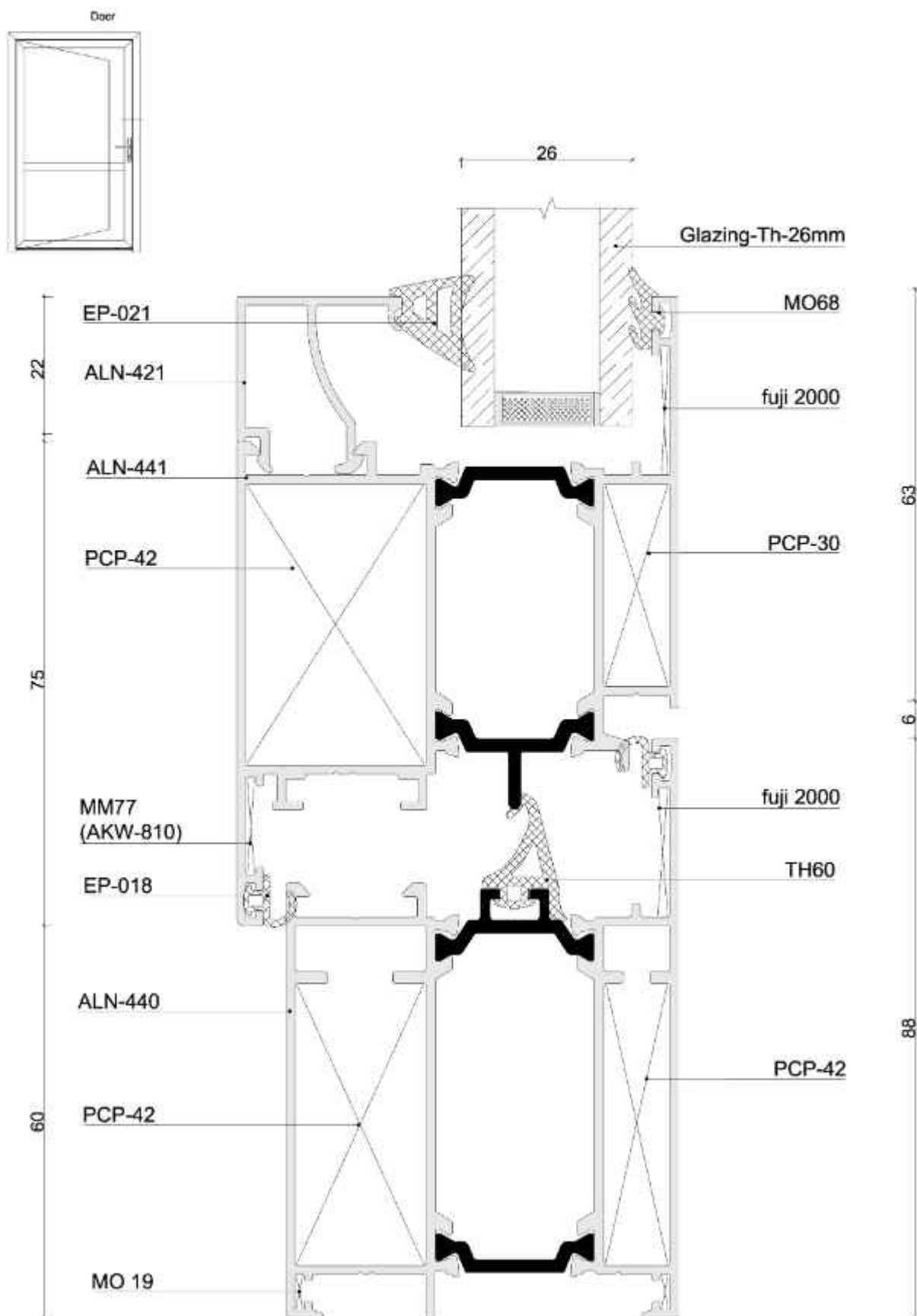
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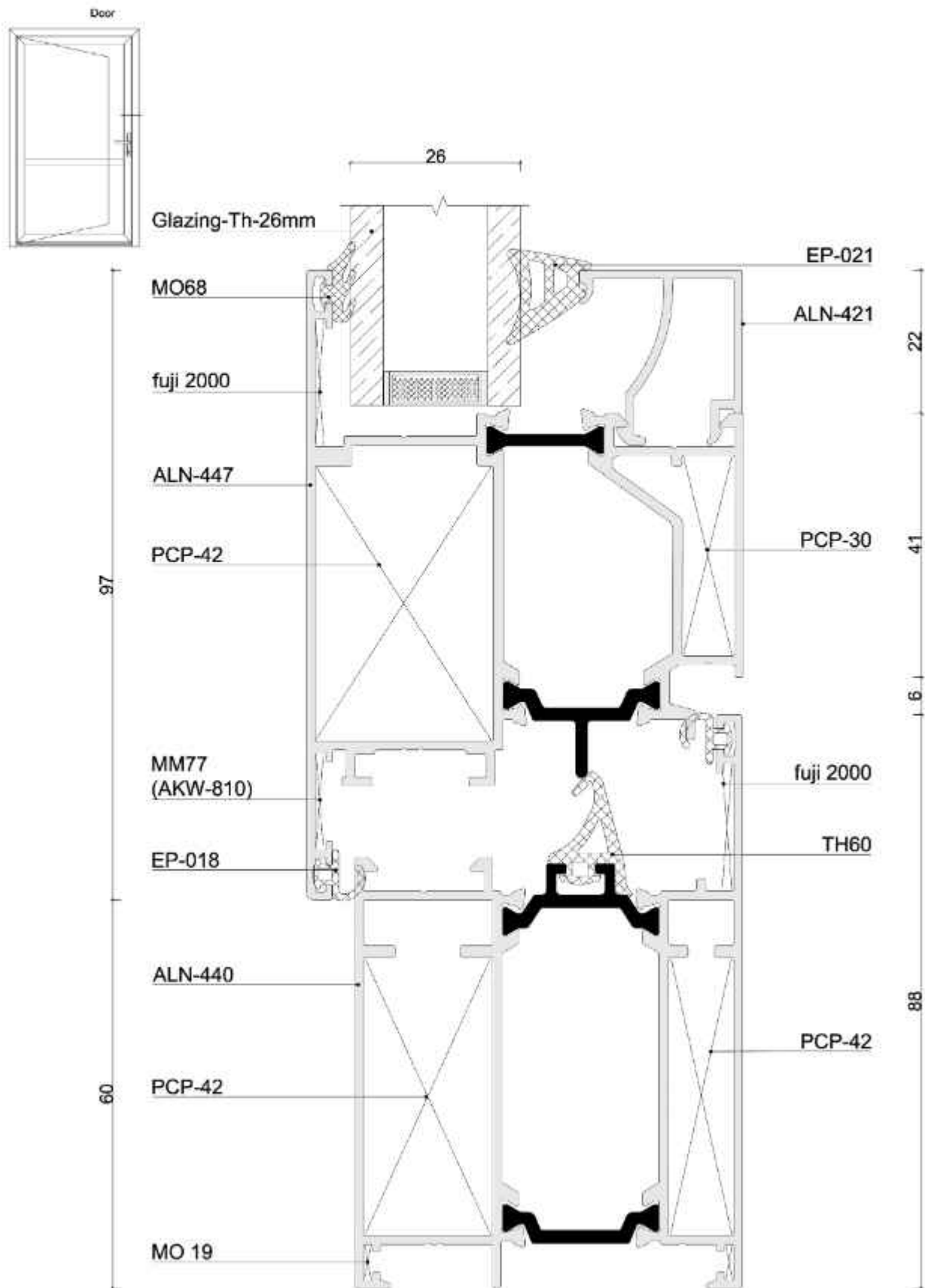
## Hinged System 60 Series Fabrication Details



## Hinged System 60 Series Fabrication Details

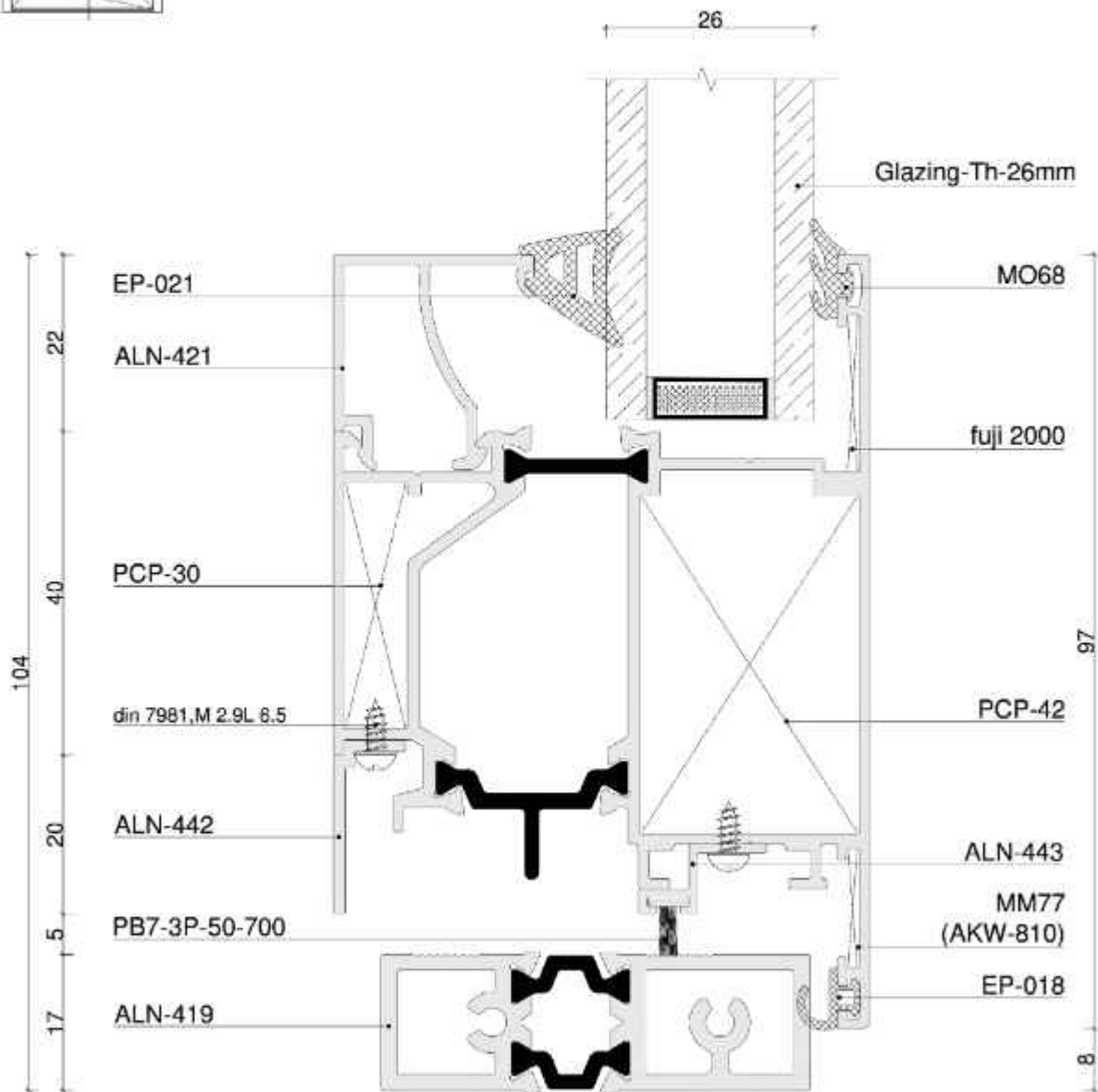
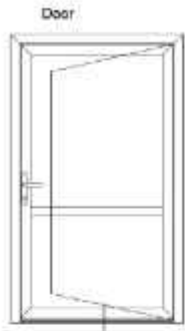


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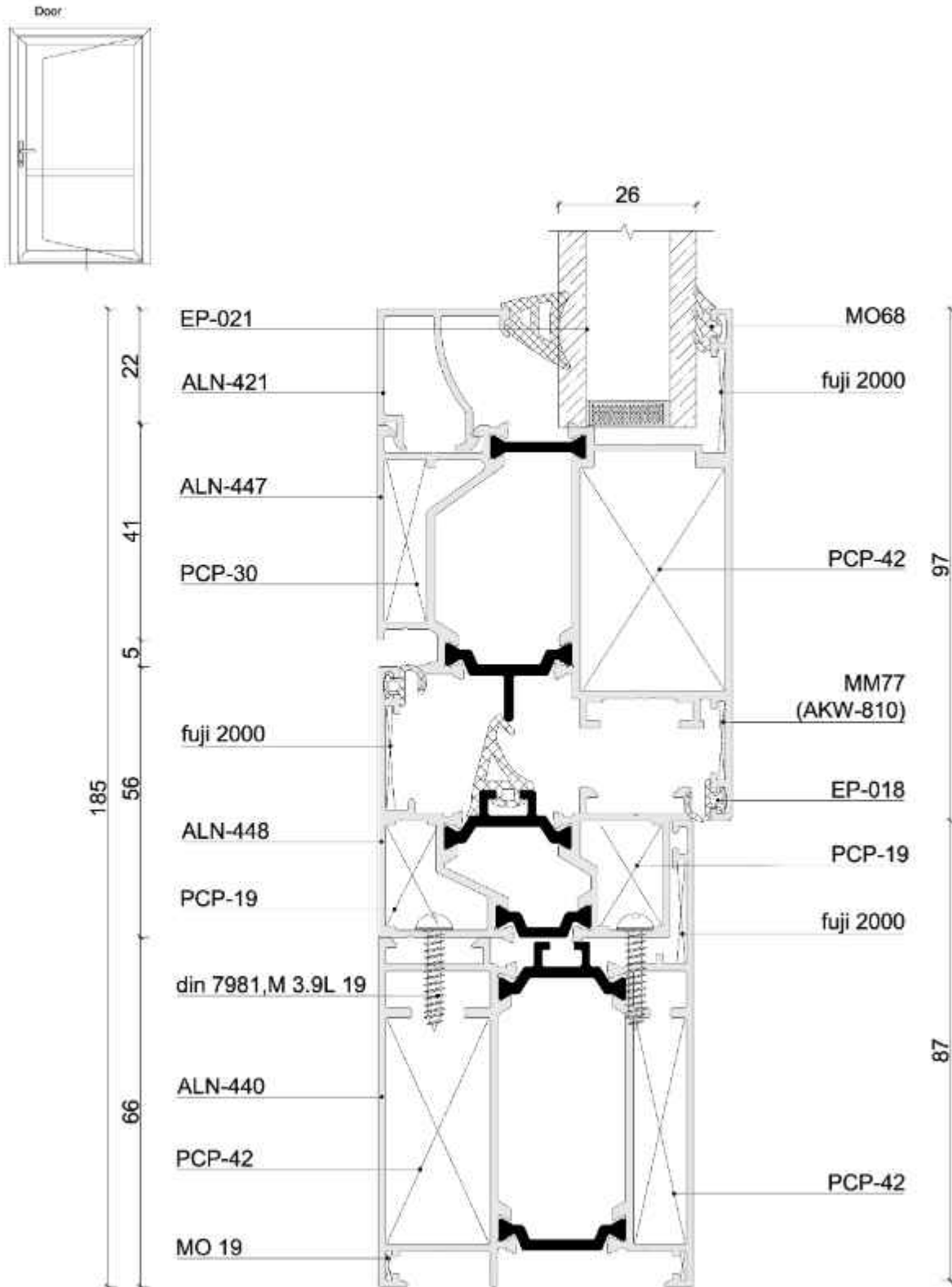


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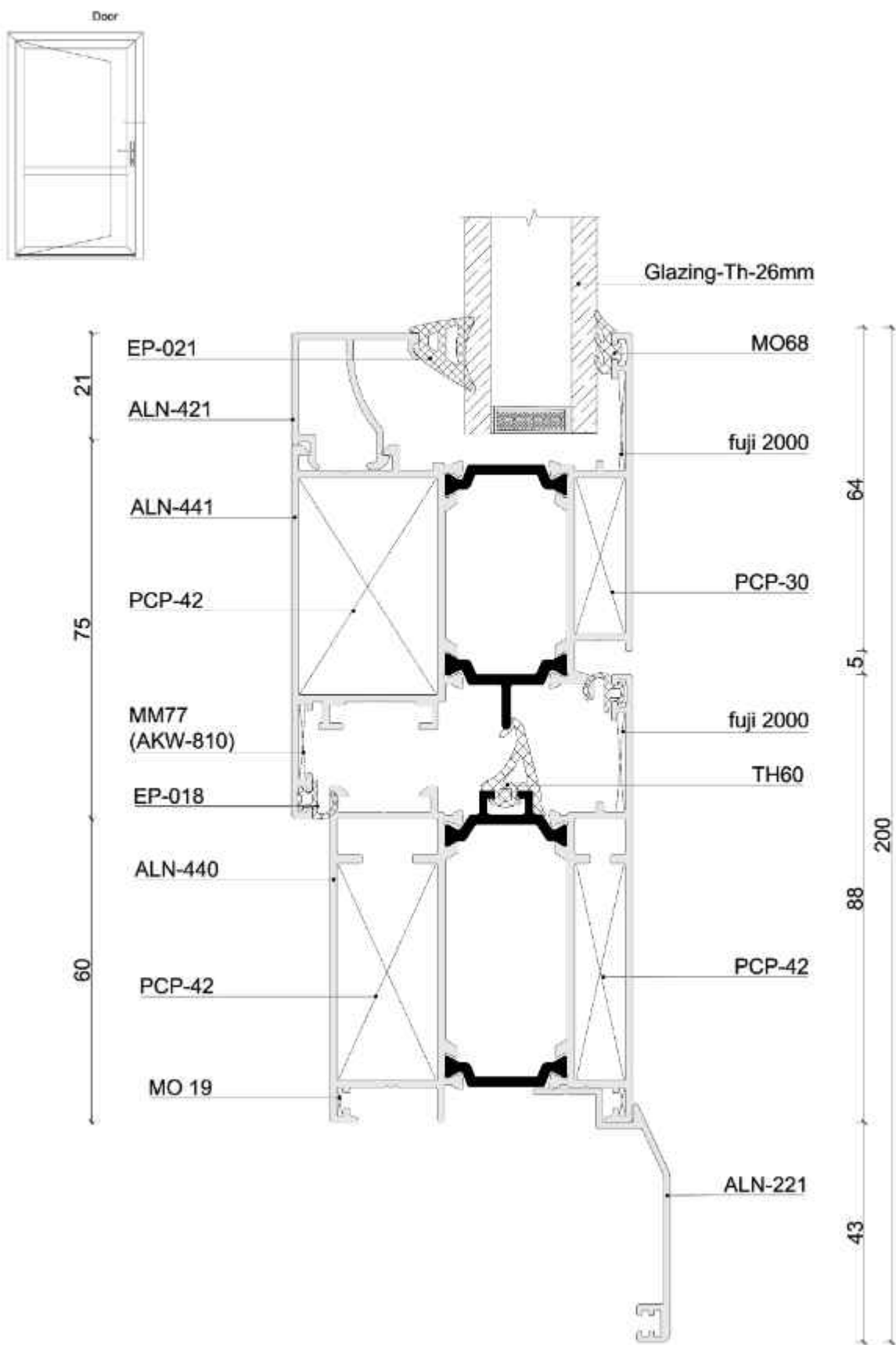
### Fabrication Details



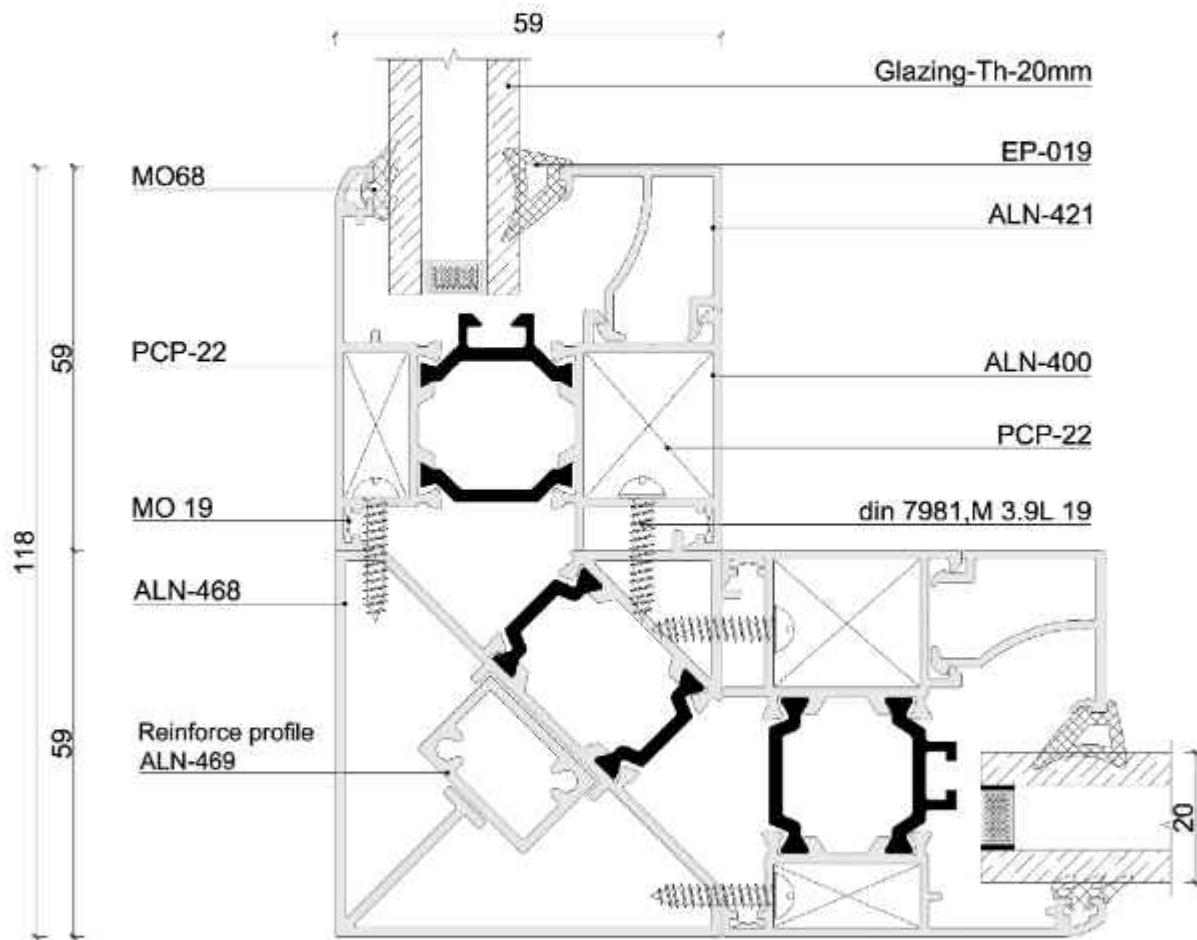
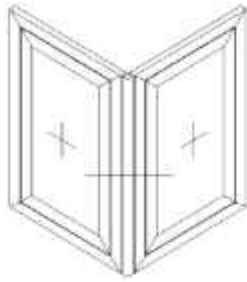
## Hinged System 60 Series Fabrication Details



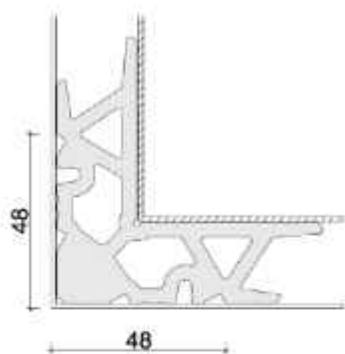
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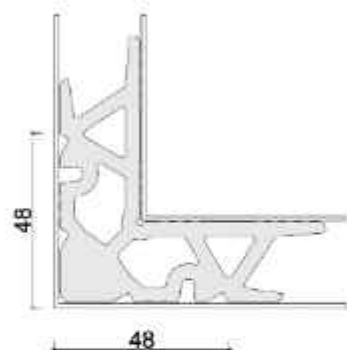
## Hinged System 60 Series Fabrication Details



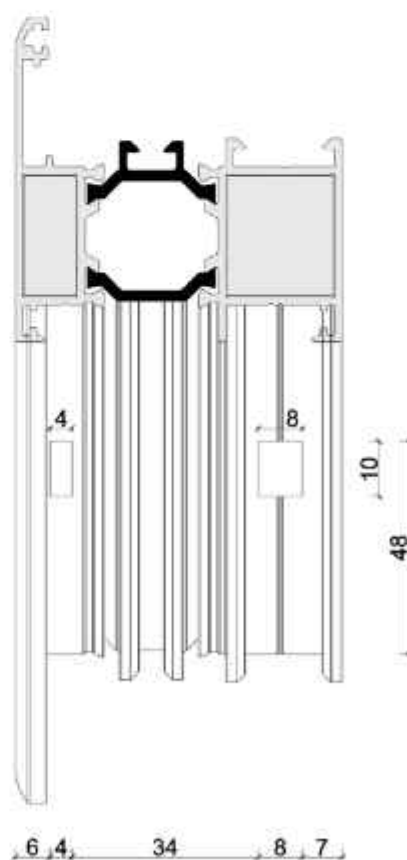
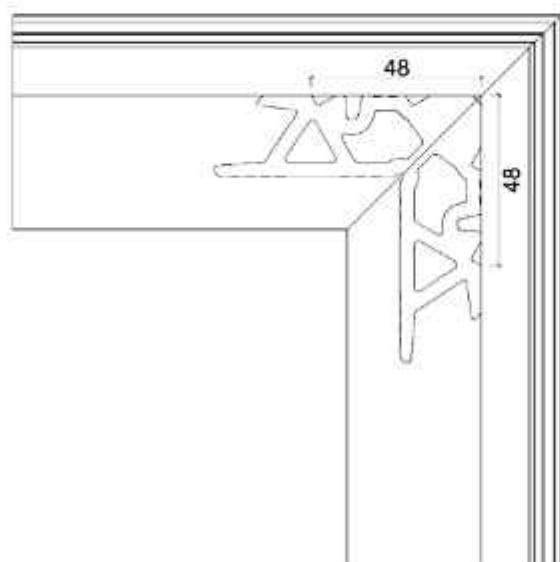
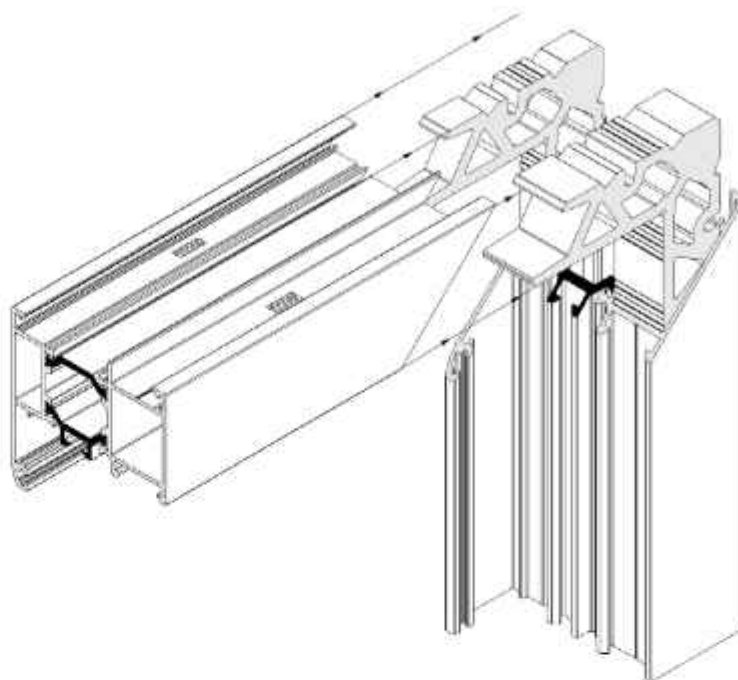
# Hinged System 60 Series Assembly Drawing



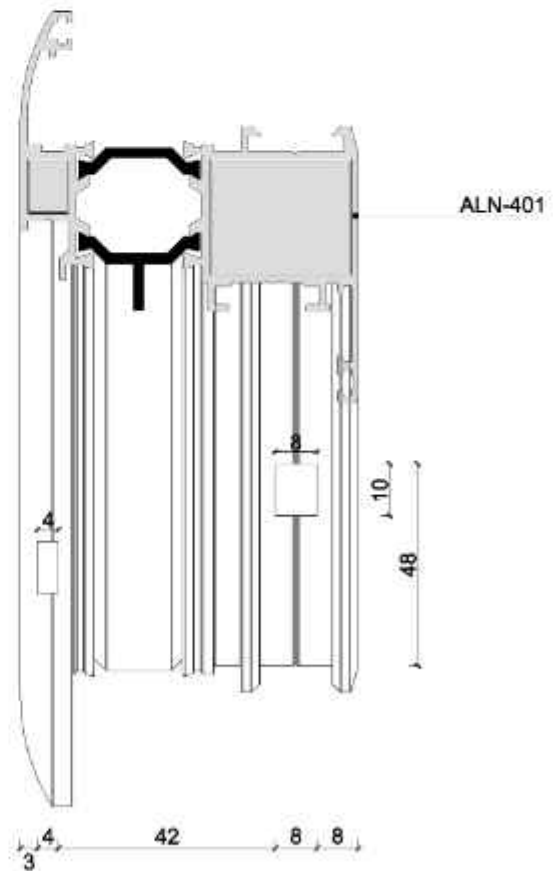
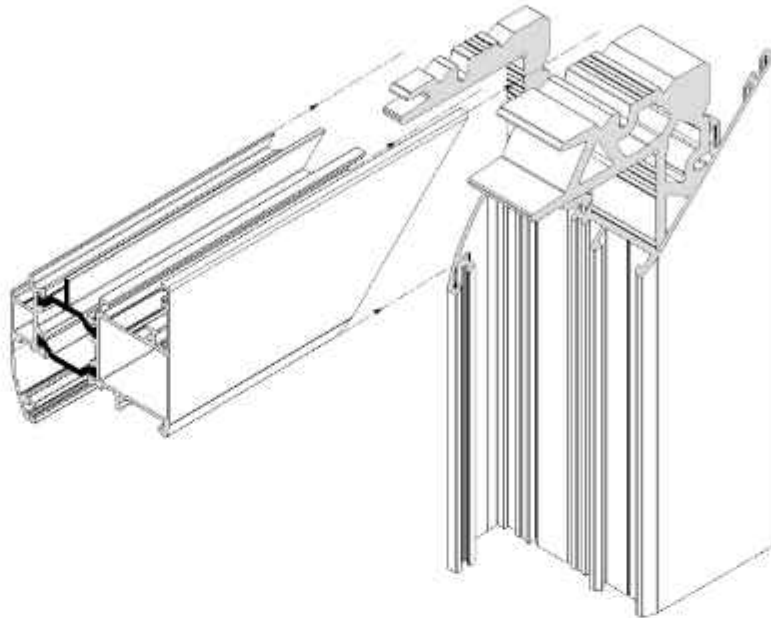
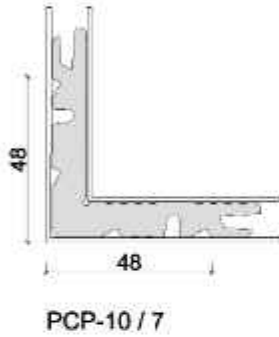
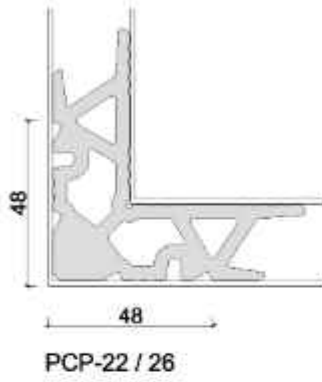
PCP-22 / 19



PCP-22 / 9

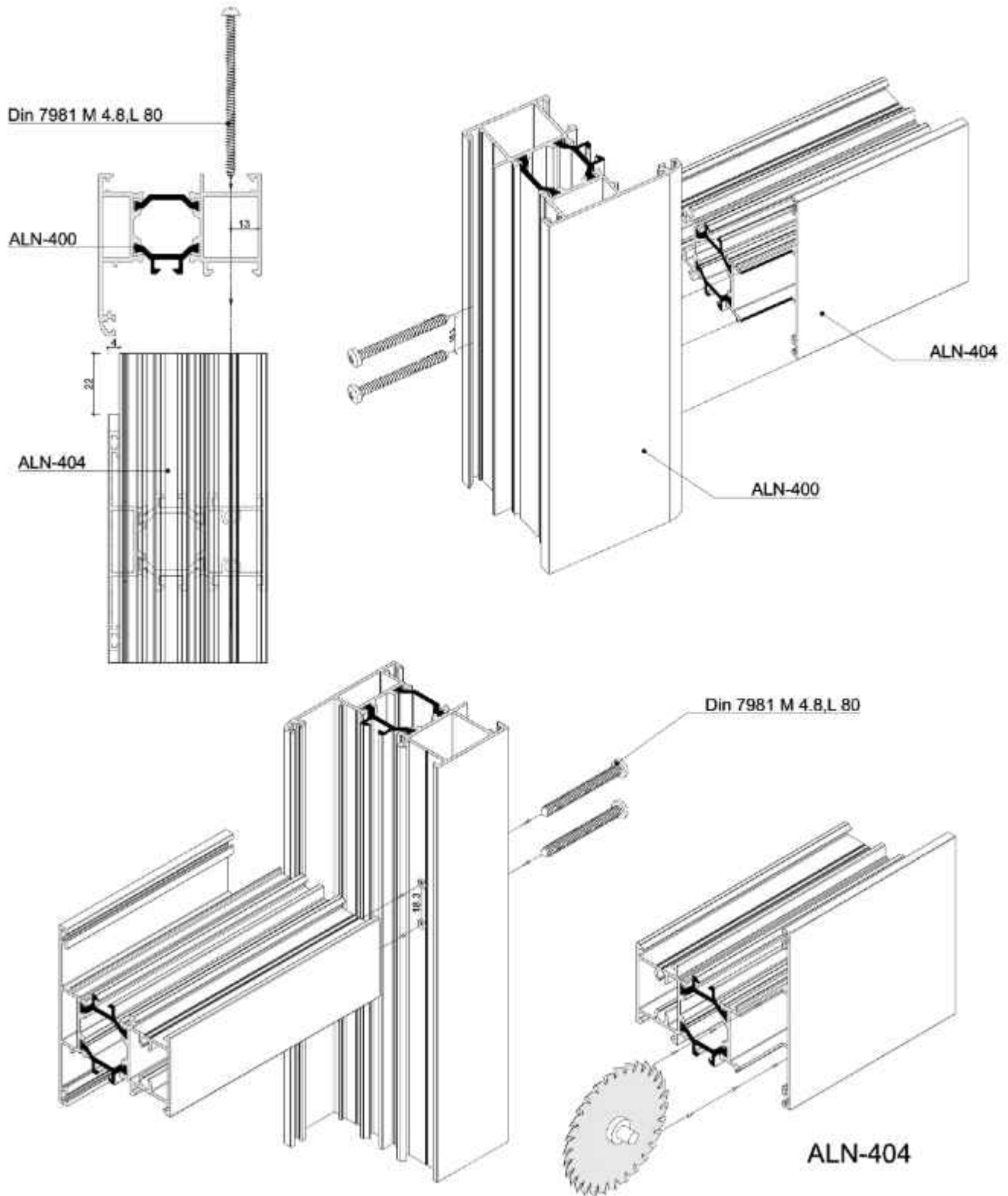


# Hinged System 60 Series Assembly Drawing

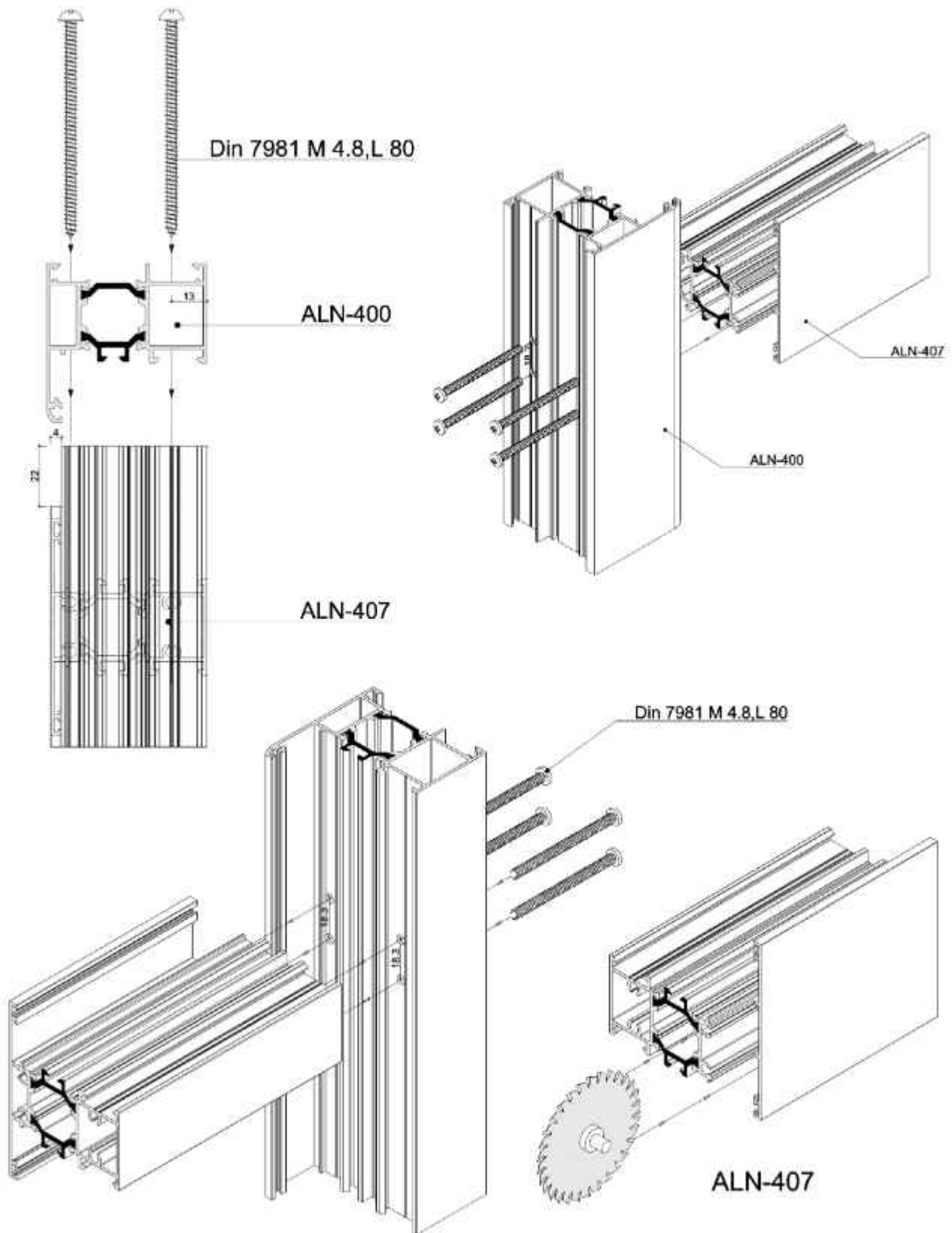




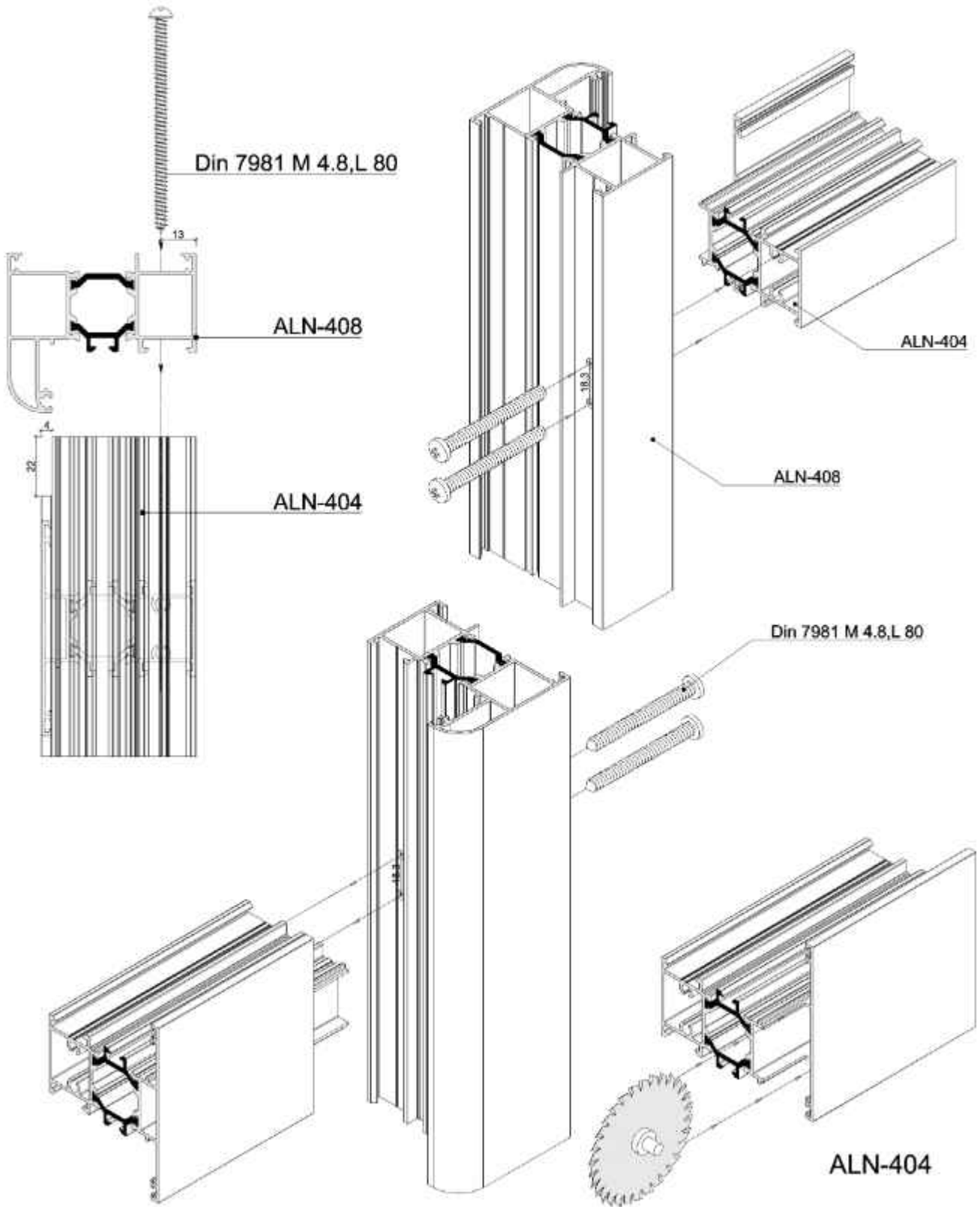
# Hinged System 60 Series Assembly Drawing



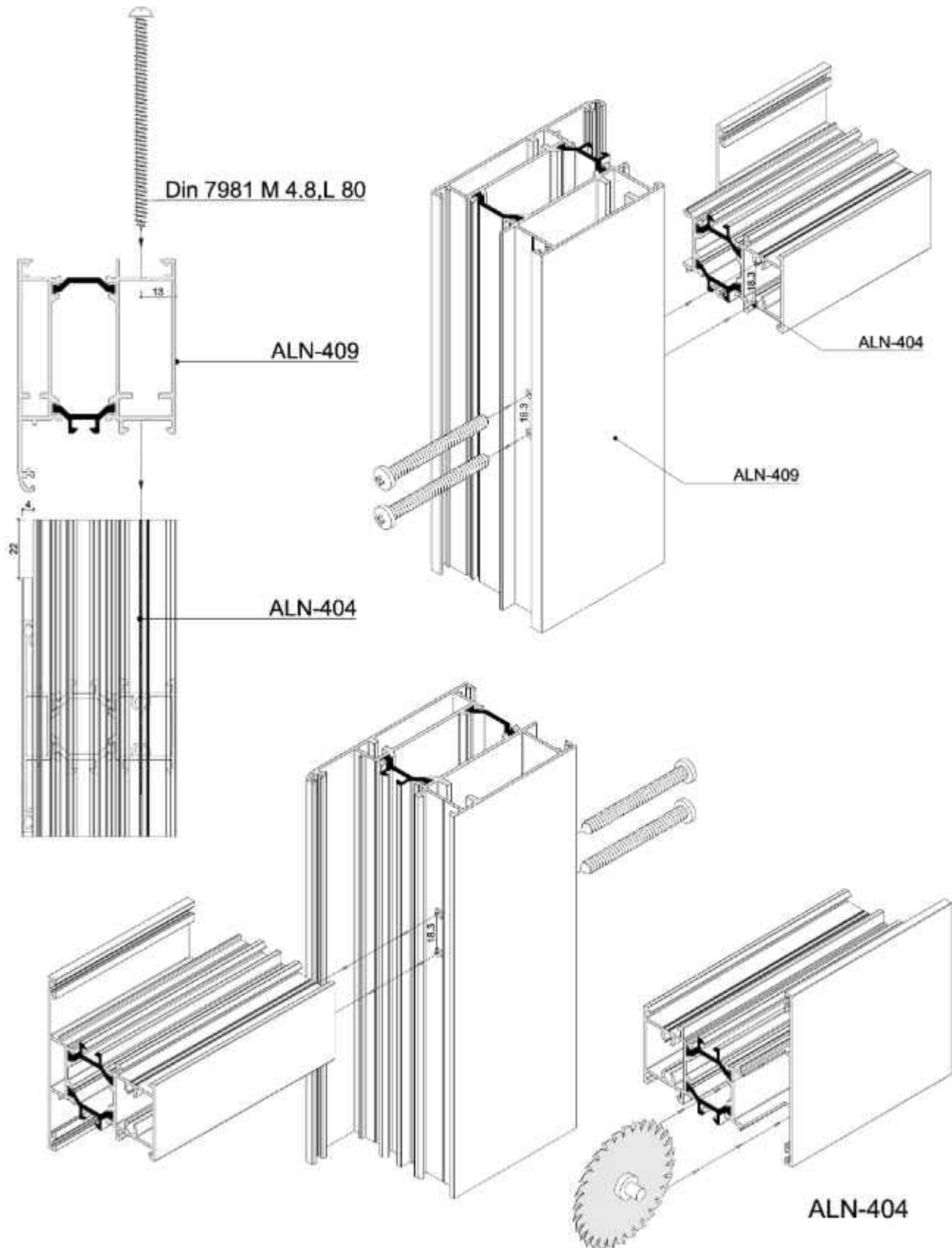
## Hinged System 60 Series Assembly Drawing



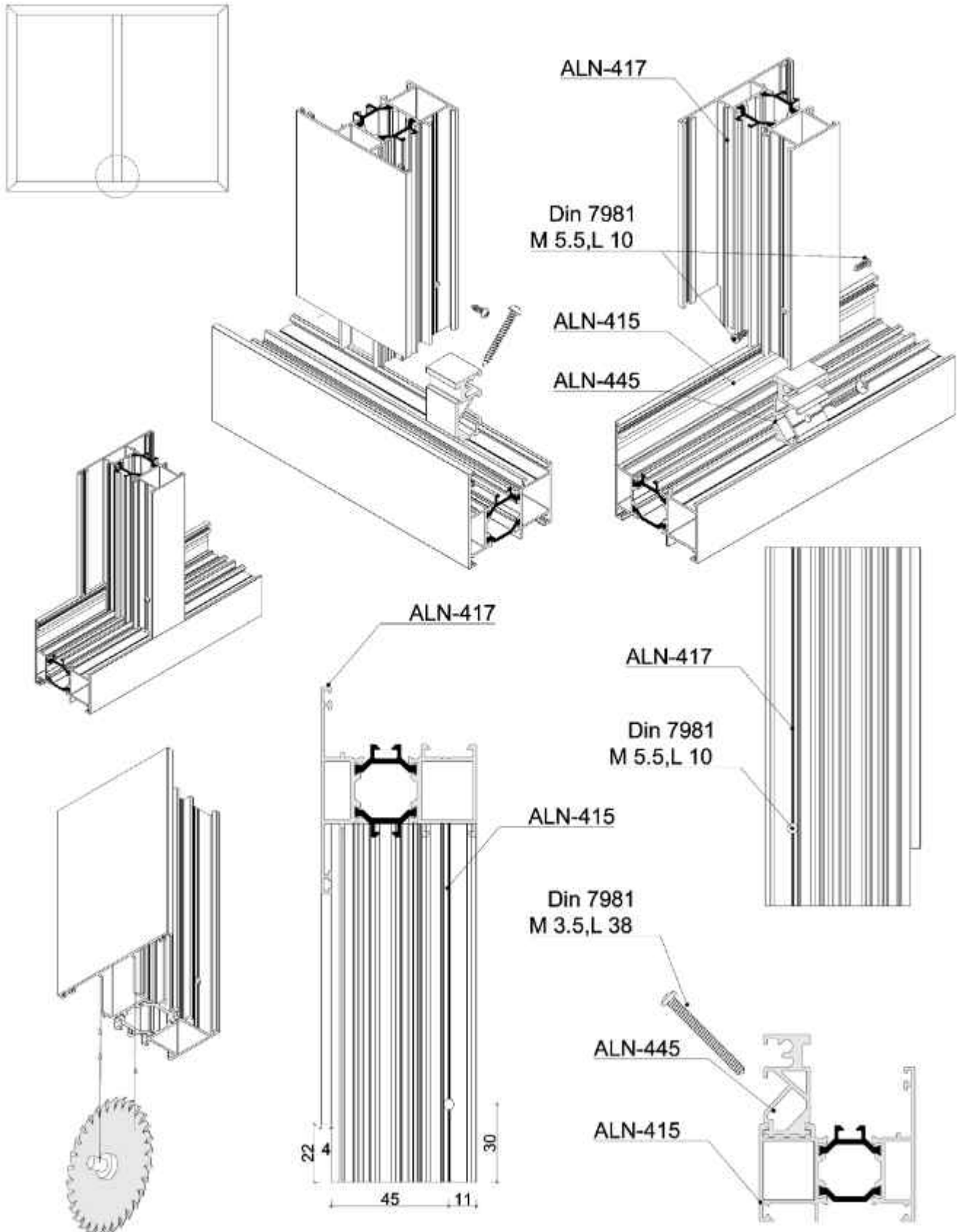
## Hinged System 60 Series Assembly Drawing



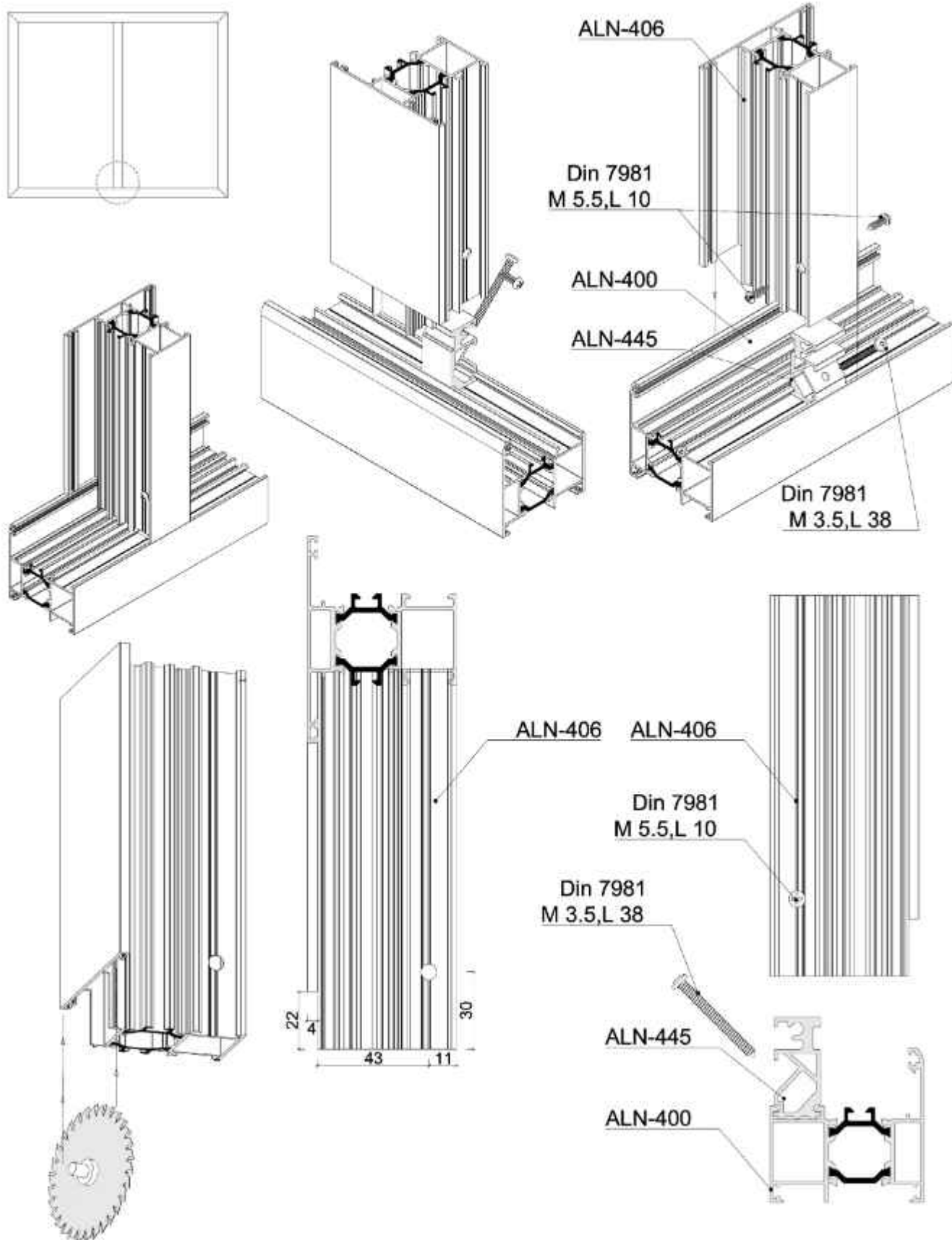
# Hinged System 60 Series Assembly Drawing



# Hinged System 60 Series Assembly Drawing



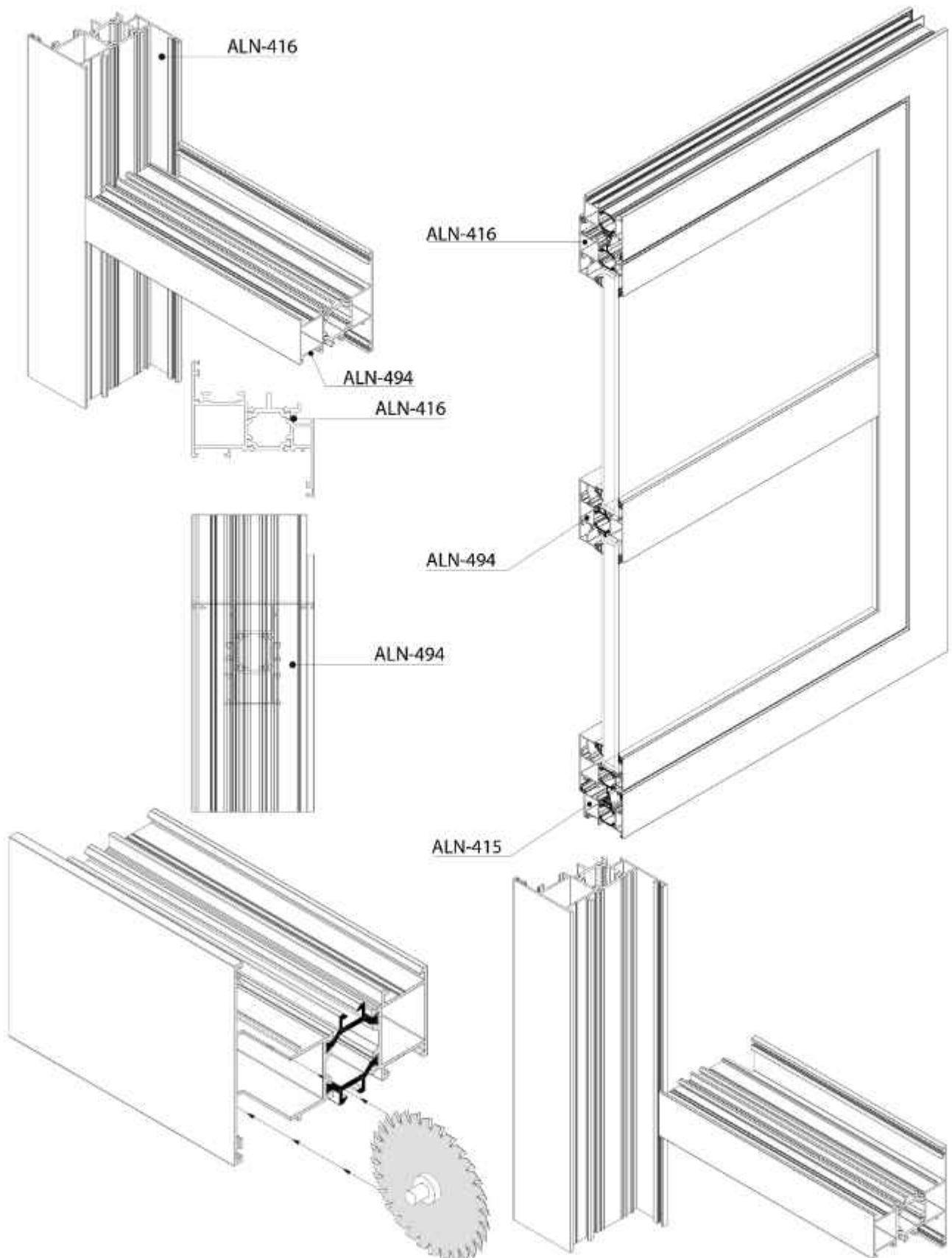
## Hinged System 60 Series Assembly Drawing



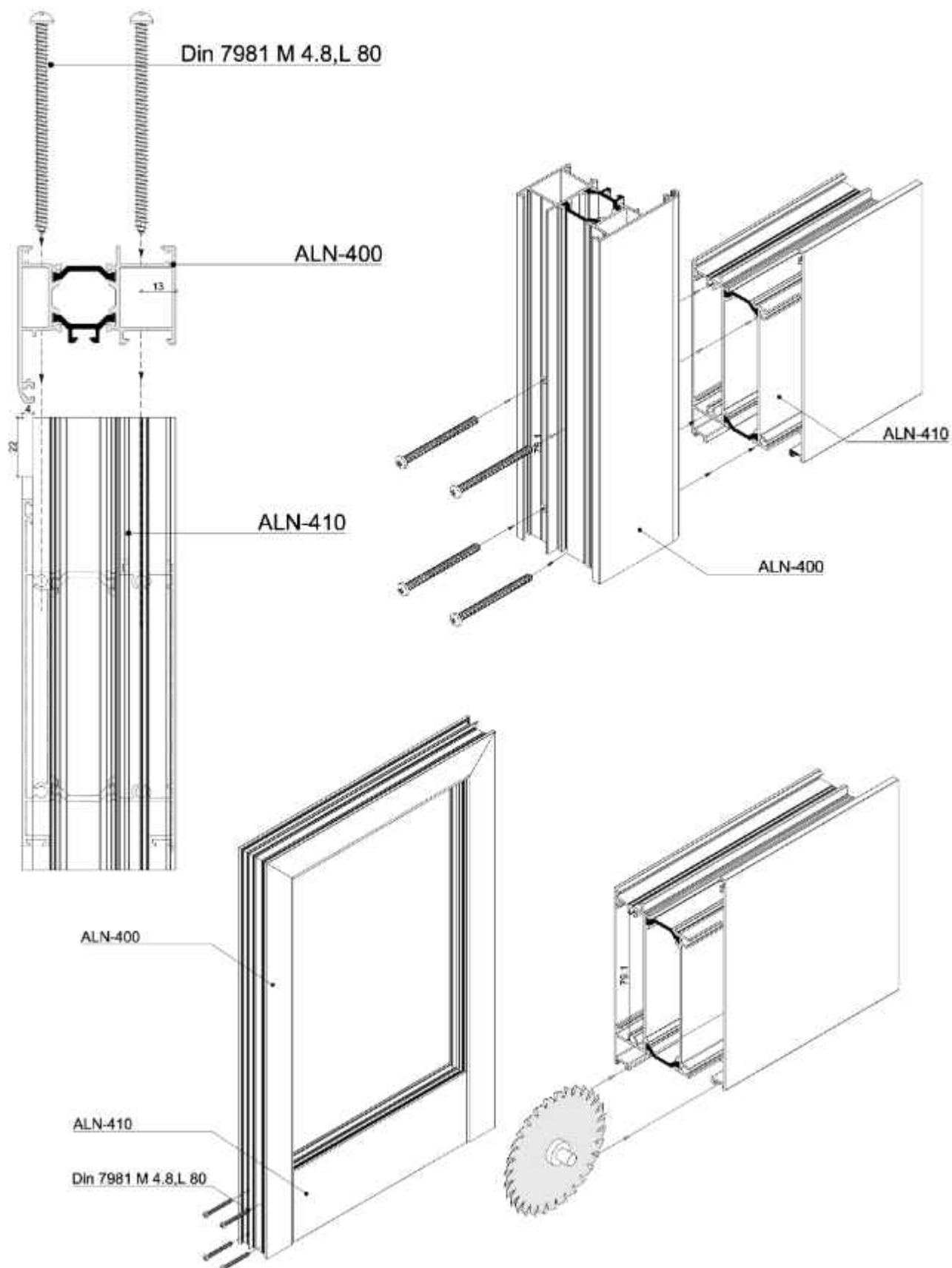
## Hinged System 60 Series

### Assembly Drawing

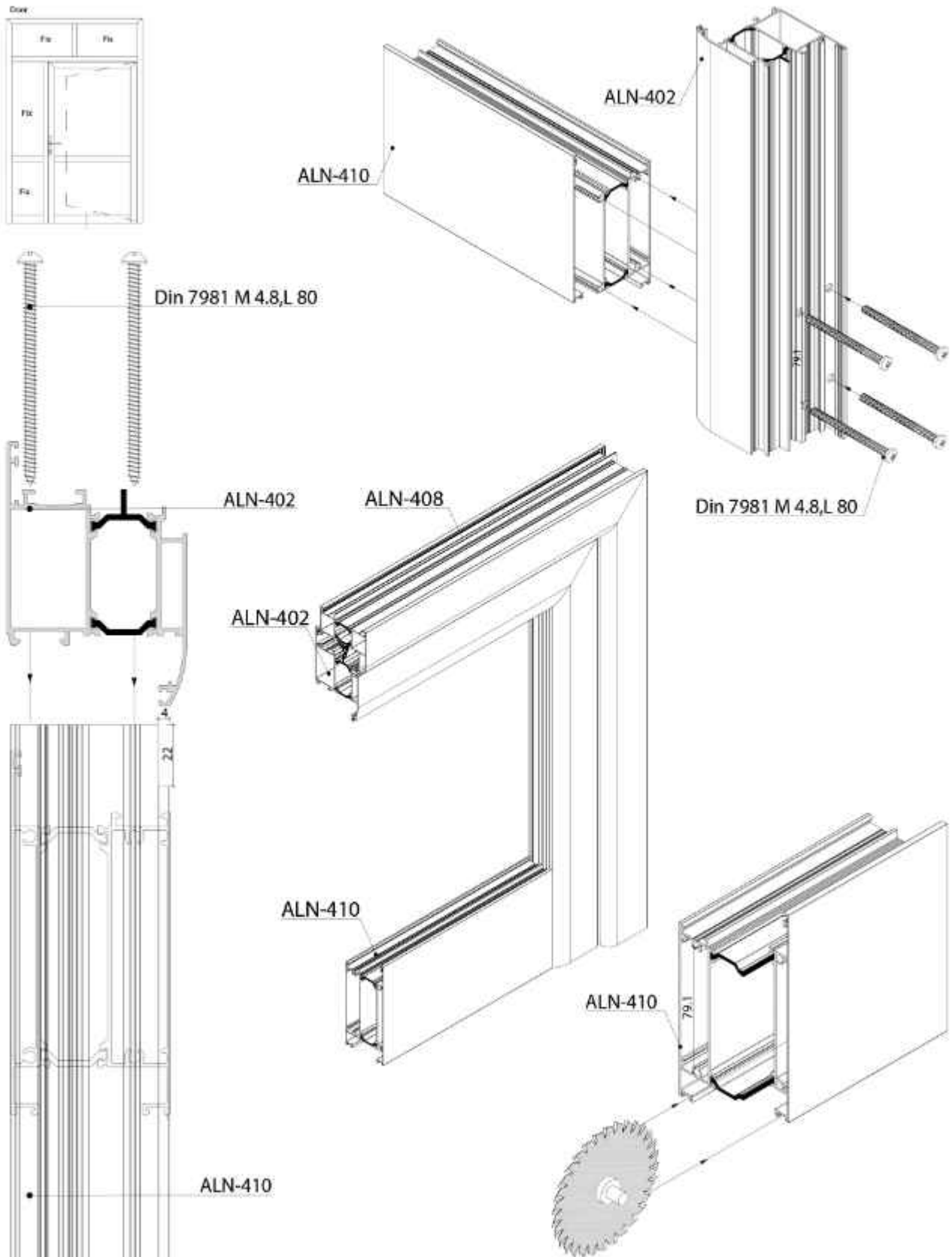
#### Connection - Sash to Transom



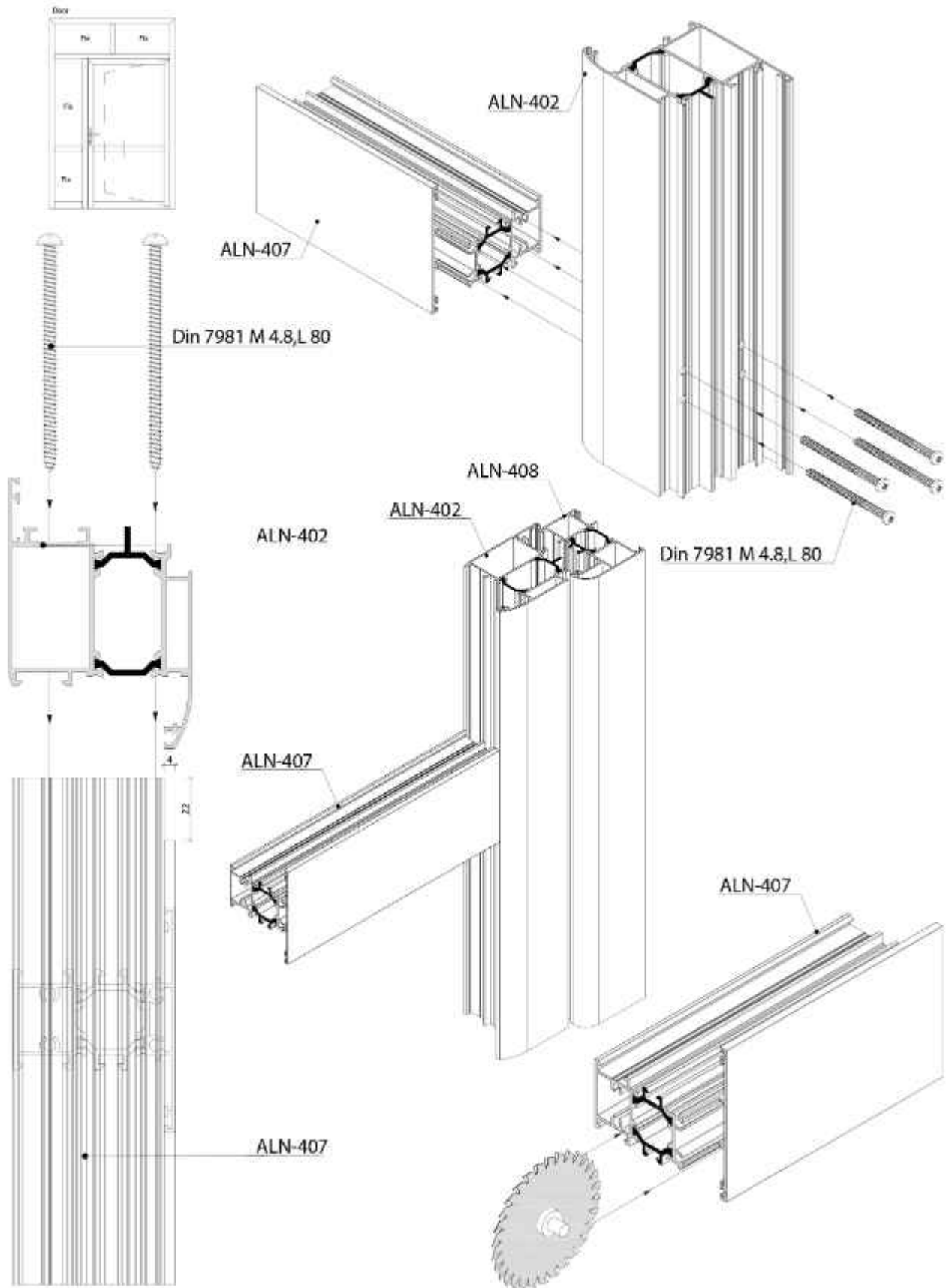
## Hinged System 60 Series Assembly Drawing



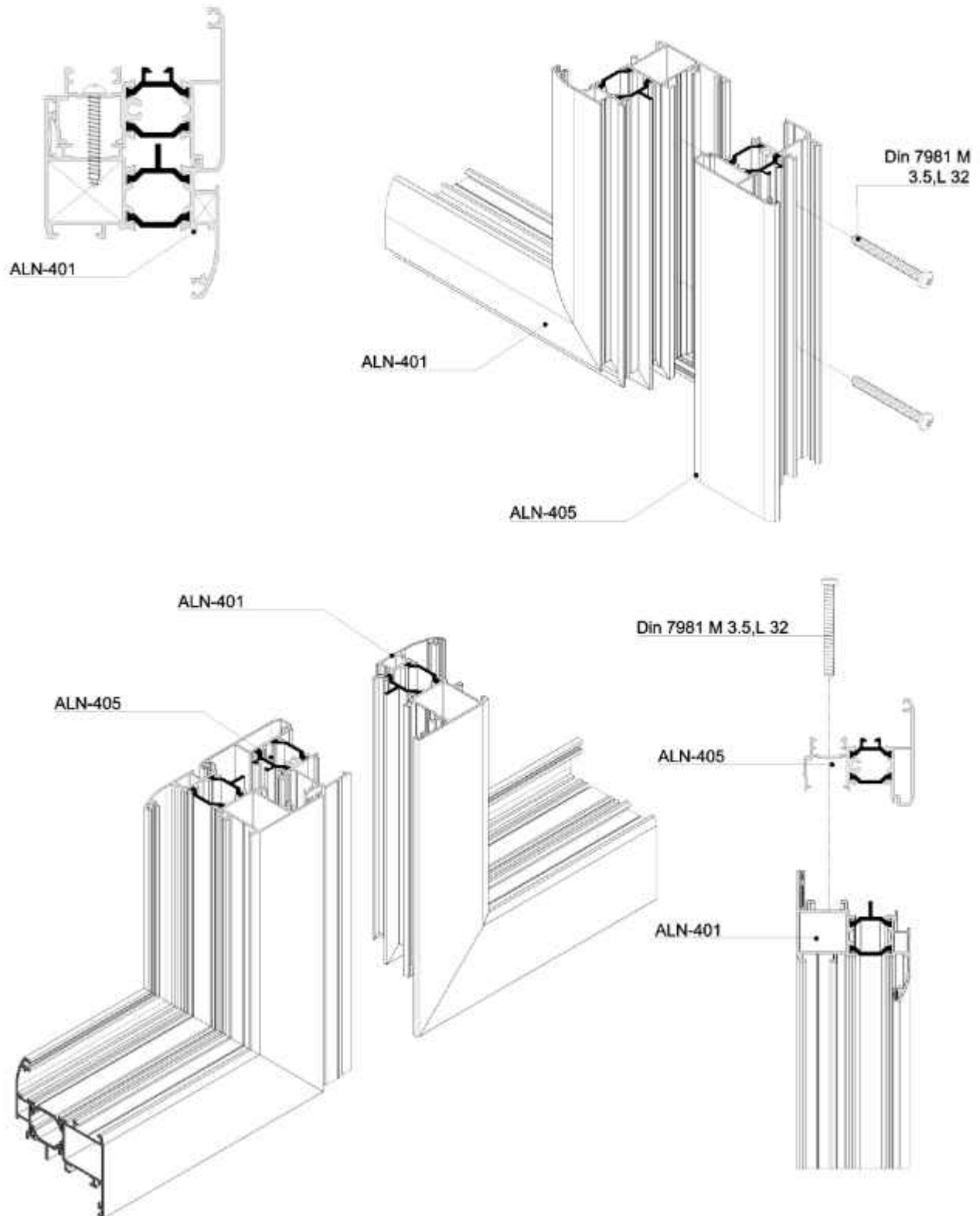
## Hinged System 60 Series Assembly Drawing



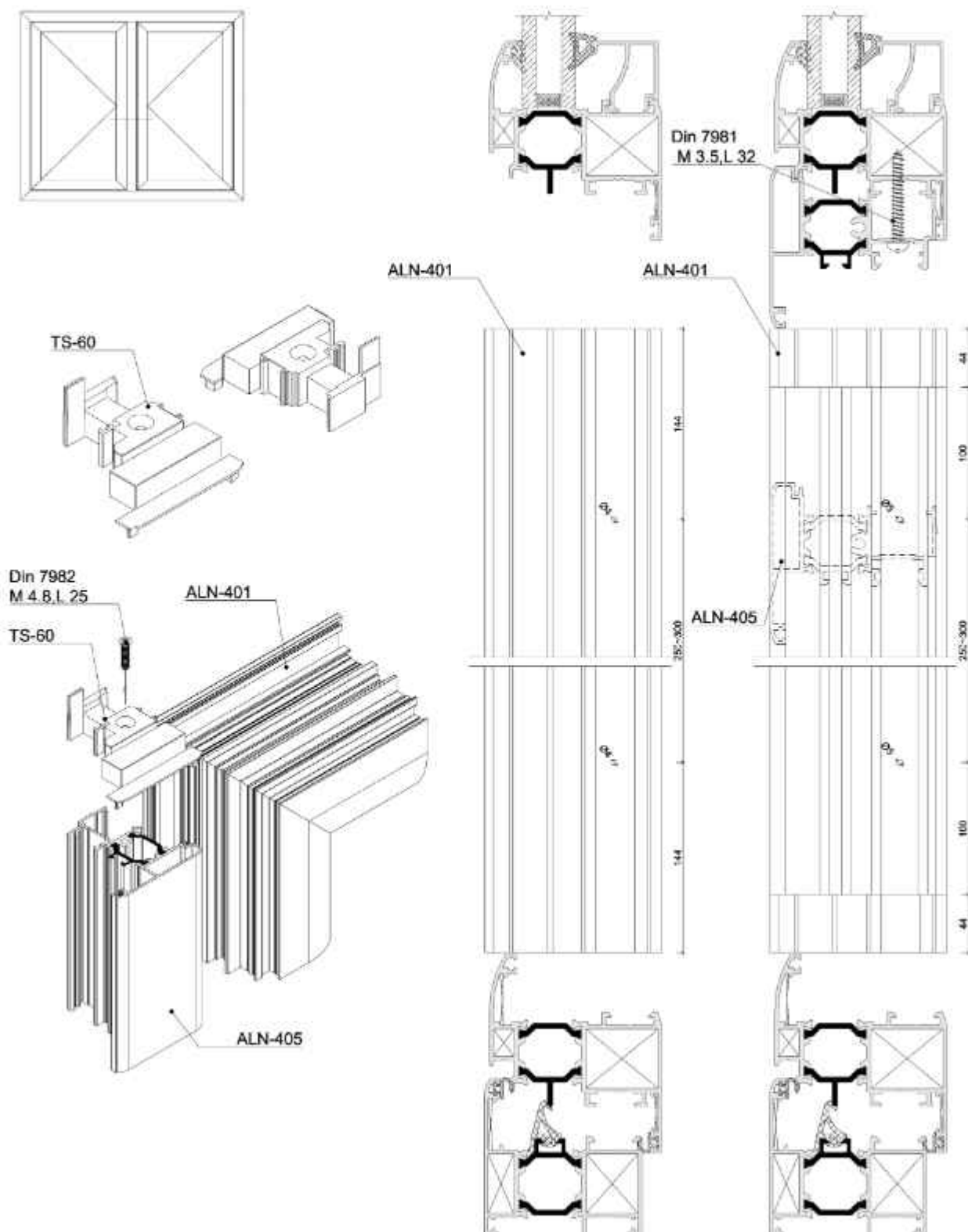
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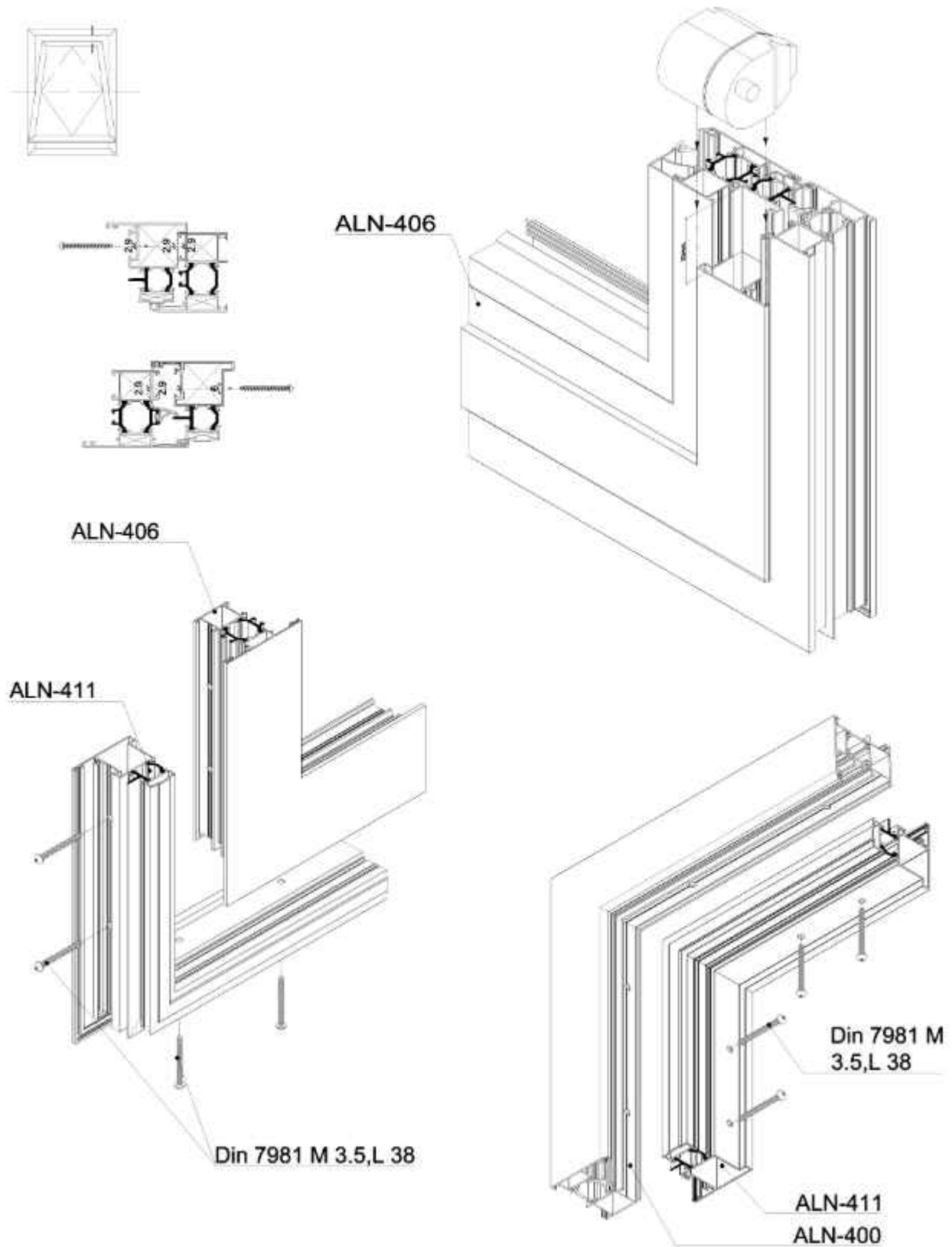
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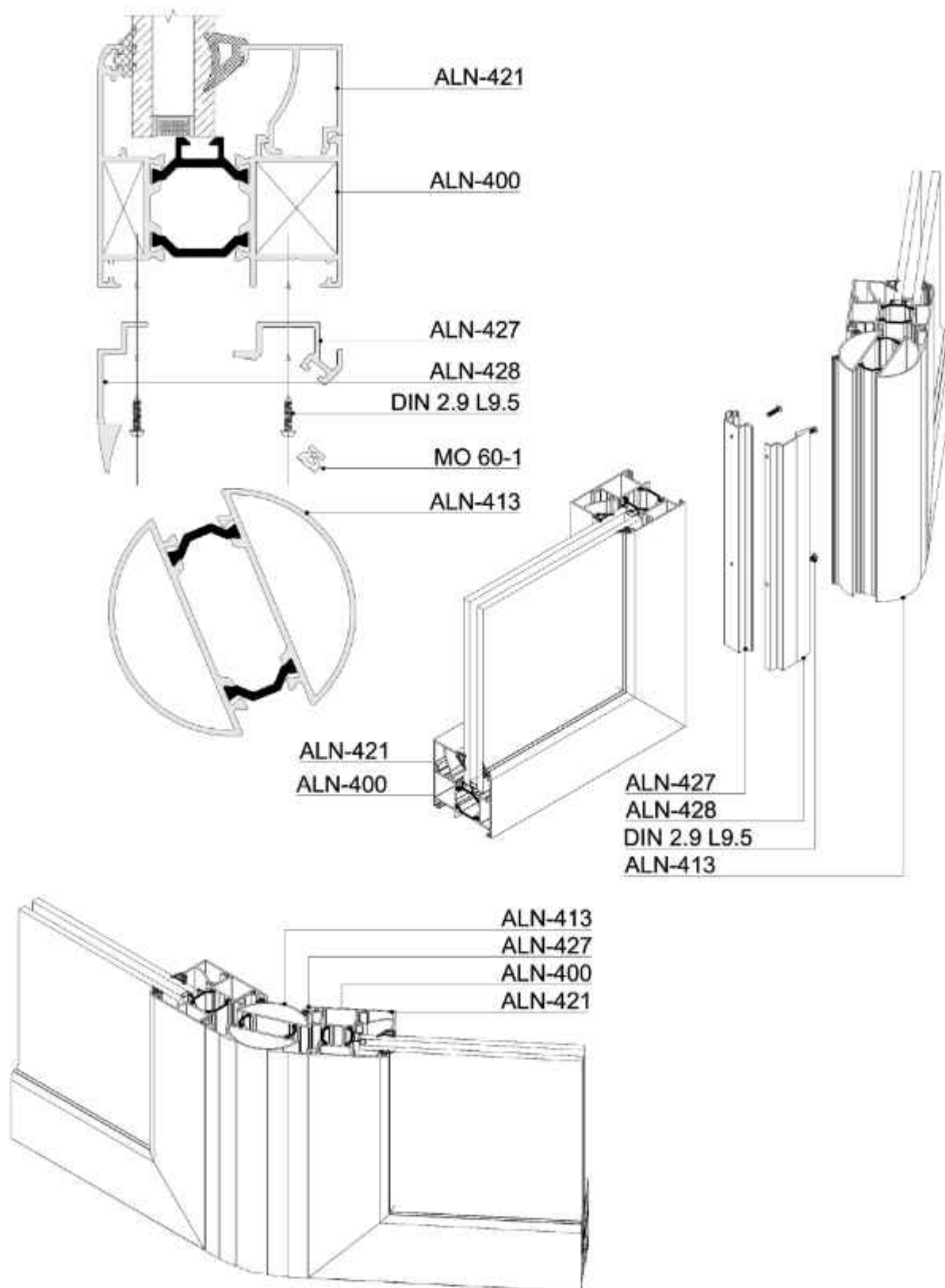
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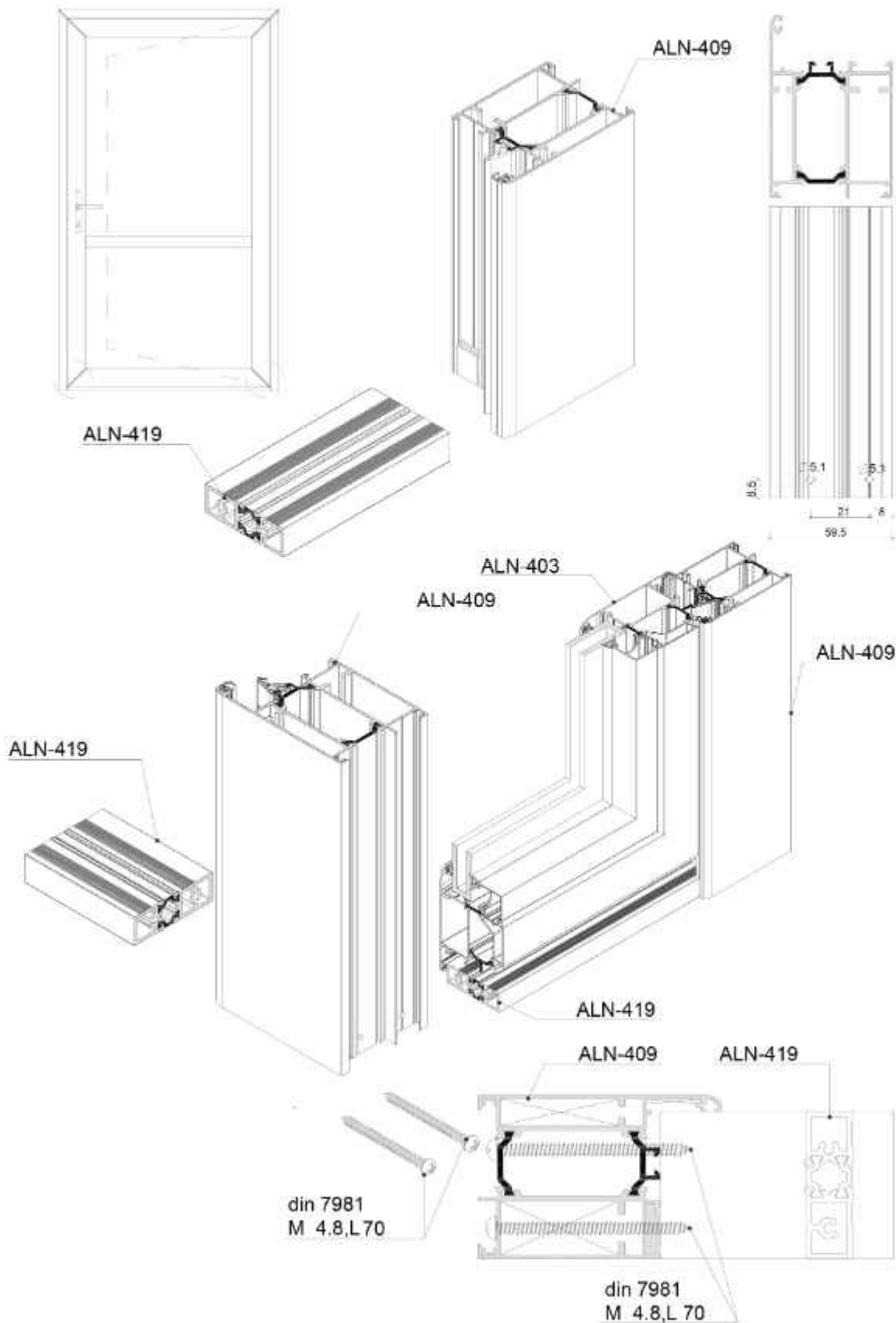
# Hinged System 60 Series Assembly Drawing



## Hinged System 60 Series Assembly Drawing



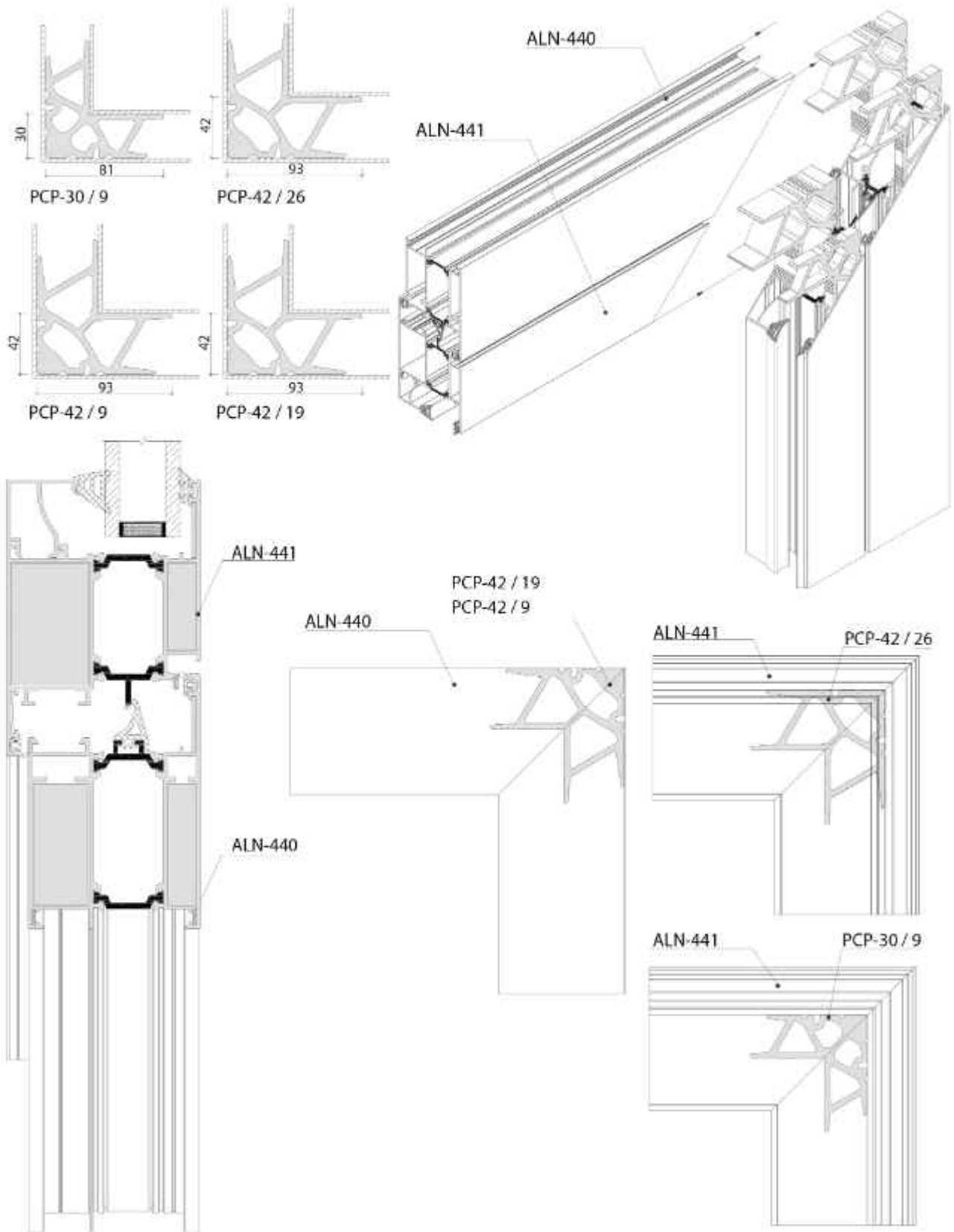
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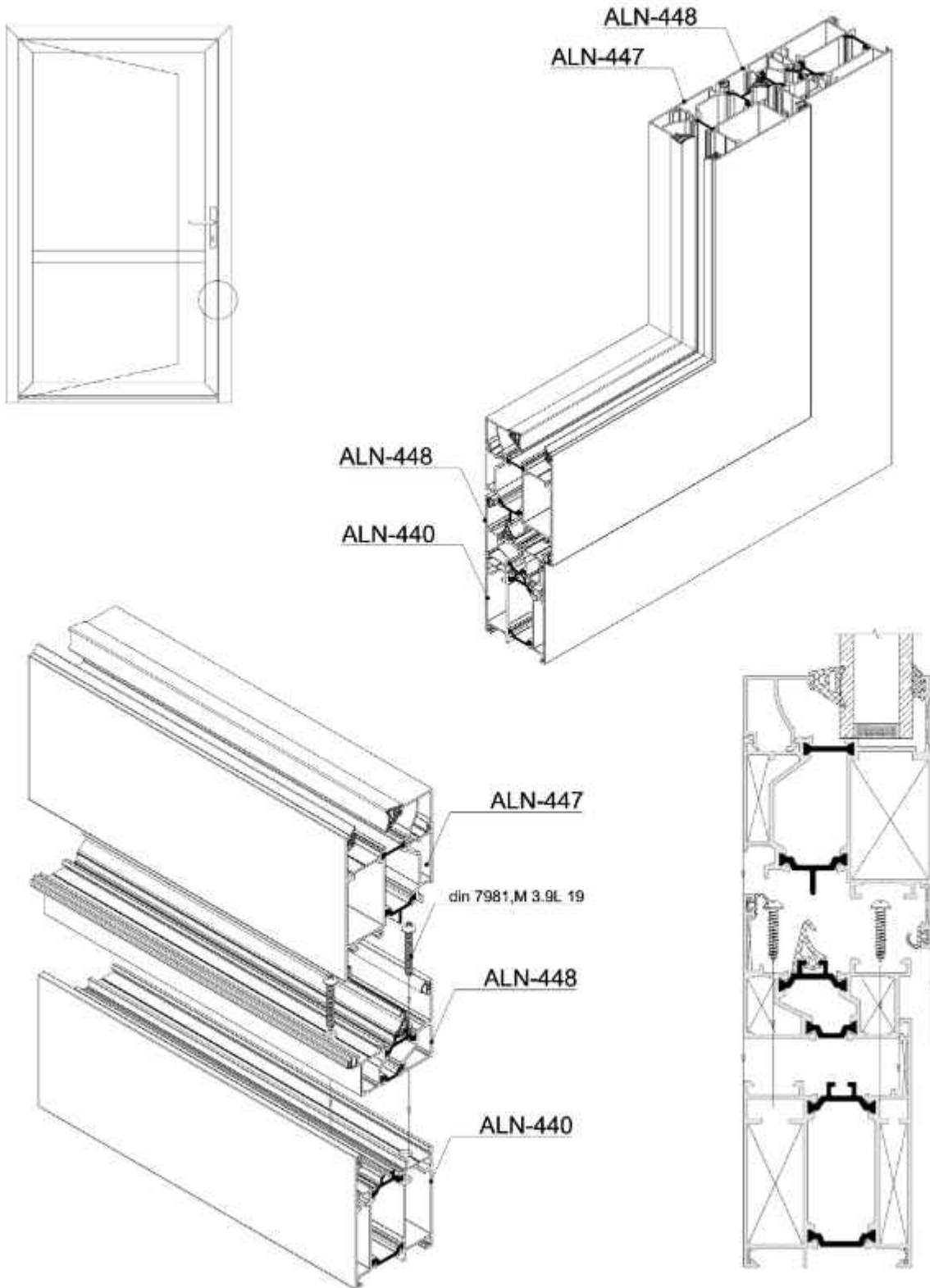
din 7981  
M 4.8, L 70

din 7981  
M 4.8, L 70

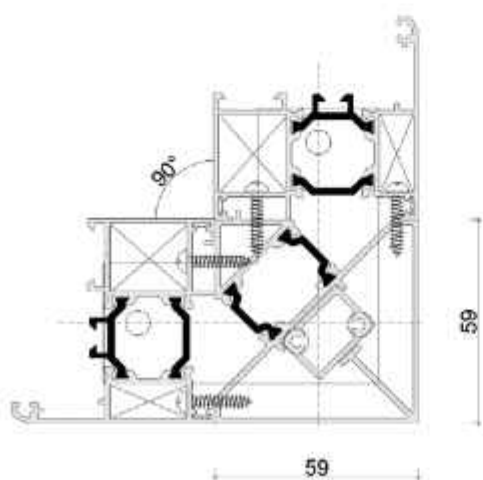
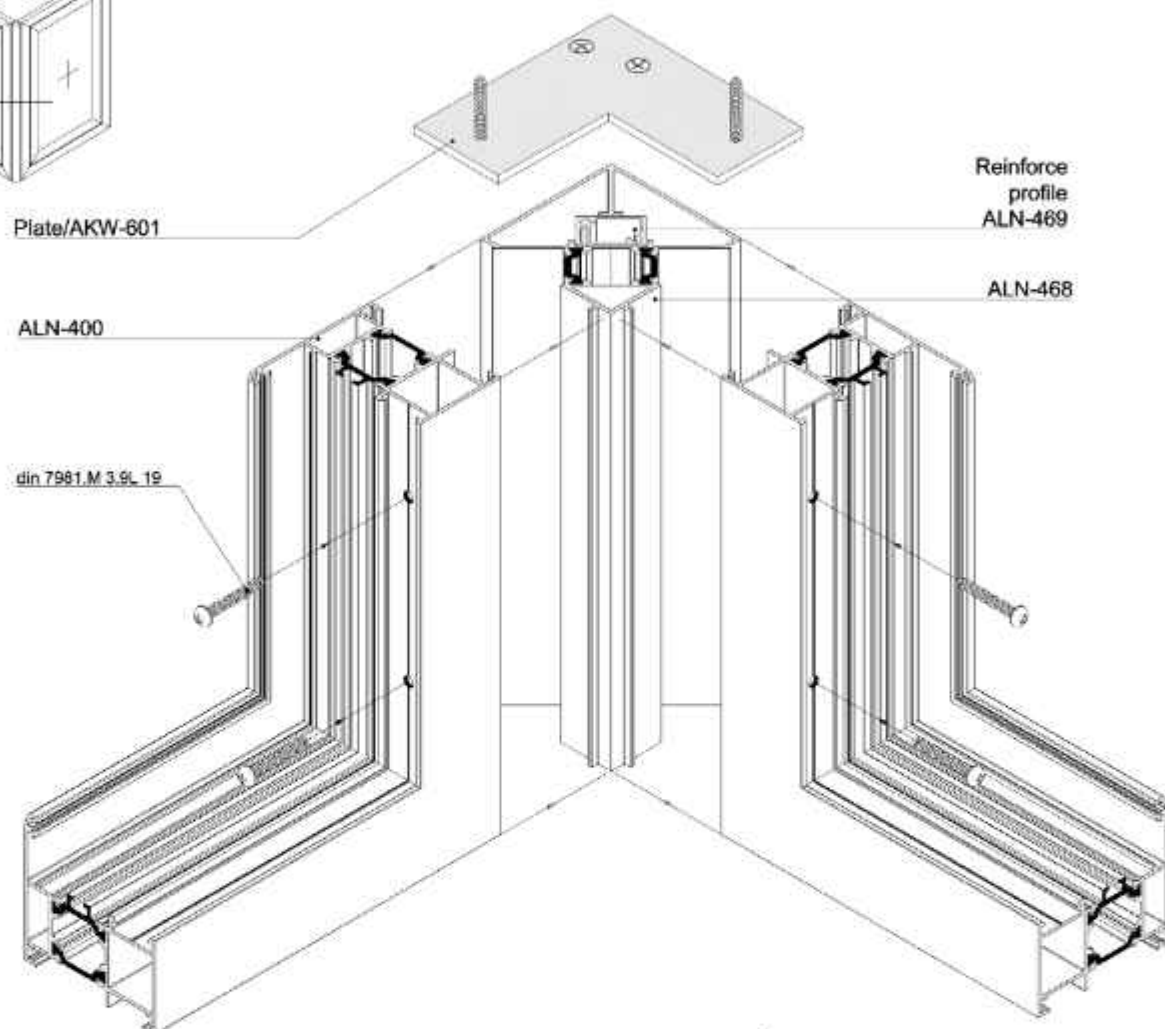
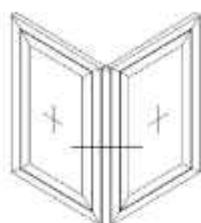
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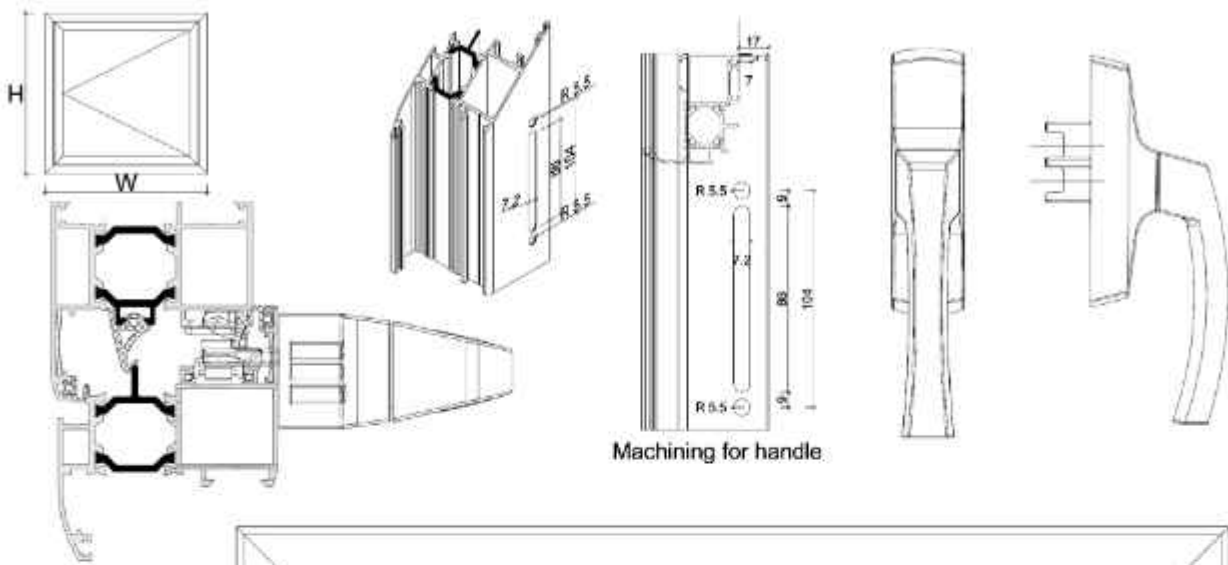
# Hinged System 60 Series Assembly Drawing



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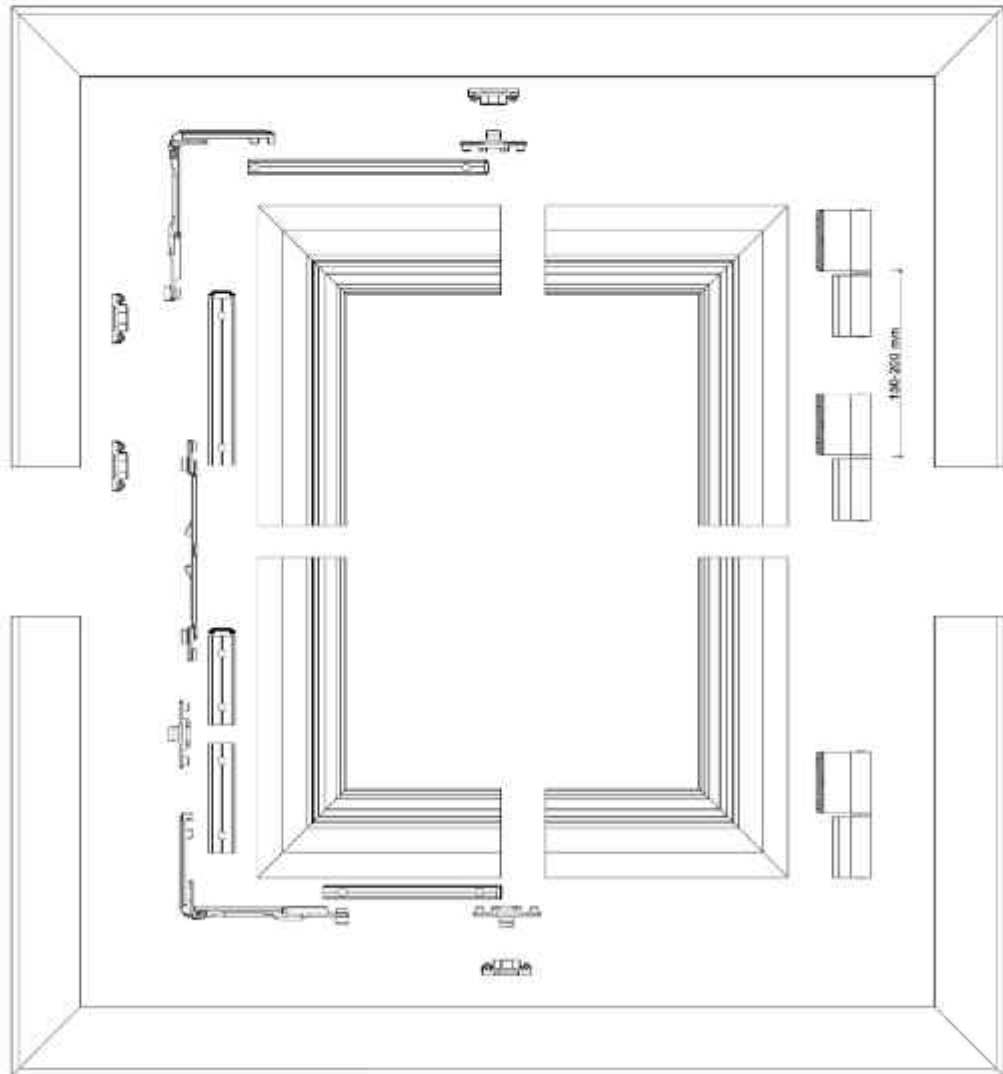


## Hinged System 60 Series Hardware Installation



Machining for handle

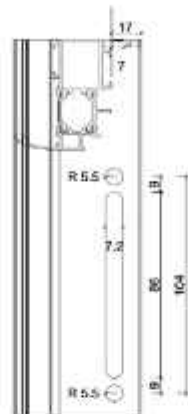
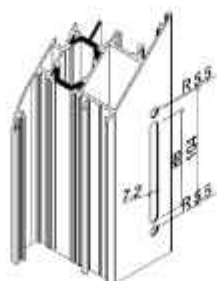
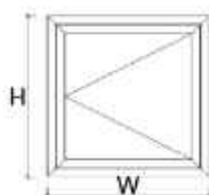
$1200 \leq H$   
 $1200 \leq W$



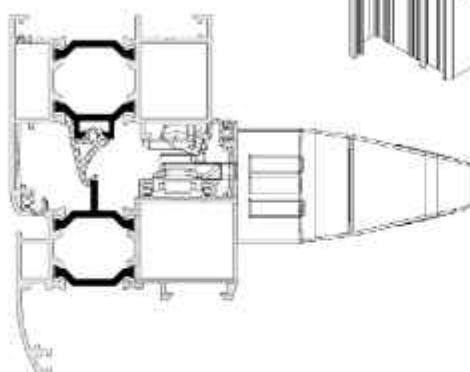
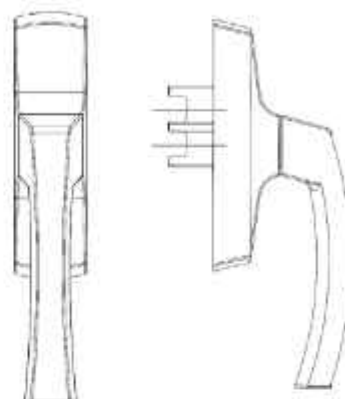
Installation of turn hardware

## Hinged System 60 Series

### Hardware Installation

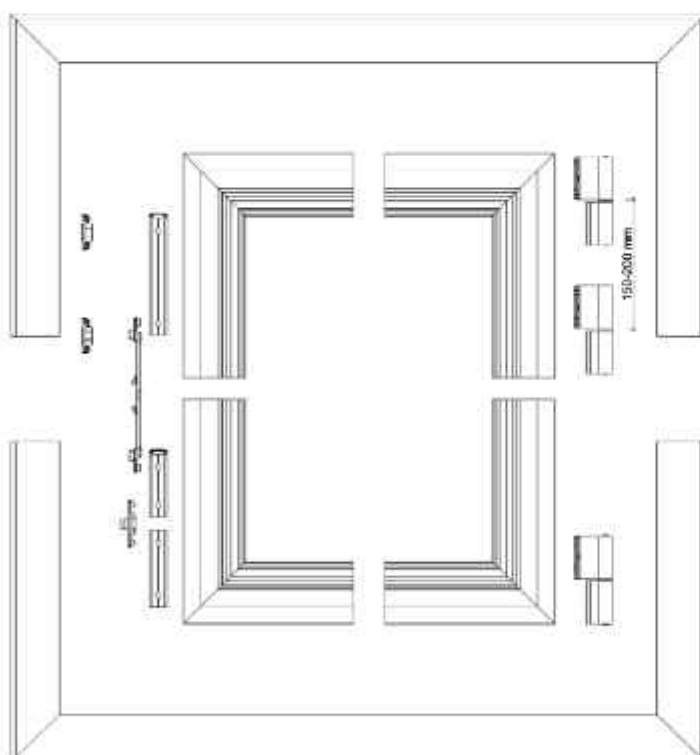
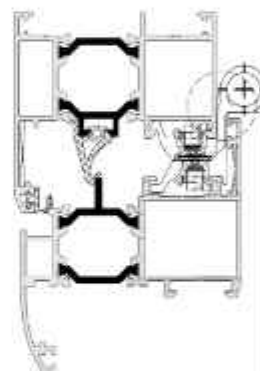


Machining for handle



$1200 \geq H$

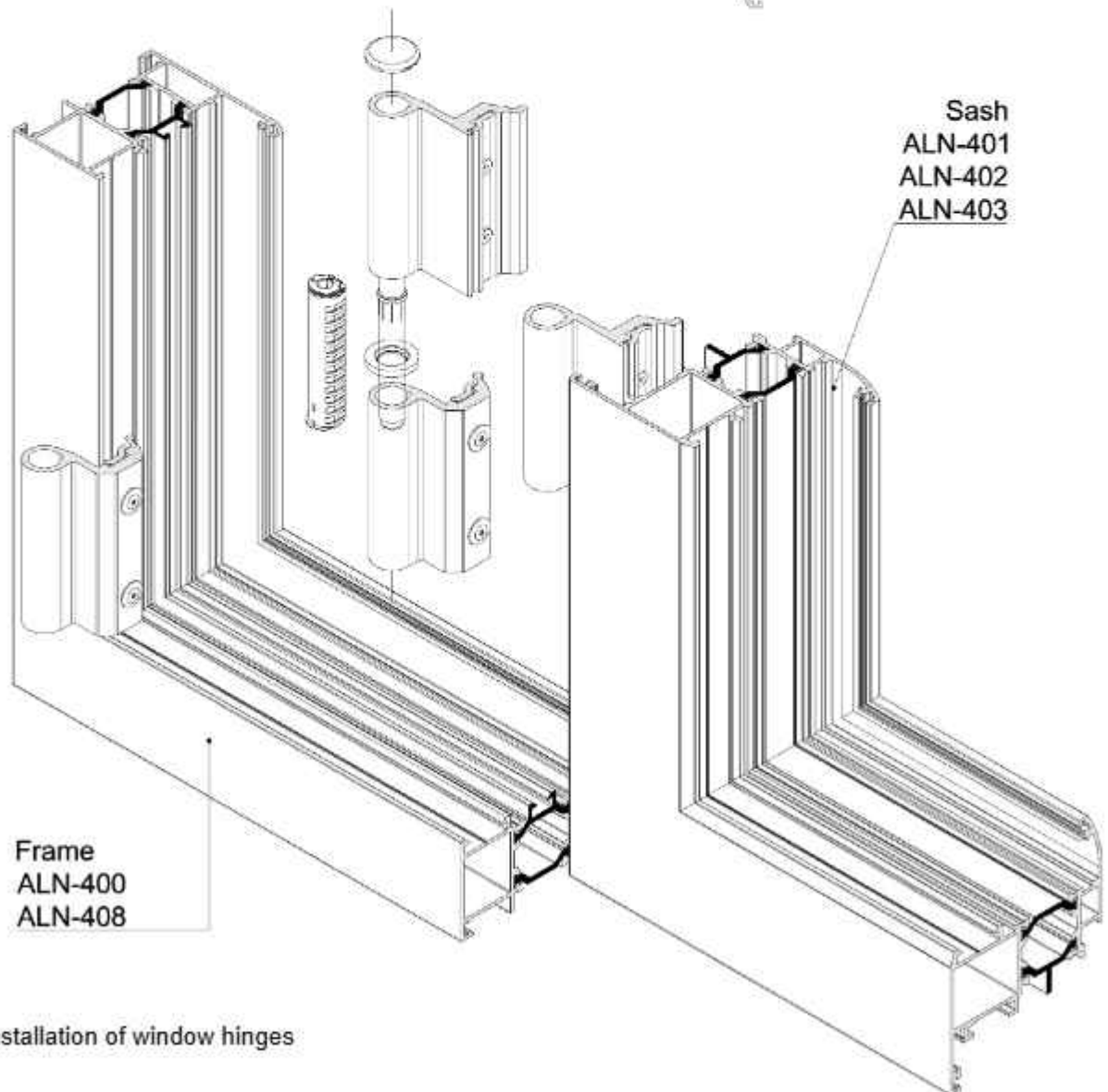
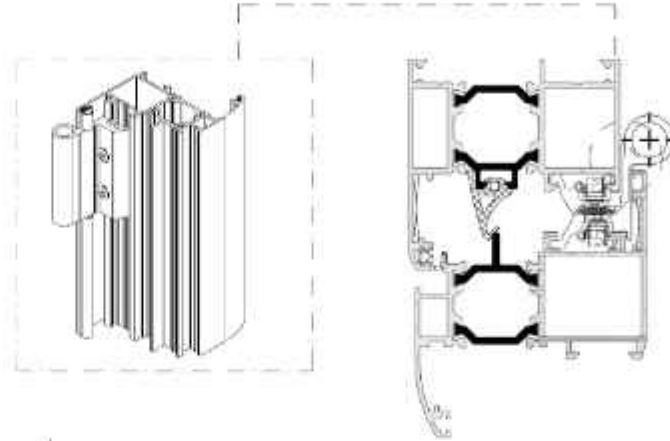
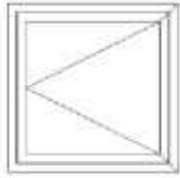
$1200 \geq W$



Installation of turn hardware



## Hinged System 60 Series Hardware Installation



Installation of window hinges

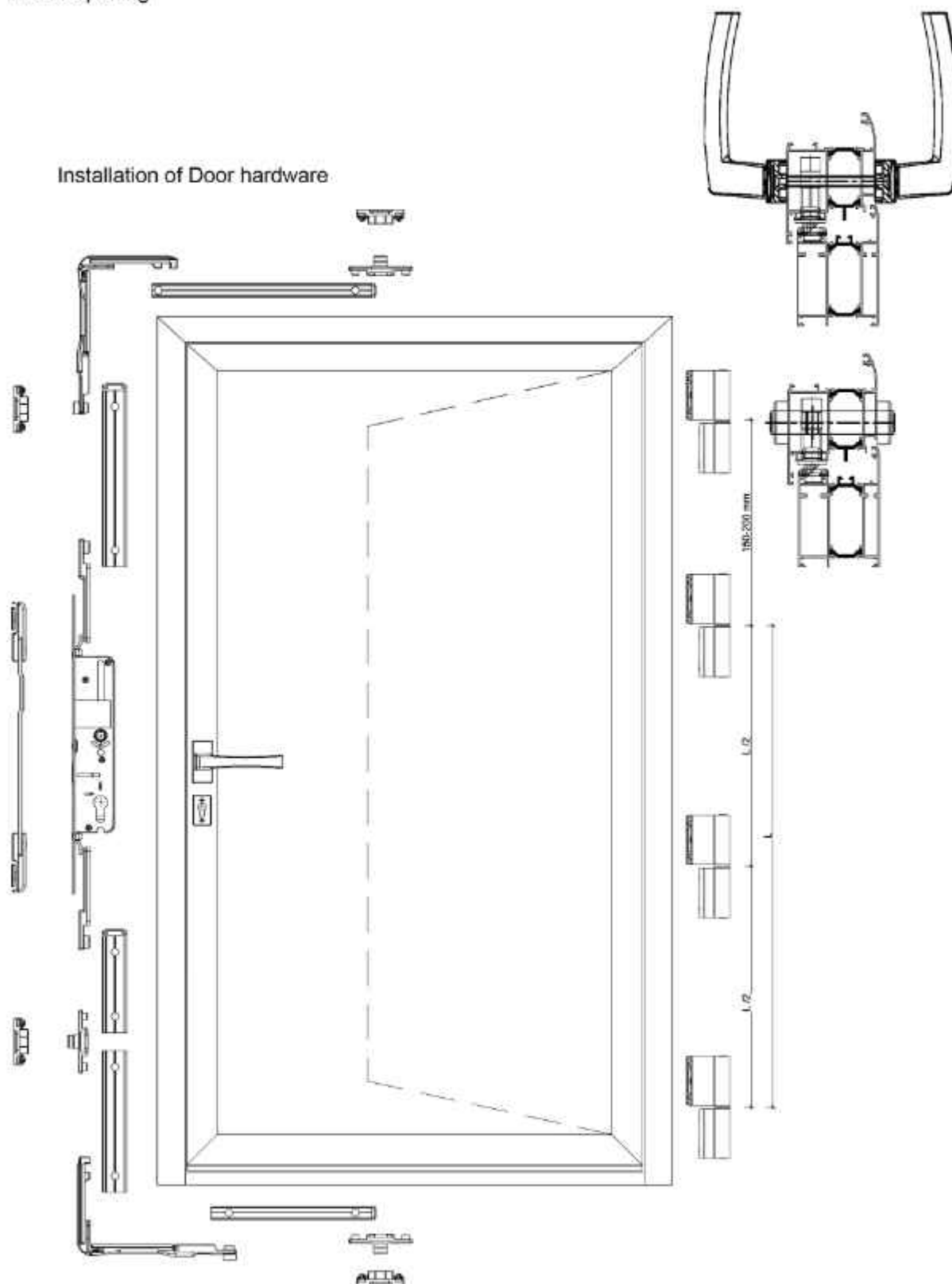


## Hinged System 60 Series

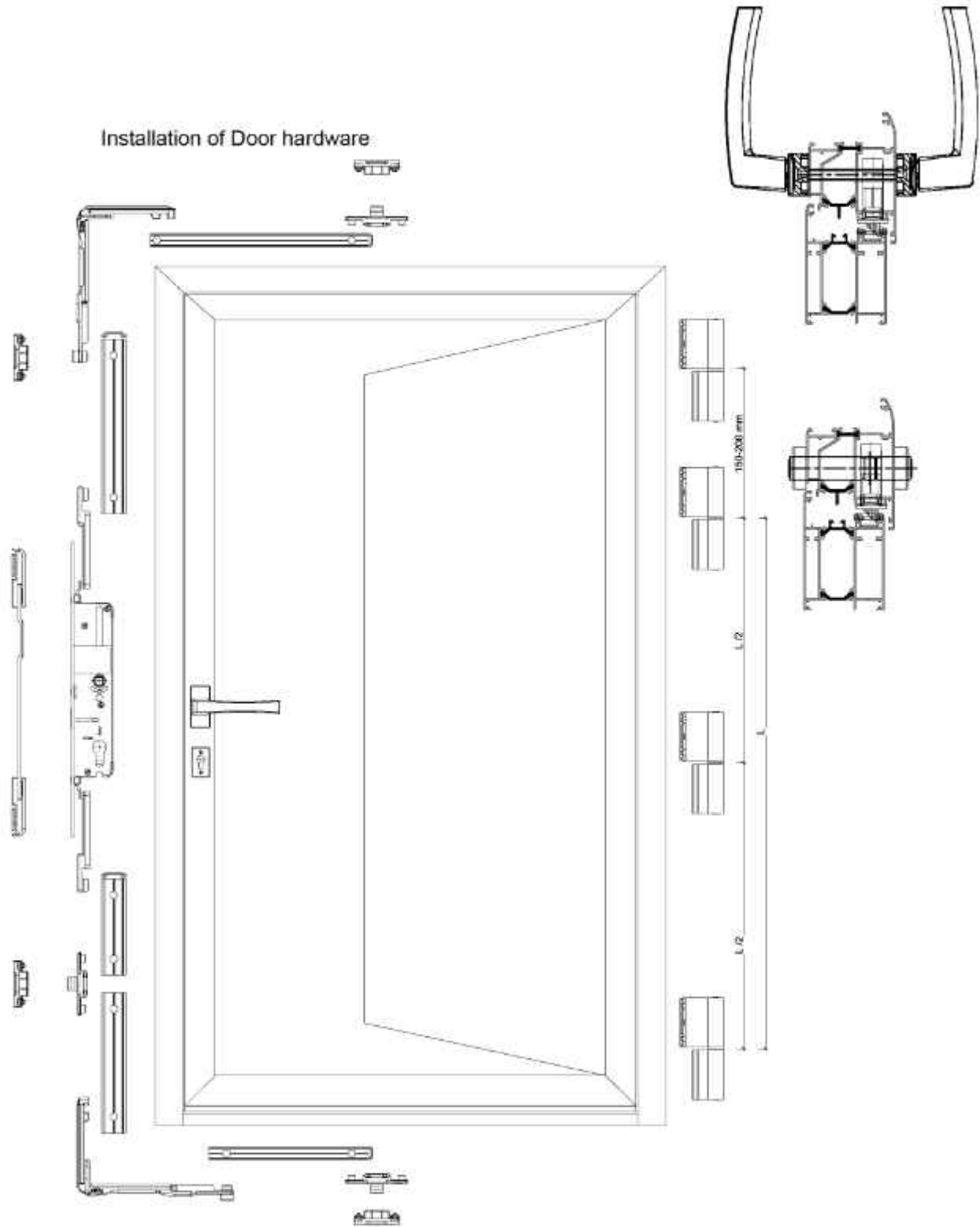
### Hardware Installation

Inward opening

Installation of Door hardware



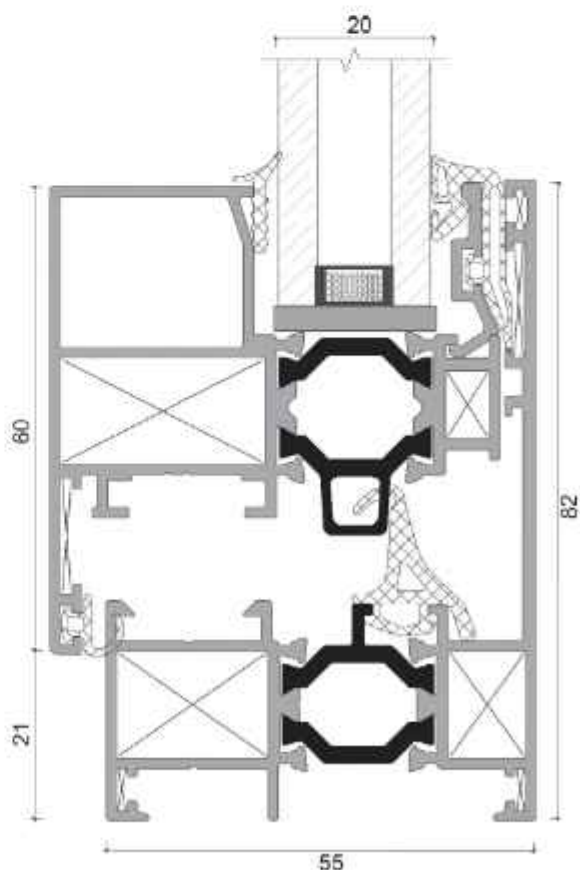
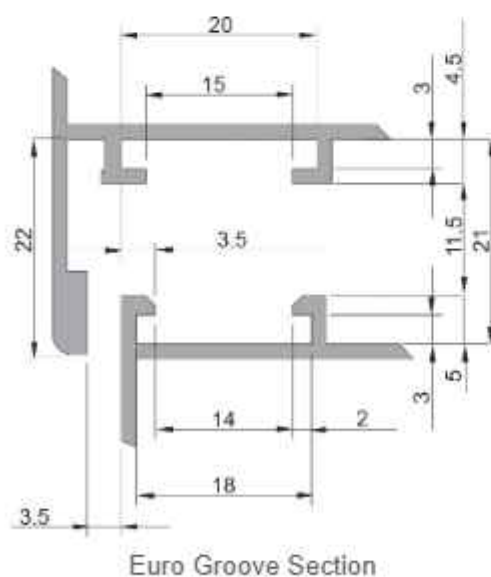
## Hinged System 60 Series Hardware Installation



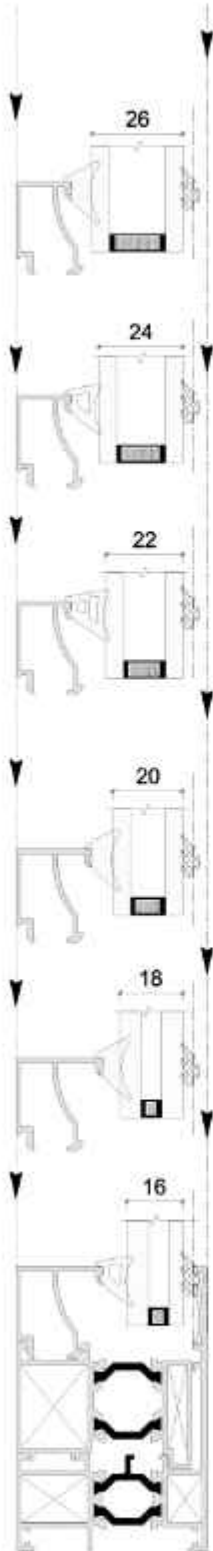


## Hidden vent System 55 Series

|                           |                       |
|---------------------------|-----------------------|
| Profile width:            | 55 mm                 |
| Vent width:               | 58 mm                 |
| Wall thickness:           | 1.3 - 1.4 mm          |
| Rubber description:       | EPDM DIN 7863         |
| Glass thickness:          | 16 - 26 mm            |
| Aluminum alloy extrusion: | EN AW 6063 T5         |
| Isulation bar:            | Polyamide Width 20 mm |
| Safety drainage system    |                       |
| Various typologies        |                       |

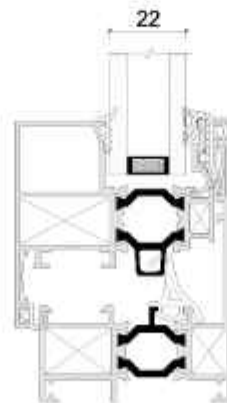


## Hidden vent System 55 Series Glazing Table



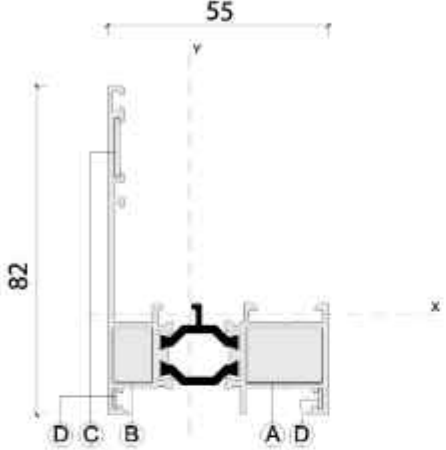
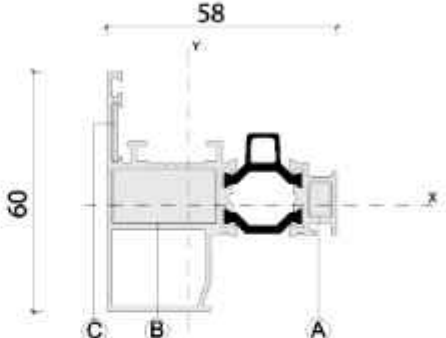
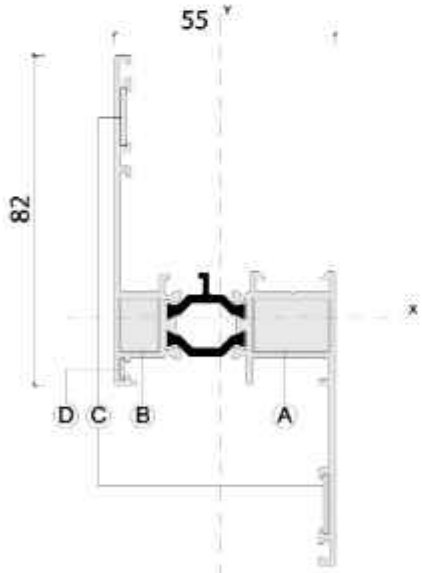
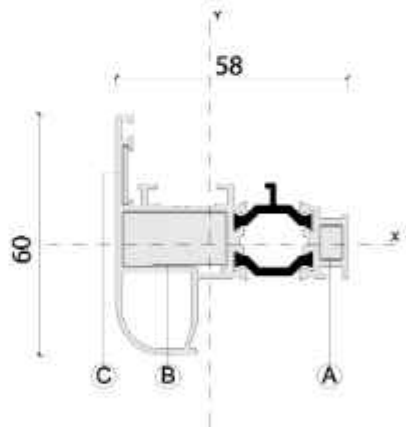
| Glazing Thickness | Gasket Inside                                                                                     | Gasket Outside                                                                                 | Glazing Bead                                                                                     |
|-------------------|---------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|
| 16 mm             |  6.5<br>EP-019   |  6<br>MO68   | <br>ALN-421   |
| 18 mm             |  4.5<br>EP-016   |  6<br>MO68   | <br>ALN-421   |
| 20 mm             |  4.5<br>EP-016   |  6<br>MO68   | <br>ALN-323   |
| 22 mm             |  7.5<br>EP-021   |  6<br>MO68   | <br>ALN-423   |
| 24 mm             |  5.5<br>EP-019   |  6<br>MO68   | <br>ALN-423   |
| 26 mm             |  4.5<br>EP-016 |  6<br>MO68 | <br>ALN-423 |

| Glazing Thickness | Gasket Inside                                                                                     | Gasket Outside                                                                             | Glazing Bead                                                                                     |
|-------------------|---------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|
| 22 mm             |  1.8<br>EP-015 |  51927 | <br>ALN-438 |



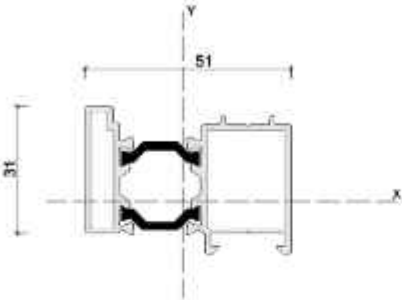
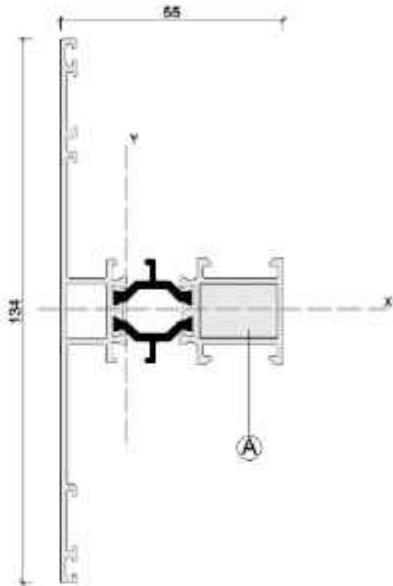
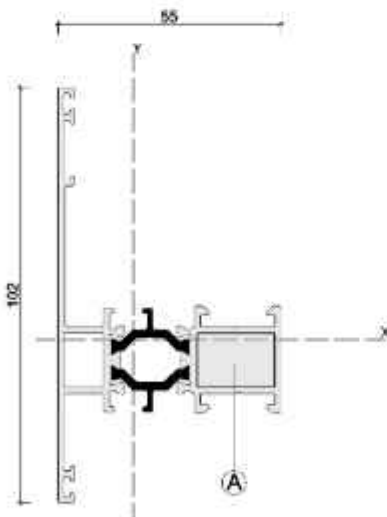
## Hidden vent System 55 Series

### Profile & Accessories Information

|                                                                                     |                                       |                                                                                      |                                      |
|-------------------------------------------------------------------------------------|---------------------------------------|--------------------------------------------------------------------------------------|--------------------------------------|
|    |                                       |    |                                      |
| $I_x$ : 17.72 cm <sup>4</sup>                                                       | $I_y$ : 15.70 cm <sup>4</sup>         | $I_x$ : 7.50 cm <sup>4</sup>                                                         | $I_y$ : 13.94 cm <sup>4</sup>        |
| Frame : ALN-431                                                                     | A: PCP-13 / 18 mm<br>B: PCP-13 / 9 mm | Sash : ALN-433                                                                       | A: PCP-8 / 5 mm<br>B: PCP-13 / 26 mm |
| Weight: 1199 gr/m                                                                   | C: MM77 (AKW-810)<br>D: MO 19         | Weight: 1209 gr/m                                                                    | C: MM77 (AKW-810)                    |
|  |                                       |  |                                      |
| $I_x$ : 36.15 cm <sup>4</sup>                                                       | $I_y$ : 23.50 cm <sup>4</sup>         | $I_x$ : 6.50 cm <sup>4</sup>                                                         | $I_y$ : 13.63 cm <sup>4</sup>        |
| Frame : ALN-432                                                                     | A: PCP-13 / 18 mm<br>B: PCP-13 / 9 mm | Sash : ALN-434                                                                       | A: PCP-8 / 5 mm<br>B: PCP-13 / 25 mm |
| Weight : 1425 gr/m                                                                  | C: MM77 (AKW-810)<br>D: MO 19         | Weight : 1155 gr/m                                                                   | C: MM77 (AKW-810)                    |

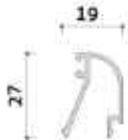
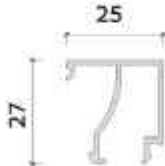
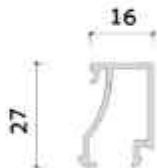
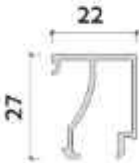
## Hidden vent System 55 Series

### Profile & Accessories Information

|                                                                                     |                               |                                                                                       |                               |
|-------------------------------------------------------------------------------------|-------------------------------|---------------------------------------------------------------------------------------|-------------------------------|
|    |                               |     |                               |
| $I_x$ : 3.30 cm <sup>4</sup>                                                        | $I_y$ : 9.27 cm <sup>4</sup>  | $I_x$ : 41.83 cm <sup>4</sup>                                                         | $I_y$ : 17.79 cm <sup>4</sup> |
| Profile :ALN-435                                                                    |                               | Transom : ALN-437                                                                     | A: ALN-445                    |
| Weight: 943 gr/m                                                                    |                               | Weight : 1467 gr/m                                                                    |                               |
|  |                               |  |                               |
| $I_x$ : 22.03 cm <sup>4</sup>                                                       | $I_y$ : 16.15 cm <sup>4</sup> |                                                                                       |                               |
| Transom : ALN-436                                                                   | A: ALN-445                    |                                                                                       |                               |
| Weight : 1297 gr/m                                                                  |                               | Transom bar profile: ALN-445                                                          | Weight : 818 gr/m             |

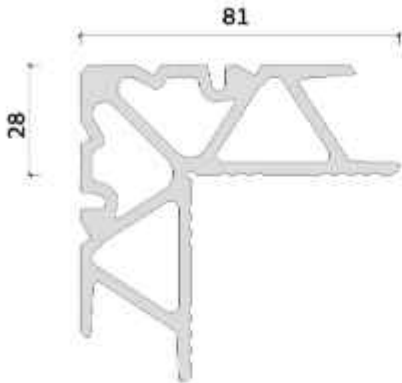
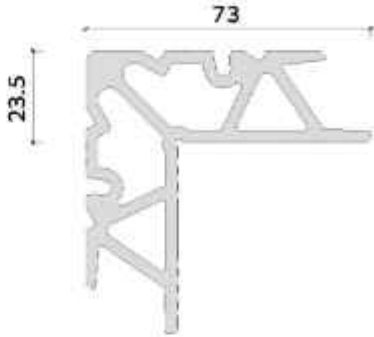
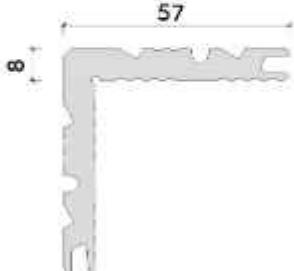
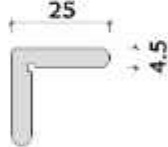
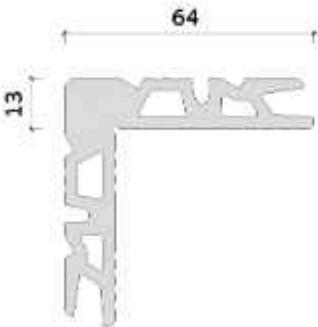
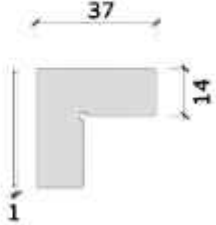
## Hidden vent System 55 Series

### Profile & Accessories Information

|                                                                                     |                   |                                                                                       |                   |
|-------------------------------------------------------------------------------------|-------------------|---------------------------------------------------------------------------------------|-------------------|
|    |                   |     |                   |
| Glazing bead: ALN-439                                                               | Weight : 235 gr/m | Glazing bead: ALN-421                                                                 | Weight : 313 gr/m |
|  |                   |   |                   |
| profile: ALN-331                                                                    | Weight : 747 gr/m | Glazing bead: ALN-423                                                                 | Weight : 281 gr/m |
|  |                   |  |                   |
| Glazing bead: ALN-323                                                               | Weight : 302 gr/m | Glazing bead: ALN-438                                                                 | Weight : 122 gr/m |

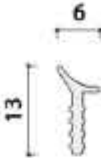
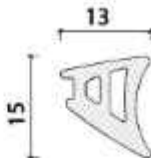
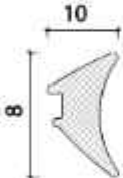
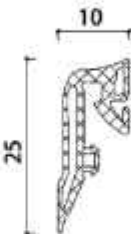
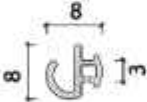
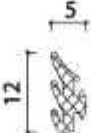
## Hidden vent System 55 Series

### Profile & Accessories Information

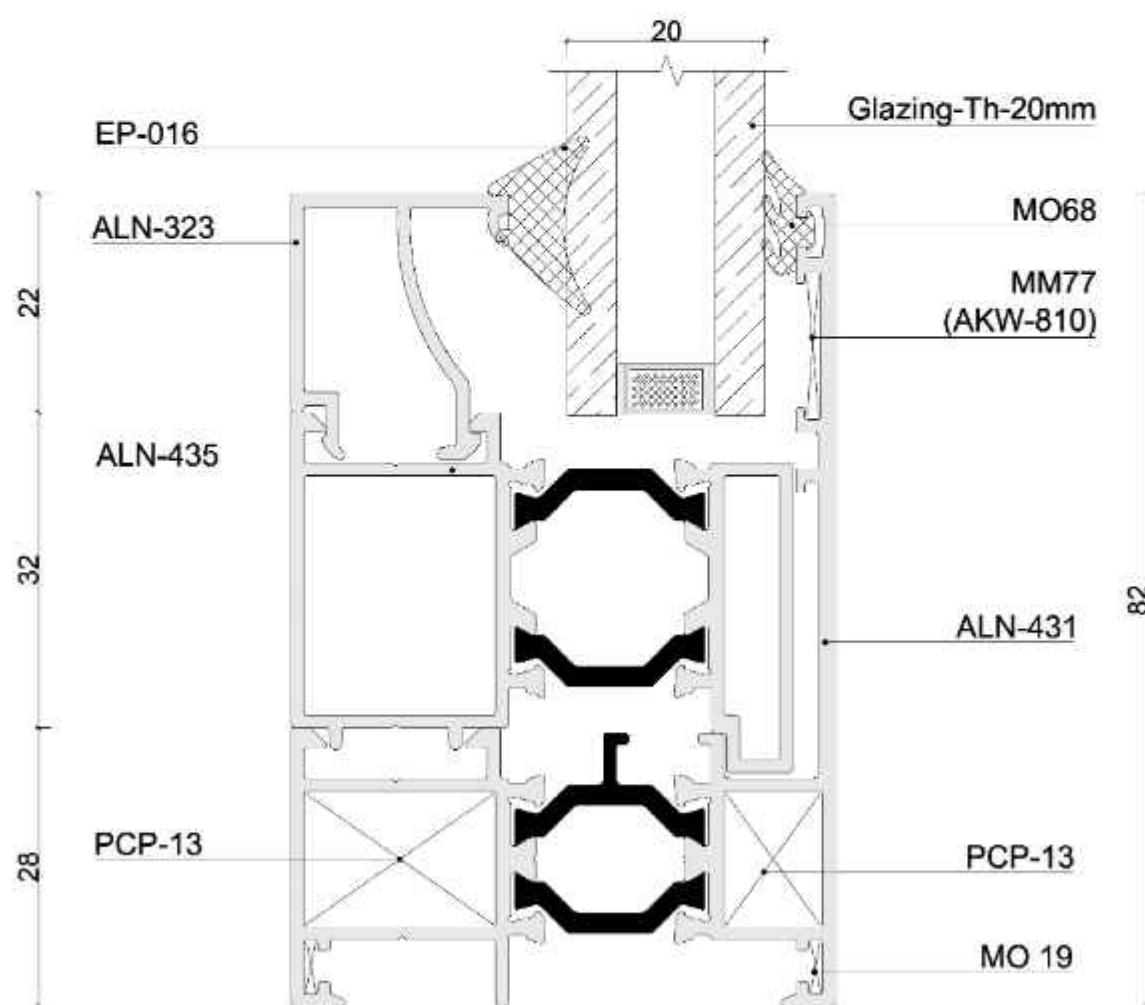
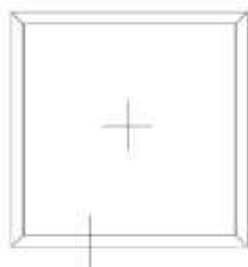
|                                                                                     |                    |                                                                                       |                    |
|-------------------------------------------------------------------------------------|--------------------|---------------------------------------------------------------------------------------|--------------------|
|    |                    |     |                    |
| Corner Joint: PCP-28                                                                | Weight : 3429 gr/m | Corner Joint: PCP-24                                                                  | Weight : 2918 gr/m |
|  |                    |  |                    |
| Corner Joint: PCP-8                                                                 | Weight : 1947 gr/m | Corner Joint: MO 19 399012                                                            | Weight: -          |
|  |                    |  |                    |
| Corner Joint: PCP-13                                                                | Weight : 2673 gr/m | Corner joint: MM 77                                                                   | Weight : -         |

## Hidden vent System 55 Series

### Profile & Accessories Information

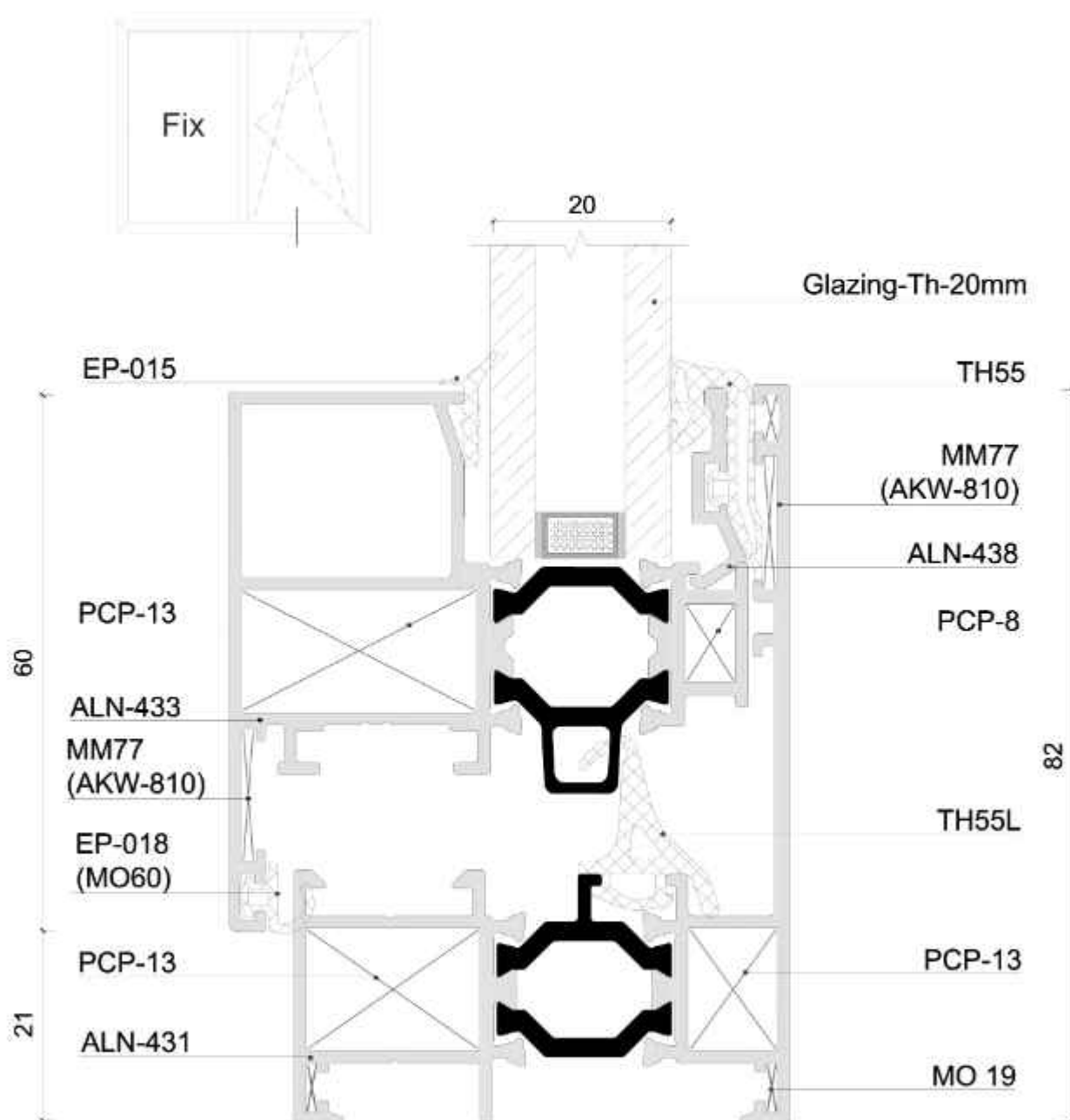
|                                                                                     |                  |                                                                                       |                   |
|-------------------------------------------------------------------------------------|------------------|---------------------------------------------------------------------------------------|-------------------|
|    |                  |    |                   |
| Gasket: EP-015                                                                      | Weight : 21 gr/m | Gasket: EP-021                                                                        | Weight : 80 gr/m  |
|    |                  |   |                   |
| Gasket: EP-016                                                                      | Weight : 77 gr/m | Gasket: TH55 lk                                                                       | Weight : 112gr/m  |
|  |                  |  |                   |
| Gasket: EP-018                                                                      | Weight : 77 gr/m | Gasket: TH55L                                                                         | Weight : 152 gr/m |
|  |                  |                                                                                       |                   |
| Gasket: MO68                                                                        |                  | Weight : 46 gr/m                                                                      |                   |

## Hidden vent System 55 Series Fabrication Details

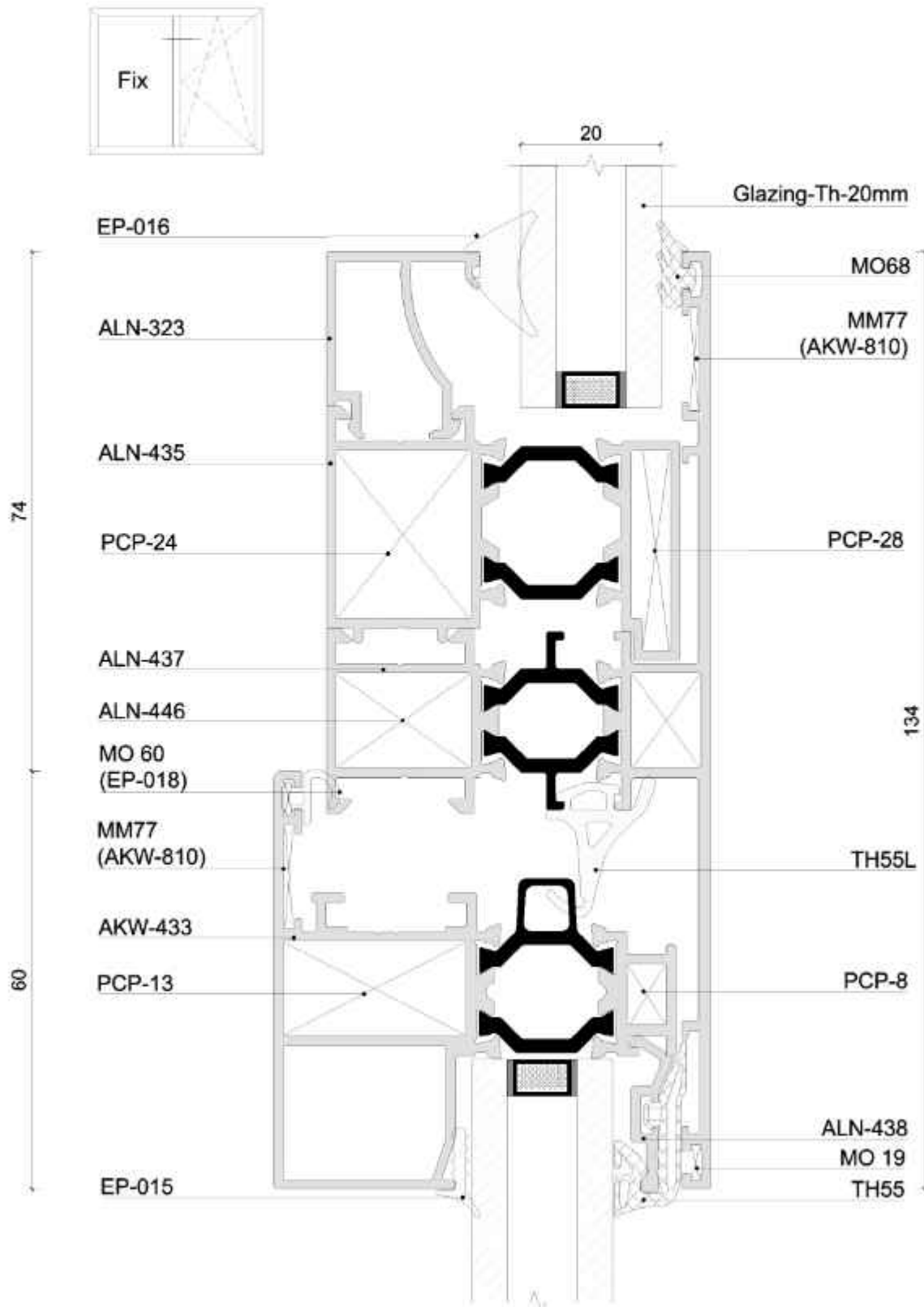


## Hidden vent System 55 Series

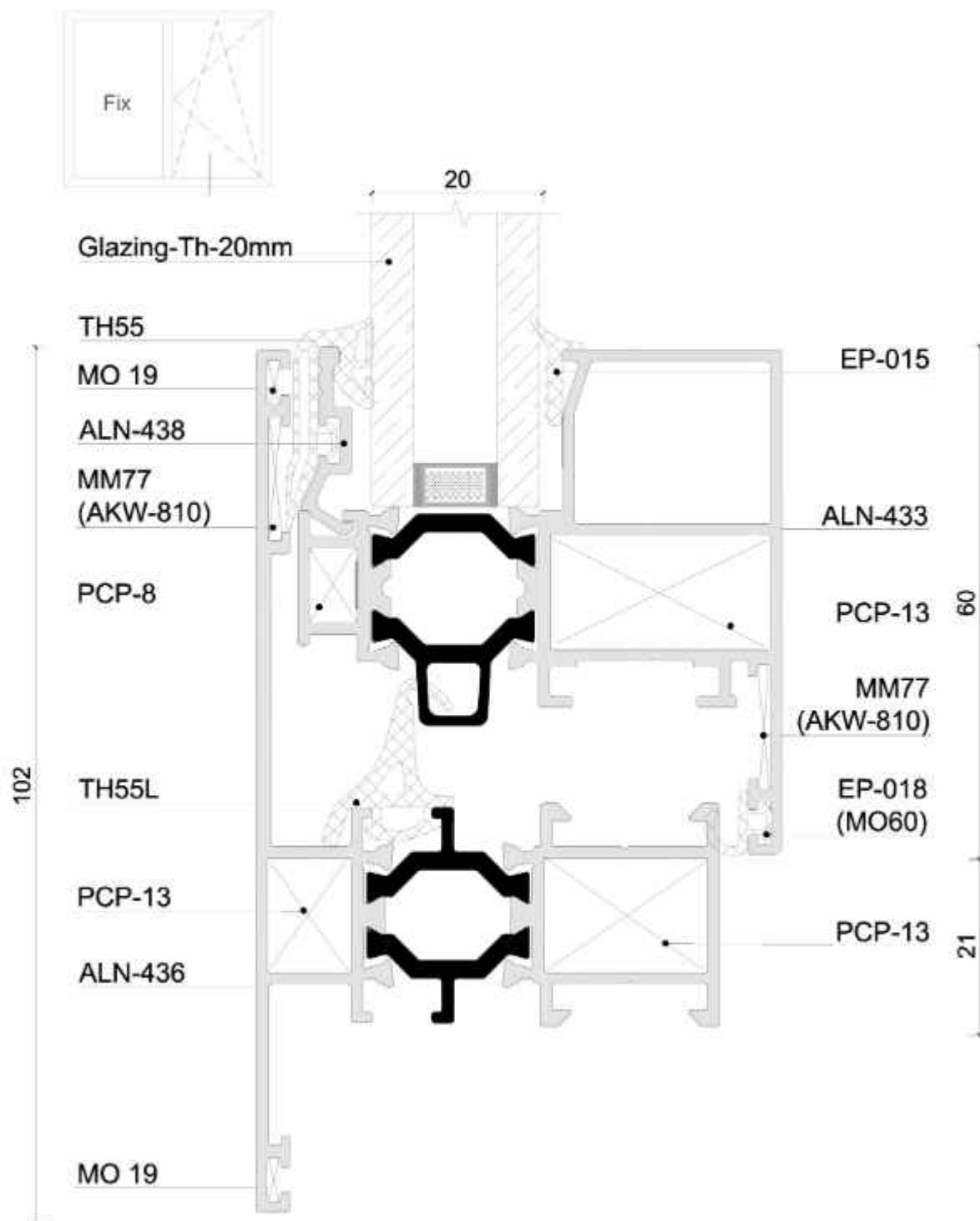
### Fabrication Details



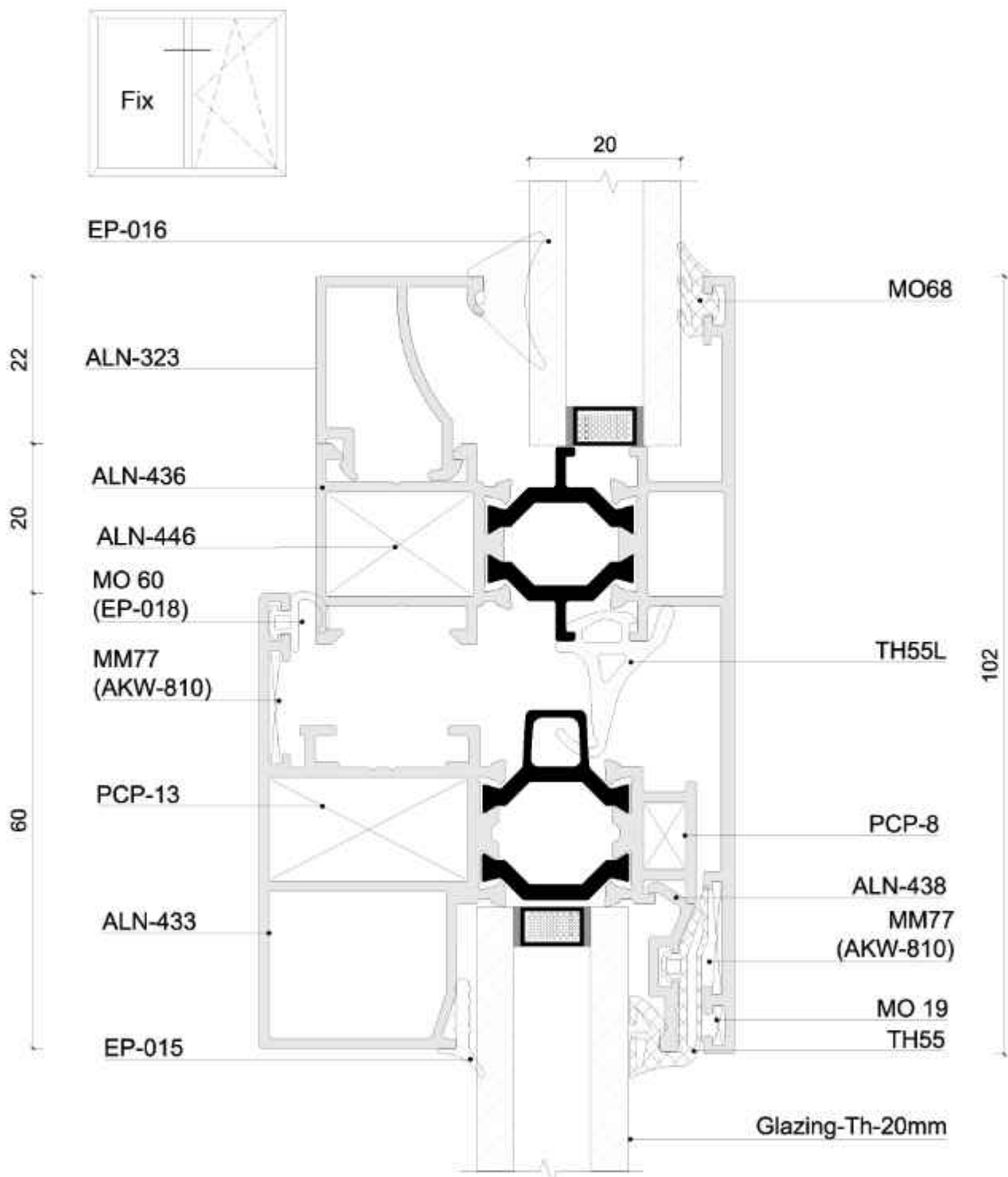
## Hidden vent System 55 Series Fabrication Details



## Hidden vent System 55 Series Fabrication Details

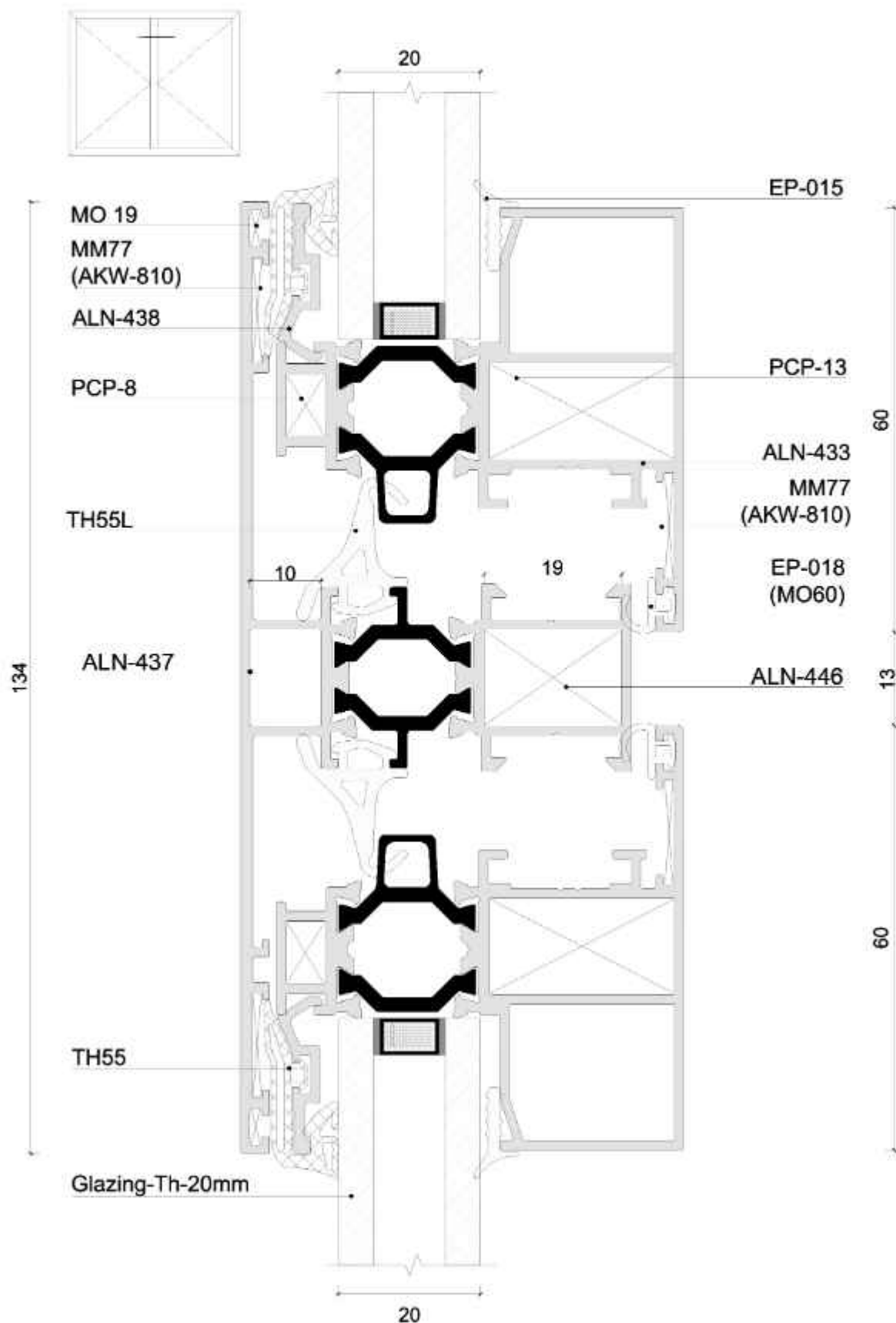


## Hidden vent System 55 Series Fabrication Details

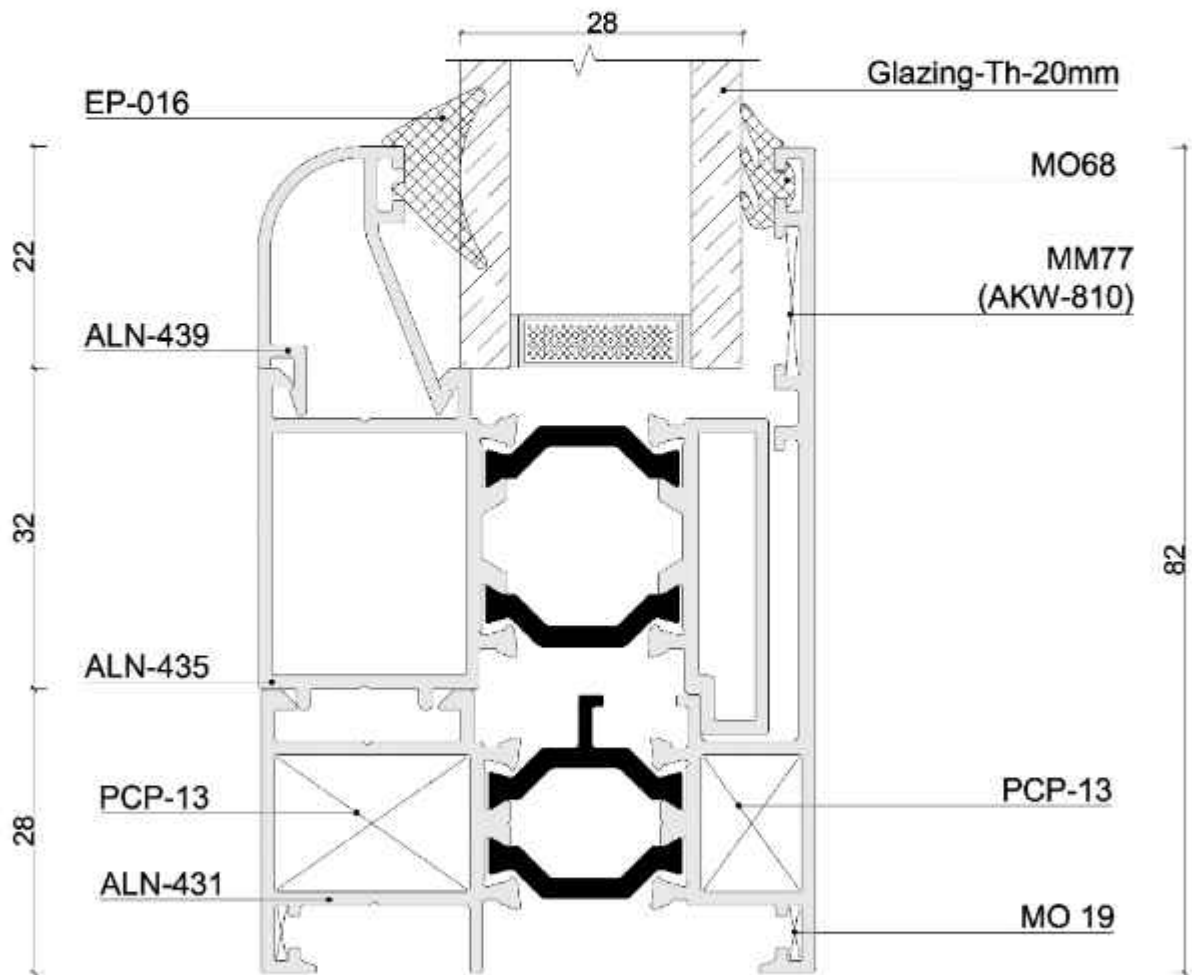
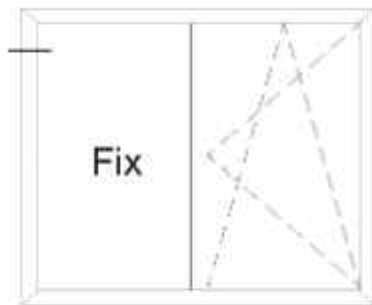


## Hidden vent System 55 Series

### Fabrication Details

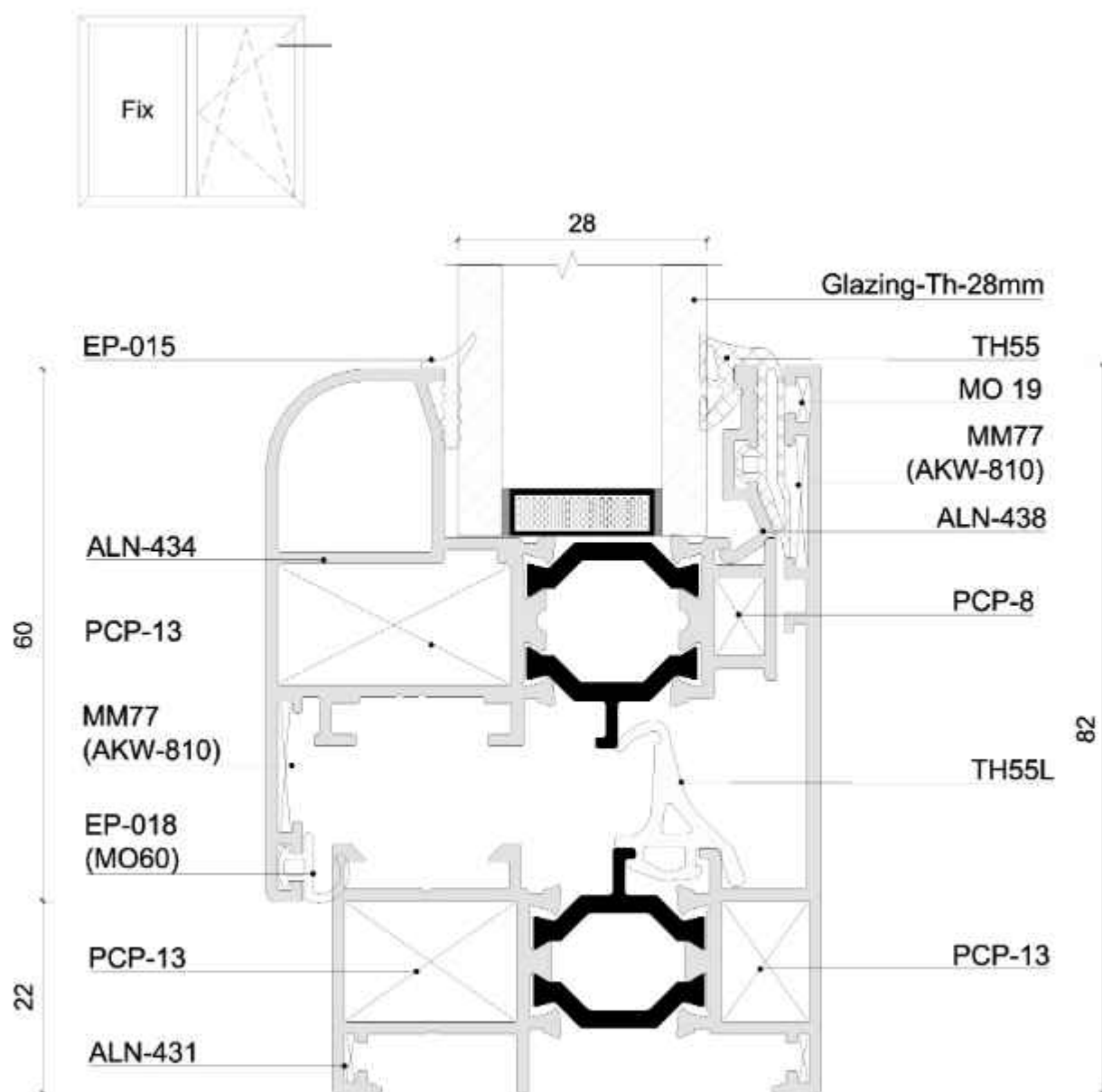


## Hidden vent System 55 Series Fabrication Details

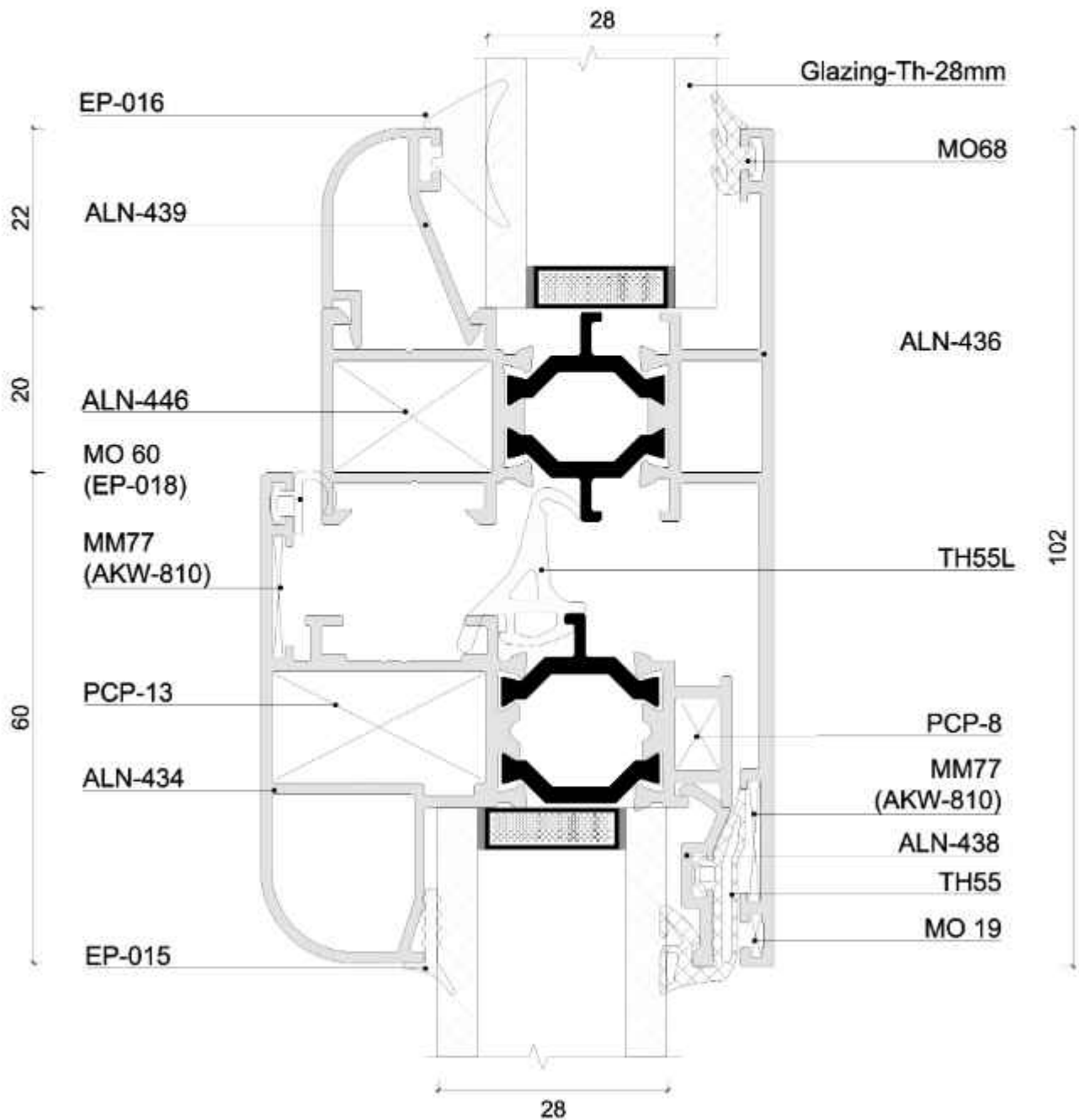
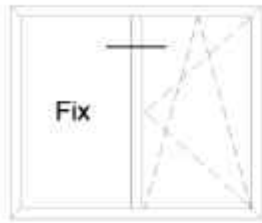


## Hidden vent System 55 Series

### Fabrication Details

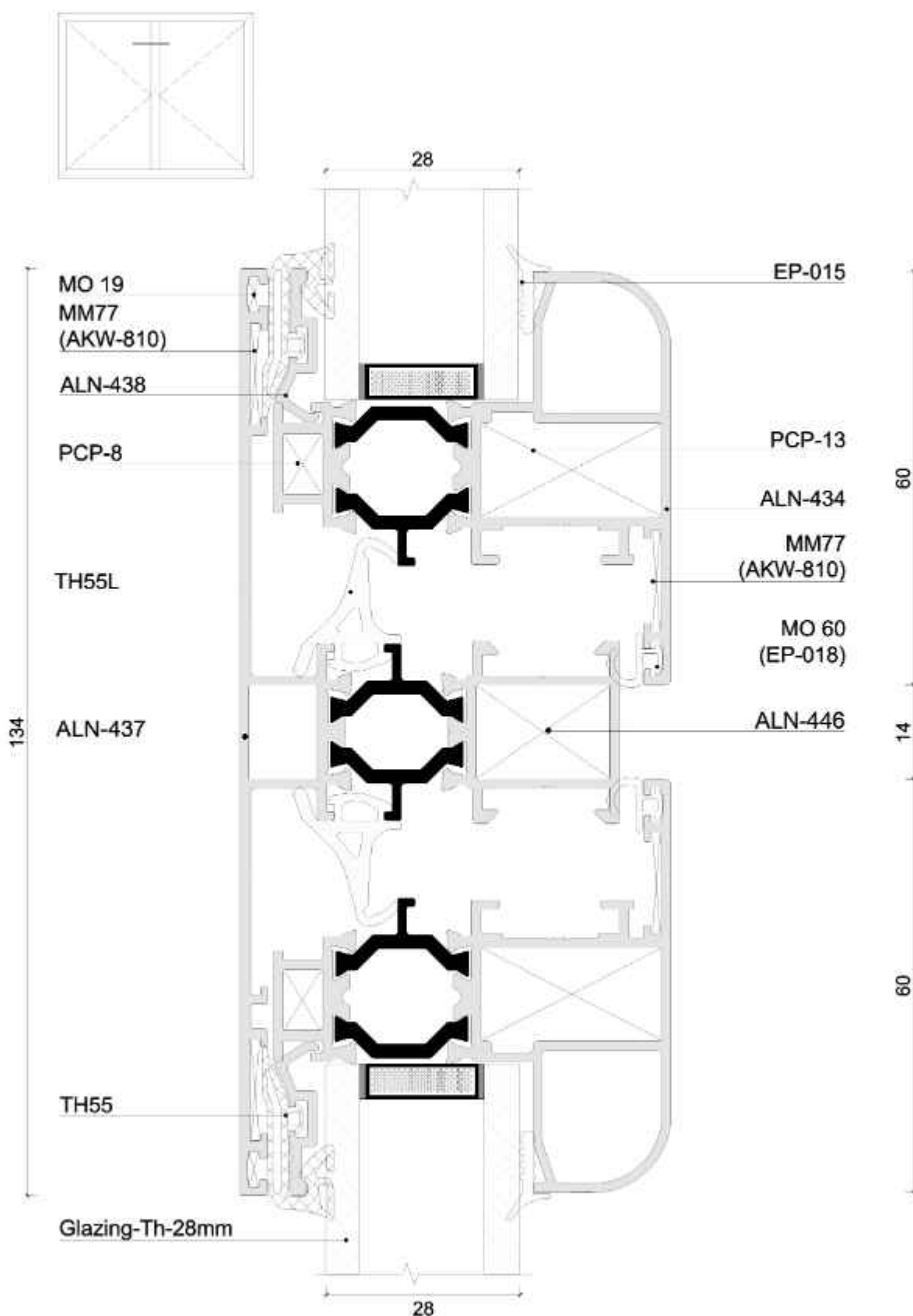


## Hidden vent System 55 Series Fabrication Details

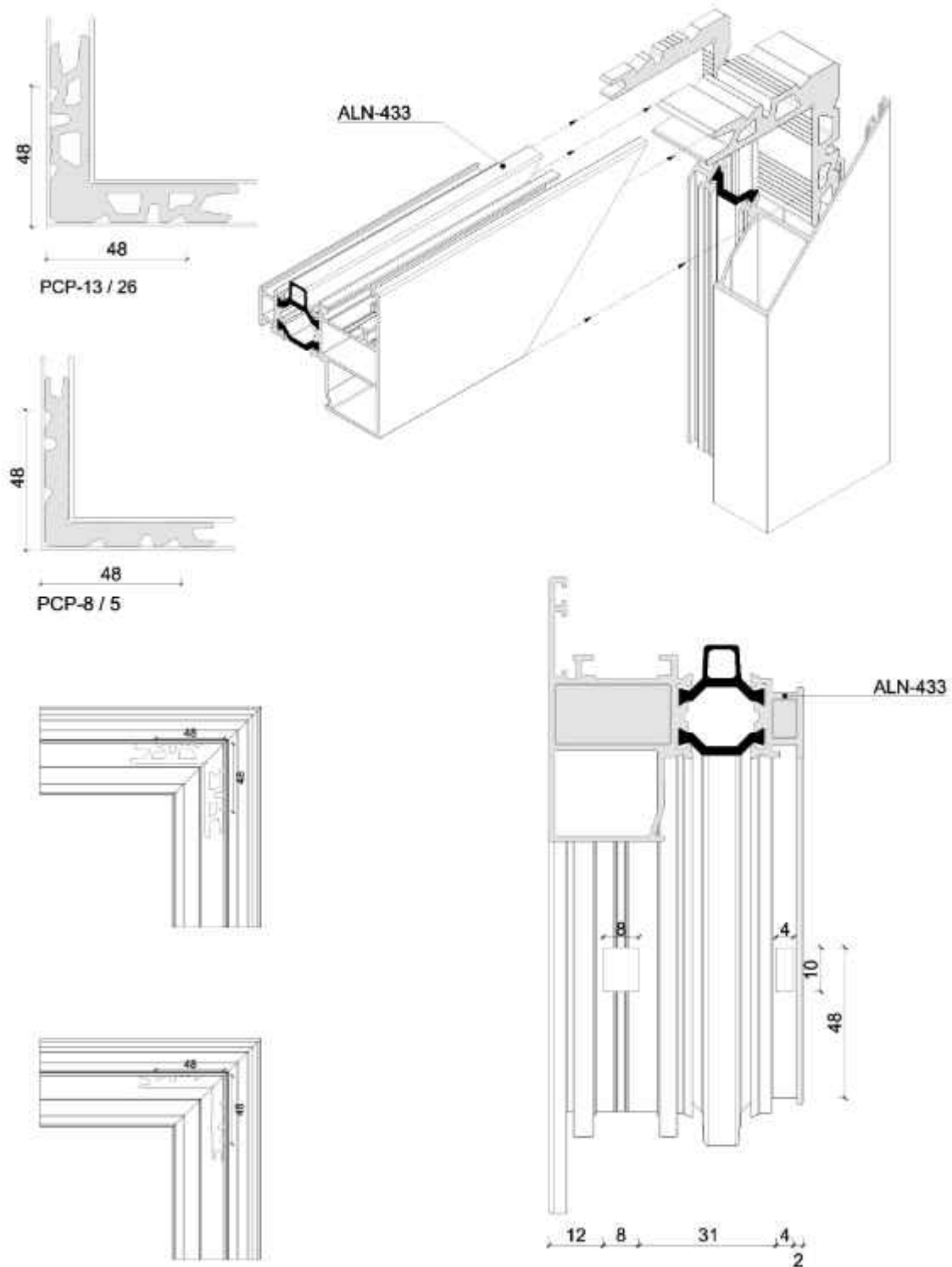


## Hidden vent System 55 Series

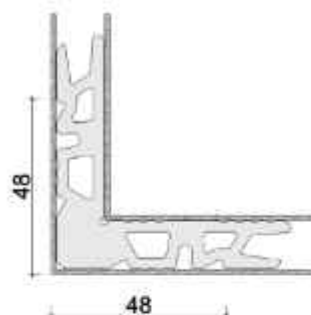
### Fabrication Details



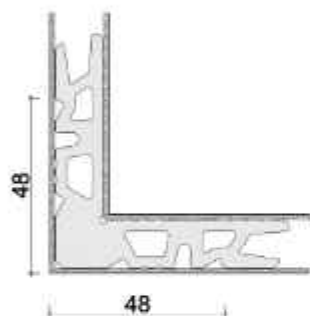
# Hidden vent System 55 Series Assembly Drawing



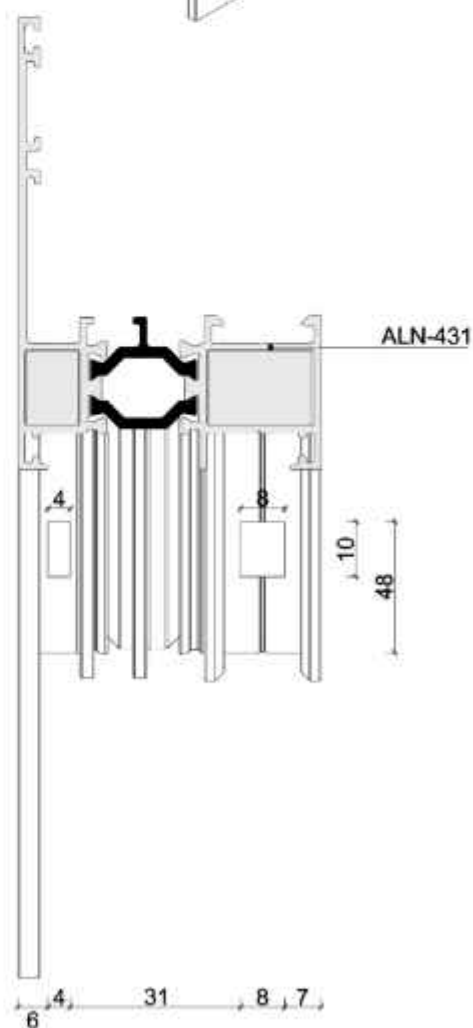
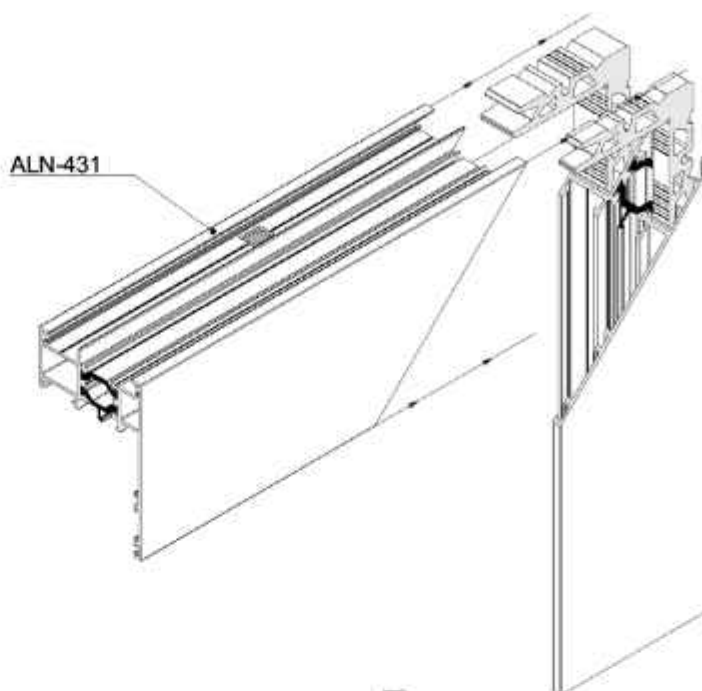
# Hidden vent System 55 Series Assembly Drawing



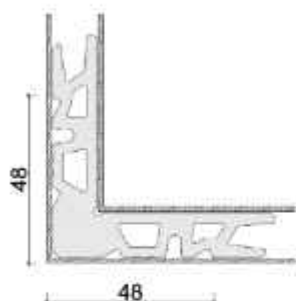
PCP-13 / 18



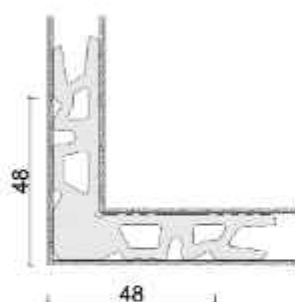
PCP-13 / 9



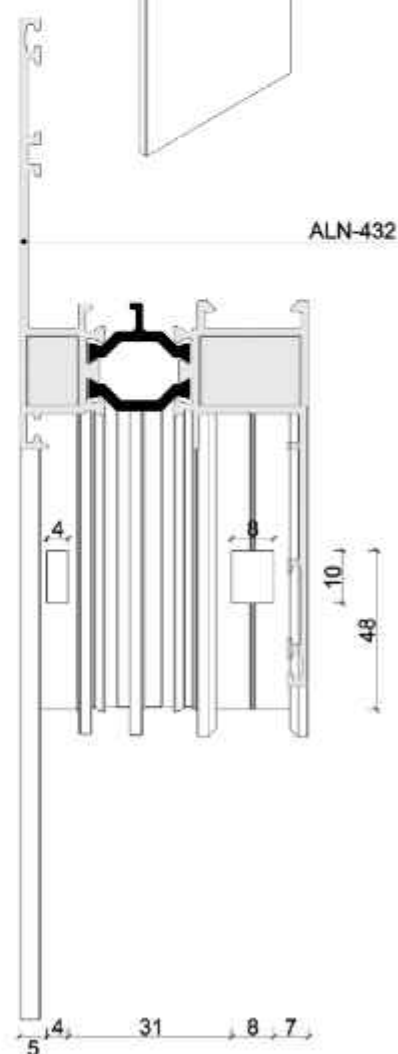
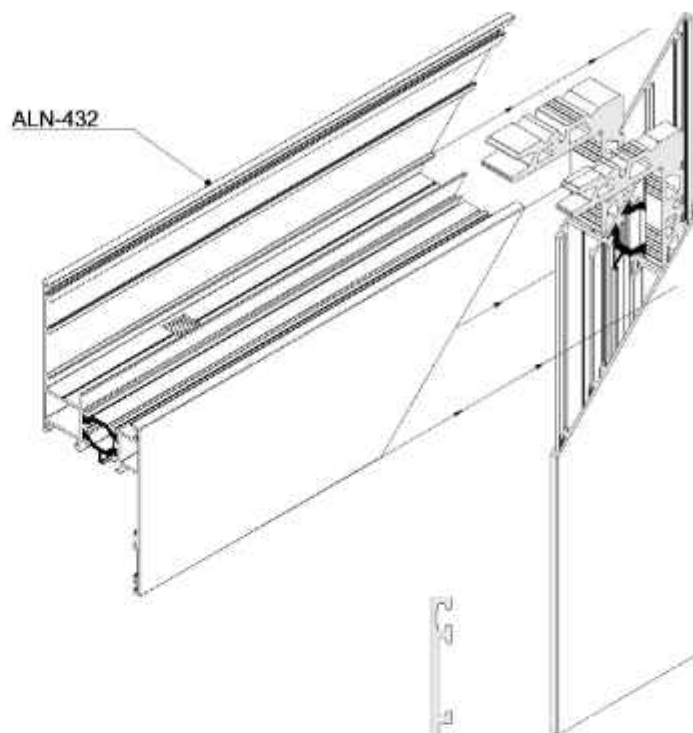
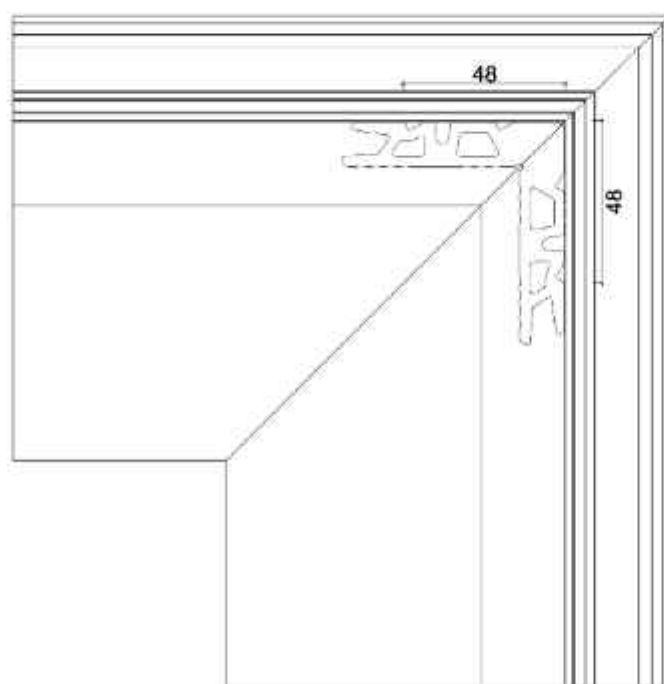
# Hidden vent System 55 Series Assembly Drawing



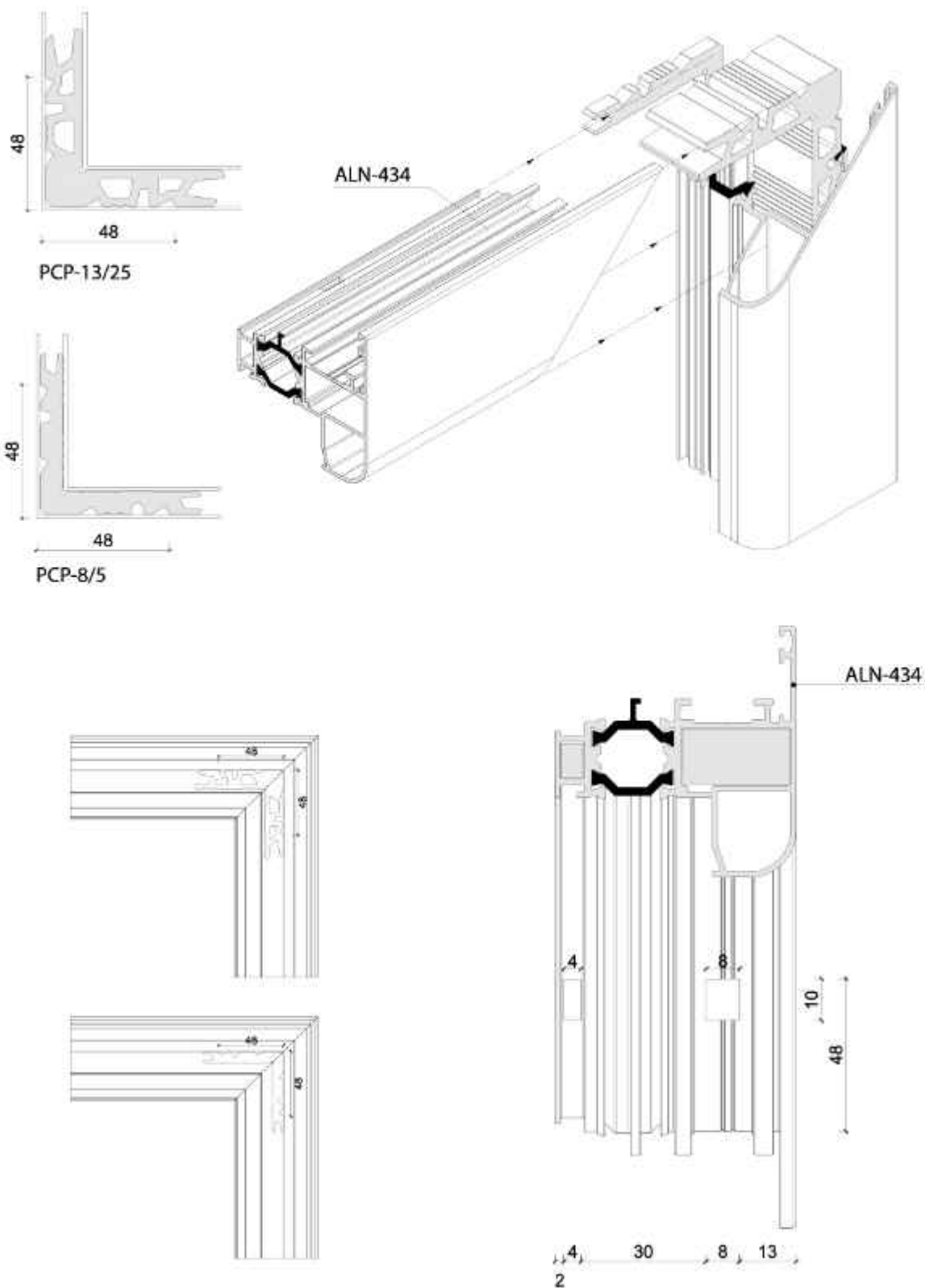
PCP-13 / 18



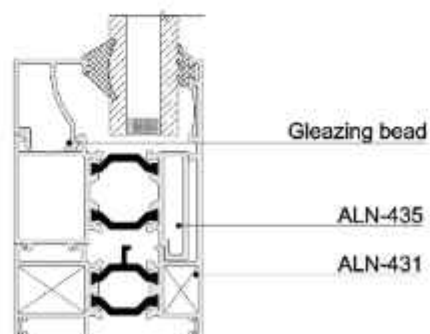
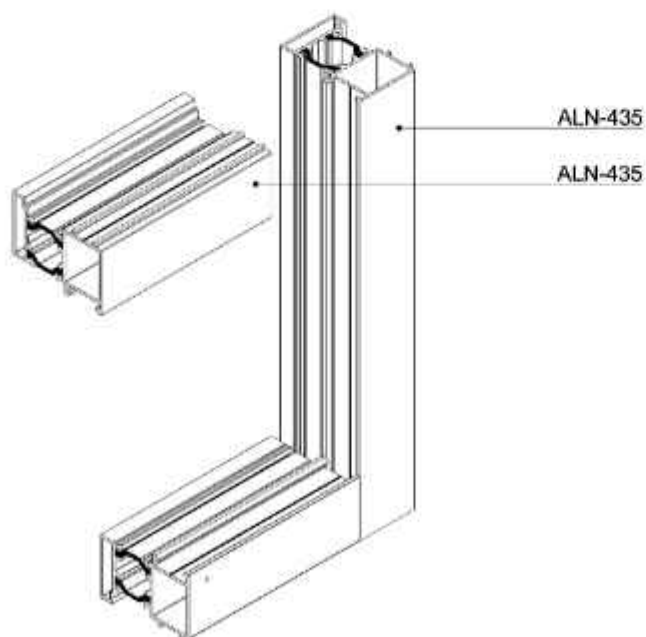
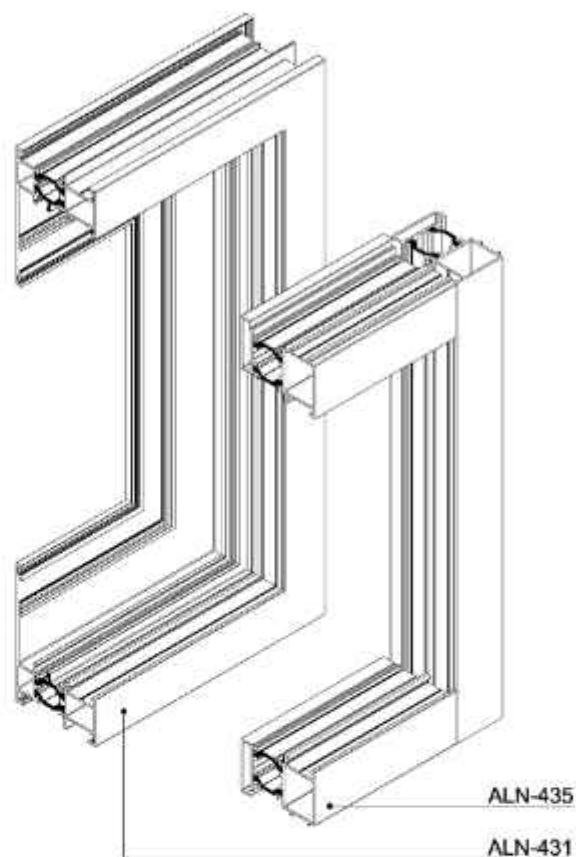
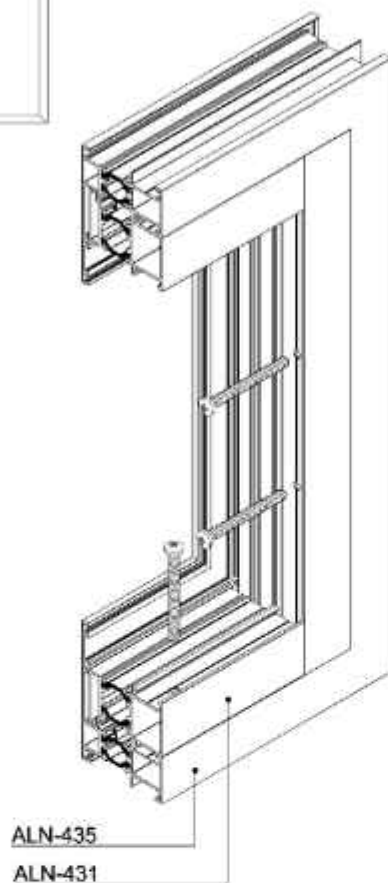
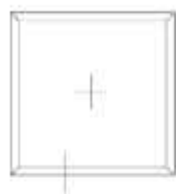
PCP-13 / 9



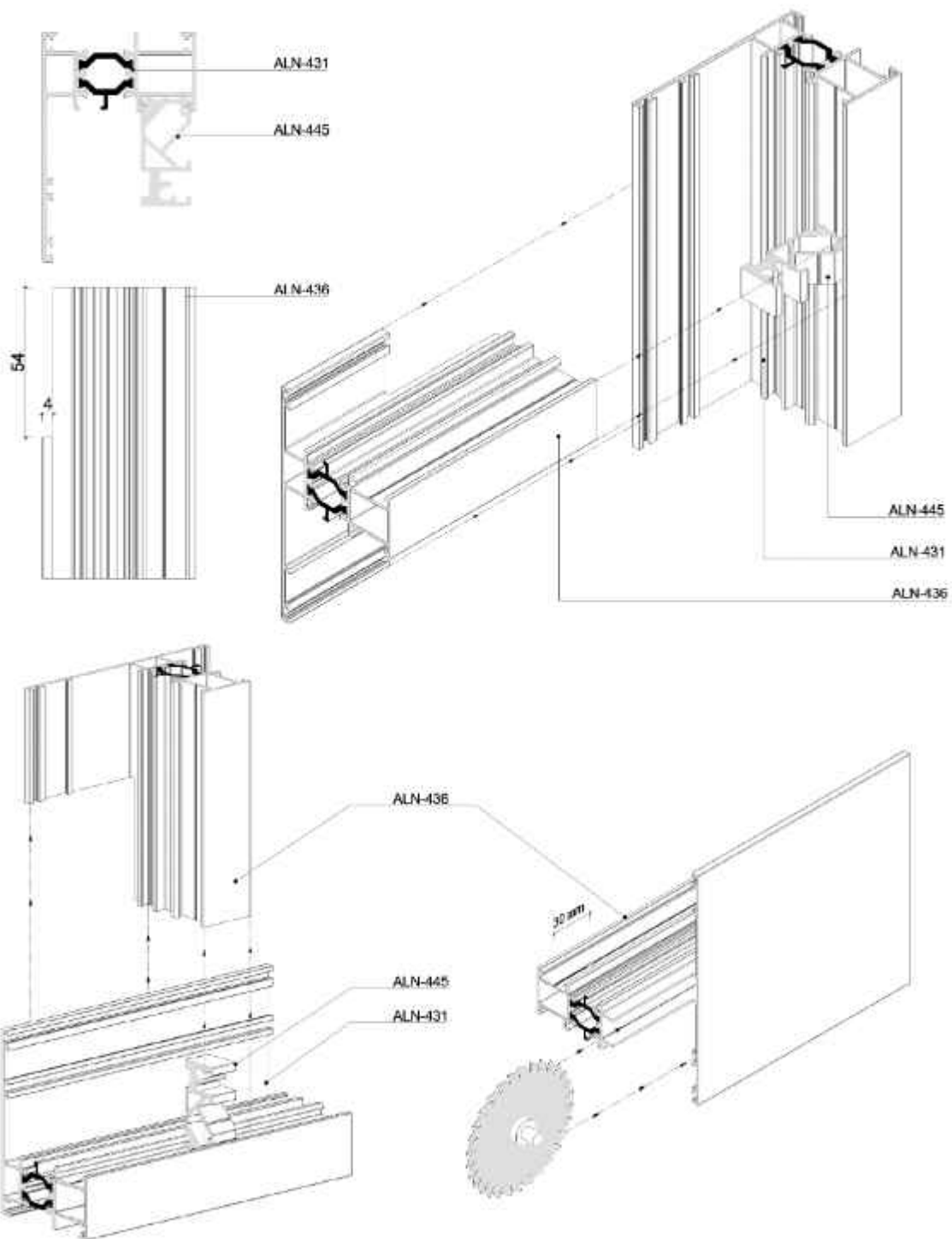
# Hidden vent System 55 Series Assembly Drawing



# Hidden vent System 55 Series Assembly Drawing

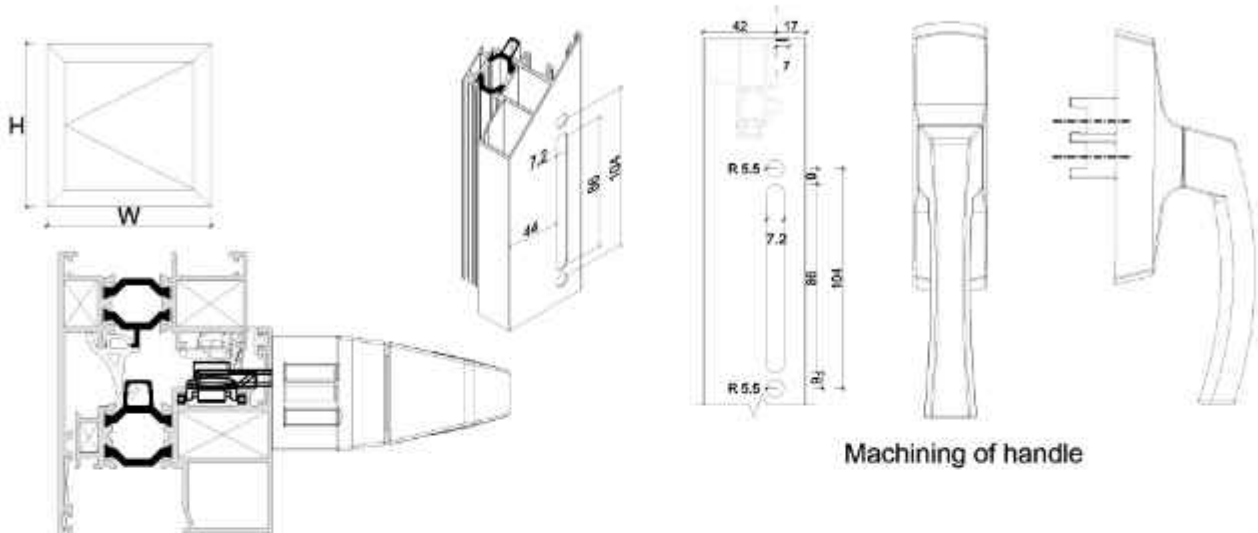


## Hidden vent System 55 Series Assembly Drawing



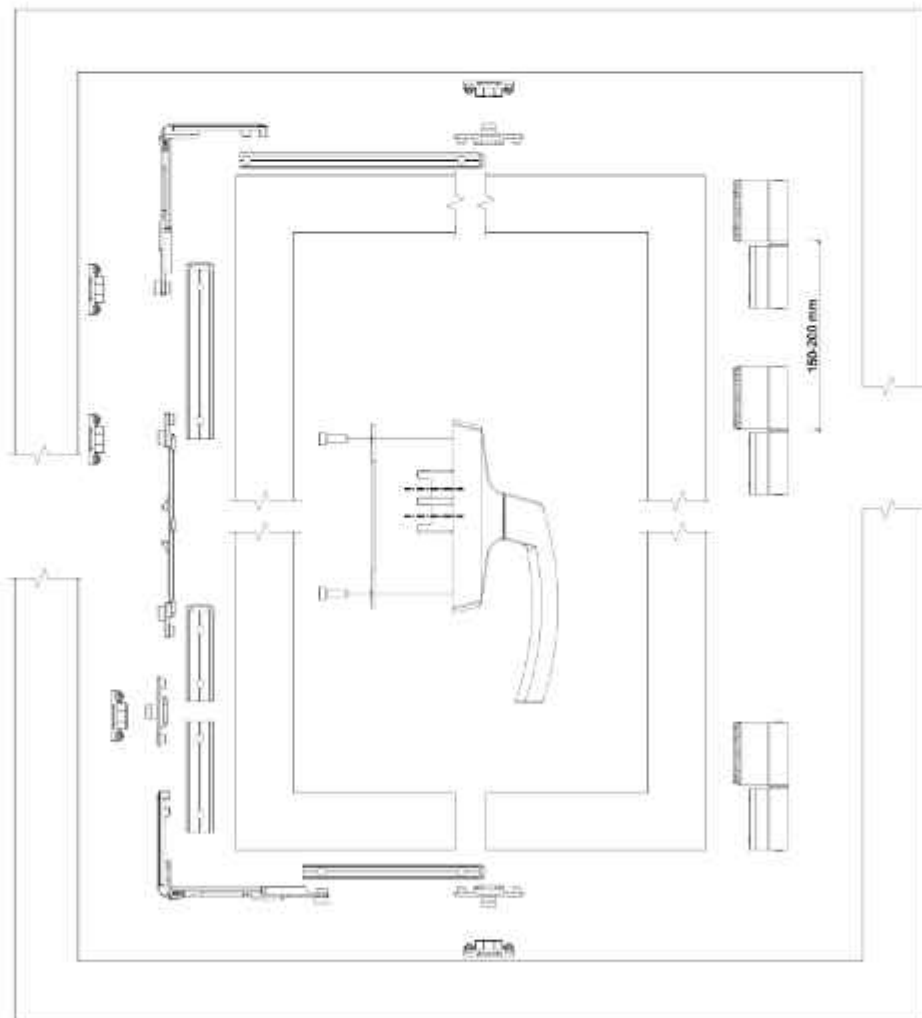
## Hidden vent System 55 Series

### Hardware Installation



Machining of handle

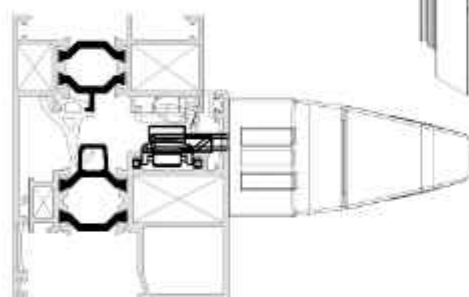
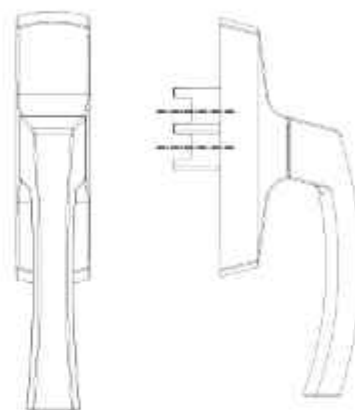
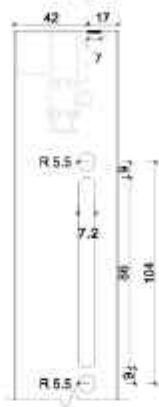
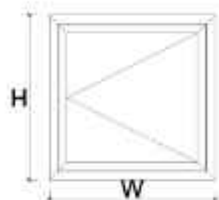
$1200 \leq H$   
 $1200 \leq W$



Turn hardware installation

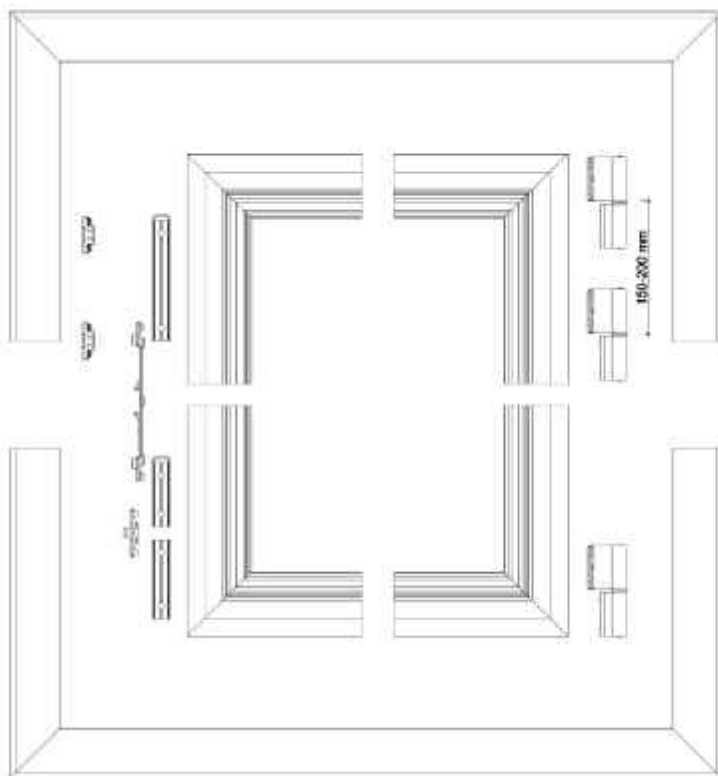
## Hidden vent System 55 Series

### Hardware Installation

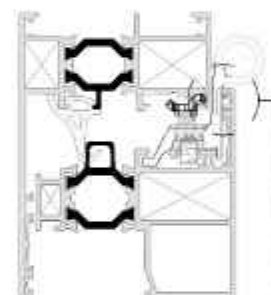


$$1200 \geq H$$

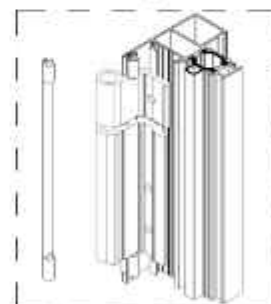
$$1200 \geq W$$



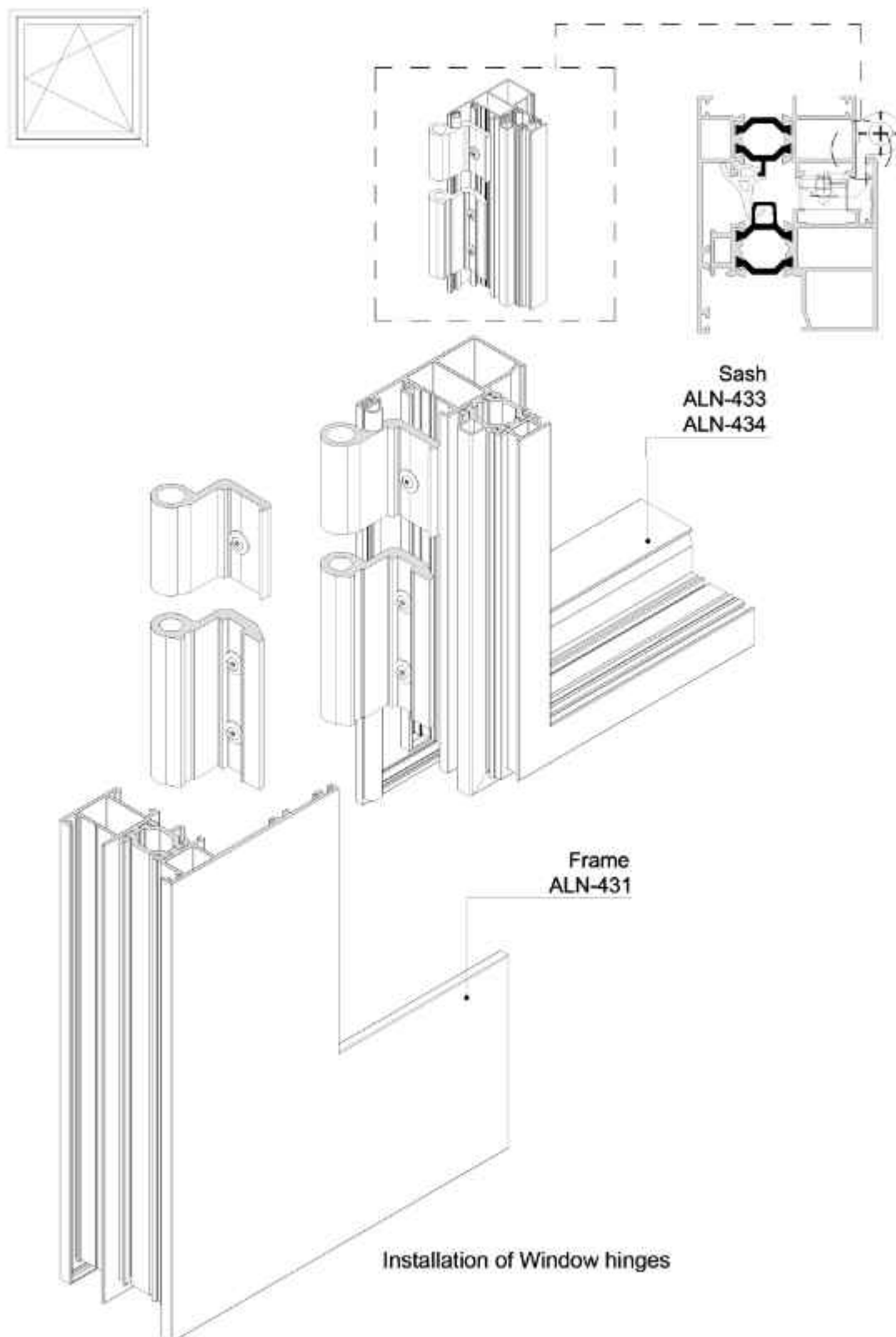
Installation of turn hardware



Window hinges Installation



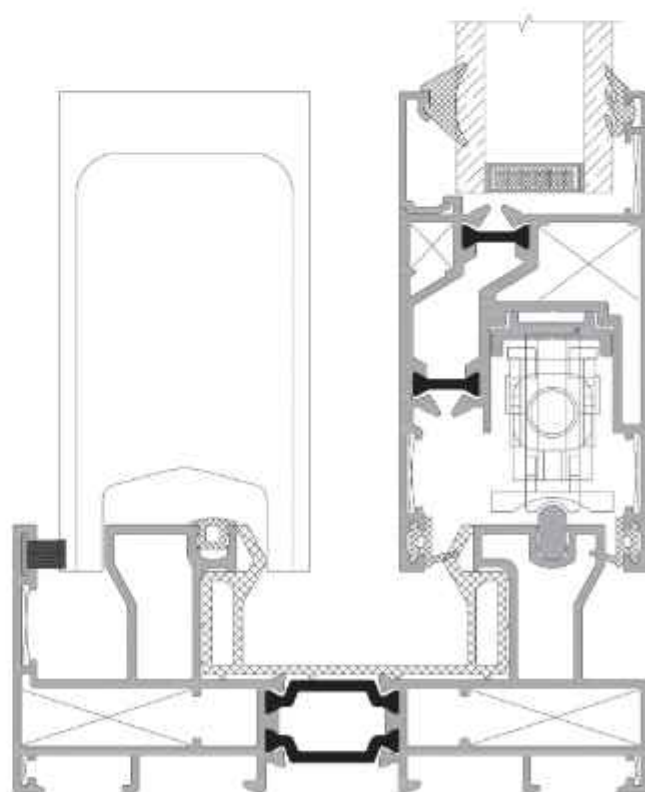
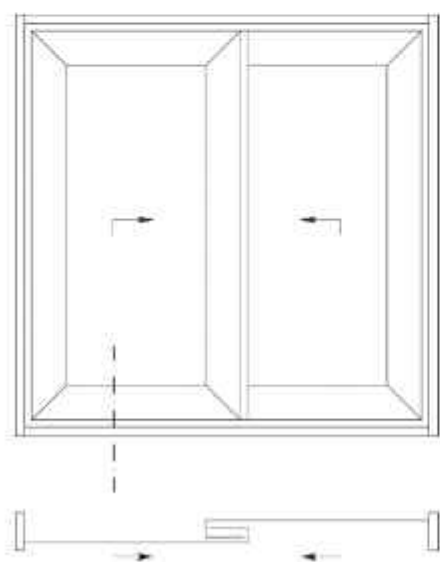
## Hidden vent System 55 Series Hardware Installation



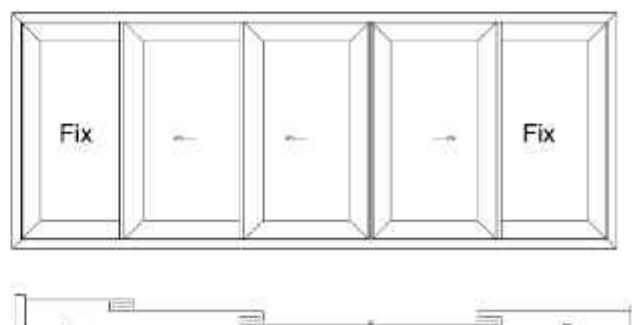
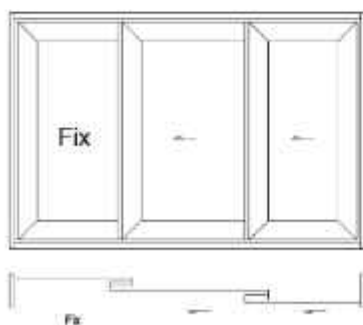
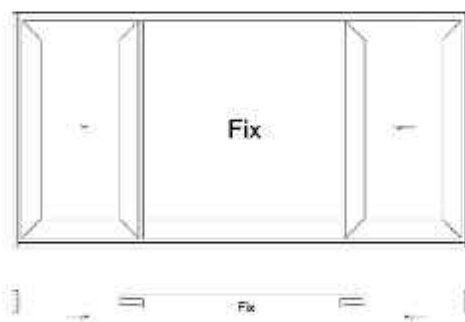
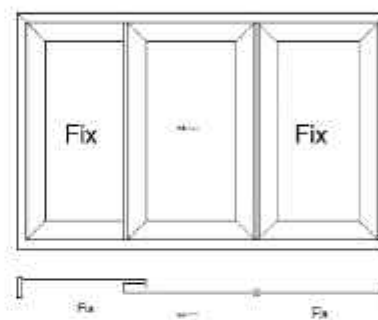
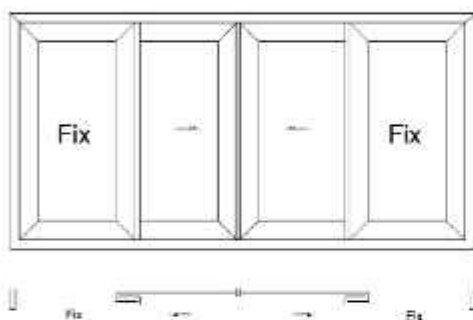
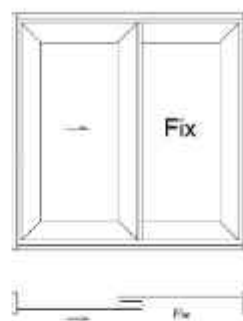


### Lift & Slide System 115 Series

|                           |                              |
|---------------------------|------------------------------|
| Profile width:            | 115 mm                       |
| Vent width:               | 45 mm                        |
| Wall thickness:           | 1.5 mm                       |
| Rubber description:       | EPDM DIN 7863                |
| Glass thickness:          | 24 - 34 mm                   |
| Aluminum alloy extrusion: | EN AW 6063 T5                |
| Isulation bar :           | Polyamide Width 24 mm        |
| Thermal permability :     | Uf = 2.58 w/m <sup>2</sup> k |
| Safety drainage system    |                              |
| Various typologies        |                              |

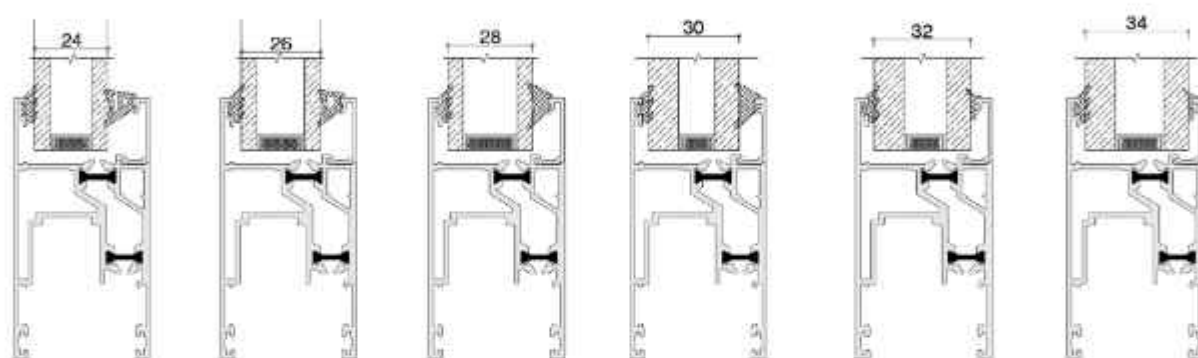


## Lift & Slide System 115 Series Typologies



## Lift & Slide System 115 Series

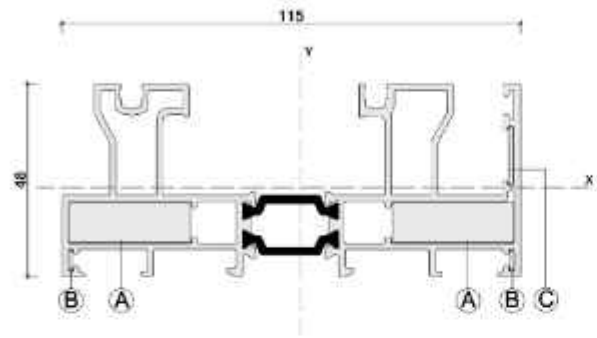
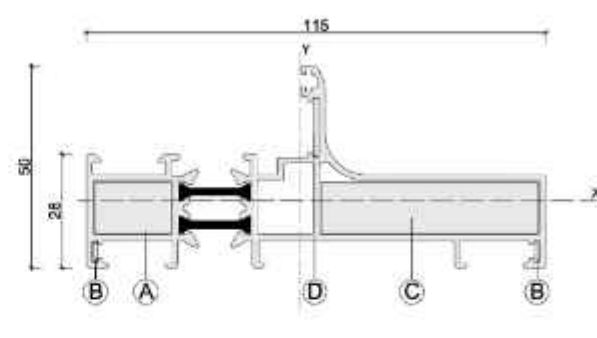
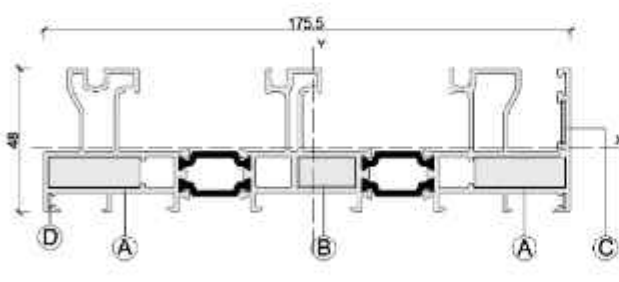
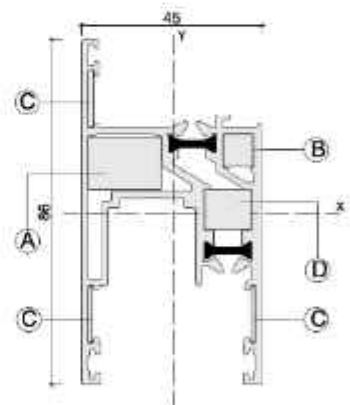
### Glazing Table



| Glazing Thickness | Gasket Inside                                                                                 | Gasket Outside                                                                              | Glazing Bead                                                                                    |
|-------------------|-----------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|
| 24 mm             | <br>EP 021 | <br>MO68 | <br>ALN-460 |
| 26 mm             | <br>EP-019 | <br>MO68 | <br>ALN-460 |
| 28 mm             | <br>EP-016 | <br>MO68 | <br>ALN-460 |
| 30 mm             | <br>EP-016 | <br>MO68 | <br>ALN-461 |
| 32 mm             | <br>EP-015 | <br>MO68 | <br>ALN-460 |
| 34 mm             | <br>EP-015 | <br>MO68 | <br>ALN-461 |

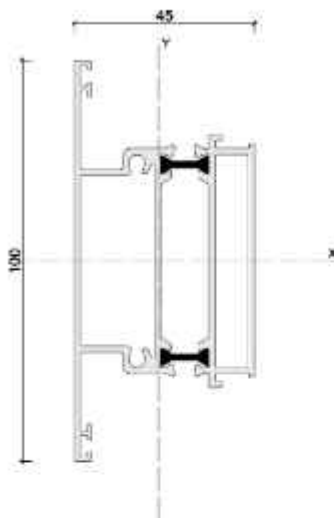
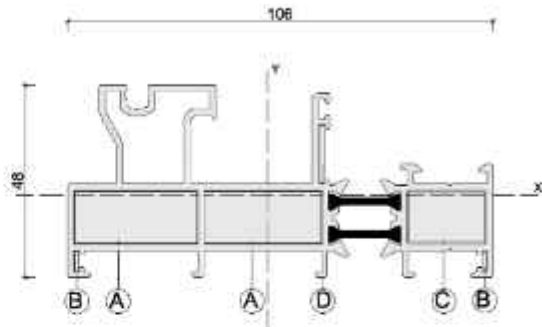
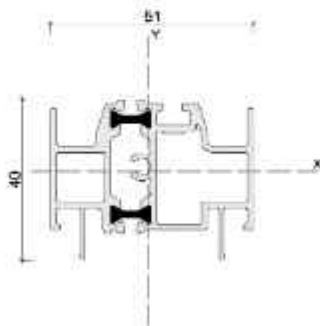
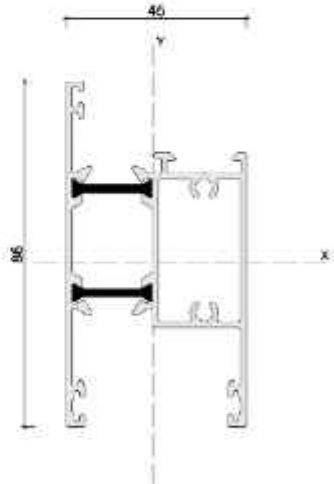
## Lift & Slide System 115 Series

### Profile & Accessories Information

|                                                                                     |                                                                                                       |                                                                                      |                                                                                                                  |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------|
|    |                                                                                                       |    |                                                                                                                  |
| $I_x$ : 17.40 cm <sup>4</sup>                                                       | $I_y$ : 114.00 cm <sup>4</sup>                                                                        | $I_x$ : 7.20 cm <sup>4</sup>                                                         | $I_y$ : 71.40 cm <sup>4</sup>                                                                                    |
| Frame : ALN-500                                                                     | A: PCP-10 / 30 mm   | Frame : ALN-502                                                                      | A: PCP-13 / 19 mm            |
| Weight: 2316 gr/m                                                                   | B: MO19(399012)    | Weight: 1780 gr/m                                                                    | B: MO19(399012)             |
|                                                                                     | C: MM77            |                                                                                      | C: PCP-13 / 54 mm           |
|                                                                                     |                                                                                                       |                                                                                      | D: MM77                     |
|  |                                                                                                       |  |                                                                                                                  |
| $I_x$ : 24.58 cm <sup>4</sup>                                                       | $I_y$ : 363.43 cm <sup>4</sup>                                                                        | $I_x$ : 17.20 cm <sup>4</sup>                                                        | $I_y$ : 26.00 cm <sup>4</sup>                                                                                    |
| Triple rail Frame: ALN-501                                                          | A: PCP-10 / 30 mm  | Sash: ALN-503                                                                        | A: PCP-13 / 18 mm           |
| Weight: 3456 gr/m                                                                   | B: PCP-10 / 19 mm  | Weight: 1775 gr/m                                                                    | B: PCP- 6 / 7 mm-with Glue  |
|                                                                                     | C: MM77            |                                                                                      | C: MM77                     |
|                                                                                     | D: MO19(399012)    |                                                                                      | D: PCB 10/ 11 Allen         |

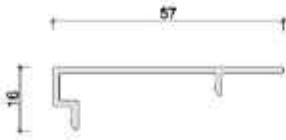
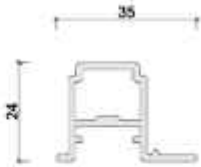
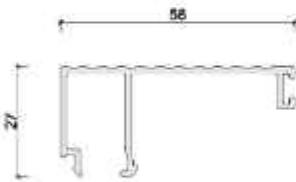
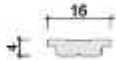
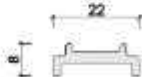
## Lift & Slide System 115 Series

### Profile & Accessories Information

|                                                                                     |                             |                                                                                      |                                                                                                         |  |
|-------------------------------------------------------------------------------------|-----------------------------|--------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------|--|
|    |                             |    |                                                                                                         |  |
| $I_x$ : 15.24 $\text{cm}^4$                                                         | $I_y$ : 35.46 $\text{cm}^4$ | $I_x$ : 12.55 $\text{cm}^4$                                                          | $I_y$ : 72.94 $\text{cm}^4$                                                                             |  |
| Transom : ALN-504                                                                   | —                           | Mono rail Frame: ALN-506                                                             | A: PCP-13 / 30 mm   |  |
| Weight: 1720 gr/m                                                                   | —                           |                                                                                      | B: MO19(399012)    |  |
|                                                                                     |                             |                                                                                      | C: PCP-13 / 19 mm  |  |
|                                                                                     |                             |                                                                                      | D: MM77            |  |
|  |                             |  |                                                                                                         |  |
| $I_x$ : 4.84 $\text{cm}^4$                                                          | $I_y$ : 10.40 $\text{cm}^4$ | $I_x$ : 15.24 $\text{cm}^4$                                                          | $I_y$ : 24.85 $\text{cm}^4$                                                                             |  |
| profile : ALN-505                                                                   | —                           | Transom: ALN-507                                                                     | —                                                                                                       |  |
| Weight: 1258 gr/m                                                                   | —                           | Weight: 1485 gr/m                                                                    | —                                                                                                       |  |

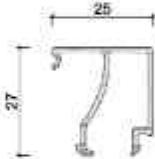
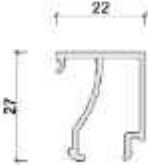
## Lift & Slide System 115 Series

### Profile & Accessories Information

|                                                                                     |                   |                                                                                       |                  |
|-------------------------------------------------------------------------------------|-------------------|---------------------------------------------------------------------------------------|------------------|
|    |                   |    |                  |
| Cover: ALN-510                                                                      | Weight: 332 gr/m  | Adjoining profile : ALN-513                                                           | Weight: 427 gr/m |
|  |                   |  |                  |
| Cover: ALN-511                                                                      | Weight: 535 gr/m  | Adjoining profile : ALN-514                                                           | Weight: 135 gr/m |
|  |                   |  |                  |
| Cover: ALN-512                                                                      | Weight : 484 gr/m | Adjoining profile : ALN-515                                                           | Weight: 203 gr/m |

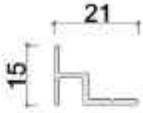
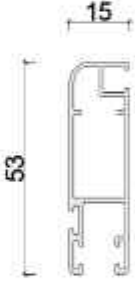
## Lift & Slide System 115 Series

### Profile & Accessories Information

|                                                                                     |                  |                                                                                       |                   |
|-------------------------------------------------------------------------------------|------------------|---------------------------------------------------------------------------------------|-------------------|
|    |                  |    |                   |
| Profile : ALN-489                                                                   | Weight: 221 gr/m | Glazing bead : ALN-461                                                                | Weight: 119 gr/m  |
|  |                  |  |                   |
| Glazing bead : ALN-474                                                              | Weight: 170 gr/m | Glazing bead : ALN-421                                                                | Weight: 313 gr/m  |
|  |                  |   |                   |
| Glazing bead : ALN-460                                                              | Weight: 127 gr/m | Glazing beads: ALN-323                                                                | Weight : 302 gr/m |

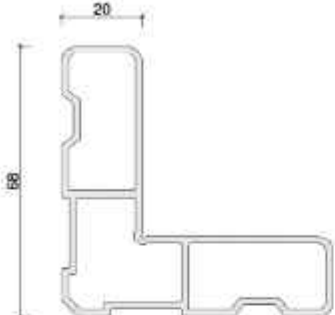
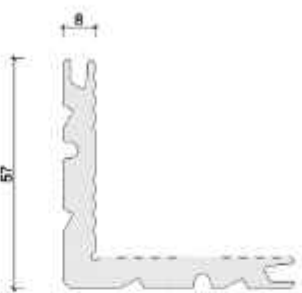
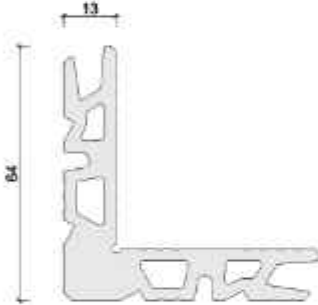
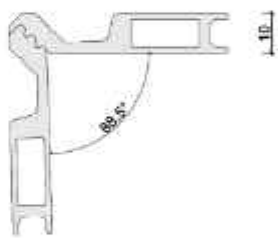
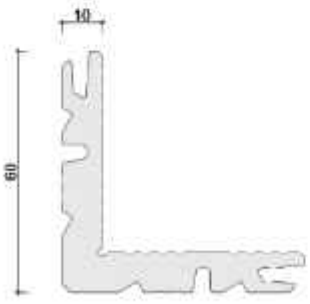
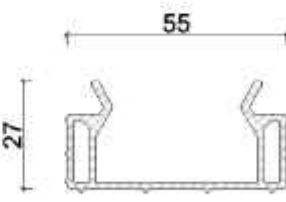
## Lift & Slide System 115 Series

### Profile & Accessories Information

|                                                                                     |                   |                                                                                       |                  |
|-------------------------------------------------------------------------------------|-------------------|---------------------------------------------------------------------------------------|------------------|
|    |                   |    |                  |
| Flange profile: ALN-222                                                             | Weight : 254 gr/m | Profile : ALN-228                                                                     | Weight: 135 gr/m |
|   |                   |   |                  |
| Flange profile: ALN-221                                                             | Weight : 302 gr/m | Fly screen : ALN-207                                                                  | Weight: 448 gr/m |
|  |                   |  |                  |
| Flange profile: ALN-219                                                             | Weight : 362 gr/m | Rail : ALN-462                                                                        | Weight: 119 gr/m |

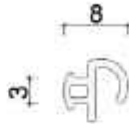
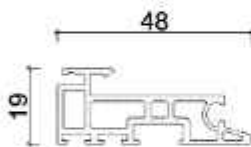
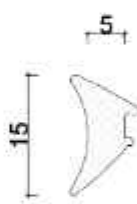
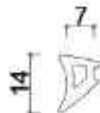
## Lift & Slide System 115 Series

### Profile & Accessories Information

|                                                                                     |                   |                                                                                      |                   |
|-------------------------------------------------------------------------------------|-------------------|--------------------------------------------------------------------------------------|-------------------|
|    |                   |    |                   |
| Corner Joint: PCP-20                                                                | Weight: 1377 gr/m | Corner Joint: PCP-8                                                                  | Weight: 1947 gr/m |
|   |                   |   |                   |
| Corner Joint: PCP13                                                                 | Weight: 2672 gr/m | Corner Joint: PCB10                                                                  | Weight: —         |
|  |                   |  |                   |
| Corner Joint: PCP-10                                                                | Weight: 2454 gr/m | Gutter: UT TS115 60027                                                               | Weight : —        |

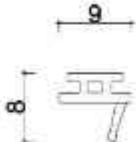
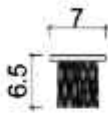
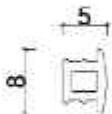
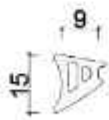
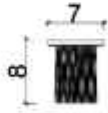
## Lift & Slide System 115 Series

### Profile & Accessories Information

|                                                                                     |                 |                                                                                       |         |         |        |          |         |
|-------------------------------------------------------------------------------------|-----------------|---------------------------------------------------------------------------------------|---------|---------|--------|----------|---------|
|    |                 |    |         |         |        |          |         |
| Cap:                                                                                | 60025           | Weight :                                                                              | —       | Gasket: | EP-018 | Weight : | 27 gr/m |
|  |                 |   |         |         |        |          |         |
| Gasket:                                                                             | MOC TS115 60028 | Weight :                                                                              | —       | Gasket: | EP-016 | Weight : | 77 gr/m |
|  |                 |  |         |         |        |          |         |
| Gasket:                                                                             | EP-019          | Weight :                                                                              | 61 gr/m | Gasket: | MO68   | Weight : | 48 gr/m |

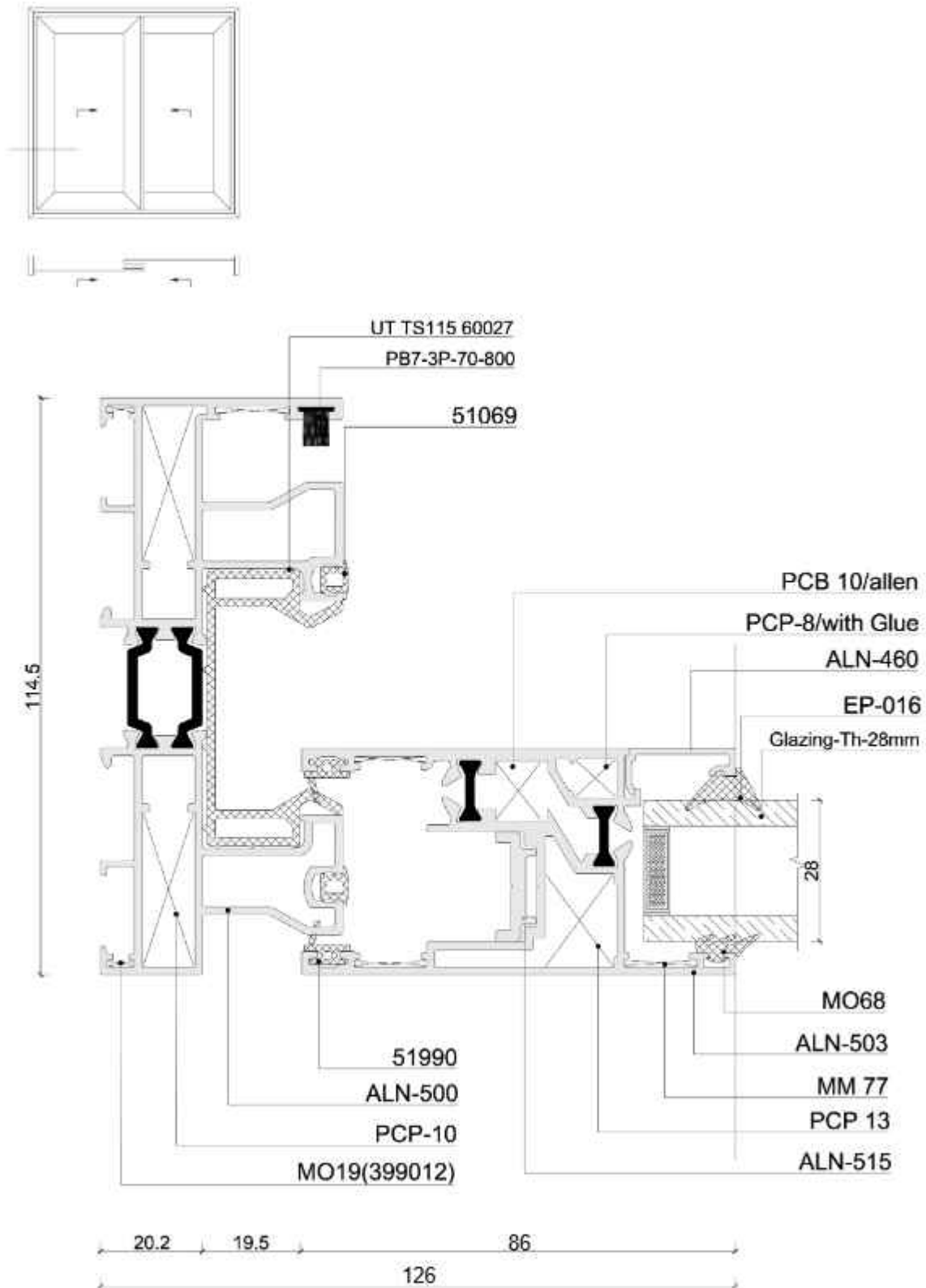
## Lift & Slide System 115 Series

### Profile & Accessories Information

|                                                                                     |                  |                                                                                       |           |
|-------------------------------------------------------------------------------------|------------------|---------------------------------------------------------------------------------------|-----------|
|    |                  |    |           |
| Gasket : 51990                                                                      | Weight: 34 gr/m  | PB7-3P-70-650                                                                         | Weight: — |
|  |                  |  |           |
| Gasket : 51069                                                                      | Weight: 27 gr/m  | PB7-3P-70-500                                                                         | Weight: — |
|  |                  |  |           |
| Gasket: EP-021                                                                      | Weight : 80 gr/m | PB7-3P-70-800                                                                         | Weight: — |

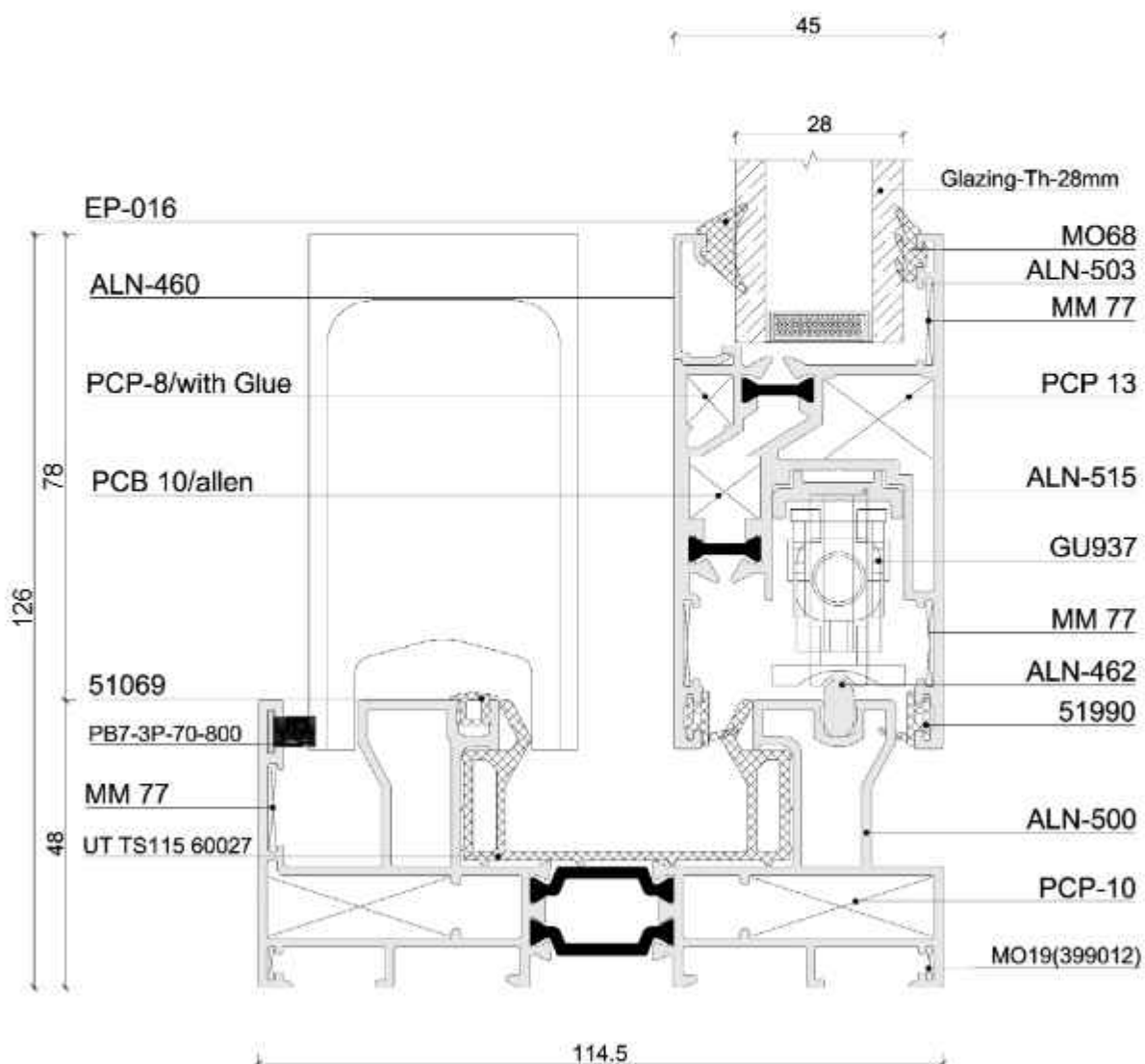
## Lift & Slide System 115 Series

### Fabrication Details

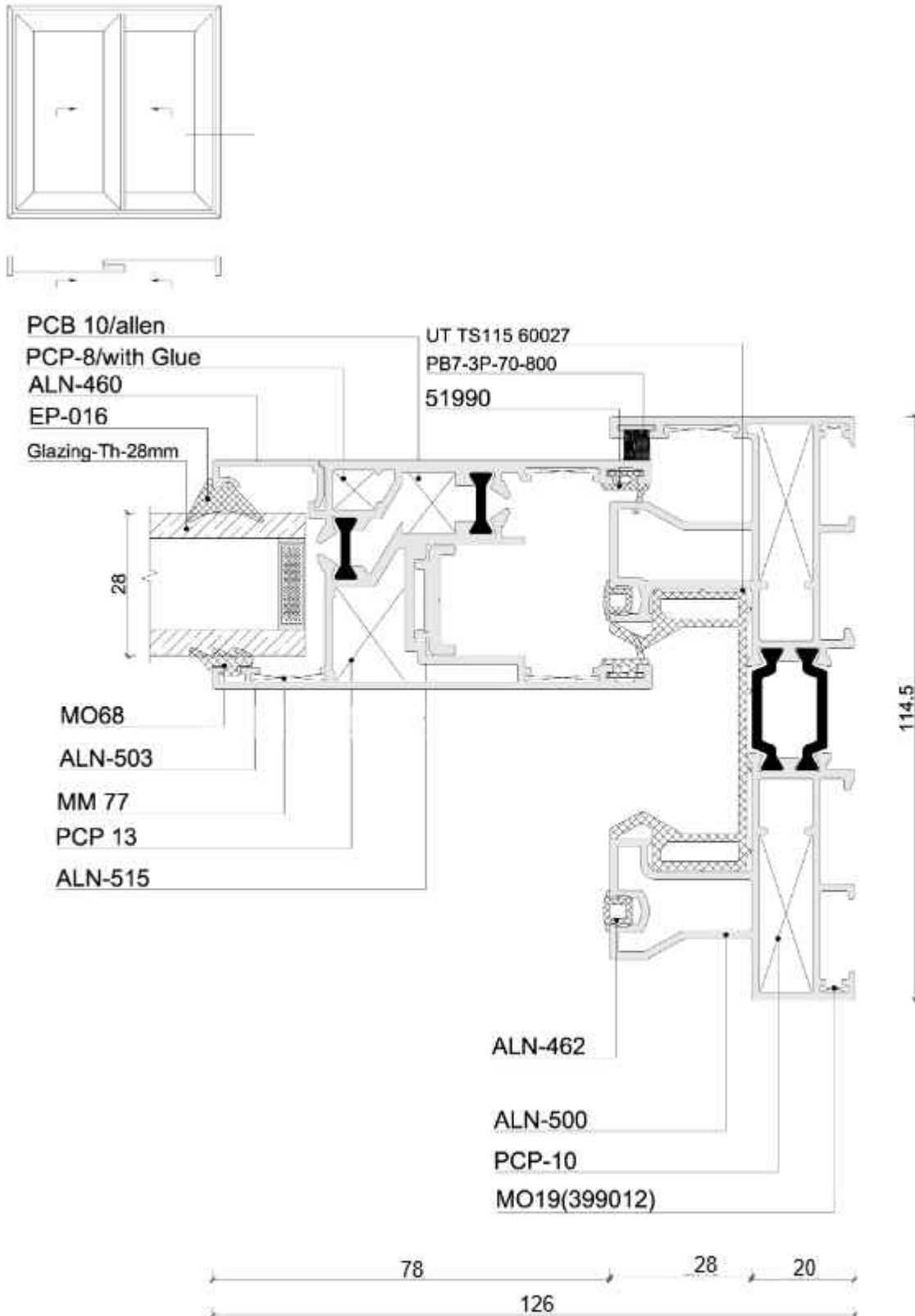


## Lift & Slide System 115 Series

### Fabrication Details

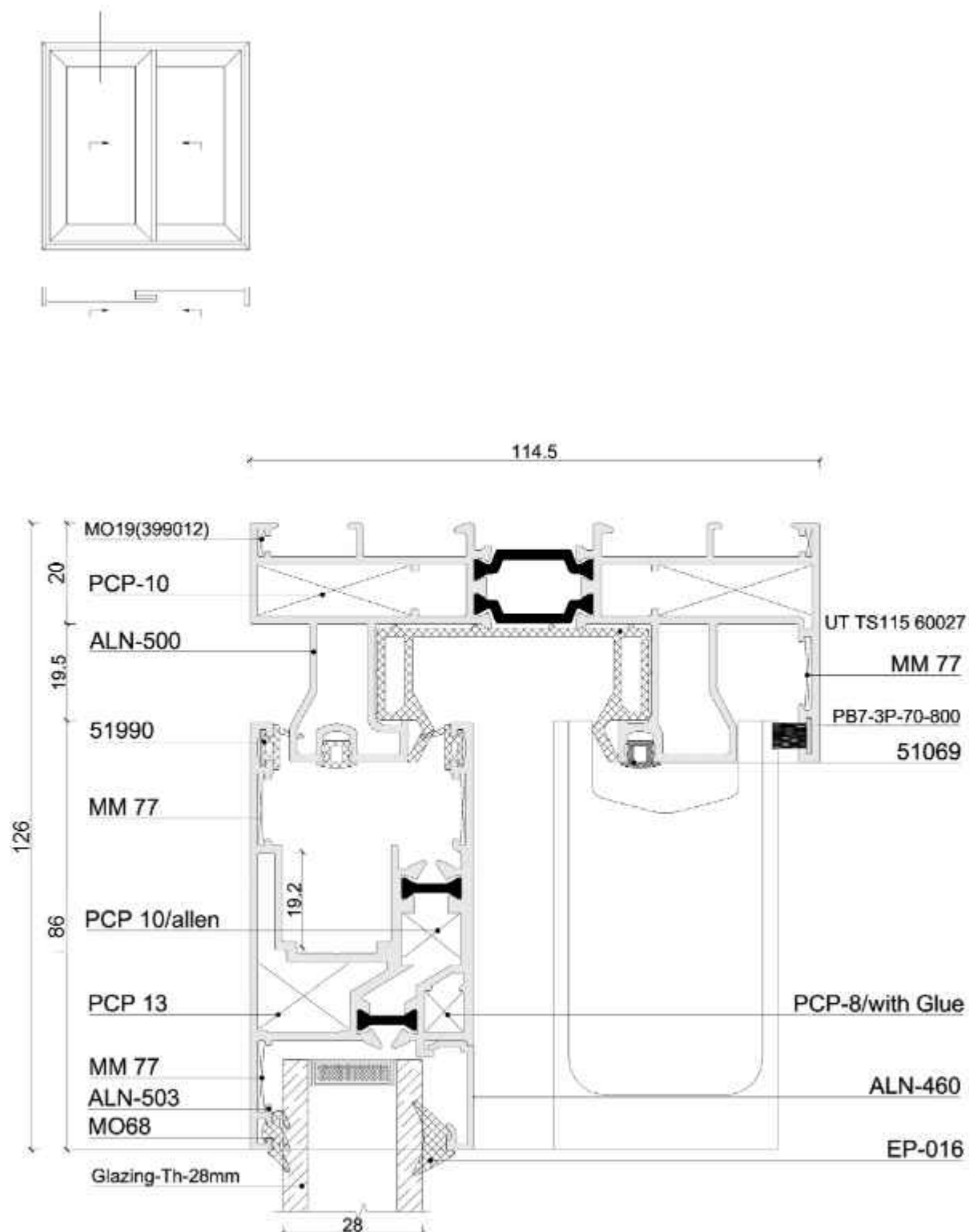


## Lift & Slide System 115 Series Fabrication Details

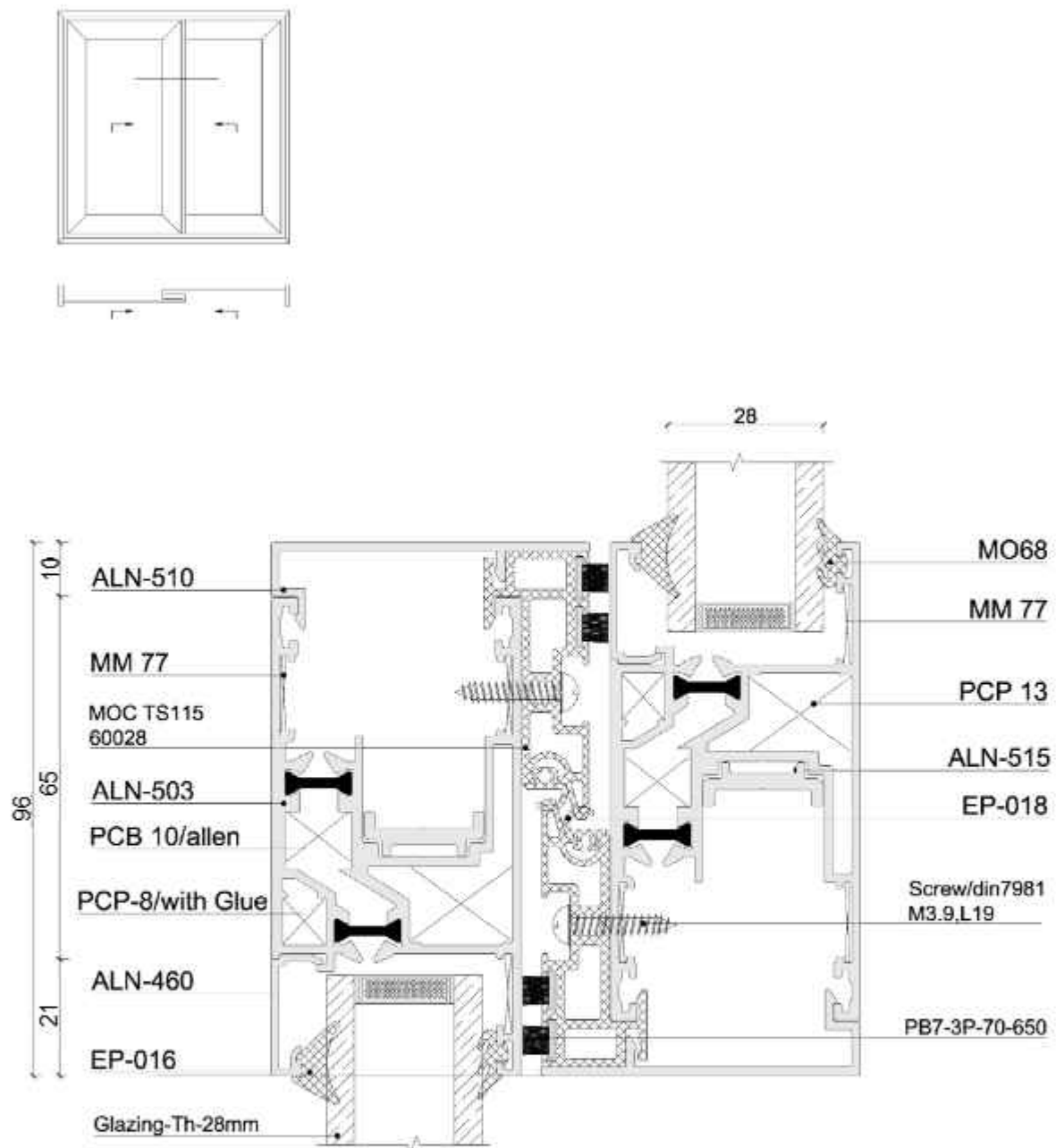


## Lift & Slide System 115 Series

### Fabrication Details

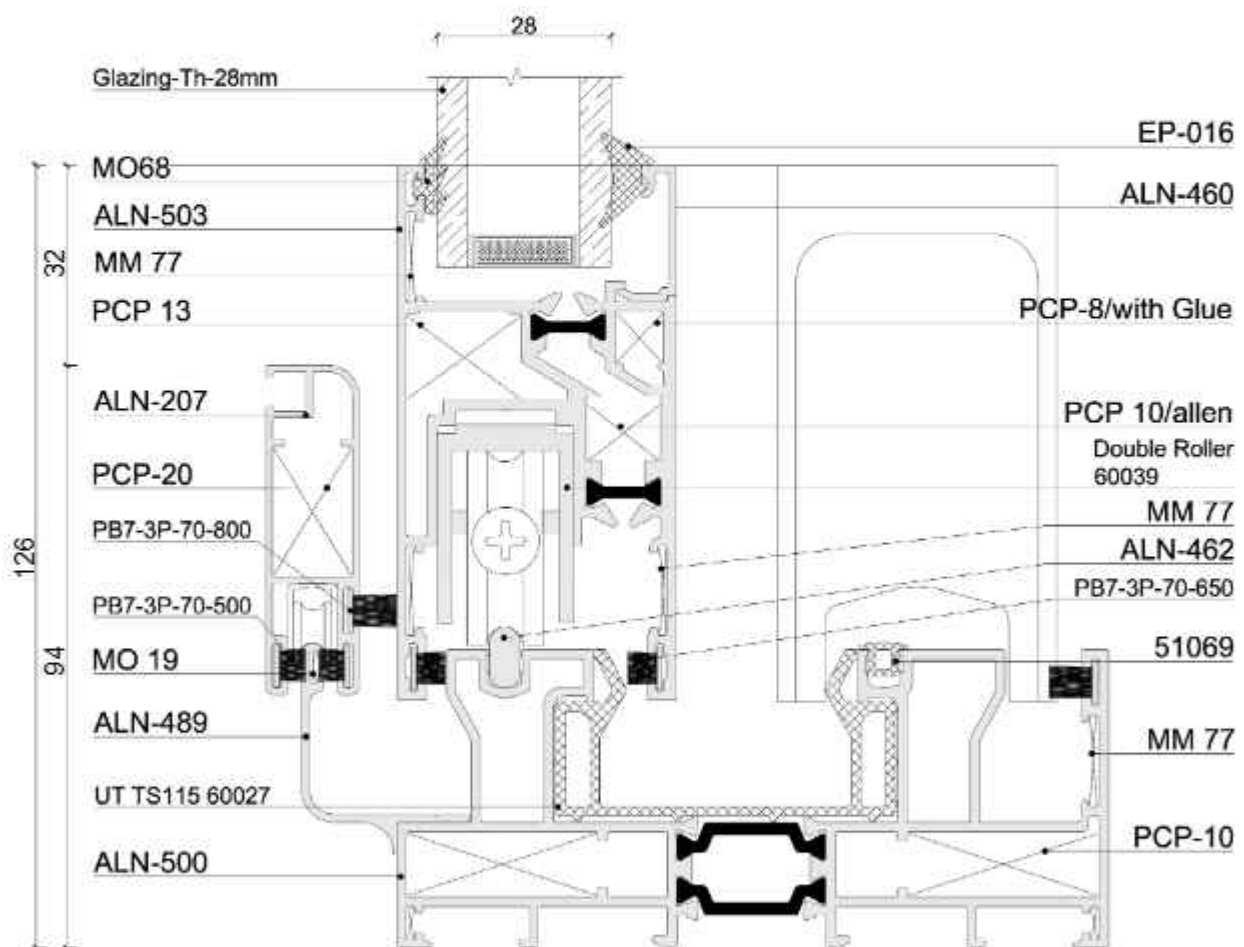


## Lift & Slide System 115 Series Fabrication Details

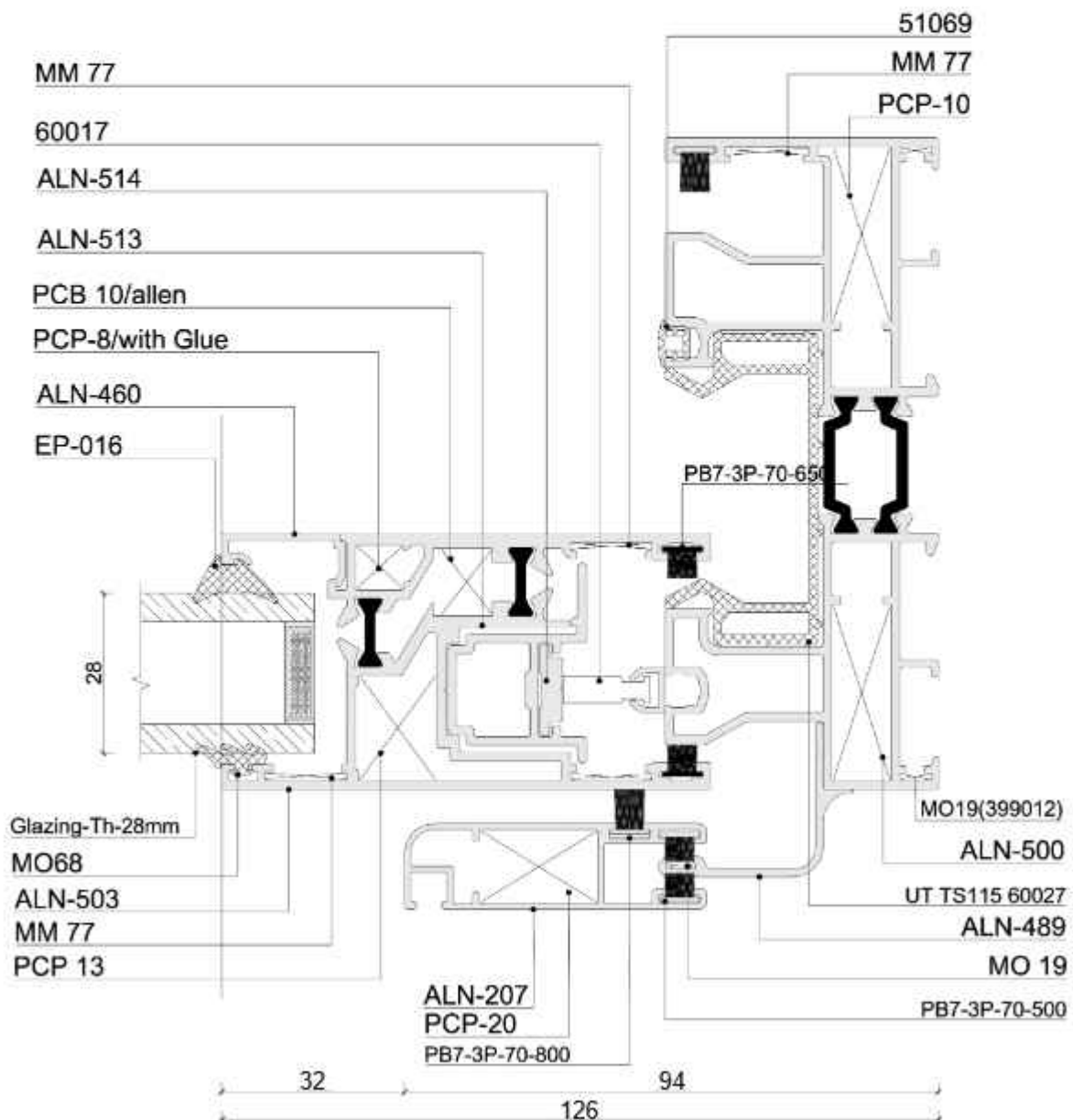
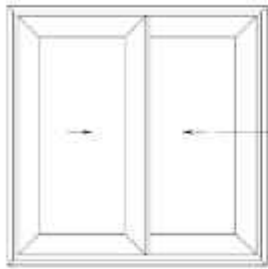


## Lift & Slide System 115 Series

### Fabrication Details

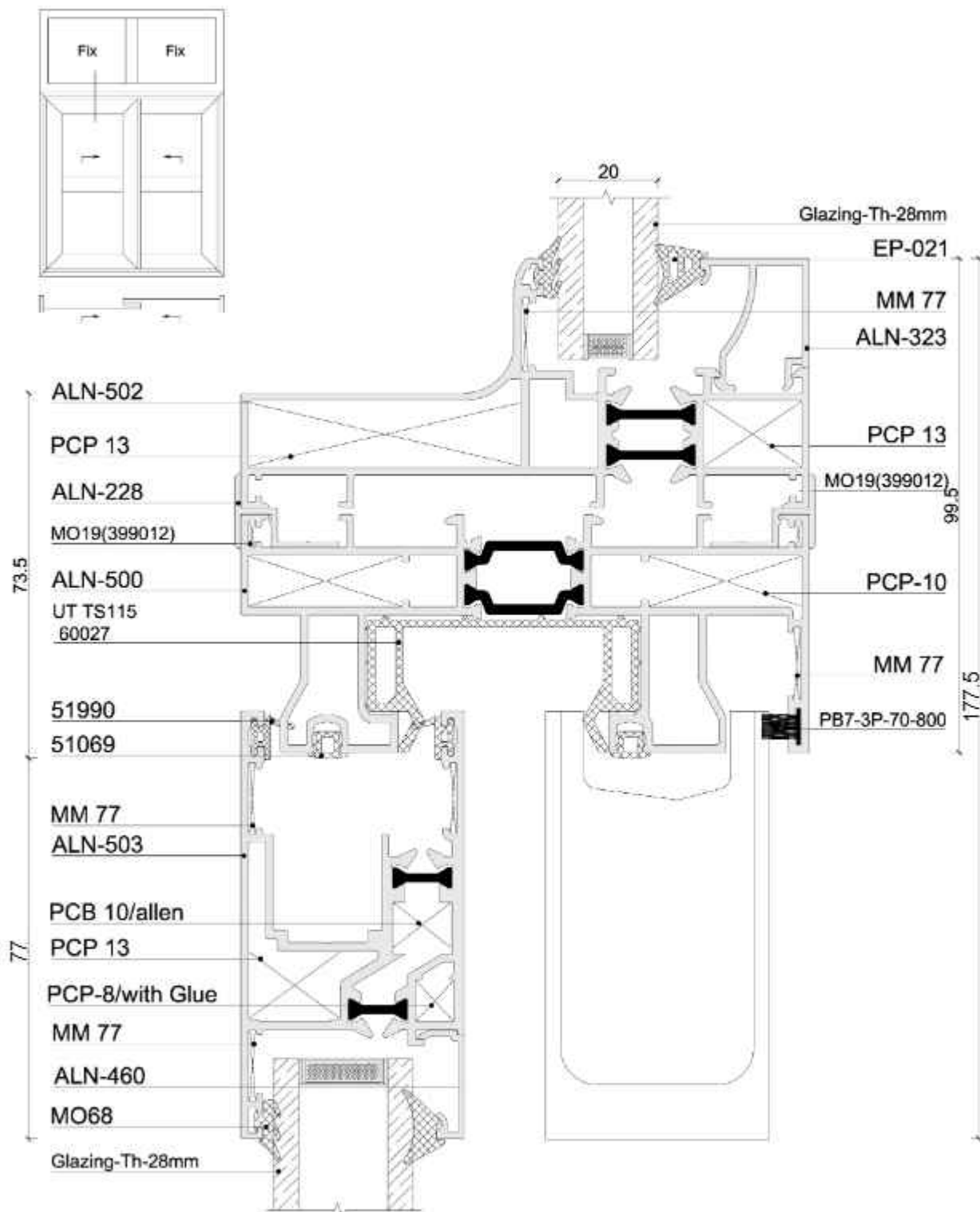


## Lift & Slide System 115 Series Fabrication Details

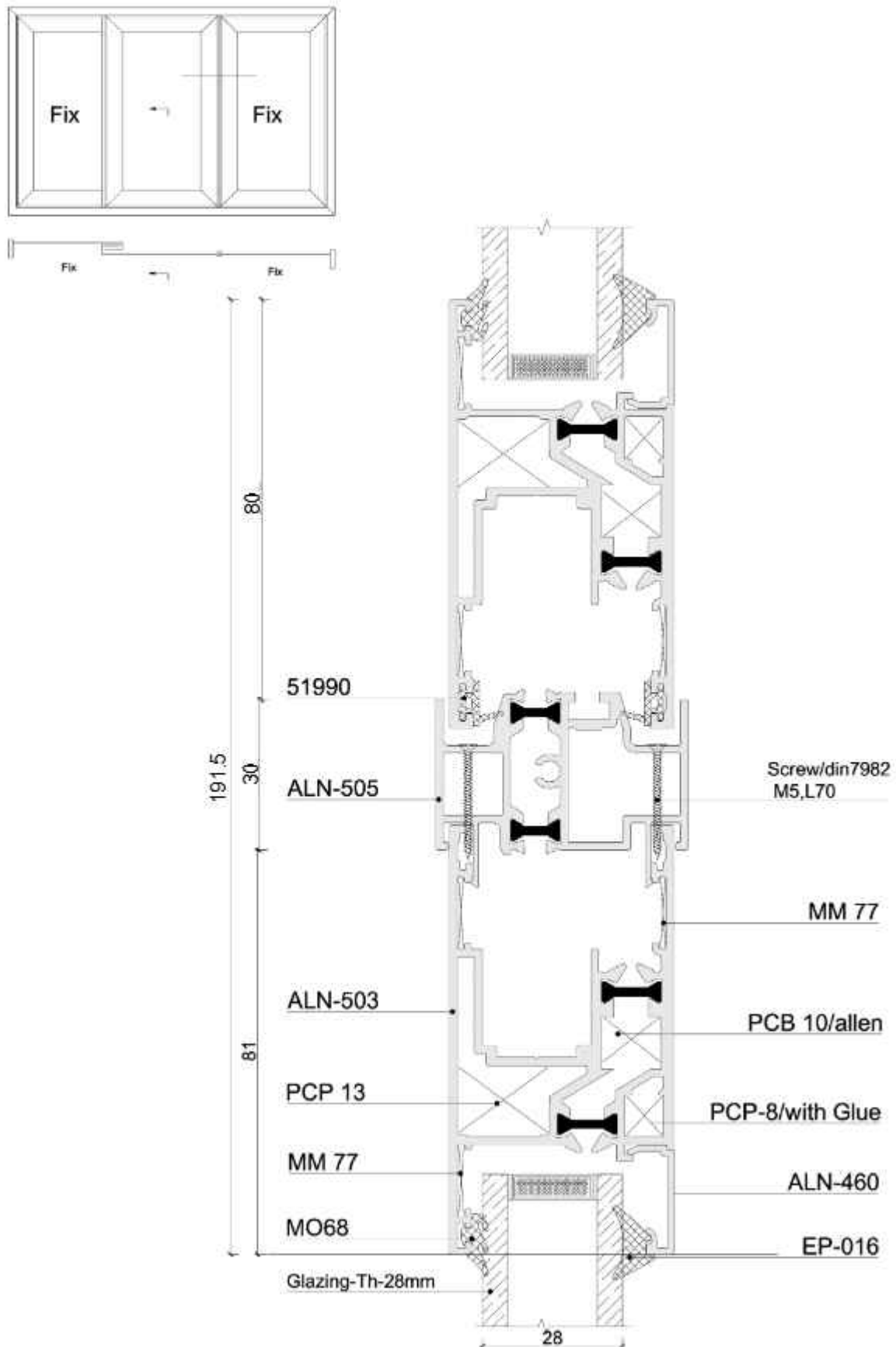


## Lift & Slide System 115 Series

### Fabrication Details

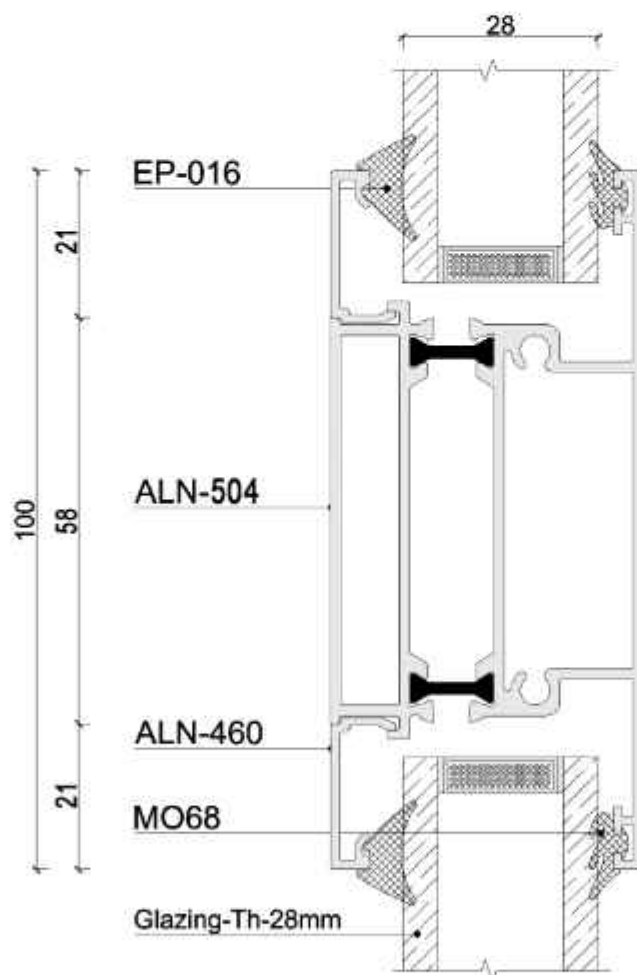


## Lift & Slide System 115 Series Fabrication Details

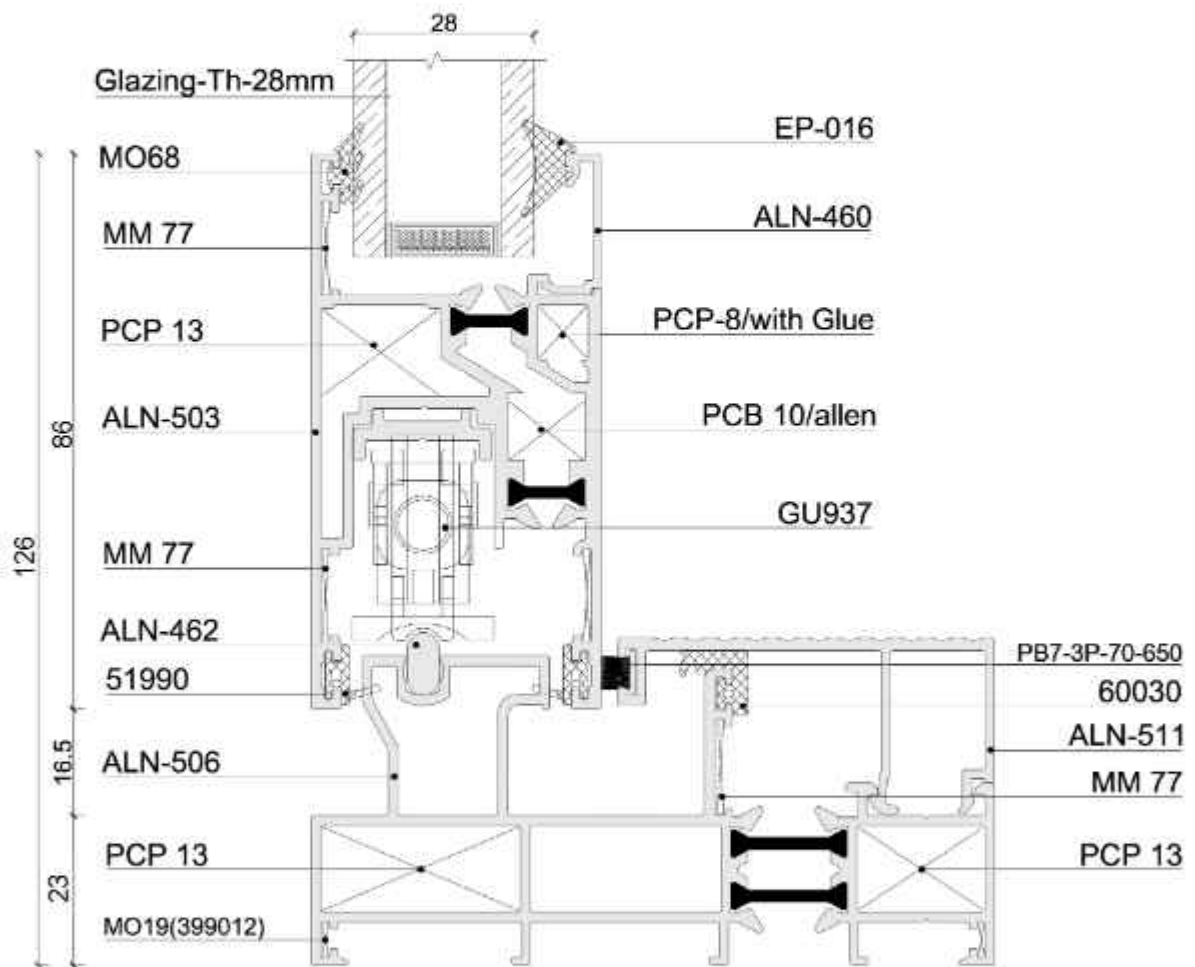
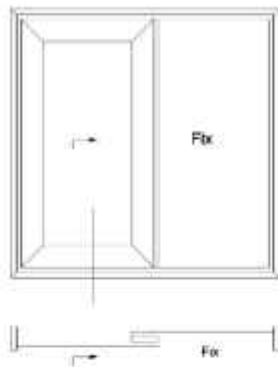


## Lift & Slide System 115 Series

### Fabrication Details

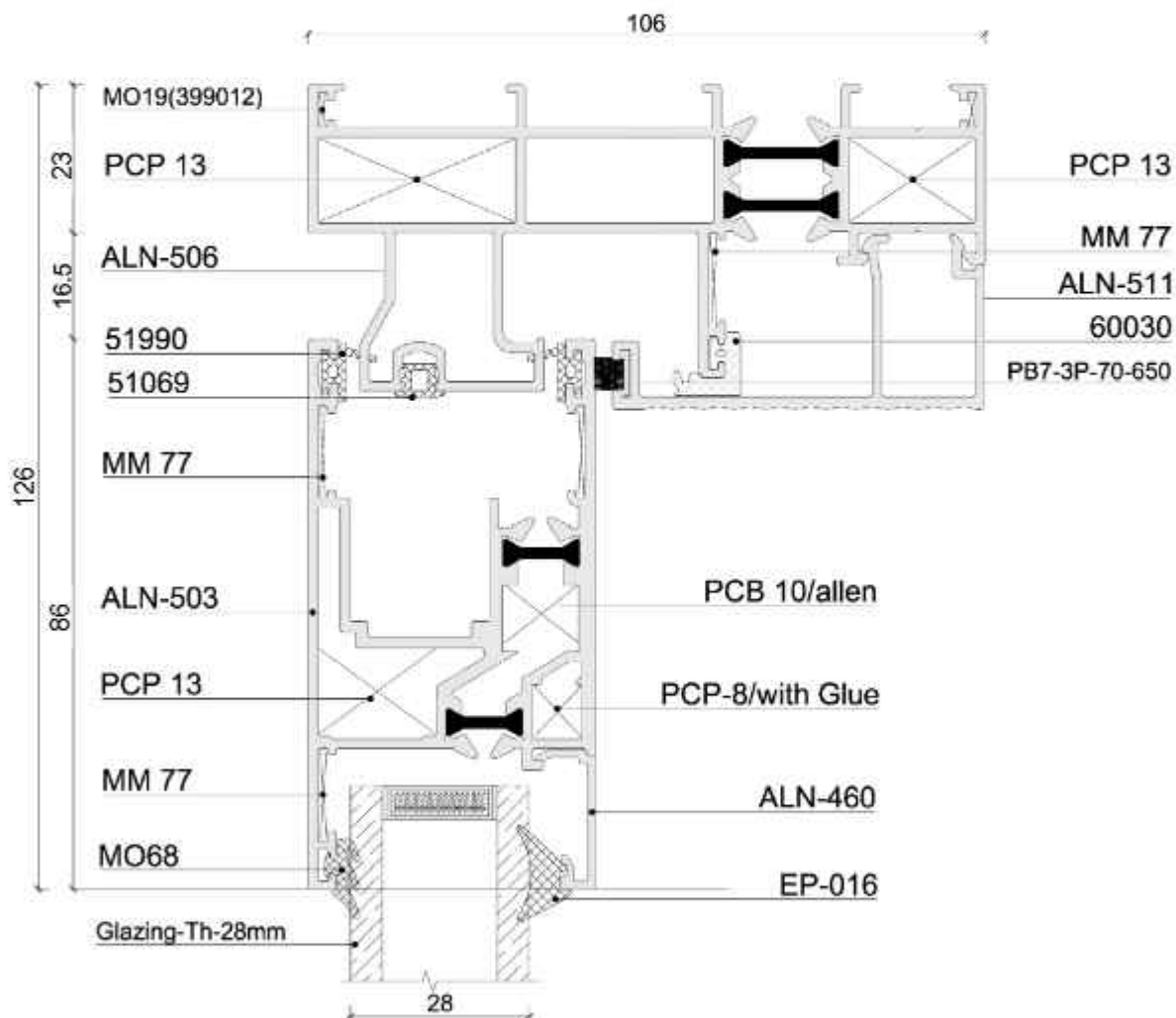
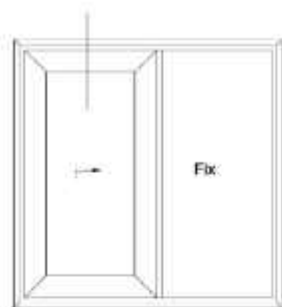


## Lift & Slide System 115 Series Fabrication Details

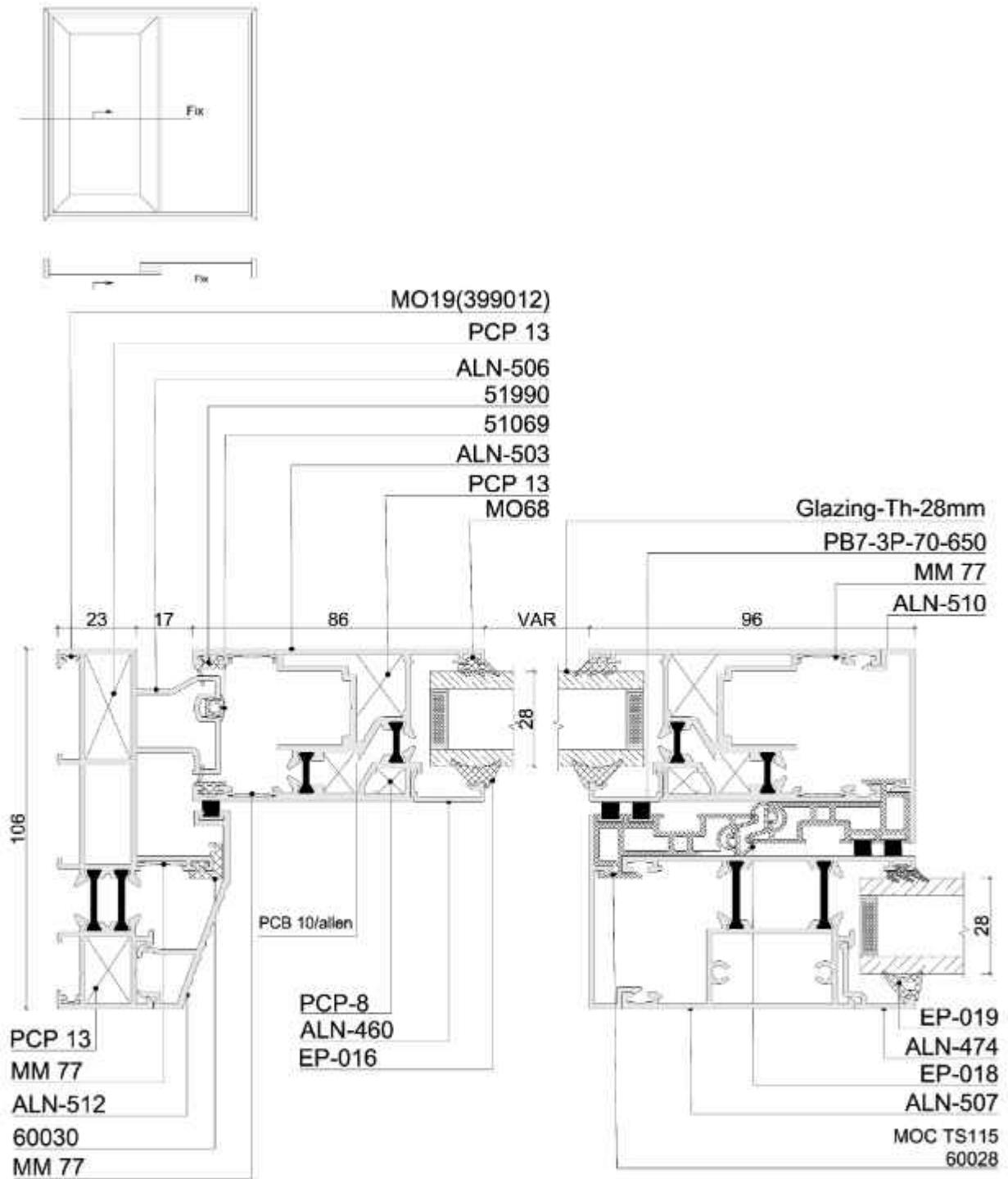


## Lift & Slide System 115 Series

### Fabrication Details

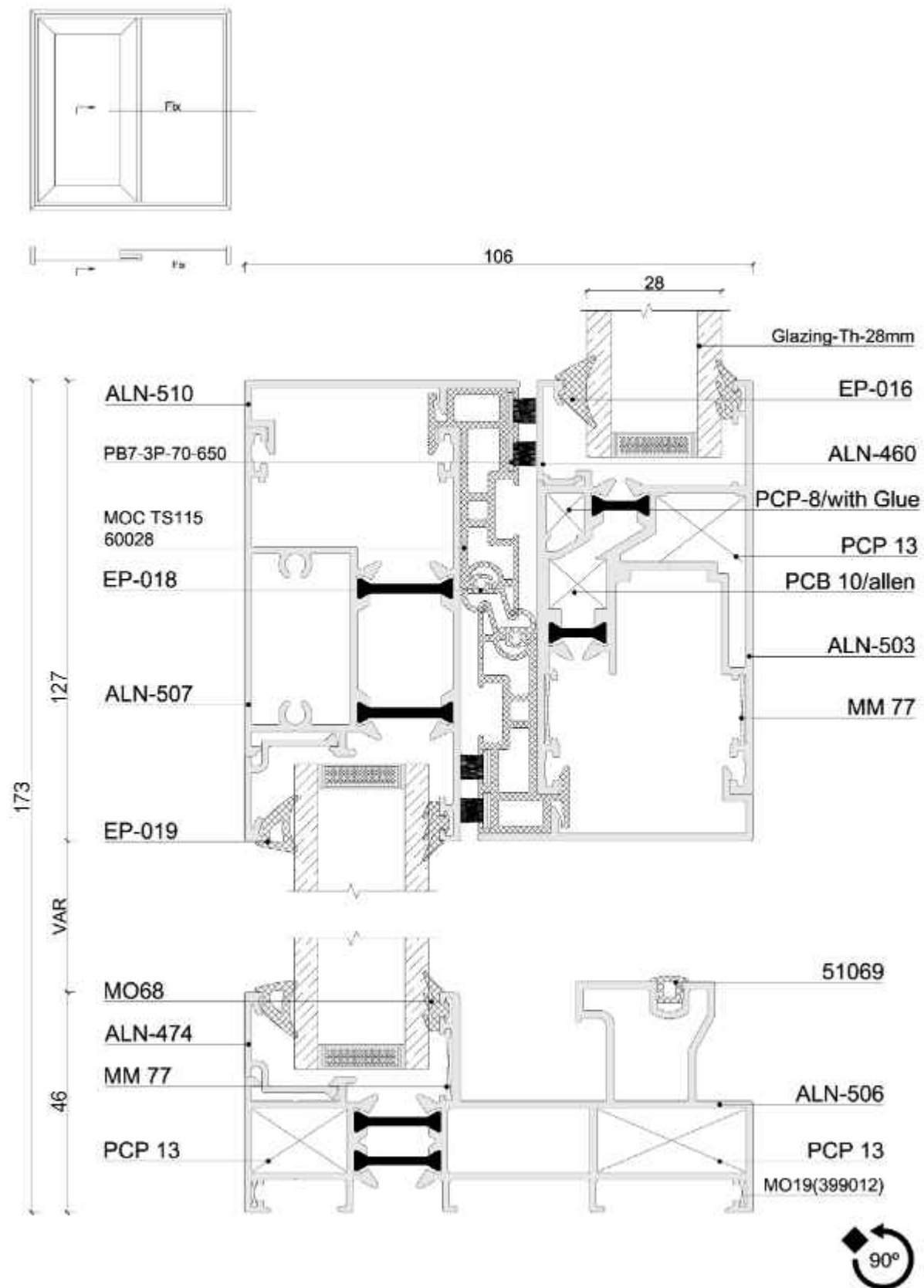


## Lift & Slide System 115 Series Fabrication Details

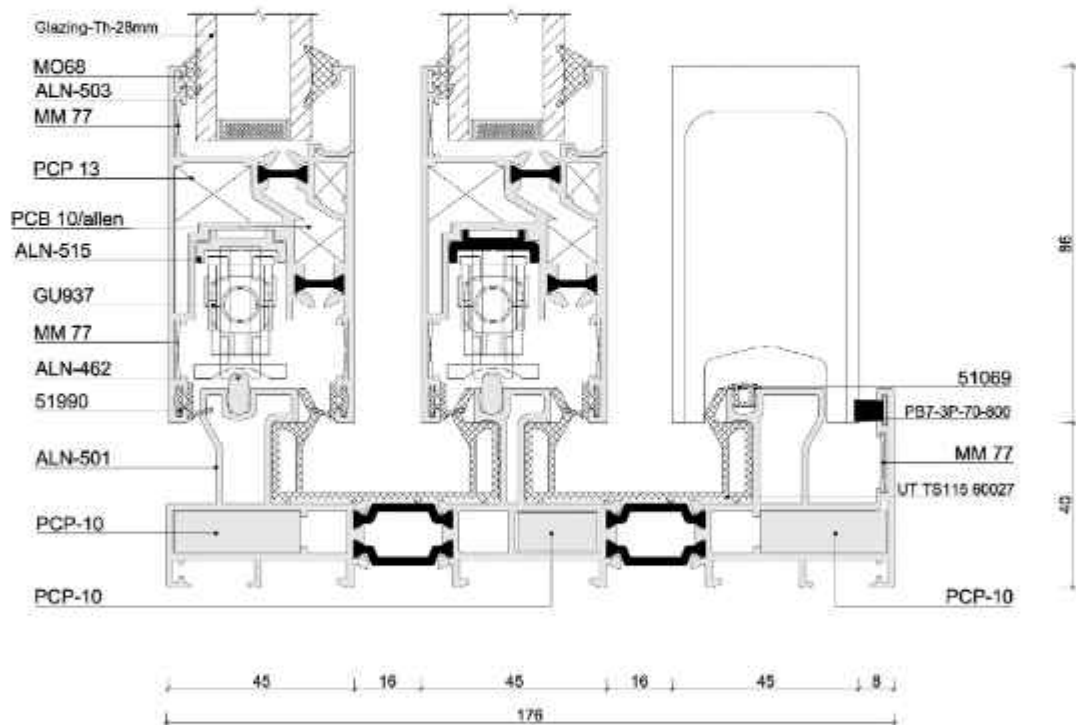
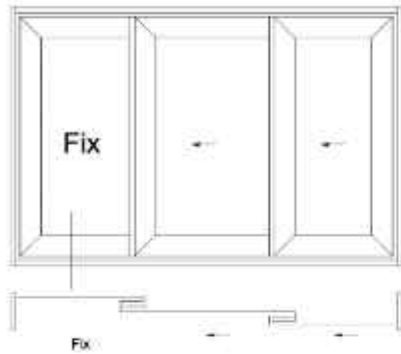


## Lift & Slide System 115 Series

### Fabrication Details

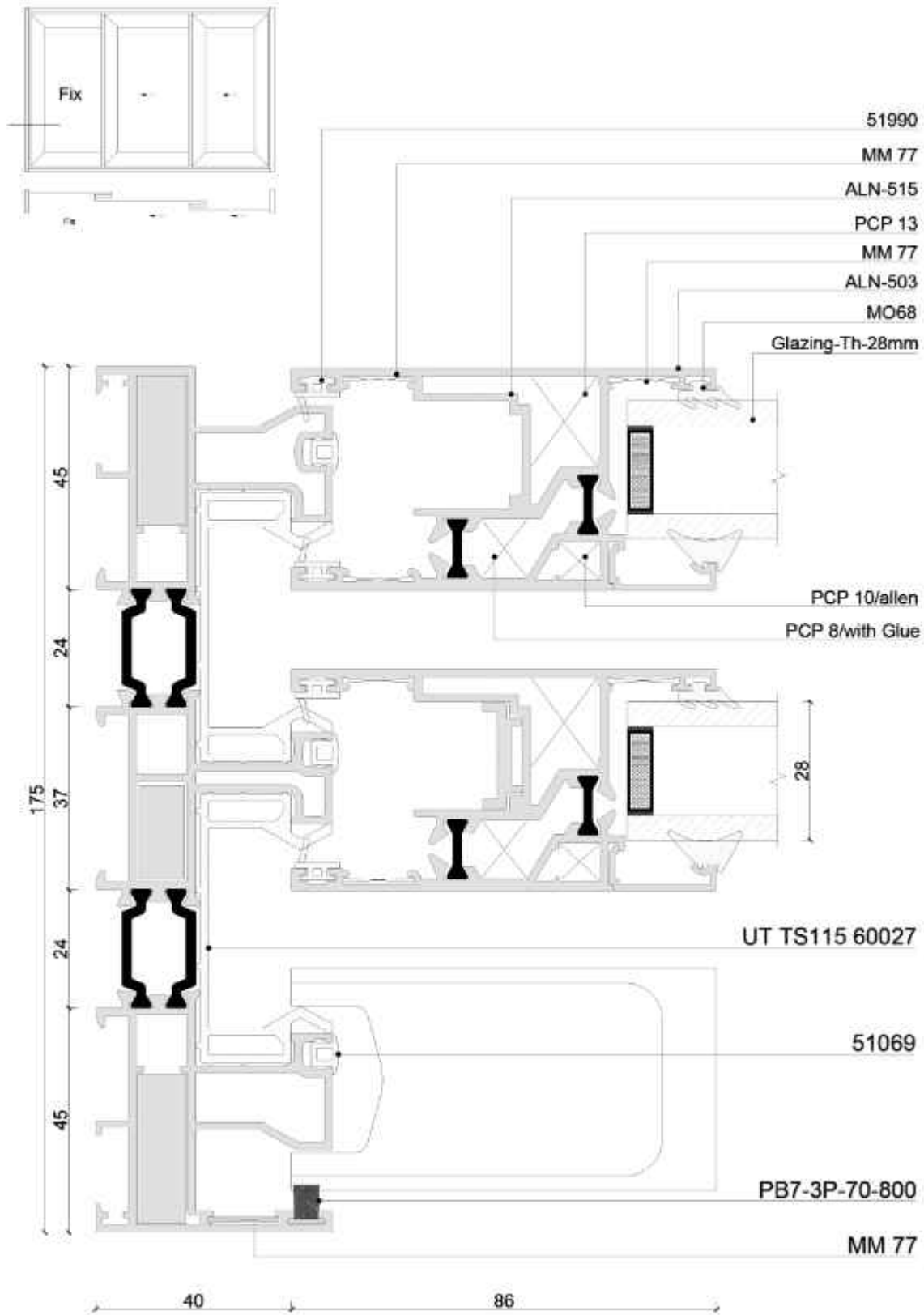


## Lift & Slide System 115 Series Fabrication Details

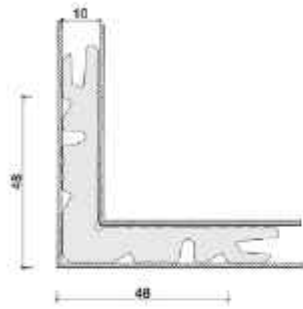


## Lift & Slide System 115 Series

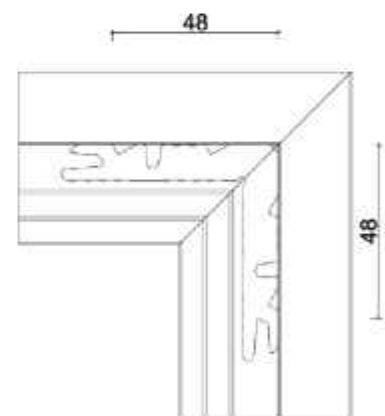
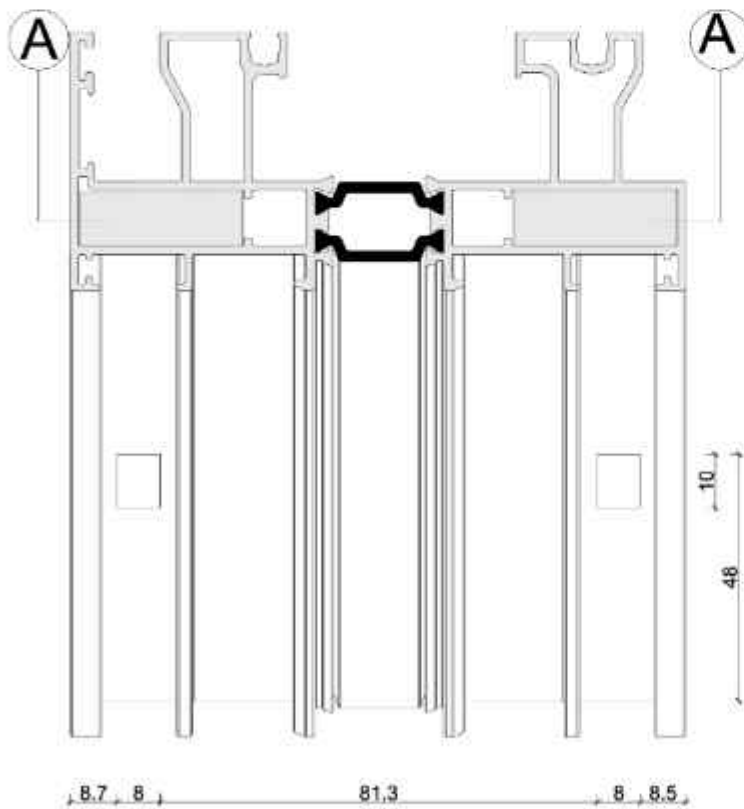
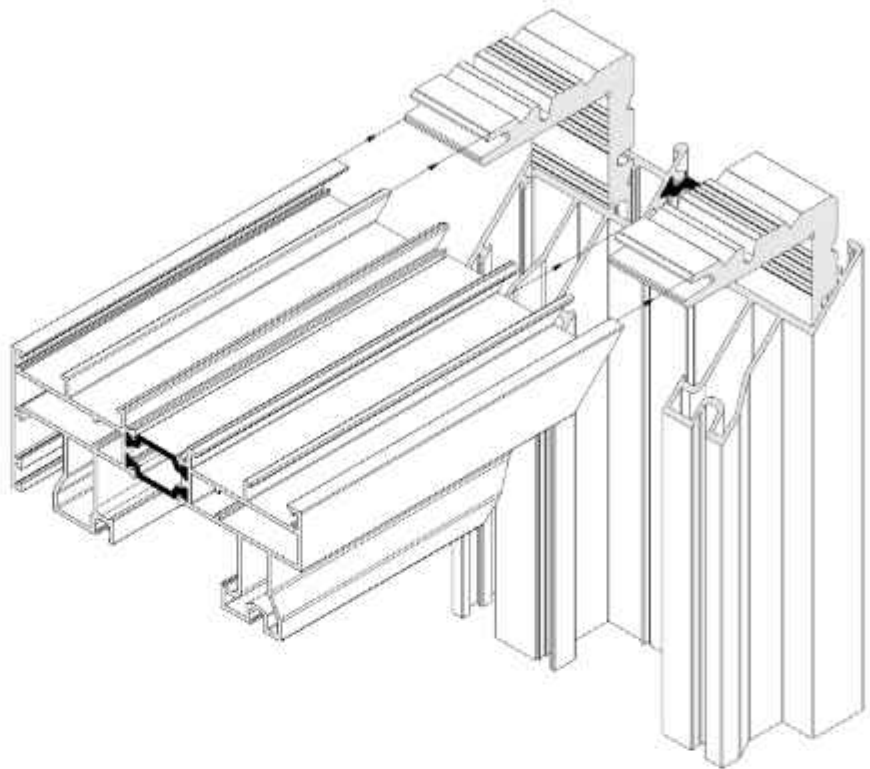
### Fabrication Details



# Lift & Slide System 115 Series Assembly Drawing ALN 500



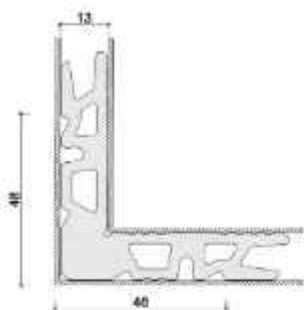
A:PCP-10 / 30 mm



# Lift & Slide System 115 Series

Assembly Drawing

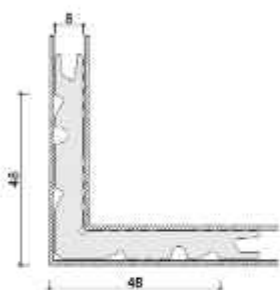
ALN 503



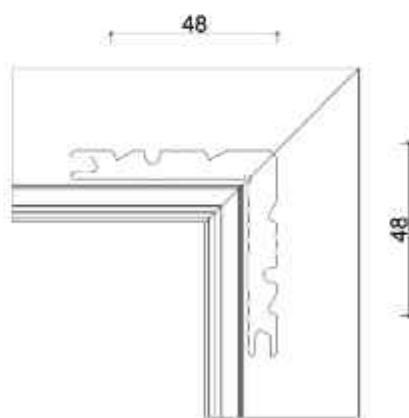
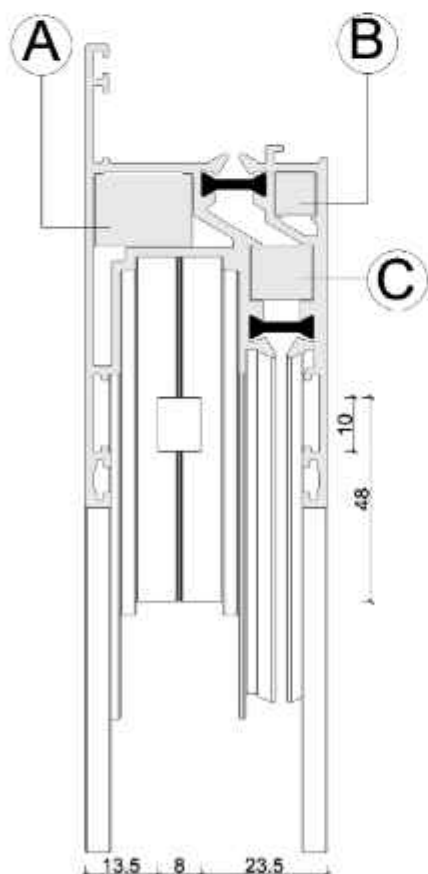
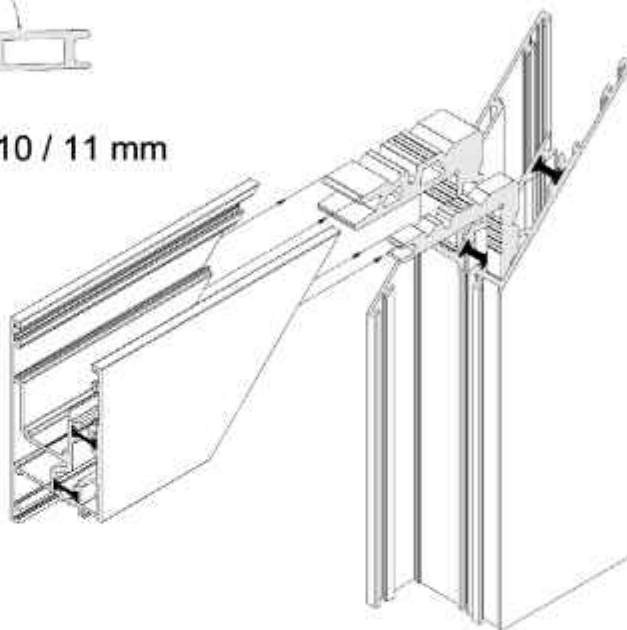
A:PCP-13 / 18 mm



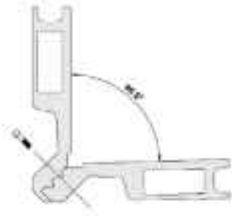
C:PCB-10 / 11 mm



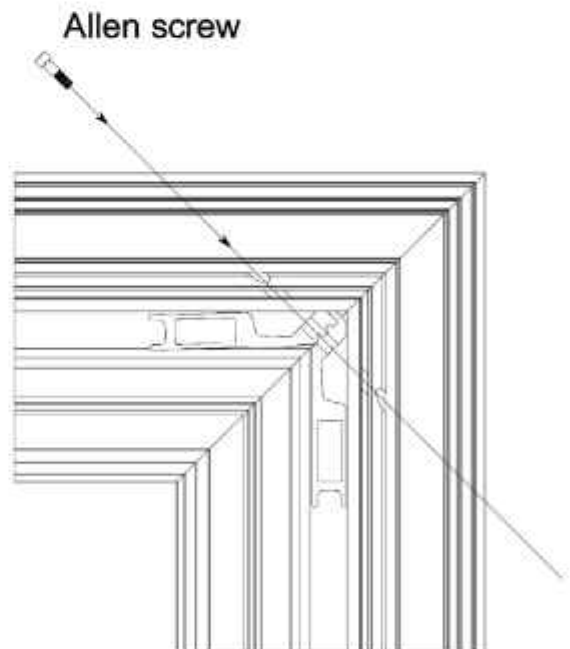
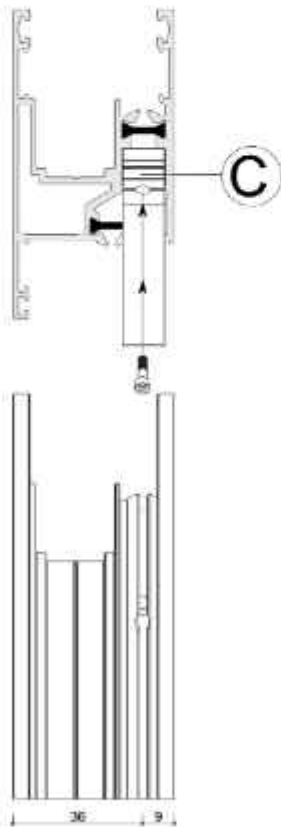
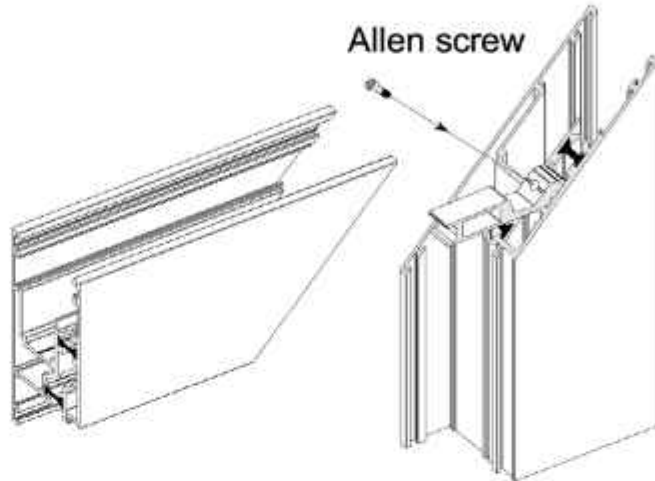
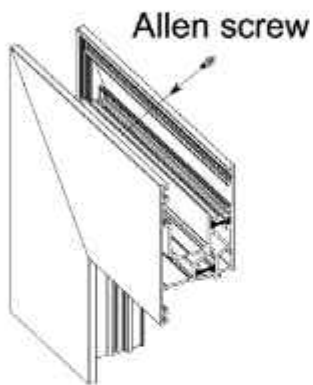
B:PCP-8 / 7 mm  
Assemble with glue



# Lift & Slide System 115 Series Assembly Drawing ALN 503



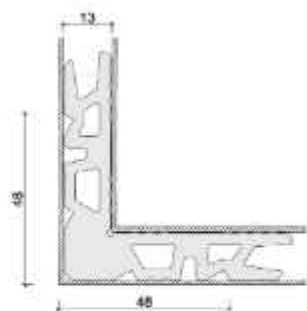
C:PCB-10 / 11 mm



# Lift & Slide System 115 Series

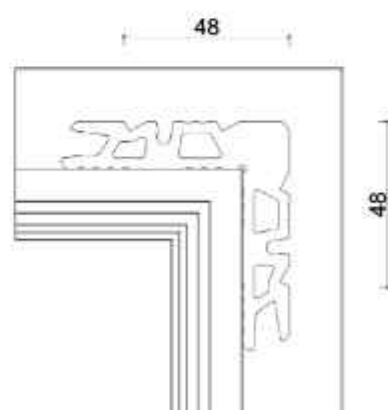
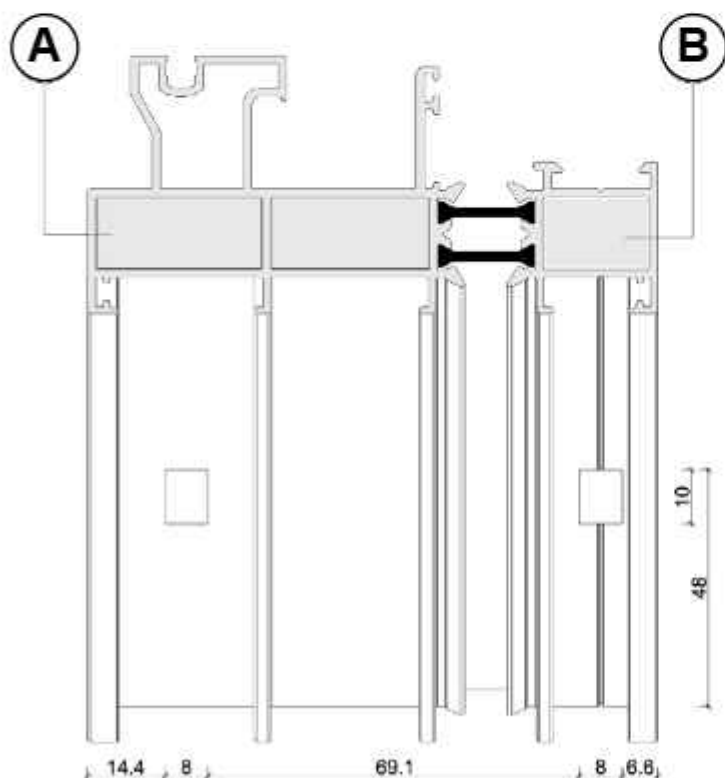
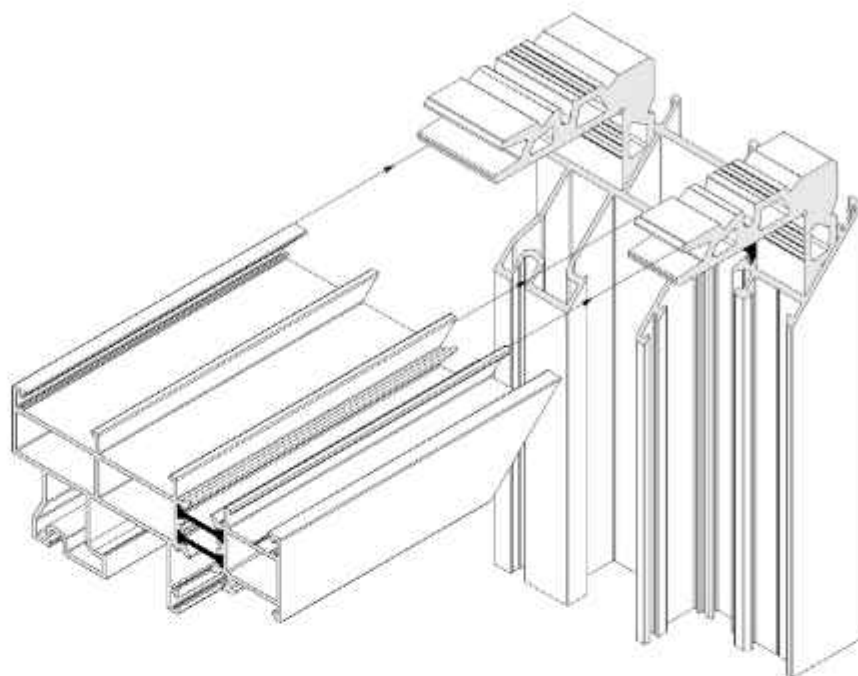
Assembly Drawing

ALN 506

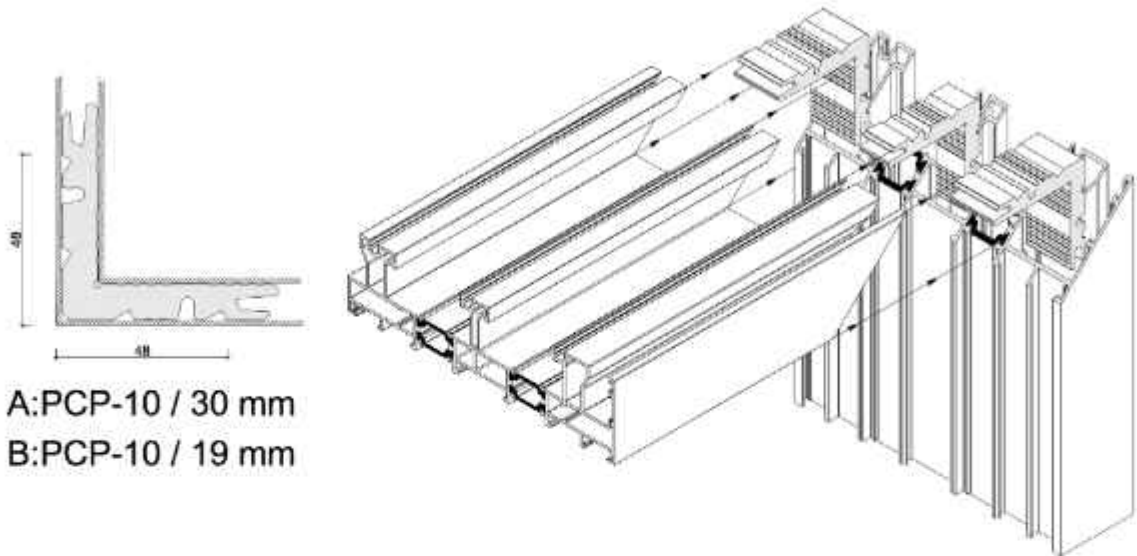


A:PCP-13 / 30 mm

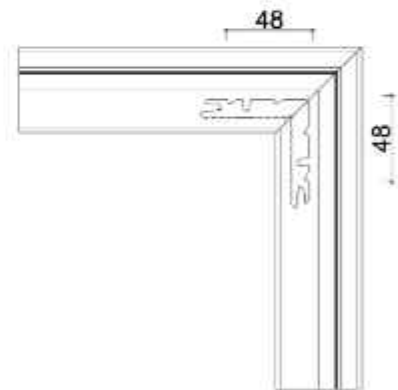
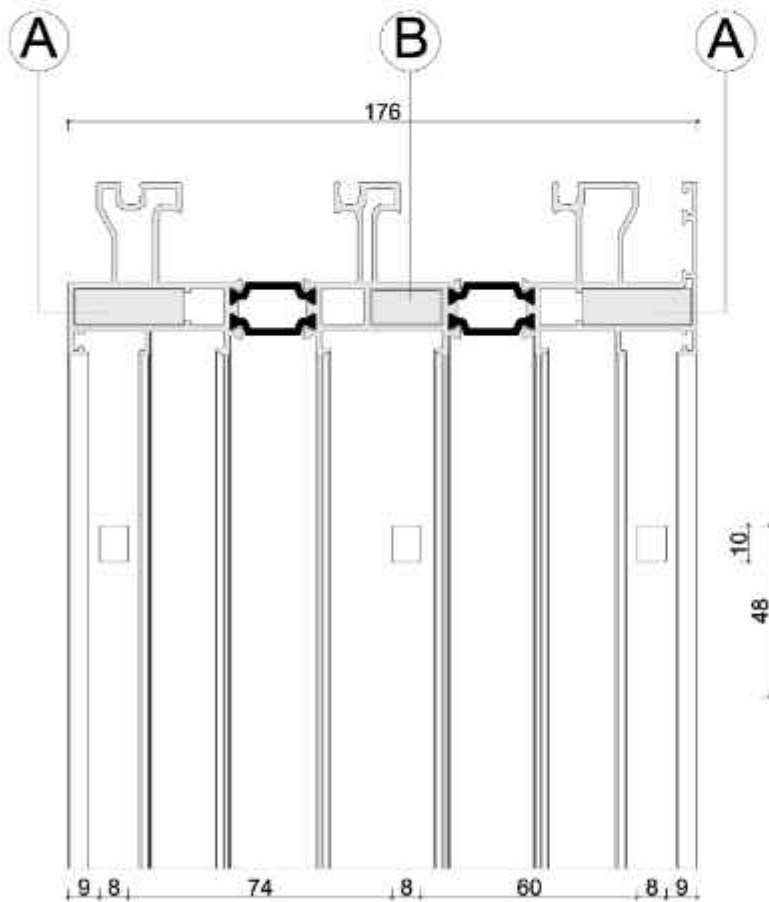
B:PCP-13 / 19 mm



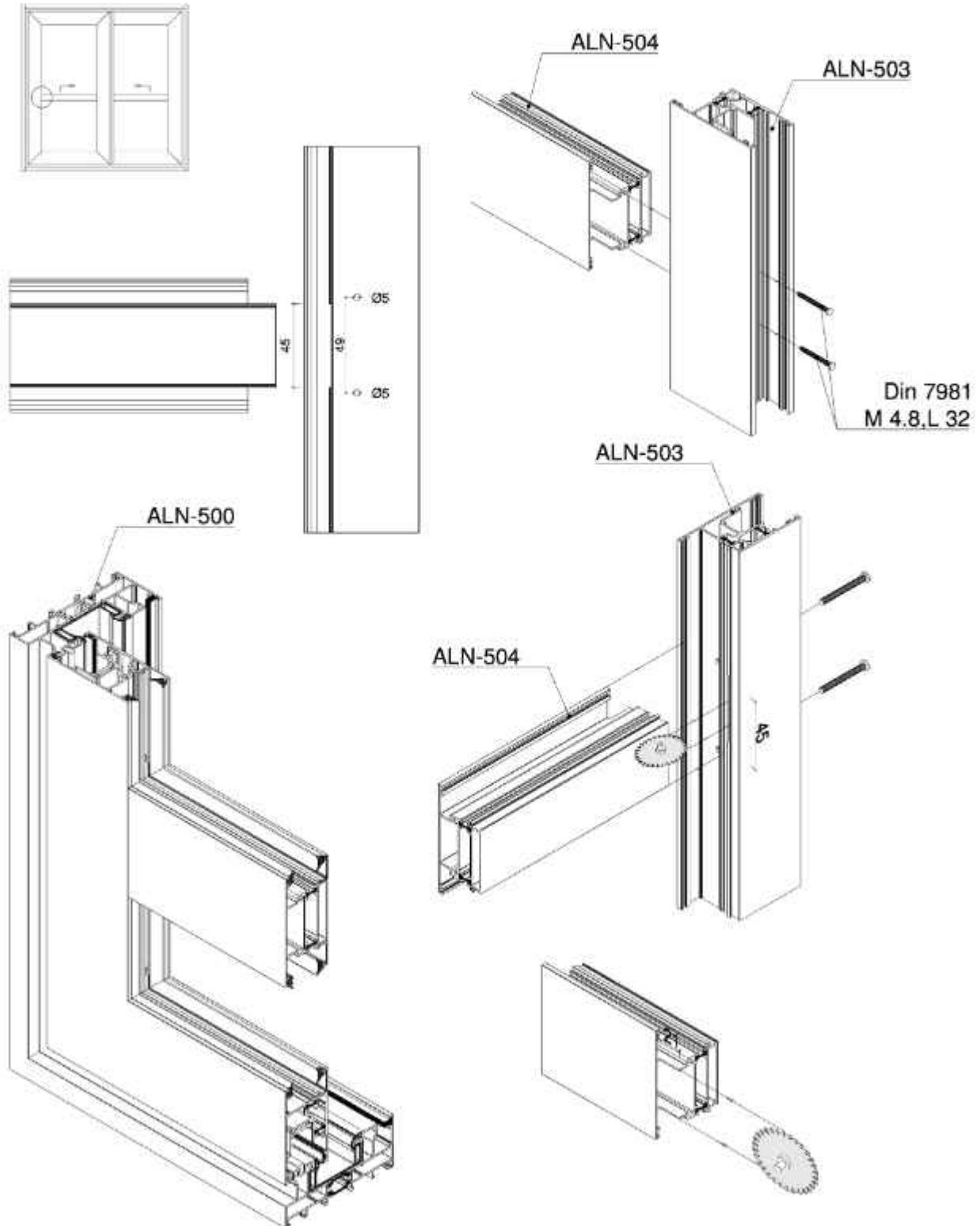
Lift & Slide System 115 Series  
Assembly Drawing  
ALN 501



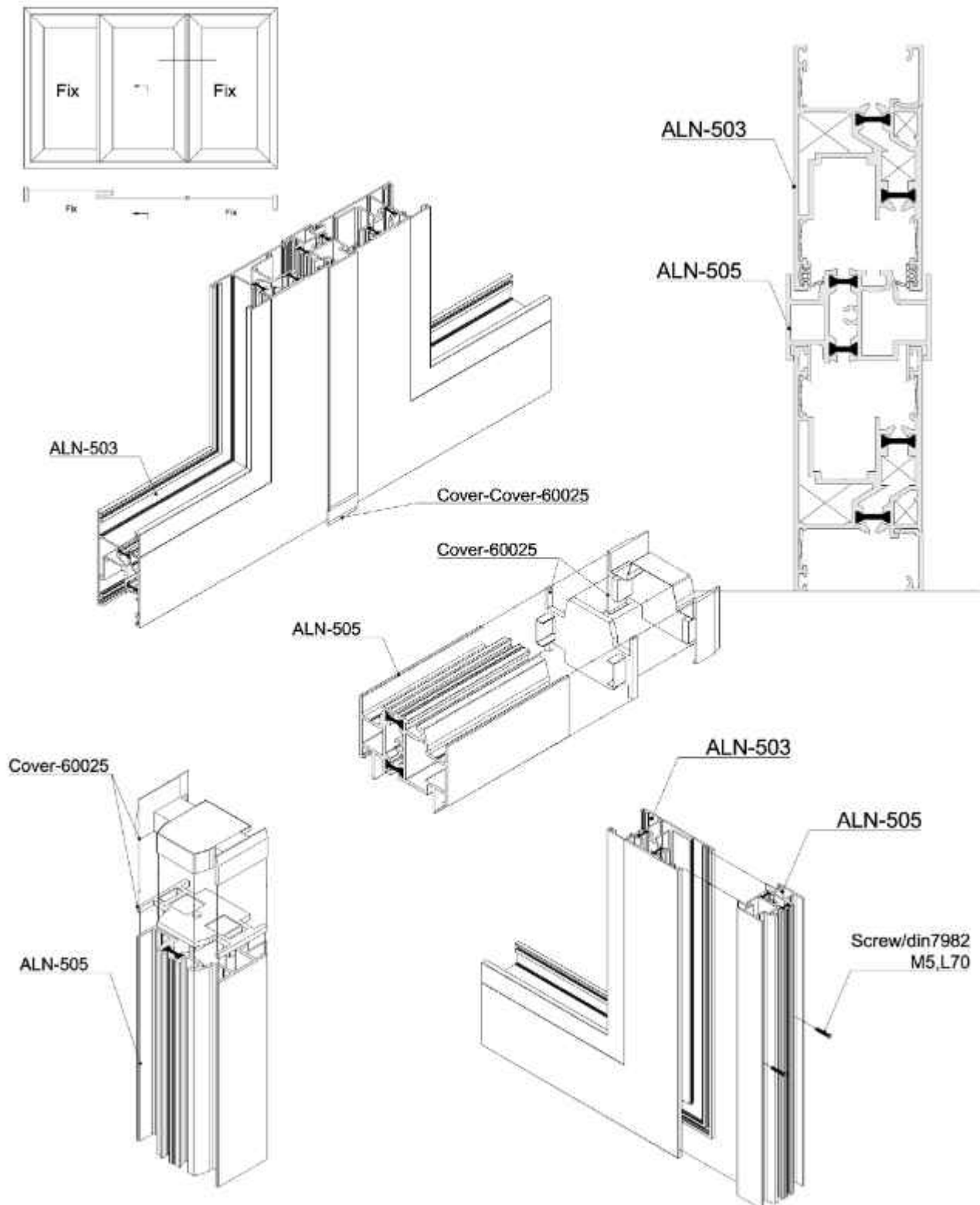
A:PCP-10 / 30 mm  
B:PCP-10 / 19 mm



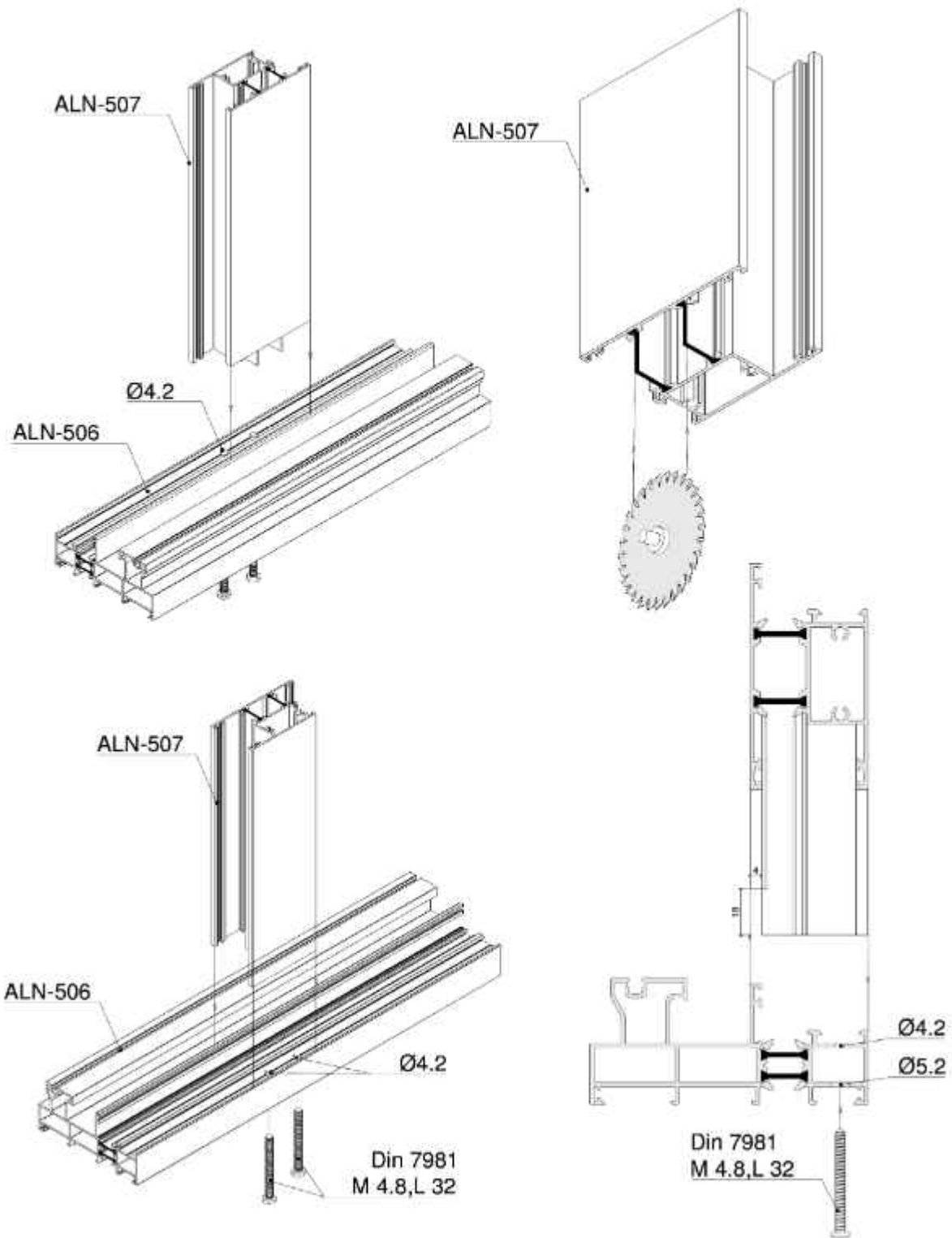
# Lift & Slide System 115 Series Assembly Drawing



# Lift & Slide System 115 Series Assembly Drawing



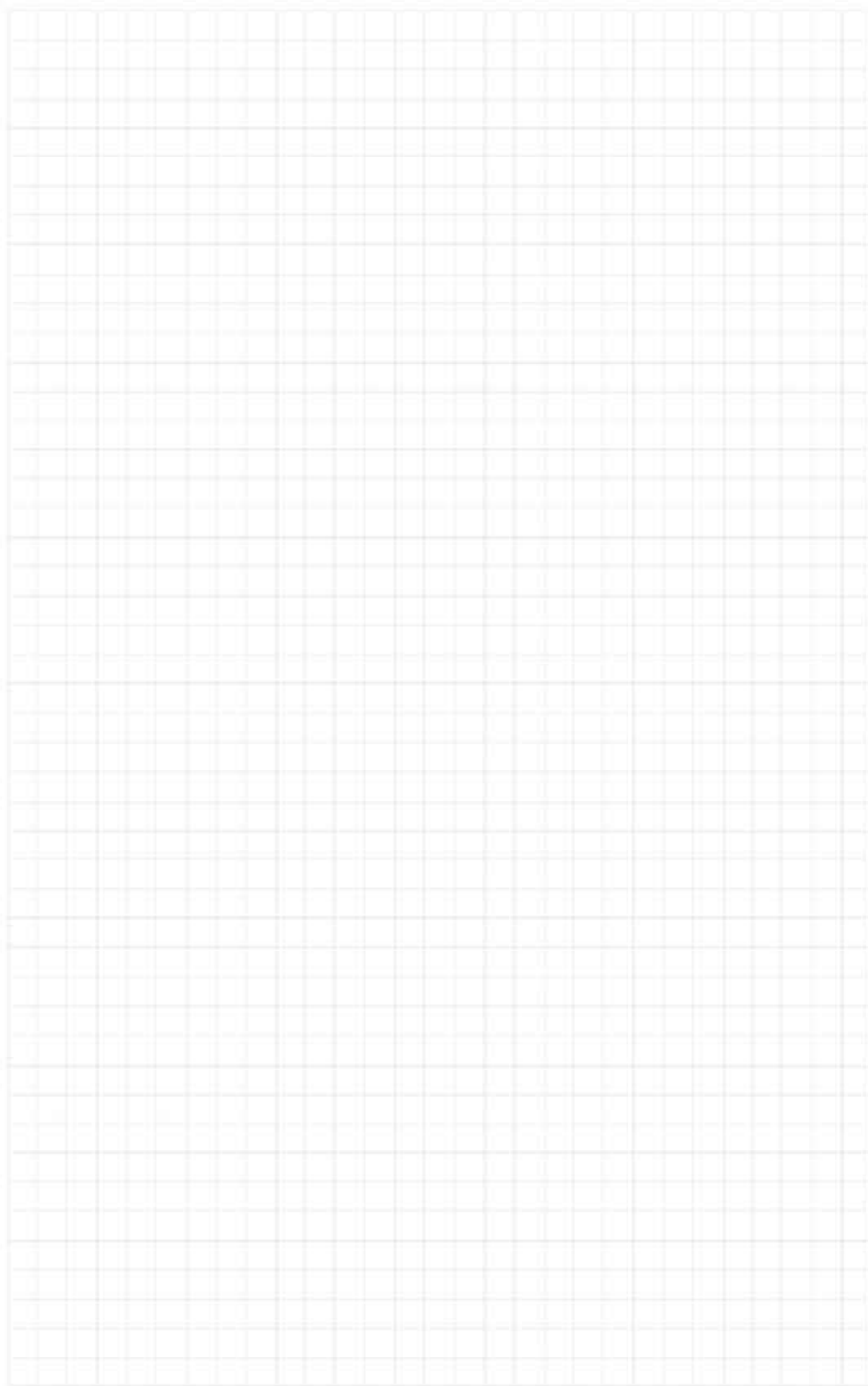
# Lift & Slide System 115 Series Assembly Drawing





**AKROLL**

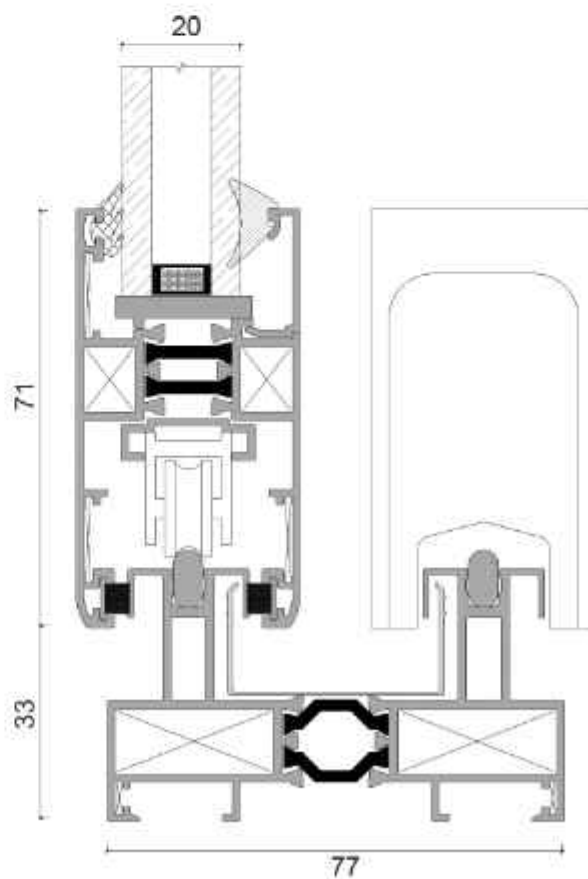
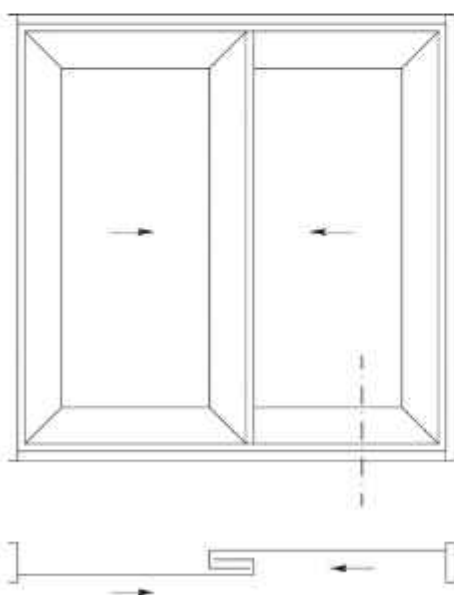
Product of Alumroll Novin Co.



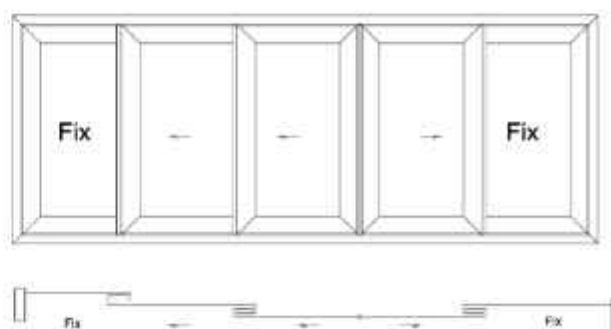
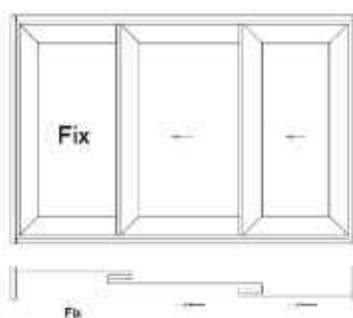
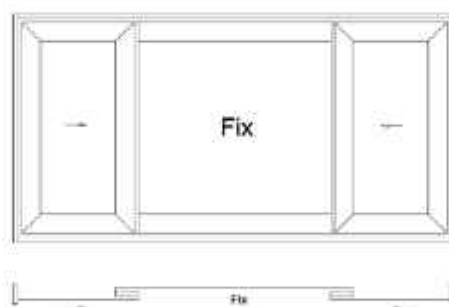
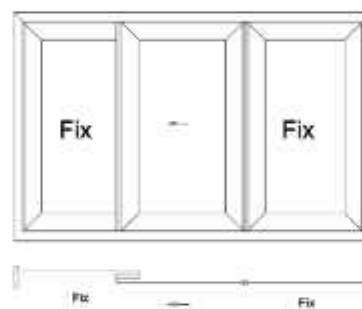
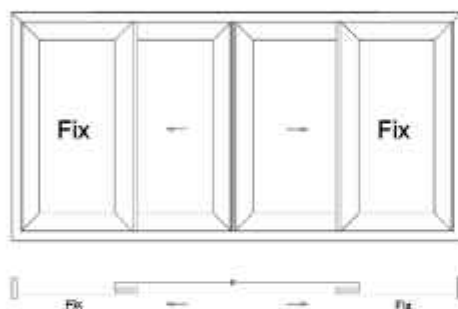


## Slide System 77 Series

|                           |                       |
|---------------------------|-----------------------|
| Profile width:            | 77 - 110 mm           |
| Vent width:               | 38 mm                 |
| Wall thickness:           | 1.3 - 1.4 mm          |
| Rubber description:       | EPDM DIN 7863         |
| Glass thickness:          | 18 - 26 mm            |
| Aluminum alloy extrusion: | EN AW 6063 T5         |
| Isulation bar:            | Polyamide Width 18 mm |
| Safety drainage system    |                       |
| Various typologies        |                       |

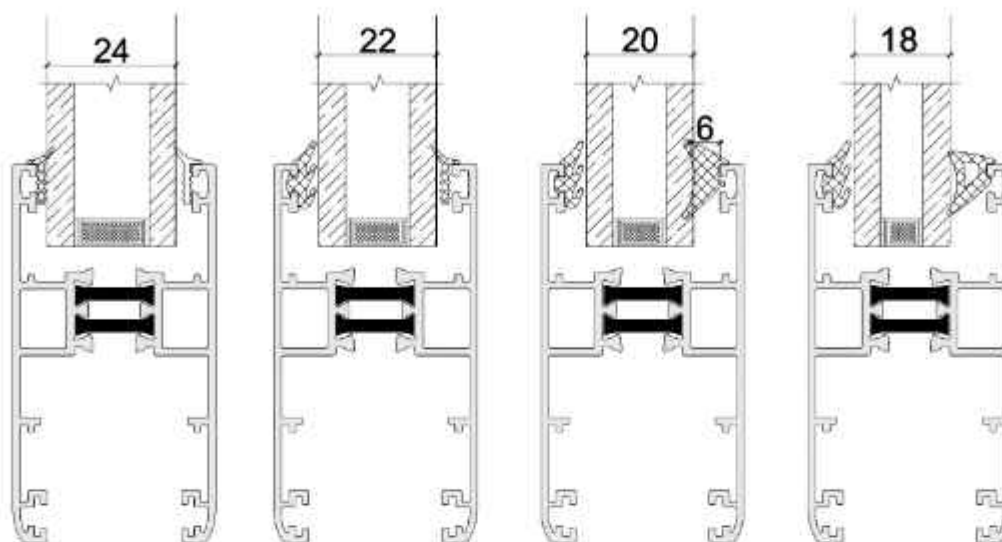


## Slide System 77 Series Typologies



## Slide System 77 Series

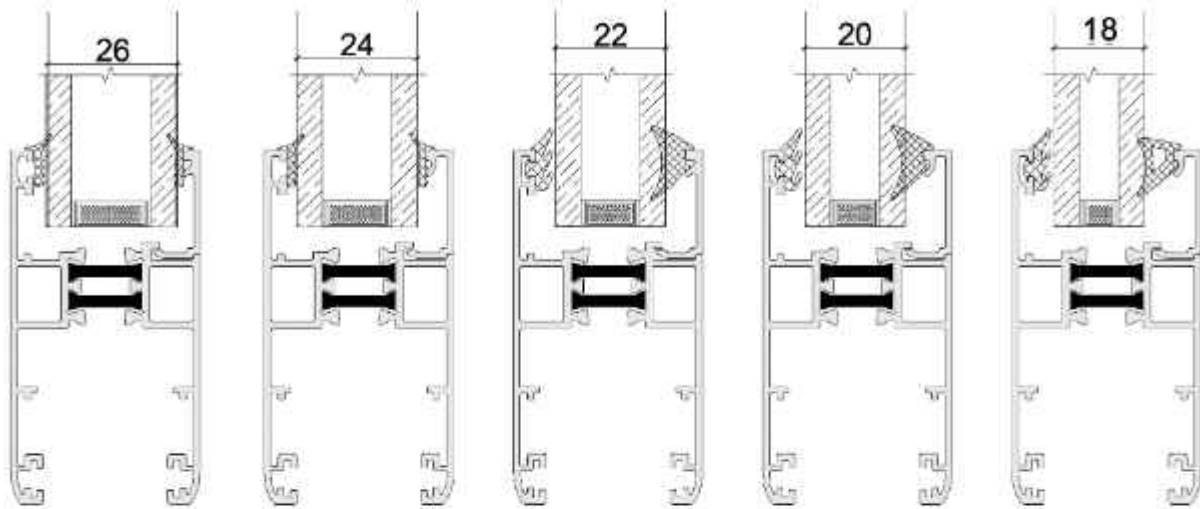
Glazing Table  
ALN-456



| Glazing Thickness | Gasket Inside                                                                                        | Gasket Outside                                                                                                      |
|-------------------|------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------|
| 18 mm             | <br><b>EP-021</b> | <br><b>MO68</b><br><b>3 mm</b> |
| 20 mm             | <br><b>EP-019</b> | <br><b>MO68</b>                |
| 22 mm             | <br><b>EP-015</b> | <br><b>MO68</b>                |
| 24 mm             | <br><b>EP-015</b> | <br><b>EP-015</b>              |

## Slide System 77 Series

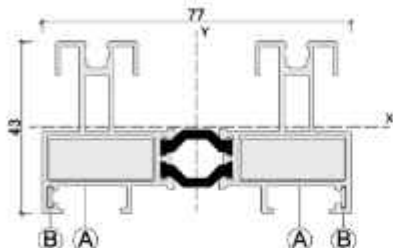
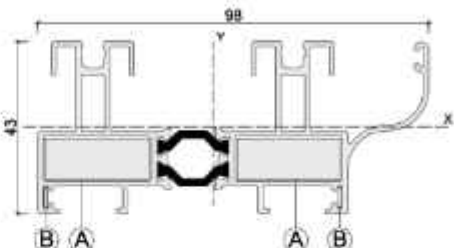
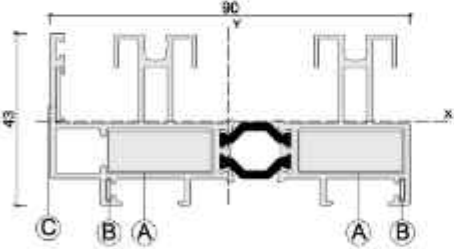
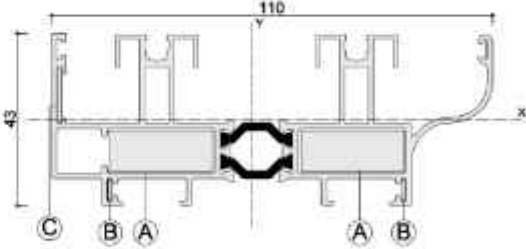
Glazing Table  
ALN-455



| Glazing Thickness | Gasket Inside                                                                                 | Gasket Outside                                                                                | Glazing Bead                                                                                     |
|-------------------|-----------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|
| 18 mm             | <br>EP-019 | <br>MO68   | <br>ALN-460 |
| 20 mm             | <br>EP-016 | <br>MO68   | <br>ALN-460 |
| 22 mm             | <br>EP-016 | <br>MO68   | <br>ALN-461 |
| 24 mm             | <br>EP-015 | <br>EP-015 | <br>ALN-460 |
| 26 mm             | <br>EP-015 | <br>EP-015 | <br>ALN-461 |

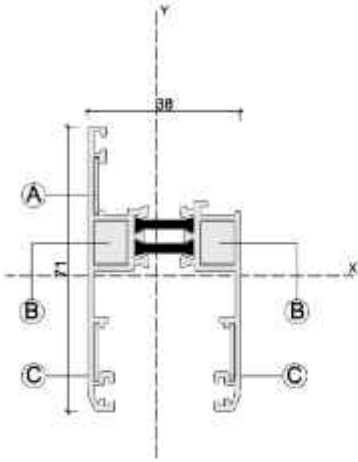
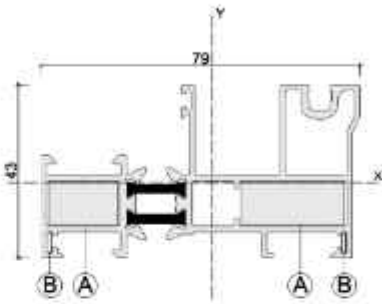
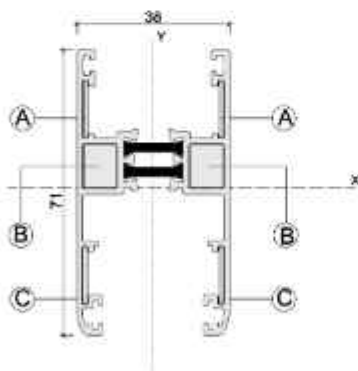
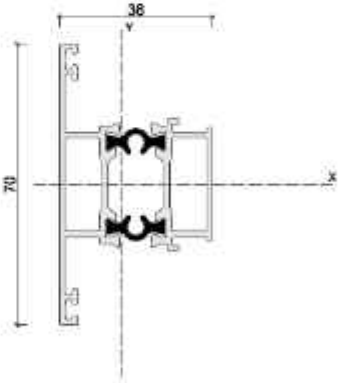
## Slide System 77 Series

### Profile & Accessories Information

|                                                                                     |                                                                                                       |                                                                                      |                                                                                                         |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------|
|    |                                                                                                       |    |                                                                                                         |
| $I_x$ : 8.40 cm <sup>4</sup>                                                        | $I_y$ : 32.54 cm <sup>4</sup>                                                                         | $I_x$ : 9.04 cm <sup>4</sup>                                                         | $I_y$ : 47.04 cm <sup>4</sup>                                                                           |
| Frame : ALN-451                                                                     | A: PCP-11 / 26 mm  | Frame : ALN-452                                                                      | A: PCP-11 / 26 mm  |
| Weight: 1485 gr/m                                                                   | B: MO19(399012)    | Weight: 1640 gr/m                                                                    | B: MO19(399012)    |
|  |                                                                                                       |  |                                                                                                         |
| $I_x$ : 9.53 cm <sup>4</sup>                                                        | $I_y$ : 49.22 cm <sup>4</sup>                                                                         | $I_x$ : 10.15 cm <sup>4</sup>                                                        | $I_y$ : 67.82 cm <sup>4</sup>                                                                           |
| Frame : ALN-453                                                                     | A: PCP-11 / 26 mm  | Frame : ALN-454                                                                      | A: PCP-11 / 26 mm  |
| Weight: 1696 gr/m                                                                   | B: MO19(399012)    | Weight: 1850 gr/m                                                                    | B: MO19(399012)    |
|                                                                                     | C: MM77            |                                                                                      | C: MM77            |

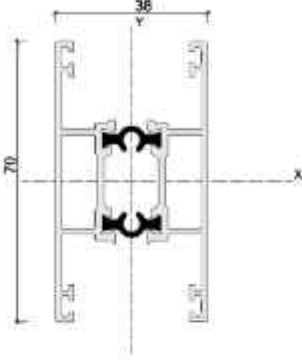
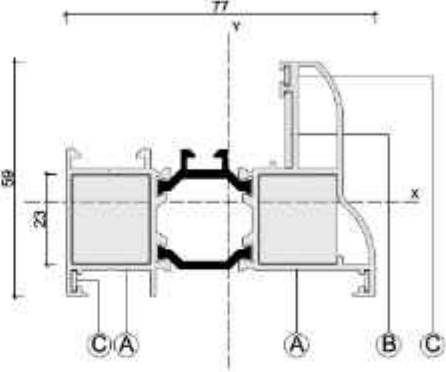
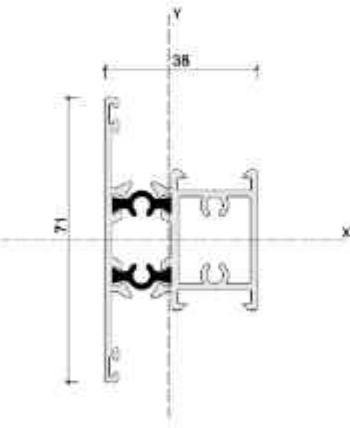
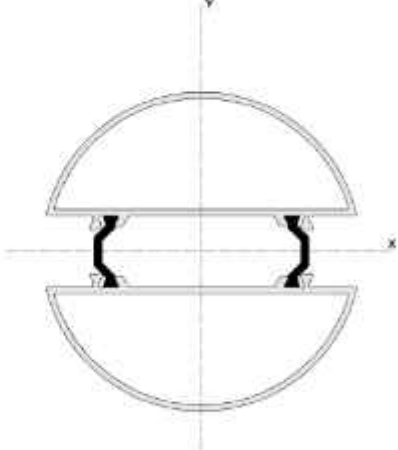
## Slide System 77 Series

### Profile & Accessories Information

|                                                                                     |                                                                                                      |                                                                                      |                                                                                                         |
|-------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------|
|    |                                                                                                      |    |                                                                                                         |
| $I_x$ : 12.40 cm <sup>4</sup>                                                       | $I_y$ : 8.04 cm <sup>4</sup>                                                                         | $I_x$ : 7.53 cm <sup>4</sup>                                                         | $I_y$ : 31.76 cm <sup>4</sup>                                                                           |
| Sash : ALN-455                                                                      | A: MM 77          | Frame : ALN-470                                                                      | A: PCP-11 / 26 mm  |
| Weight: 1068 gr/m                                                                   | B: PCP-11 / 8 mm  | Weight: 1475 gr/m                                                                    | B: PCP-11 / 17 mm  |
|                                                                                     | C: MM 77          |                                                                                      | C: MO19(399012)    |
|  |                                                                                                      |  |                                                                                                         |
| $I_x$ : 15.44 cm <sup>4</sup>                                                       | $I_y$ : 9.43 cm <sup>4</sup>                                                                         | $I_x$ : 8.78 cm <sup>4</sup>                                                         | $I_y$ : 6.21 cm <sup>4</sup>                                                                            |
| Sash : ALN-456                                                                      | A: MM 77          | Transom : ALN-458                                                                    | —                                                                                                       |
| Weight: 1163 gr/m                                                                   | B: PCP-11 / 8 mm  | Weight: 1076 gr/m                                                                    | —                                                                                                       |
|                                                                                     | C: MM 77          |                                                                                      |                                                                                                         |

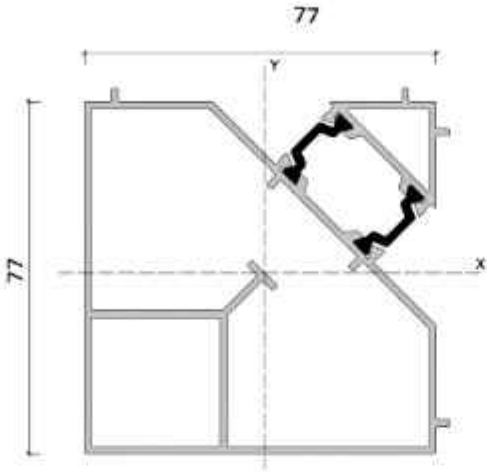
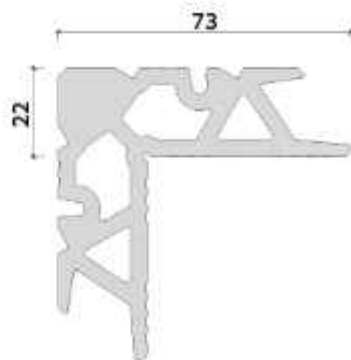
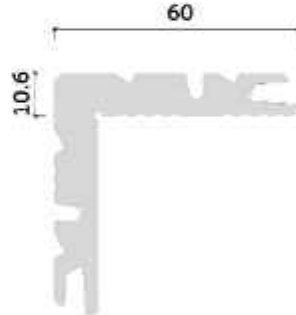
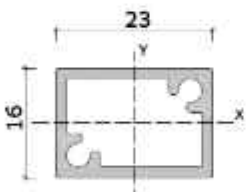
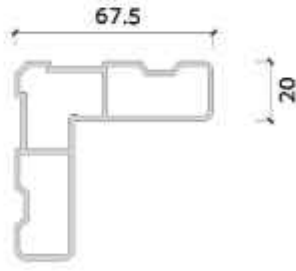
## Slide System 77 Series

### Profile & Accessories Information

|                                                                                     |                              |                                                                                      |                                                                                                         |
|-------------------------------------------------------------------------------------|------------------------------|--------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------|
|    |                              |    |                                                                                                         |
| $I_x$ : 14.53 cm <sup>4</sup>                                                       | $I_y$ : 9.12 cm <sup>4</sup> | $I_x$ : 11.62 cm <sup>4</sup>                                                        | $I_y$ : 29.73 cm <sup>4</sup>                                                                           |
| Transom : ALN-459                                                                   | —                            | Profile ALN-466                                                                      | A: PCP-22 / 19 mm  |
| Weight: 1270 gr/m                                                                   | —                            | Weight: 1435 gr/m                                                                    | B: fuji 2000       |
|                                                                                     |                              |                                                                                      | C: MO 19           |
|  |                              |  |                                                                                                         |
| $I_x$ : 8.50 cm <sup>4</sup>                                                        | $I_y$ : 7.10 cm <sup>4</sup> | $I_x$ : 30.79 cm <sup>4</sup>                                                        | $I_y$ : 33.53 cm <sup>4</sup>                                                                           |
| Transom : ALN-471                                                                   | —                            | Coupling : ALN-414                                                                   | —                                                                                                       |
| Weight: 1166 gr/m                                                                   | —                            | Weight : 1720 gr/m                                                                   | —                                                                                                       |

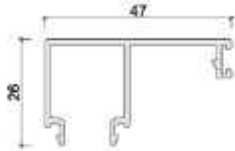
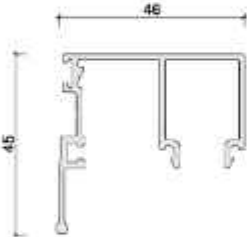
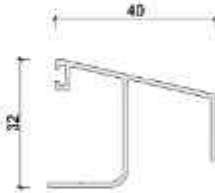
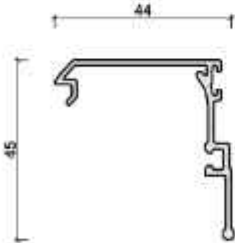
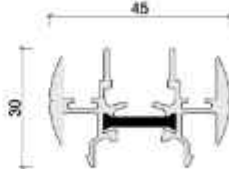
## Slide System 77 Series

### Profile & Accessories Information

|                                                                                     |           |                                                                                       |                    |
|-------------------------------------------------------------------------------------|-----------|---------------------------------------------------------------------------------------|--------------------|
|    |           |     |                    |
|                                                                                     |           | Corner joint: PCP-22                                                                  | Weight : 3718 gr/m |
|                                                                                     |           |   |                    |
|                                                                                     |           | Corner Joint: PCP11                                                                   | Weight: 2549 gr/m  |
|  |           |  |                    |
| $I_x$ : -                                                                           | $I_y$ : - |                                                                                       |                    |
| Coupling : ALN-469                                                                  | A: -      |                                                                                       |                    |
| Weight: 337 gr/m                                                                    | B: -      | Corner Joint: PCP 20                                                                  | Weight: 1377 gr/m  |

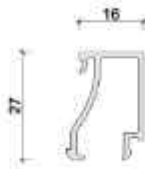
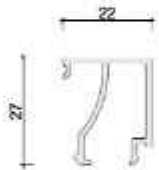
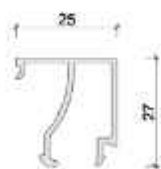
## Slide System 77 Series

### Profile & Accessories Information

|                                                                                     |                  |                                                                                      |                  |
|-------------------------------------------------------------------------------------|------------------|--------------------------------------------------------------------------------------|------------------|
|    |                  |   |                  |
| Cap: ALN-472                                                                        | Weight: 413 gr/m | Fly screen : ALN-207                                                                 | Weight: 448 gr/m |
|  |                  |  |                  |
| Cap: ALN-473                                                                        | Weight: 634 gr/m | Cap : ALN-361                                                                        | Weight: 370 gr/m |
|  |                  |  |                  |
| Interlock: ALN-457                                                                  | Weight: 435 gr/m | Adjoining profile : ALN-464                                                          | Weight: 748 gr/m |

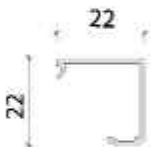
## Slide System 77 Series

### Profile & Accessories Information

|                                                                                     |                   |                                                                                       |                  |
|-------------------------------------------------------------------------------------|-------------------|---------------------------------------------------------------------------------------|------------------|
|    |                   |    |                  |
| Glazing beads: ALN-321                                                              | Weight :224 gr/m  | Glazing beads: ALN-423                                                                | Weight :281 gr/m |
|  |                   |  |                  |
| Glazing beads: ALN-323                                                              | Weight : 302 gr/m | Glazing beads: ALN-424                                                                | Weight :167 gr/m |
|  |                   |  |                  |
| Glazing bead : ALN-421                                                              | Weight: 313 gr/m  | Glazing bead : ALN-460                                                                | Weight: 127 gr/m |

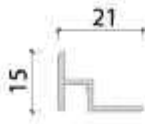
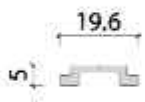
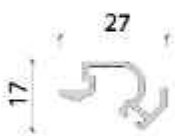
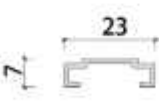
## Slide System 77 Series

### Profile & Accessories Information

|                                                                                     |                  |                                                                                      |                   |
|-------------------------------------------------------------------------------------|------------------|--------------------------------------------------------------------------------------|-------------------|
|    |                  |    |                   |
| Glazing bead : ALN-461                                                              | Weight: 119 gr/m | Flange profile: ALN-219                                                              | Weight : 362 gr/m |
|  |                  |   |                   |
| Glazing bead : ALN-463                                                              | Weight: 178 gr/m | Flange profile: ALN-221                                                              | Weight : 302 gr/m |
|  |                  |  |                   |
| Glazing bead : ALN-474                                                              | Weight: 170 gr/m | Flange profile: ALN-222                                                              | Weight : 254 gr/m |

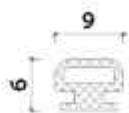
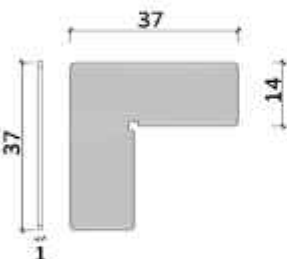
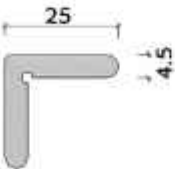
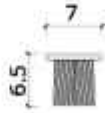
## Slide System 77 Series

### Profile & Accessories Information

|                                                                                     |                  |                                                                                       |                   |
|-------------------------------------------------------------------------------------|------------------|---------------------------------------------------------------------------------------|-------------------|
|    |                  |    |                   |
| Profile : ALN-228                                                                   | Weight: 135 gr/m | profile: ALN-475                                                                      | Weight : 275 gr/m |
|  |                  |  |                   |
| Profile : ALN-331                                                                   | Weight: 140 gr/m | Profile : ALN-429                                                                     | Weight : 235 gr/m |
|  |                  |  |                   |
| Profile : ALN-364                                                                   | Weight: 140 gr/m | Profile : ALN-430                                                                     | Weight : 230 gr/m |

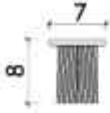
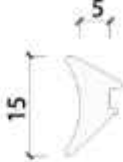
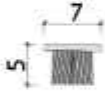
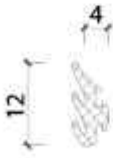
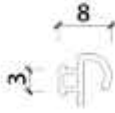
## Slide System 77 Series

### Profile & Accessories Information

|                                                                                     |                  |                                                                                       |                 |
|-------------------------------------------------------------------------------------|------------------|---------------------------------------------------------------------------------------|-----------------|
|    |                  |    |                 |
| Rail : ALN-462                                                                      | Weight: 119 gr/m | Gasket : MO 60(Jenta)                                                                 | Weight: 39 gr/m |
|  |                  |  |                 |
| Corner Joint: MM77<br>399138                                                        | Weight: –        | Gasket : 51990                                                                        | Weight: 34 gr/m |
|  |                  |  |                 |
| Corner Joint: MO19 (399012)                                                         | Weight: –        | PB7-3P-70-650                                                                         | Weight: –       |

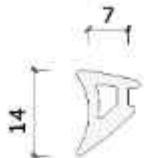
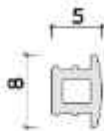
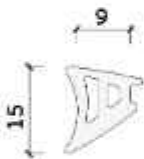
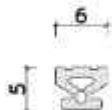
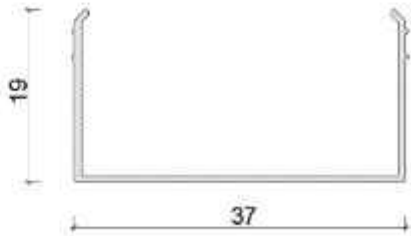
## Slide System 77 Series

### Profile & Accessories Information

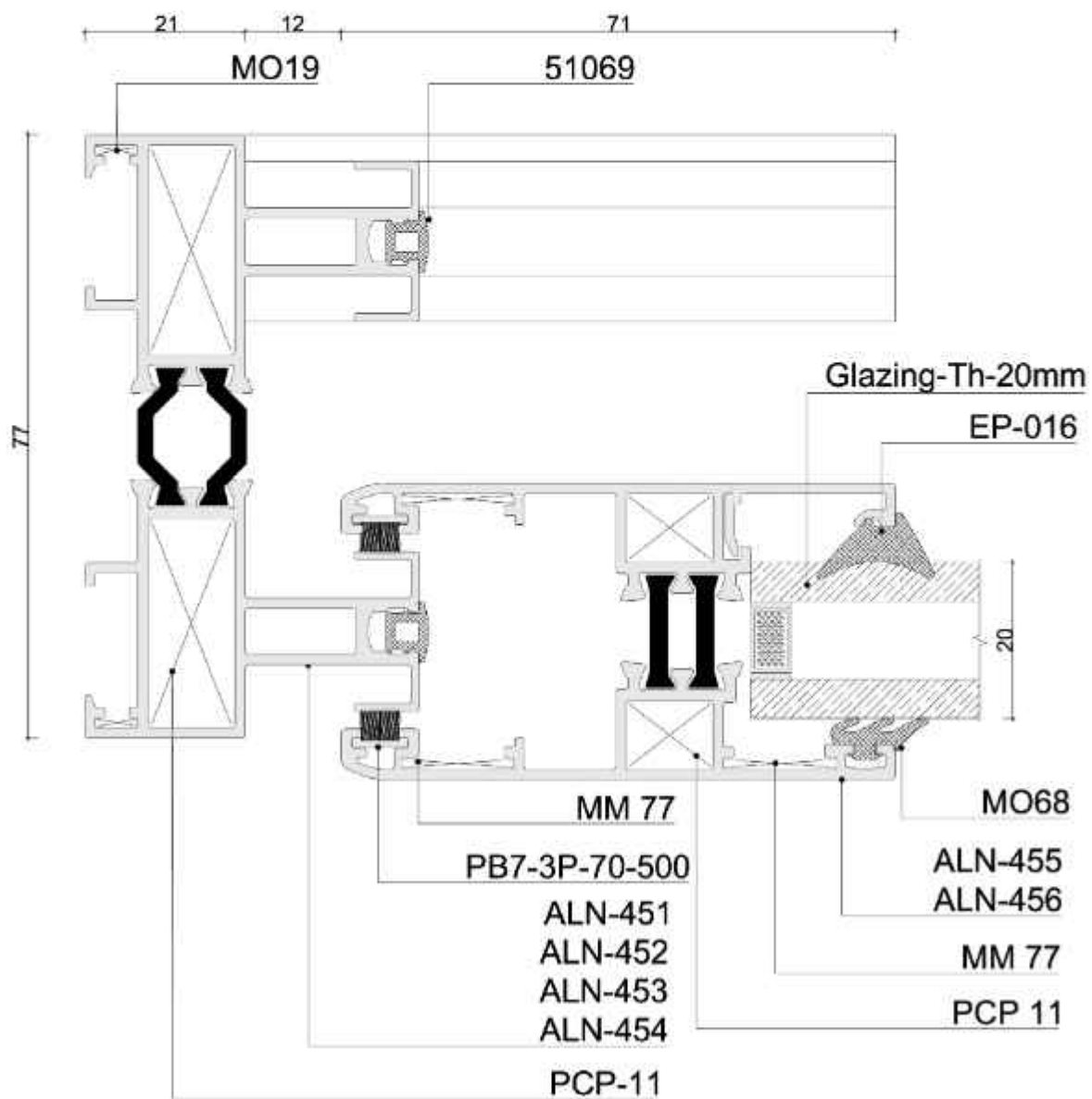
|                                                                                     |                  |                                                                                       |                  |
|-------------------------------------------------------------------------------------|------------------|---------------------------------------------------------------------------------------|------------------|
|    |                  |    |                  |
| PB7-3P-70-800                                                                       | Weight: —        | Gasket: EP-016                                                                        | Weight : 77 gr/m |
|  |                  |  |                  |
| PB7-3P-70-500                                                                       | Weight: —        | Gasket: EP-015                                                                        | Weight : 21 gr/m |
|  |                  |  |                  |
| Gasket: MO68                                                                        | Weight : 38 gr/m | Gasket: EP-018                                                                        | Weight : 27 gr/m |

## Slide System 77 Series

### Profile & Accessories Information

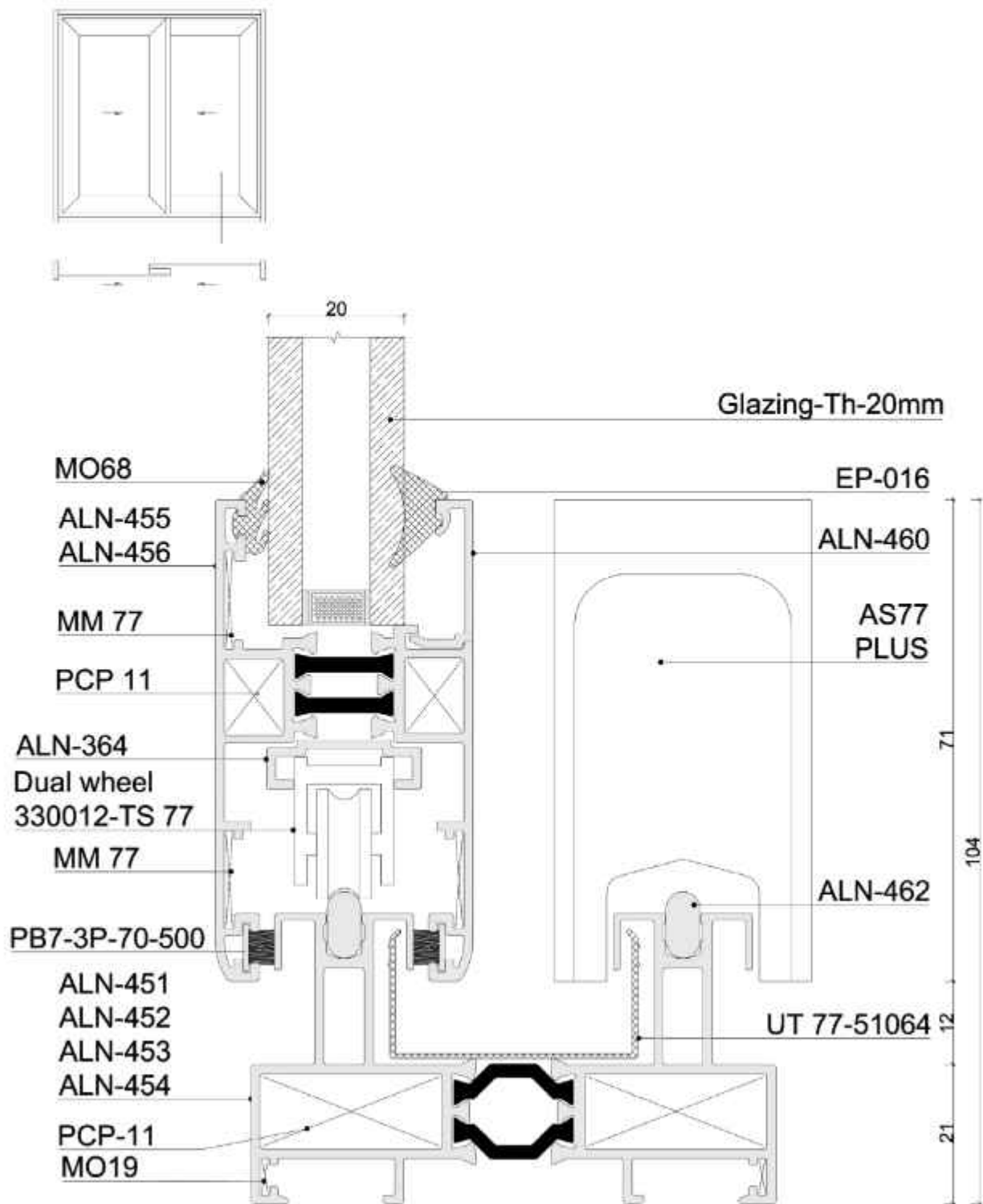
|                                                                                     |                  |                                                                                       |                  |
|-------------------------------------------------------------------------------------|------------------|---------------------------------------------------------------------------------------|------------------|
|    |                  |    |                  |
| Gasket: EP-019                                                                      | Weight : 61 gr/m | Gasket: 51069                                                                         | Weight : 27 gr/m |
|  |                  |  |                  |
| Gasket: EP-021                                                                      | Weight : 80 gr/m | Gasket: MO 60                                                                         | Weight : 26 gr/m |
|  |                  |   |                  |
| Gasket: MOC 77                                                                      | Weight : 131gr/m | Gasket: UT 77-51064                                                                   | Weight : 70 gr/m |

## Slide System 77 Series Fabrication Details

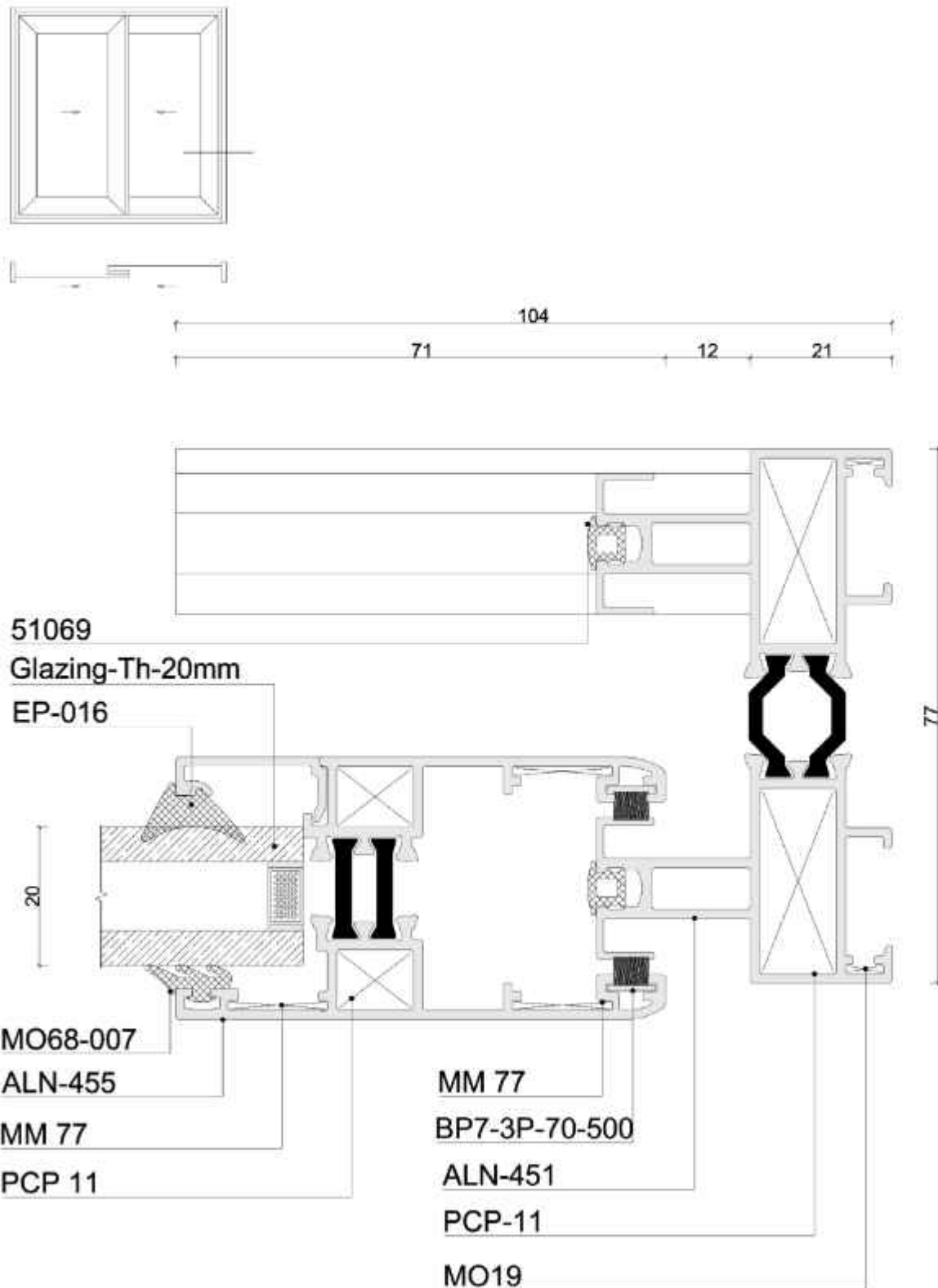


## Slide System 77 Series

### Fabrication Details

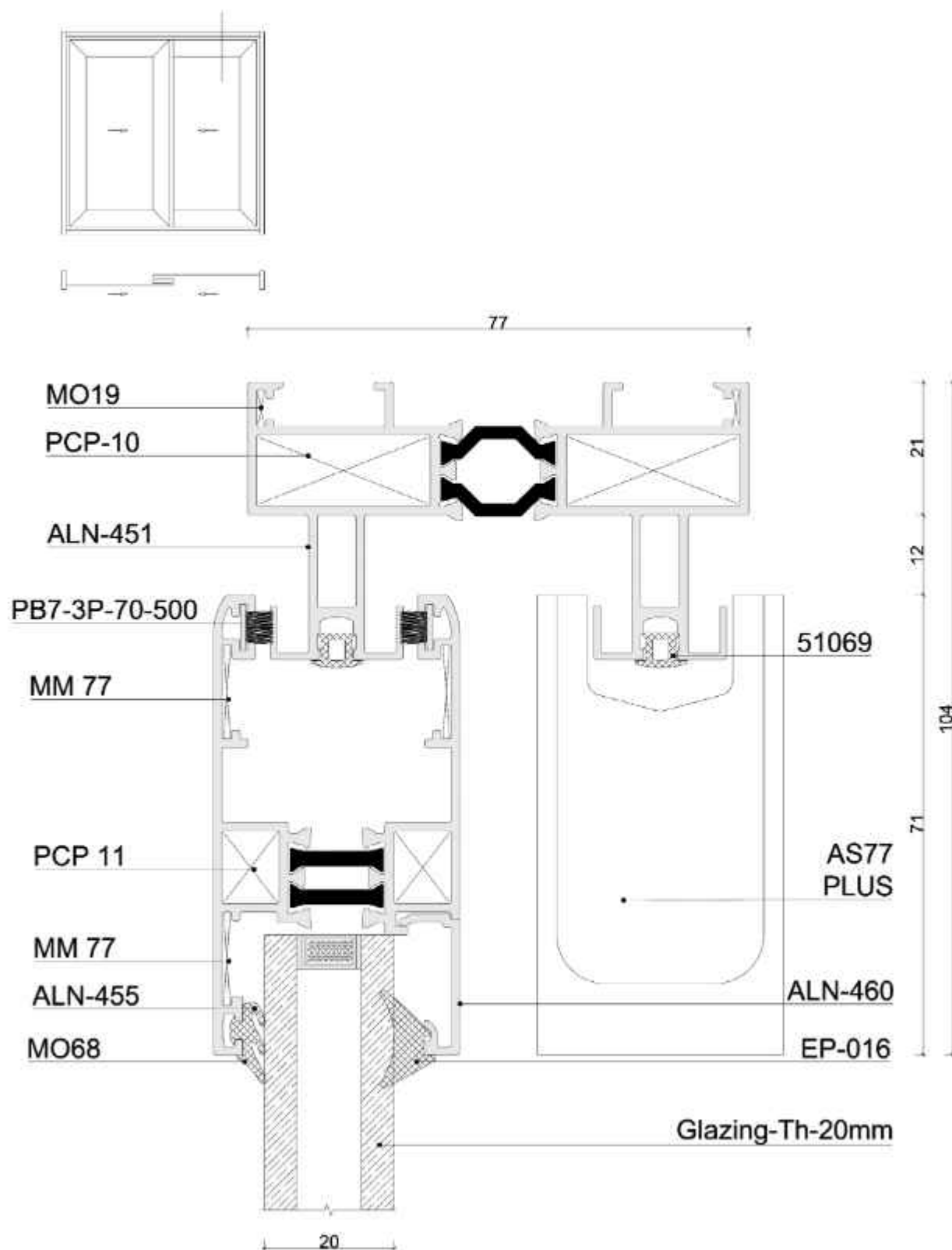


## Slide System 77 Series Fabrication Details

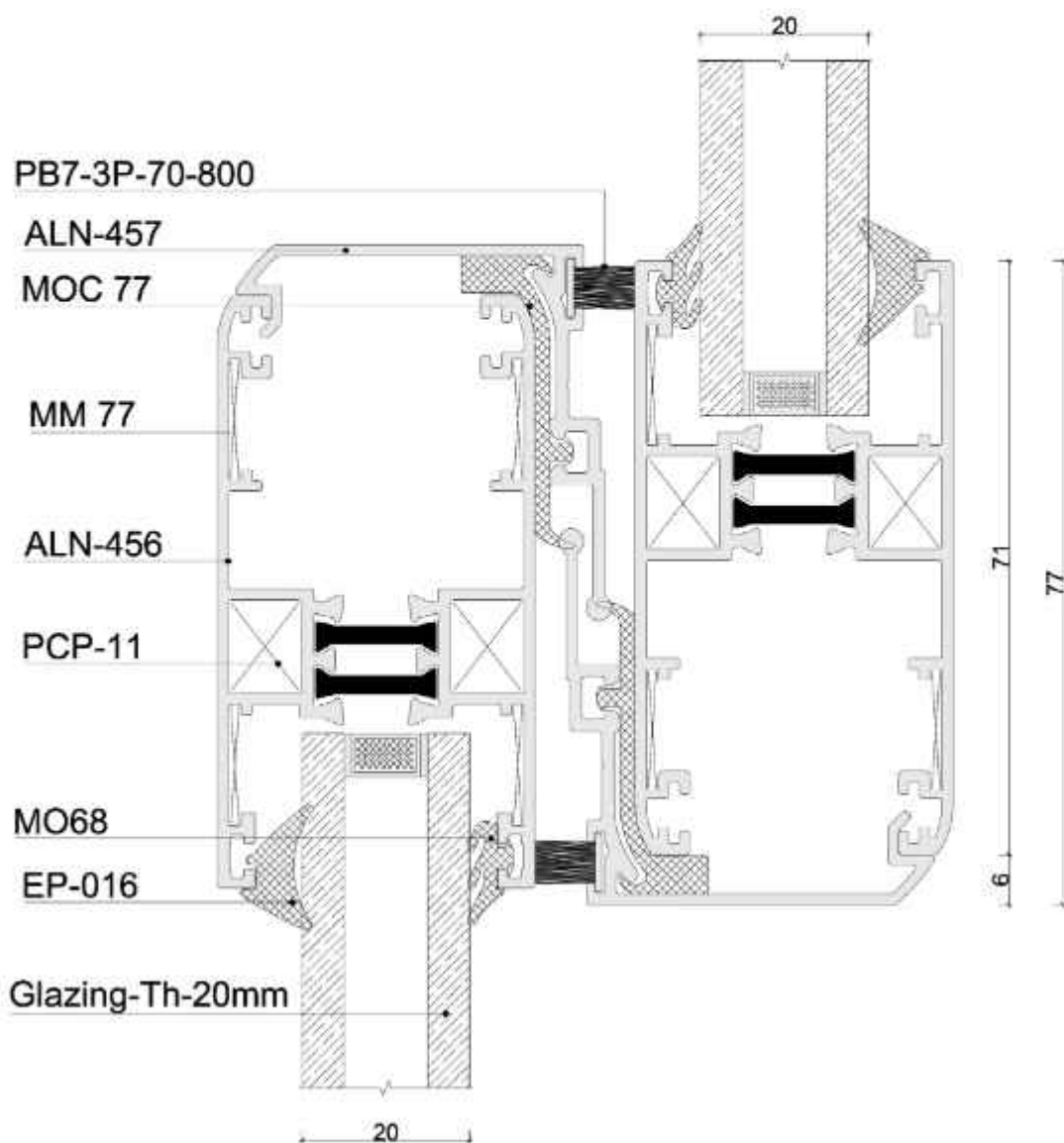


## Slide System 77 Series

### Fabrication Details

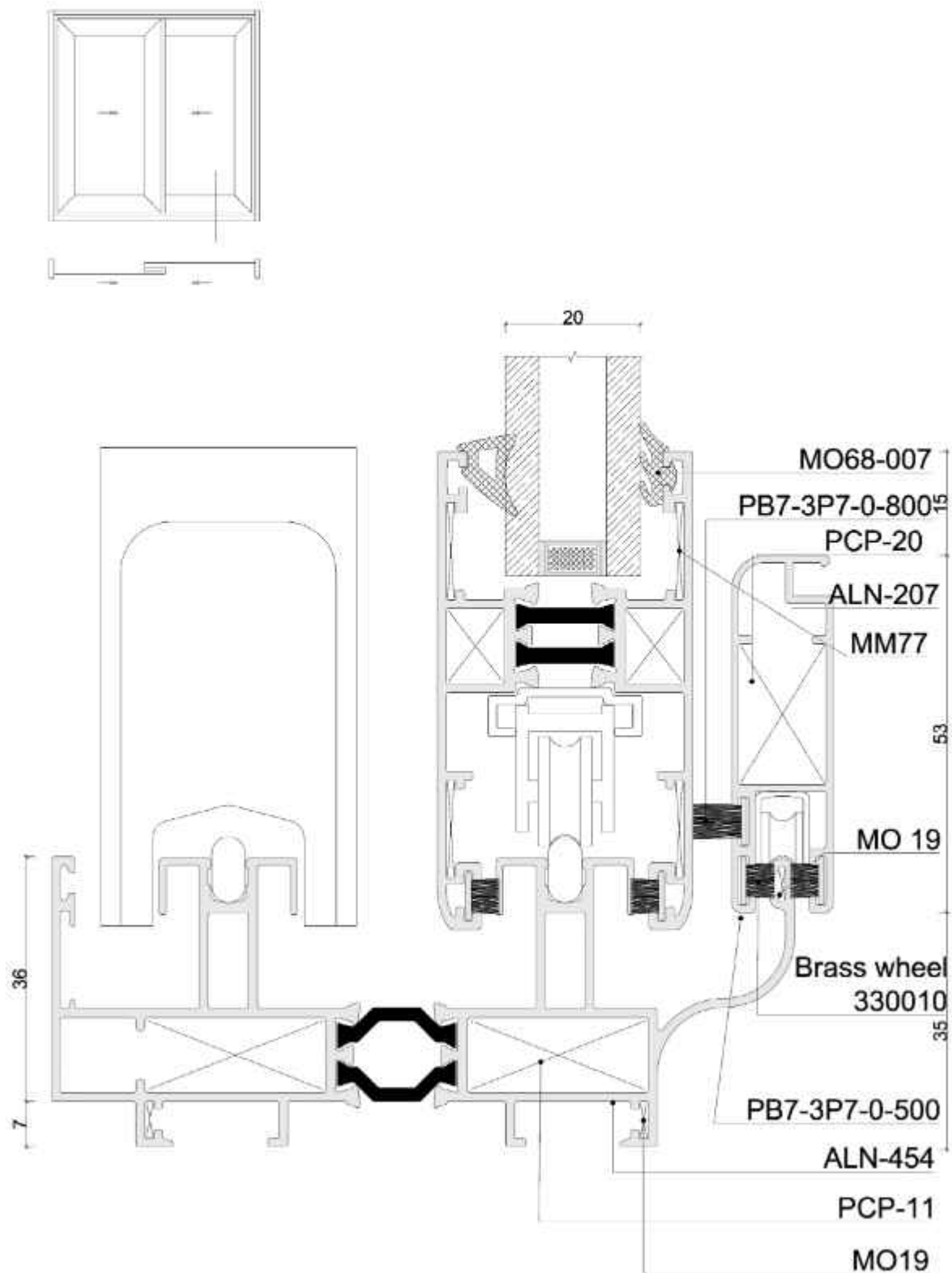


## Slide System 77 Series Fabrication Details

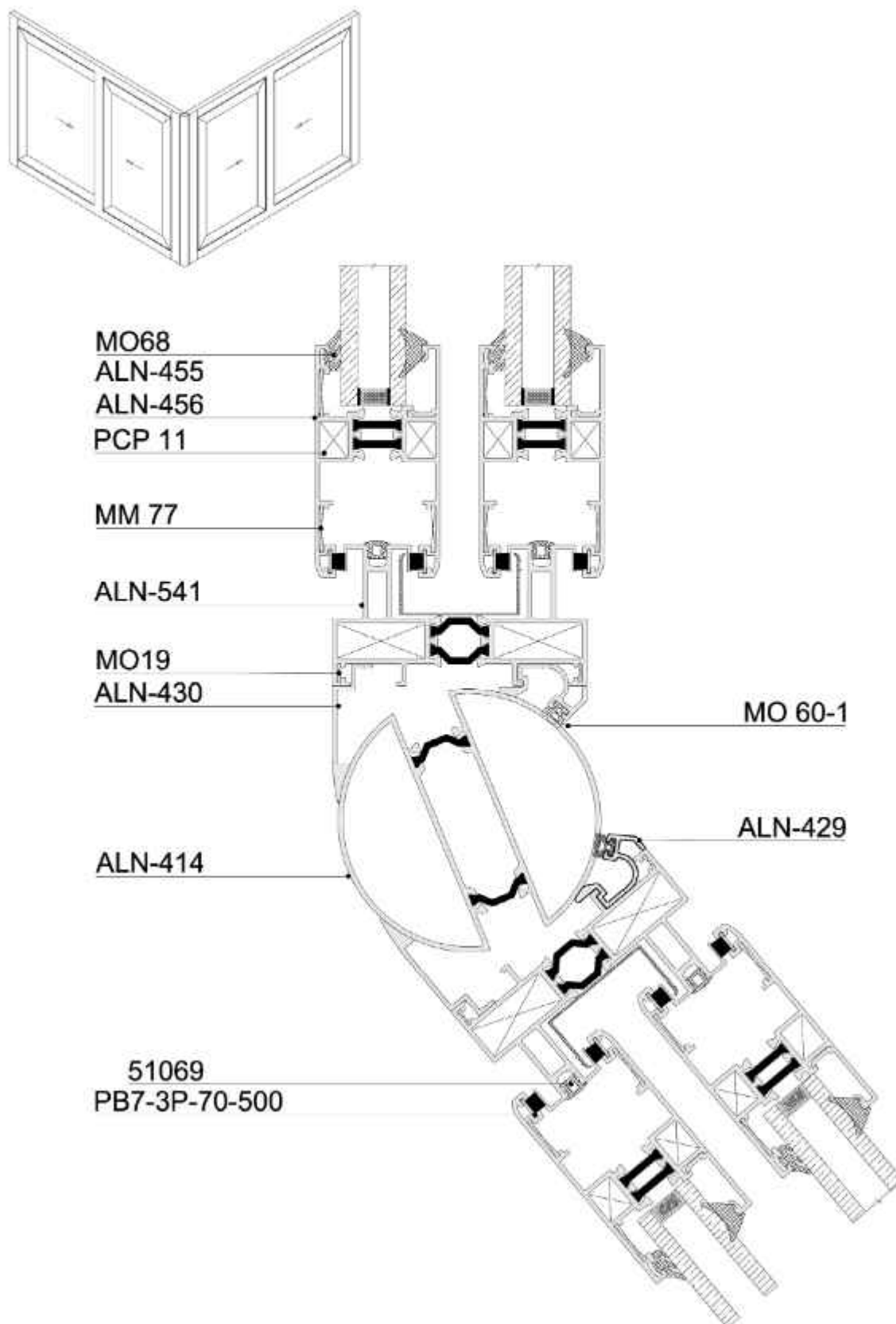


## Slide System 77 Series

### Fabrication Details

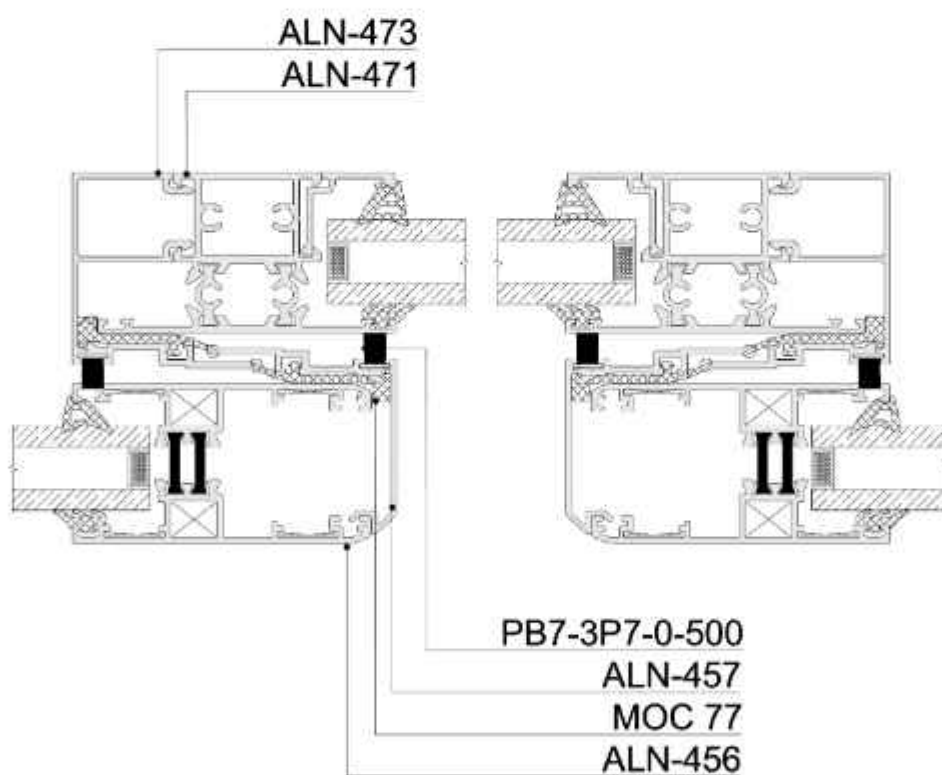
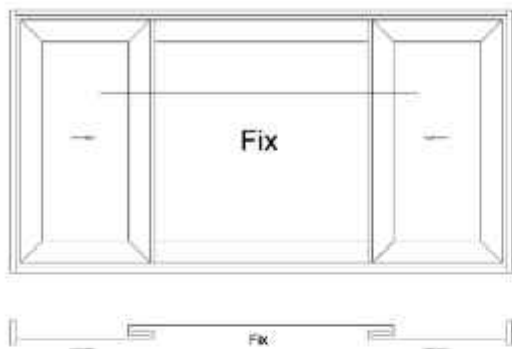


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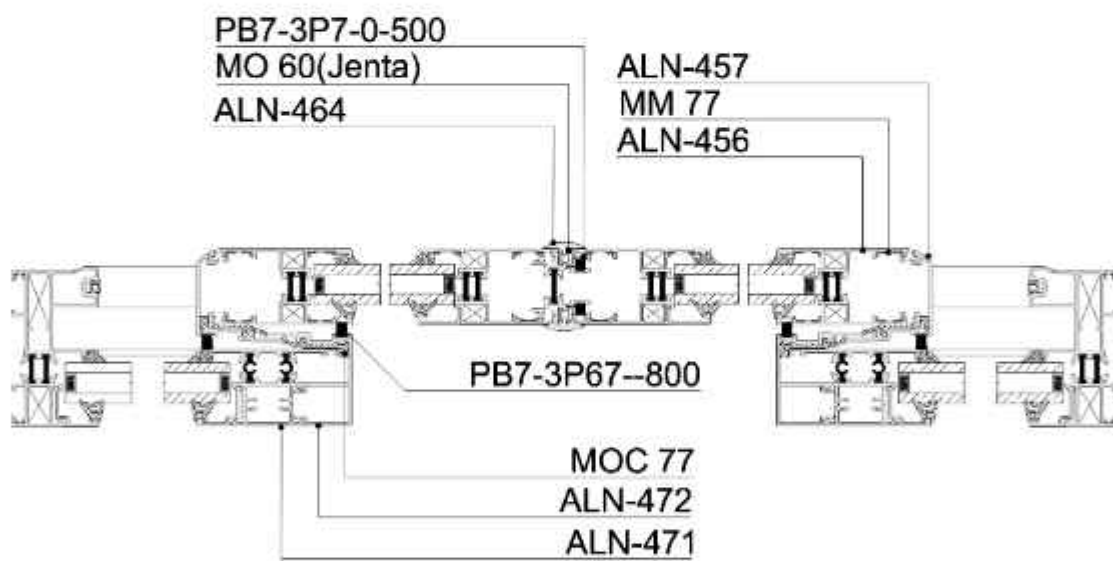
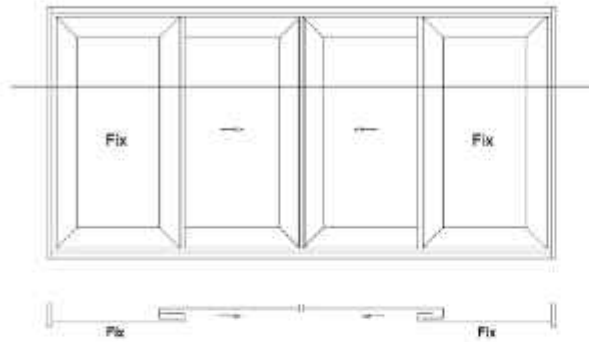


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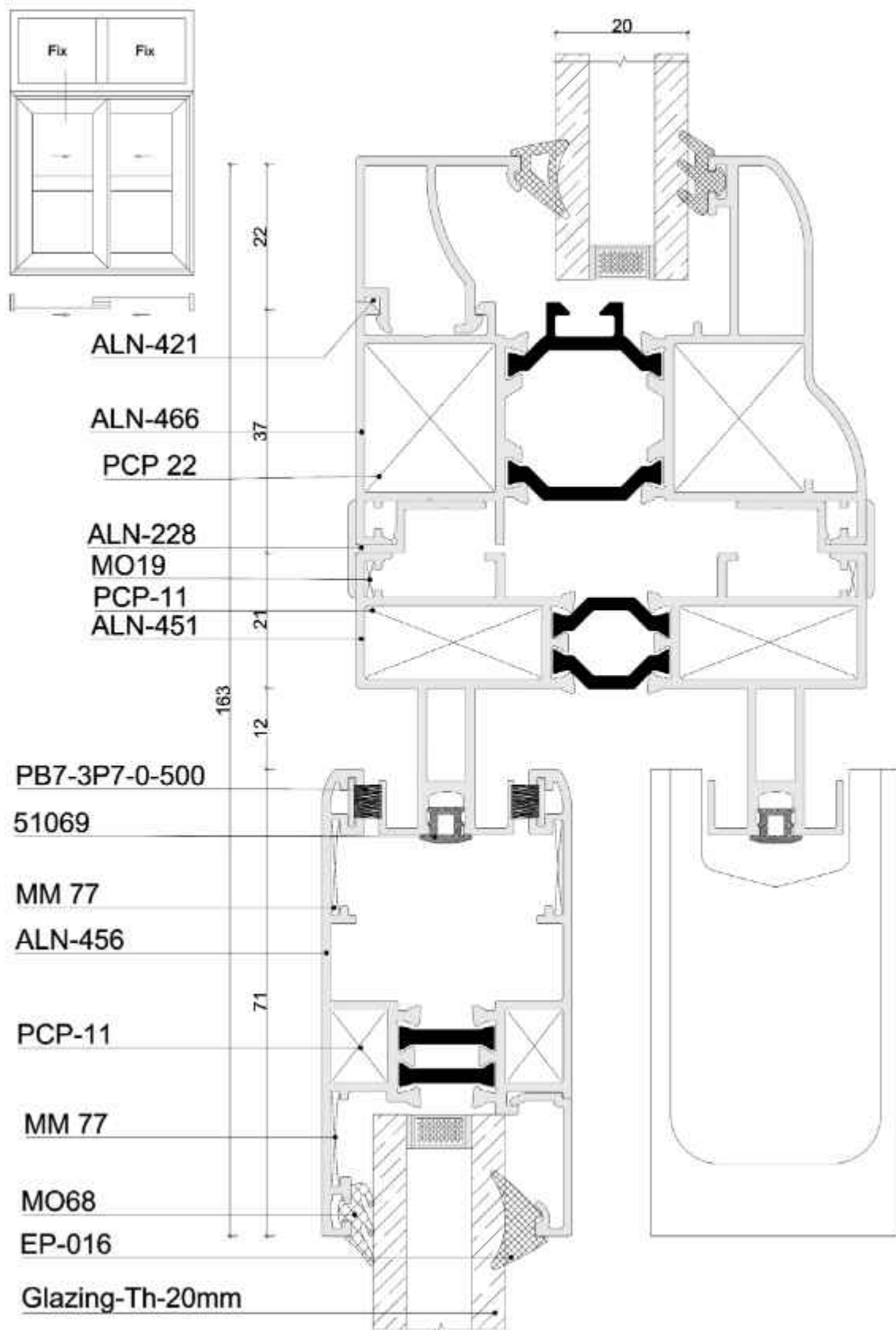
### Fabrication Details



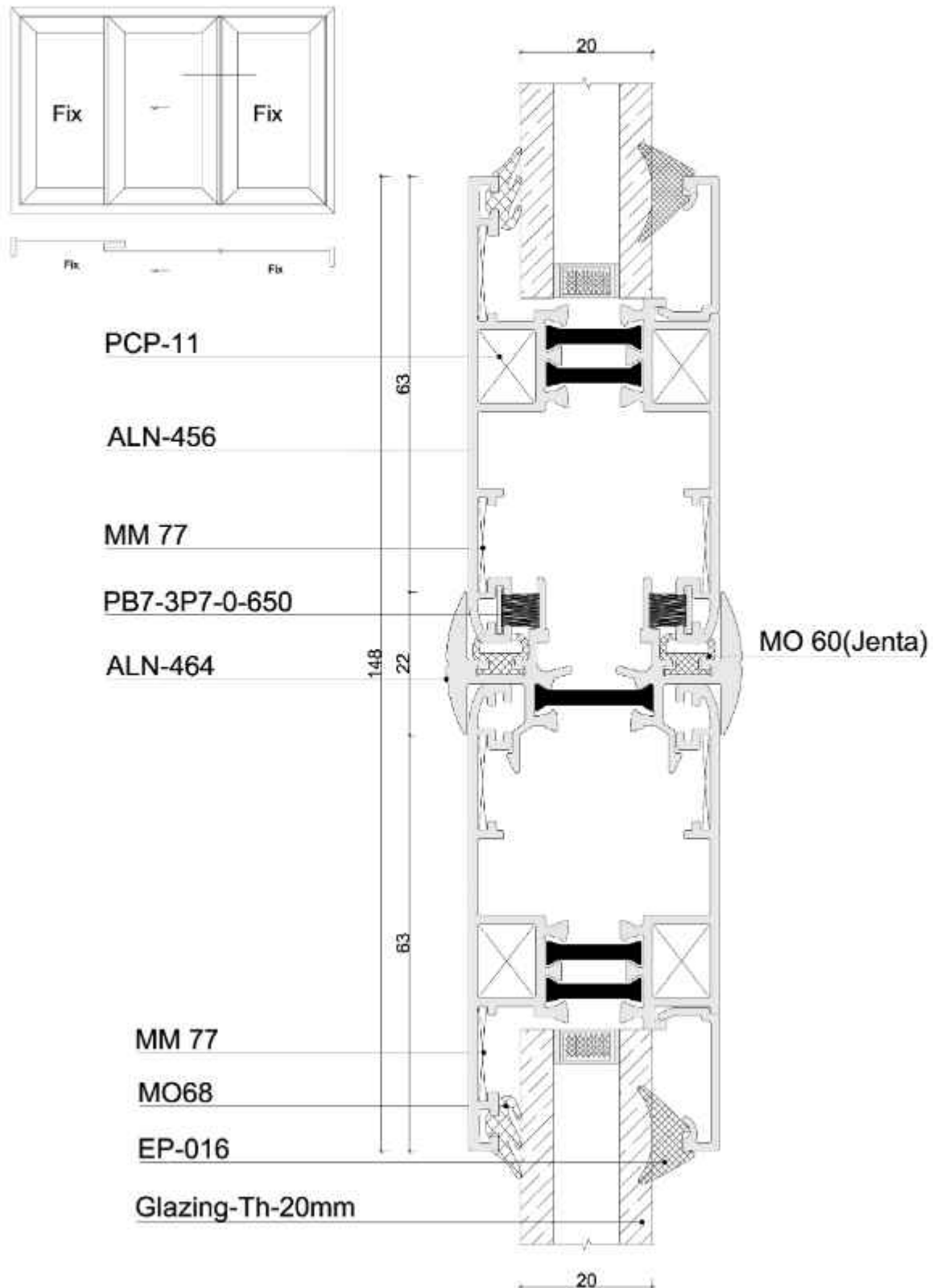
## Slide System 77 Series Fabrication Details



## Slide System 77 Series Fabrication Details

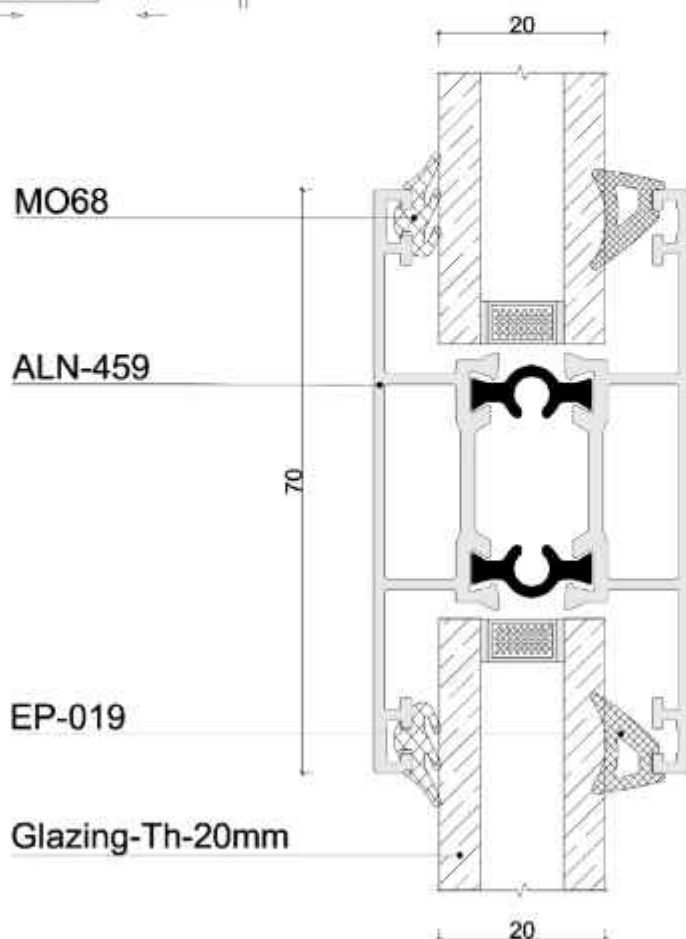


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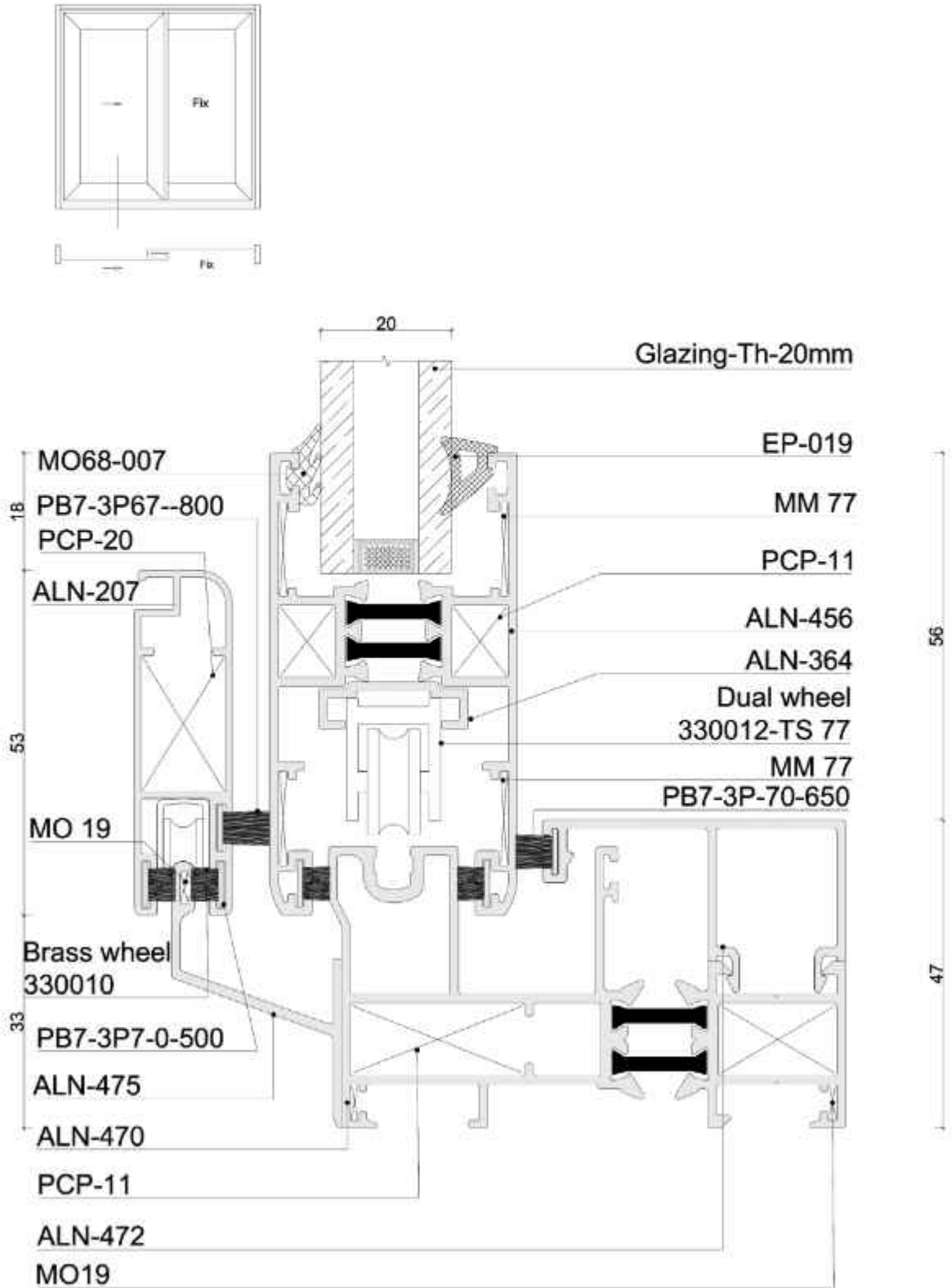


## Slide System 77 Series

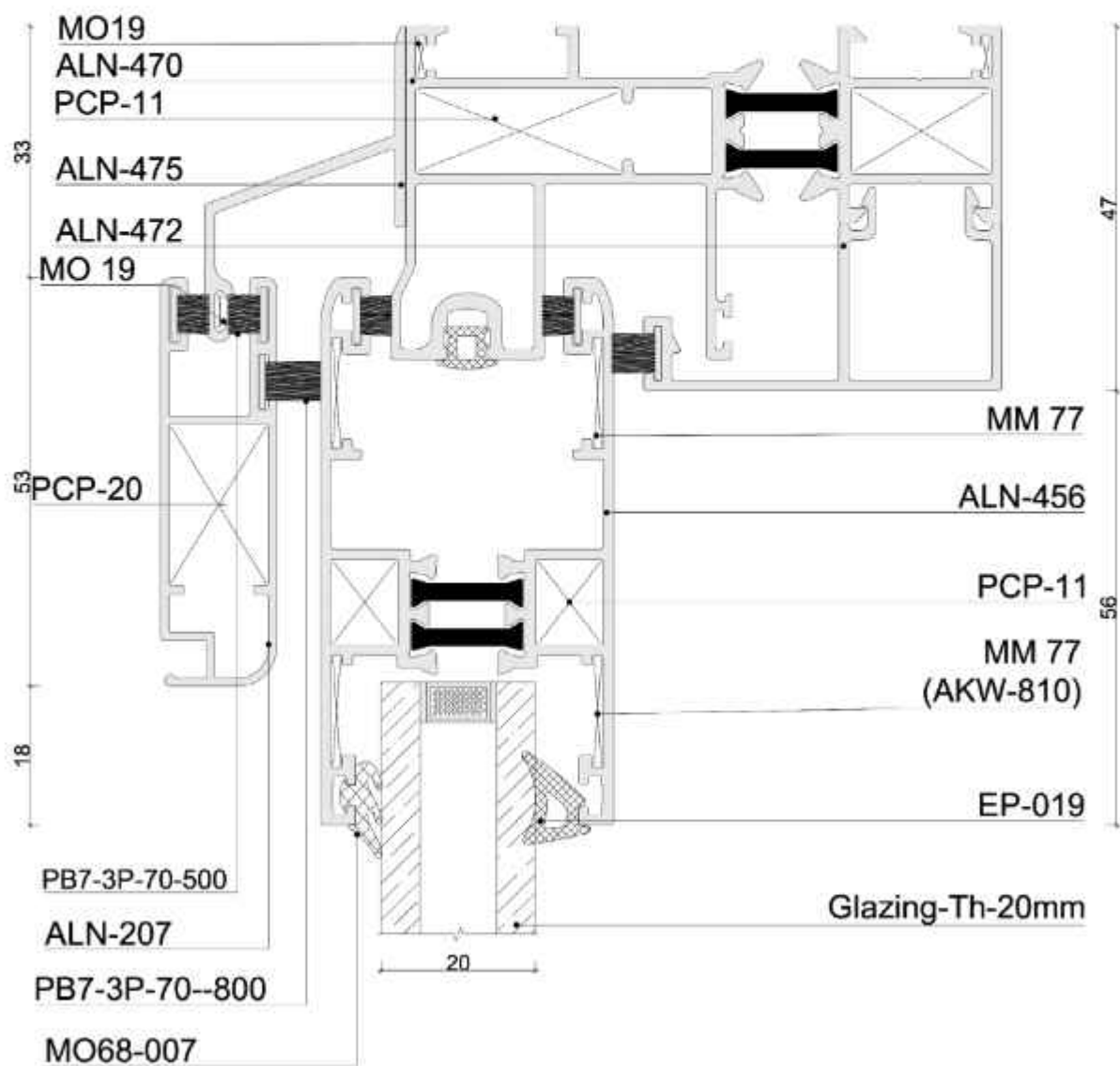
### Fabrication Details



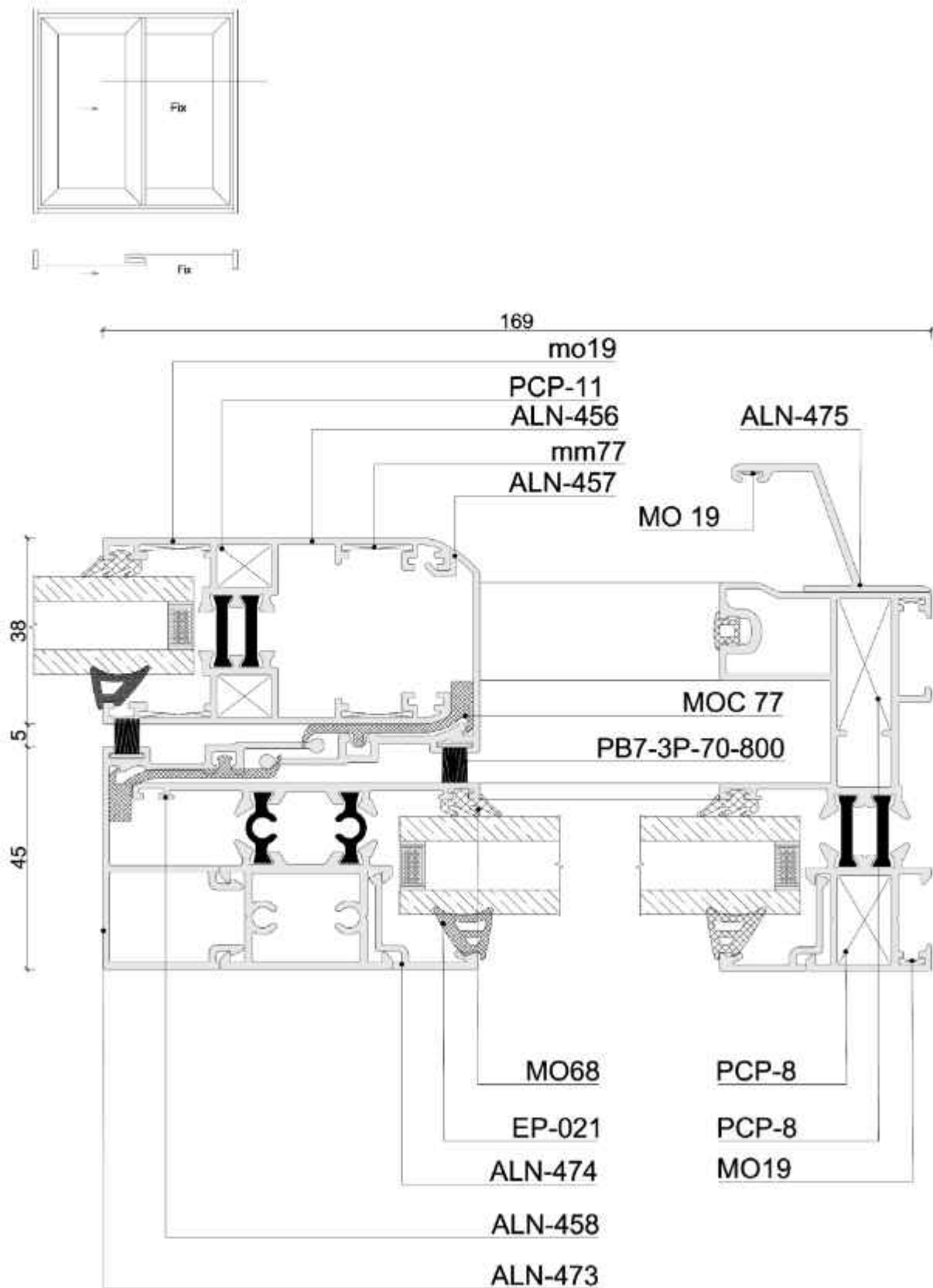
## Slide System 77 Series Fabrication Details



## Slide System 77 Series Fabrication Details

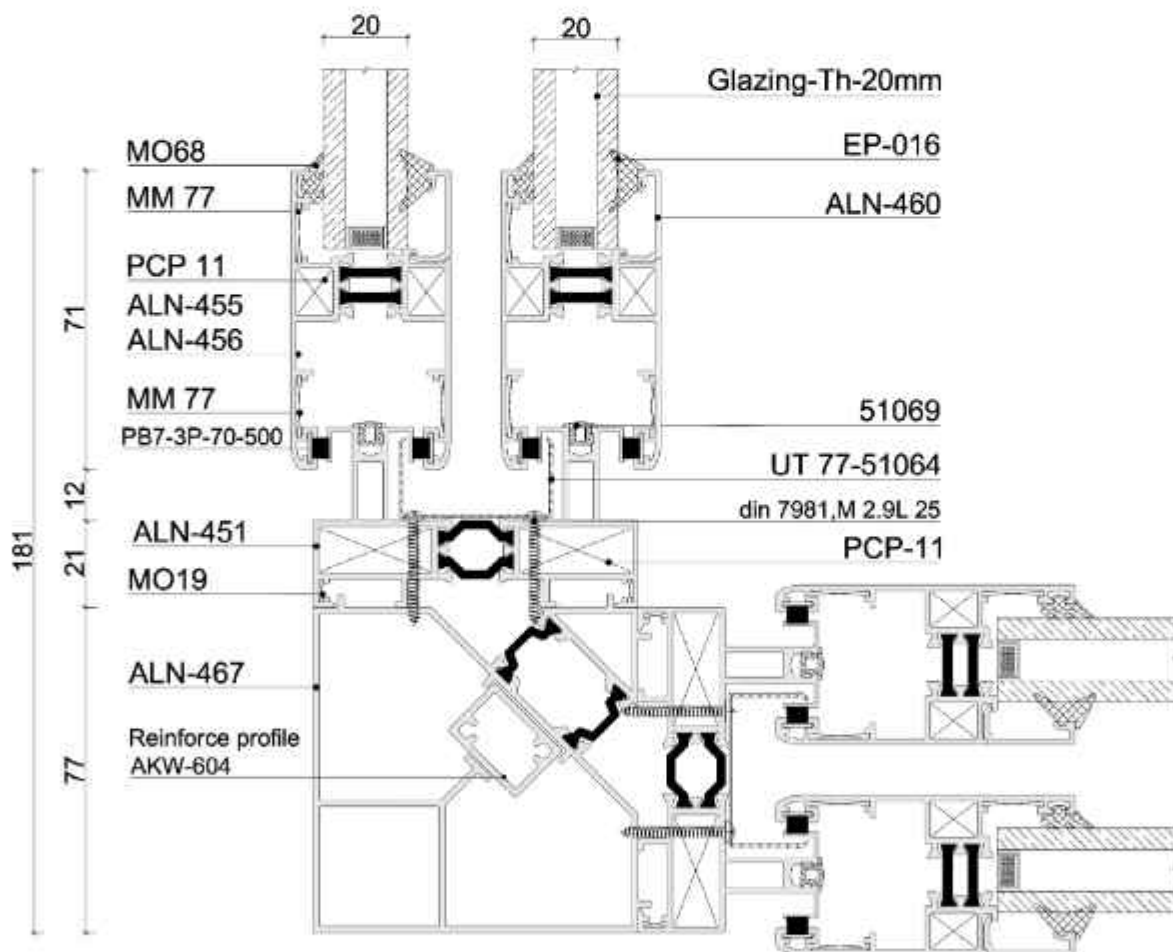
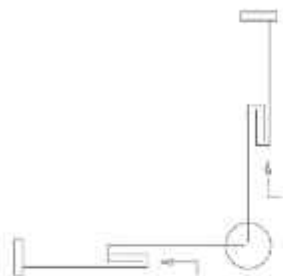


## Slide System 77 Series Fabrication Details



## Slide System 77 Series

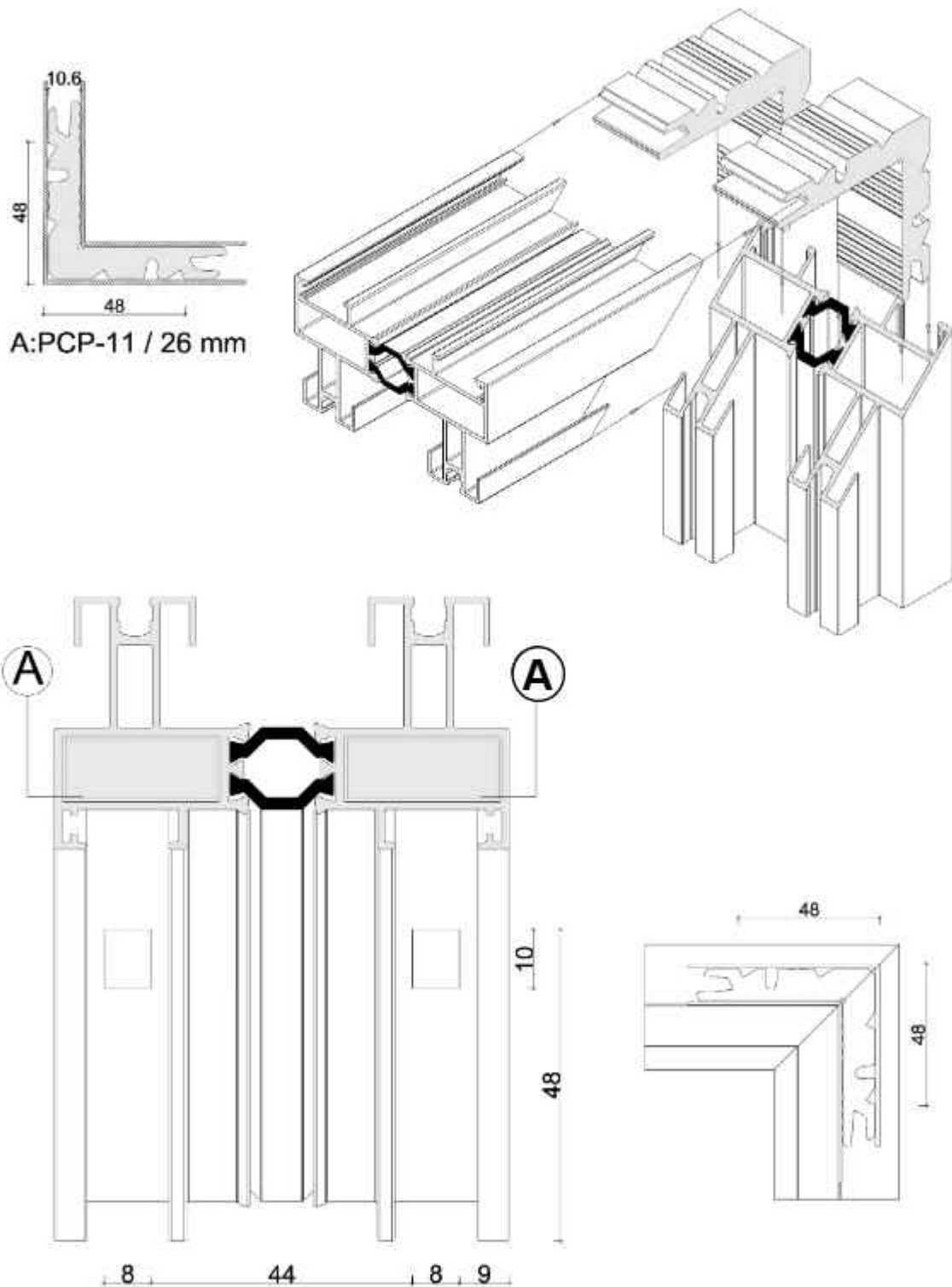
### Fabrication Details



# Slide System 77 Series

## Assembly Drawing

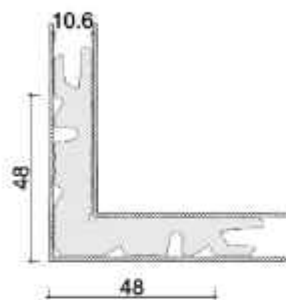
### ALN - 451



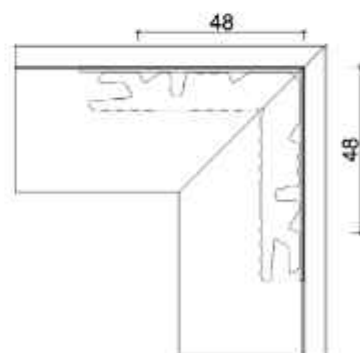
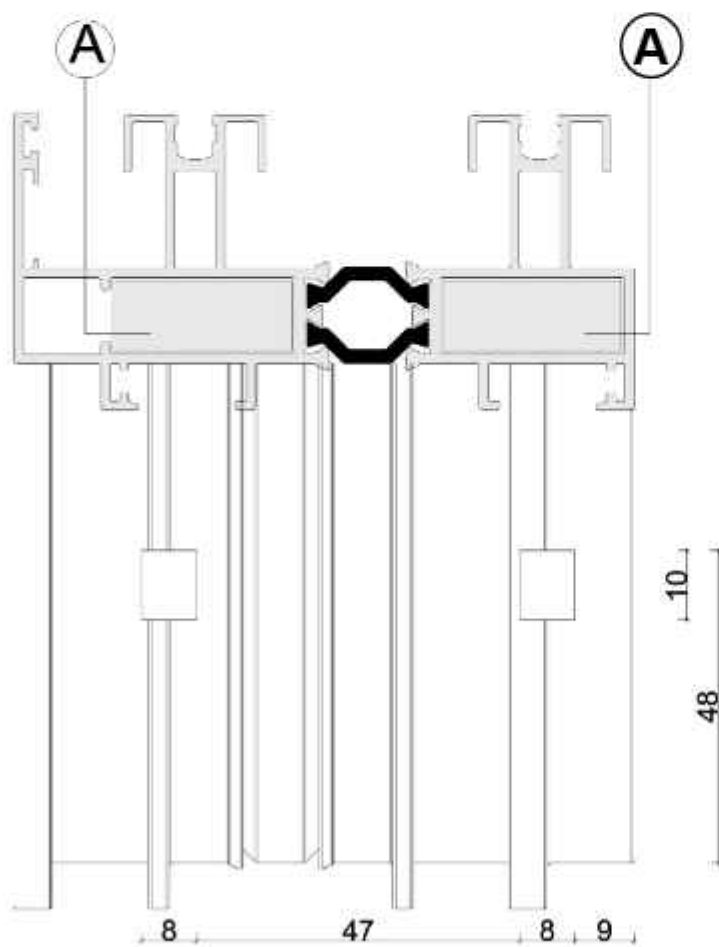
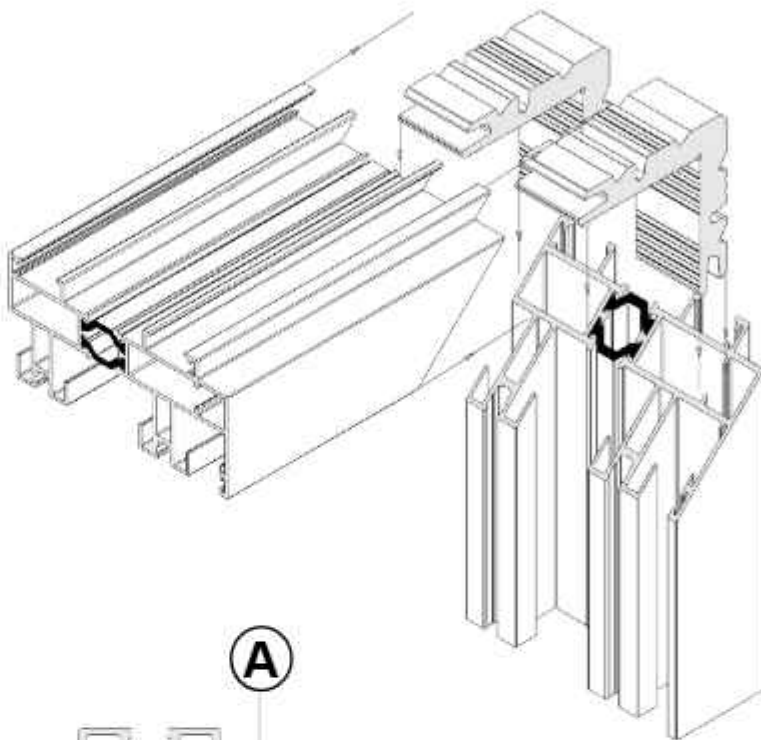
## Slide System 77 Series

Assembly Drawing

ALN - 453



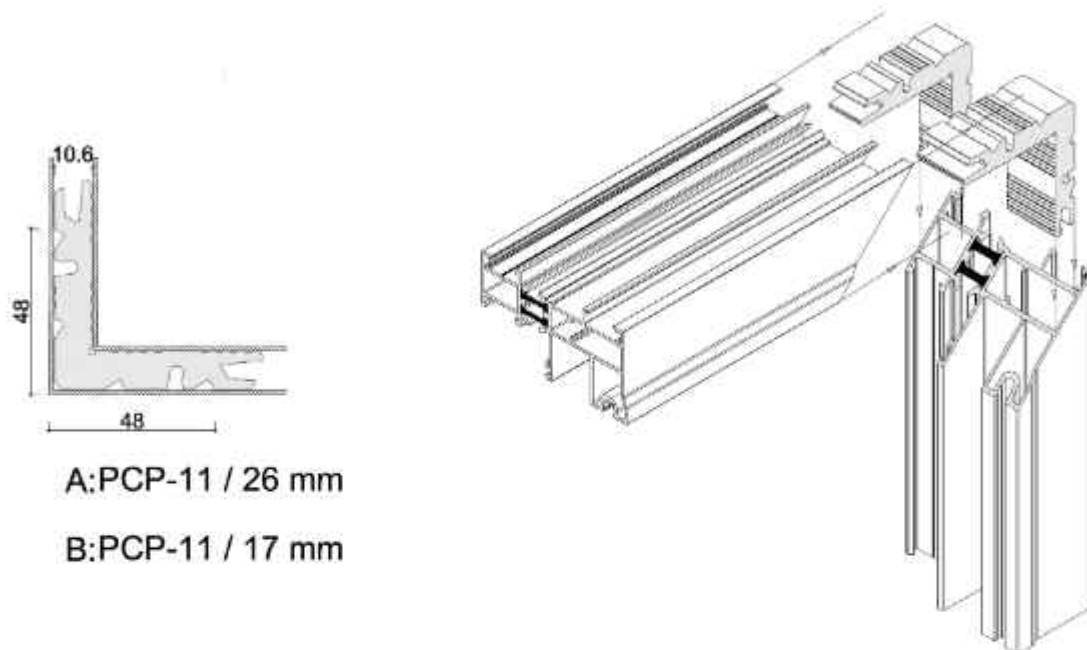
A:PCP-11 / 26 mm



# Slide System 77 Series

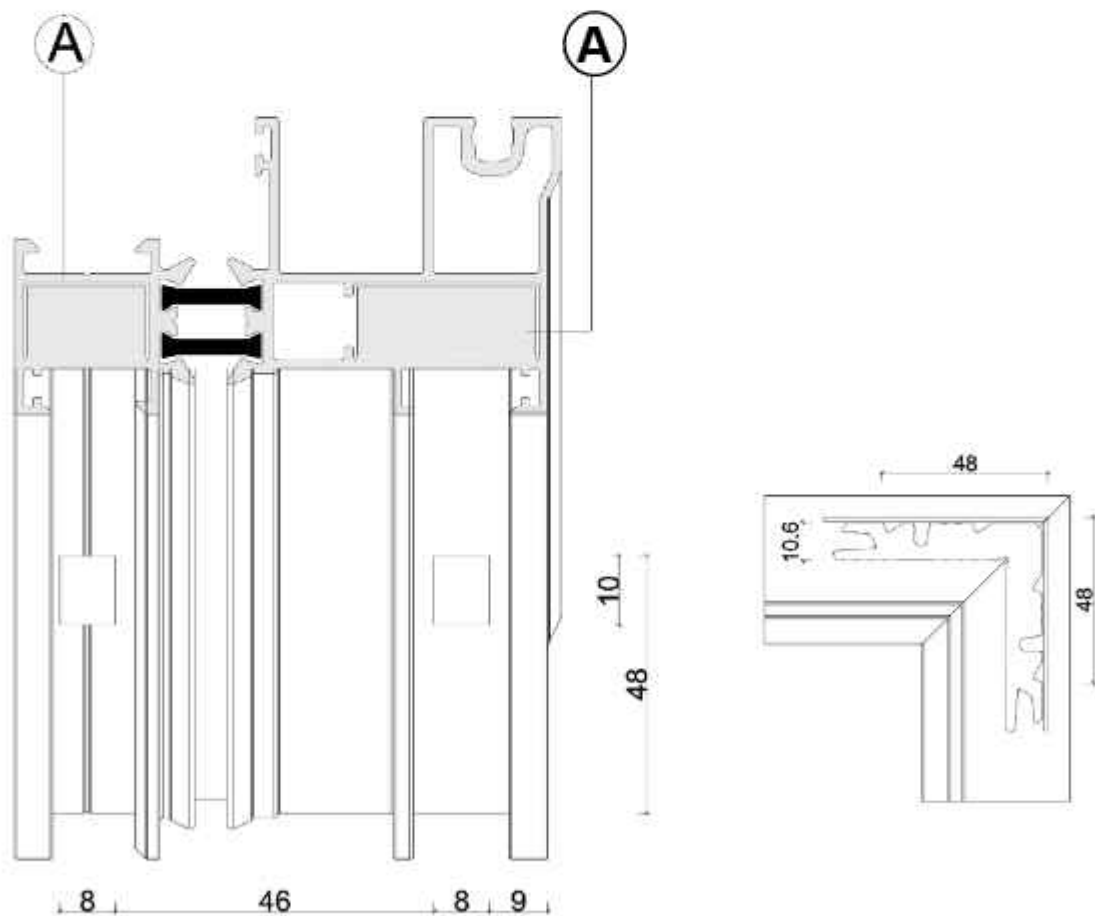
## Assembly Drawing

### ALN - 470



A:PCP-11 / 26 mm

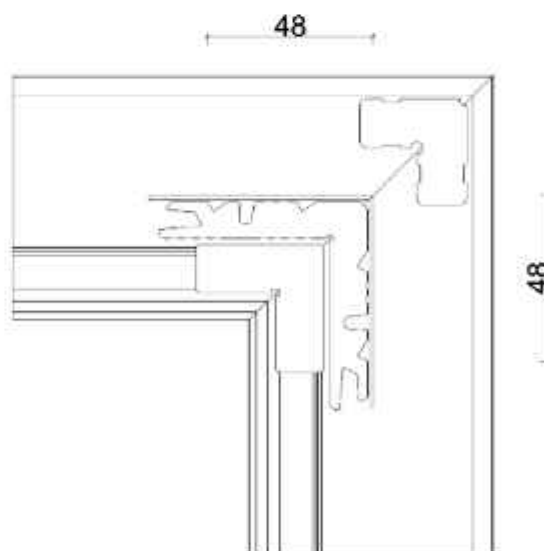
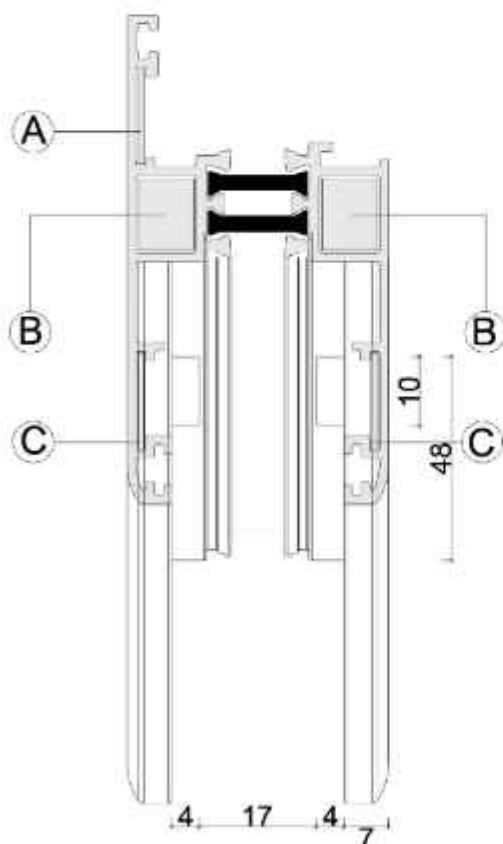
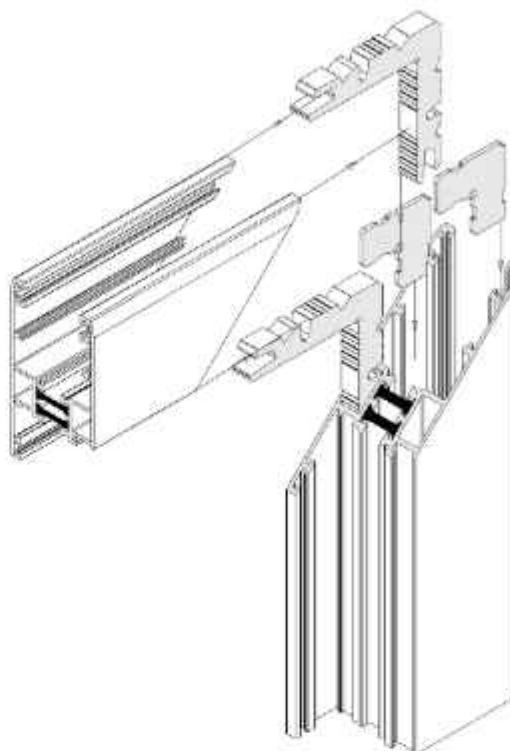
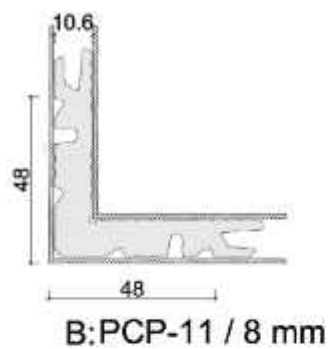
B:PCP-11 / 17 mm



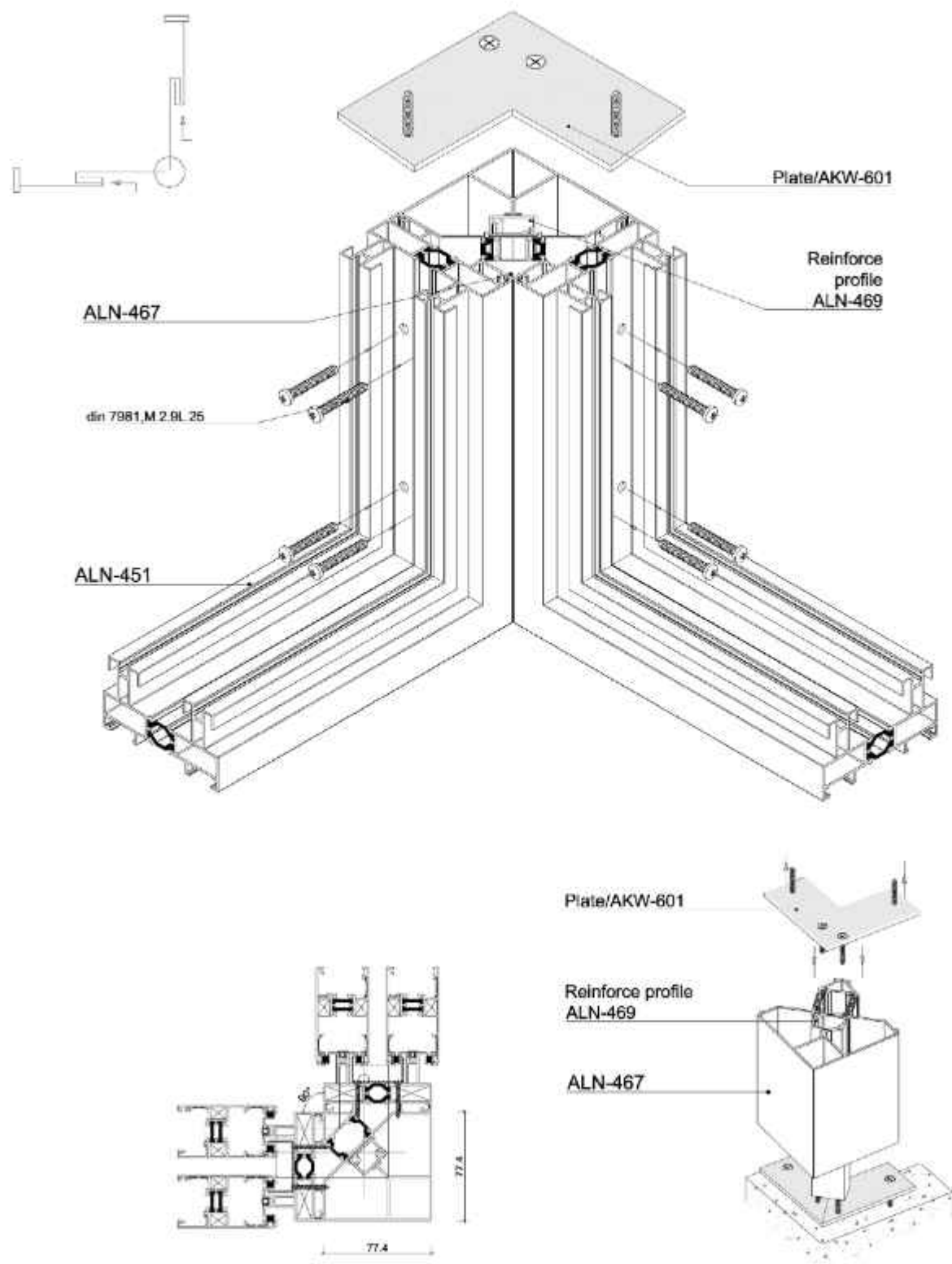
## Slide System 77 Series

Assembly Drawing

ALN - 455

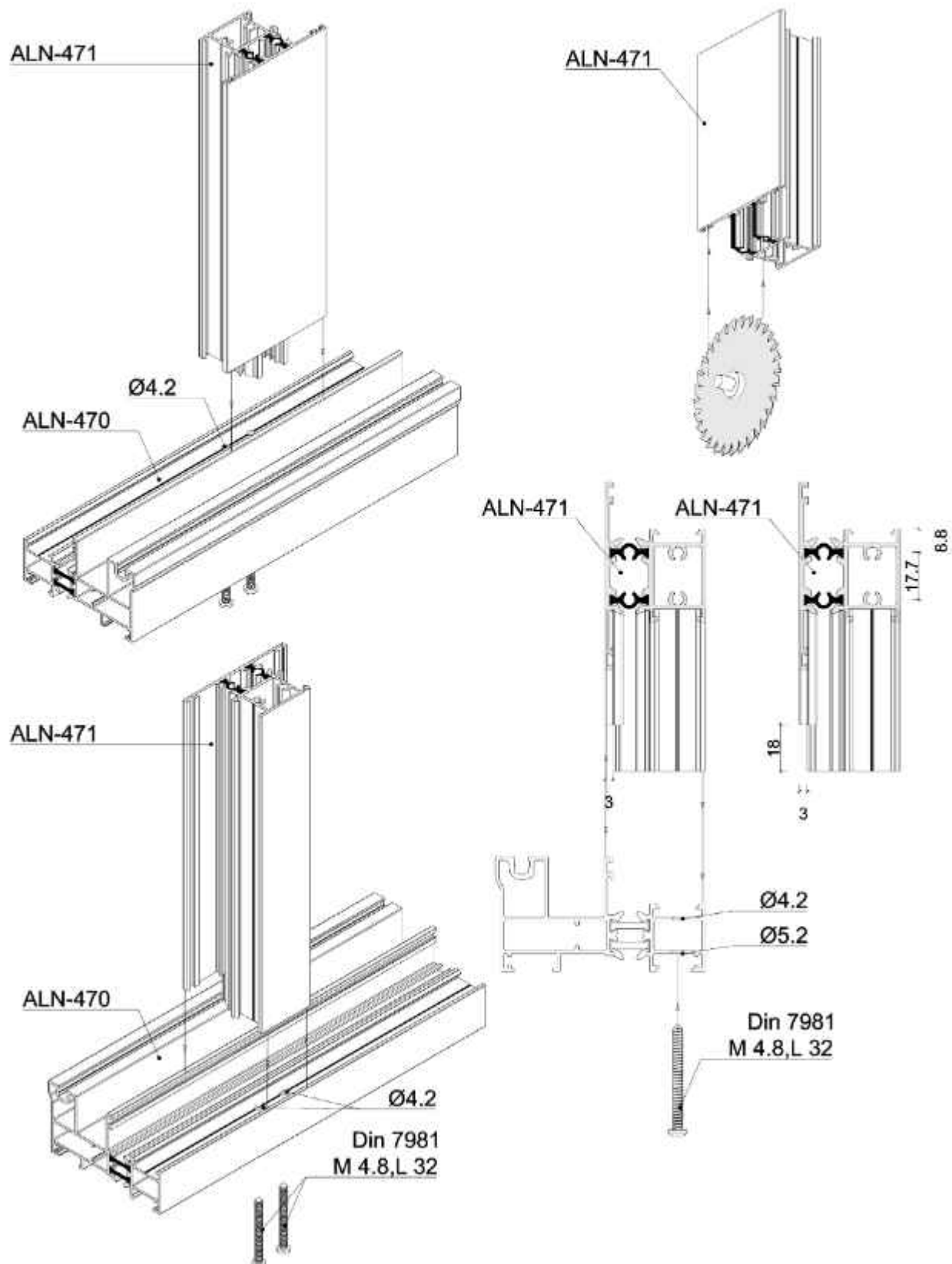


# Slide System 77 Series Assembly Drawing

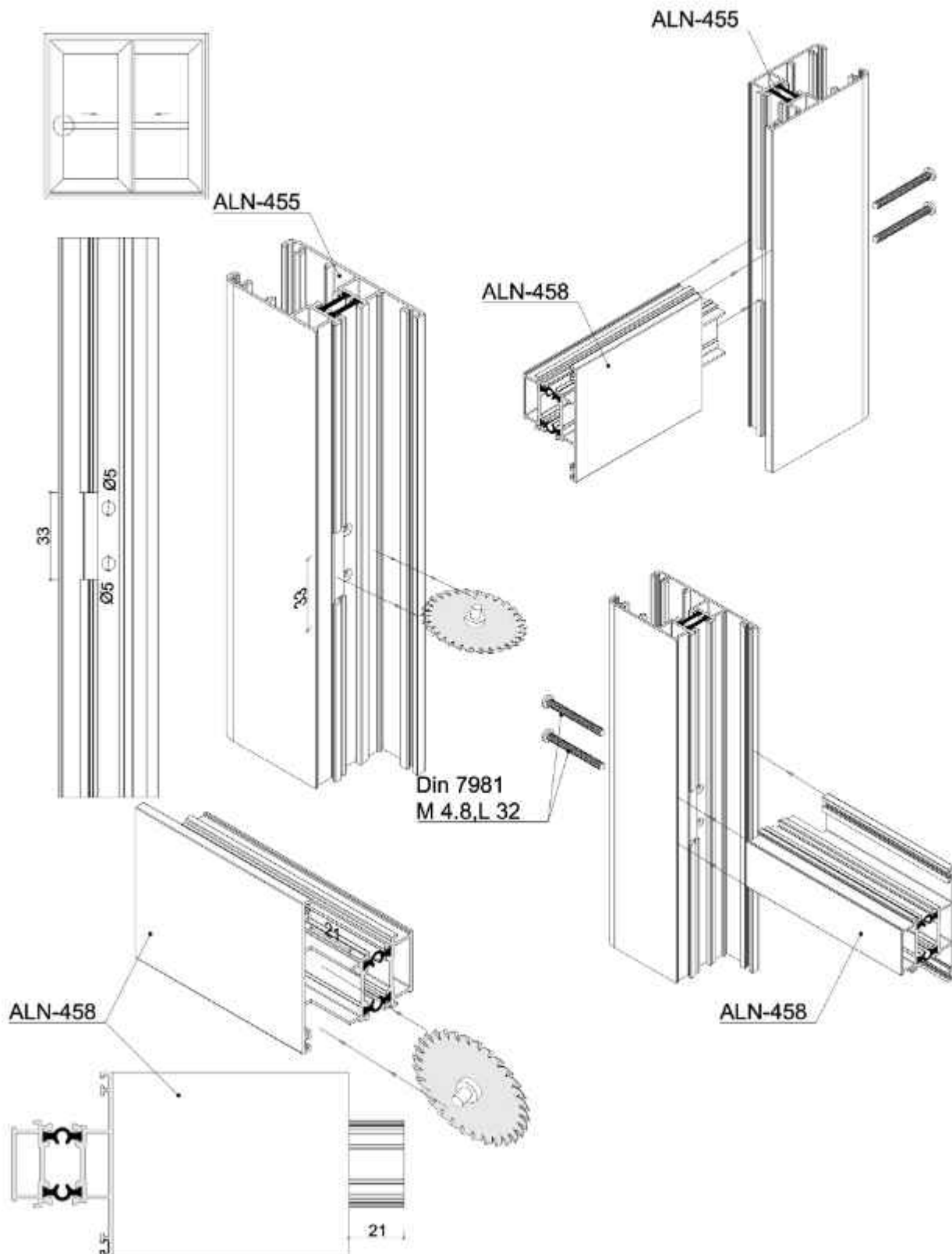


## Slide System 77 Series

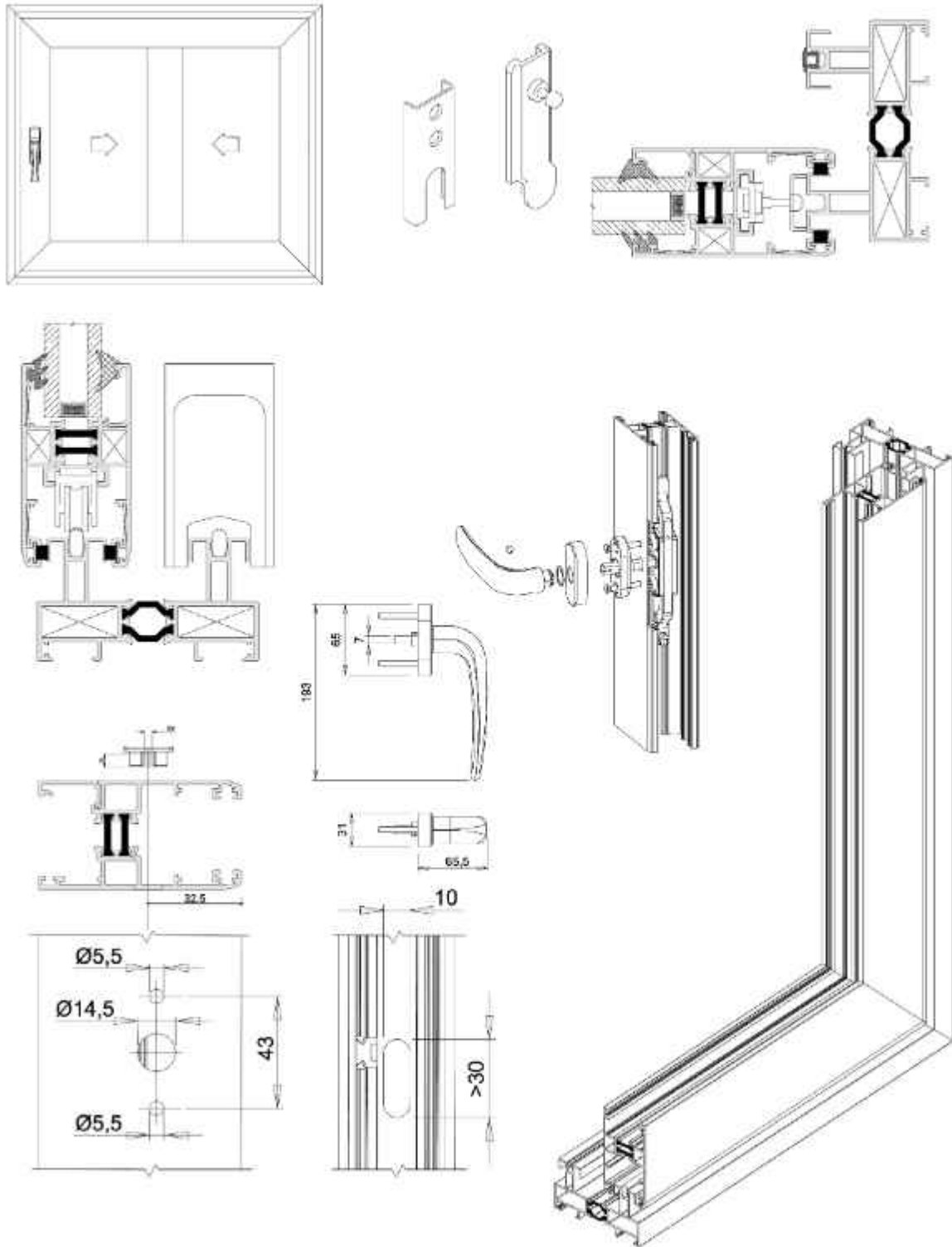
### Assembly Drawing



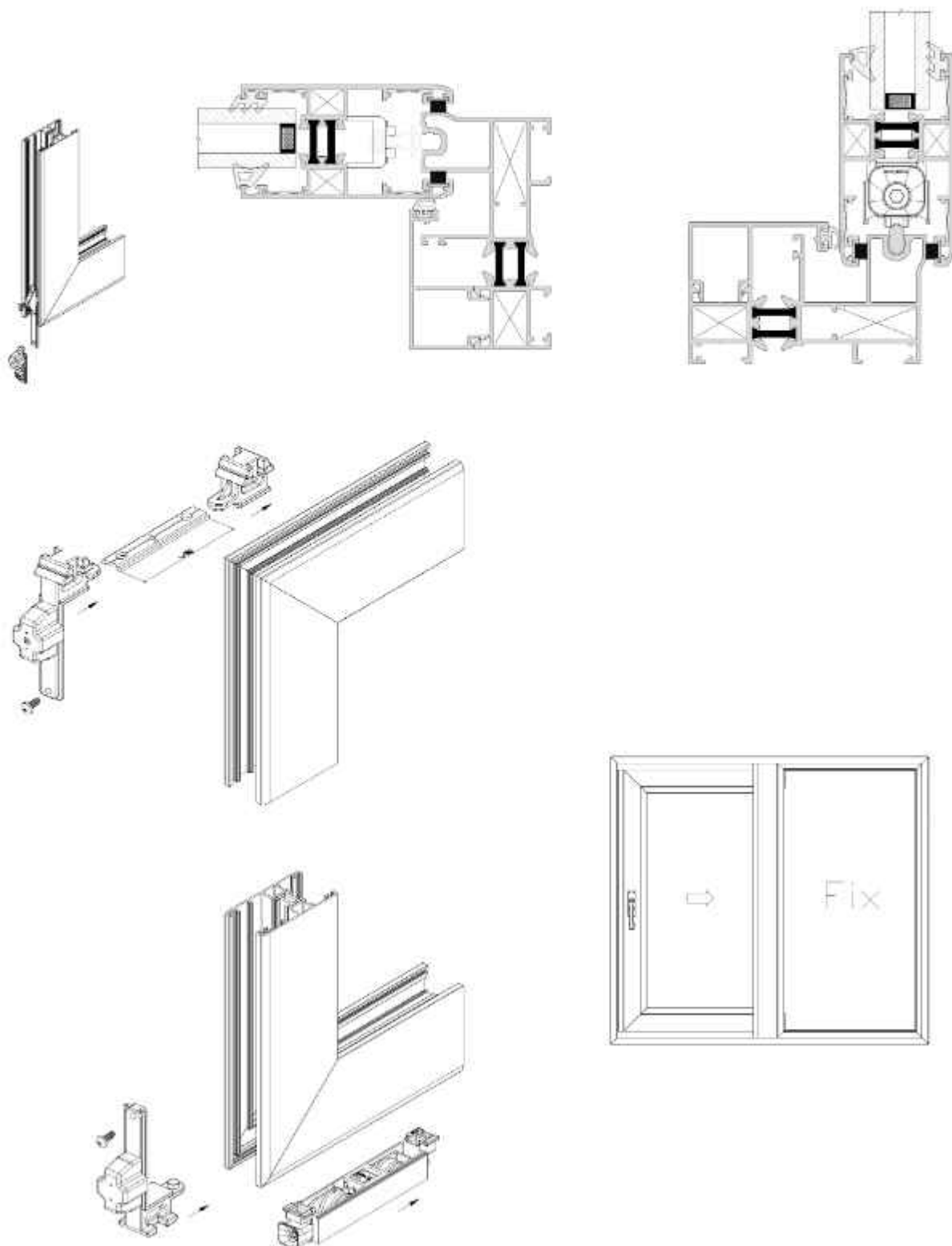
# Slide System 77 Series Assembly Drawing

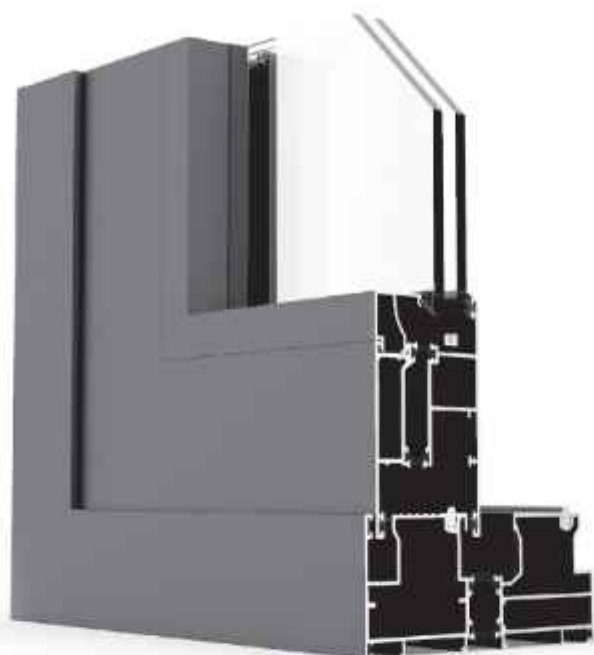


## Slide System 77 Series Assembly Drawing



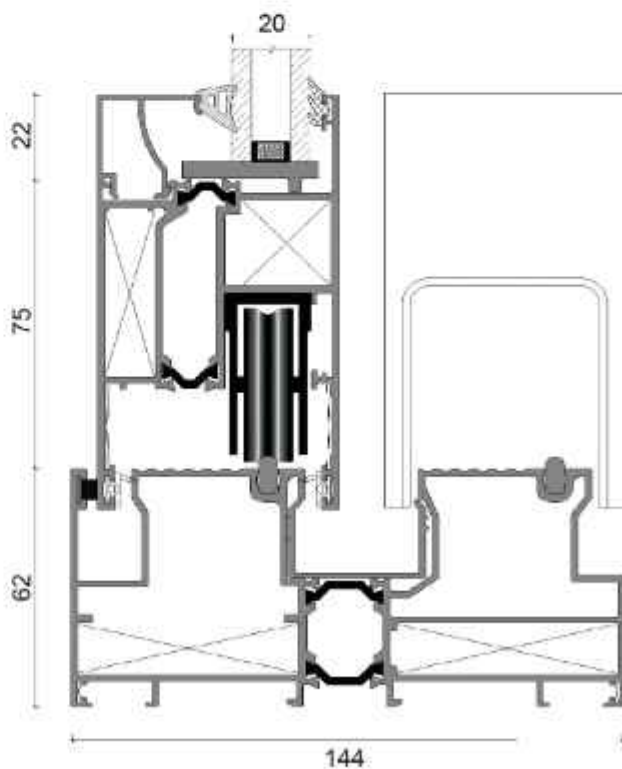
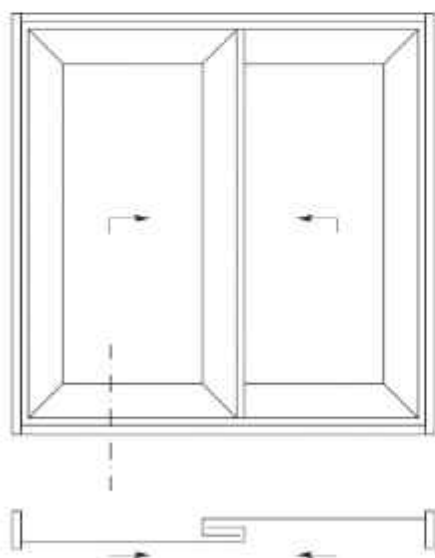
## Slide System 77 Series Hardware Installation



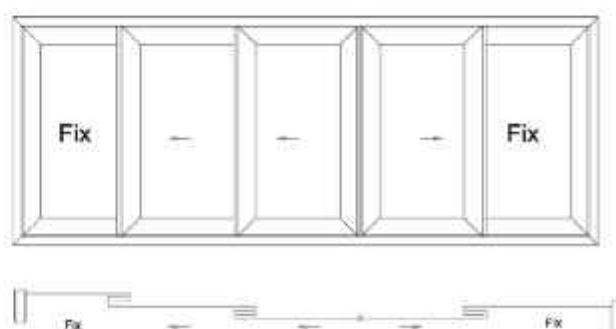
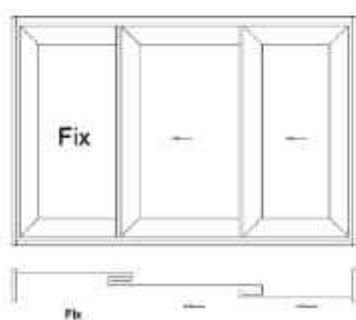
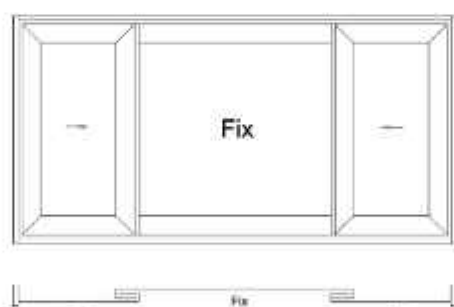
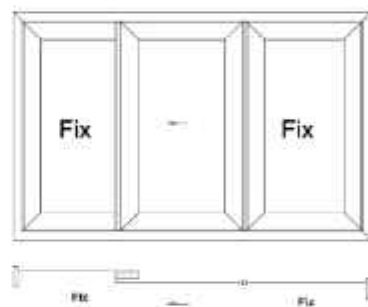
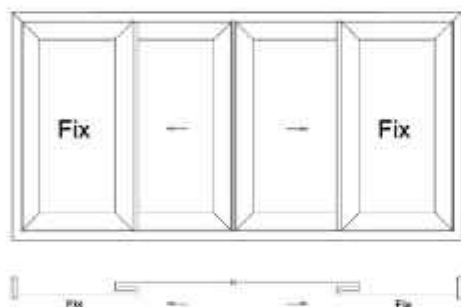
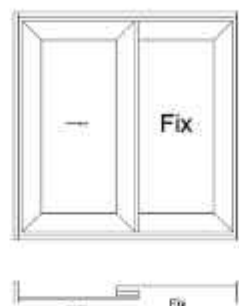


## Lift & Slide System 143 Series

|                           |                       |
|---------------------------|-----------------------|
| Profile width:            | 143 - 218 mm          |
| Vent width:               | 62 mm                 |
| Wall thickness:           | 1.6 - 1.7 mm          |
| Rubber description:       | EPDM DIN 7863         |
| Glass thickness:          | 20 - 30 mm            |
| Aluminum alloy extrusion: | EN AW 6063 T5         |
| Isulation bar:            | Polyamide Width 20 mm |
| Safety drainage system    |                       |
| Various typologies        |                       |



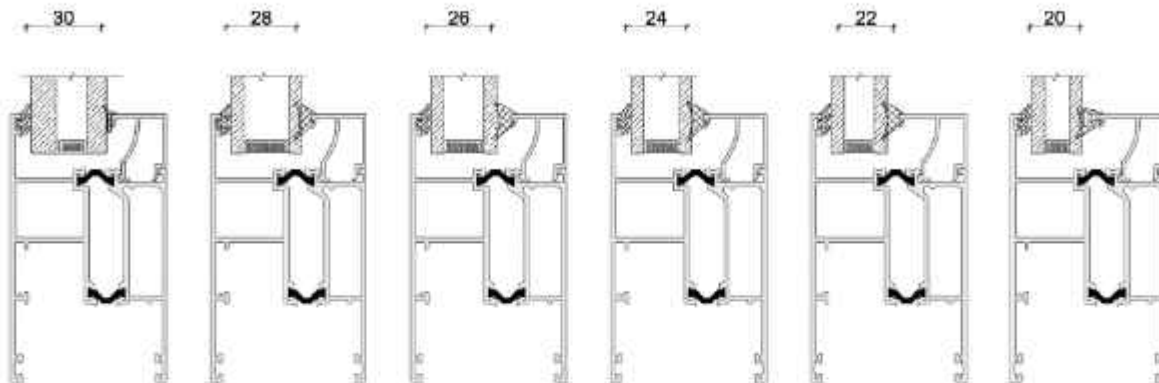
## Lift & Slide System 143 Series Typologies



## Lift & Slide System 143 Series

Glazing Table

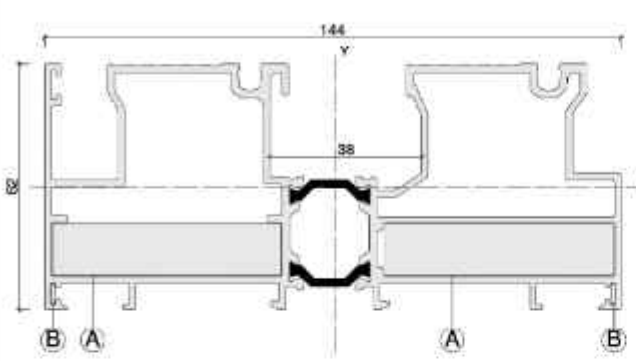
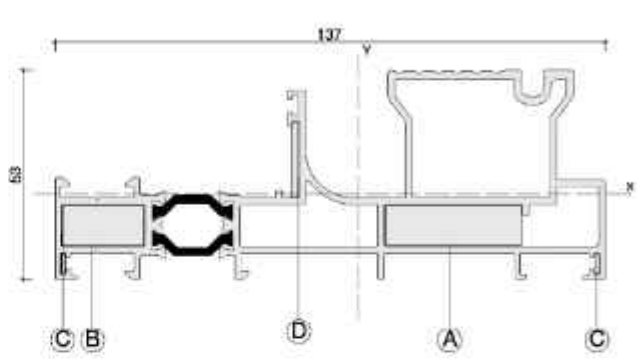
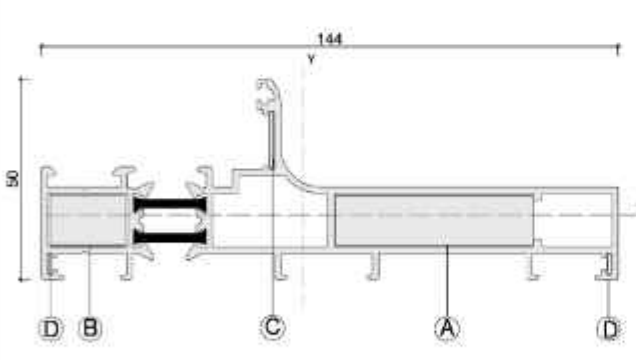
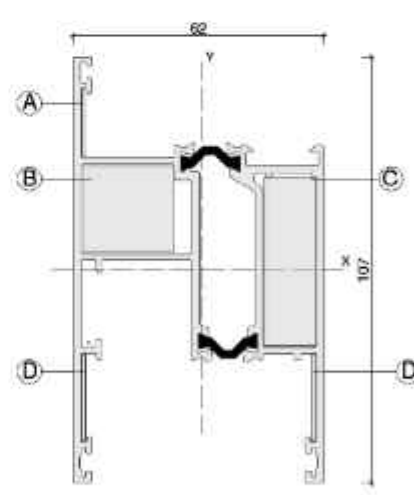
ALN - 484



| Glazing Thickness | Gasket Inside                                                                                 | Gasket Outside                                                                              | Glazing Bead                                                                                     |
|-------------------|-----------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|
| 20 mm             | <br>EP-021 | <br>MO68 | <br>ALN-422 |
| 22 mm             | <br>EP-016 | <br>MO68 | <br>ALN-422 |
| 24 mm             | <br>EP-016 | <br>MO68 | <br>ALN-421 |
| 26 mm             | <br>EP-016 | <br>MO68 | <br>ALN-323 |
| 28 mm             | <br>EP-016 | <br>MO68 | <br>ALN-323 |
| 30 mm             | <br>EP-015 | <br>MO68 | <br>ALN-323 |

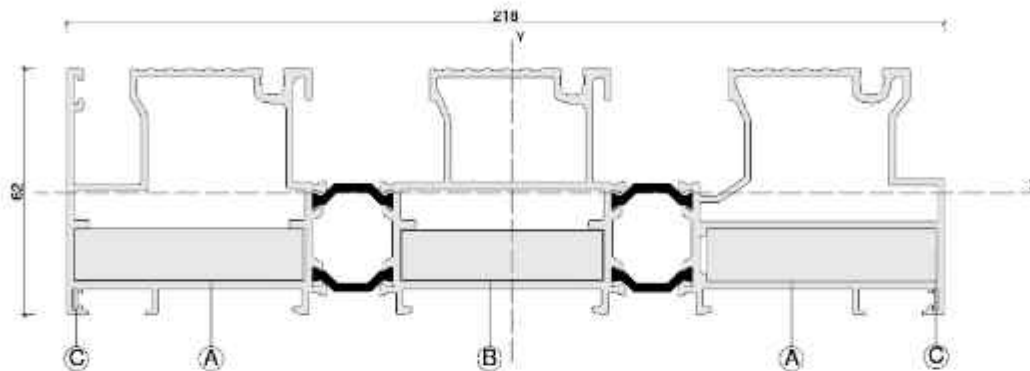
## Lift & Slide System 143 Series

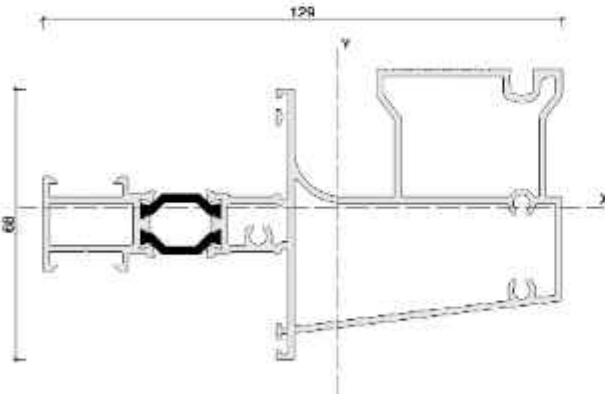
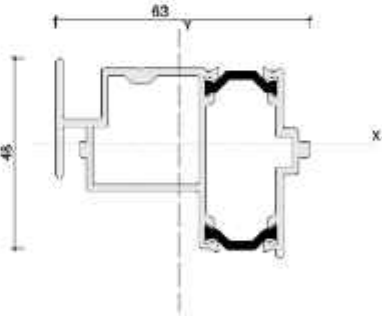
### Profile & Accessories Information

|                                                                                     |                                                                                                             |                                                                                      |                                                                                                                                                                                                        |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|    |                                                                                                             |    |                                                                                                                                                                                                        |
| $I_x$ : 47.26 cm <sup>4</sup>                                                       | $I_y$ : 238.10 cm <sup>4</sup>                                                                              | $I_x$ : 20.64 cm <sup>4</sup>                                                        | $I_y$ : 152.73 cm <sup>4</sup>                                                                                                                                                                         |
| Frame : ALN-480                                                                     | A: PCP-13 / 56.5 mm       | Monorail Frame : ALN-490                                                             | A: PCP-10 / 33.5 mm                                                                                                |
| Weight: 3220 gr/m                                                                   | B: MO19(399012)          | Weight: 2540 gr/m                                                                    | B: PCP-10 / 19.8 mm                                                                                               |
|                                                                                     |                                                                                                             |                                                                                      | C: MO19(399012)  D: Fuj2000  |
|  |                                                                                                             |  |                                                                                                                                                                                                        |
| $I_x$ : 8.29 cm <sup>4</sup>                                                        | $I_y$ : 139.22 cm <sup>4</sup>                                                                              | $I_x$ : 53.13 cm <sup>4</sup>                                                        | $I_y$ : 44.22 cm <sup>4</sup>                                                                                                                                                                          |
| Frame : ALN-482                                                                     | A: PCP-13 / 49 mm        | Sash : ALN-484                                                                       | A:  B:                       |
| Weight: 2051 gr/m                                                                   | B: PCP-13 / 19 mm        | Weight: 2272 gr/m                                                                    | C:  D:                       |
|                                                                                     | C: MM77 D: MO19(399012)  |                                                                                      | C: PCP-42/12mm  D: Fuj2000   |

## Lift & Slide System 143 Series

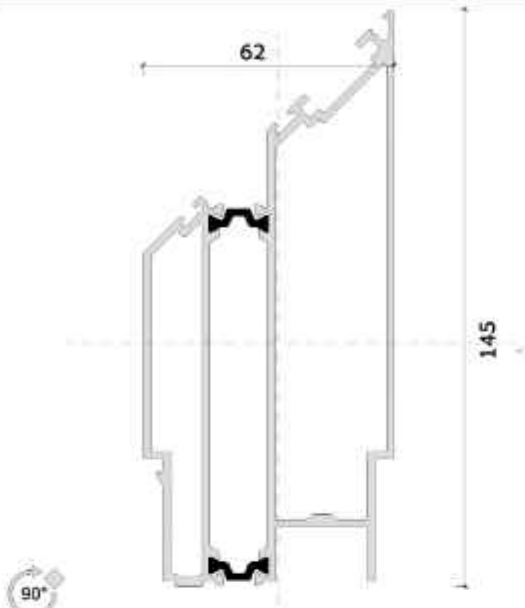
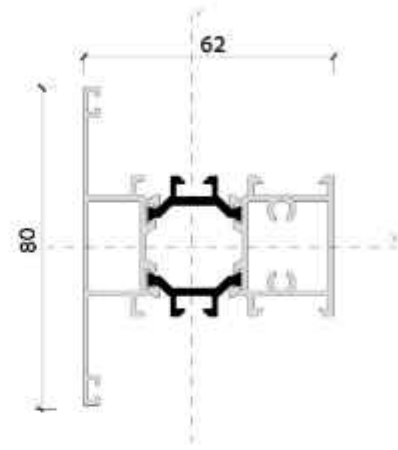
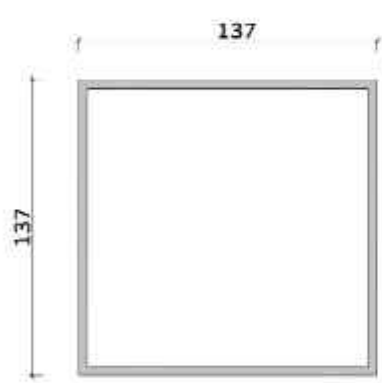
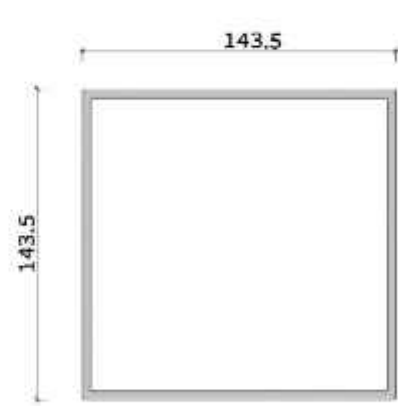
### Profile & Accessories Information



|                                                                                     |                           |                                                                                      |                           |
|-------------------------------------------------------------------------------------|---------------------------|--------------------------------------------------------------------------------------|---------------------------|
| $I_x: 68.88 \text{ cm}^4$                                                           |                           | $I_y: 757.90 \text{ cm}^4$                                                           |                           |
| Triple rail Frame : ALN-481                                                         |                           | A: PCP-13 / 56 mm                                                                    |                           |
| Weight: 4824 gr/m                                                                   |                           | B: PCP-13 / 49 mm                                                                    |                           |
|                                                                                     |                           | C: MO19(399012)                                                                      |                           |
|  |                           |  |                           |
| $I_x: 32.16 \text{ cm}^4$                                                           | $I_y: 138.4 \text{ cm}^4$ | $I_x: 8.31 \text{ cm}^4$                                                             | $I_y: 18.56 \text{ cm}^4$ |
| Transom : ALN-491                                                                   | -                         | Profile : ALN-488                                                                    | -                         |
| Weight: 2591 gr/m                                                                   | -                         | Weight: 1387 gr/m                                                                    | -                         |

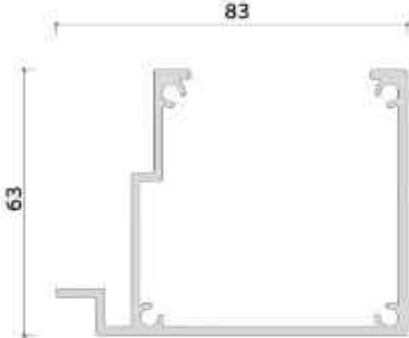
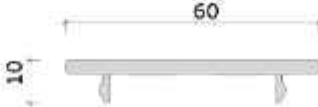
## Lift & Slide System 143 Series

### Profile & Accessories Information

|                                                                                     |                                |                                                                                      |                               |
|-------------------------------------------------------------------------------------|--------------------------------|--------------------------------------------------------------------------------------|-------------------------------|
|    |                                |    |                               |
| $I_x$ : 51.01 cm <sup>4</sup>                                                       | $I_y$ : 186.49 cm <sup>4</sup> | $I_x$ : 11.57 cm <sup>4</sup>                                                        | $I_y$ : 22.89 cm <sup>4</sup> |
| Corner Profile: ALN-483                                                             | -                              | Transom : ALN-487                                                                    | -                             |
| Weight: 3003 gr/m                                                                   | -                              | Weight: 1417 gr/m                                                                    | -                             |
|  |                                |  |                               |
| $I_x$ : 51.01 cm <sup>4</sup>                                                       | $I_y$ : 186.49 cm <sup>4</sup> | $I_x$ : 11.57 cm <sup>4</sup>                                                        | $I_y$ : 22.89 cm <sup>4</sup> |
| Profile: ALN-476                                                                    | -                              | Profile: ALN-477                                                                     | -                             |
| Weight: 5764 gr/m                                                                   | -                              | Weight: 6046 gr/m                                                                    | -                             |

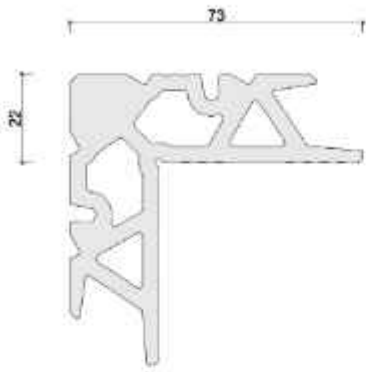
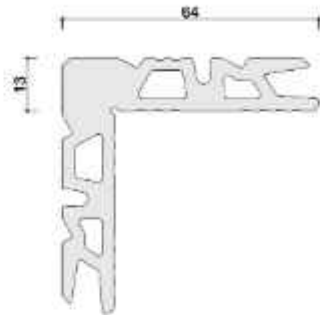
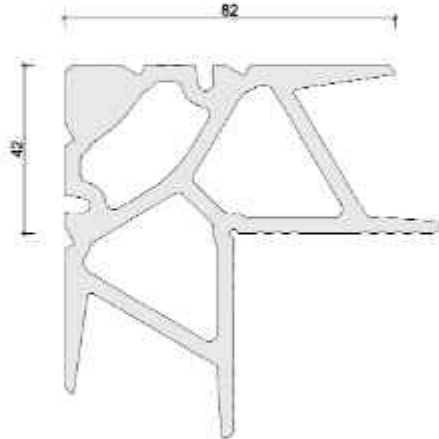
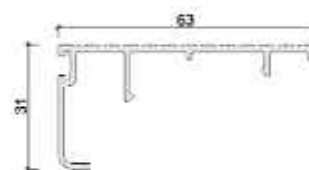
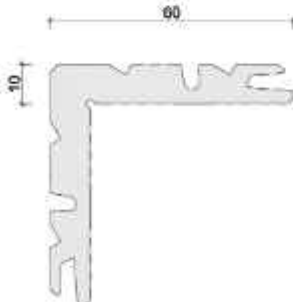
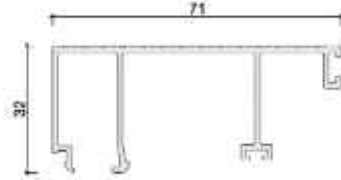
## Lift & Slide System 143 Series

### Profile & Accessories Information

|                                                                                     |                                |                                                                                      |                               |
|-------------------------------------------------------------------------------------|--------------------------------|--------------------------------------------------------------------------------------|-------------------------------|
|    |                                |    |                               |
| $I_x$ : 51.01 cm <sup>4</sup>                                                       | $I_y$ : 186.49 cm <sup>4</sup> | $I_x$ : 11.57 cm <sup>4</sup>                                                        | $I_y$ : 22.89 cm <sup>4</sup> |
| Gutter : ALN-478                                                                    | -                              | Cap : ALN-479                                                                        | -                             |
| Weight: 1393 gr/m                                                                   | -                              | Weight: 580 gr/m                                                                     | -                             |
|  |                                |  |                               |
| Cap : ALN-496                                                                       | -                              | $I_x$ : 20.78 cm <sup>4</sup>                                                        | $I_y$ : 9.71 cm <sup>4</sup>  |
| Weight: 86 gr/m                                                                     | -                              | Profile : ALN-495                                                                    | -                             |
| -                                                                                   | -                              | Weight: 891 gr/m                                                                     | -                             |

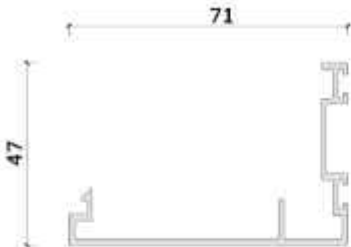
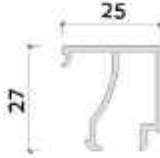
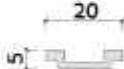
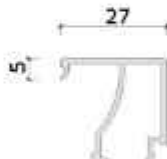
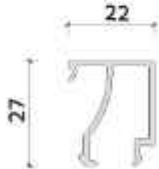
## Lift & Slide System 143 Series

### Profile & Accessories Information

|                                                                                     |        |                                                                                      |           |               |         |         |           |
|-------------------------------------------------------------------------------------|--------|--------------------------------------------------------------------------------------|-----------|---------------|---------|---------|-----------|
|    |        |   |           |               |         |         |           |
| Corner Joint:                                                                       | PCP-22 | Weight :                                                                             | 3718 gr/m | Corner Joint: | PCP-13  | Weight: | 2673 gr/m |
|   |        |  |           |               |         |         |           |
| Corner :                                                                            | PCP-42 | Weight :                                                                             | 5133 gr/m | Cap:          | ALN-486 | Weight: | 499 gr/m  |
|  |        |  |           |               |         |         |           |
| Corner :                                                                            | PCP-10 | Weight :                                                                             | 2454 gr/m | Cap:          | ALN-492 | Weight: | 759 gr/m  |

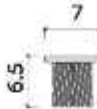
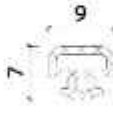
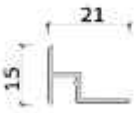
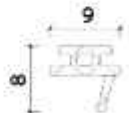
## Lift & Slide System 143 Series

### Profile & Accessories Information

|                                                                                     |                  |                                                                                      |                  |
|-------------------------------------------------------------------------------------|------------------|--------------------------------------------------------------------------------------|------------------|
|    |                  |    |                  |
| Cap: ALN-485                                                                        | Weight: 694 gr/m | Glazing beads: ALN-421                                                               | Weight: 321 gr/m |
|  |                  |  |                  |
| Profile : ALN-331                                                                   | Weight: 139 gr/m | Glazing beads: ALN-422                                                               | Weight: 321 gr/m |
|  |                  |  |                  |
| Glazing beads: ALN-323                                                              | Weight: 302 gr/m | Profile: ALN-489                                                                     | Weight: 221 gr/m |

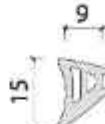
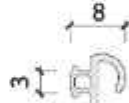
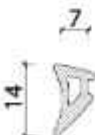
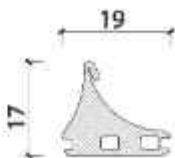
## Lift & Slide System 143 Series

### Profile & Accessories Information

|                                                                                     |                  |                                                                                       |                 |
|-------------------------------------------------------------------------------------|------------------|---------------------------------------------------------------------------------------|-----------------|
|    |                  |    |                 |
| Profile : ALN-493                                                                   | Weight: 467 gr/m | PB7-3P-70-650                                                                         | Weight: –       |
|  |                  |  |                 |
| Rail : ALN-462                                                                      | Weight: 119 gr/m | Gasket : MO 60                                                                        | Weight: 26 gr/m |
|  |                  |  |                 |
| Profile : ALN-228                                                                   | Weight: 135 gr/m | Gasket : 51990                                                                        | Weight: 34 gr/m |

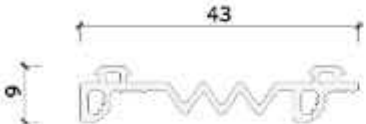
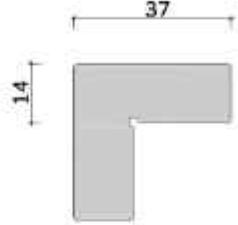
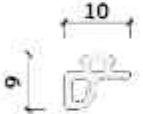
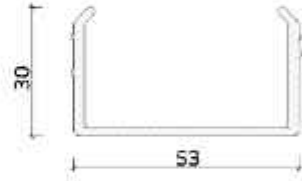
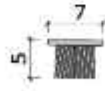
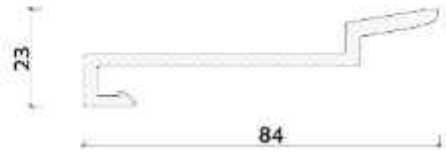
## Lift & Slide System 143 Series

### Profile & Accessories Information

|                                                                                     |                  |                                                                                       |                   |
|-------------------------------------------------------------------------------------|------------------|---------------------------------------------------------------------------------------|-------------------|
|    |                  |    |                   |
| Gasket: MO68                                                                        | Weight : 48 gr/m | Gasket: EP-021                                                                        | Weight : 80 gr/m  |
|  |                  |  |                   |
| Gasket : 51069                                                                      | Weight: 27 gr/m  | Gasket: EP-018                                                                        | Weight : 27 gr/m  |
|  |                  |  |                   |
| Gasket: EP-019                                                                      | Weight : 61 gr/m | Gasket: TH-75/51056                                                                   | Weight : 161 gr/m |

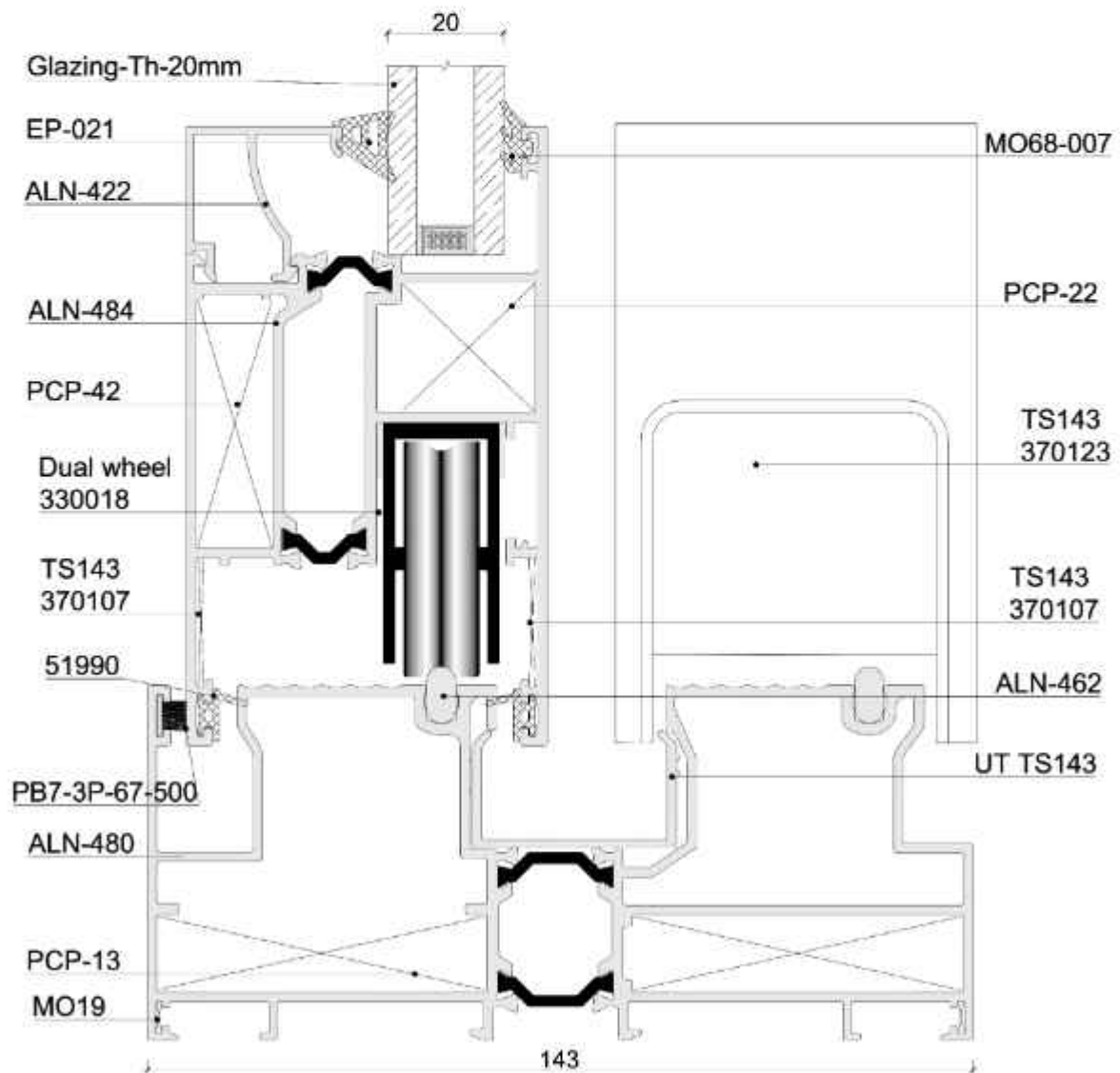
## Lift & Slide System 143 Series

### Profile & Accessories Information

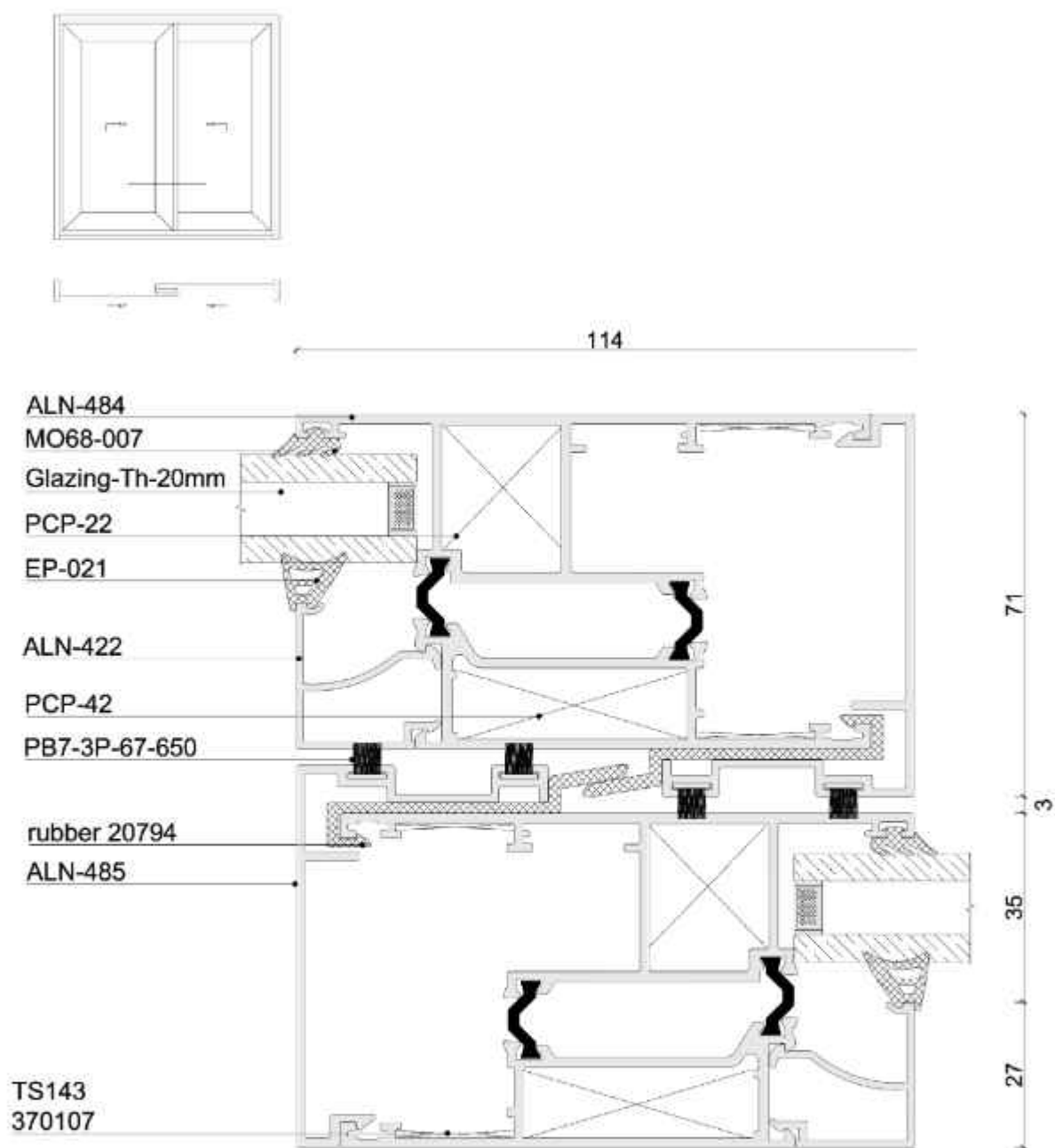
|                                                                                     |                   |                                                                                      |                  |
|-------------------------------------------------------------------------------------|-------------------|--------------------------------------------------------------------------------------|------------------|
|    |                   |    |                  |
| Gasket: Corner gasket 60019                                                         | Weight : 134 gr/m | Corner: MM77                                                                         | Weight: –        |
|  |                   |  |                  |
| Gasket: Corner gasket-60018                                                         | Weight : 44 gr/m  | Gasket : UT TS143                                                                    | Weight: 318 gr/m |
|  |                   |  |                  |
| PB7-3P-70-500                                                                       | Weight: –         | Gasket : Rubber 20794                                                                | Weight: 429 gr/m |

## Lift & Slide System 143 Series

### Fabrication Details

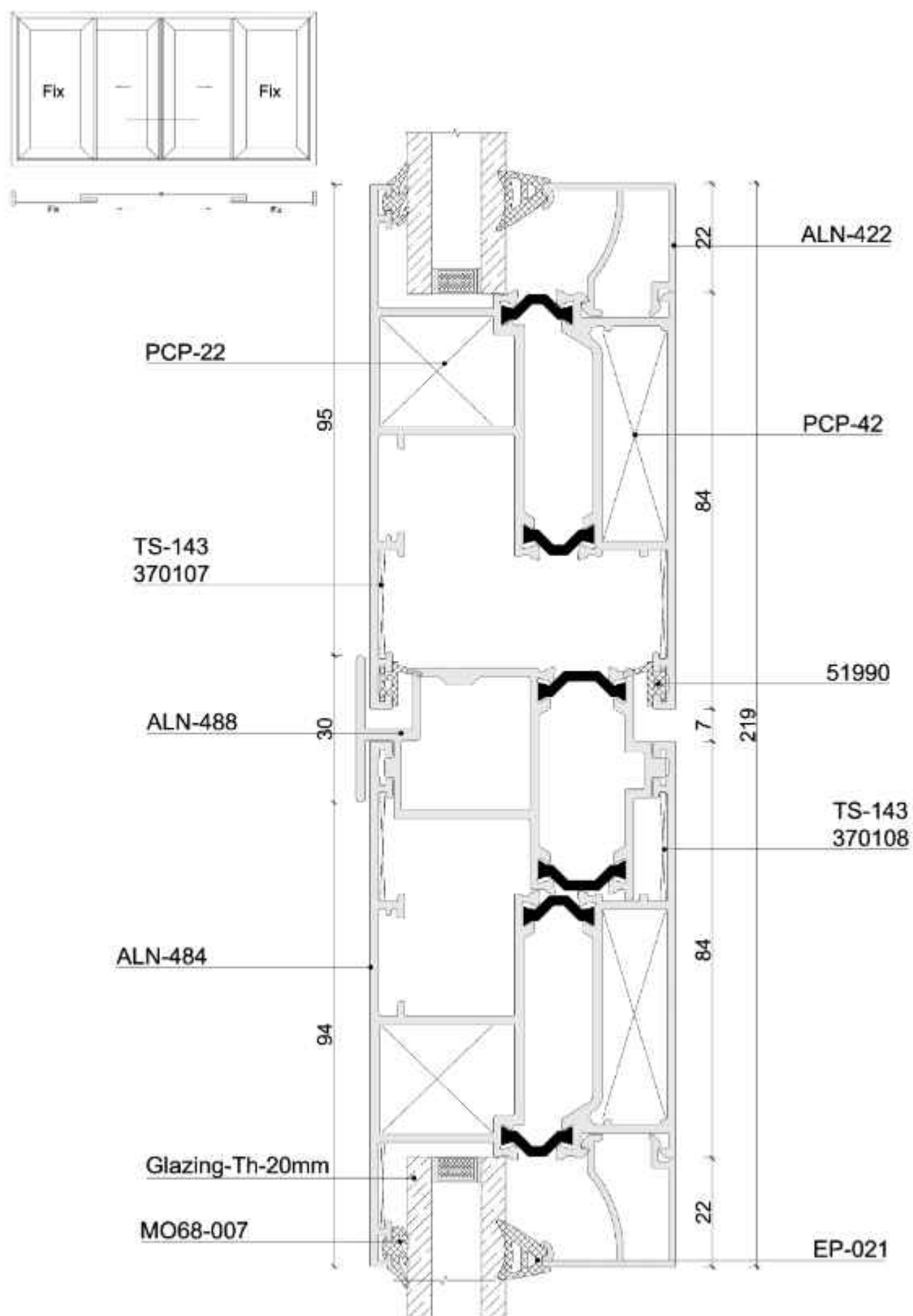


# Lift & Slide System 143 Series Fabrication Details

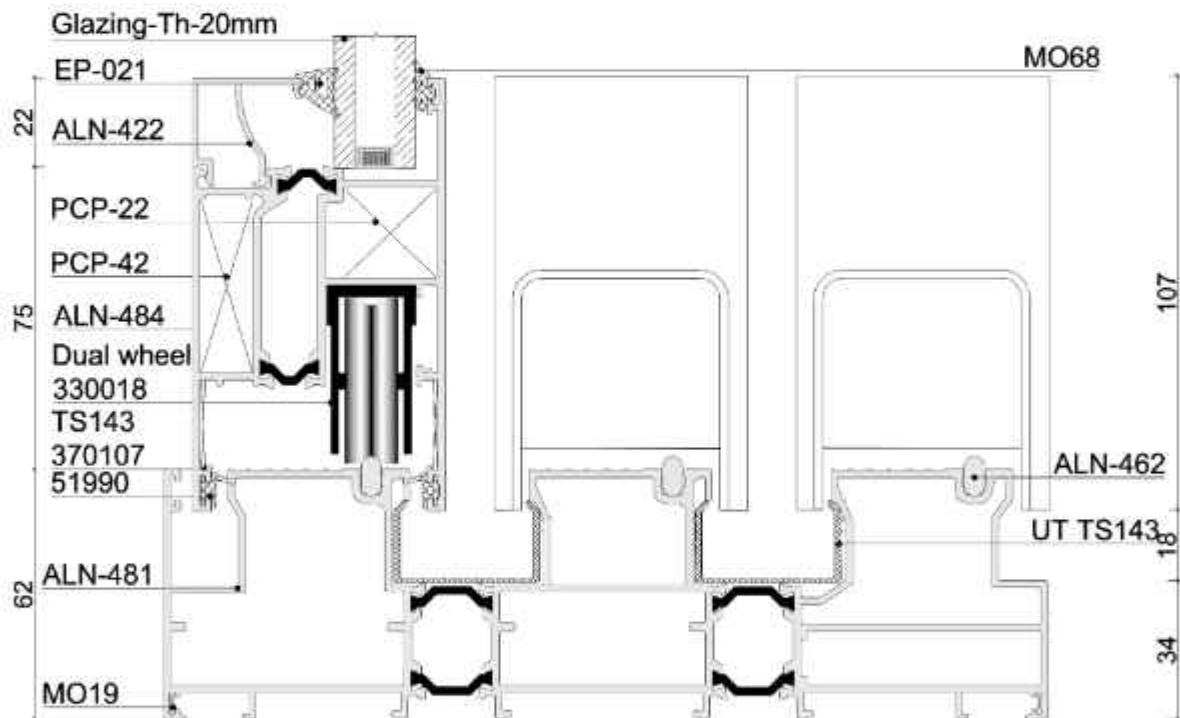
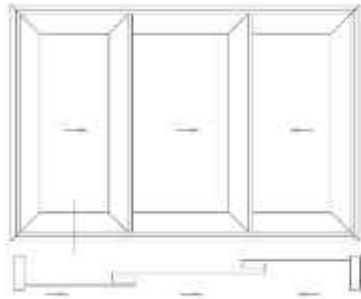


## Lift & Slide System 143 Series

### Fabrication Details

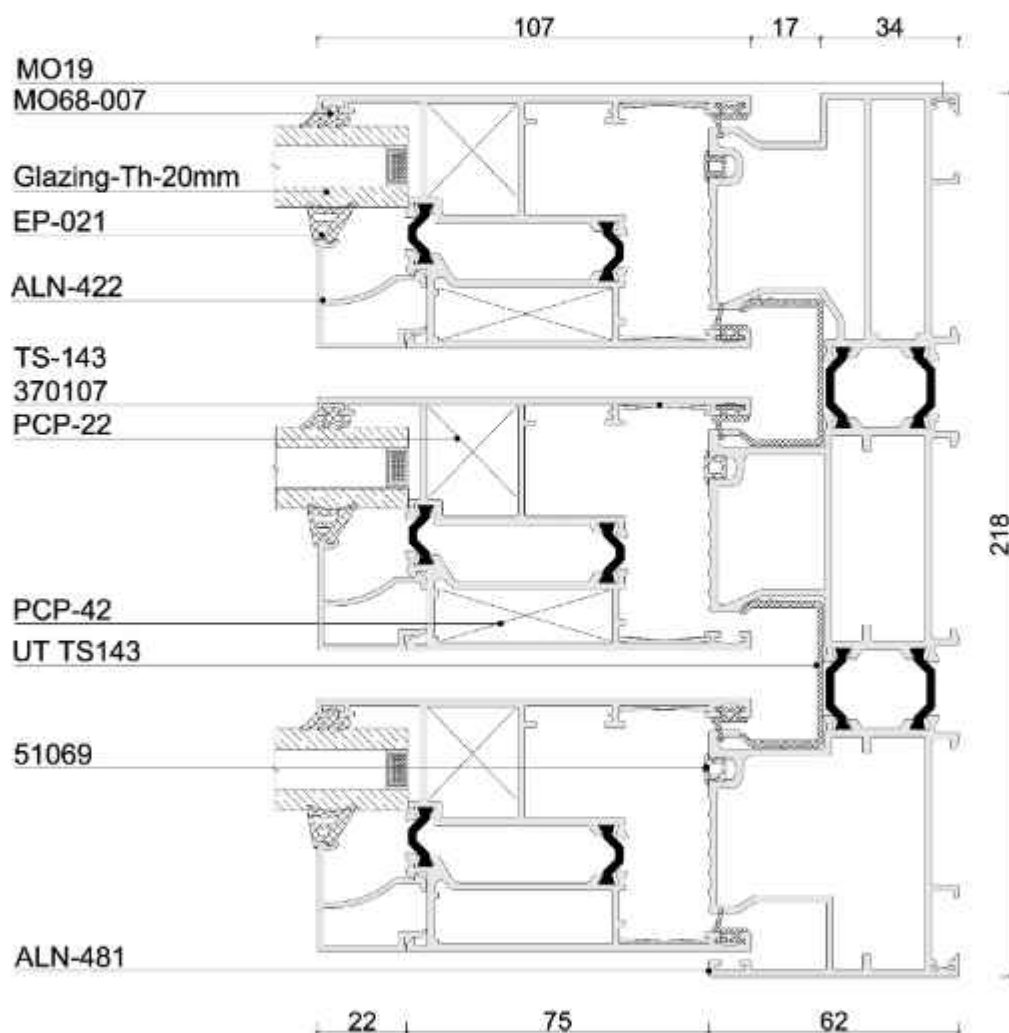
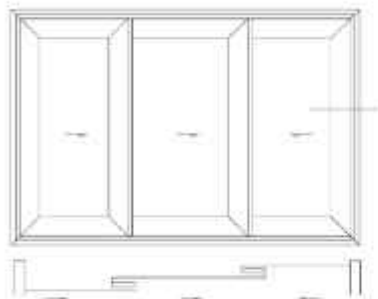


## Lift & Slide System 143 Series Fabrication Details



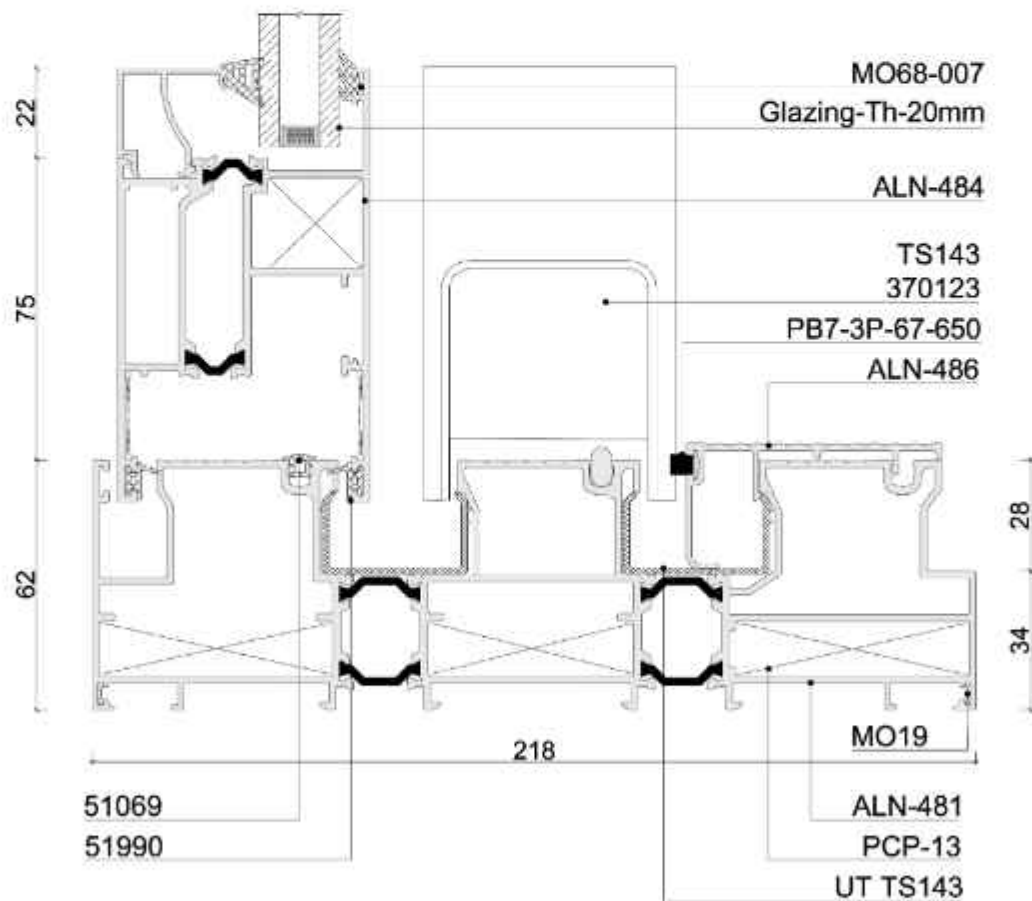
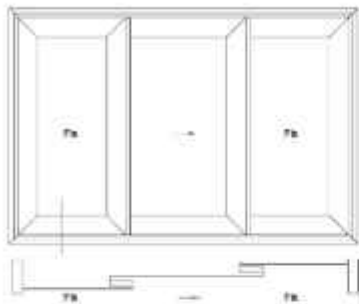
## Lift & Slide System 143 Series

### Fabrication Details



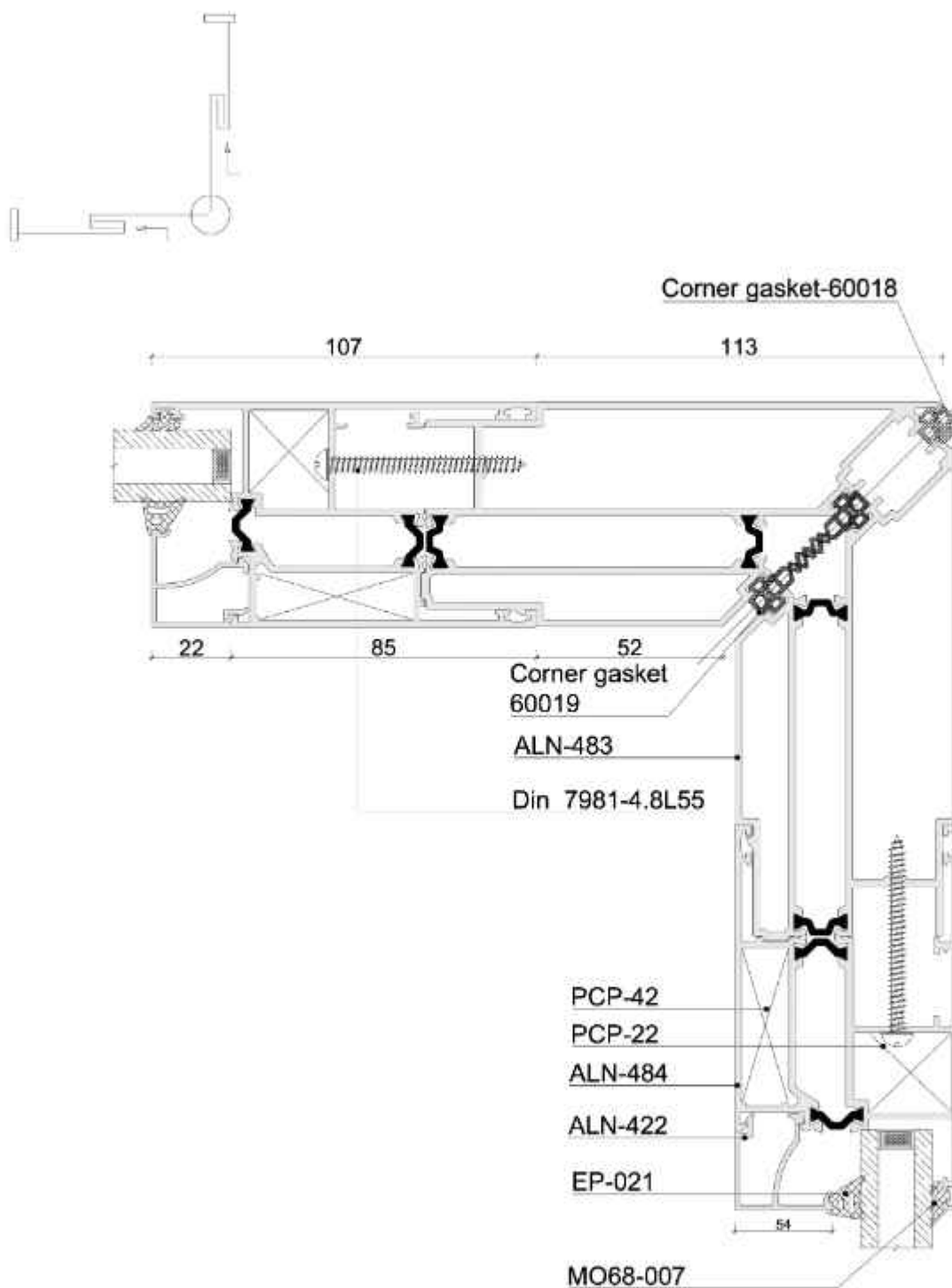
## Lift & Slide System 143 Series

### Fabrication Details

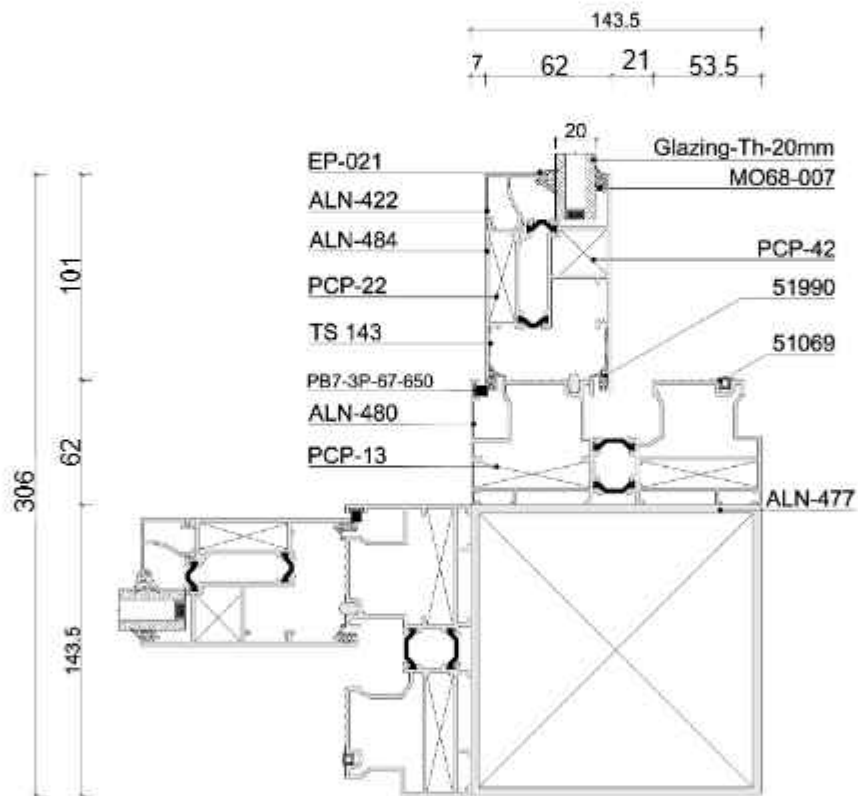
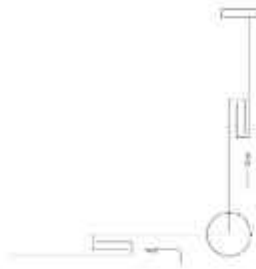


## Lift & Slide System 143 Series

### Fabrication Details

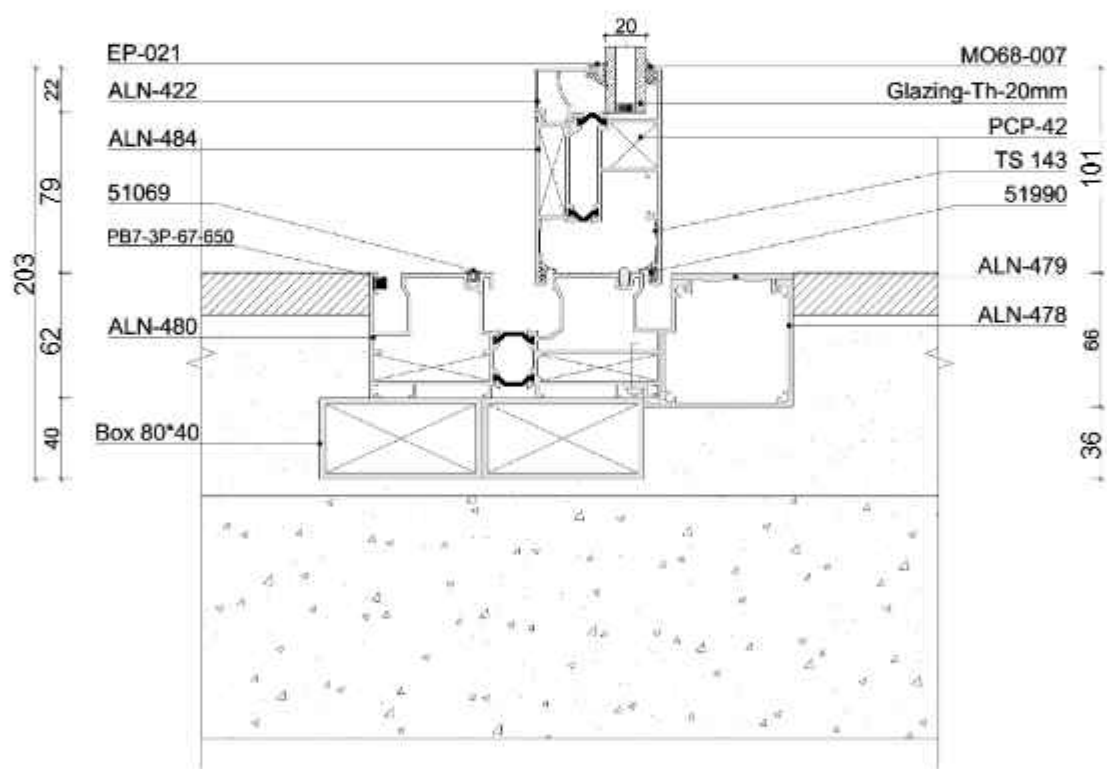


# Lift & Slide System 143 Series Fabrication Details

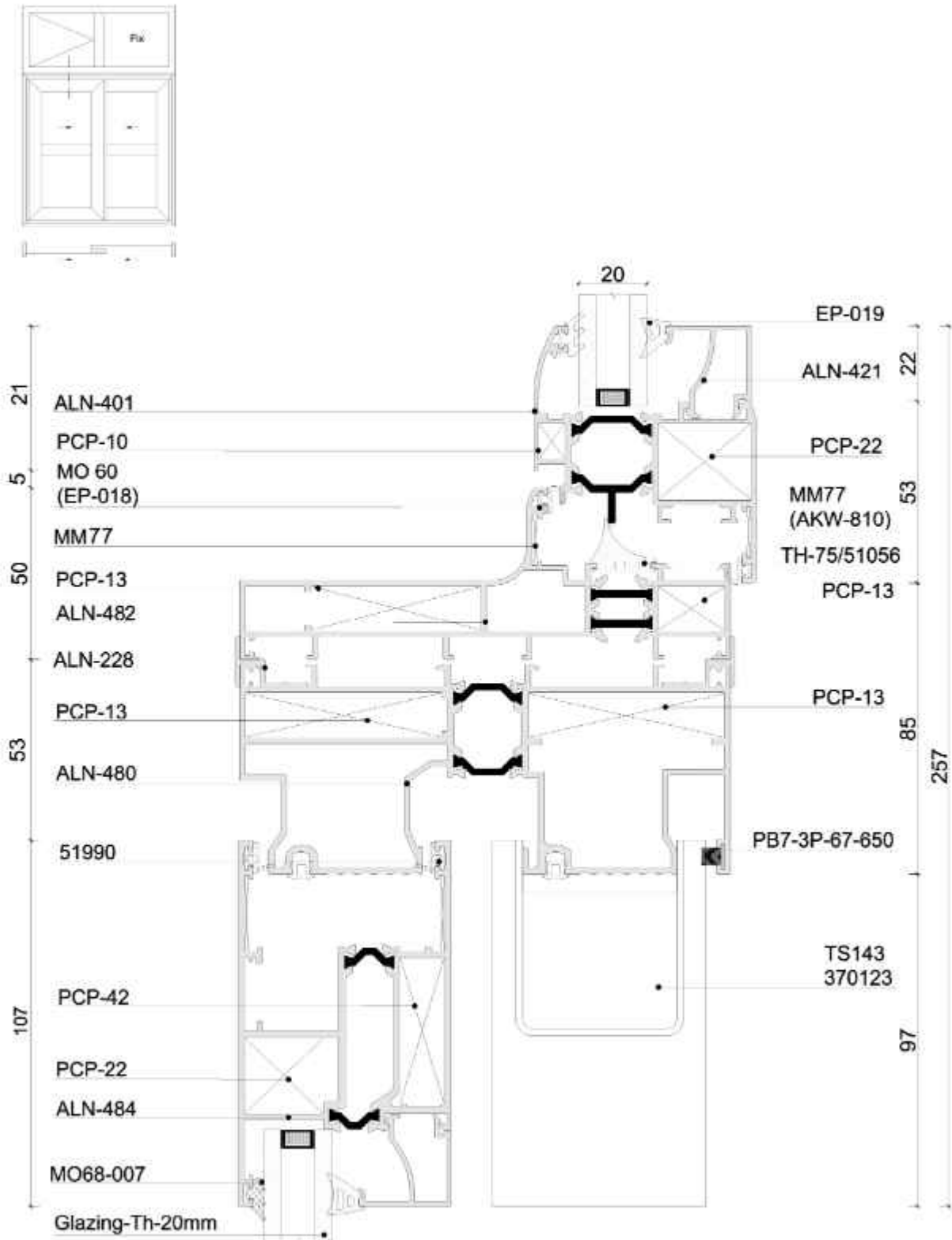


## Lift & Slide System 143 Series

### Fabrication Details

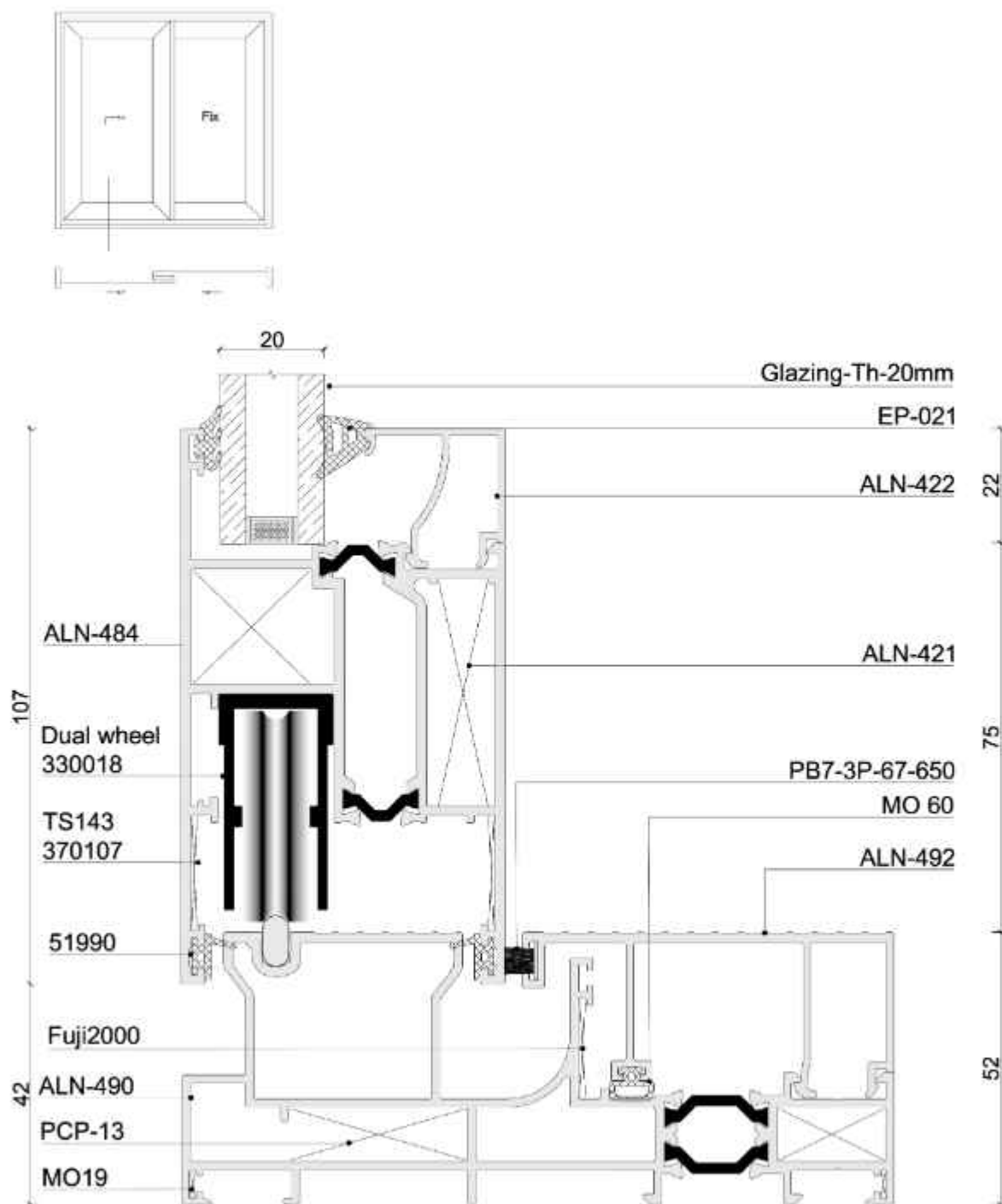


## Lift & Slide System 143 Series Fabrication Details

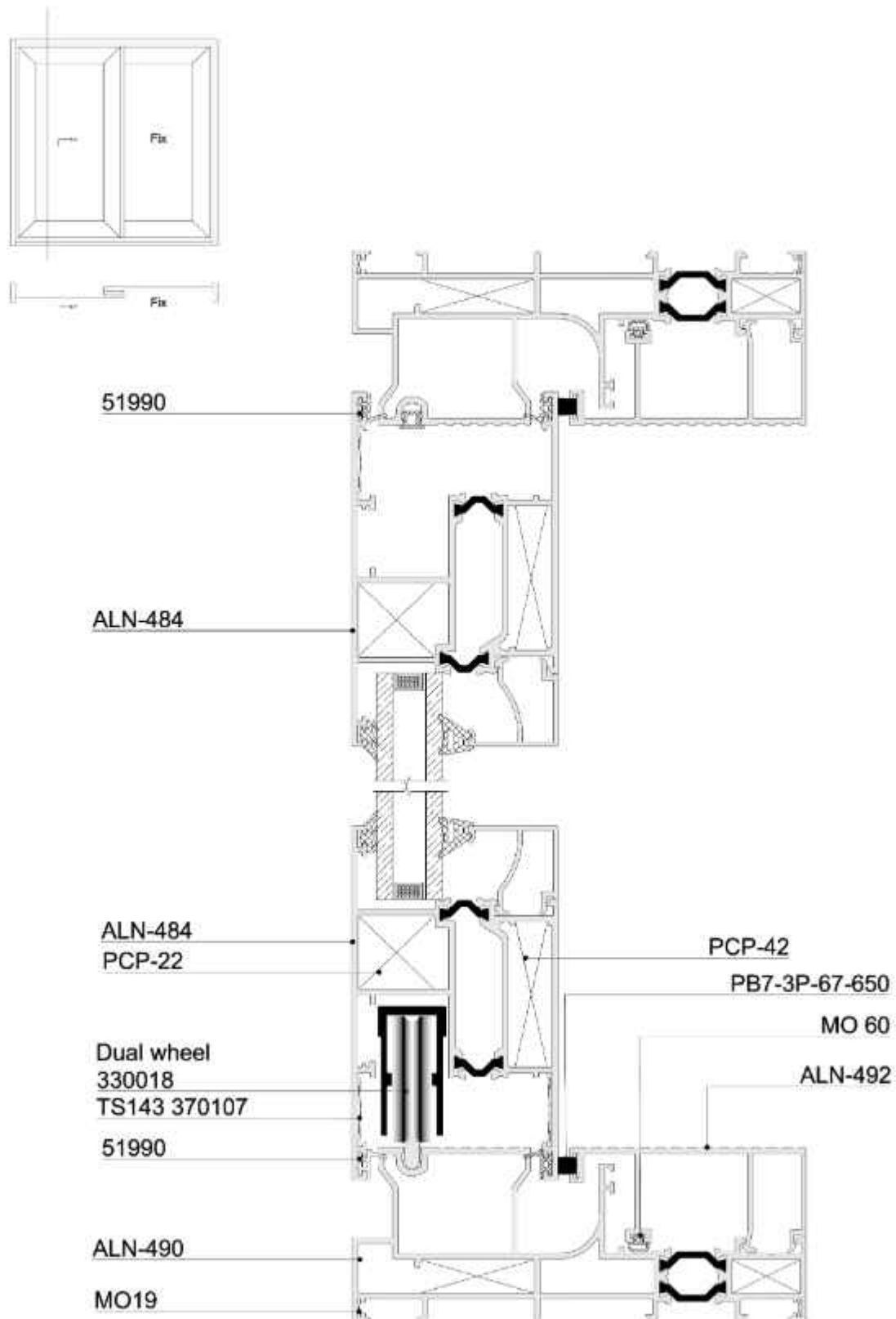


## Lift & Slide System 143 Series

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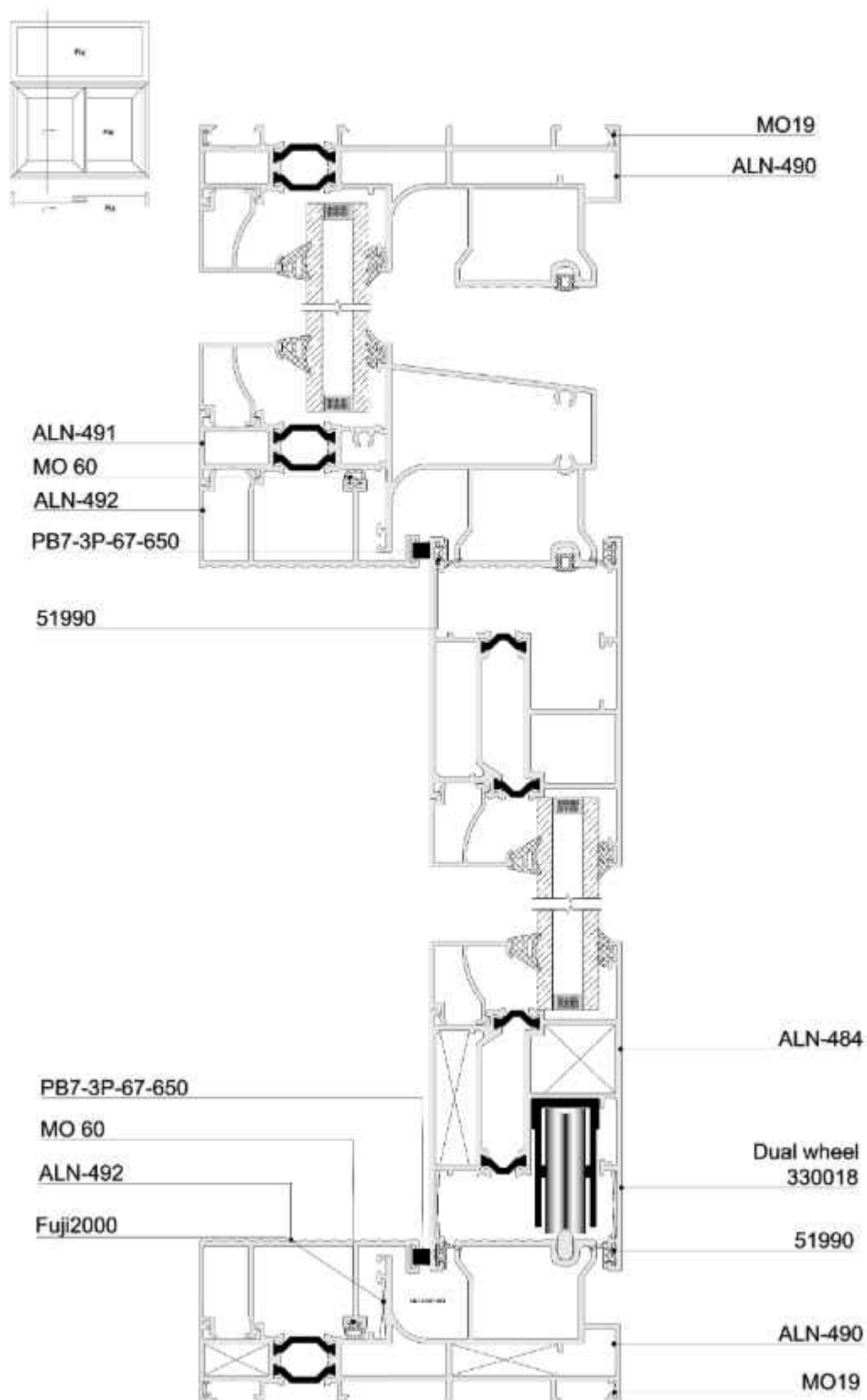


# Lift & Slide System 143 Series Fabrication Details

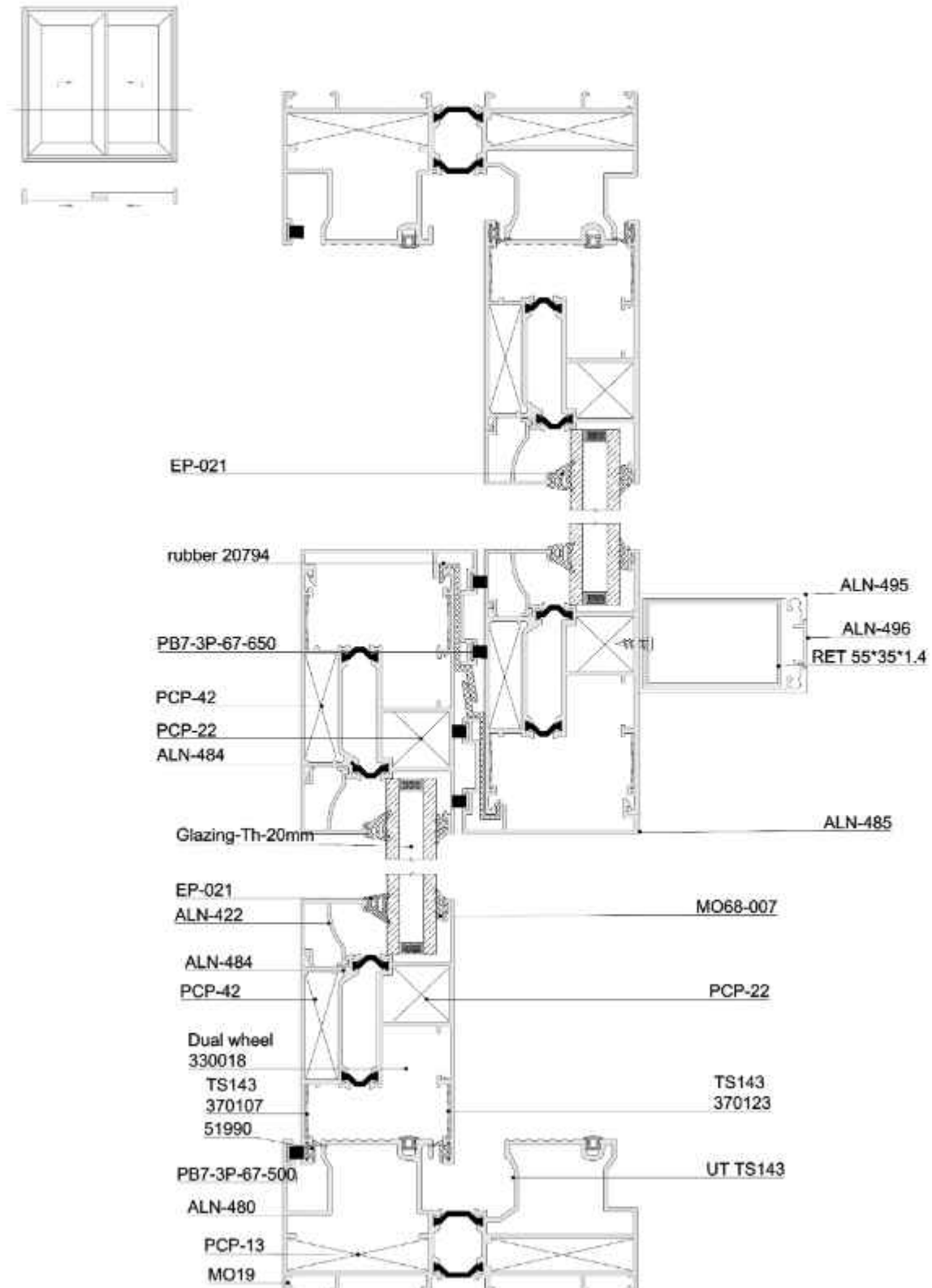


## Lift & Slide System 143 Series

### Fabrication Details



## Lift & Slide System 143 Series Fabrication Details

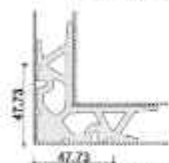


# Lift & Slide System 143 Series Assembly Drawing

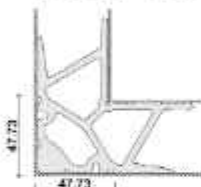
ALN - 484



A: Wide plastic-TS 143  
370108



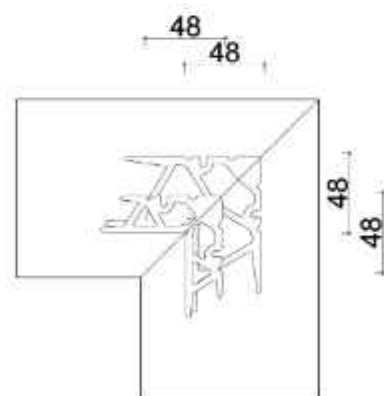
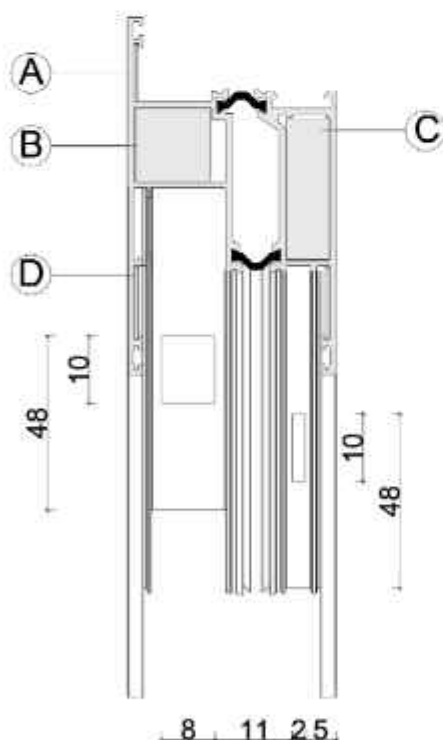
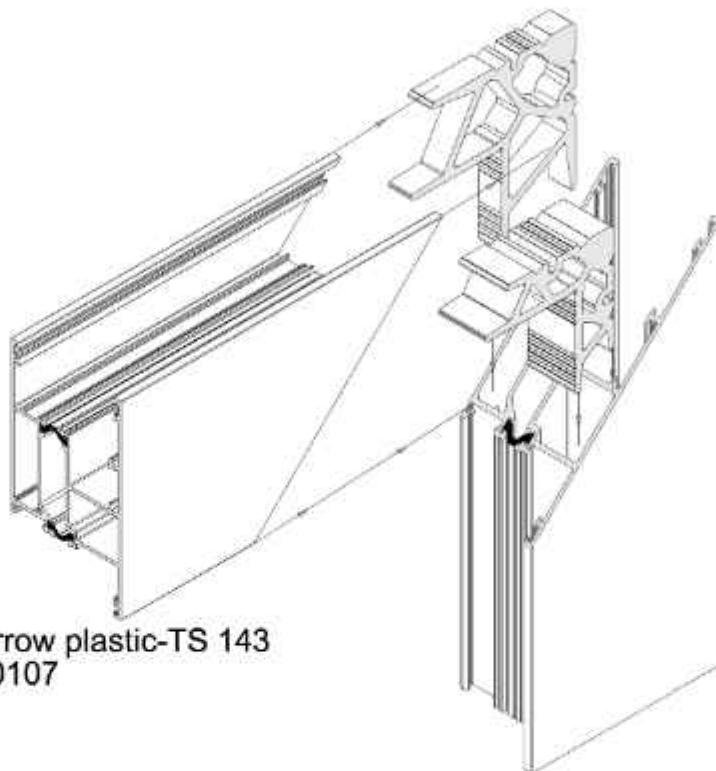
B: PCP-22/22mm



C: PCP-42/12mm

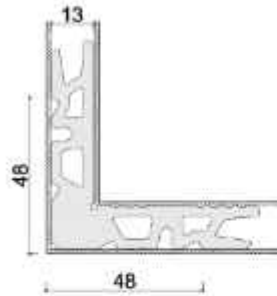


D: Narrow plastic-TS 143  
370107



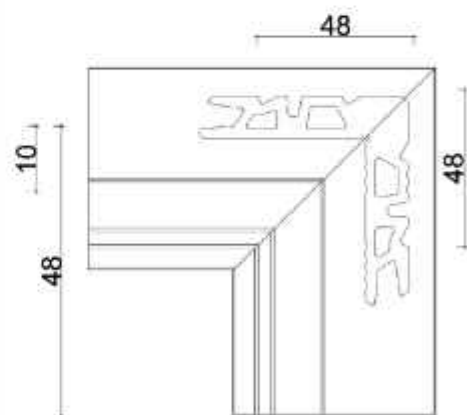
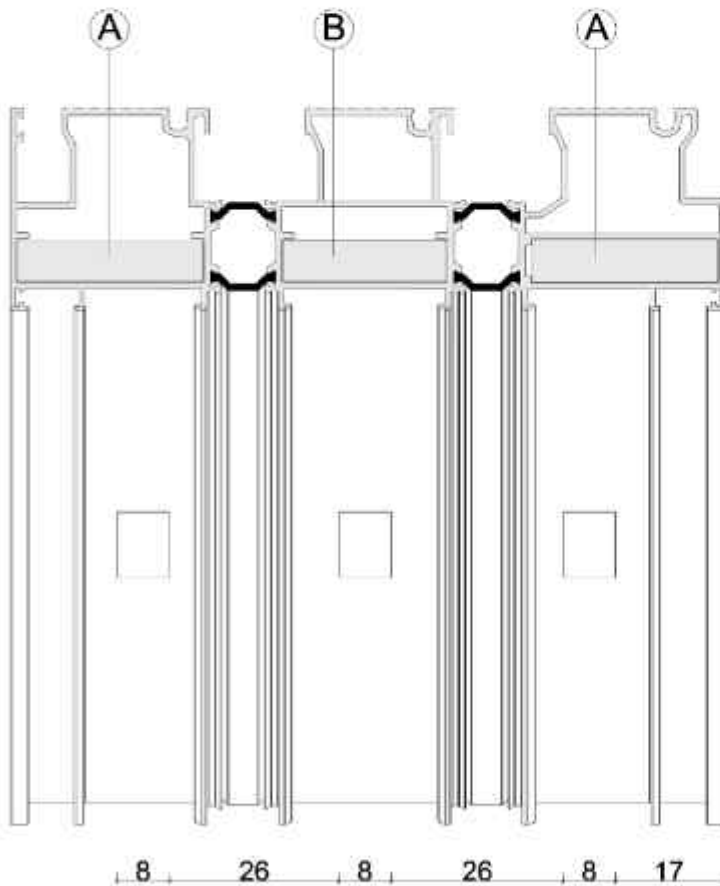
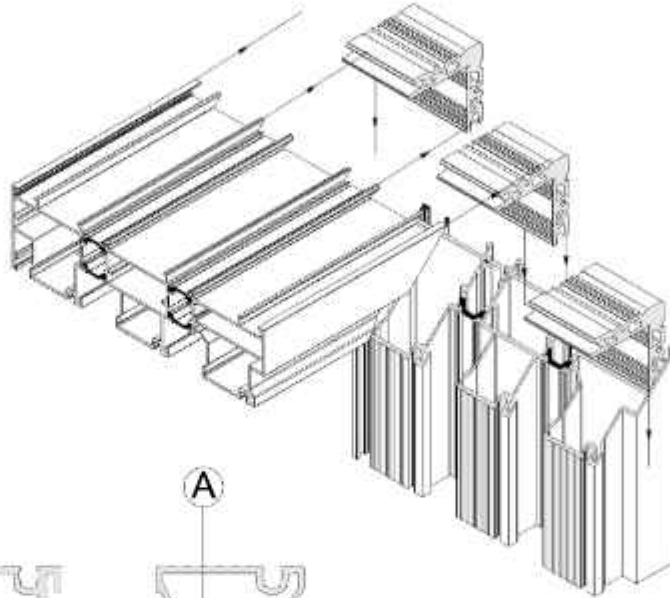
# Lift & Slide System 143 Series Assembly Drawing

## ALN - 481



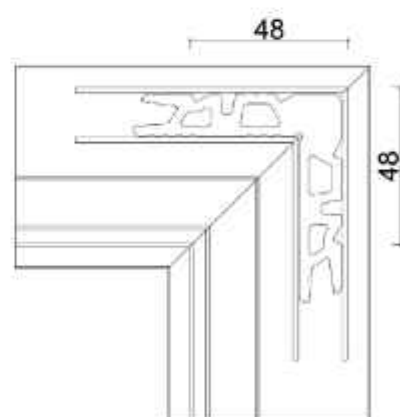
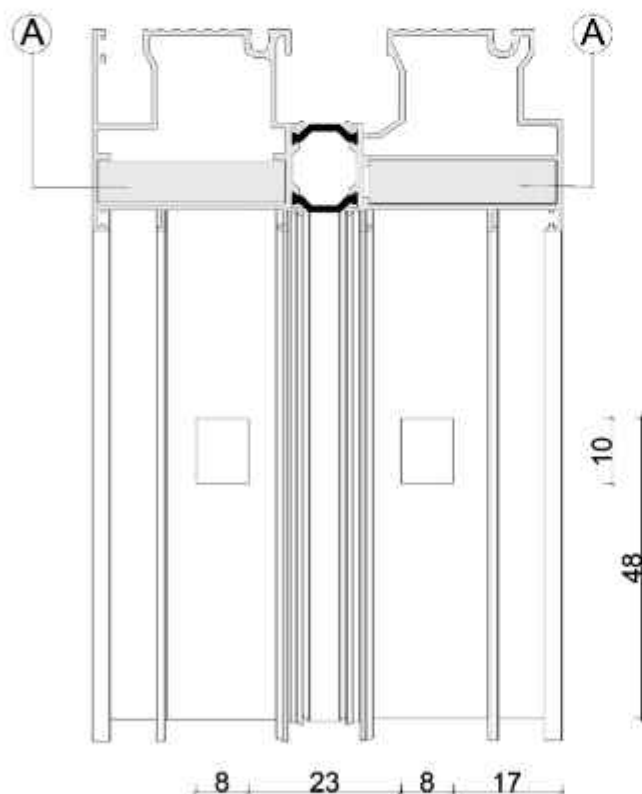
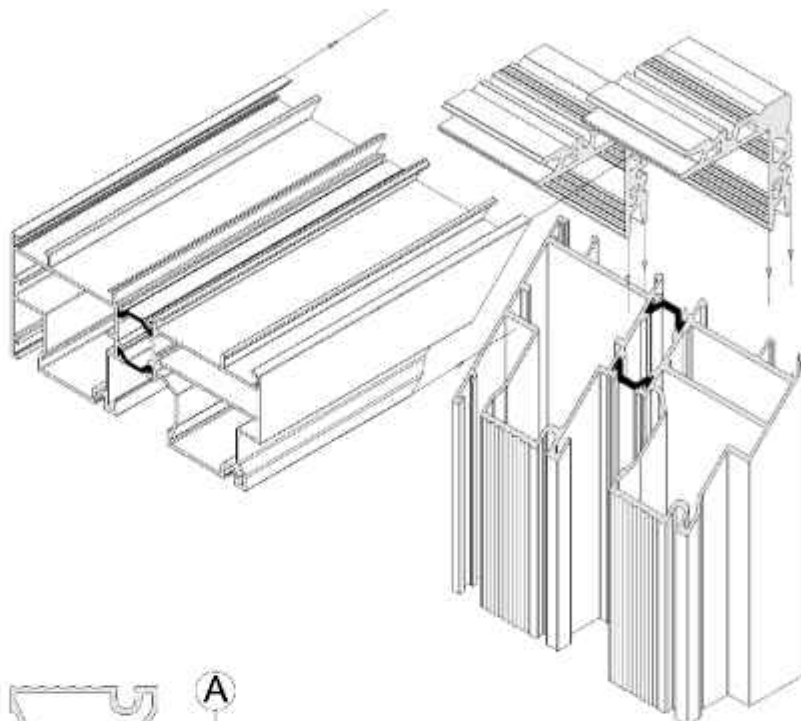
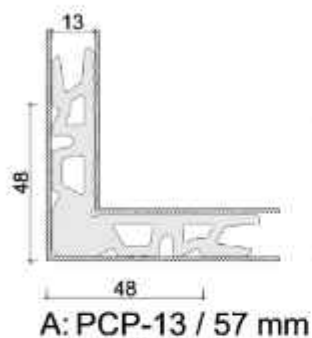
A:PCP-13 / 56 mm

B:PCP-13 / 49 mm



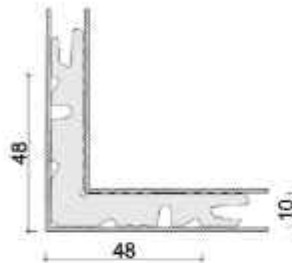
# Lift & Slide System 143 Series Assembly Drawing

ALN - 480

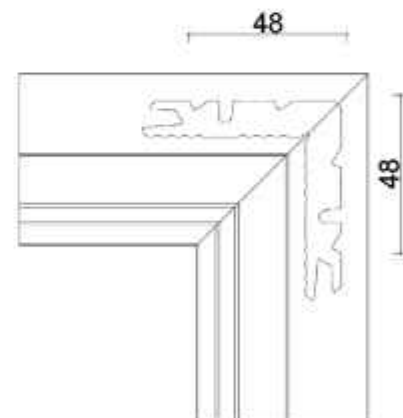
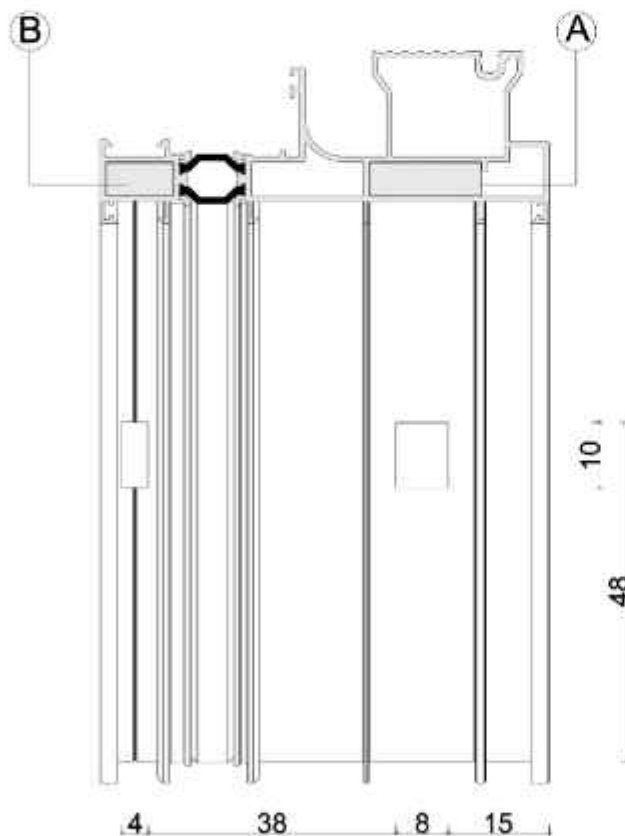
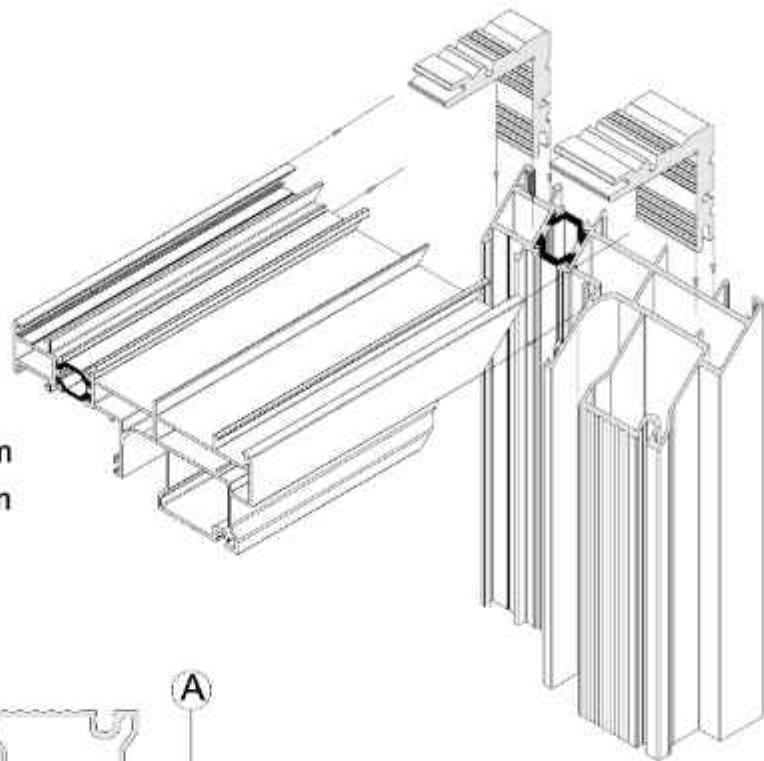


# Lift & Slide System 143 Series Assembly Drawing

ALN - 490

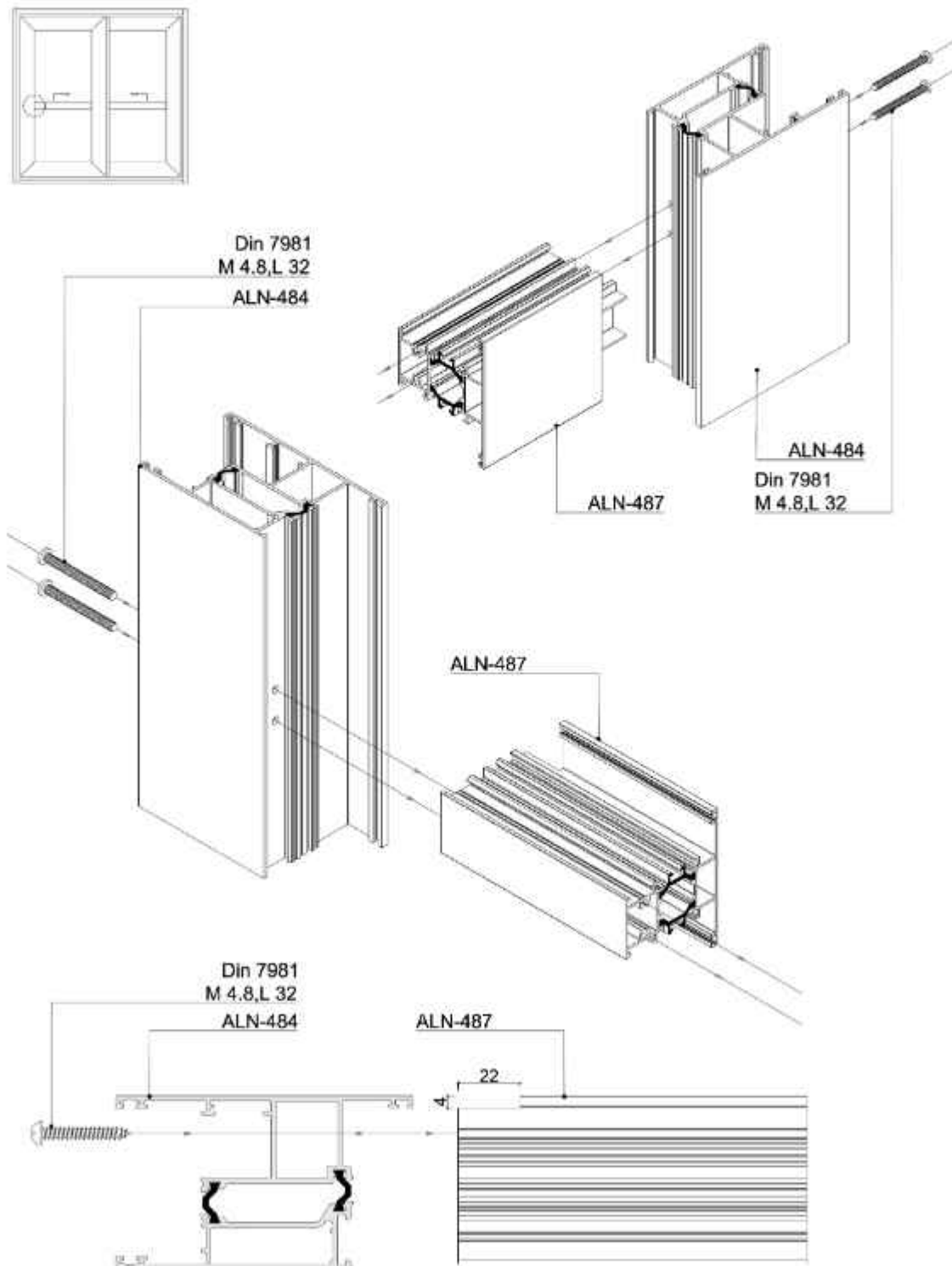


A:PCP-10 / 33.5 mm  
B:PCP-10 / 19.8 mm

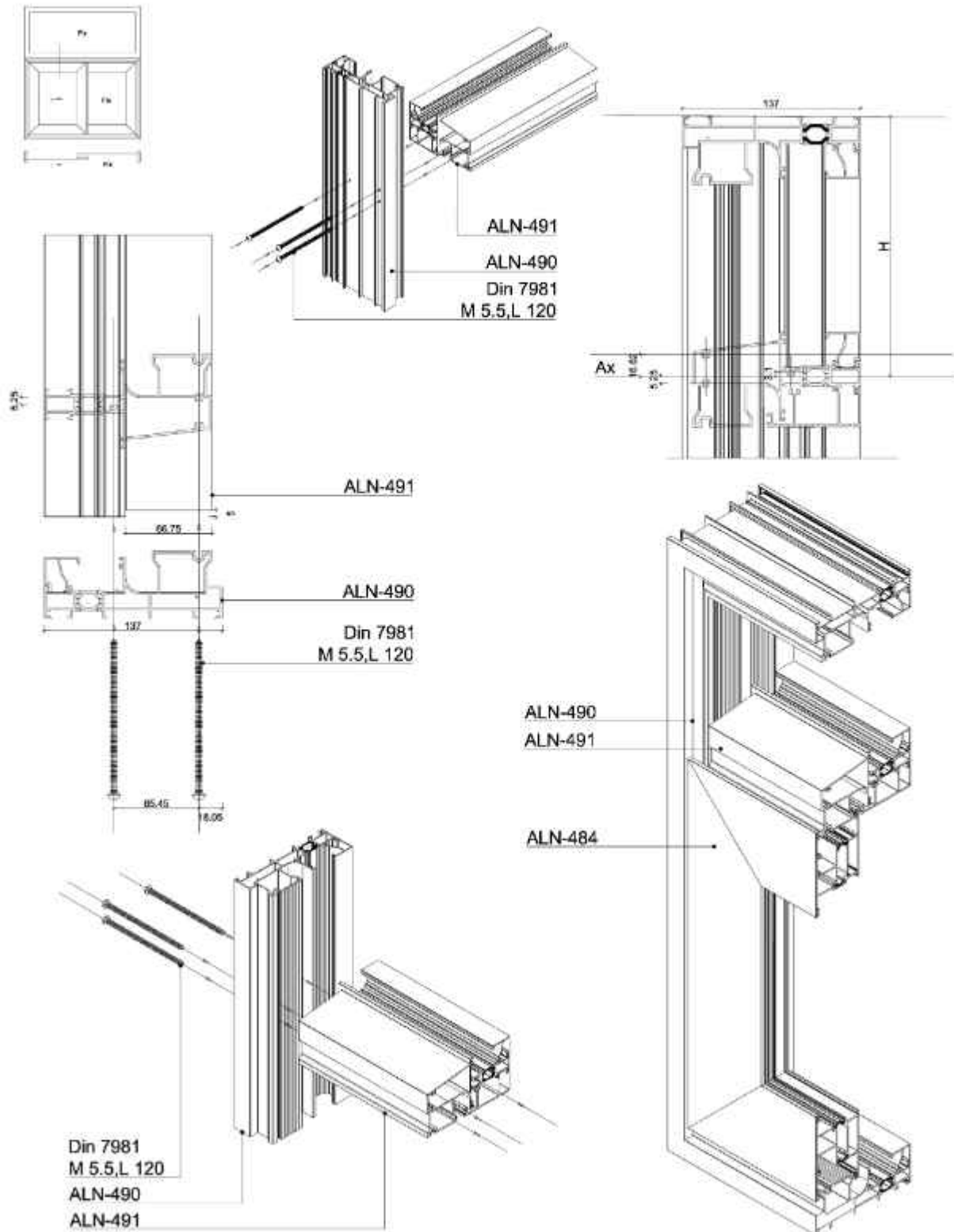


# Lift & Slide System 143 Series

## Assembly Drawing

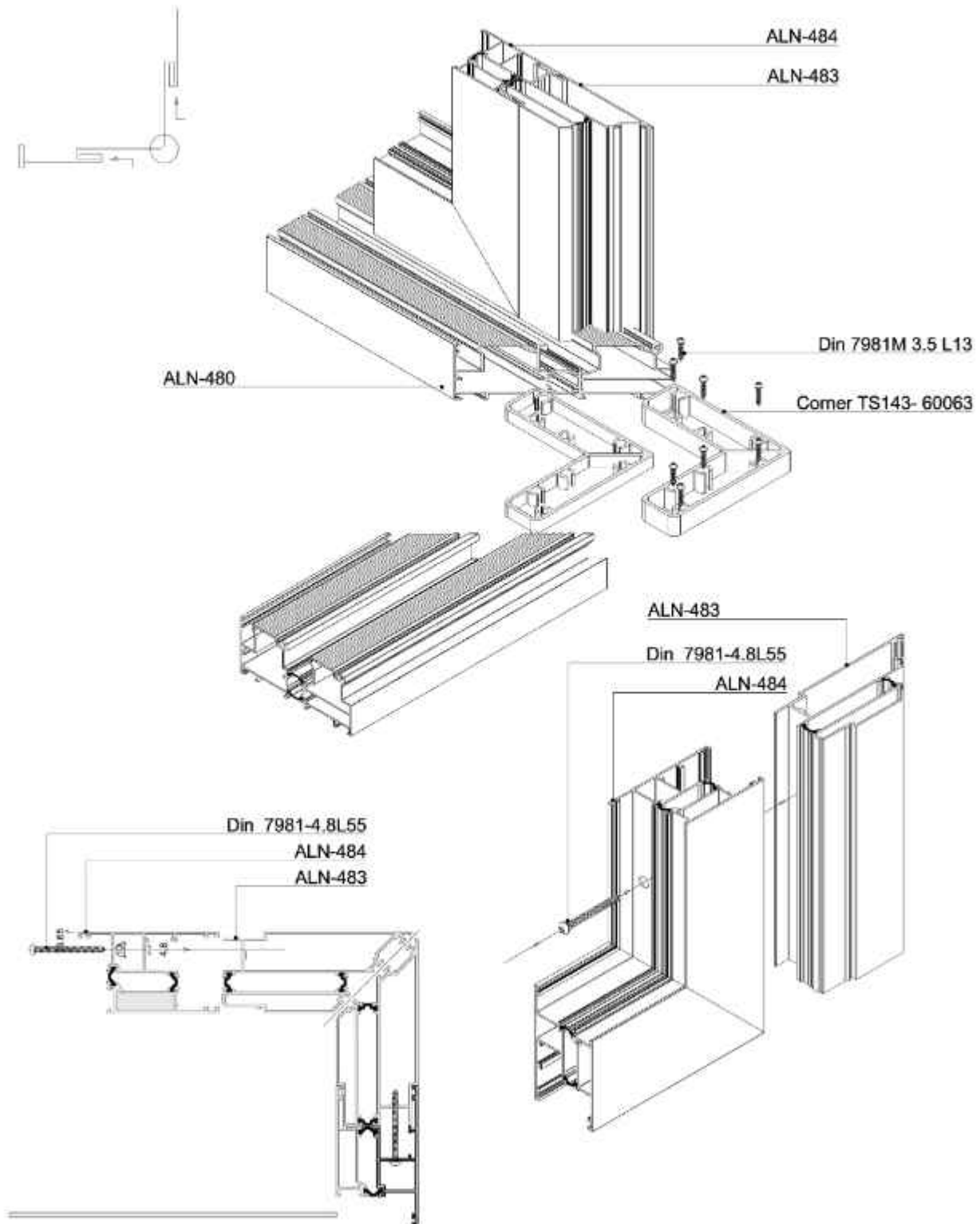


# Lift & Slide System 143 Series Assembly Drawing



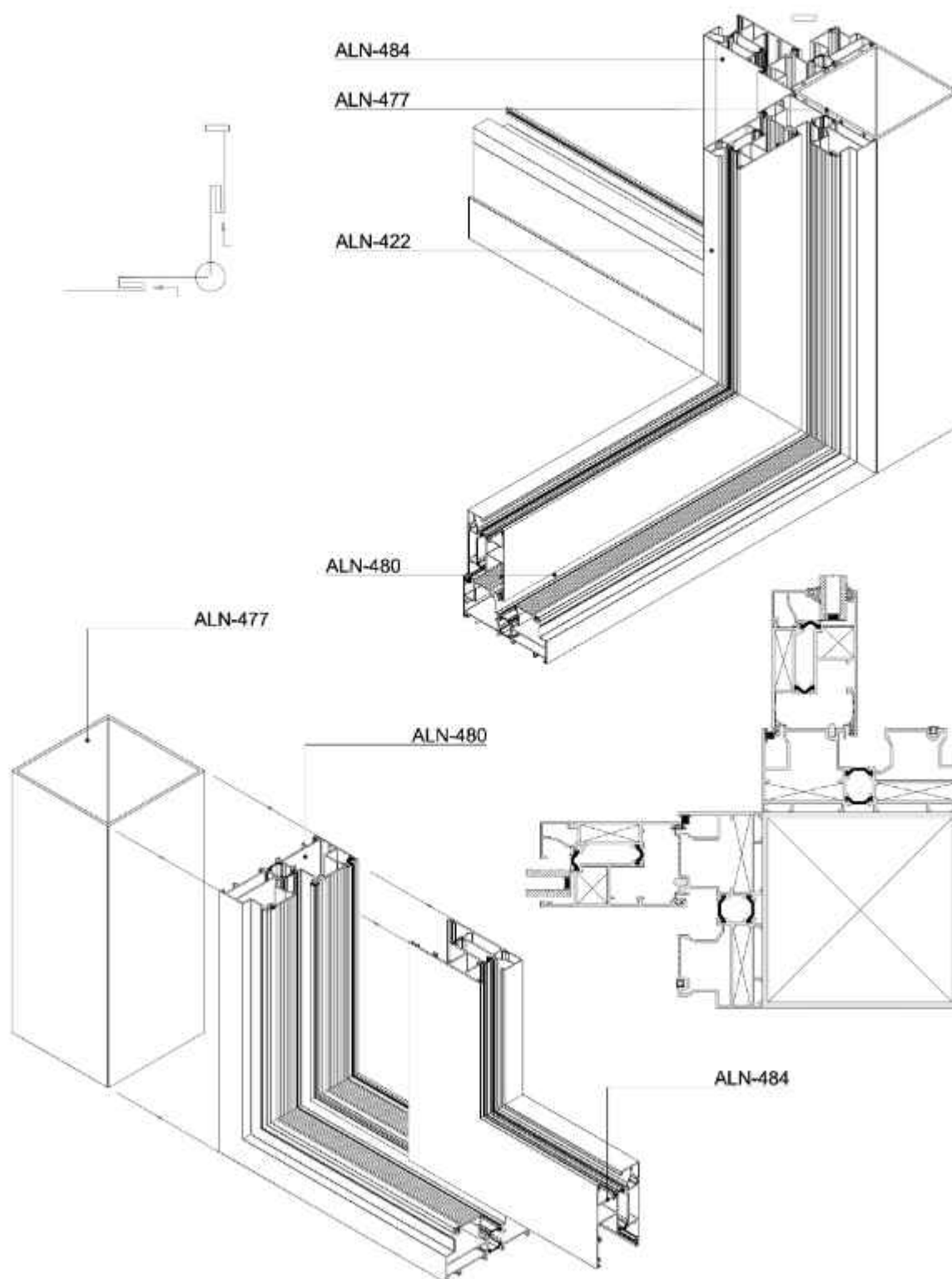


# Lift & Slide System 143 Series Assembly Drawing

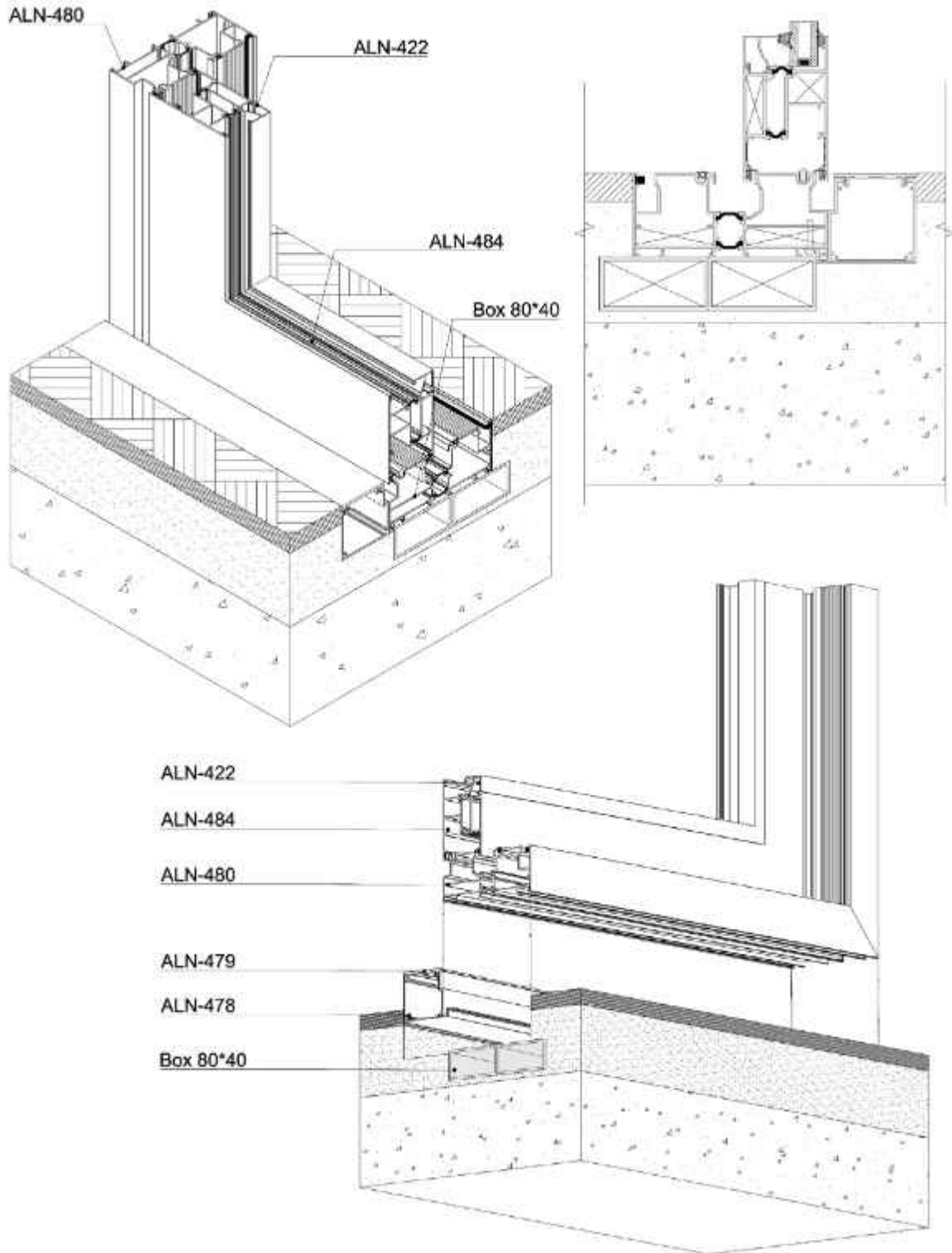


# Lift & Slide System 143 Series

## Assembly Drawing

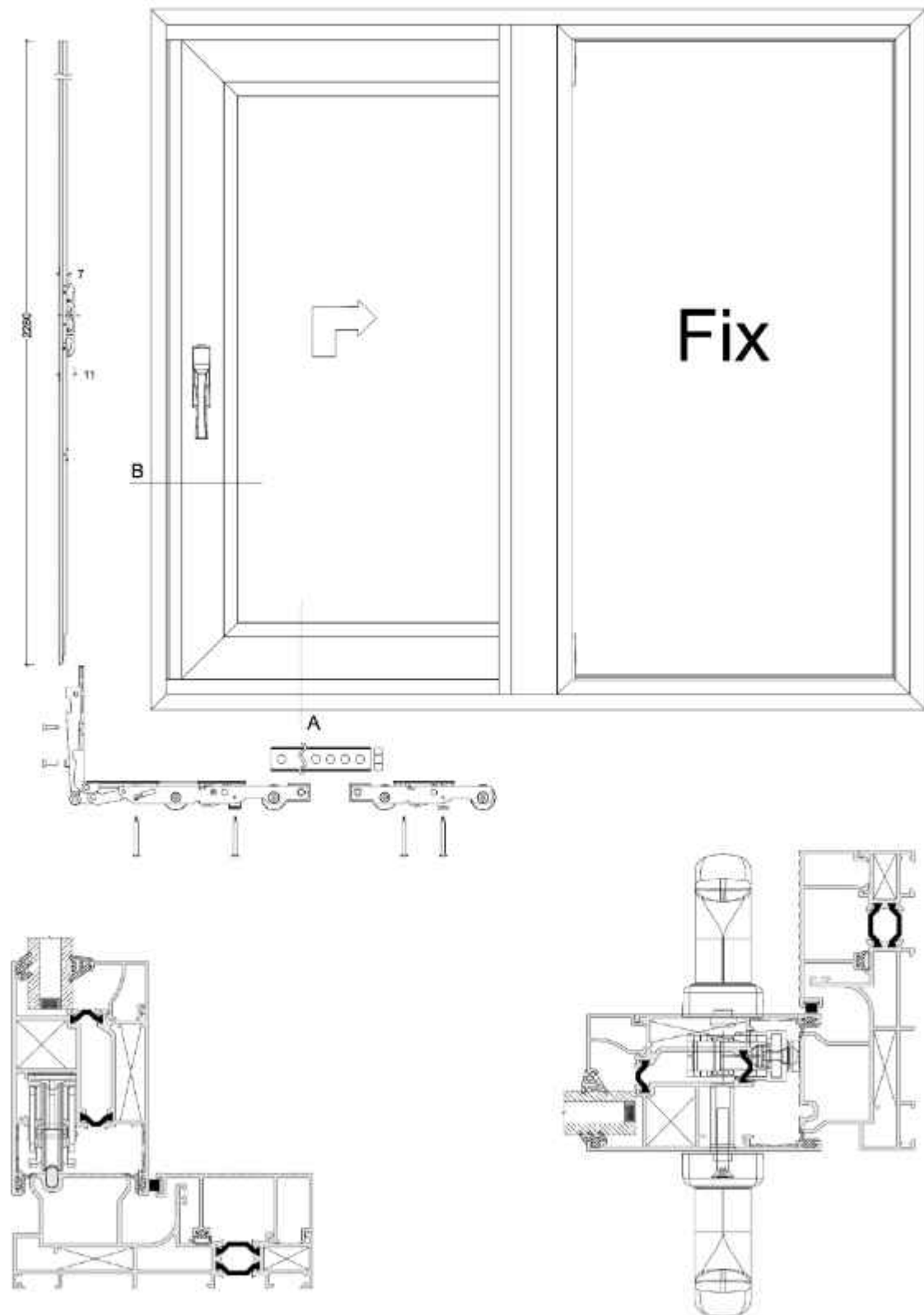


# Lift & Slide System 143 Series Assembly Drawing



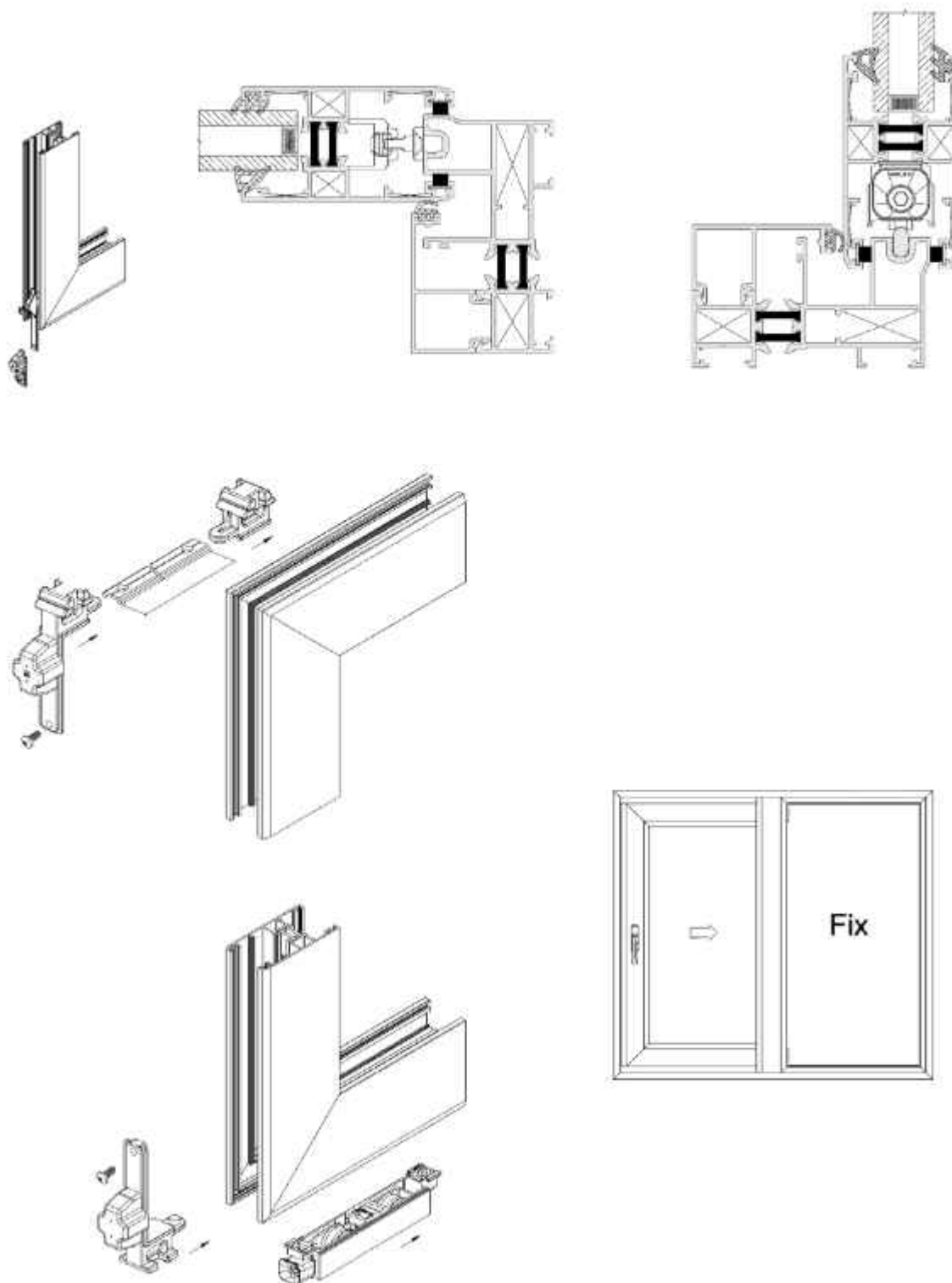
## Lift & Slide System 143 Series

### Hardware installation



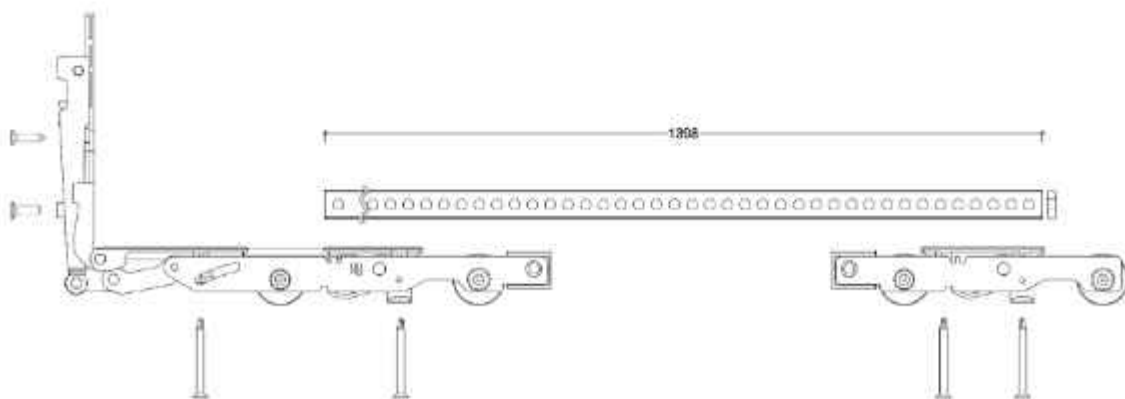
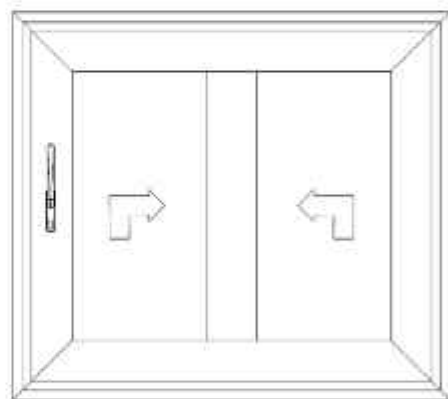
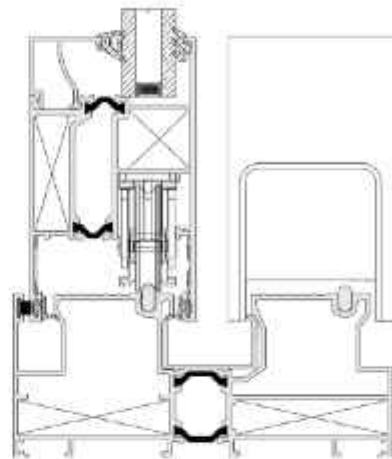
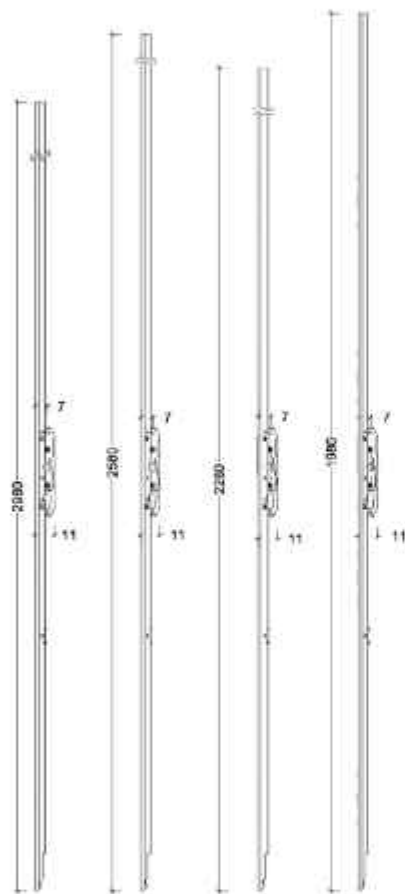
## Lift & Slide System 143 Series

### Hardware installation



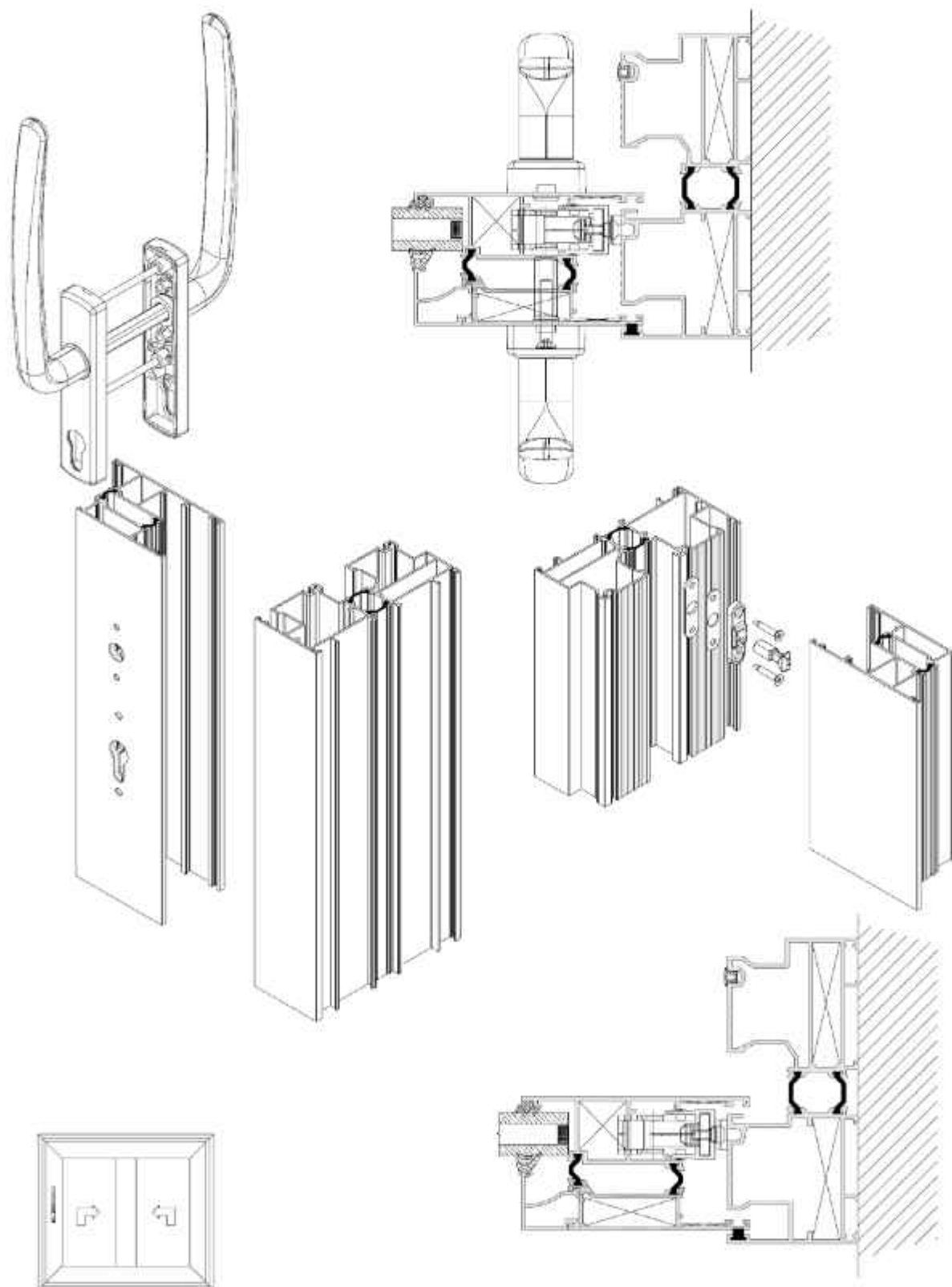
## Lift & Slide System 143 Series

### Hardware installation



## Lift & Slide System 143 Series

### Hardware installation





# ALN 300

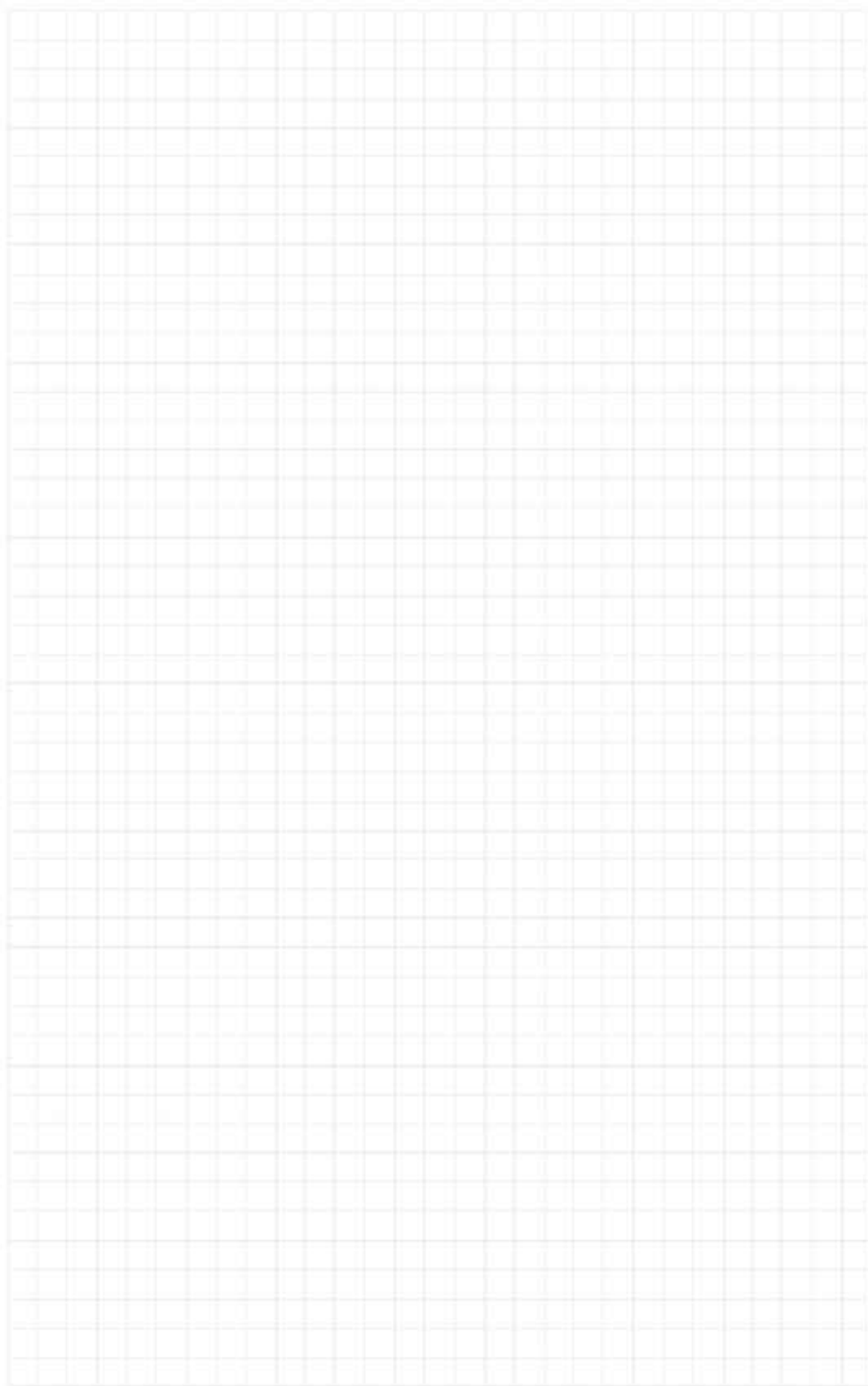
Normal Systems

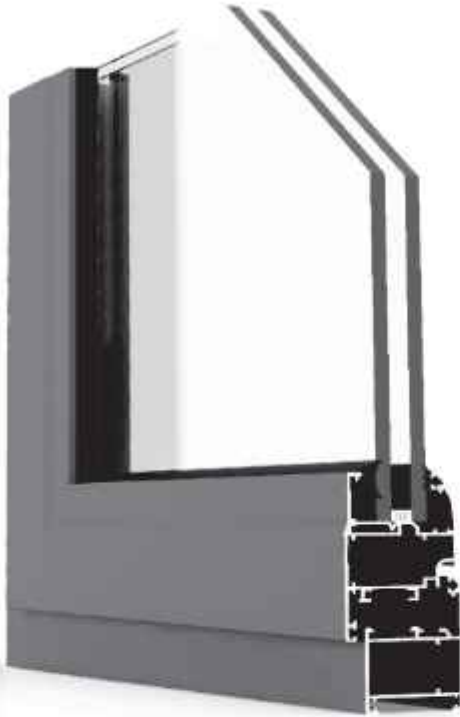




**AKROLL**

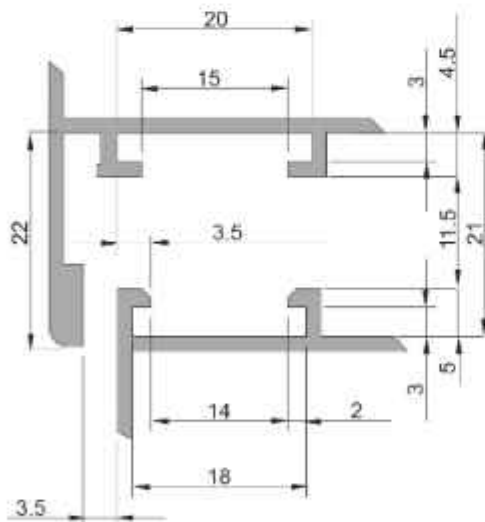
Product of Alumroll Novin Co.



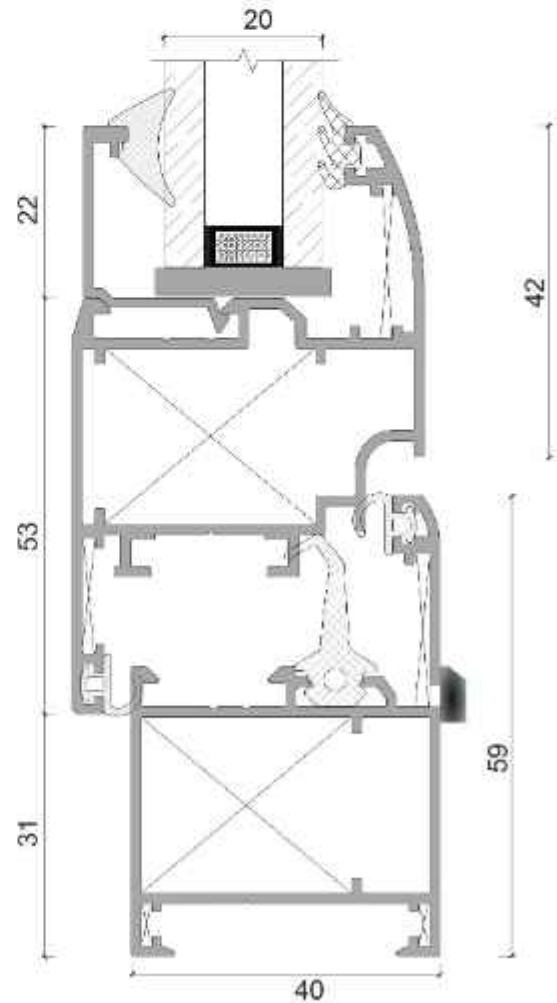


## Hinged System 40 Series

|                           |               |
|---------------------------|---------------|
| Profile width:            | 40 - 77 mm    |
| Vent width:               | 45 mm         |
| Wall thickness:           | 1.3 - 1.4 mm  |
| Rubber description:       | EPDM DIM 7863 |
| Glass thickness:          | 6 - 24 m      |
| Aluminum alloy extrusion: | EN AW 6063 T5 |
| Safety drainage system    |               |
| Various typologies        |               |



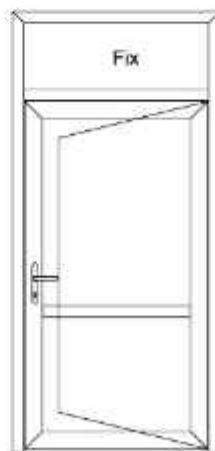
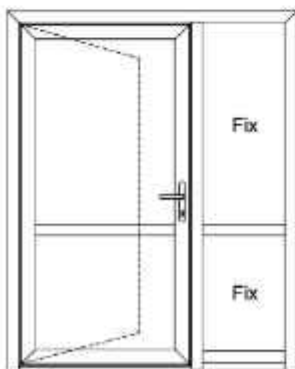
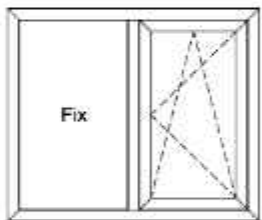
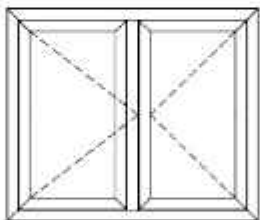
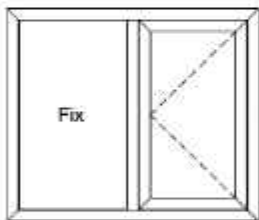
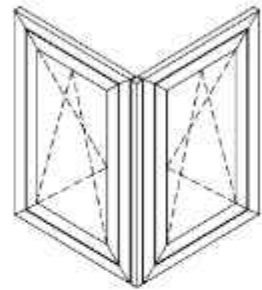
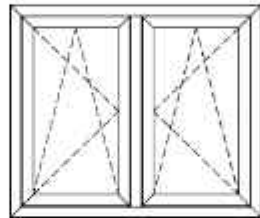
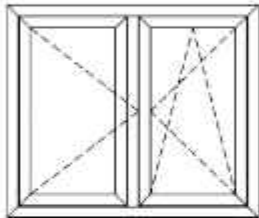
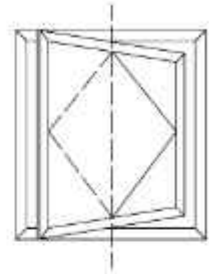
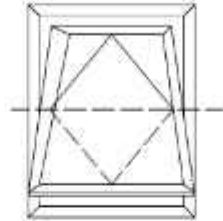
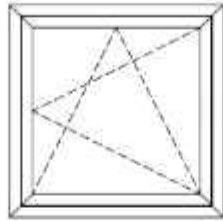
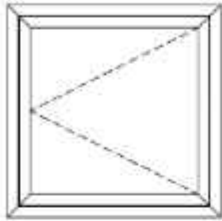
Euro Groove Section





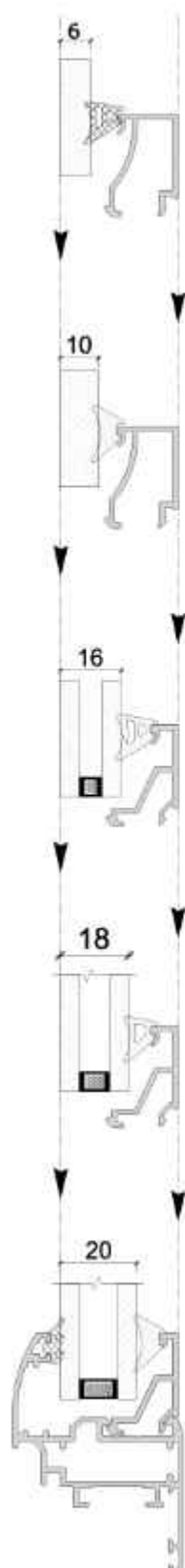
## Hinged System 40 Series

### Typologies



## Hinged System 40 Series

### Glazing Table



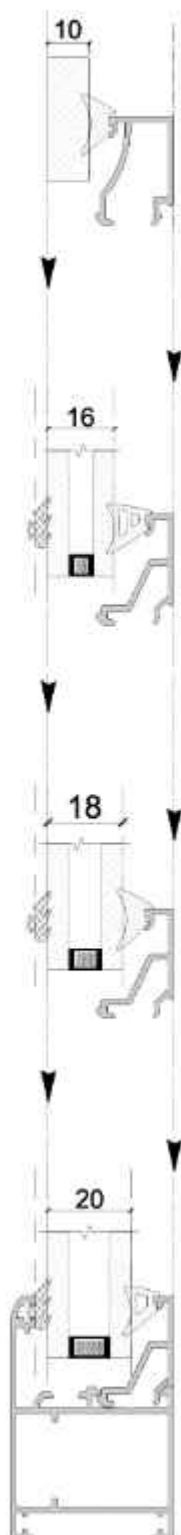
|       |                                                                                               |                                                                                                 |                                                                                                  |
|-------|-----------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|
| 6 mm  | <br>EP-021   | <br>MO68-007   | <br>ALN-423   |
| 10 mm | <br>EP-016   | <br>MO68-007   | <br>ALN-423   |
| 16 mm | <br>EP-021   | <br>MO68-007   | <br>ALN-322   |
| 18 mm | <br>EP-019   | <br>MO68-007   | <br>ALN-322   |
| 20 mm | <br>EP-016 | <br>MO68-007 | <br>ALN-321 |
| 22 mm | <br>EP-015 | <br>MO68-007 | <br>ALN-322 |
| 24 mm | <br>EP-015 | <br>MO68-007 | <br>ALN-424 |



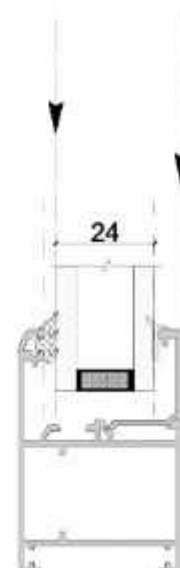
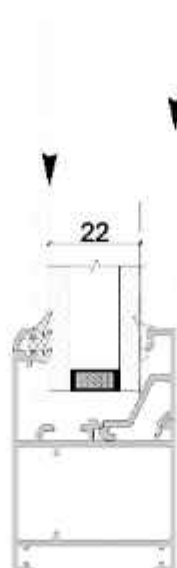


## Hinged System 40 Series

### Glazing Table

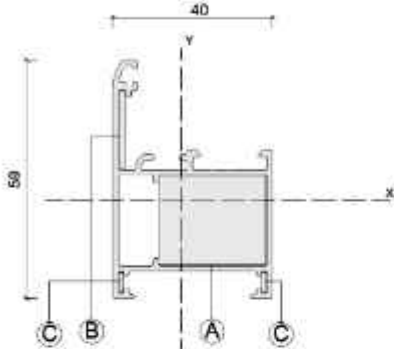
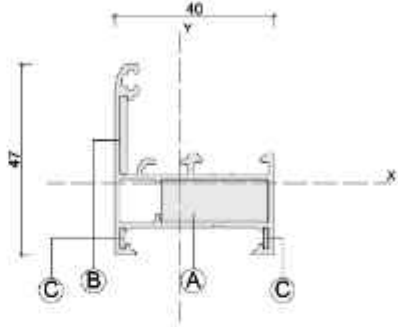
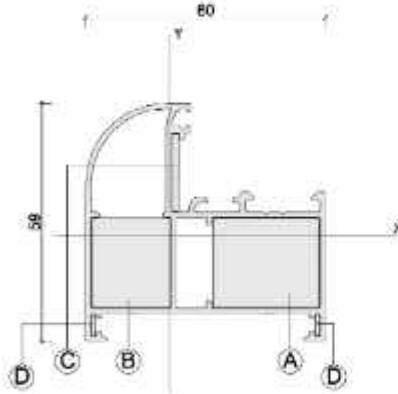
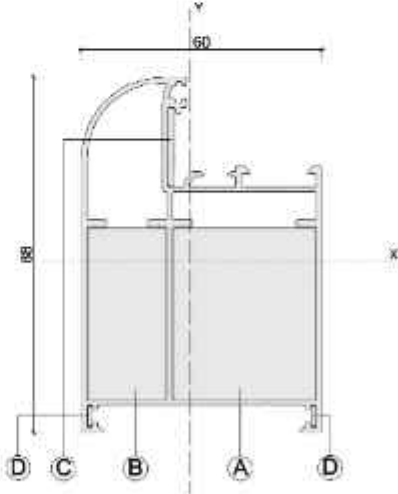


|       |               |          |         |
|-------|---------------|----------|---------|
| 10 mm | 4.5<br>EP-016 | MO68-007 | ALN-423 |
| 16 mm | 7.5<br>EP-021 | MO68-007 | ALN-322 |
| 18 mm | 4.5<br>EP-016 | MO68-007 | ALN-322 |
| 20 mm | 7.5<br>EP-021 | MO68-007 | ALN-321 |
| 22 mm | 1.9<br>EP-015 | MO68-007 | ALN-322 |
| 24 mm | 1.9<br>EP-015 | MO68-007 | ALN-424 |



## Hinged System 40 Series

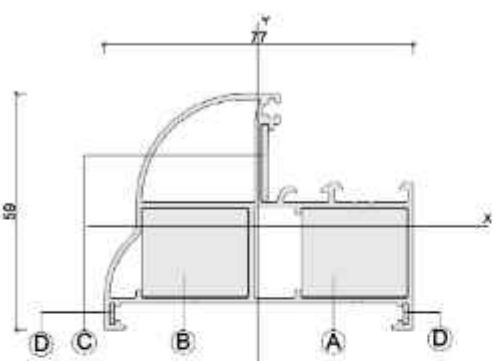
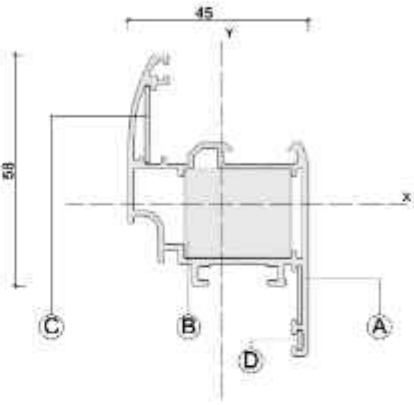
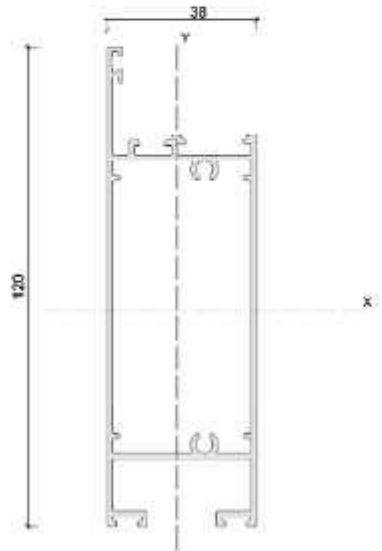
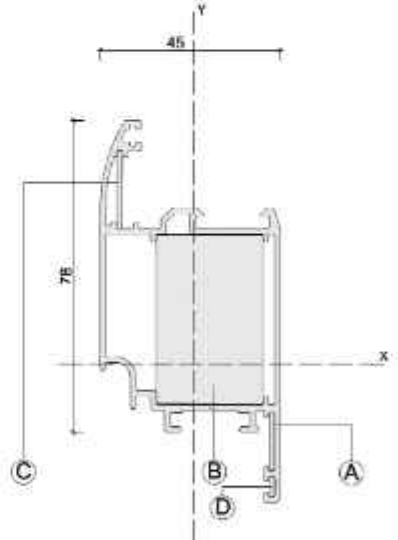
### Profile & Accessories Information

|                                                                                     |                                                                                                       |                                                                                      |                                                                                                         |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------|
|    |                                                                                                       |    |                                                                                                         |
| $I_x$ : 7.25 cm <sup>4</sup>                                                        | $I_y$ : 6.41 cm <sup>4</sup>                                                                          | $I_x$ : 3.53 cm <sup>4</sup>                                                         | $I_y$ : 5.23 cm <sup>4</sup>                                                                            |
| Frame : ALN-300                                                                     | A: PCP-22/26 mm    | Frame : ALN-307                                                                      | A: PCP-10 / 26 mm  |
| Weight: 755 gr/m                                                                    | B: fuji 2000       | Weight: 670 gr/m                                                                     | B: fuji 2000       |
|                                                                                     | C: MO 19           |                                                                                      | C: MO 19           |
|  |                                                                                                       |  |                                                                                                         |
| $I_x$ : 11.53 cm <sup>4</sup>                                                       | $I_y$ : 15.34 cm <sup>4</sup>                                                                         | $I_x$ : 37.32 cm <sup>4</sup>                                                        | $I_y$ : 23.52 cm <sup>4</sup>                                                                           |
| Frame : ALN-306                                                                     | A: PCP-22 / 26 mm  | Frame : ALN-308                                                                      | A: PCP-42 / 26 mm  |
| Weight: 1060 gr/m                                                                   | B: PCP-22 / 19 mm  | Weight: 1475 gr/m                                                                    | B: PCP-42 / 19 mm  |
|                                                                                     | C: fuji 2000       |                                                                                      | C: fuji 2000       |
|                                                                                     | D: MO 19           |                                                                                      | D: MO 19           |



## Hinged System 40 Series

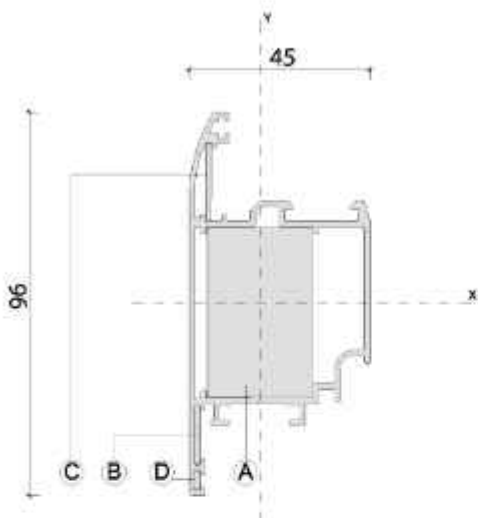
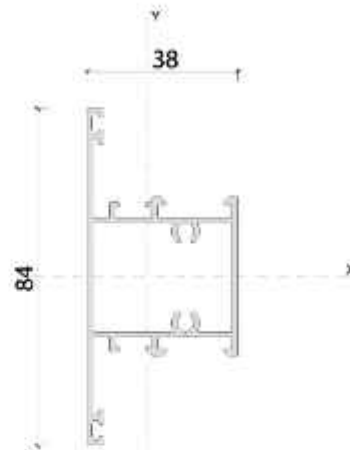
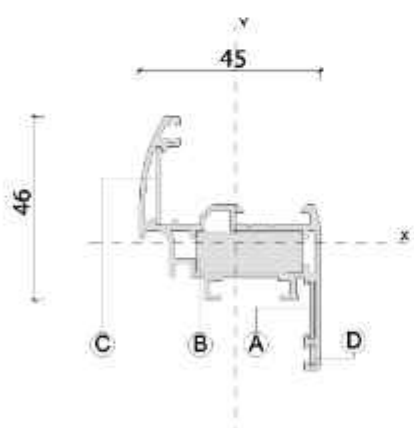
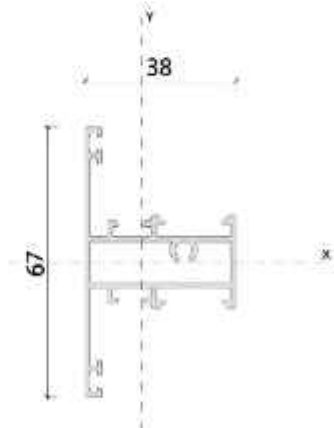
### Profile & Accessories Information

|                                                                                     |                                                                                                     |                                                                                      |                                                                                                                                                                                                   |
|-------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|    |                                                                                                     |    |                                                                                                                                                                                                   |
| $I_x$ : 13.29 $cm^4$                                                                | $I_y$ : 25.98 $cm^4$                                                                                | $I_x$ : 11.04 $cm^4$                                                                 | $I_y$ : 9.55 $cm^4$                                                                                                                                                                               |
| Frame : ALN-366                                                                     | A: PCP-22/26 mm  | Sash : ALN-301                                                                       | A: MM 77                                                                                                     |
| Weight: 1250 gr/m                                                                   | B: PCP-22/26 mm  | Weight: 930 gr/m                                                                     | B: PCP-22 / 26 mm                                                                                            |
|                                                                                     | C: fuji 2000     |                                                                                      | C: fuji 2000  D: MO 19  |
|  |                                                                                                     |  |                                                                                                                                                                                                   |
| $I_x$ : 63.82 $cm^4$                                                                | $I_y$ : 11.55 $cm^4$                                                                                | $I_x$ : 25.53 $cm^4$                                                                 | $I_y$ : 12.08 $cm^4$                                                                                                                                                                              |
| Profile : ALN-310                                                                   | A: -                                                                                                | Sash : ALN-302                                                                       | A: MM 77                                                                                                     |
| Weight: 1295 gr/m                                                                   | B: -                                                                                                | Weight: 1075 gr/m                                                                    | B: PCP-42 / 26 mm                                                                                            |
|                                                                                     |                                                                                                     |                                                                                      | C: fuji 2000  D: MO 19  |



## Hinged System 40 Series

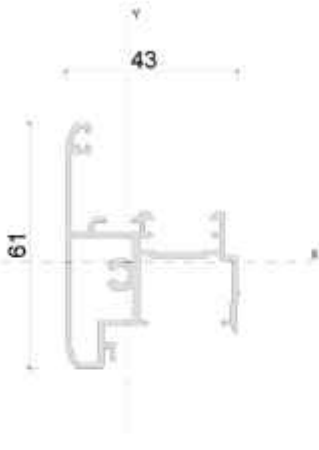
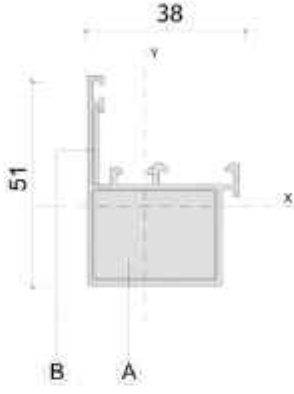
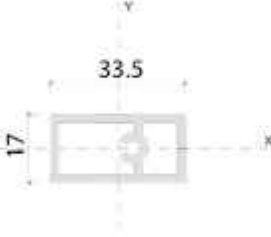
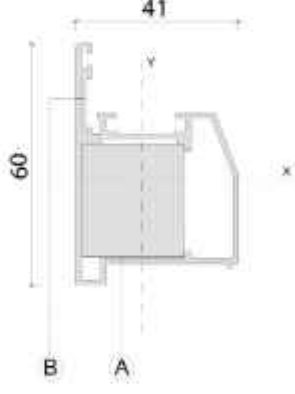
### Profile & Accessories Information

|                                                                                     |                               |                                                                                      |                              |
|-------------------------------------------------------------------------------------|-------------------------------|--------------------------------------------------------------------------------------|------------------------------|
|    |                               |    |                              |
| $I_x$ : 25.54 cm <sup>4</sup>                                                       | $I_y$ : 11.07 cm <sup>4</sup> | $I_x$ : 13.50 cm <sup>4</sup>                                                        | $I_y$ : 6.71 cm <sup>4</sup> |
| Sash : ALN-303                                                                      | A: PCP-42 / 26 mm<br>B: MM 77 | Transom : ALN-304                                                                    | A: -                         |
| Weight: 1070 gr/m                                                                   | C: fuji 2000<br>D: MO 19      | Weight: 930 gr/m                                                                     | B: -                         |
|  |                               |  |                              |
| $I_x$ : 5.88 cm <sup>4</sup>                                                        | $I_y$ : 7.81 cm <sup>4</sup>  | $I_x$ : 5.76 cm <sup>4</sup>                                                         | $I_y$ : 5.03 cm <sup>4</sup> |
| Sash : ALN-309                                                                      | A: MM 77<br>B: PCP-10 / 26 mm | Transom : ALN-311                                                                    | A: -                         |
| Weight: 830 gr/m                                                                    | C: fuji 2000<br>D: MO 19      | Weight: 770 gr/m                                                                     | B: -                         |



## Hinged System 40 Series

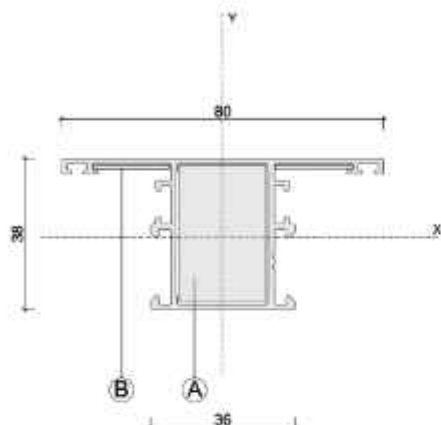
### Profile & Accessories Information

|                                                                                     |                          |                                                                                       |                                                                                                         |
|-------------------------------------------------------------------------------------|--------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------|
|    |                          |     |                                                                                                         |
| $I_x: 6.64 \text{ cm}^4$                                                            | $I_y: 6.04 \text{ cm}^4$ | $I_x: 4.73 \text{ cm}^4$                                                              | $I_y: 4.14 \text{ cm}^4$                                                                                |
| Profile : ALN-305                                                                   | A: -                     | Profile : ALN-313                                                                     | A: PCP-22 / 30 mm  |
| Weight: 870 gr/m                                                                    | B: -                     | Weight: 607 gr/m                                                                      | B: Fuji2000        |
|  |                          |  |                                                                                                         |
| $I_x: 0.86 \text{ cm}^4$                                                            | $I_y: 2.62 \text{ cm}^4$ | $I_x: 7.69 \text{ cm}^4$                                                              | $I_y: 6.07 \text{ cm}^4$                                                                                |
| Profile : ALN-312                                                                   | A: -                     | Profile : ALN-314                                                                     | A: PCP-28 / 25 mm  |
| Weight: 608 gr/m                                                                    | B: -                     | Weight: 751 gr/m                                                                      | B: MM 77           |



## Hinged System 40 Series

### Profile & Accessories Information



Profile : ALN-230

Weight: 200 gr/m

$I_x$ : 7.76  $cm^4$

$I_y$ : 5.26  $cm^4$

Profile : ALN-315

A: PCP-22 / 34 mm



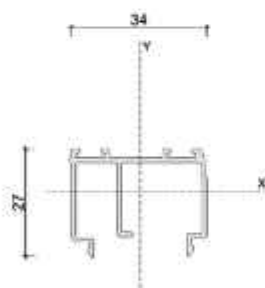
Weight: 821 gr/m

B: fuji 2000



Fly screen : ALN-207

Weight: 448 gr/m



$I_x$ : 1.00  $cm^4$

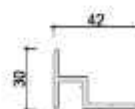
$I_y$ : 2.33  $cm^4$

Profile : ALN-316

A: -

Weight: 343 gr/m

B: -



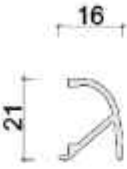
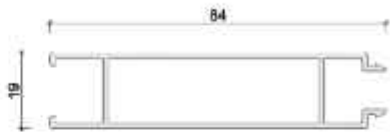
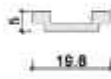
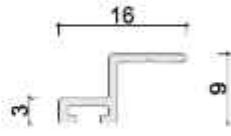
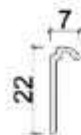
Profile : ALN-228

Weight: 135 gr/m



## Hinged System 40 Series

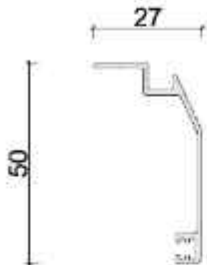
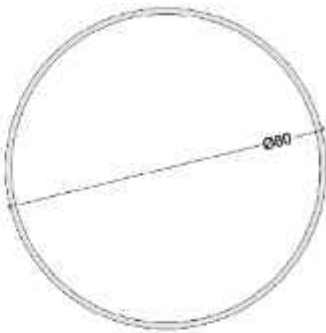
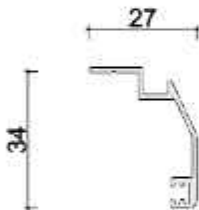
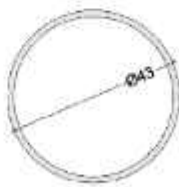
### Profile & Accessories Information

|                                                                                     |                   |                                                                                       |                    |
|-------------------------------------------------------------------------------------|-------------------|---------------------------------------------------------------------------------------|--------------------|
|    |                   |     |                    |
| profile: ALN-229                                                                    | Weight : 192 gr/m | Profile : ALN-412                                                                     | Weight : 691 gr/m  |
|  |                   |  |                    |
| Profile : ALN-331                                                                   | Weight : 140 gr/m | profile: ALN-443                                                                      | Weight : 75.6 gr/m |
|  |                   |  |                    |
| profile: ALN-332                                                                    | Weight : 113 gr/m | profile: ALN-444                                                                      | Weight : 344 gr/m  |



## Hinged System 40 Series

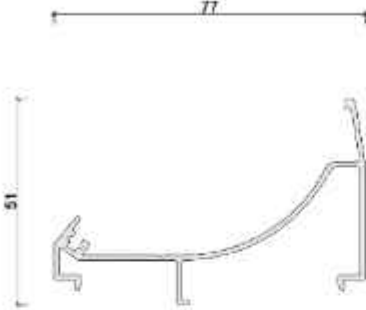
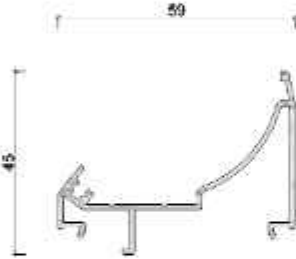
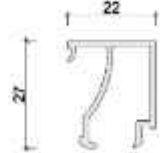
### Profile & Accessories Information

|                                                                                     |                   |                                                                                       |                   |
|-------------------------------------------------------------------------------------|-------------------|---------------------------------------------------------------------------------------|-------------------|
|    |                   |     |                   |
| Flange profile: ALN-221                                                             | Weight : 302 gr/m | Profile : ALN-328                                                                     | Weight : 999 gr/m |
|  |                   |    |                   |
| Flange profile: ALN-222                                                             | Weight : 254 gr/m | Profile : ALN-215                                                                     | Weight : 648 gr/m |
|  |                   |  |                   |
| Flange profile: ALN-219                                                             | Weight : 362 gr/m | Profile : ALN-329                                                                     | Weight : 525 gr/m |



## Hinged System 40 Series

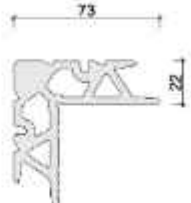
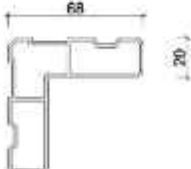
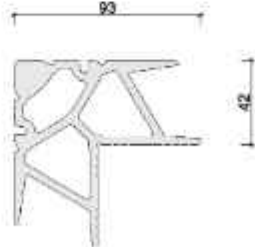
### Profile & Accessories Information

|                                                                                     |                   |                                                                                       |                  |
|-------------------------------------------------------------------------------------|-------------------|---------------------------------------------------------------------------------------|------------------|
|    |                   |    |                  |
| Profile : ALN-328                                                                   | Weight : 613 gr/m | Glazing beads: ALN-321                                                                | Weight :224 gr/m |
|   |                   |  |                  |
| Profile : ALN-225                                                                   | Weight : 548 gr/m | Glazing beads: ALN-322                                                                | Weight :238 gr/m |
|  |                   |  |                  |
| Profile : ALN-327                                                                   | Weight : 367 gr/m | Glazing beads: ALN-323                                                                | Weight :302 gr/m |



## Hinged System 40 Series

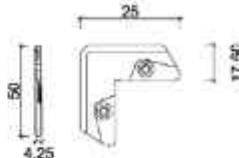
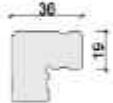
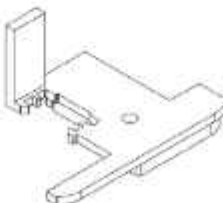
### Profile & Accessories Information

|                                                                                     |                                 |                                                                                       |                                 |
|-------------------------------------------------------------------------------------|---------------------------------|---------------------------------------------------------------------------------------|---------------------------------|
|    |                                 |    |                                 |
| Glazing beads: ALN-424                                                              | Weight : 167 gr/m               | Corner joint: PCP-22                                                                  | Weight : 3718 gr/m <sup>2</sup> |
|  |                                 |  |                                 |
| Corner joint: PCP-10                                                                | Weight : 2454 gr/m <sup>2</sup> | Corner Joint: PCP-28                                                                  | Weight : 3429 gr/m <sup>2</sup> |
|  |                                 |  |                                 |
| Corner joint: PCP 20                                                                | Weight : 1375 gr/m <sup>2</sup> | Corner joint: PCP-42                                                                  | Weight : 5133 gr/m <sup>2</sup> |



## Hinged System 40 Series

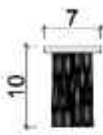
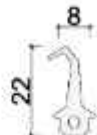
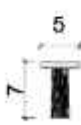
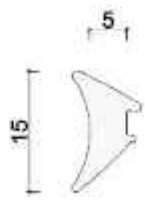
### Profile & Accessories Information

|                                                                                     |                  |                                                                                       |           |
|-------------------------------------------------------------------------------------|------------------|---------------------------------------------------------------------------------------|-----------|
|    |                  |    |           |
| Corner joint: MM 77                                                                 | Weight : –       | Corner Joint: Fuji 2000                                                               | Weight: – |
|  |                  |   |           |
| Corner joint: AKW-804                                                               | Weight : –       | ALP-305-01                                                                            | Weight: – |
|  |                  |  |           |
| Corner: MO 19                                                                       | Weight: 583 gr/m | ALP-305-02                                                                            | Weight: – |



## Hinged System 40 Series

### Profile & Accessories Information

|                                                                                     |            |                                                                                       |                   |
|-------------------------------------------------------------------------------------|------------|---------------------------------------------------------------------------------------|-------------------|
|    |            |    |                   |
| PB7-3P-70-1000                                                                      | Weight : — | Gasket: 1015                                                                          | Weight : 116 gr/m |
|  |            |  |                   |
| PB7-3P-70-500                                                                       | Weight: —  | Gasket: MO68                                                                          | Weight : 48 gr/m  |
|  |            |  |                   |
| PB7-3P-50-700                                                                       | Weight: —  | Gasket: EP-016                                                                        | Weight : 77 gr/m  |



## Hinged System 40 Series

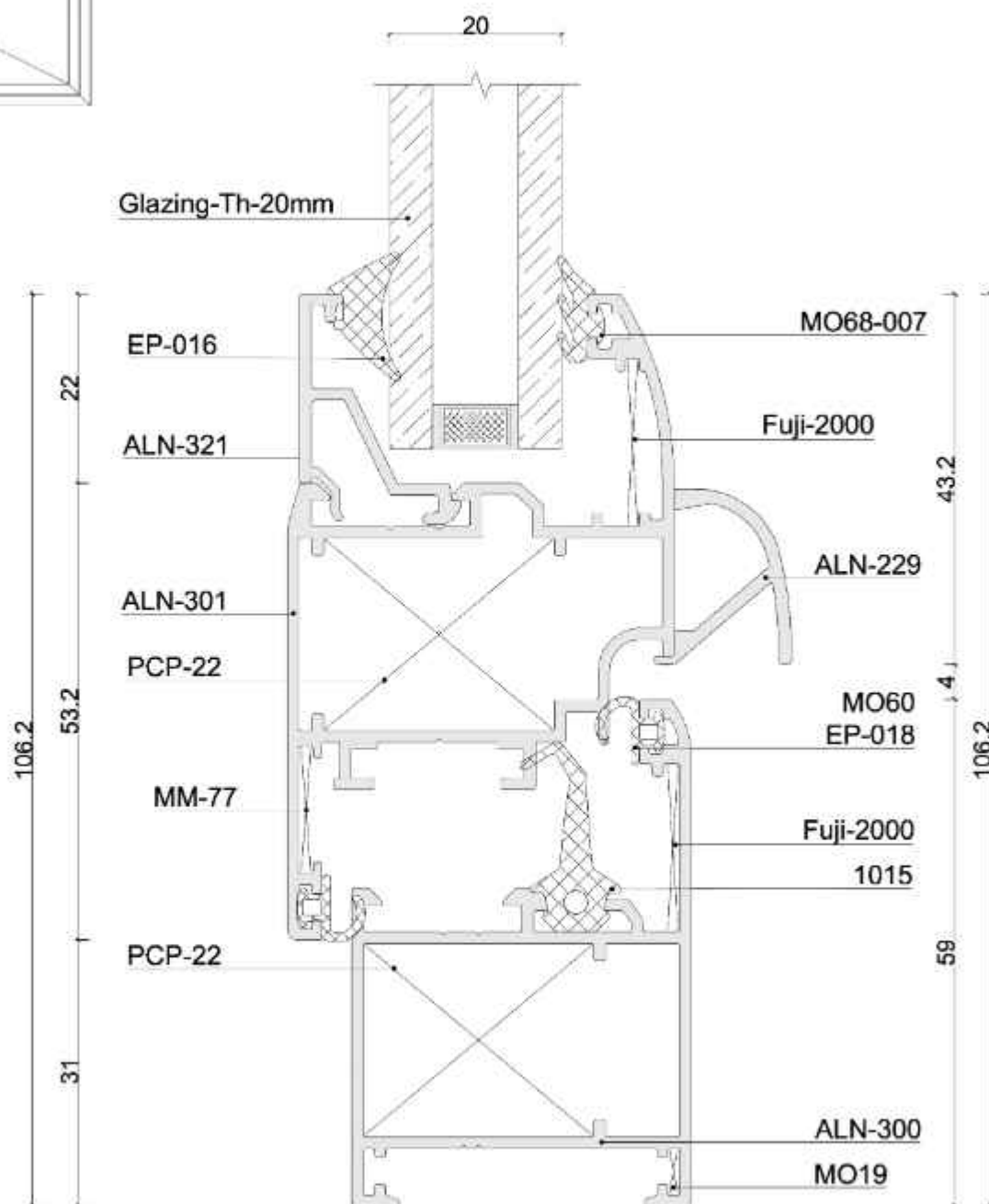
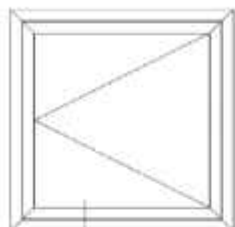
### Profile & Accessories Information

|                |                  |                 |                  |
|----------------|------------------|-----------------|------------------|
|                |                  |                 |                  |
| Gasket: EP-021 | Weight : 80 gr/m | Gasket: 3523801 | Weight: 35 gr/m  |
|                |                  |                 |                  |
| Gasket: EP-018 | Weight : 27 gr/m | Gasket: EP-015  | Weight 21 gr/m   |
|                |                  |                 |                  |
| Gasket: mo 60  | Weight : 26 gr/m | Gasket: EP-019  | Weight : 61 gr/m |



## Hinged System 40 Series

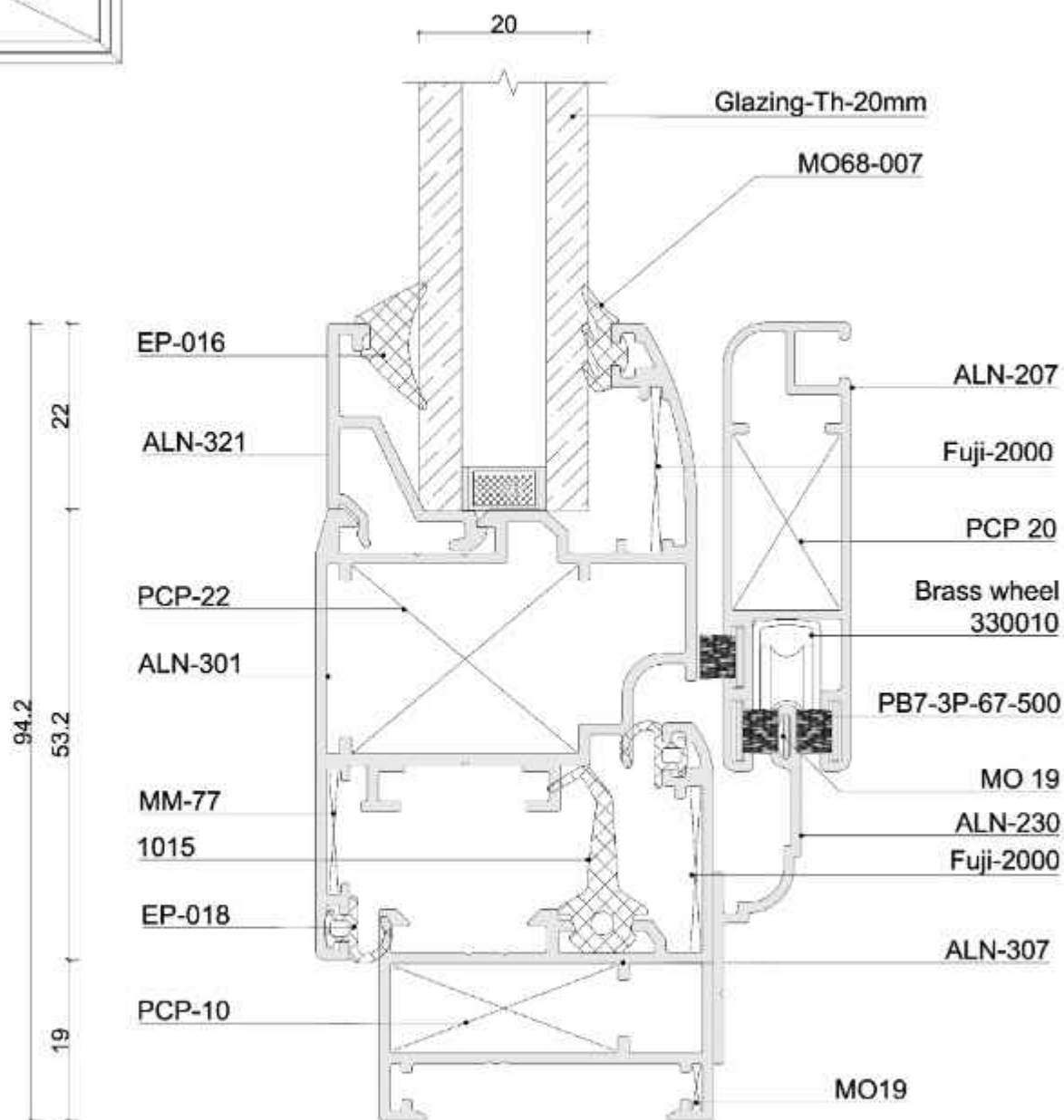
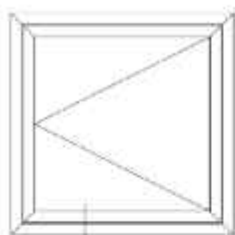
### Fabrication Details





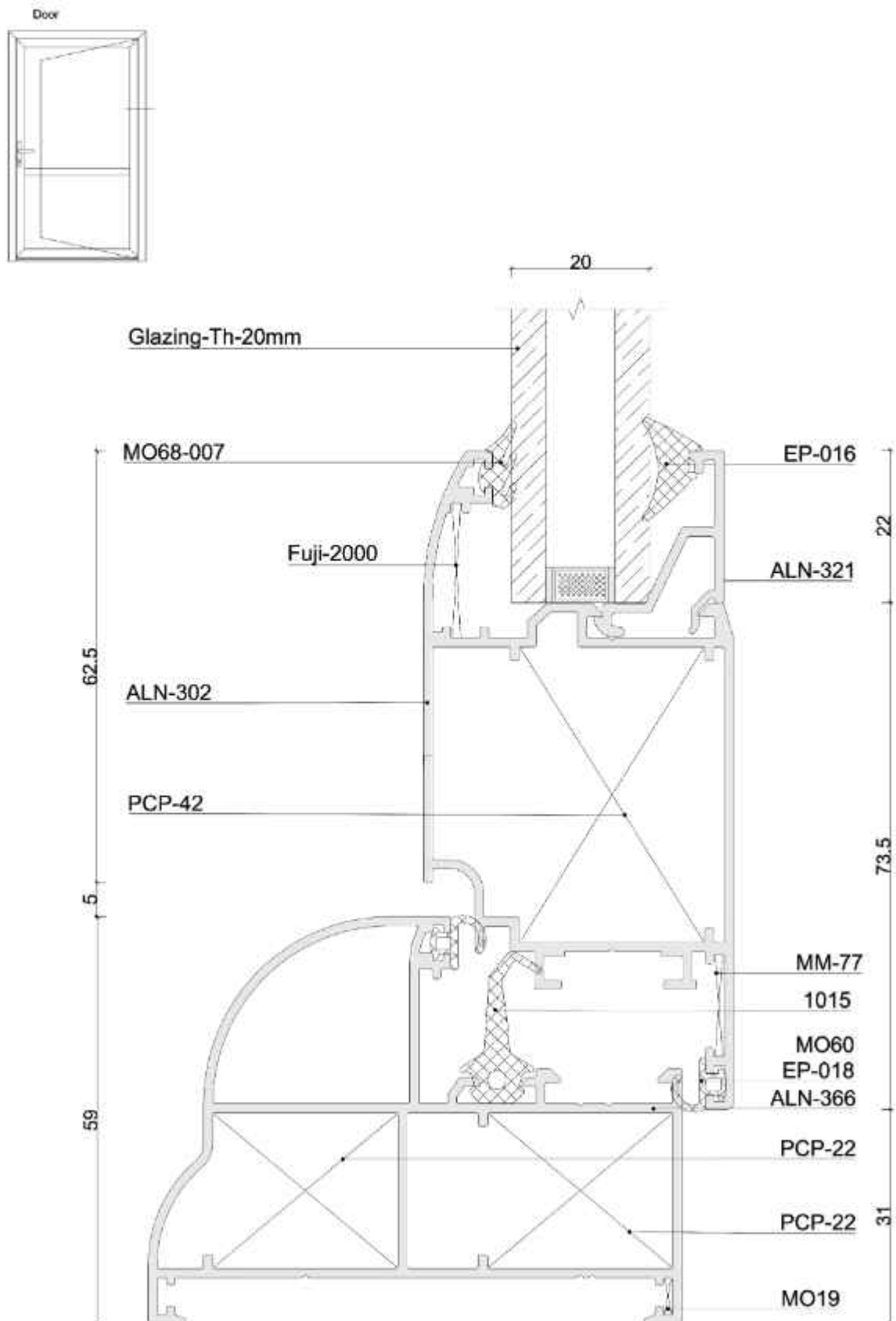
## Hinged System 40 Series

### Fabrication Details



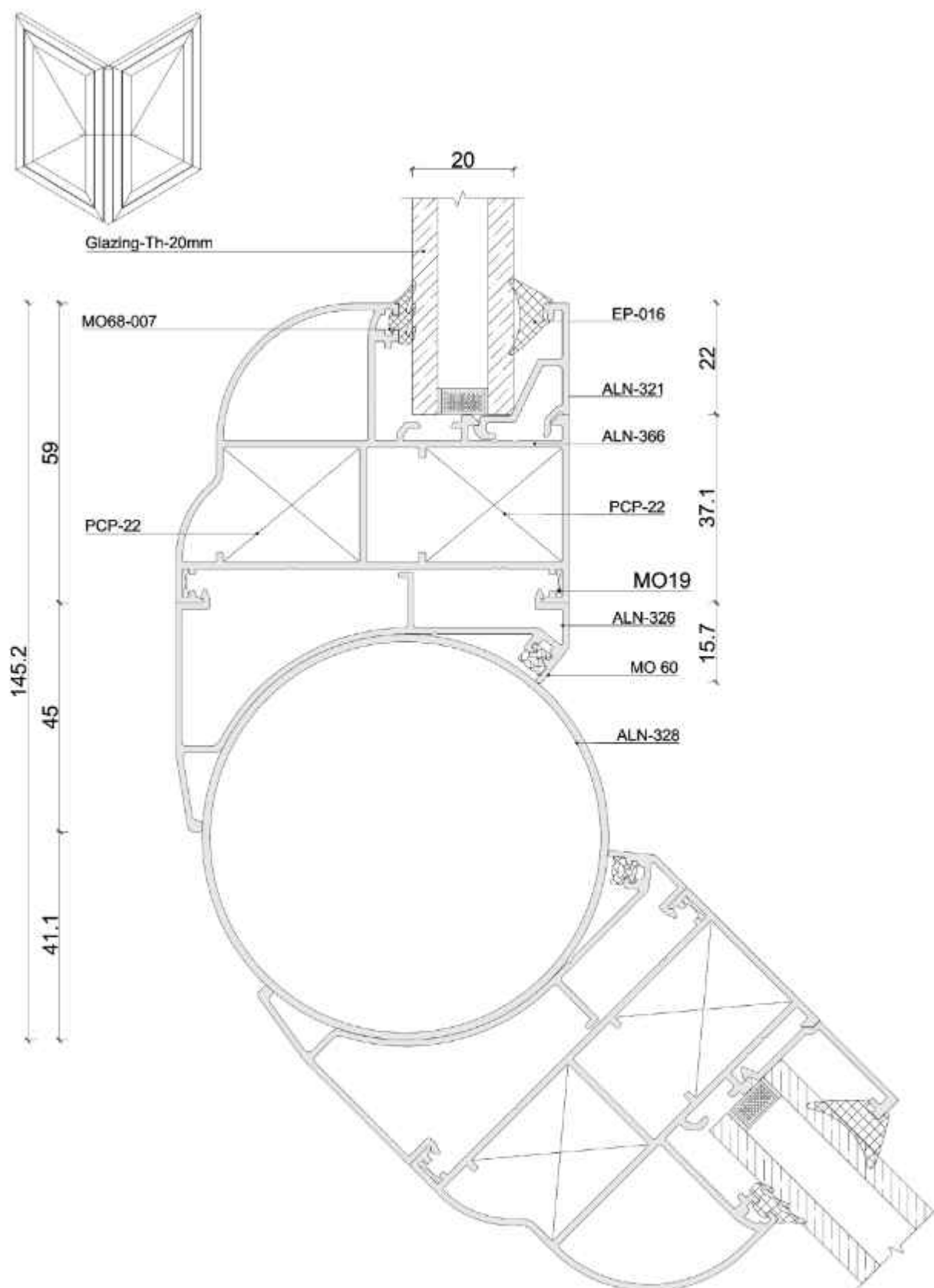


## Hinged System 40 Series Fabrication Details



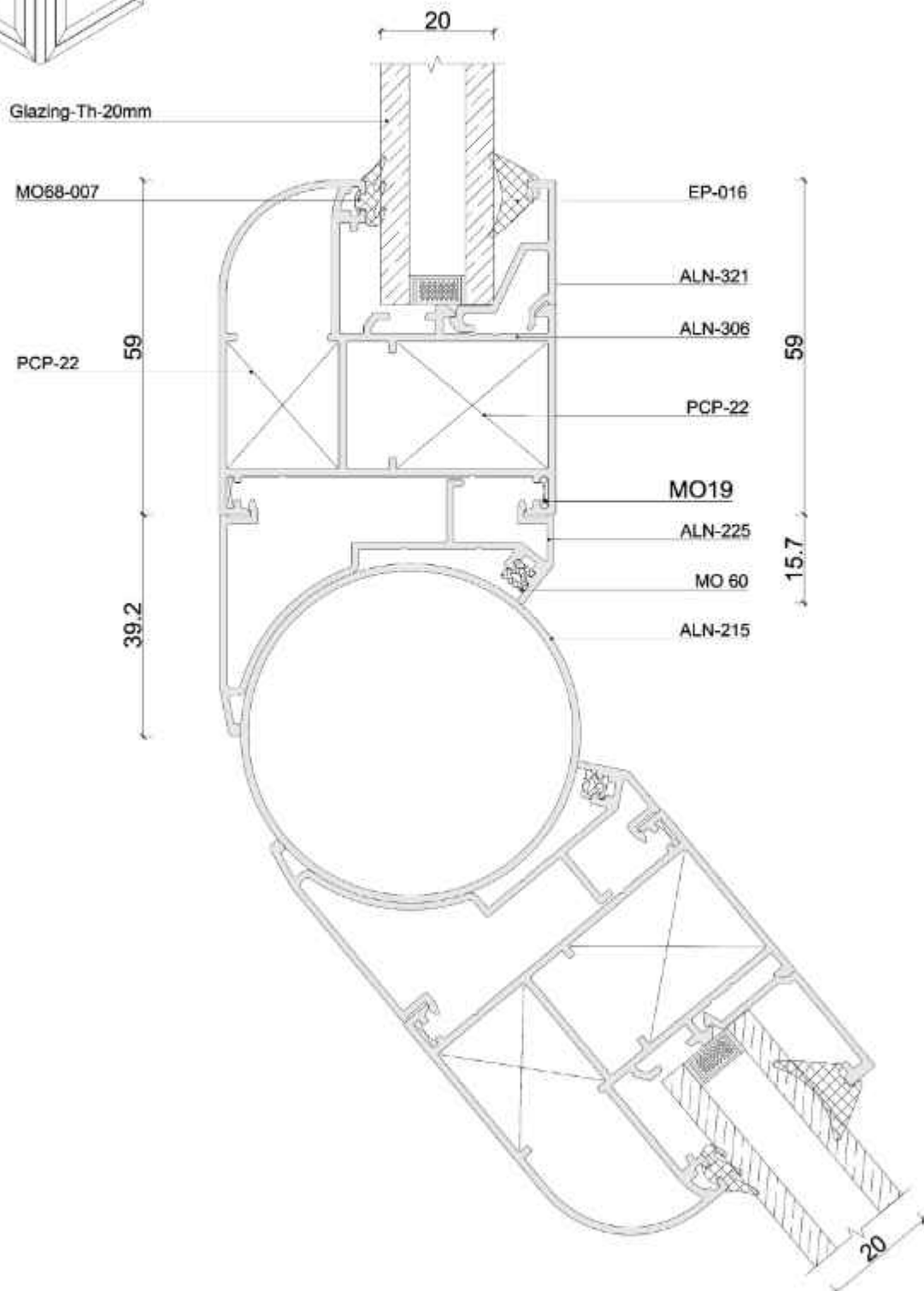
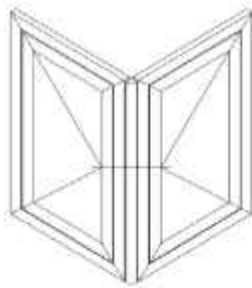
# Hinged System 40 Series

## Fabrication Details



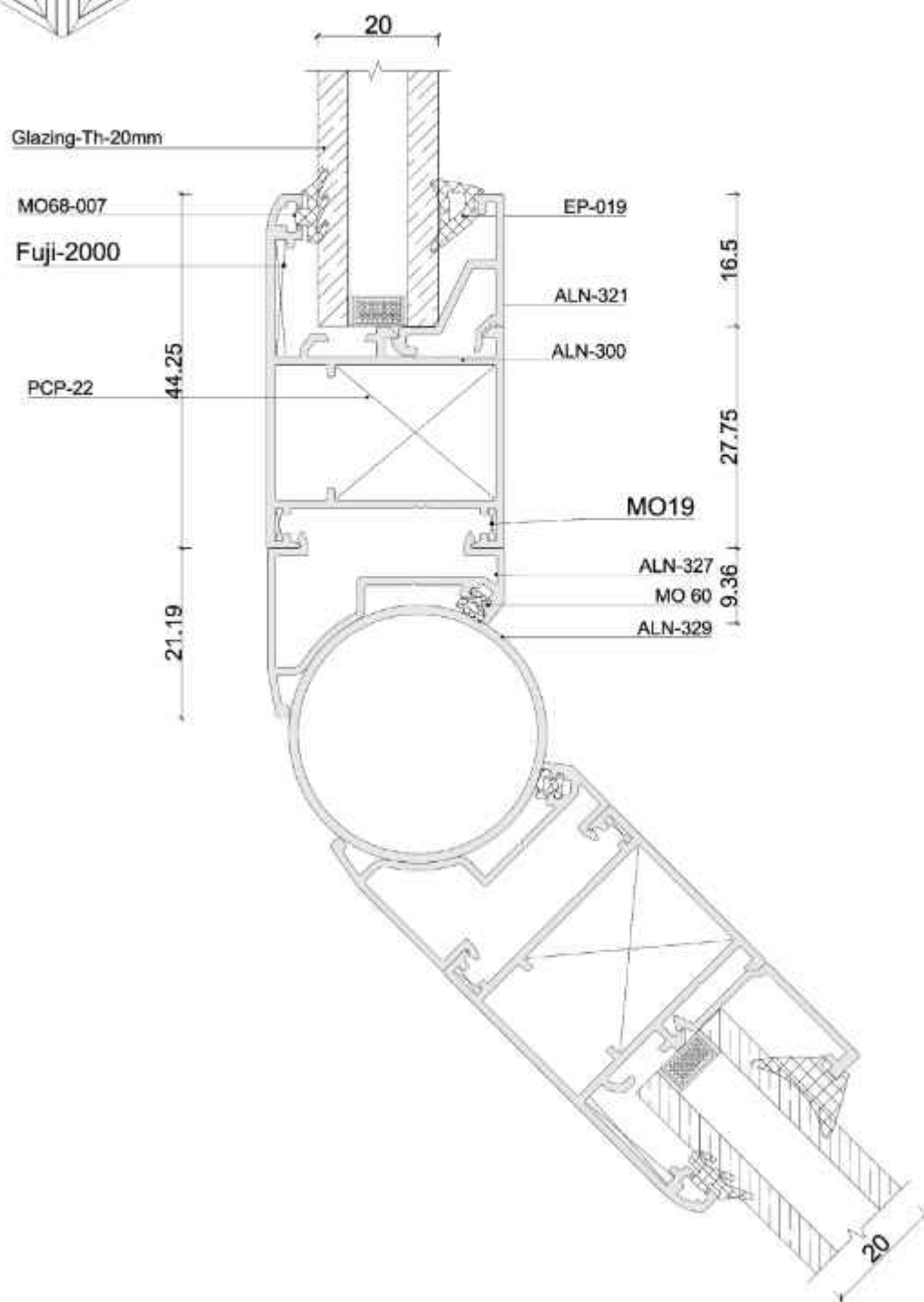
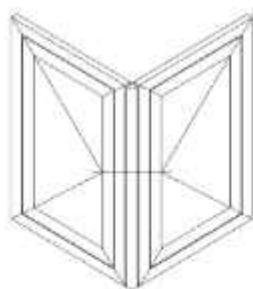


## Hinged System 40 Series Fabrication Details



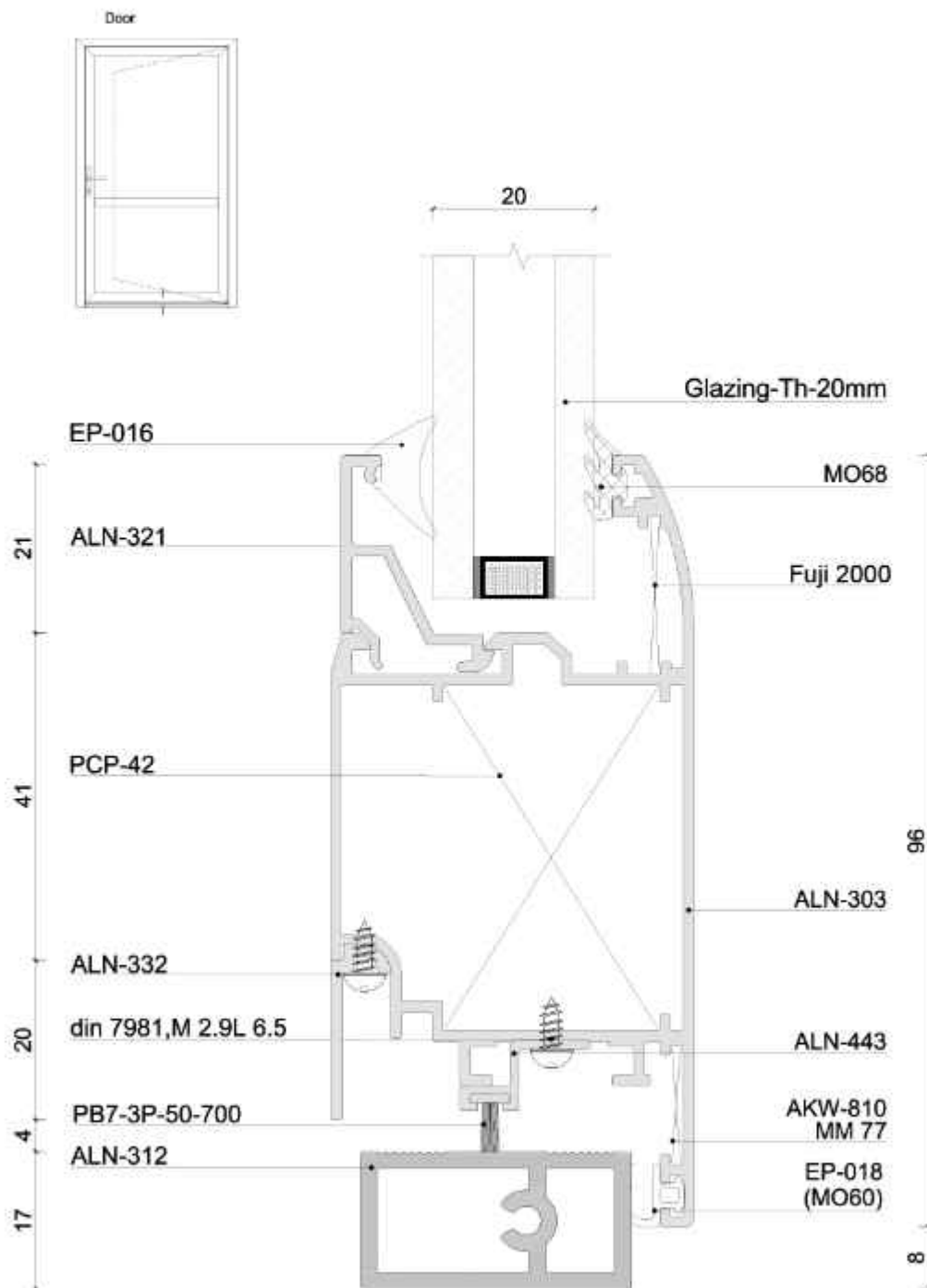
## Hinged System 40 Series

### Fabrication Details



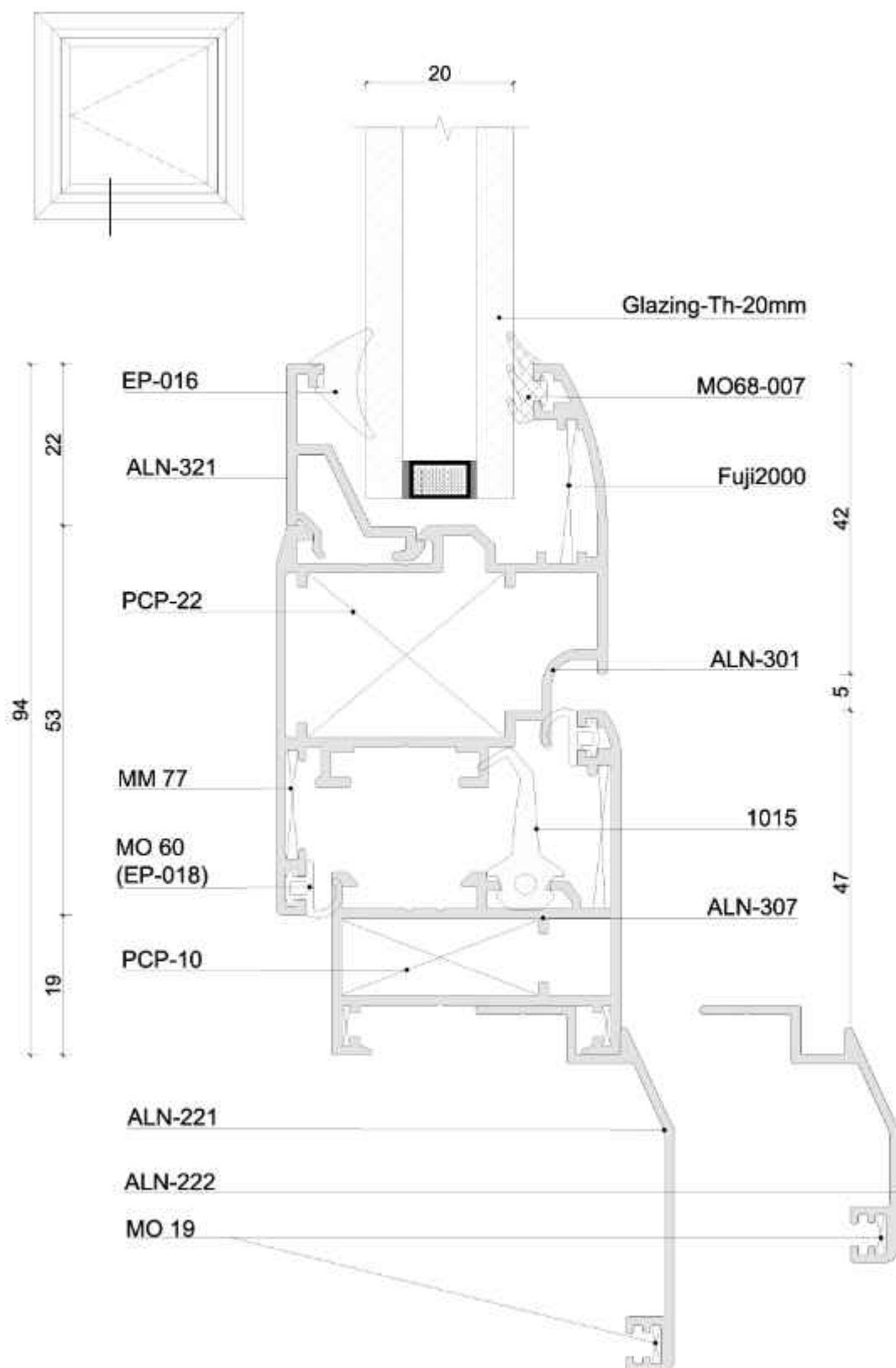


## Hinged System 40 Series Fabrication Details



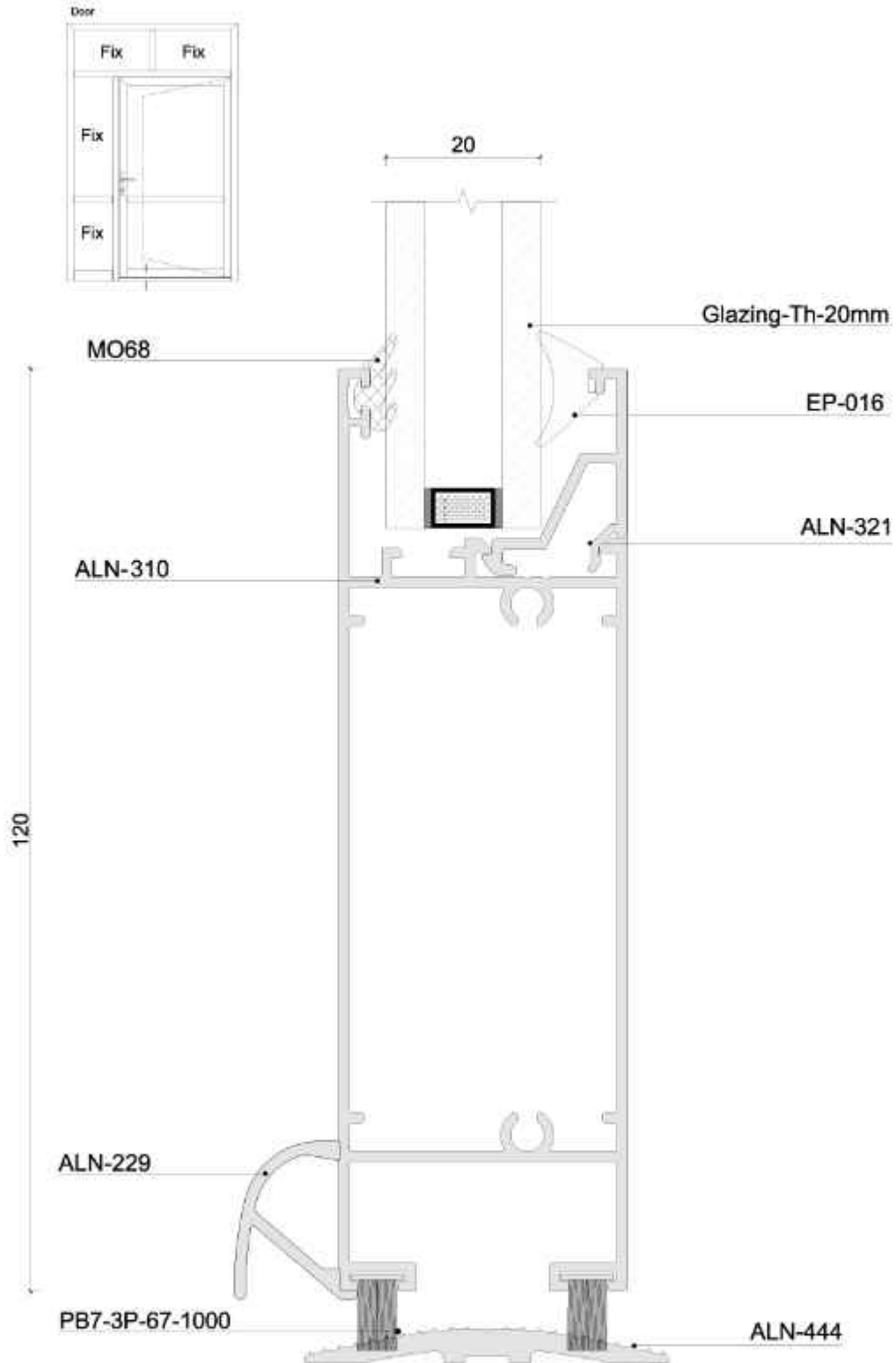
## Hinged System 40 Series

### Fabrication Details



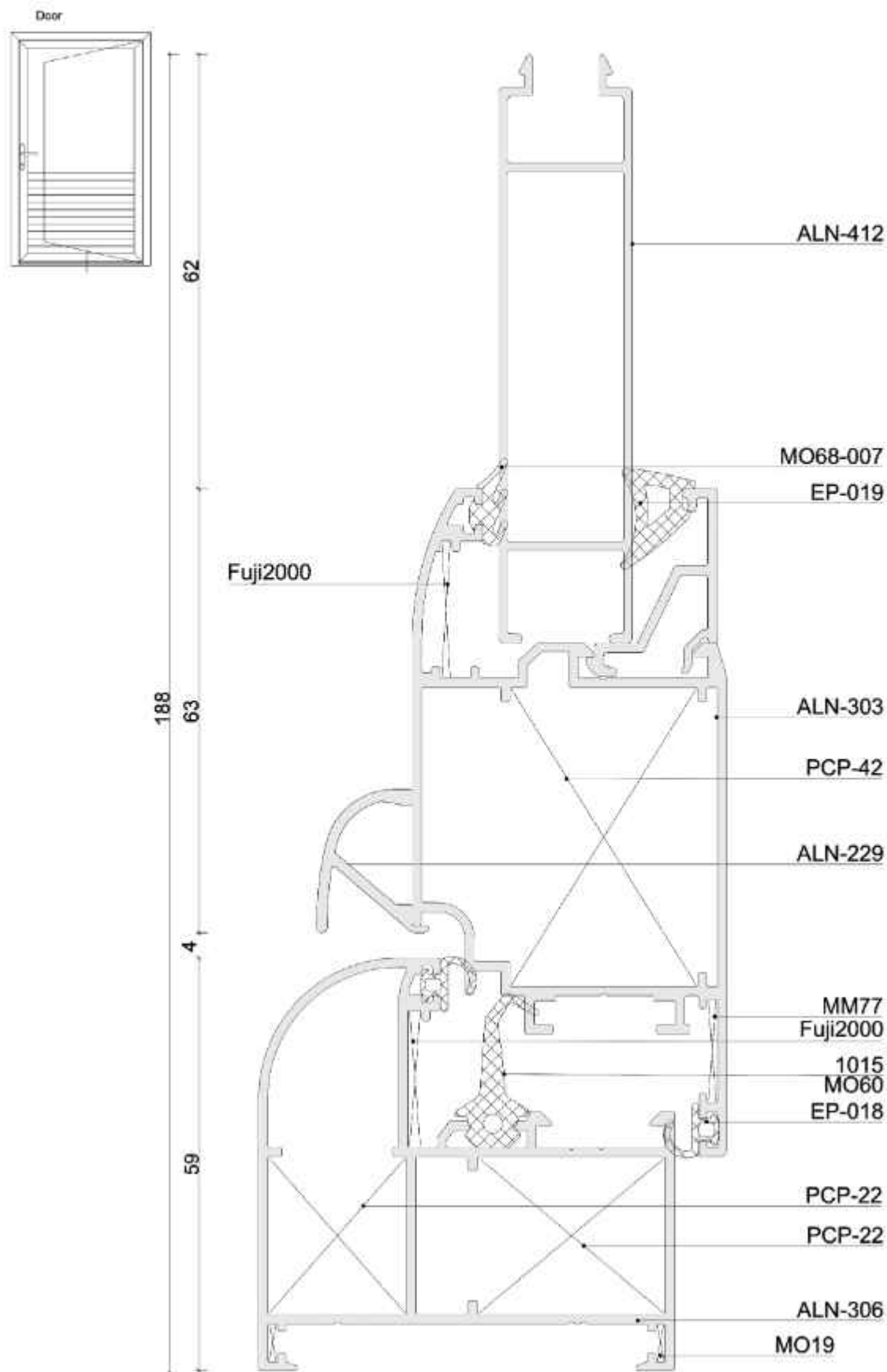


## Hinged System 40 Series Fabrication Details



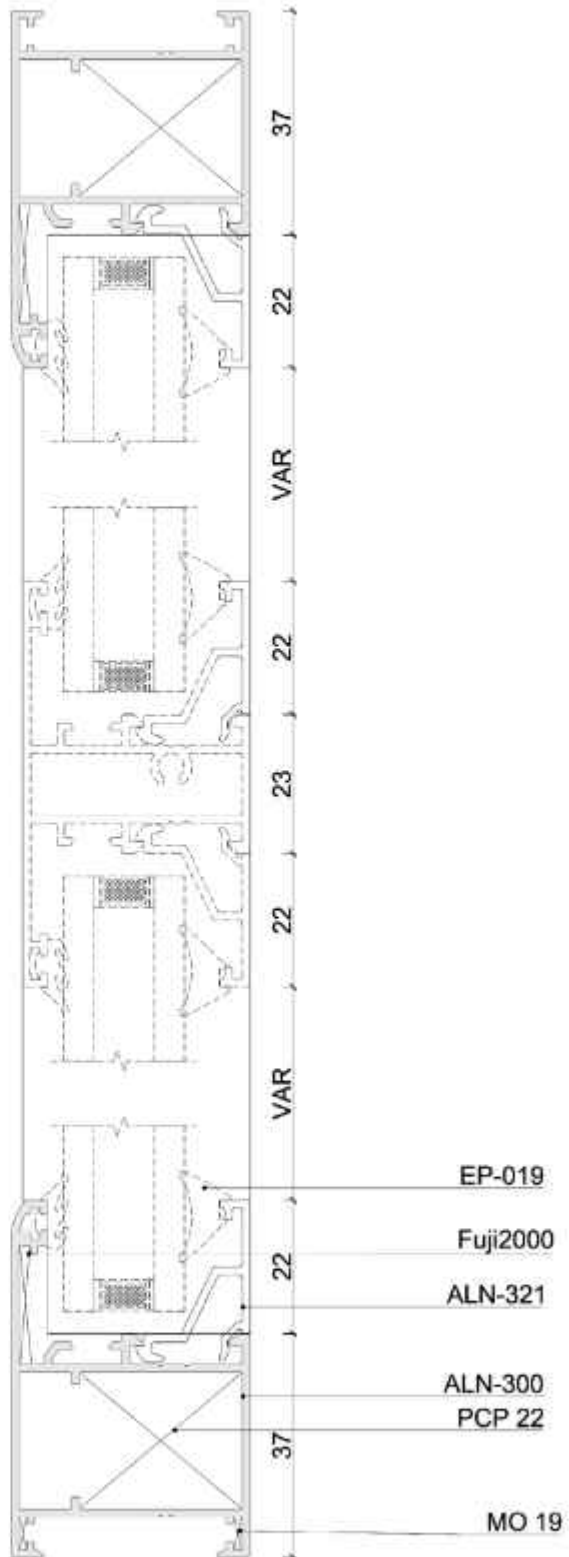
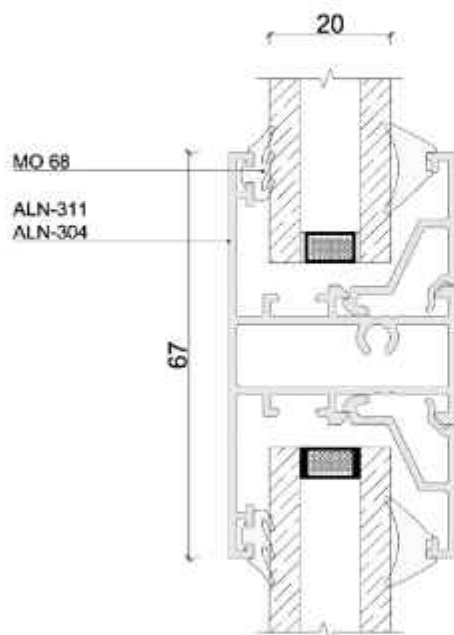
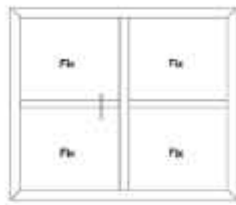
## Hinged System 40 Series

### Fabrication Details



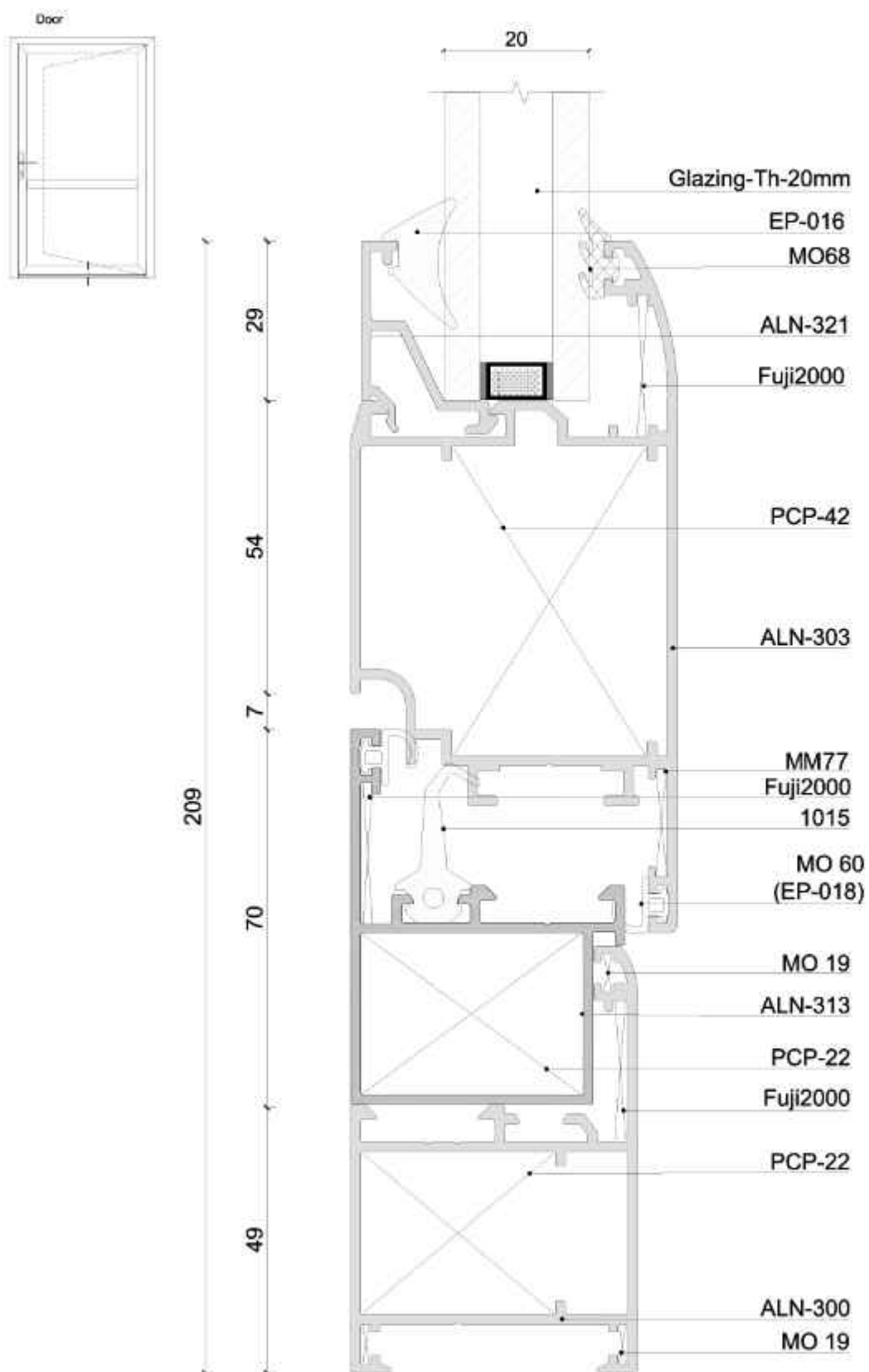


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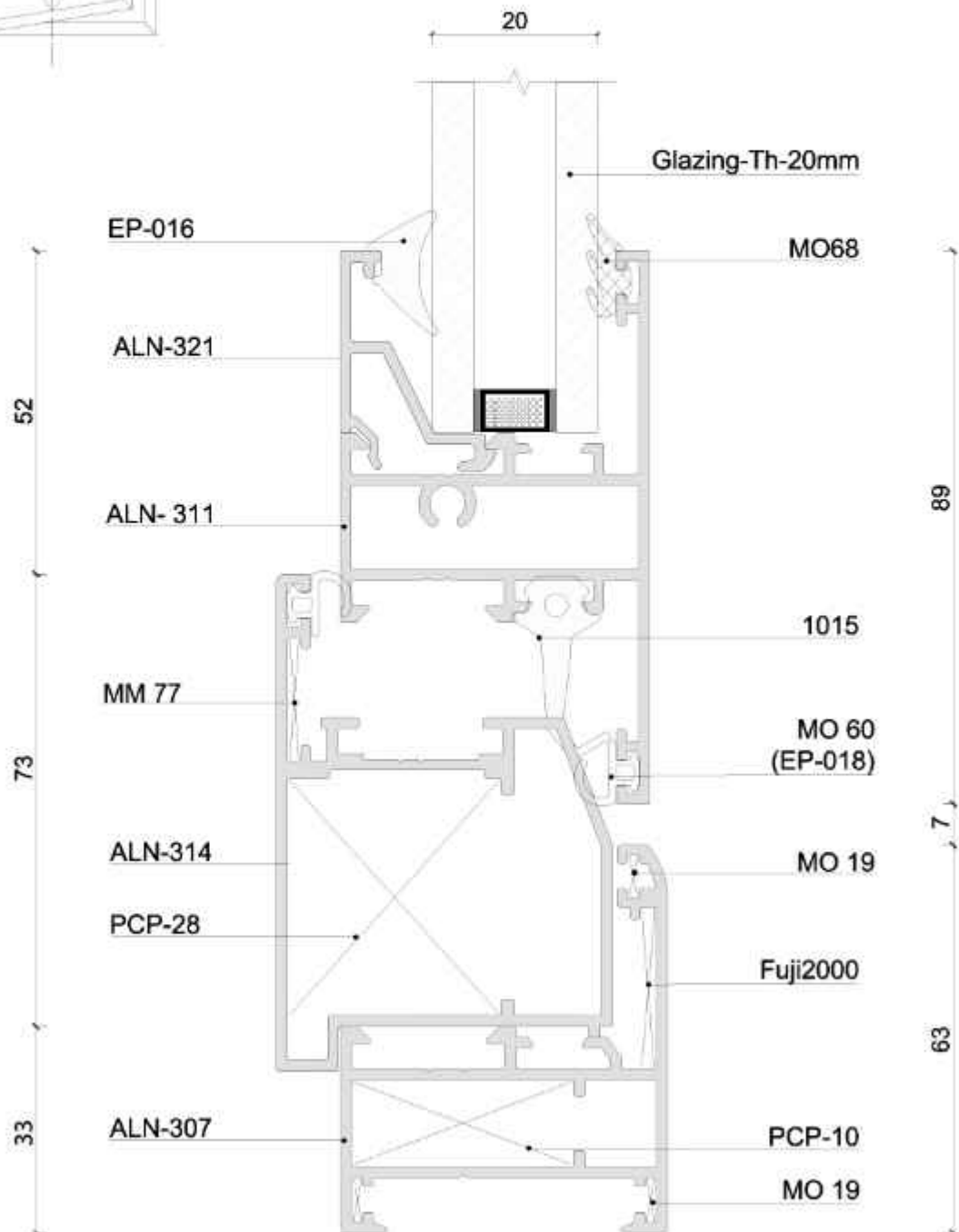
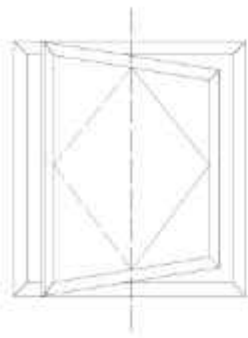
## Hinged System 40 Series

### Fabrication Details



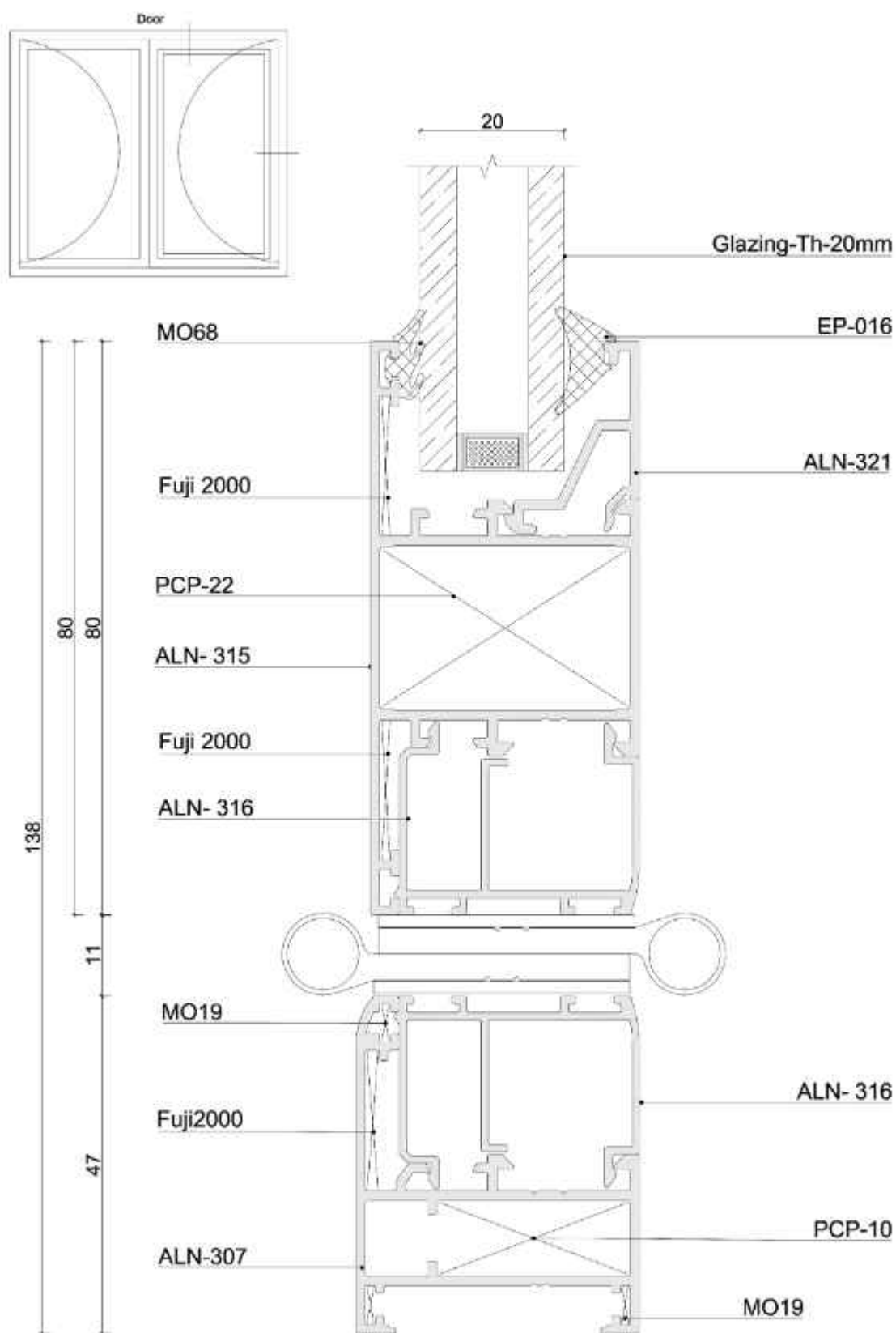


## Hinged System 40 Series Fabrication Details



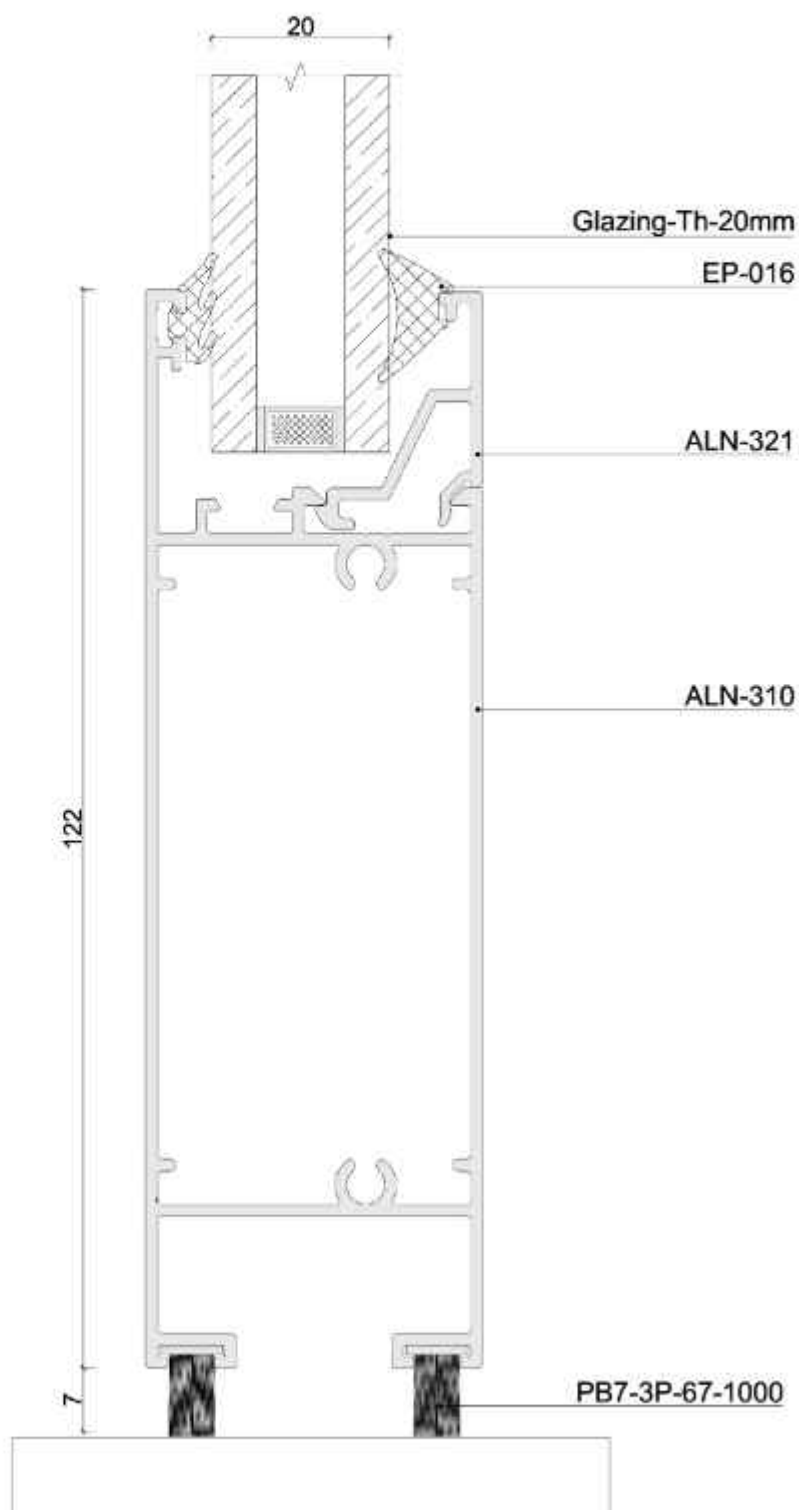
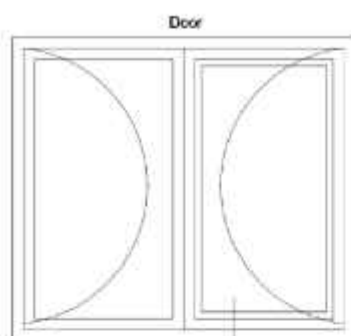
## Hinged System 40 Series

### Fabrication Details



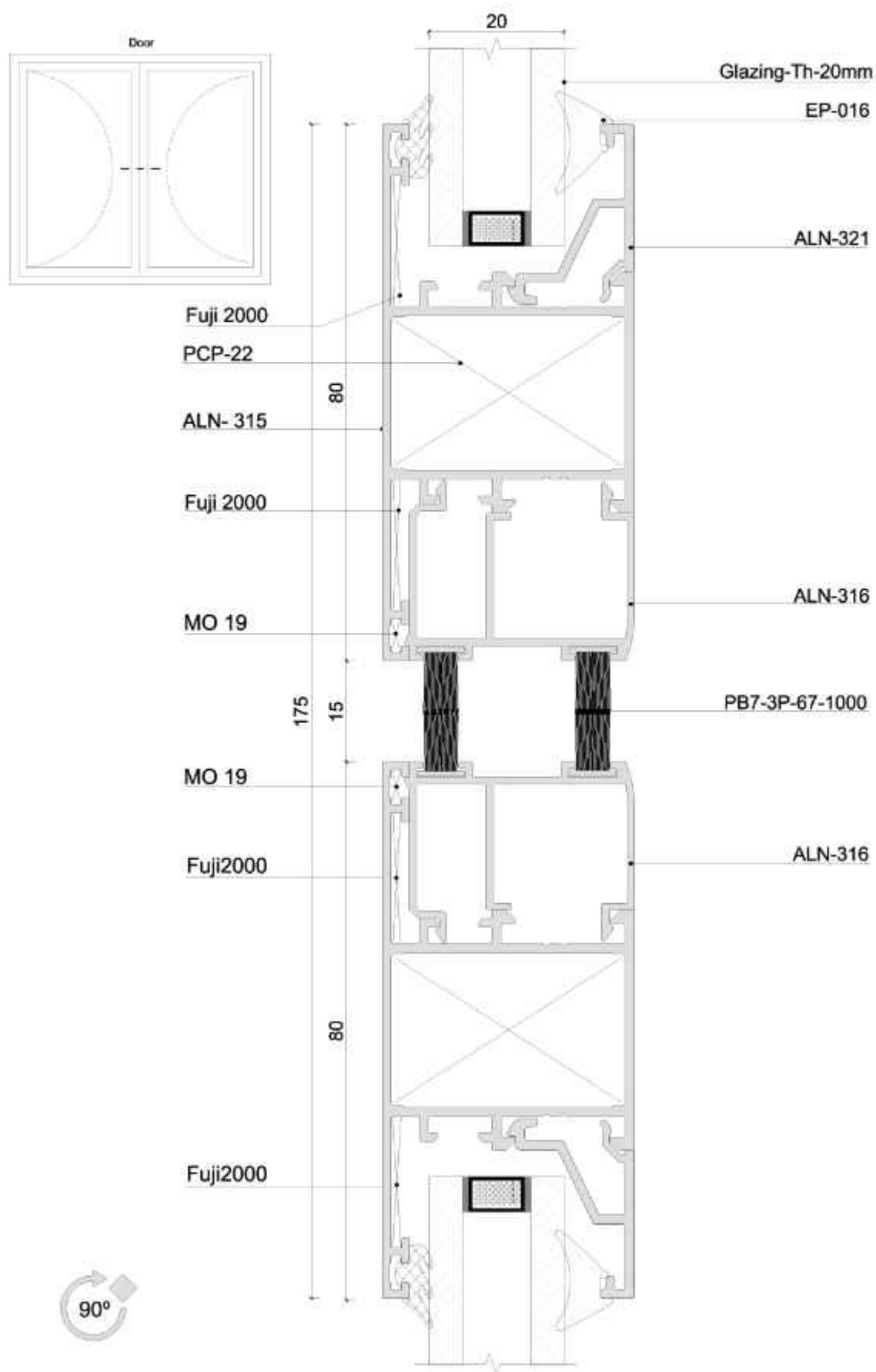


## Hinged System 40 Series Fabrication Details



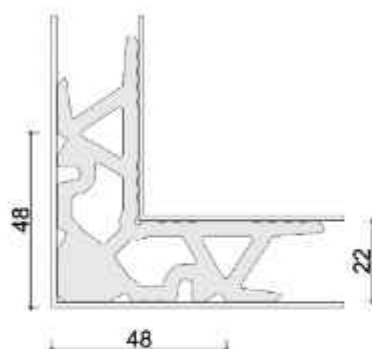
## Hinged System 40 Series

### Fabrication Details

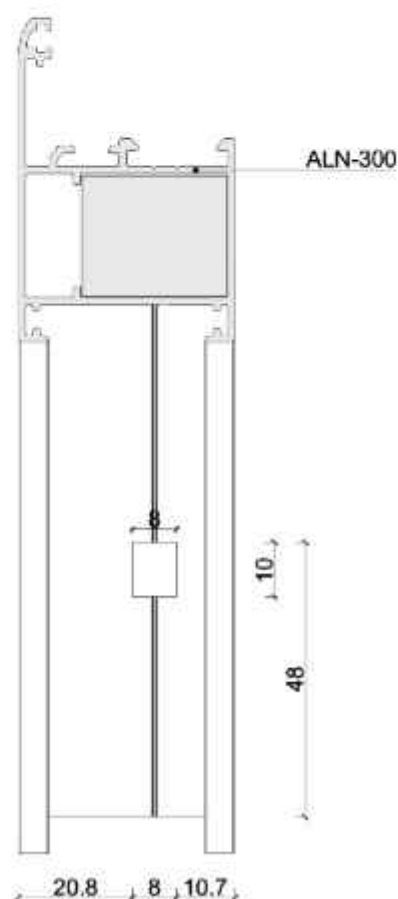
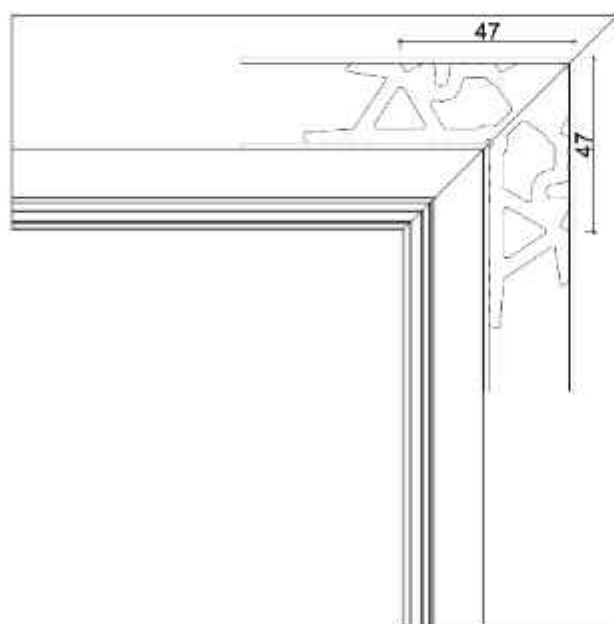
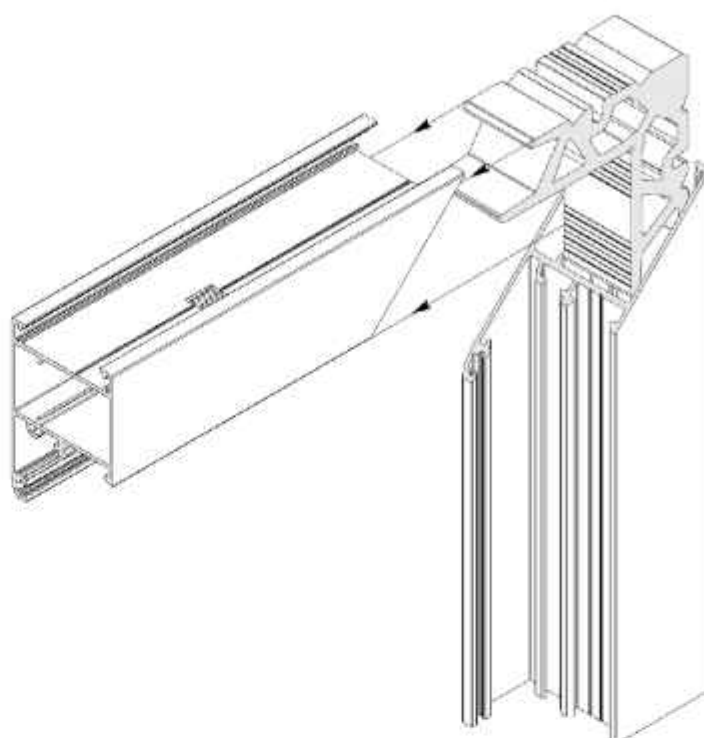




# Hinged System 40 Series Assembly Drawing

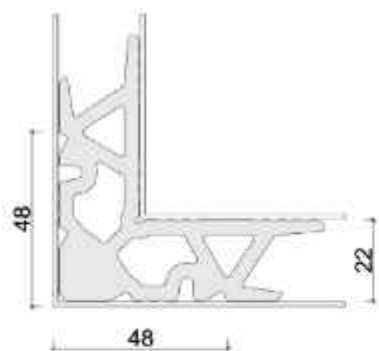


PCP-22 / 26

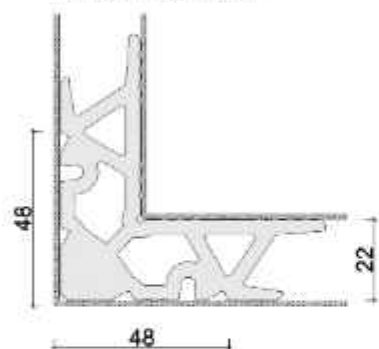


# Hinged System 40 Series

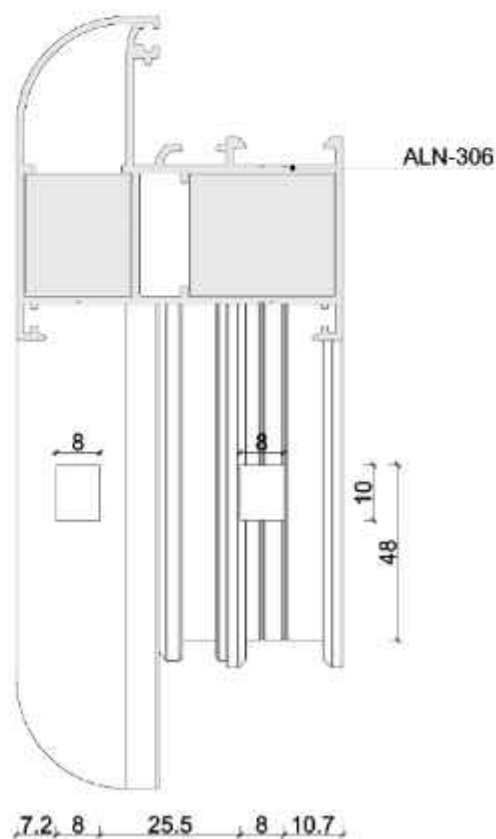
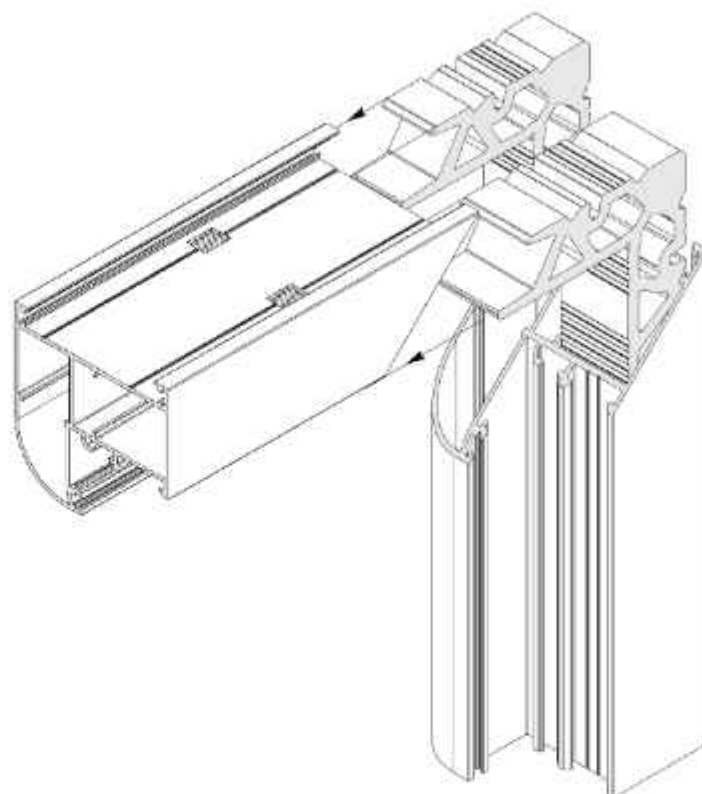
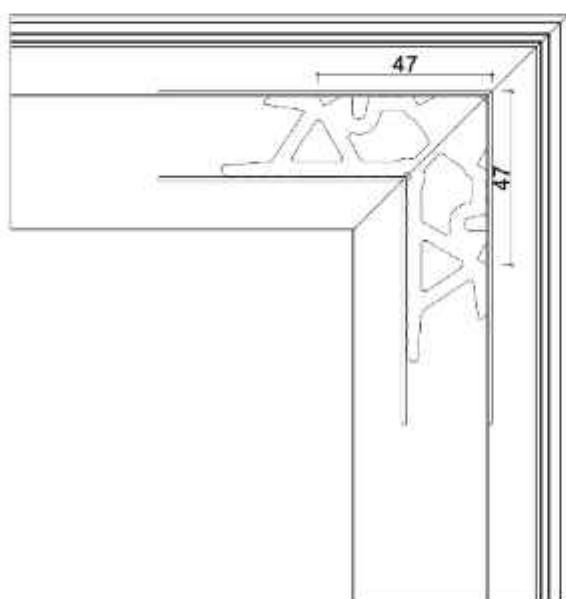
## Assembly Drawing



PCP-22 / 26

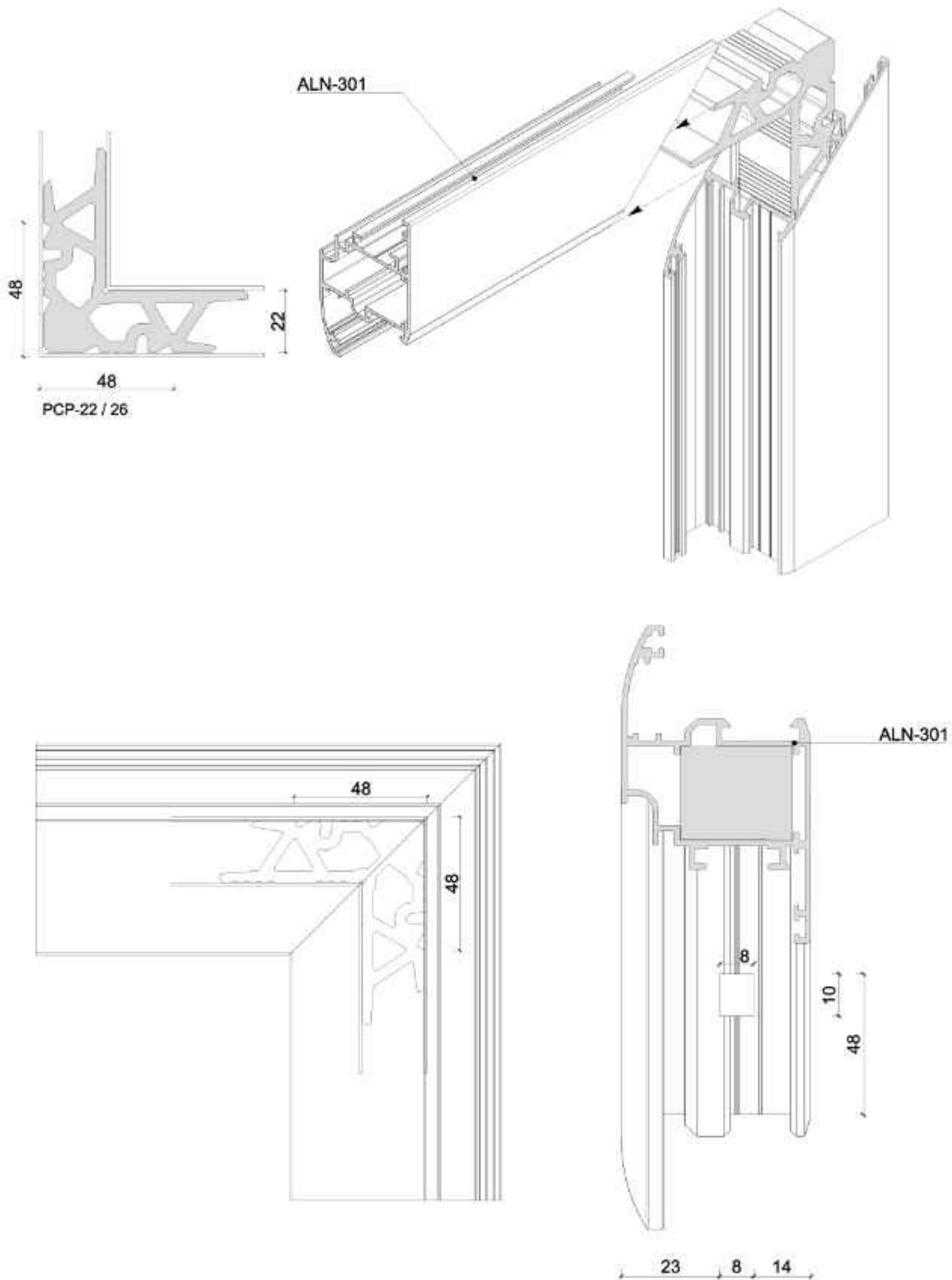


PCP-22 / 19





## Hinged System 40 Series Assembly Drawing



## Hinged System 40 Series

### Assembly Drawing



40

ALN-300

22

ALN-304

Din 7981 M  
4.8.L 50

ALN-300

ALN-304

ALN-304

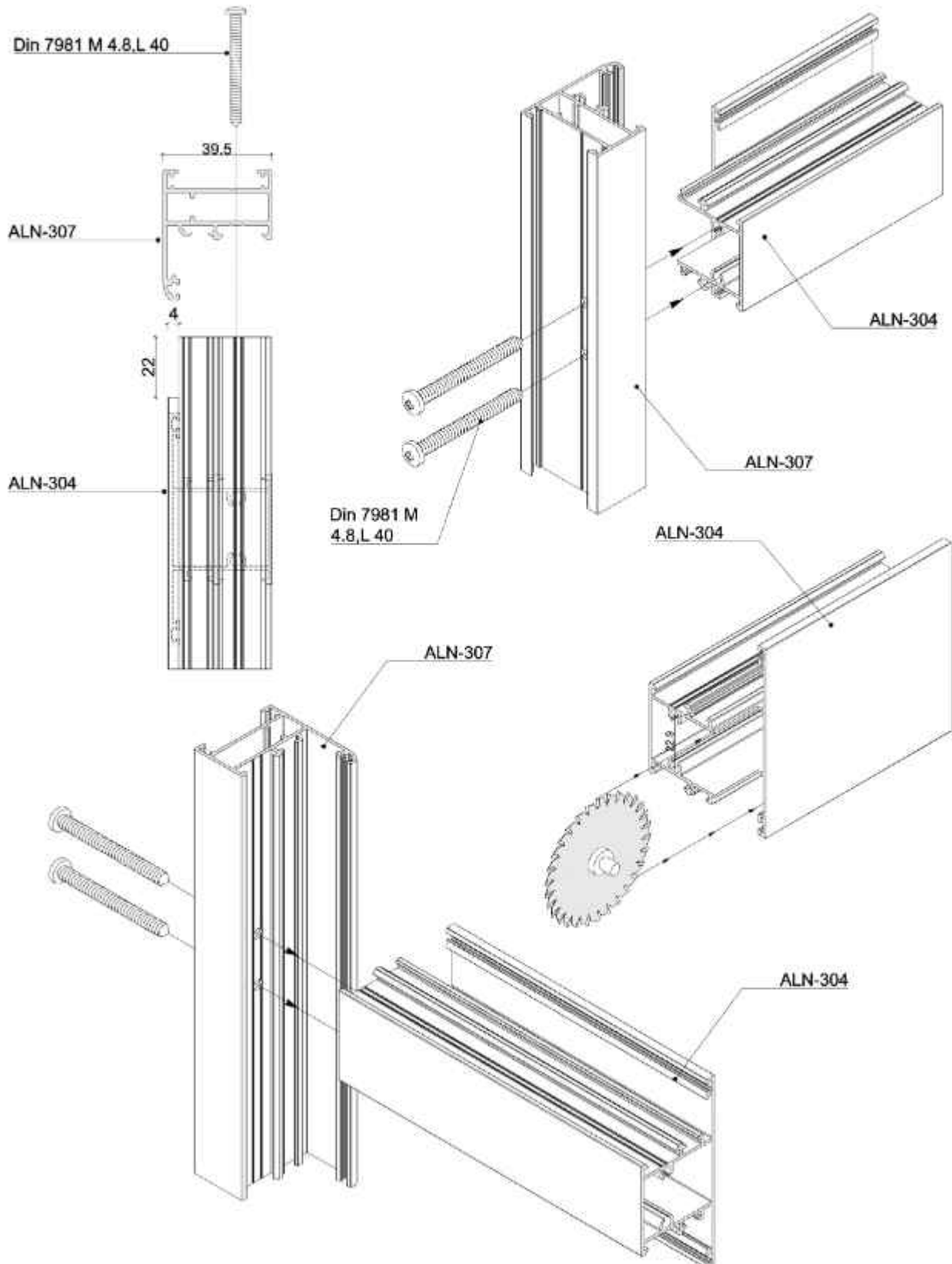
ALN-300

ALN-304



## Hinged System 40 Series

### Assembly Drawing



## Hinged System 40 Series

### Assembly Drawing



59.5

ALN-306

22

ALN-304

Dln 7981 M  
4.8,L 50

ALN-304

ALN-306

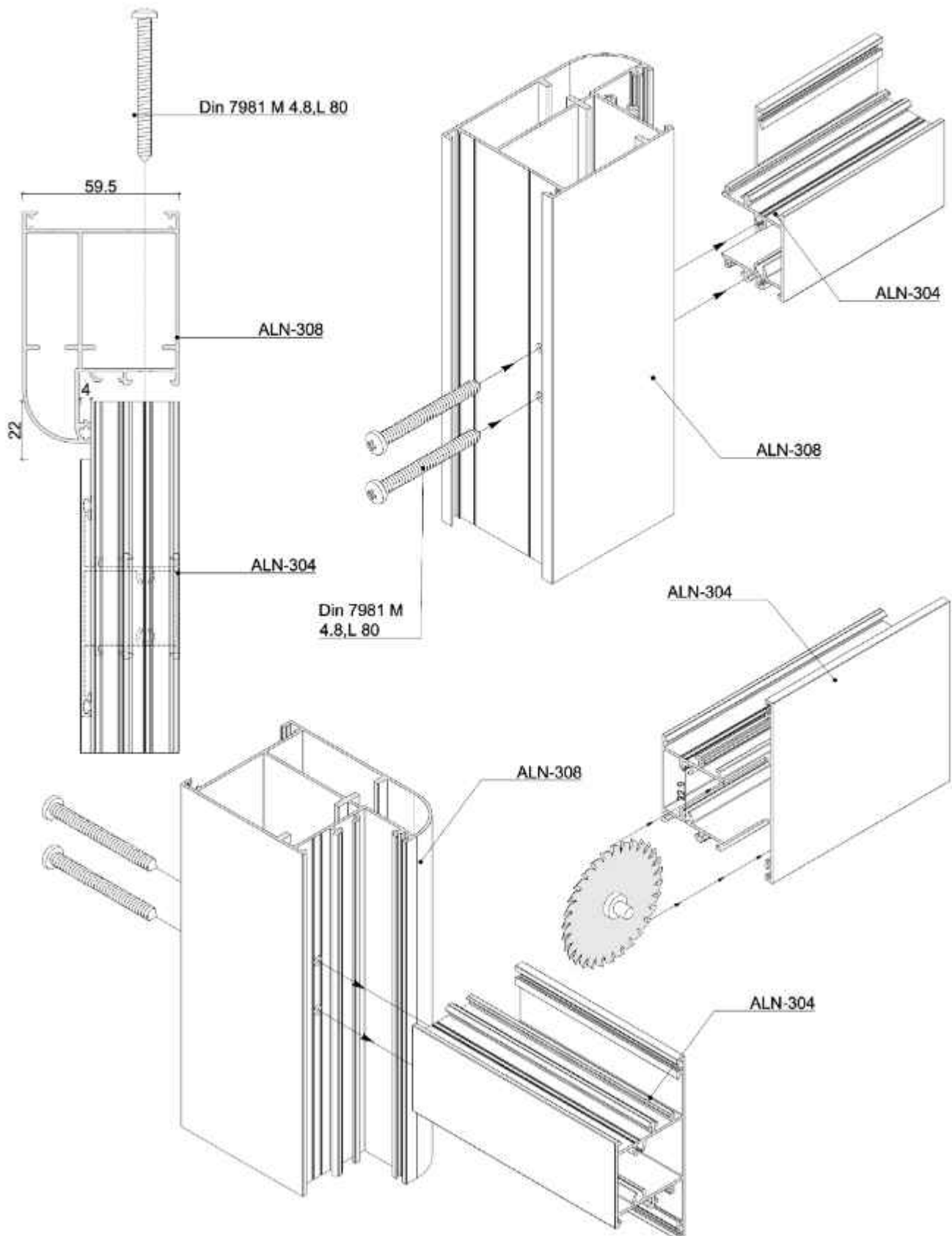
ALN-304

ALN-306

ALN-304

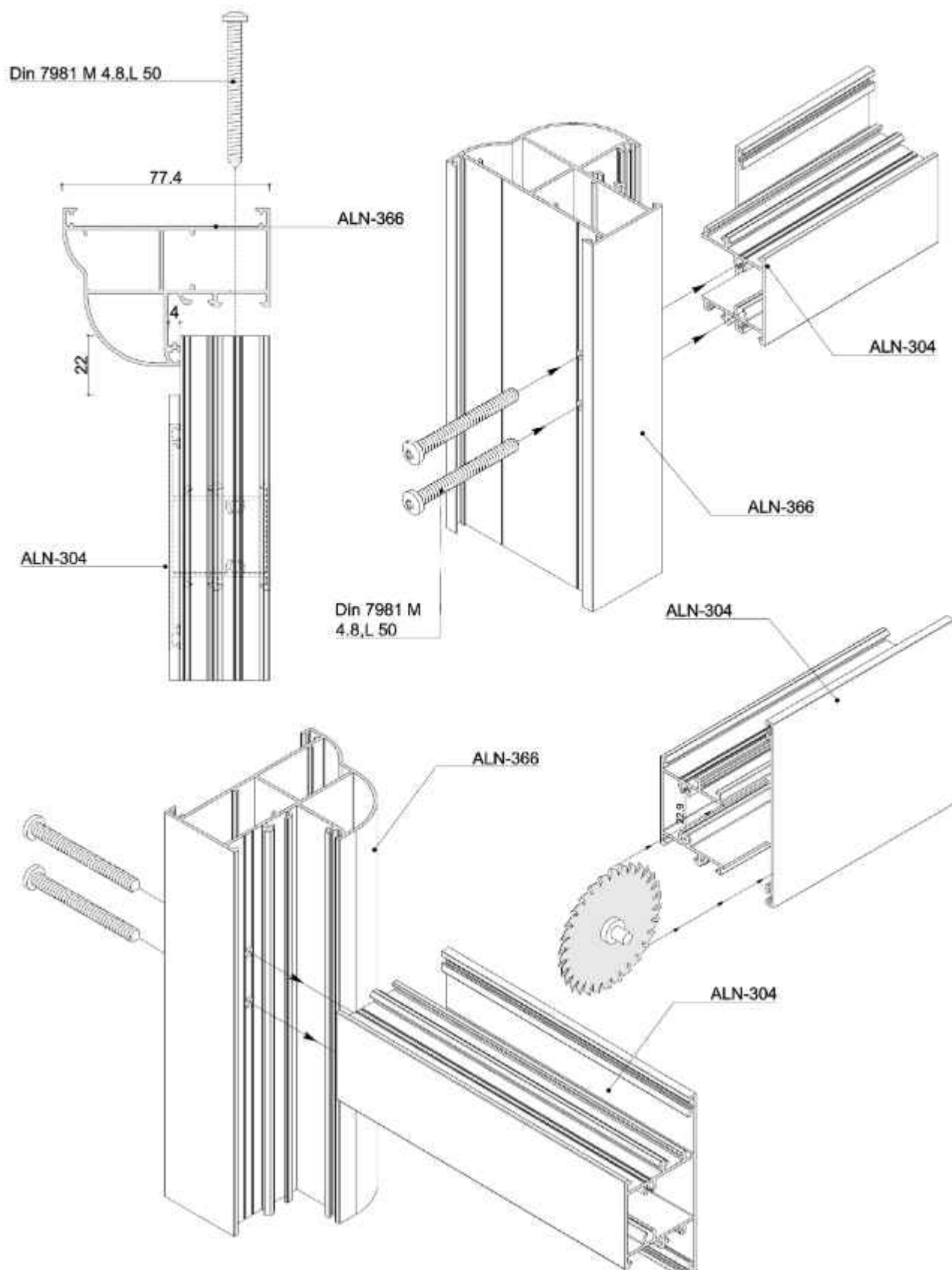


## Hinged System 40 Series Assembly Drawing



## Hinged System 40 Series

### Assembly Drawing

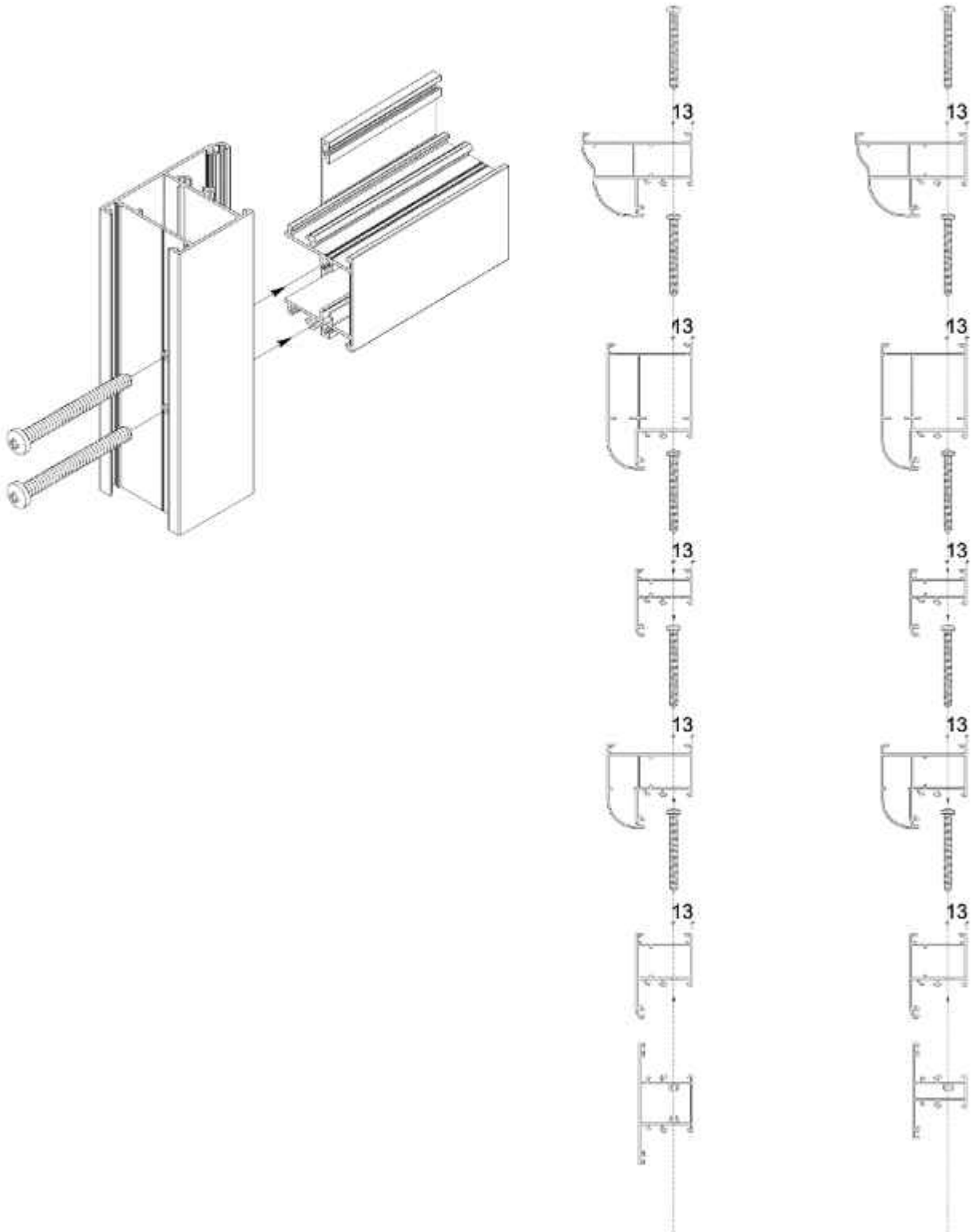




## Hinged System 40 Series

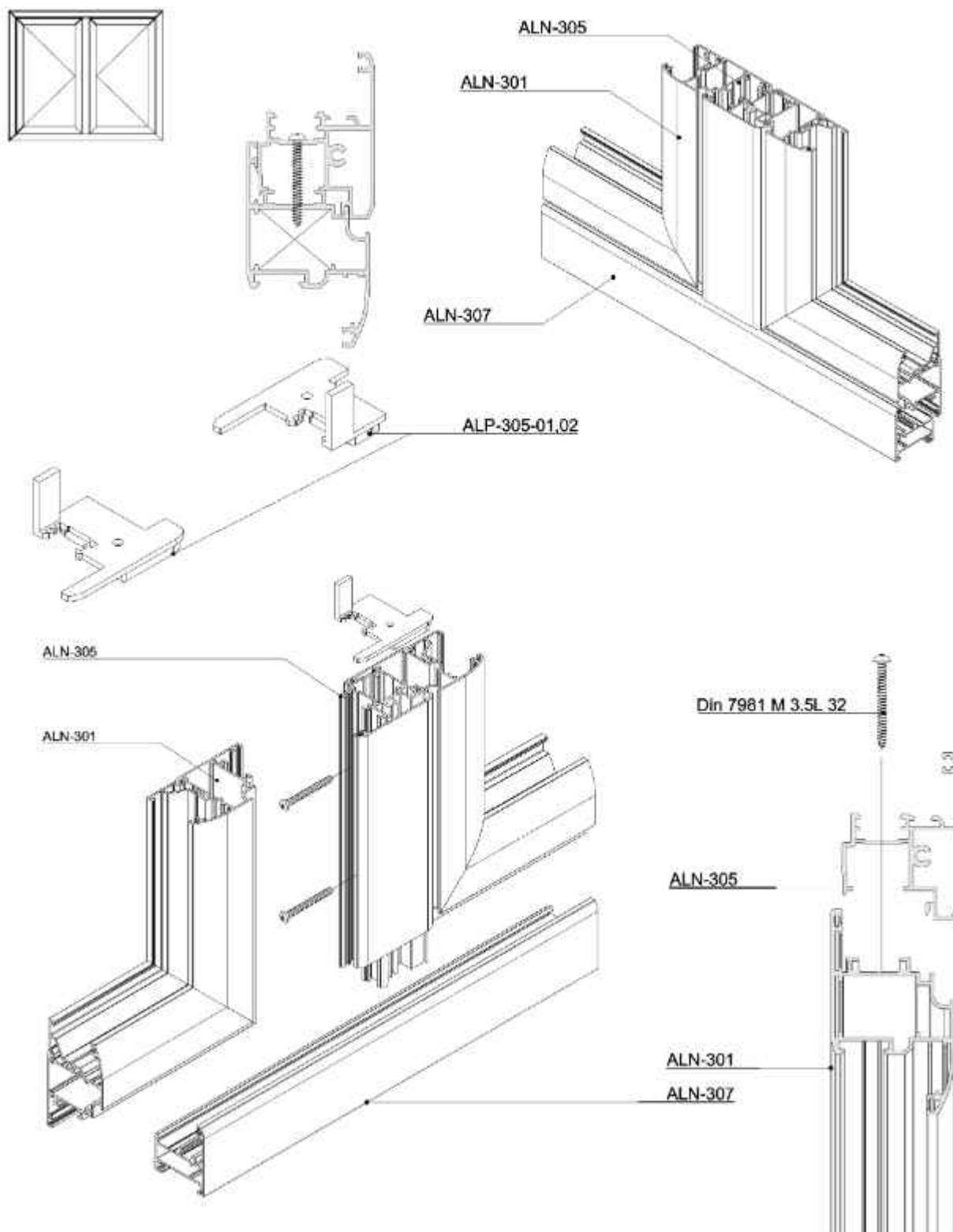
Connection - frame to transom

### Connection - frame to transom



# Hinged System 40 Series

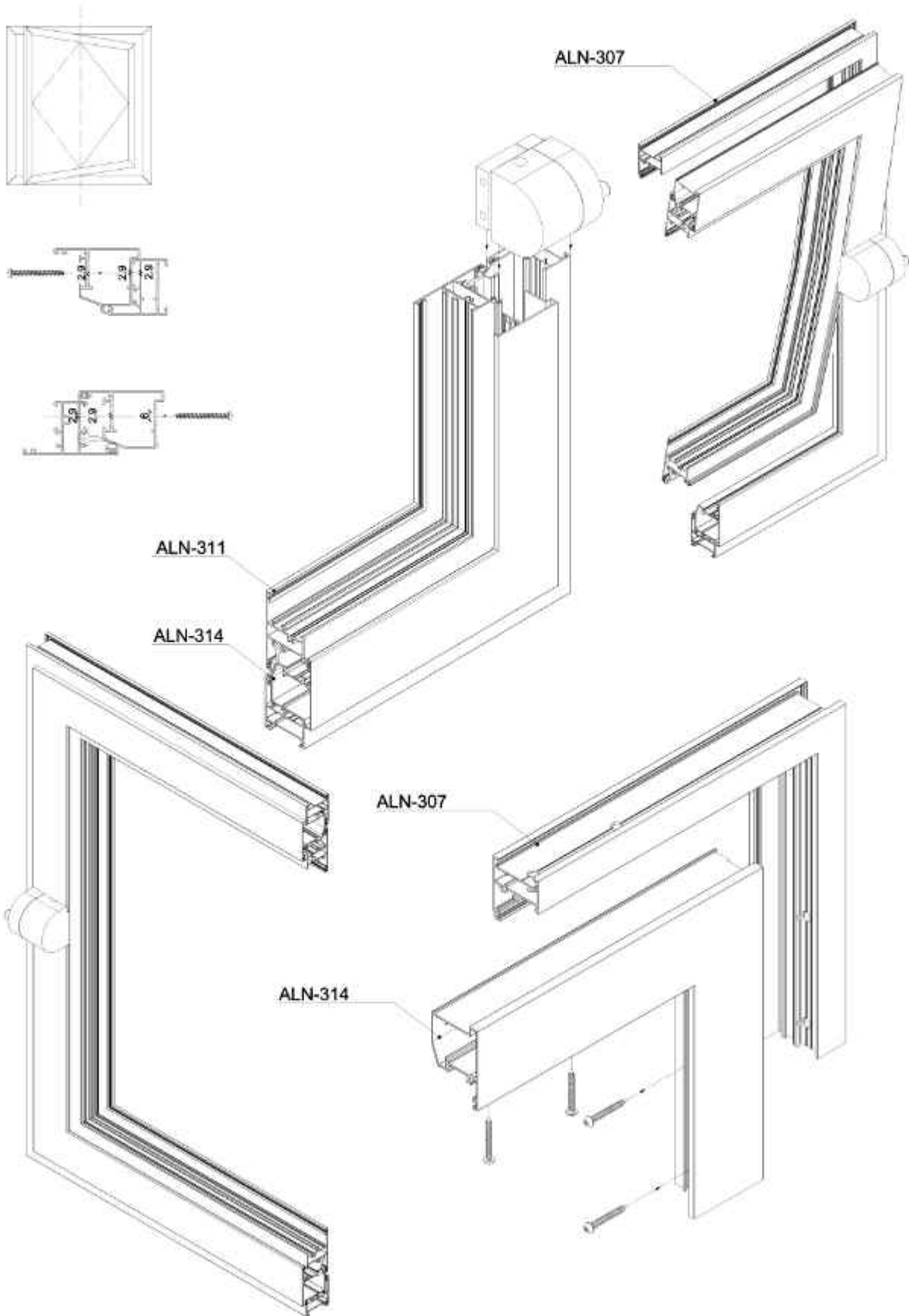
## Assembly Drawing





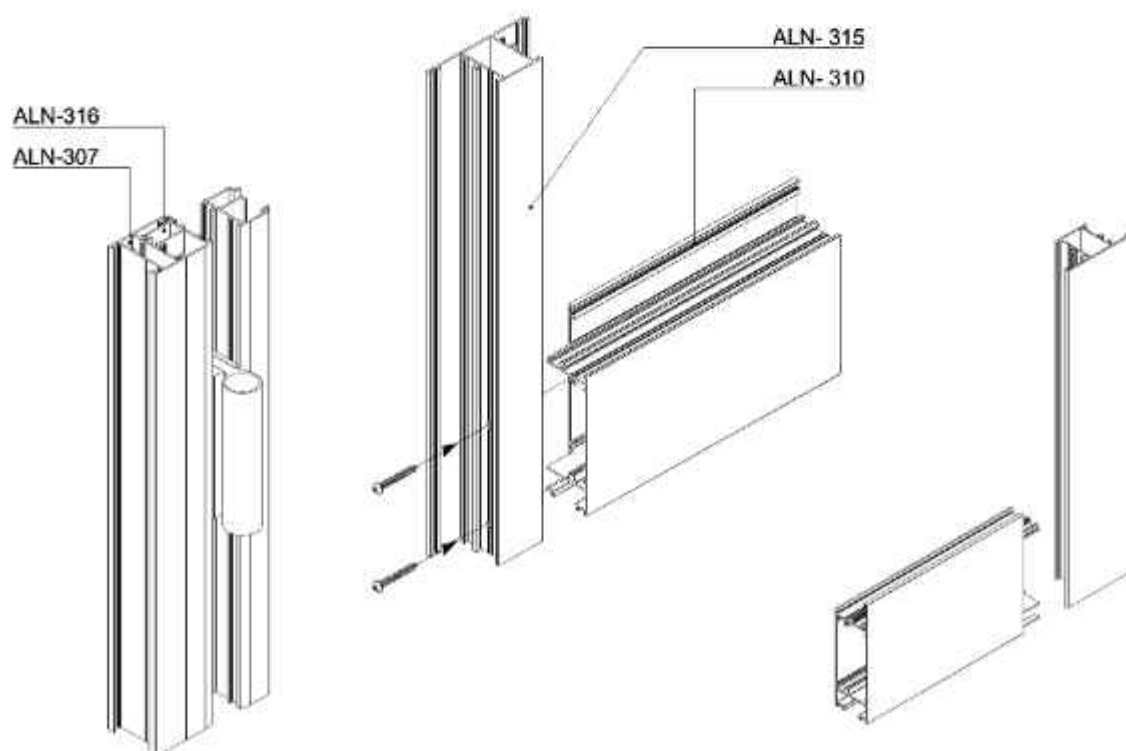
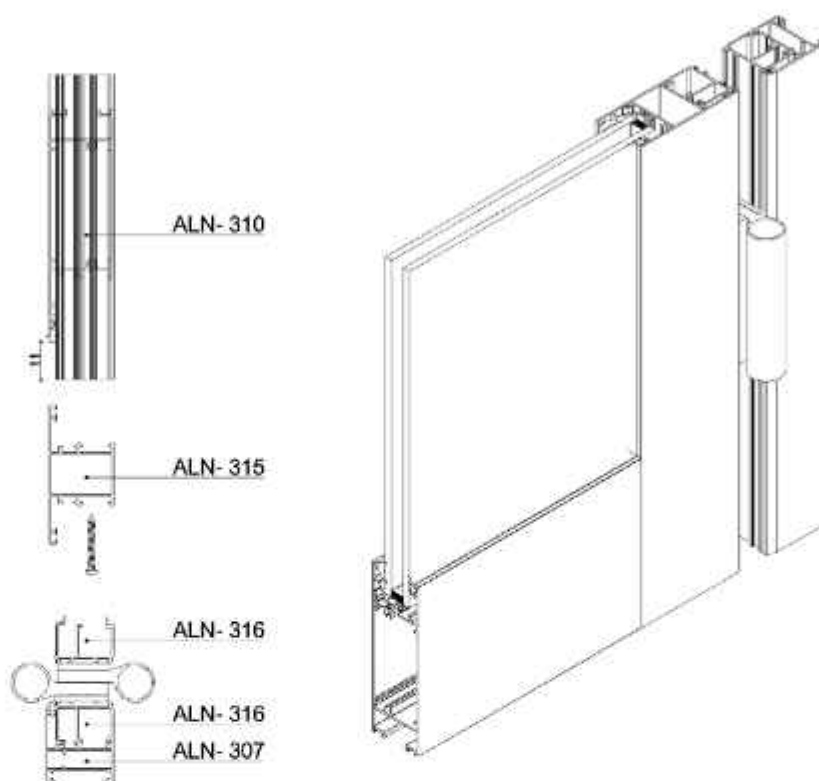
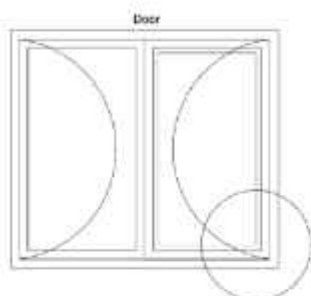
## Hinged System 40 Series

### Assembly Drawing



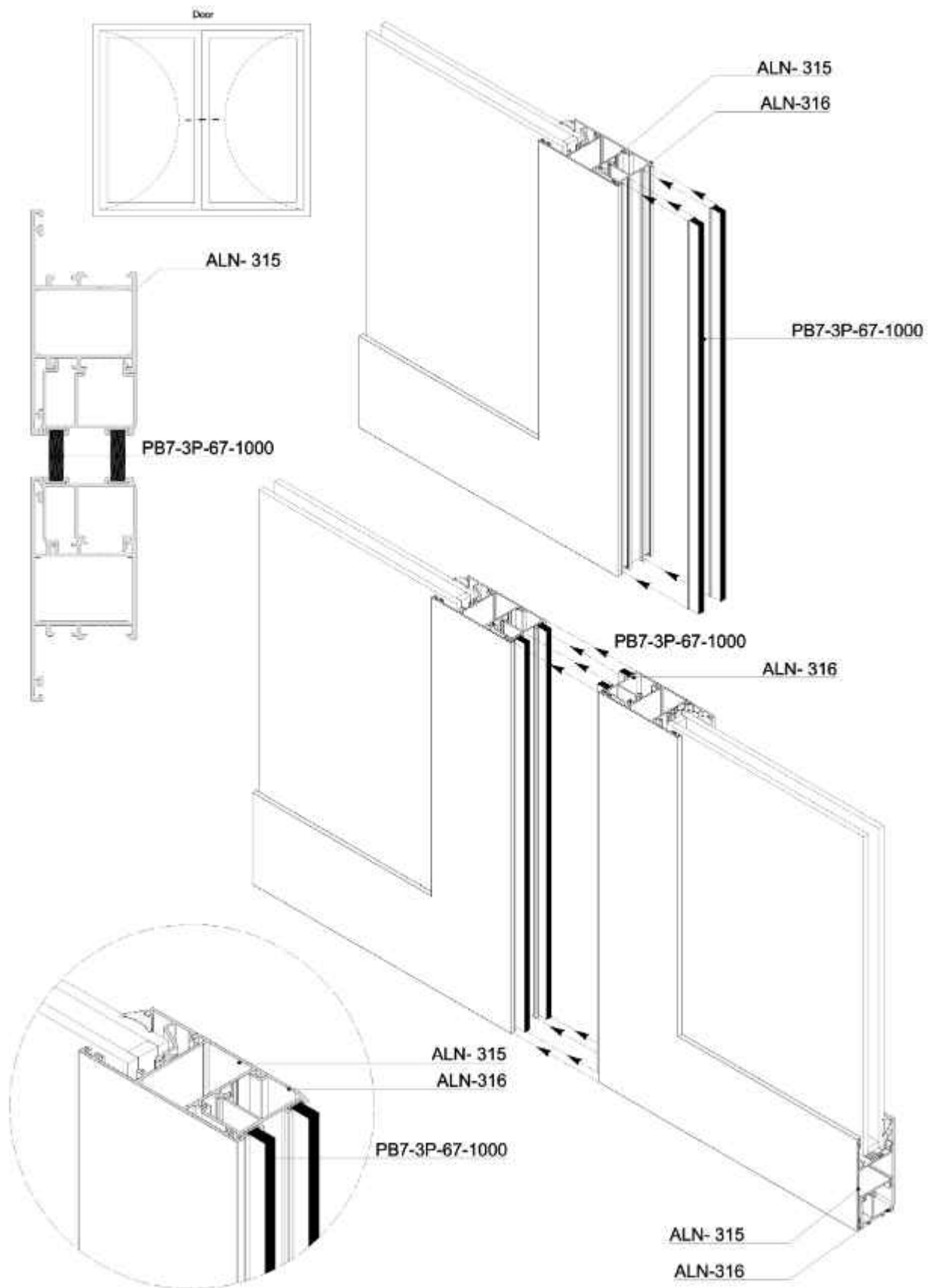
# Hinged System 40 Series

## Assembly Drawing



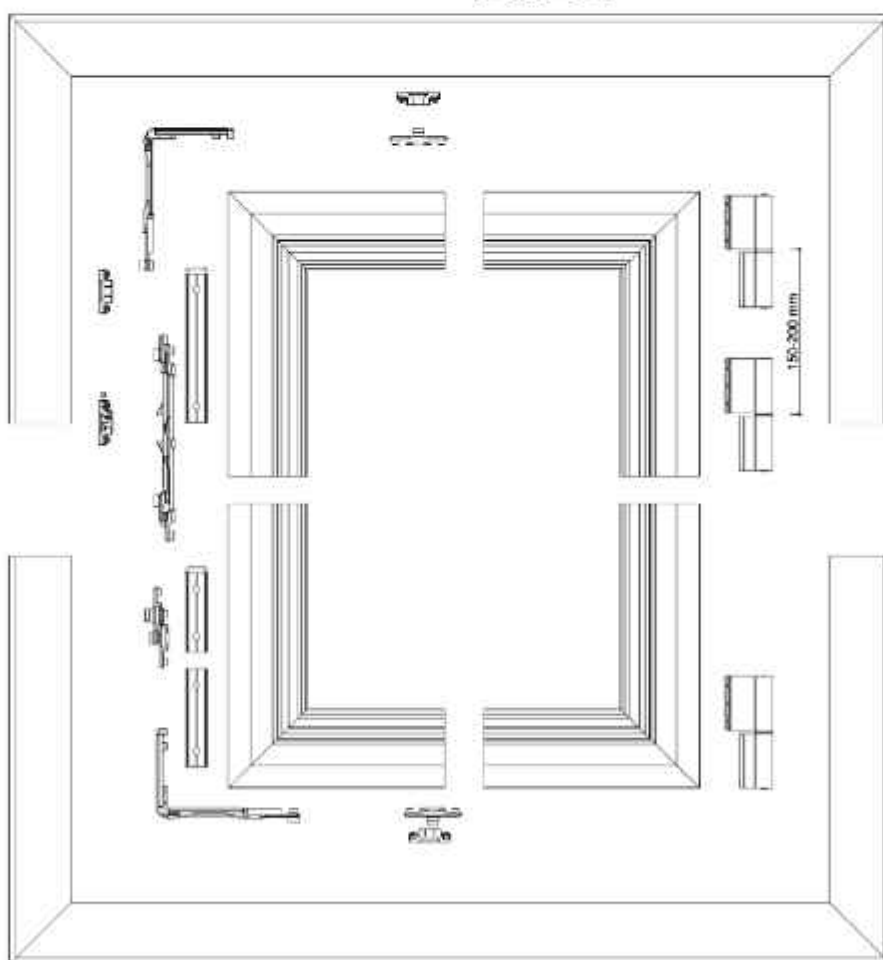
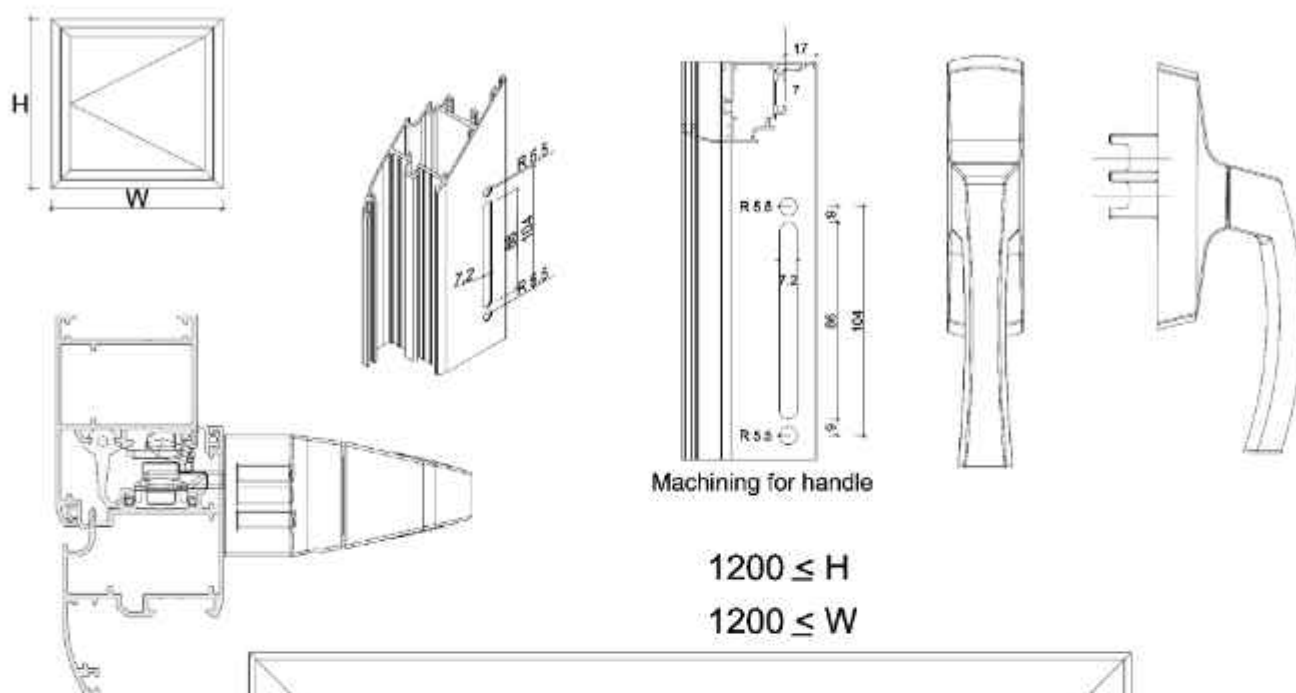


## Hinged System 40 Series Assembly Drawing



## Hinged System 40 Series

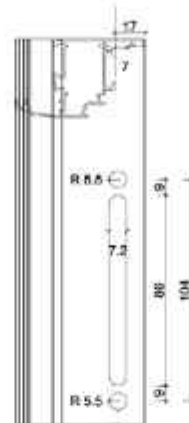
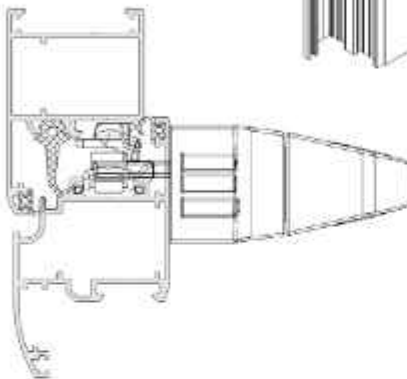
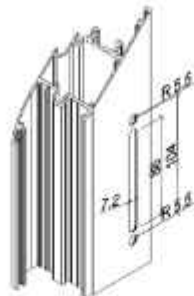
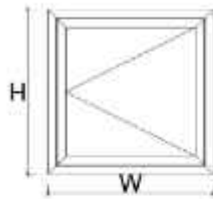
### Hardware Installation



Installation of turn hardware



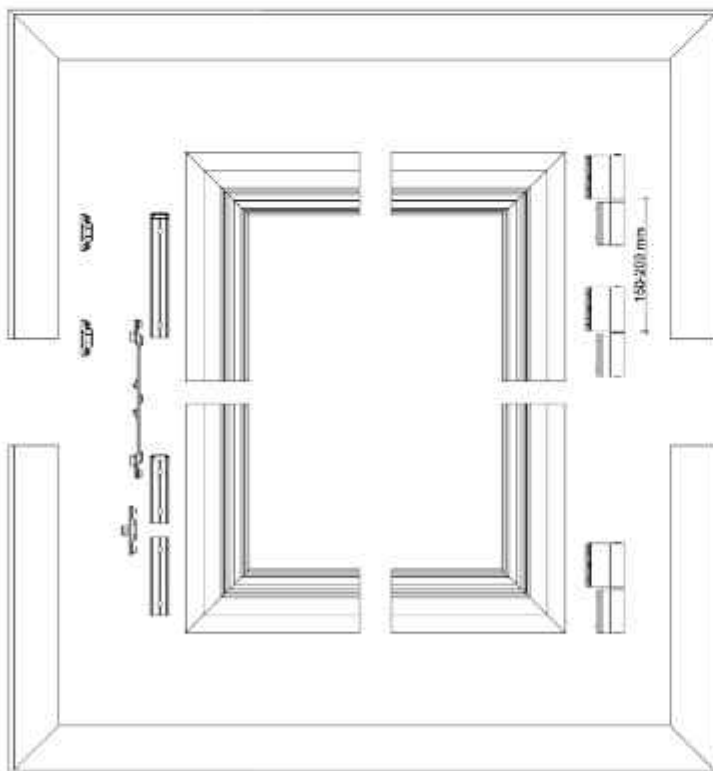
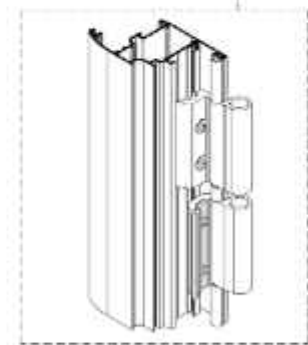
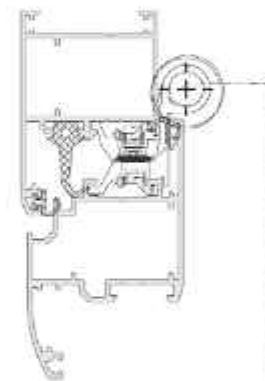
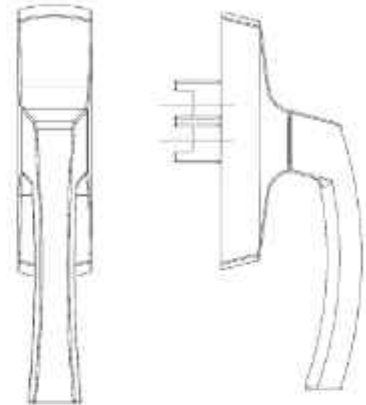
## Hinged System 40 Series Hardware Installation



Machining for handle

$$1200 \geq H$$

$$1200 \geq W$$



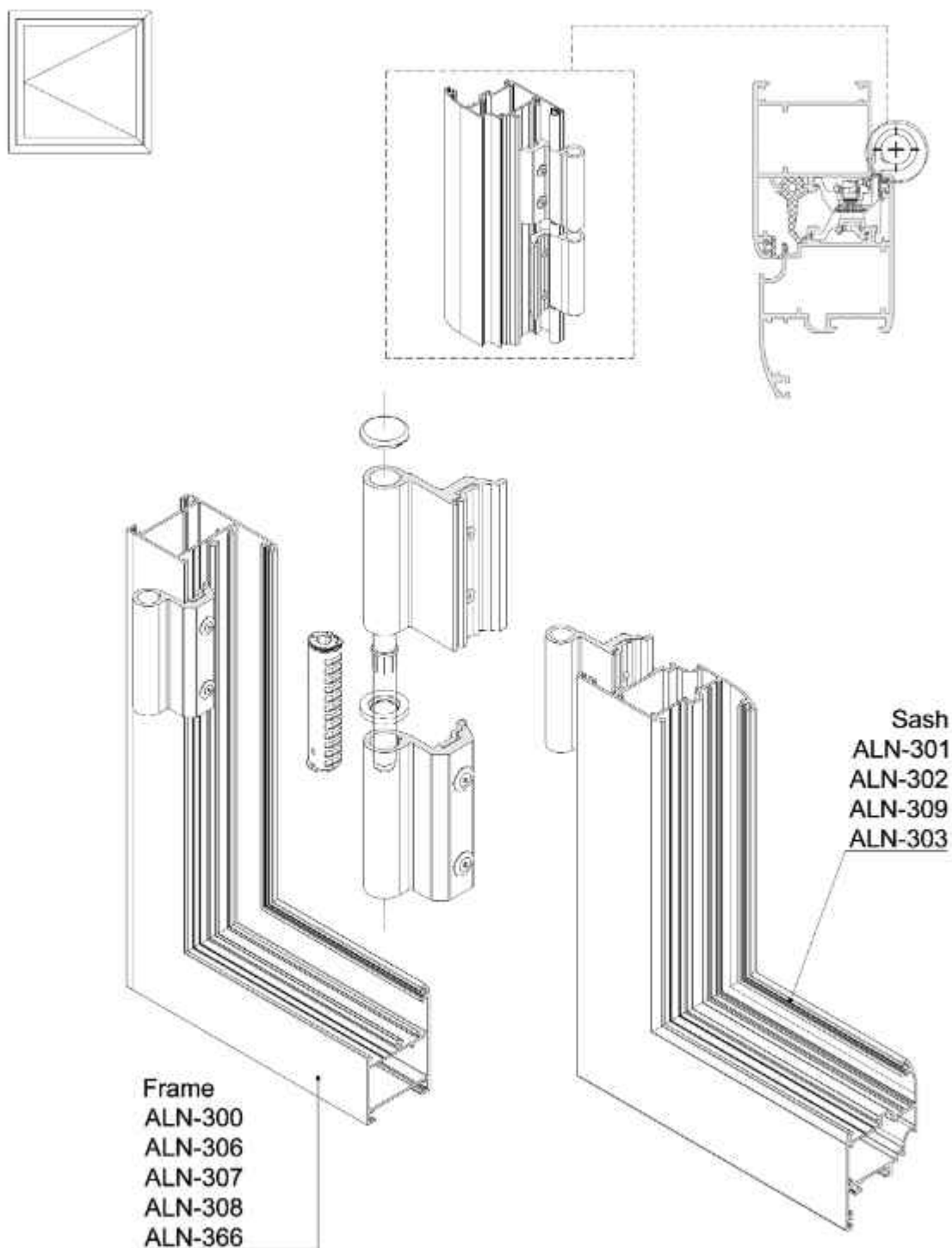
Installation of turn hardware

Installation of turn hardware



## Hinged System 40 Series

### Hardware Installation



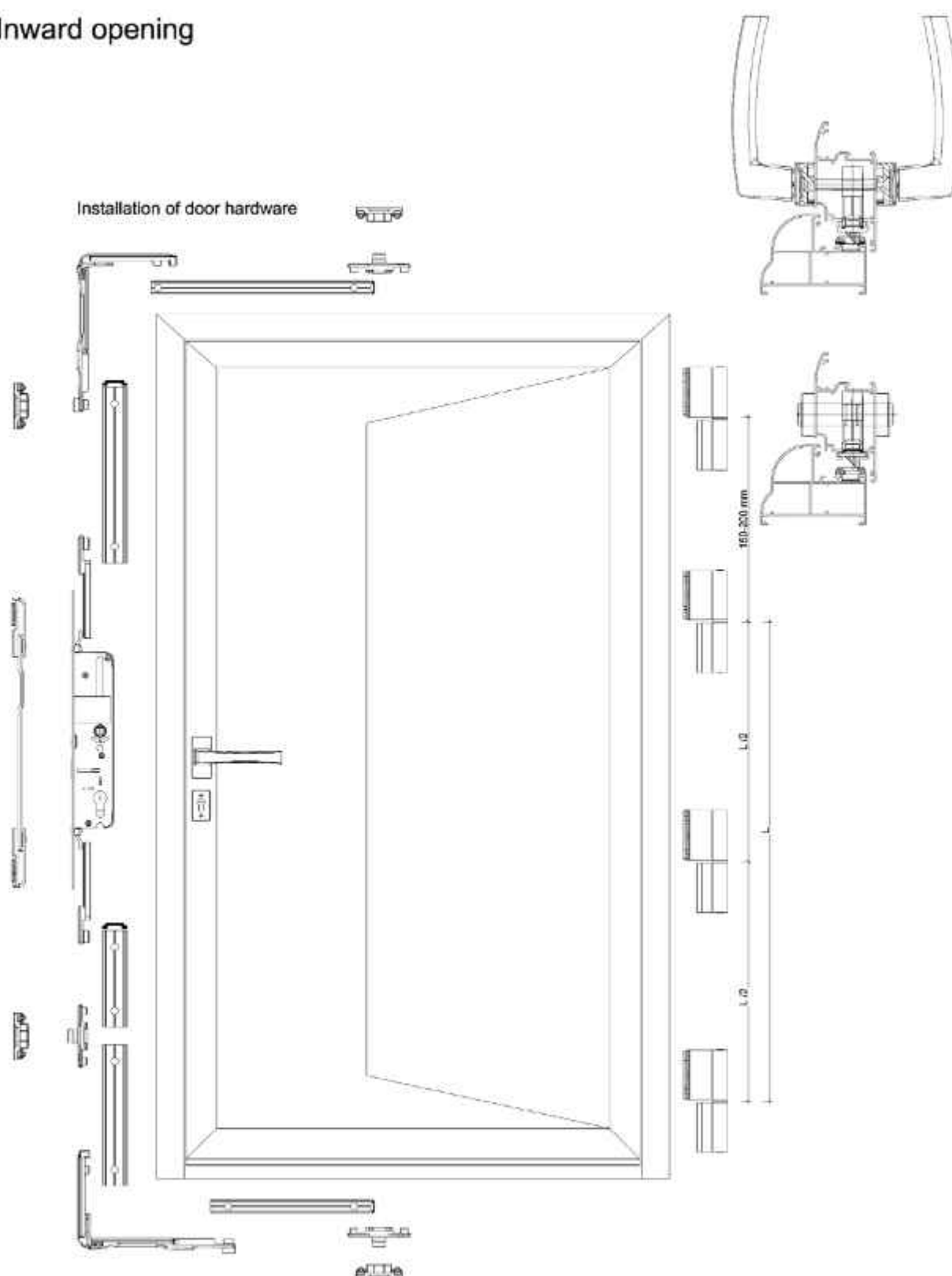
Installation of window hinges



## Hinged System 40 Series

### Hardware Installation

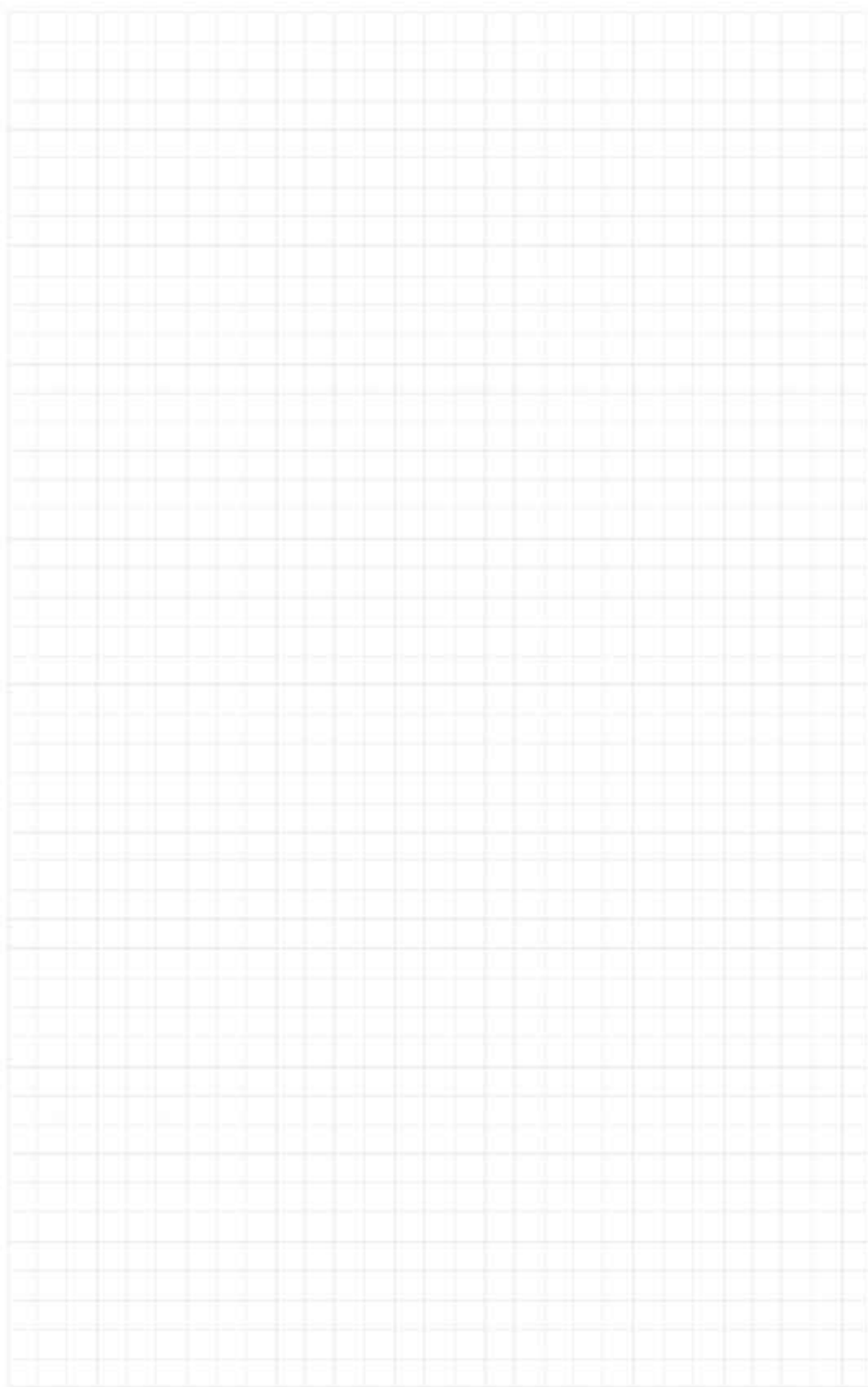
#### Inward opening

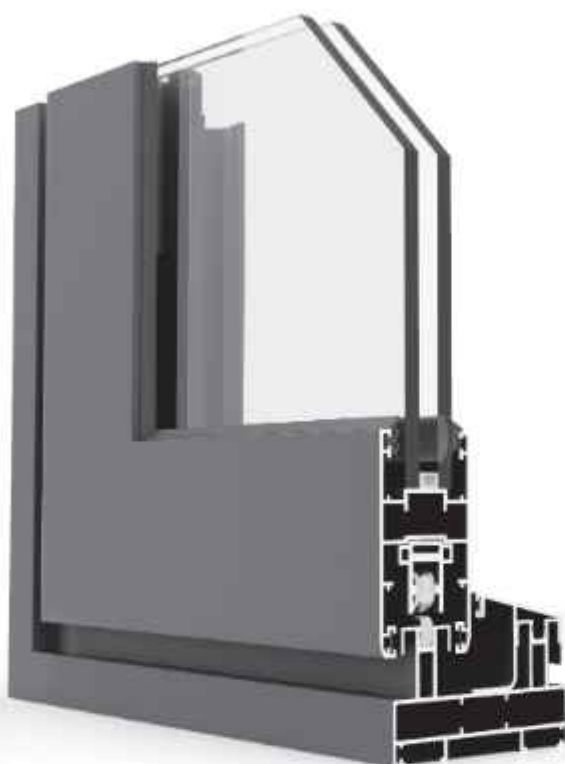




**AKROLL**

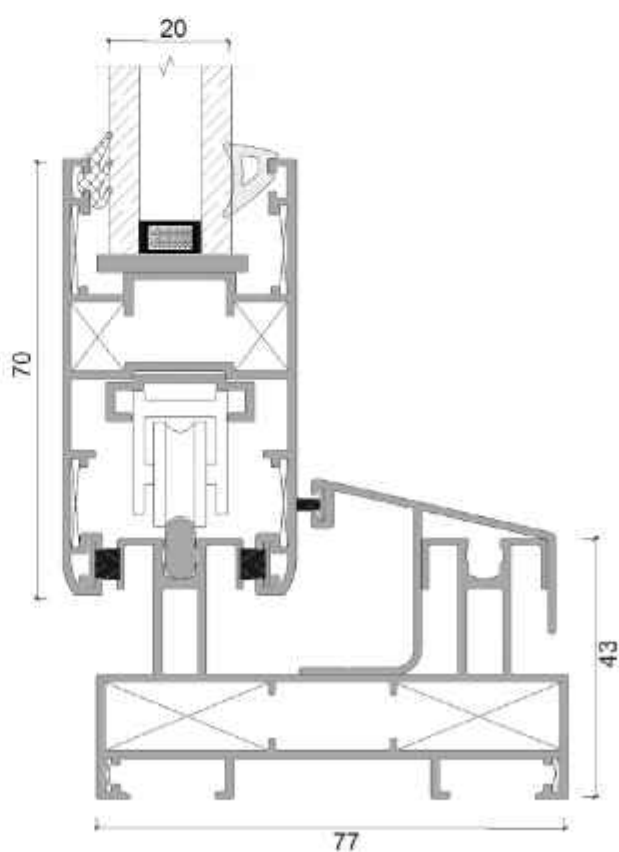
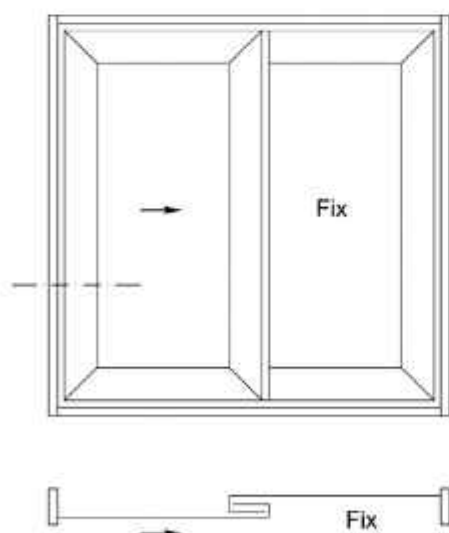
Product of Alumroll Novin Co.





## Slide System 77 Series

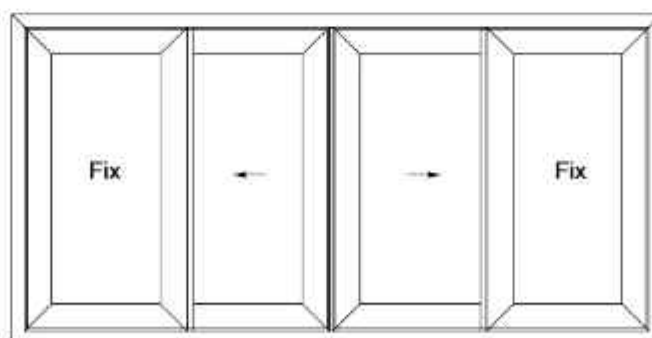
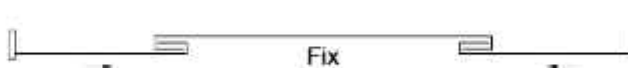
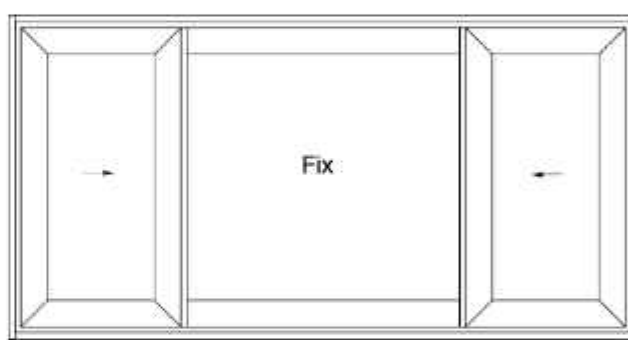
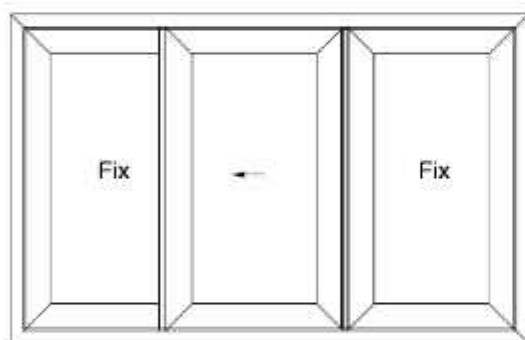
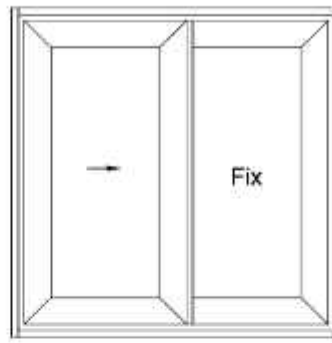
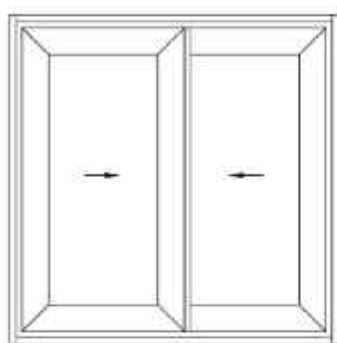
|                           |               |
|---------------------------|---------------|
| Profile width:            | 77 - 110 mm   |
| Vent width:               | 38 mm         |
| Wall thickness:           | 1.3 - 1.4 mm  |
| Rubber description:       | EPDM DIN 7863 |
| Glass thickness:          | 4 - 24 mm     |
| Aluminum alloy extrusion: | EN AW 6063 T5 |
| Safety drainage system    |               |
| Various typologies        |               |





## Slide System 77 Series

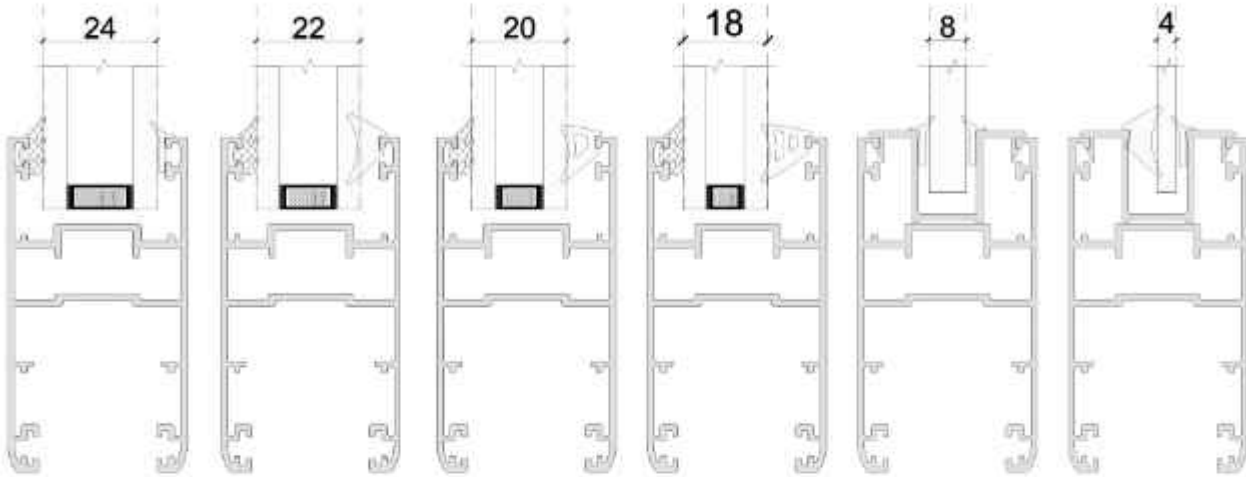
### Typologies



## Slide System 77 Series

### Glazing Table

#### ALN-356



| Glazing Thickness | Gasket Inside                                                                                 | Gasket Outside                                                                              |
|-------------------|-----------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|
| 18 mm             | <br>EP-021 | <br>MO68 |
| 20 mm             | <br>EP-019 | <br>MO68 |
| 22 mm             | <br>EP-016 | <br>MO68 |
| 24 mm             | <br>EP-015 | <br>MO68 |

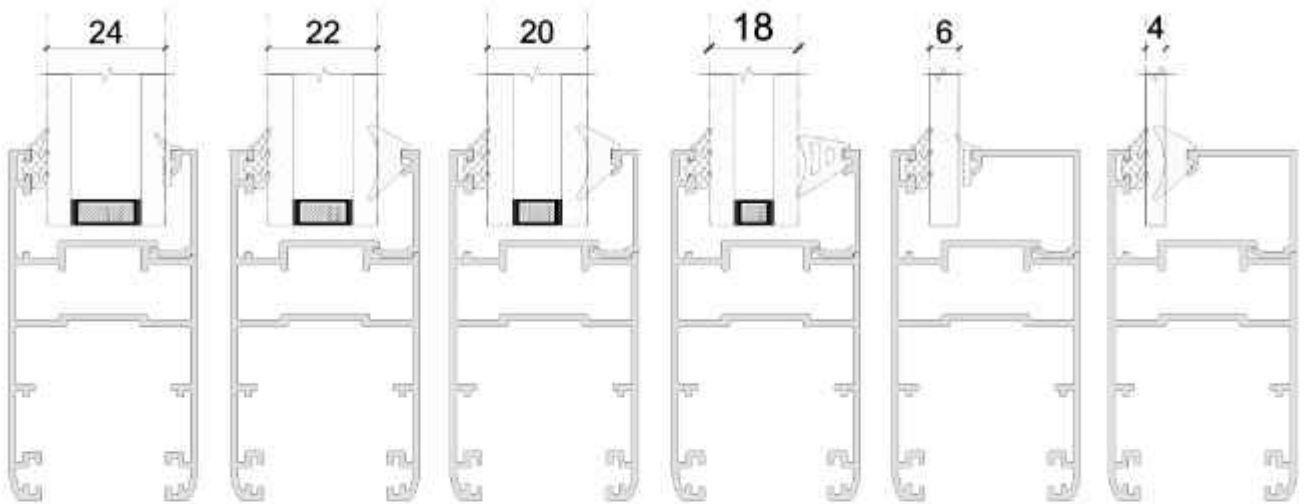
| Glazing Thickness | Gasket Inside                                                                                 | Gasket Outside                                                                                | Glazing Bead                                                                                     |
|-------------------|-----------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|
| 8 mm              | <br>EP-015 | <br>EP-015 | <br>ALN-362 |
| 4 mm              | <br>EP-015 | <br>EP-016 | <br>ALN-362 |



## Slide System 77 Series

### Glazing Table

#### ALN-355

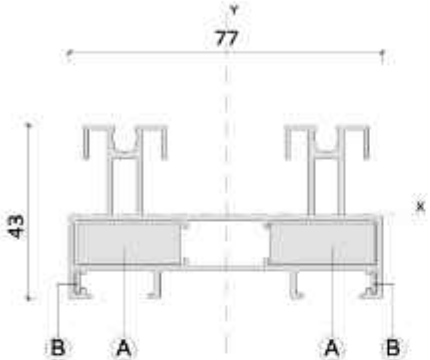
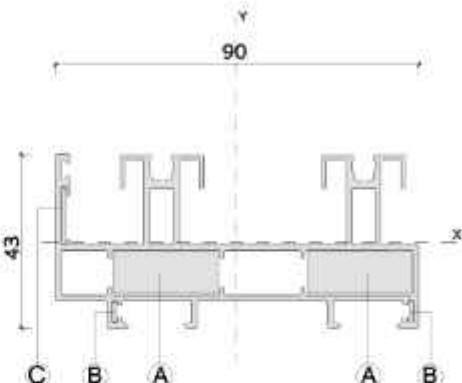
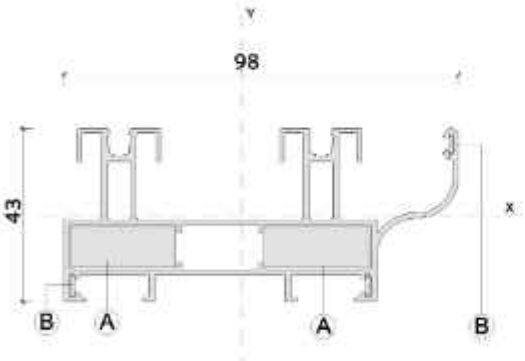
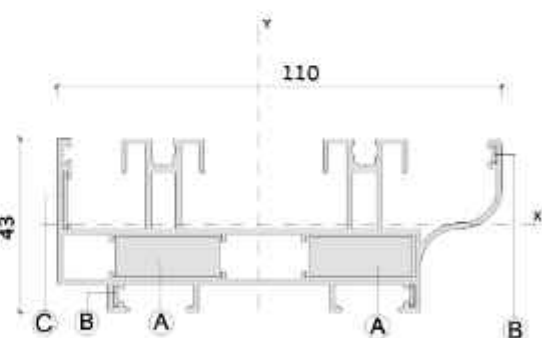


| Glazing Thickness | Gasket Inside                                                                                 | Gasket Outside                                                                              | Glazing Bead                                                                                     |
|-------------------|-----------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|
| 4 mm              | <br>EP-016 | <br>MO68 | <br>ALN-463 |
| 6 mm              | <br>EP-015 | <br>MO68 | <br>ALN-463 |
| 18 mm             | <br>EP-019 | <br>MO68 | <br>ALN-461 |
| 20 mm             | <br>EP-016 | <br>MO68 | <br>ALN-460 |
| 22 mm             | <br>EP-016 | <br>MO68 | <br>ALN-461 |
| 24 mm             | <br>EP-015 | <br>MO68 | <br>ALN-460 |



## Slide System 77 Series

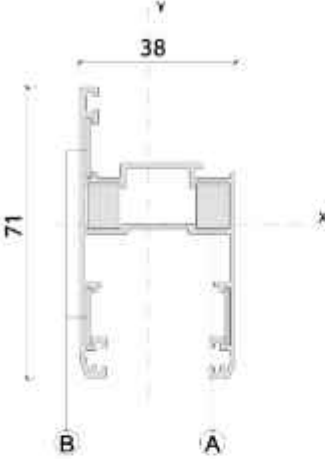
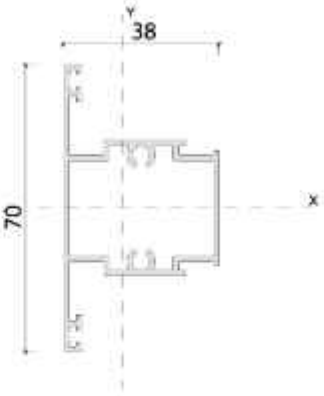
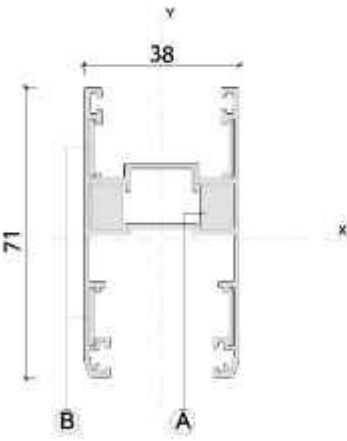
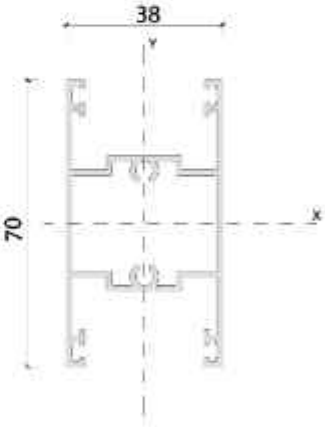
### Profile & Accessories Information

|                                                                                     |                                                                                                       |                                                                                      |                                                                                                         |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------|
|    |                                                                                                       |    |                                                                                                         |
| $I_x$ : 8.40 cm <sup>4</sup>                                                        | $I_y$ : 32.54 cm <sup>4</sup>                                                                         | $I_x$ : 9.04 cm <sup>4</sup>                                                         | $I_y$ : 47.04 cm <sup>4</sup>                                                                           |
| Frame : ALN-351                                                                     | A: PCP-11 / 26 mm  | Frame : ALN-353                                                                      | A: PCP-11 / 26 mm   |
| Weight: 1320 gr/m                                                                   | B: MO 19 (399012)  | Weight: 1528 gr/m                                                                    | B: MO 19 (399012)  |
|                                                                                     |                                                                                                       |                                                                                      | C: MM77            |
|  |                                                                                                       |  |                                                                                                         |
| $I_x$ : 8.98 cm <sup>4</sup>                                                        | $I_y$ : 46.66 cm <sup>4</sup>                                                                         | $I_x$ : 10.15 cm <sup>4</sup>                                                        | $I_y$ : 67.82 cm <sup>4</sup>                                                                           |
| Frame : ALN-352                                                                     | A: PCP-11 / 26 mm  | Frame : ALN-354                                                                      | A: PCP-11 / 26 mm  |
| Weight: 1477 gr/m                                                                   | B: MO 19 (399012)  | Weight: 1685 gr/m                                                                    | B: MO 19 (399012)  |
|                                                                                     |                                                                                                       |                                                                                      | C: MM77            |



## Slide System 77 Series

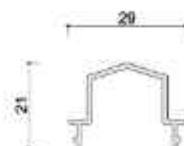
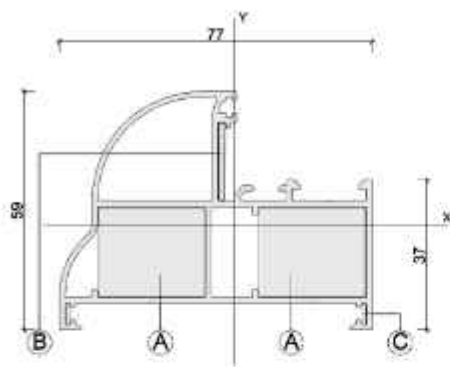
### Profile & Accessories Information

|                                                                                     |                                                                                                      |                                                                                       |                          |
|-------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|--------------------------|
|    |                                                                                                      |     |                          |
| $I_x: 12.41 \text{ cm}^4$                                                           | $I_y: 7.80 \text{ cm}^4$                                                                             | $I_x: 9.27 \text{ cm}^4$                                                              | $I_y: 5.50 \text{ cm}^4$ |
| Sash: ALN-355                                                                       | A: PCP-11 / 8 mm  | Transom: ALN-358                                                                      | —                        |
| Weight: 912 gr/m                                                                    | B: MM77           | Weight: 805 gr/m                                                                      | —                        |
|  |                                                                                                      |  |                          |
| $I_x: 15.62 \text{ cm}^4$                                                           | $I_y: 9.26 \text{ cm}^4$                                                                             | $I_x: 15.13 \text{ cm}^4$                                                             | $I_y: 8.58 \text{ cm}^4$ |
| Sash: ALN-356                                                                       | A: PCP-11 / 8 mm  | Transom: ALN-359                                                                      | —                        |
| Weight: 1029 gr/m                                                                   | B: MM77           | Weight: 1010 gr/m                                                                     | —                        |



## Slide System 77 Series

### Profile & Accessories Information



Profile : ALN-360

Weight: 203 gr/m

$I_x$ : 13.29  $cm^4$

$I_y$ : 25.98  $cm^4$

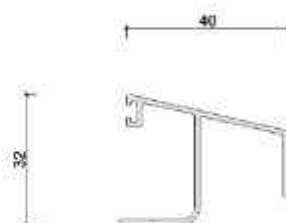
Frame : ALN-366

A: PCP-22/26 mm 

B: fuji 2000 

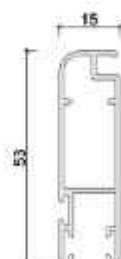
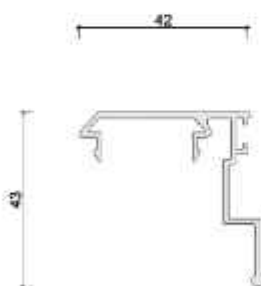
Weight: 1250 gr/m

C: MO19 



Profile : ALN-361

Weight: 370 gr/m



Cap : ALN-357

Weight: 432 gr/m

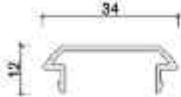
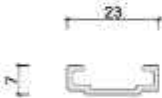
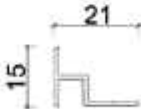
Fly screen : ALN-207

Weight: 448 gr/m



## Slide System 77 Series

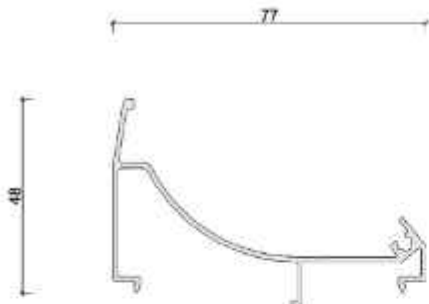
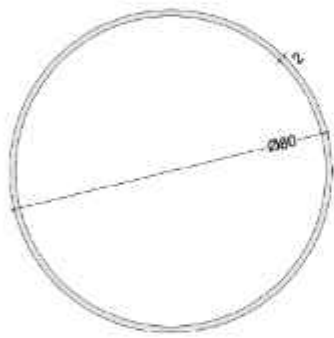
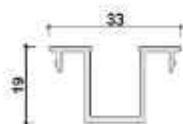
### Profile & Accessories Information

|                                                                                     |                  |                                                                                      |                   |
|-------------------------------------------------------------------------------------|------------------|--------------------------------------------------------------------------------------|-------------------|
|    |                  |    |                   |
| Profile : ALN-363                                                                   | Weight: 194 gr/m | Flange profile: ALN-219                                                              | Weight : 362 gr/m |
|  |                  |   |                   |
| Profile : ALN-364                                                                   | Weight: 140 gr/m | Flange profile: ALN-221                                                              | Weight : 302 gr/m |
|  |                  |  |                   |
| Profile : ALN-228                                                                   | Weight: 135 gr/m | Flange profile: ALN-222                                                              | Weight : 254 gr/m |



## Slide System 77 Series

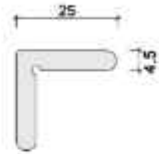
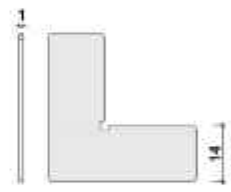
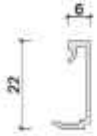
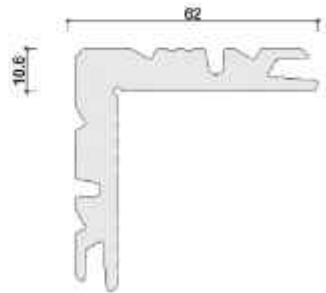
### Profile & Accessories Information

|                                                                                     |                   |                                                                                       |                  |
|-------------------------------------------------------------------------------------|-------------------|---------------------------------------------------------------------------------------|------------------|
|    |                   |    |                  |
| Profile: ALN-326                                                                    | Weight : 613 gr/m | Glazing beads: ALN-463                                                                | Weight :178 gr/m |
|   |                   |  |                  |
| Profile: ALN-328                                                                    | Weight : 999 gr/m | Glazing beads: ALN-322                                                                | Weight :238 gr/m |
|  |                   |  |                  |
| Glazing beads: ALN-362                                                              | Weight :254 gr/m  | Glazing beads: ALN-321                                                                | Weight :224 gr/m |



## Slide System 77 Series

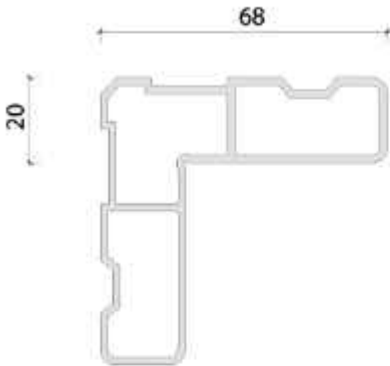
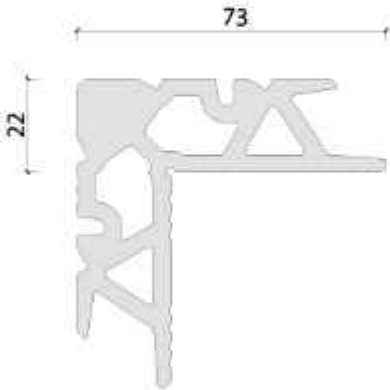
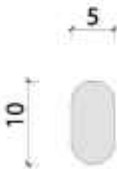
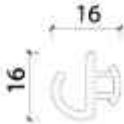
### Profile & Accessories Information

|                                                                                     |                   |                                                                                       |                   |
|-------------------------------------------------------------------------------------|-------------------|---------------------------------------------------------------------------------------|-------------------|
|    |                   |    |                   |
| Glazing beads: ALN-424                                                              | Weight : 167 gr/m | Corner joint: MO 19 (5MM/480196)                                                      | Weight: _         |
|  |                   |  |                   |
| Glazing beads: ALN-461                                                              | Weight : 119 gr/m | Corner joint : MM 77                                                                  | Weight: _         |
|  |                   |   |                   |
| Glazing beads: ALN-460                                                              | Weight : 127 gr/m | Corner joint : PCP11                                                                  | Weight: 2549 gr/m |



## Slide System 77 Series

### Profile & Accessories Information

|                                                                                     |                    |                                                                                       |                  |
|-------------------------------------------------------------------------------------|--------------------|---------------------------------------------------------------------------------------|------------------|
|    |                    |    |                  |
| Corner joint: PCP 20                                                                | Weight : 1375 gr/m | Gasket: EP-015                                                                        | Weight : 21 gr/m |
|   |                    |  |                  |
| Corner joint: PCP-22                                                                | Weight : 3718 gr/m | Gasket: EP-016                                                                        | Weight : 77 gr/m |
|  |                    |  |                  |
| Rail : ALN-462                                                                      | Weight: 119 gr/m   | Gasket: EP-018                                                                        | Weight : 27 gr/m |



## Slide System 77 Series

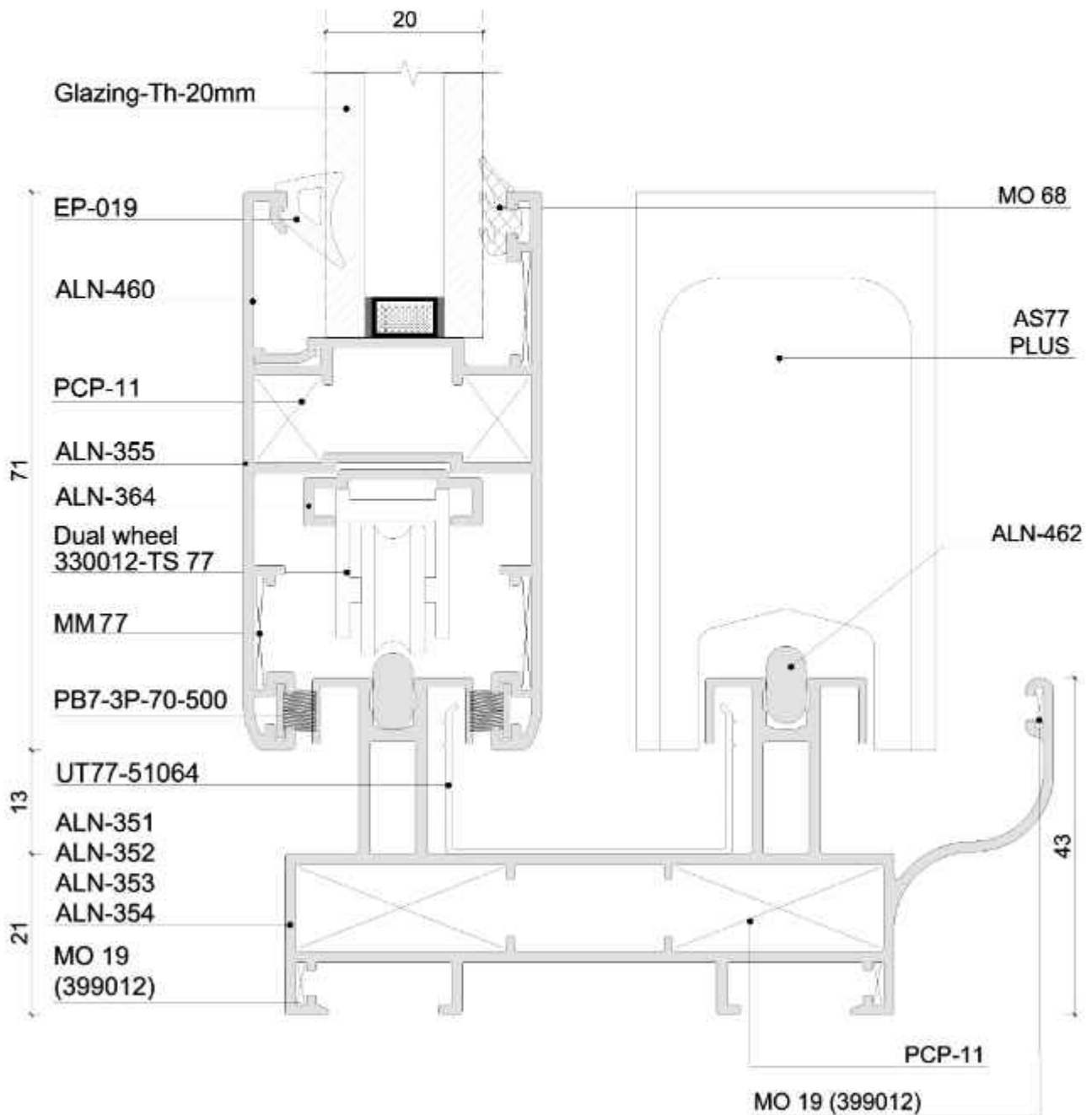
### Profile & Accessories Information

|                |                  |                       |            |
|----------------|------------------|-----------------------|------------|
|                |                  |                       |            |
| Gasket: EP-021 | Weight : 80 gr/m | Gasket: PB7-3P-70-500 | Weight : — |
|                |                  |                       |            |
| Gasket: MO68   | Weight : 46 gr/m | Gasket: PB7-3P-70-800 | Weight : — |
|                |                  |                       |            |
| Gasket : MO 60 | Weight: 26       | Gasket: PB7-3P-50-500 | Weight : — |



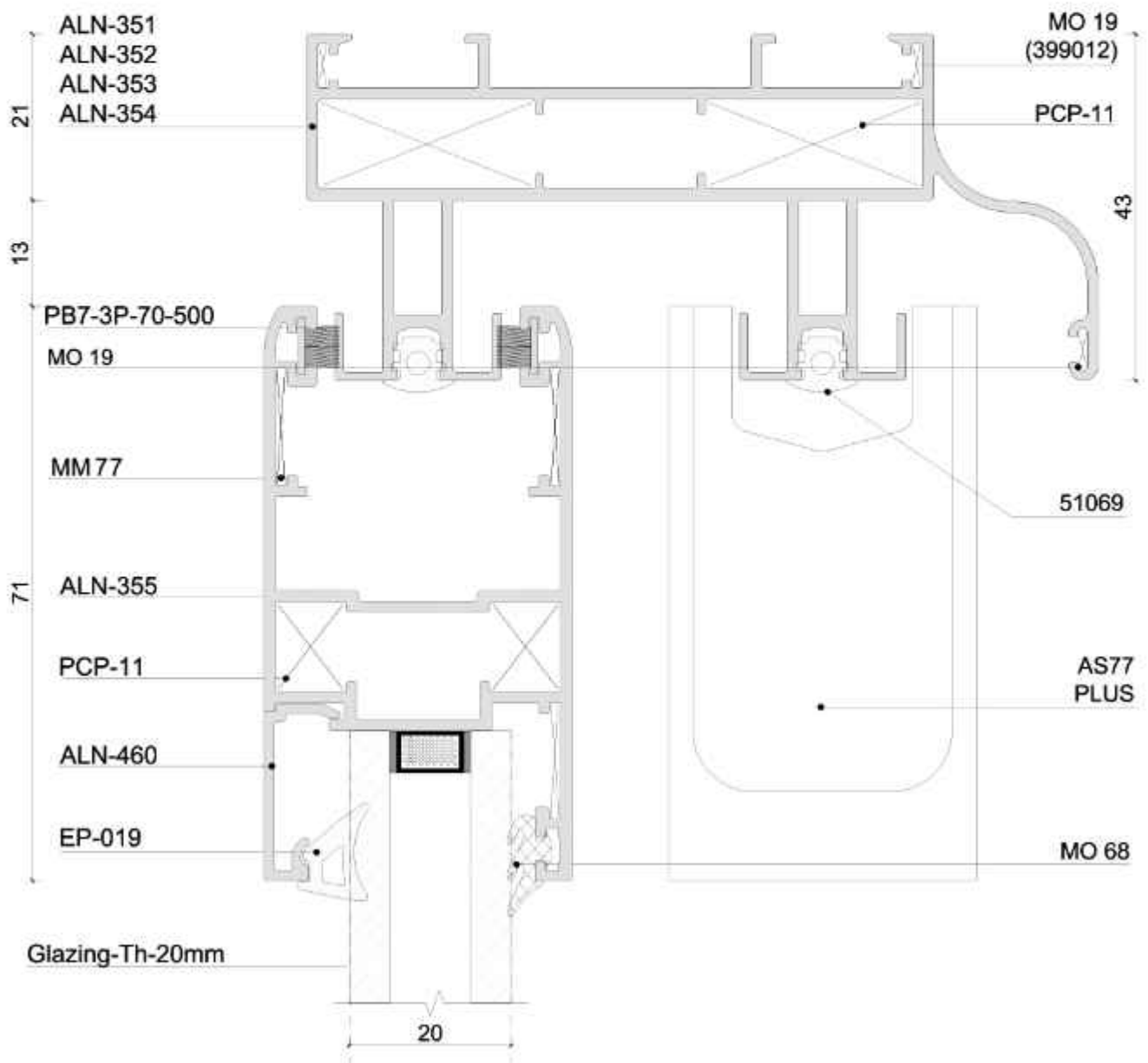
## Slide System 77 Series

### Fabrication Details

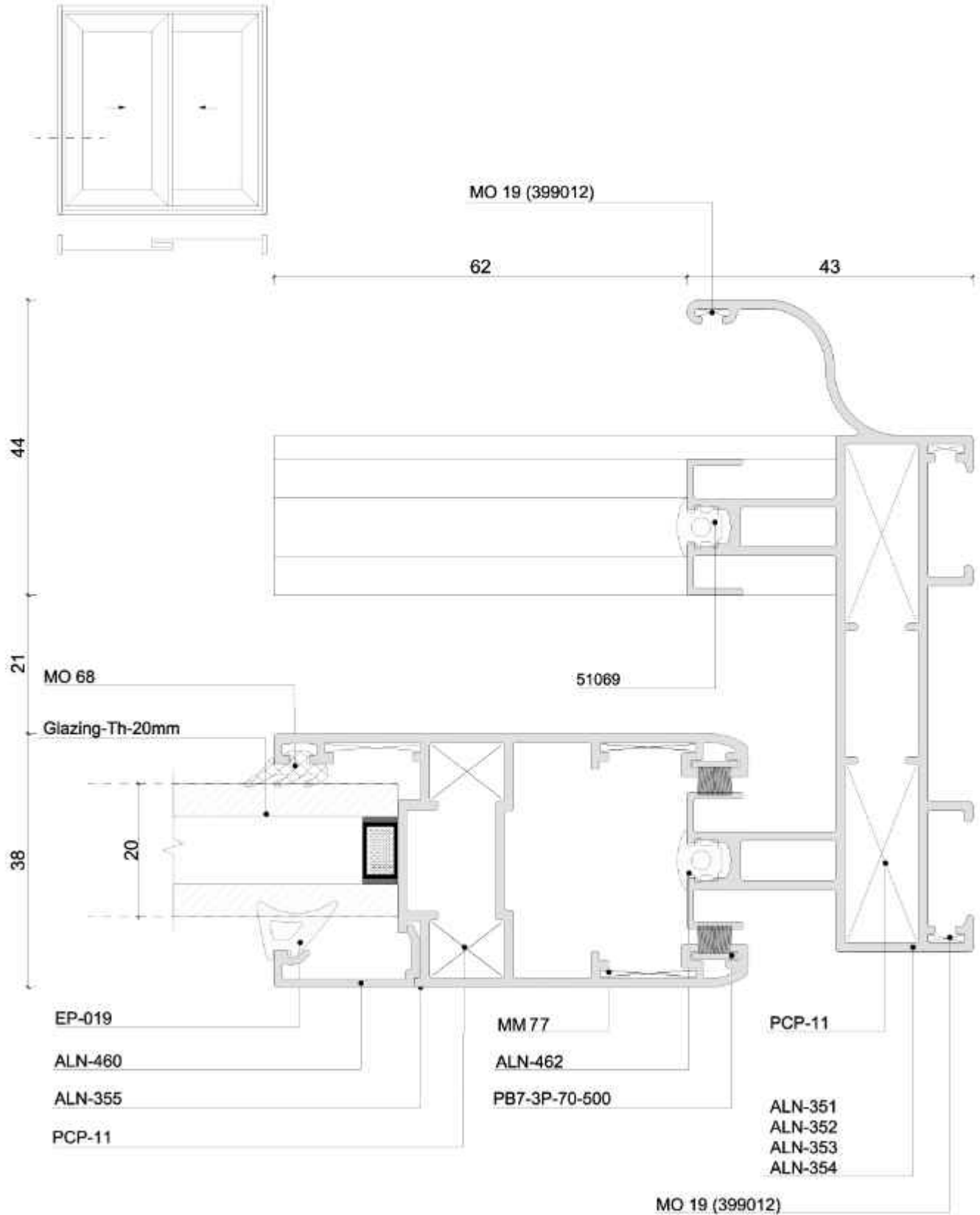




## Slide System 77 Series Fabrication Details

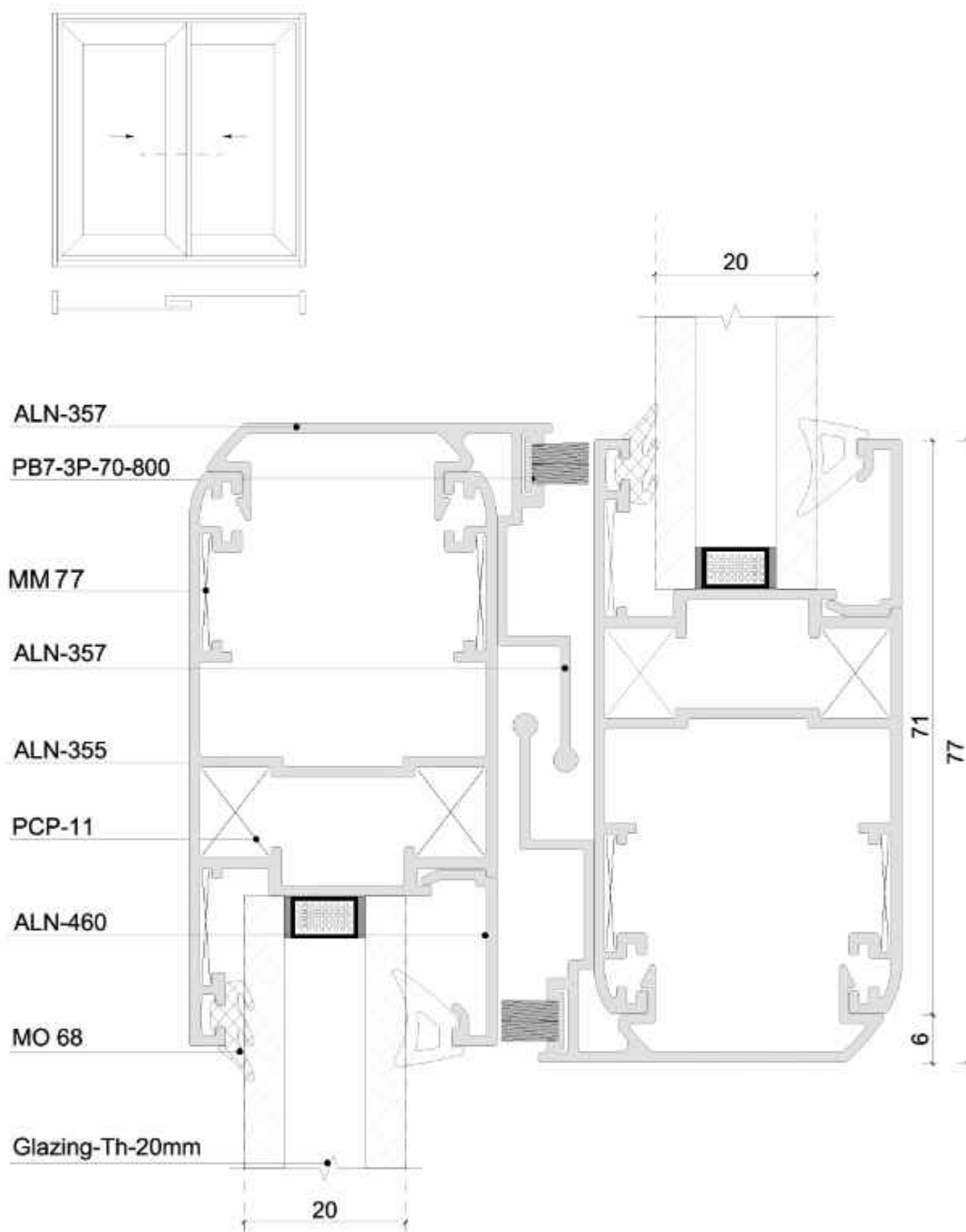


## Slide System 77 Series Fabrication Details

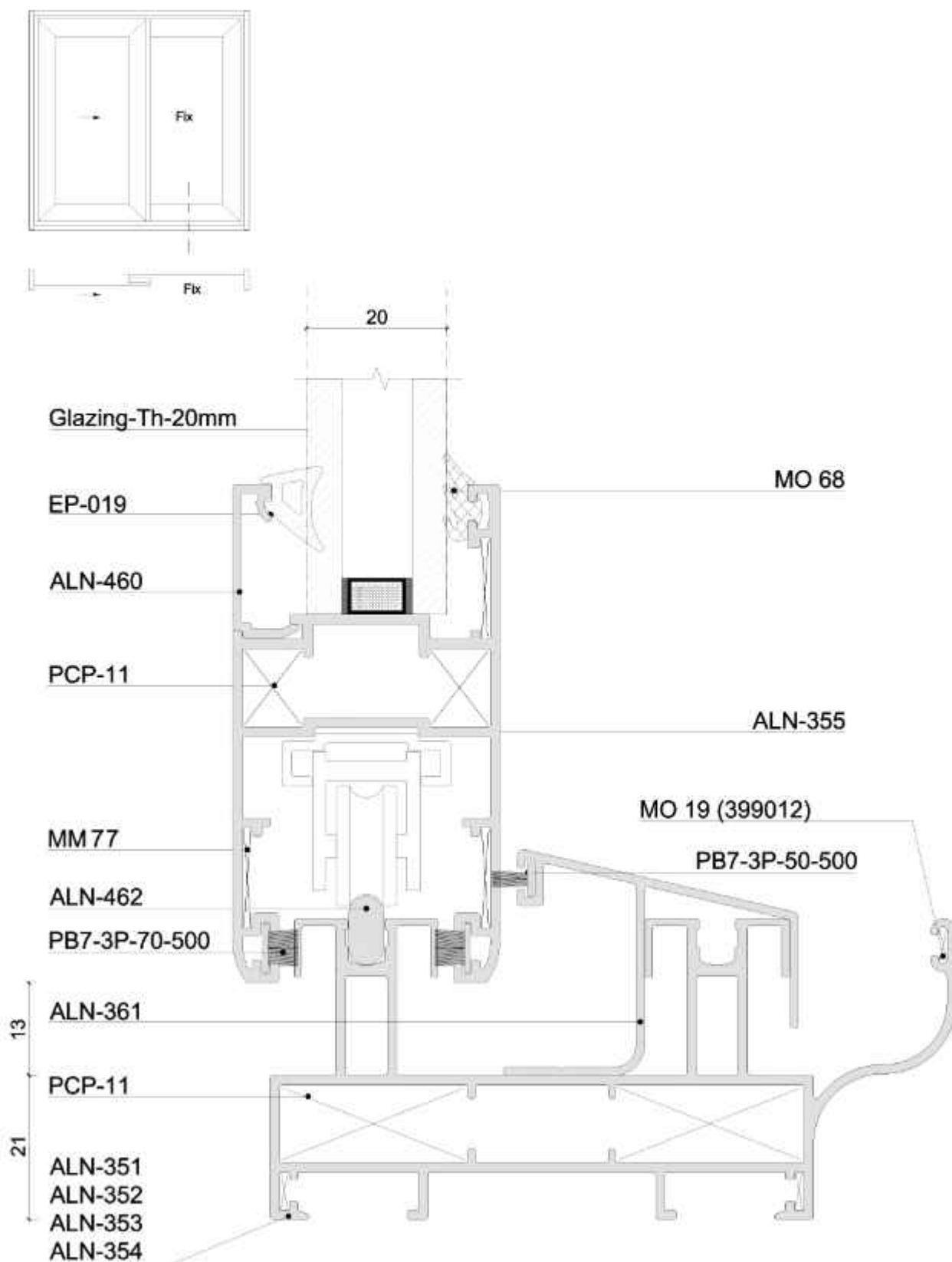




## Slide System 77 Series Fabrication Details

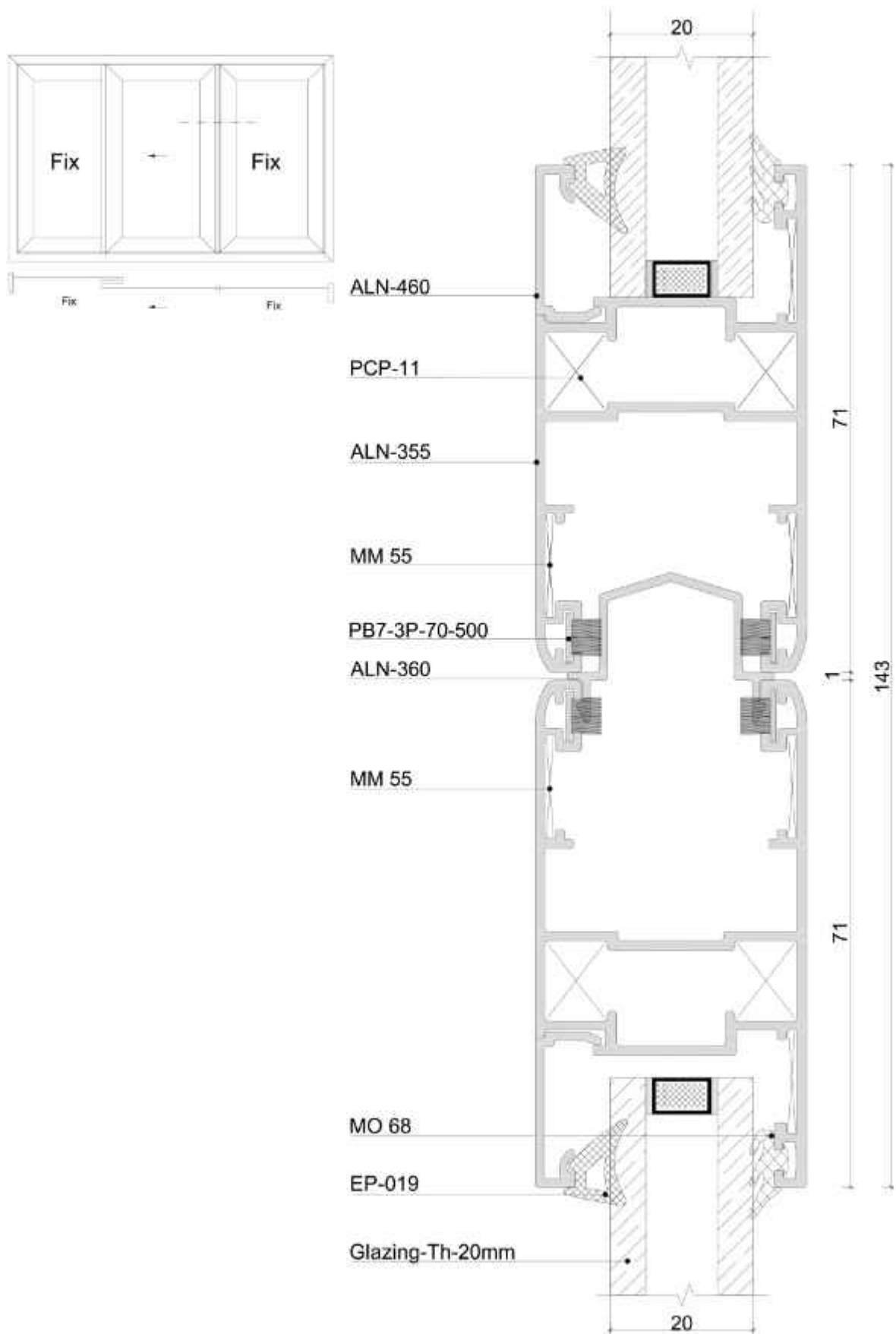


## Slide System 77 Series Fabrication Details



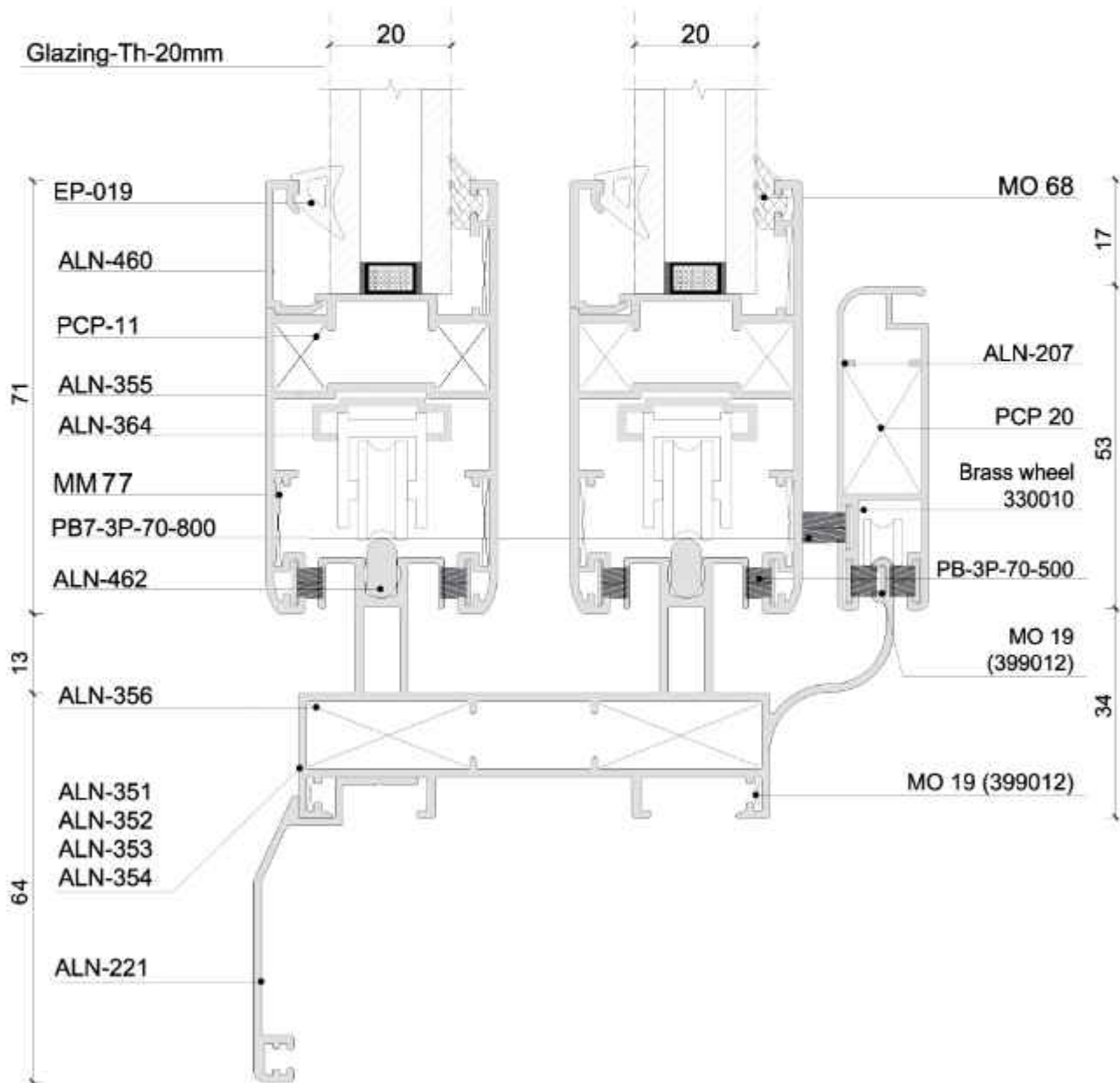


## Slide System 77 Series Fabrication Details



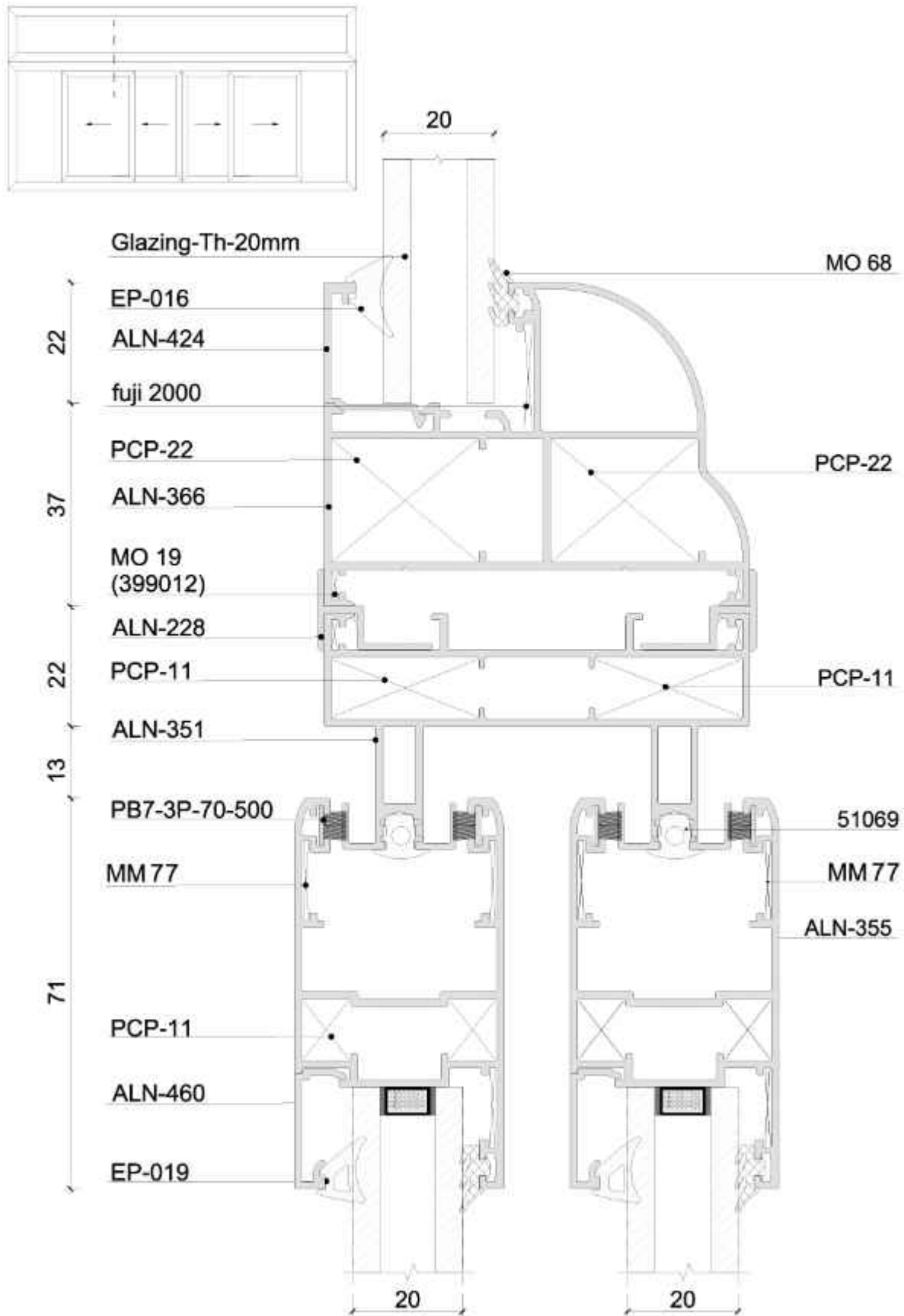
## Slide System 77 Series

### Fabrication Details



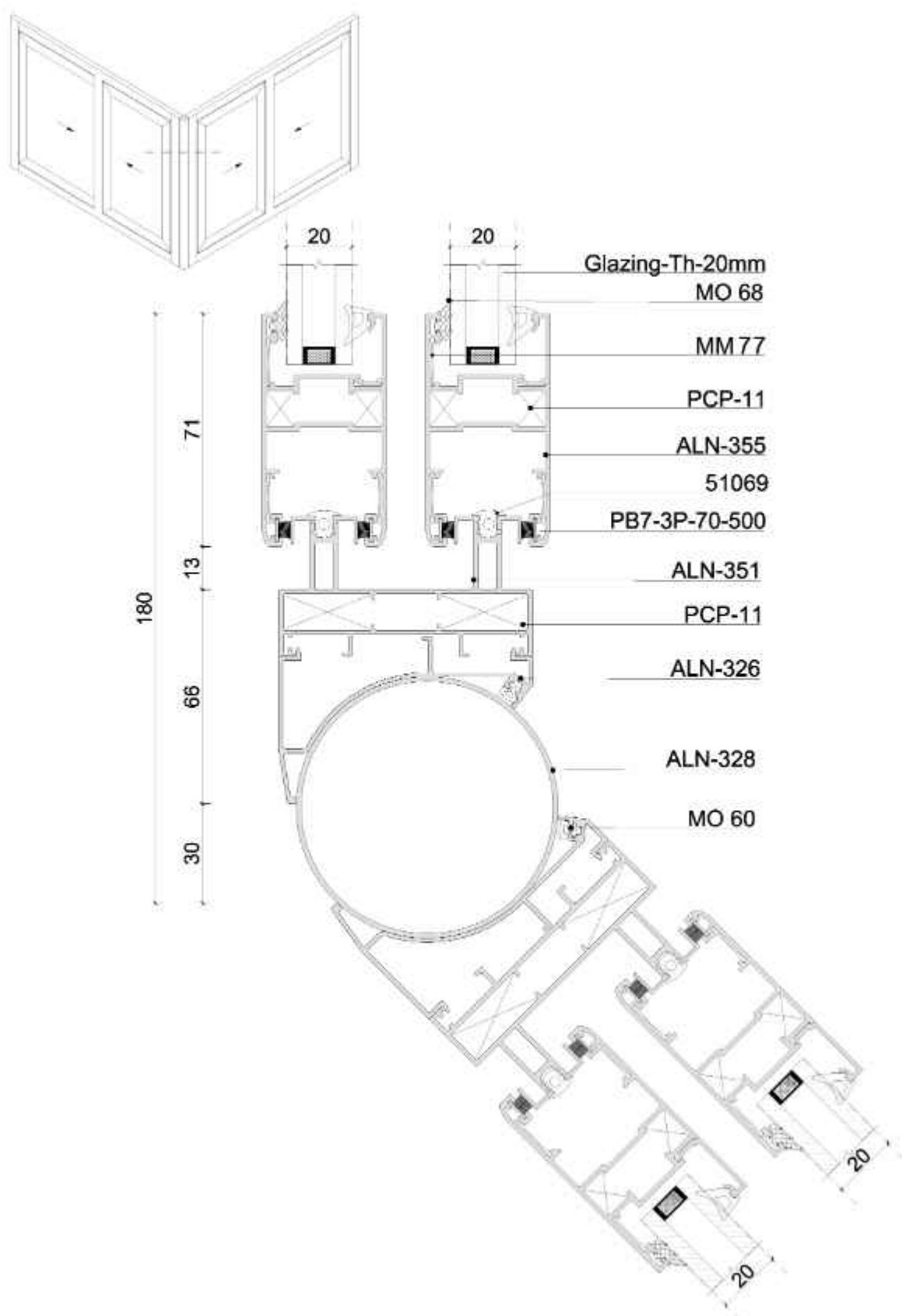


## Slide System 77 Series Fabrication Details



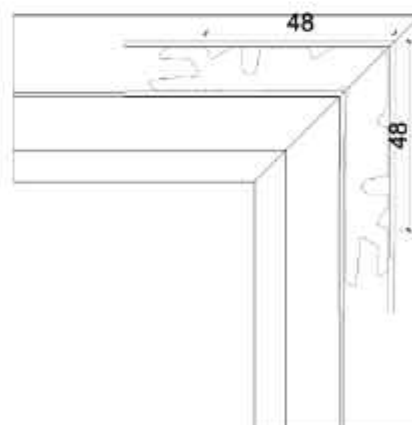
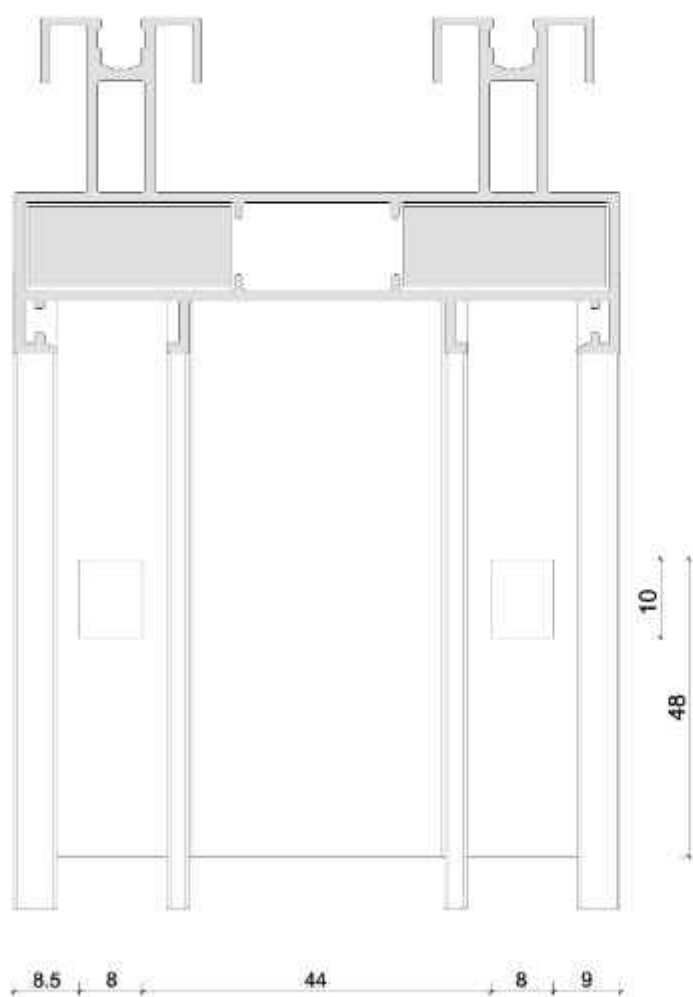
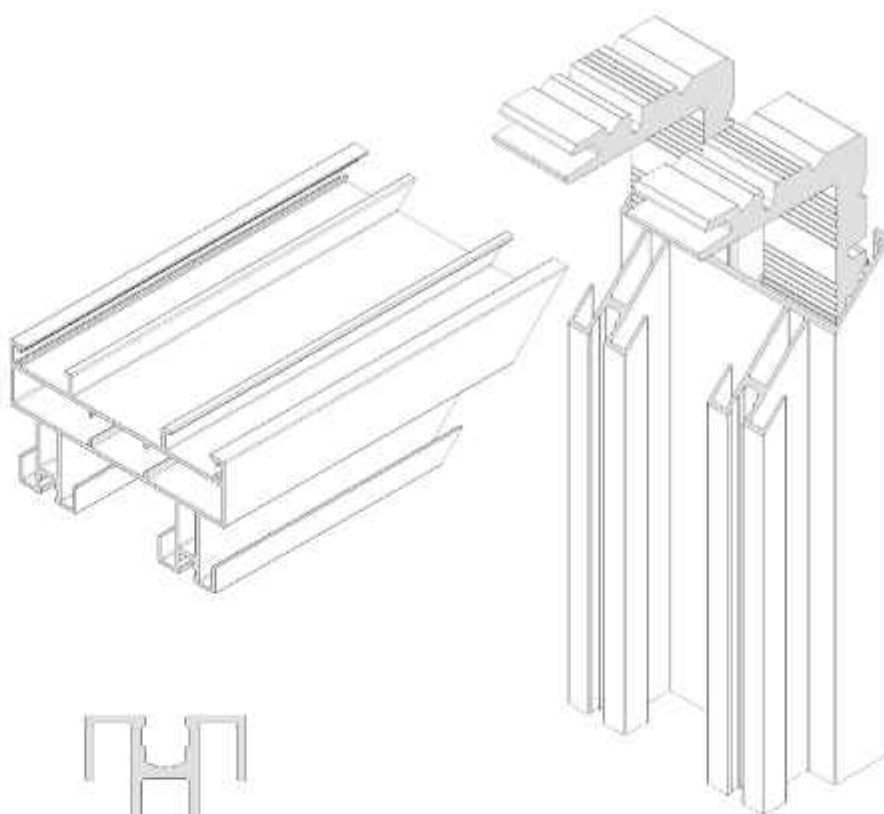
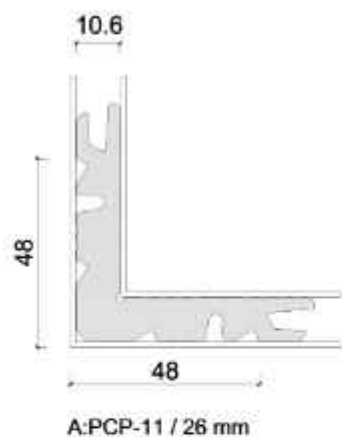
## Slide System 77 Series

### Fabrication Details



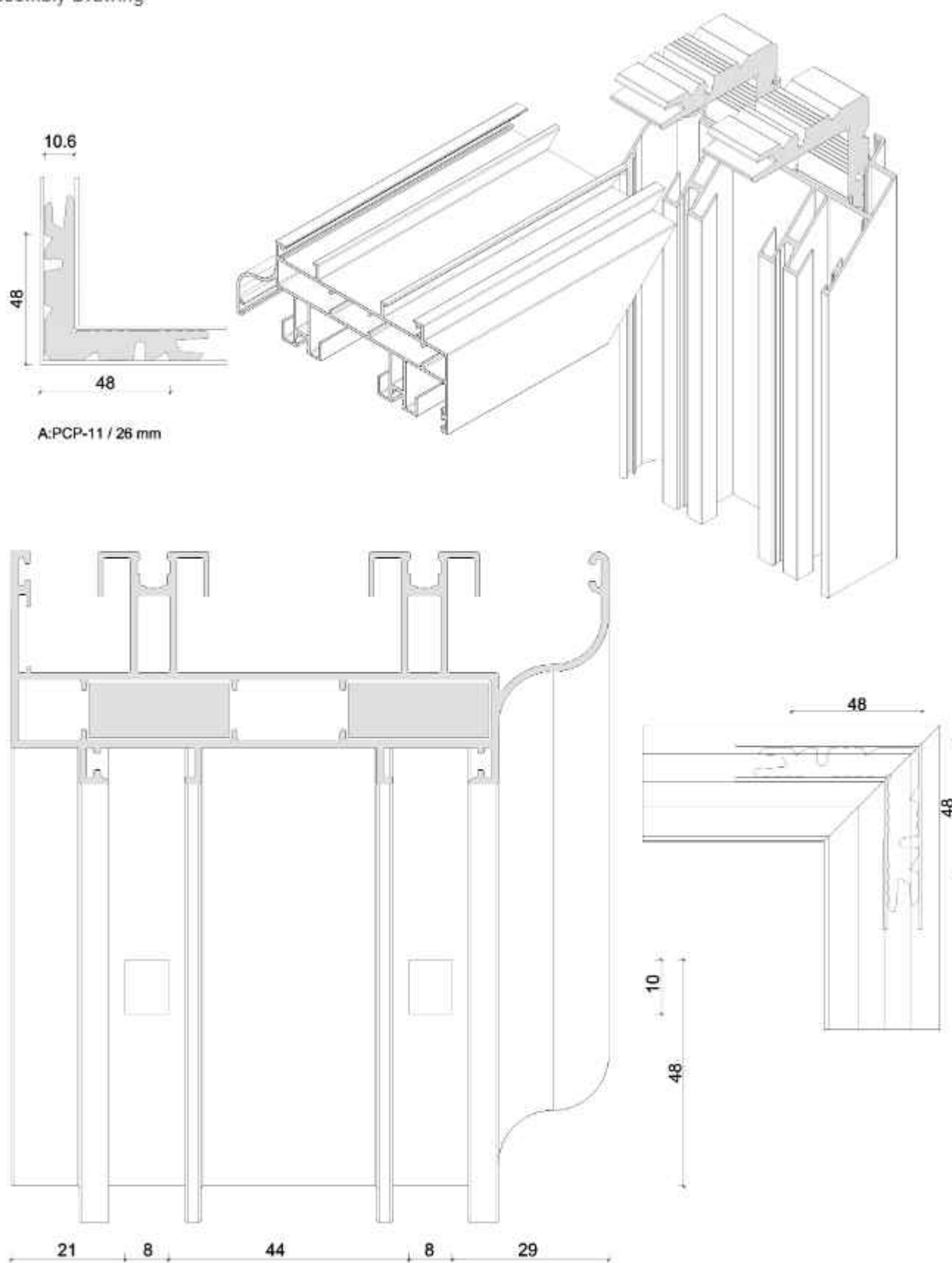


# Slide System 77 Series Assembly Drawing



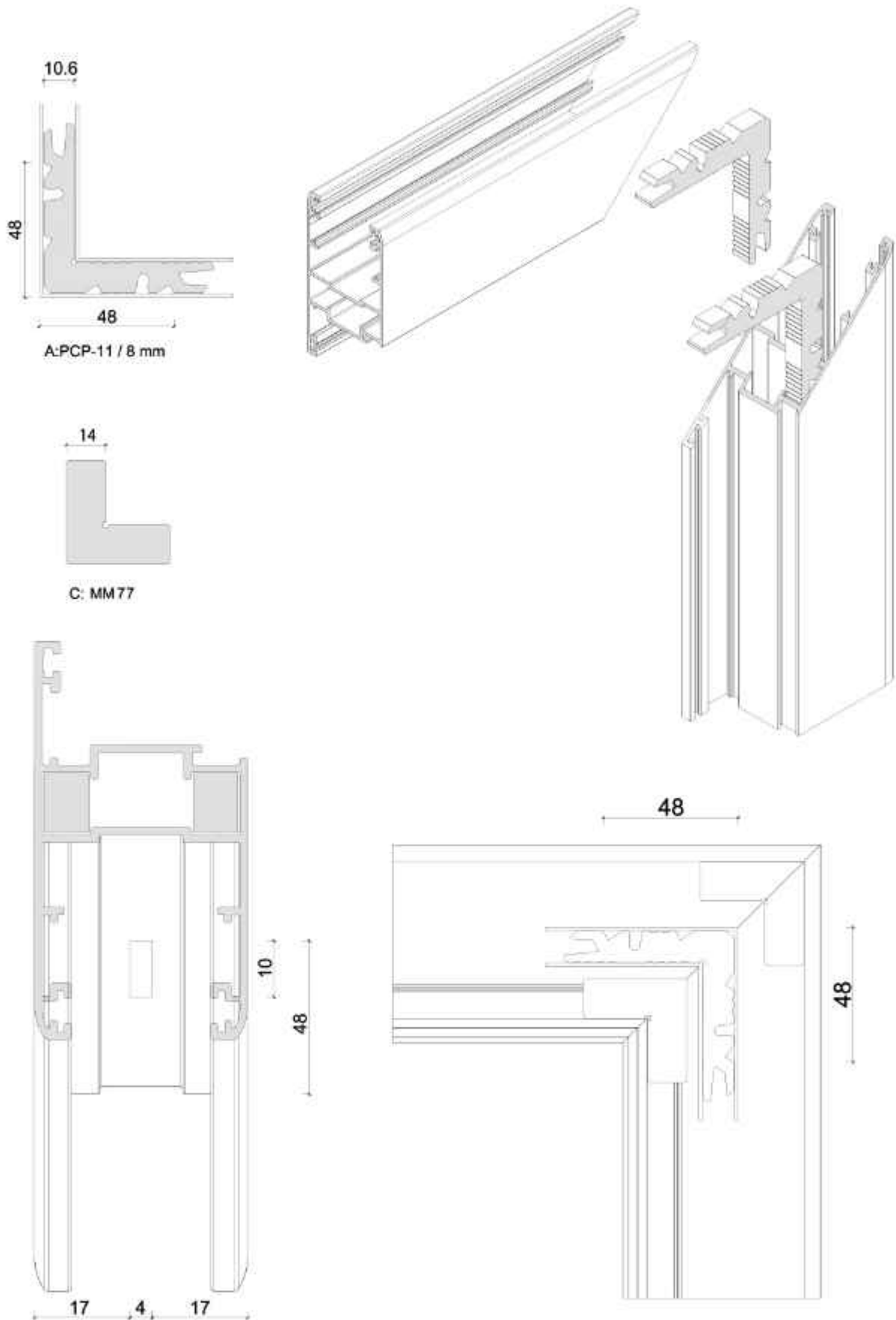
# Slide System 77 Series

## Assembly Drawing





# Slide System 77 Series Assembly Drawing



# Slide System 77 Series

## Assembly Drawing



38



ALN-356

ALN-359

ALN-356

Din 7981  
M 4.8, L 32

ALN-351

ALN-359

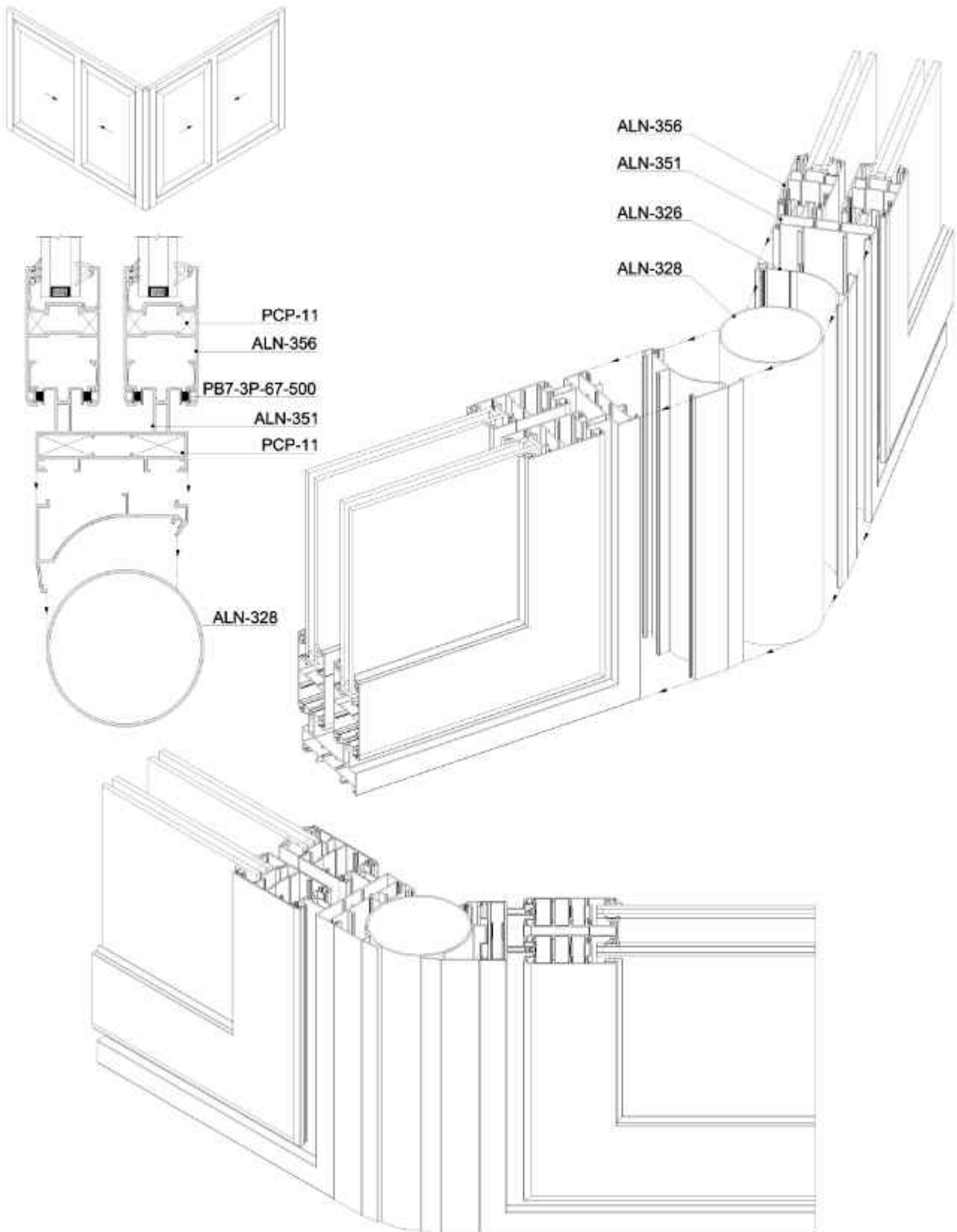
ALN-359

ALN-356

ALN-356

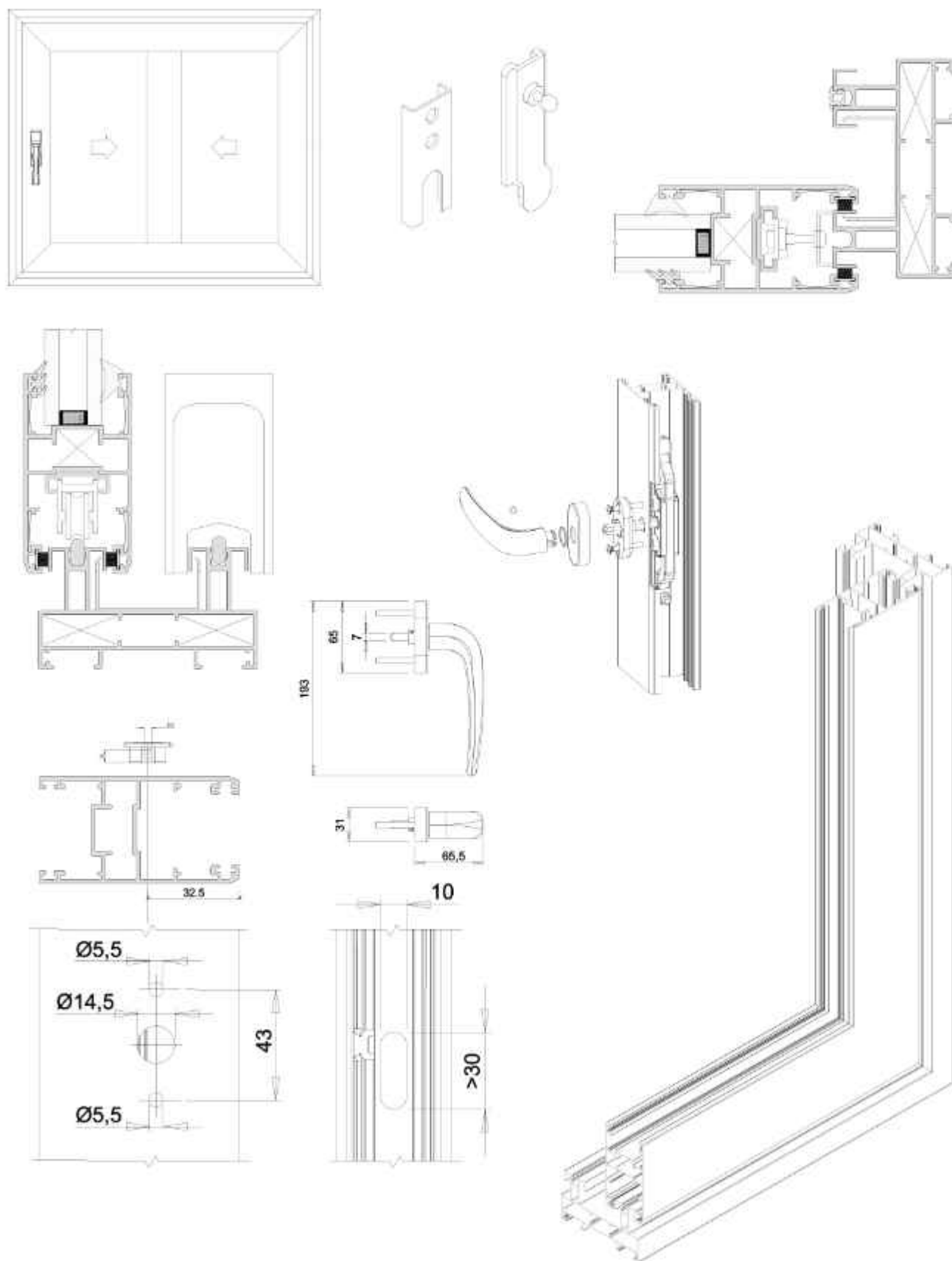


## Slide System 77 Series Assembly Drawing



# Slide System 77 Series

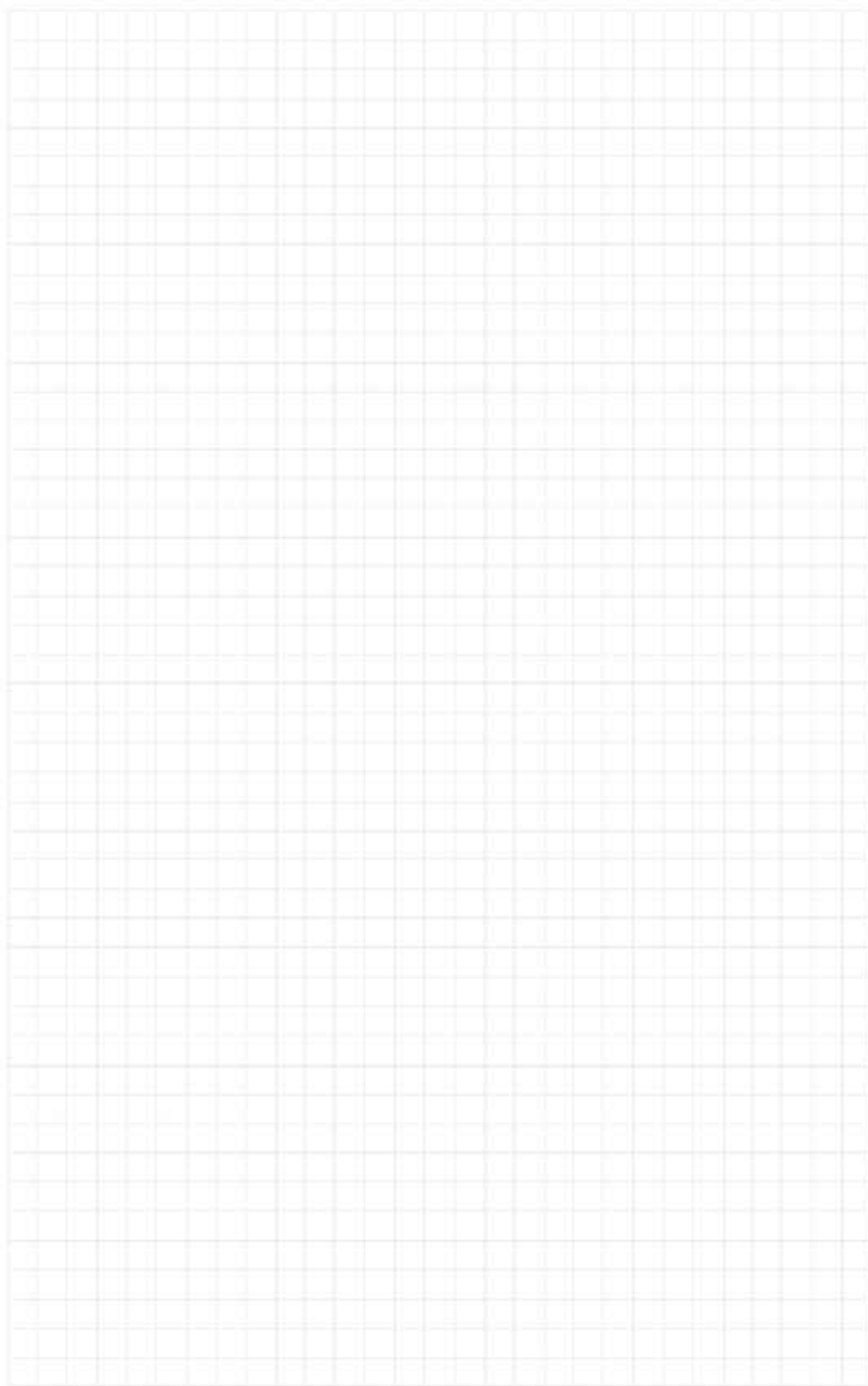
## Assembly Drawing





**AKROLL**

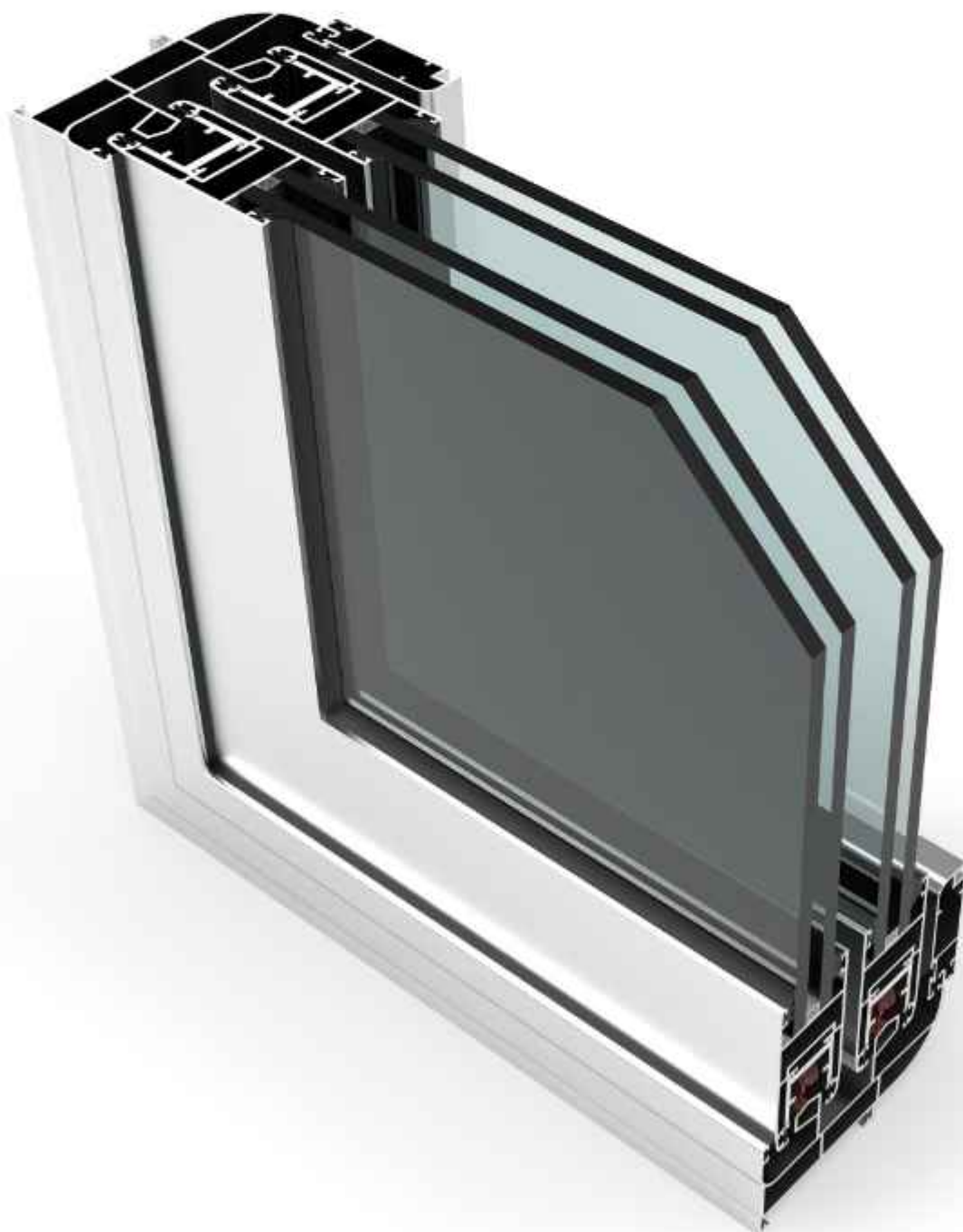
Product of Alumroll Novin Co.





# ALN 200

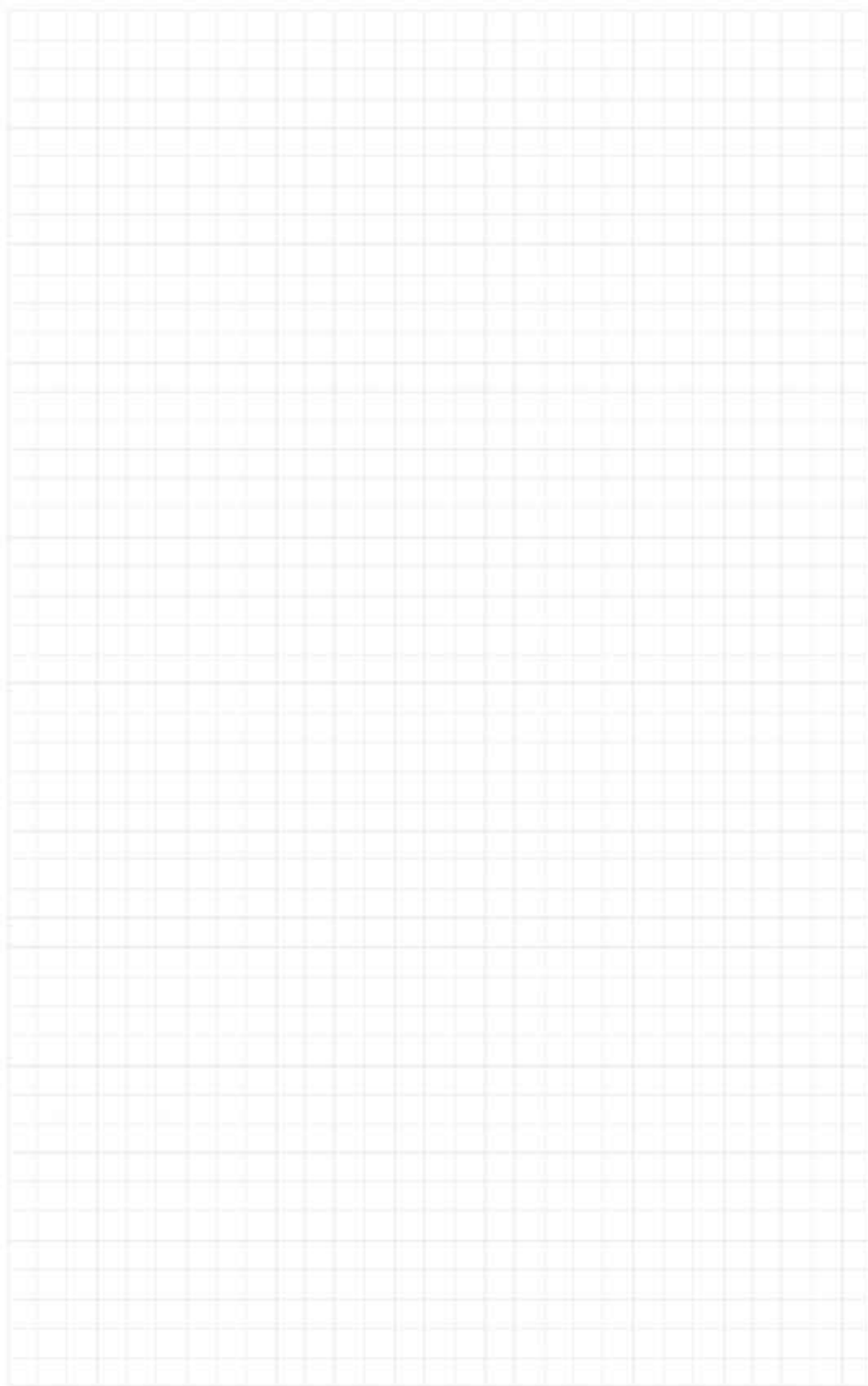
Normal Systems





**AKROLL**

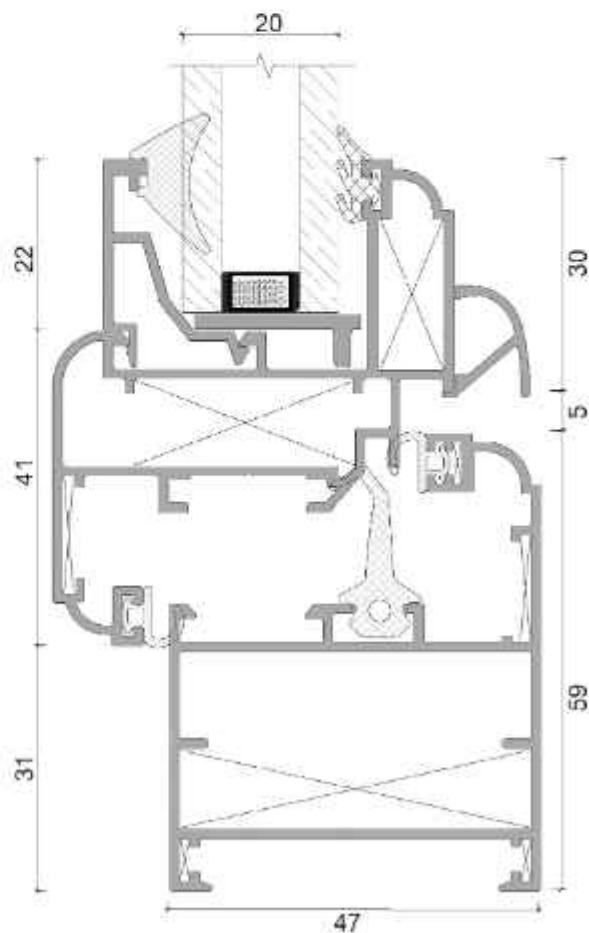
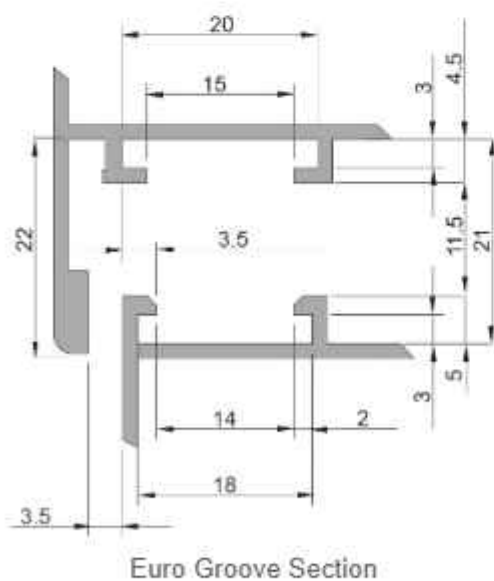
Product of Alumroll Novin Co.





## Hinged System 47 & 59 Series

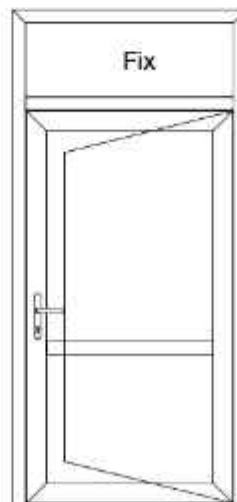
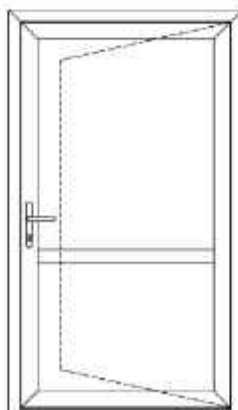
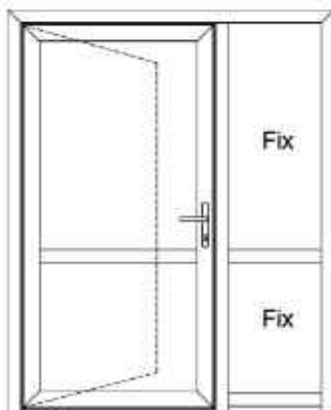
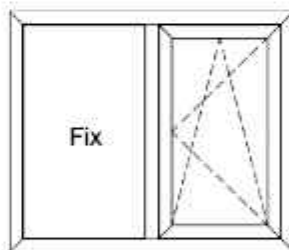
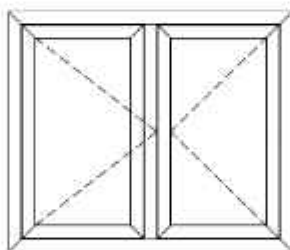
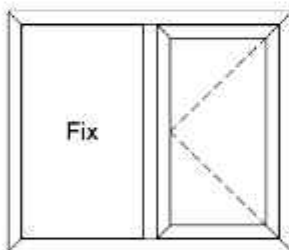
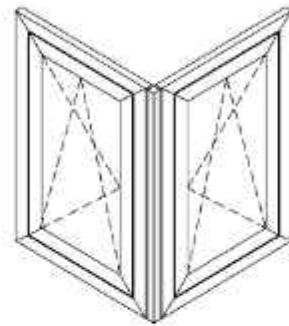
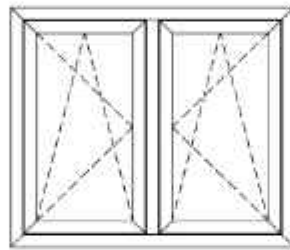
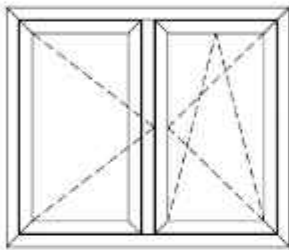
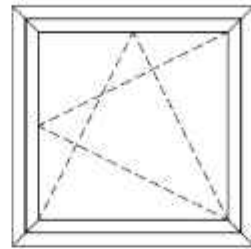
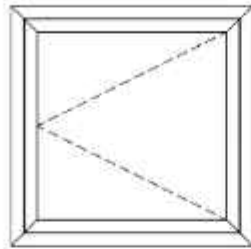
|                           |               |
|---------------------------|---------------|
| Profile width:            | 47,59 mm      |
| Vent width:               | 52 mm         |
| Wall thickness:           | 1.2 - 1.3 mm  |
| Rubber description:       | EPDM DIN 7863 |
| Glass thickness:          | 6 - 22 m      |
| Aluminum alloy extrusion: | EN AW 6063 T5 |
| Safety drainage system    |               |
| Various typologies        |               |





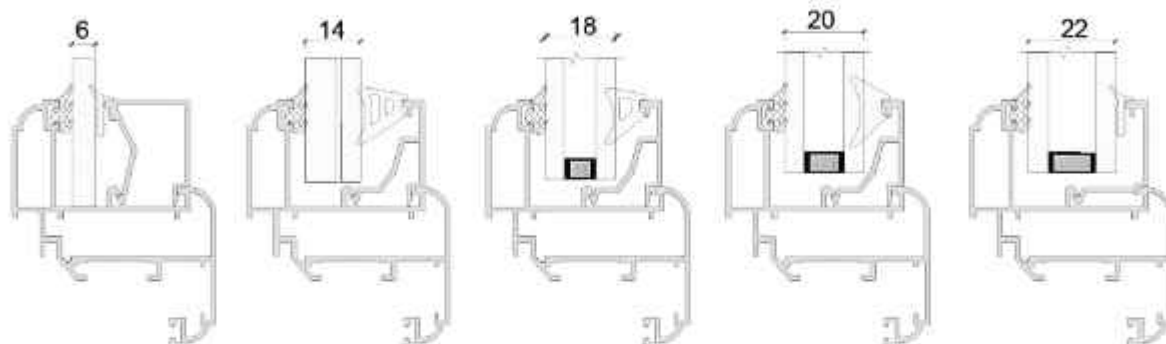
## Hinged System 47 & 59 Series

### Typologies



## Hinged System 47 & 59 Series

### Glazing Table

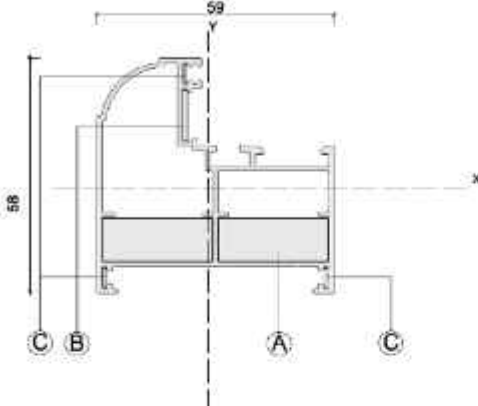
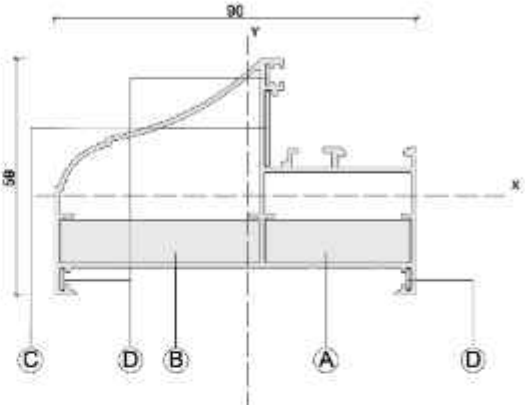
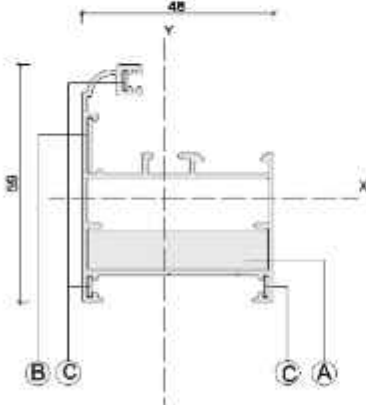
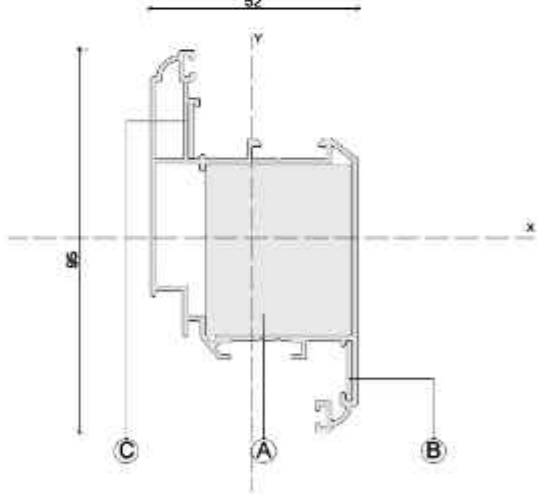


| Glazing Thickness | Gasket Inside                                                                                 | Gasket Outside                                                                              | Glazing Bead                                                                                     |
|-------------------|-----------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|
| 6 mm              | <br>EP-015 | <br>MO68 | <br>ALN-214 |
| 14 mm             | <br>EP-021 | <br>MO68 | <br>ALN-213 |
| 18 mm             | <br>EP-019 | <br>MO68 | <br>ALN-213 |
| 20 mm             | <br>EP-016 | <br>MO68 | <br>ALN-213 |
| 22 mm             | <br>EP-016 | <br>MO68 | <br>ALN-424 |



## Hinged System 47 & 59 Series

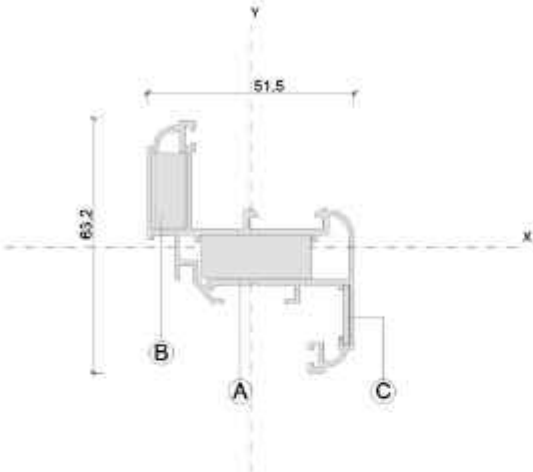
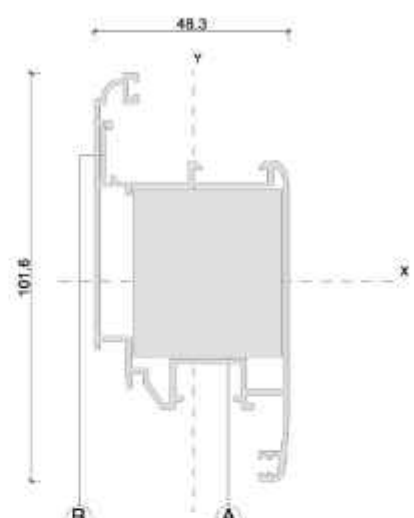
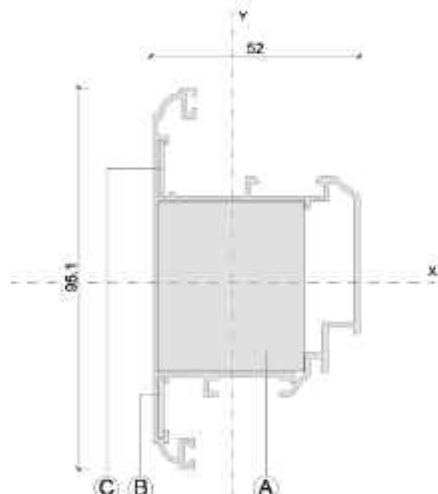
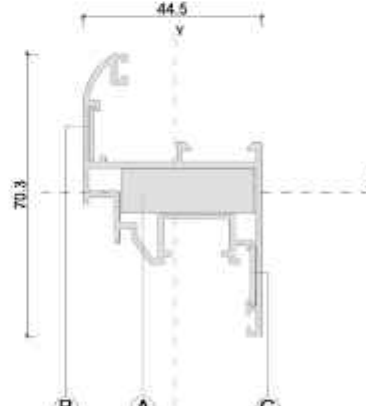
### Profile & Accessories Information

|                                                                                     |                                                                                                       |                                                                                      |                                                                                                         |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------|
|    |                                                                                                       |    |                                                                                                         |
| $I_x$ : 10.93 cm <sup>4</sup>                                                       | $I_y$ : 14.33 cm <sup>4</sup>                                                                         | $I_x$ : 11.96 cm <sup>4</sup>                                                        | $I_y$ : 35.26 cm <sup>4</sup>                                                                           |
| Frame : ALN-208                                                                     | A: PCP-11 / 26 mm  | Frame : ALN-243                                                                      | A: PCP-11 / 36 mm  |
| Weight: 990 gr/m                                                                    | B: fuji 2013       | Weight: 1170 gr/m                                                                    | B: PCP-11 / 49 mm  |
|                                                                                     | C: MO 19           |                                                                                      | C: fuji 2000       |
|                                                                                     |                                                                                                       |                                                                                      | D: MO 19           |
|  |                                                                                                       |  |                                                                                                         |
| $I_x$ : 8.91 cm <sup>4</sup>                                                        | $I_y$ : 9.71 cm <sup>4</sup>                                                                          | $I_x$ : 29.28 cm <sup>4</sup>                                                        | $I_y$ : 15.59 cm <sup>4</sup>                                                                           |
| Frame : ALN-217                                                                     | A: PCP-10 / 44 mm  | Sash : ALN-209                                                                       | A: PCP-42 / 35 mm  |
| Weight: 830 gr/m                                                                    | B: fuji 2013       | Weight: 1120 gr/m                                                                    | B: MM 55           |
|                                                                                     | D: MO 19           |                                                                                      | C: fuji 2013       |



## Hinged System 47 & 59 Series

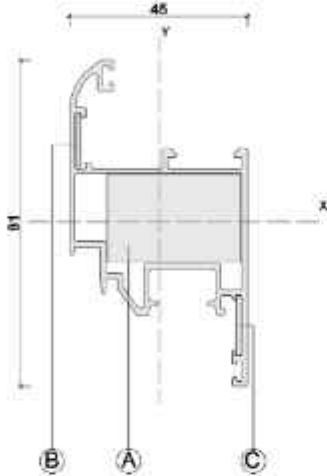
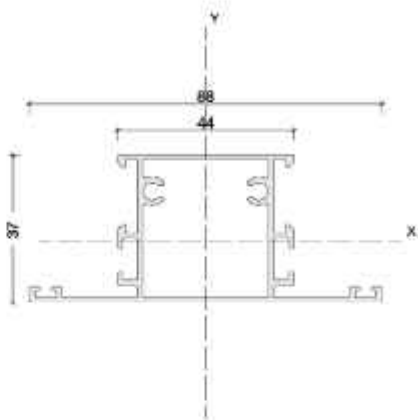
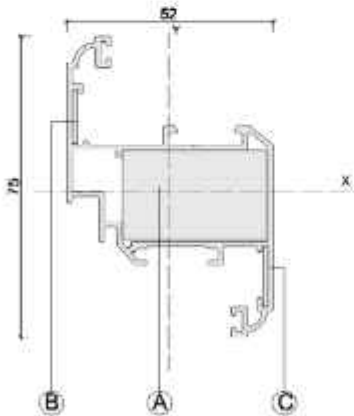
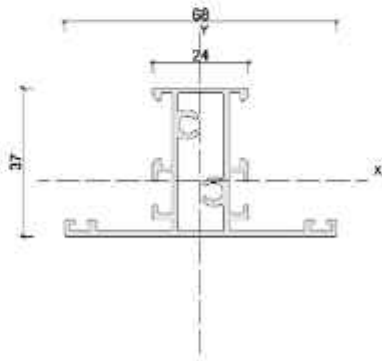
### Profile & Accessories Information

|                                                                                     |                                                                                                                                                                                                              |                                                                                      |                                                                                                         |
|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------|
|    |                                                                                                                                                                                                              |    |                                                                                                         |
| $I_x$ : 7.43 cm <sup>4</sup>                                                        | $I_y$ : 10.16 cm <sup>4</sup>                                                                                                                                                                                | $I_x$ : 33.85 cm <sup>4</sup>                                                        | $I_y$ : 15.12 cm <sup>4</sup>                                                                           |
| Sash : ALN-216                                                                      | A: PCP-11 / 27 mm <br>B: PCP-19 / 8 mm  | Transom : ALN-259                                                                    | A: PCP 42 / 36 mm   |
| Weight: 880 gr/m                                                                    | C: MM 55                                                                                                                  | Weight: 1180 gr/m                                                                    | B: fuji 2013       |
|  |                                                                                                                                                                                                              |  |                                                                                                         |
| $I_x$ : 27.15 cm <sup>4</sup>                                                       | $I_y$ : 13.75 cm <sup>4</sup>                                                                                                                                                                                | $I_x$ : 8.55 cm <sup>4</sup>                                                         | $I_y$ : 8.55 cm <sup>4</sup>                                                                            |
| Sash : ALN-223                                                                      | A: PCP-42 / 36 mm <br>B: MM 55         | Sash : ALN-261                                                                       | A: PCP-11 / 32 mm  |
| Weight: 1055 gr/m                                                                   | C: fuji 2013                                                                                                              | Weight: 894 gr/m                                                                     | B: fuji 2013       |
|                                                                                     |                                                                                                                                                                                                              |                                                                                      | C: MM 55           |



## Hinged System 47 & 59 Series

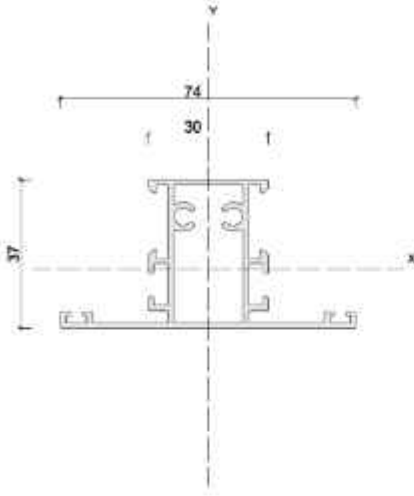
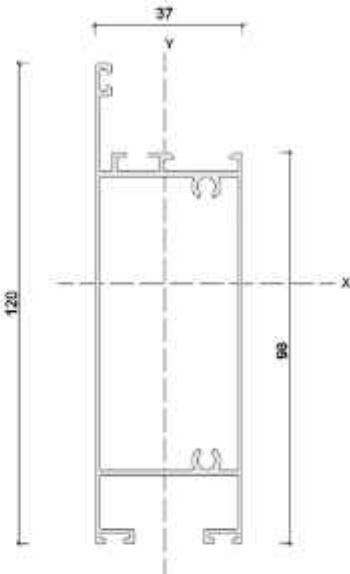
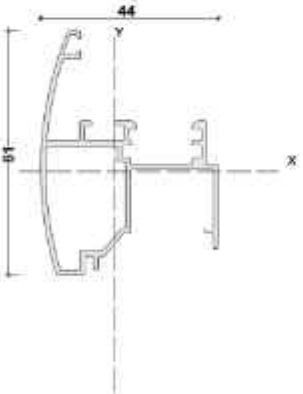
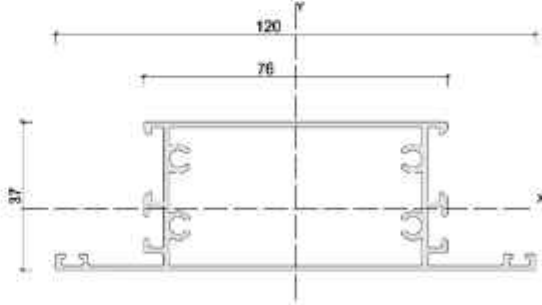
### Profile & Accessories Information

|                                                                                     |                                                                                                       |                                                                                      |                             |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|-----------------------------|
|    |                                                                                                       |    |                             |
| $I_x$ : 14.33 $\text{cm}^4$                                                         | $I_y$ : 9.88 $\text{cm}^4$                                                                            | $I_x$ : 6.90 $\text{cm}^4$                                                           | $I_y$ : 16.10 $\text{cm}^4$ |
| Sash : ALN-262                                                                      | A: PCP-22 / 32 mm  | Transom : ALN-211                                                                    | A: -                        |
| Weight: 970 gr/m                                                                    | B: fuji 2013       | Weight: 940 gr/m                                                                     | B: -                        |
|                                                                                     | C: MM 55           |                                                                                      |                             |
|  |                                                                                                       |  |                             |
| $I_x$ : 12.44 $\text{cm}^4$                                                         | $I_y$ : 12.02 $\text{cm}^4$                                                                           | $I_x$ : 4.96 $\text{cm}^4$                                                           | $I_y$ : 6.14 $\text{cm}^4$  |
| Sash: ALN-264                                                                       | A: PCP-22 / 36 mm  | Transom : ALN-218                                                                    | A: -                        |
| Weight: 926 gr/m                                                                    | B: fuji 2013       | Weight: 813 gr/m                                                                     | B: -                        |
|                                                                                     | C: MM 55           |                                                                                      |                             |



## Hinged System 47 & 59 Series

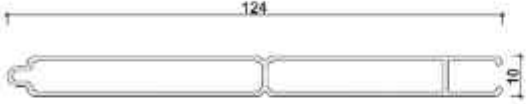
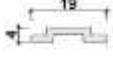
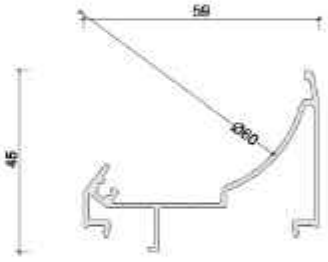
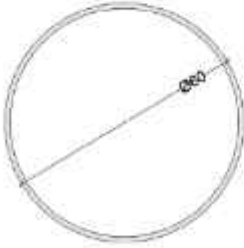
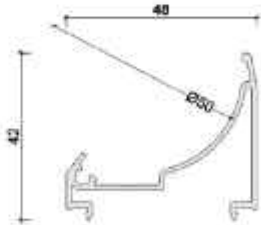
### Profile & Accessories Information

|                                                                                     |                          |                                                                                      |                           |
|-------------------------------------------------------------------------------------|--------------------------|--------------------------------------------------------------------------------------|---------------------------|
|    |                          |    |                           |
| $I_x: 5.77 \text{ cm}^4$                                                            | $I_y: 8.47 \text{ cm}^4$ | $I_x: 10.56 \text{ cm}^4$                                                            | $I_y: 60.90 \text{ cm}^4$ |
| Transom : ALN-248                                                                   | A: -                     | Profile : ALN-235                                                                    | A: -                      |
| Weight: 851 gr/m                                                                    | B: -                     | Weight: 1212 gr/m                                                                    | B: -                      |
|  |                          |  |                           |
| $I_x: 5.53 \text{ cm}^4$                                                            | $I_y: 5.77 \text{ cm}^4$ | $I_x: 9.51 \text{ cm}^4$                                                             | $I_y: 49.88 \text{ cm}^4$ |
| Profile : ALN-210                                                                   | A: -                     | Transom : ALN-245                                                                    | A: -                      |
| Weight: 700 gr/m                                                                    | B: -                     | Weight: 1242 gr/m                                                                    | B: -                      |



## Hinged System 47 & 59 Series

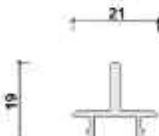
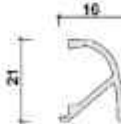
### Profile & Accessories Information

|                                                                                     |                   |                                                                                      |                   |
|-------------------------------------------------------------------------------------|-------------------|--------------------------------------------------------------------------------------|-------------------|
|    |                   |   |                   |
| Profile : ALN-212                                                                   | Weight : 870 gr/m | Profile : ALN-224                                                                    | Weight : 110 gr/m |
|  |                   |   |                   |
| Profile : ALN-227                                                                   | Weight : 540 gr/m | Profile : ALN-225                                                                    | Weight : 548 gr/m |
|  |                   |  |                   |
| Profile : ALN-215                                                                   | Weight : 648 gr/m | Profile : ALN-226                                                                    | Weight : 456 gr/m |



## Hinged System 47 & 59 Series

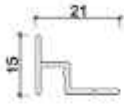
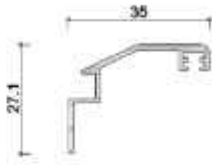
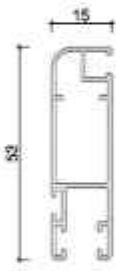
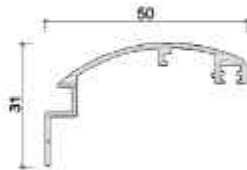
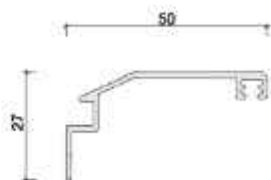
### Profile & Accessories Information

|                                                                                     |                   |                                                                                       |                   |
|-------------------------------------------------------------------------------------|-------------------|---------------------------------------------------------------------------------------|-------------------|
|    |                   |    |                   |
| Glazing beads: ALN-424                                                              | Weight : 169 gr/m | Profile : ALN-257                                                                     | Weight : 149 gr/m |
|  |                   |  |                   |
| Profile : ALN-230                                                                   | Weight : 200 gr/m | Profile : ALN-444                                                                     | Weight : 344 gr/m |
|  |                   |  |                   |
| Profile : ALN-241                                                                   | Weight : 194 gr/m | Drainage : ALN-229                                                                    | Weight : 190 gr/m |



## Hinged System 47 & 59 Series

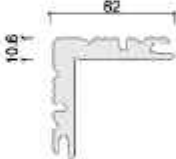
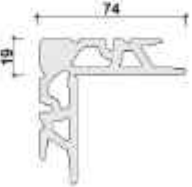
### Profile & Accessories Information

|                                                                                     |                   |                                                                                       |                   |
|-------------------------------------------------------------------------------------|-------------------|---------------------------------------------------------------------------------------|-------------------|
|    |                   |    |                   |
| Profile : ALN-228                                                                   | Weight : 135 gr/m | Flange profile: ALN-222                                                               | Weight : 255 gr/m |
|   |                   |  |                   |
| Fly screen : ALN-207                                                                | Weight: 448 gr/m  | Flange profile: ALN-219                                                               | Weight : 360 gr/m |
|  |                   |  |                   |
| Fly screen : ALN-220                                                                | Weight: 626 gr/m  | Flange profile: ALN-221                                                               | Weight : 300 gr/m |



## Hinged System 47 & 59 Series

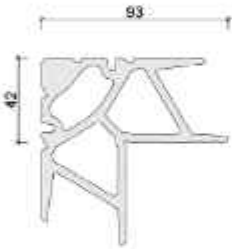
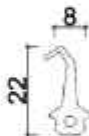
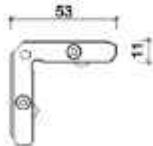
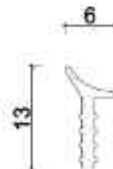
### Profile & Accessories Information

|                                                                                     |                   |                                                                                       |                    |
|-------------------------------------------------------------------------------------|-------------------|---------------------------------------------------------------------------------------|--------------------|
|    |                   |    |                    |
| Glazing beads: ALN-213                                                              | Weight : 210 gr/m | Corner joint: PCP-10                                                                  | Weight : 2455 gr/m |
|  |                   |  |                    |
| Glazing beads: ALN-214                                                              | Weight : 262 gr/m | Corner joint: PCP-11                                                                  | Weight : 2550 gr/m |
|  |                   |  |                    |
| Corner Joint: mm55                                                                  | Weight : -        | Corner: PCP 19                                                                        | Weight : 3499 gr/m |



## Hinged System 47 & 59 Series

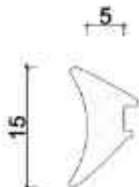
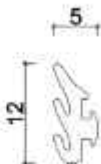
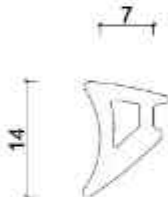
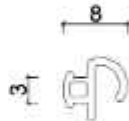
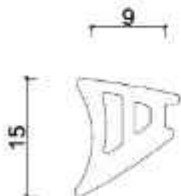
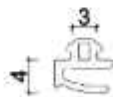
### Profile & Accessories Information

|                                                                                     |                                 |                                                                                       |                  |
|-------------------------------------------------------------------------------------|---------------------------------|---------------------------------------------------------------------------------------|------------------|
|    |                                 |    |                  |
| Corner: PCP 20                                                                      | Weight : 1375 gr/m              | Cap : MO 97                                                                           | Weight : –       |
|   |                                 |  |                  |
| Corner joint: PCP-42                                                                | Weight : 5130 gr/m <sup>2</sup> | Gasket: 1015                                                                          | Weight : –       |
|  |                                 |  |                  |
| Corner Joint: Fuji 2013                                                             | Weight : –                      | Gasket: EP-015                                                                        | Weight : 21 gr/m |



## Hinged System 47 & 59 Series

### Profile & Accessories Information

|                                                                                     |                  |                                                                                       |                  |
|-------------------------------------------------------------------------------------|------------------|---------------------------------------------------------------------------------------|------------------|
|    |                  |    |                  |
| Gasket: EP-016                                                                      | Weight : 77 gr/m | Gasket: MO68                                                                          | Weight : -       |
|  |                  |  |                  |
| Gasket: EP-019                                                                      | Weight : 61 gr/m | Gasket: EP-018                                                                        | Weight : 27 gr/m |
|  |                  |  |                  |
| Gasket: EP-021                                                                      | Weight : 80 gr/m | Gasket: 3523801                                                                       | Weight : 40 gr/m |

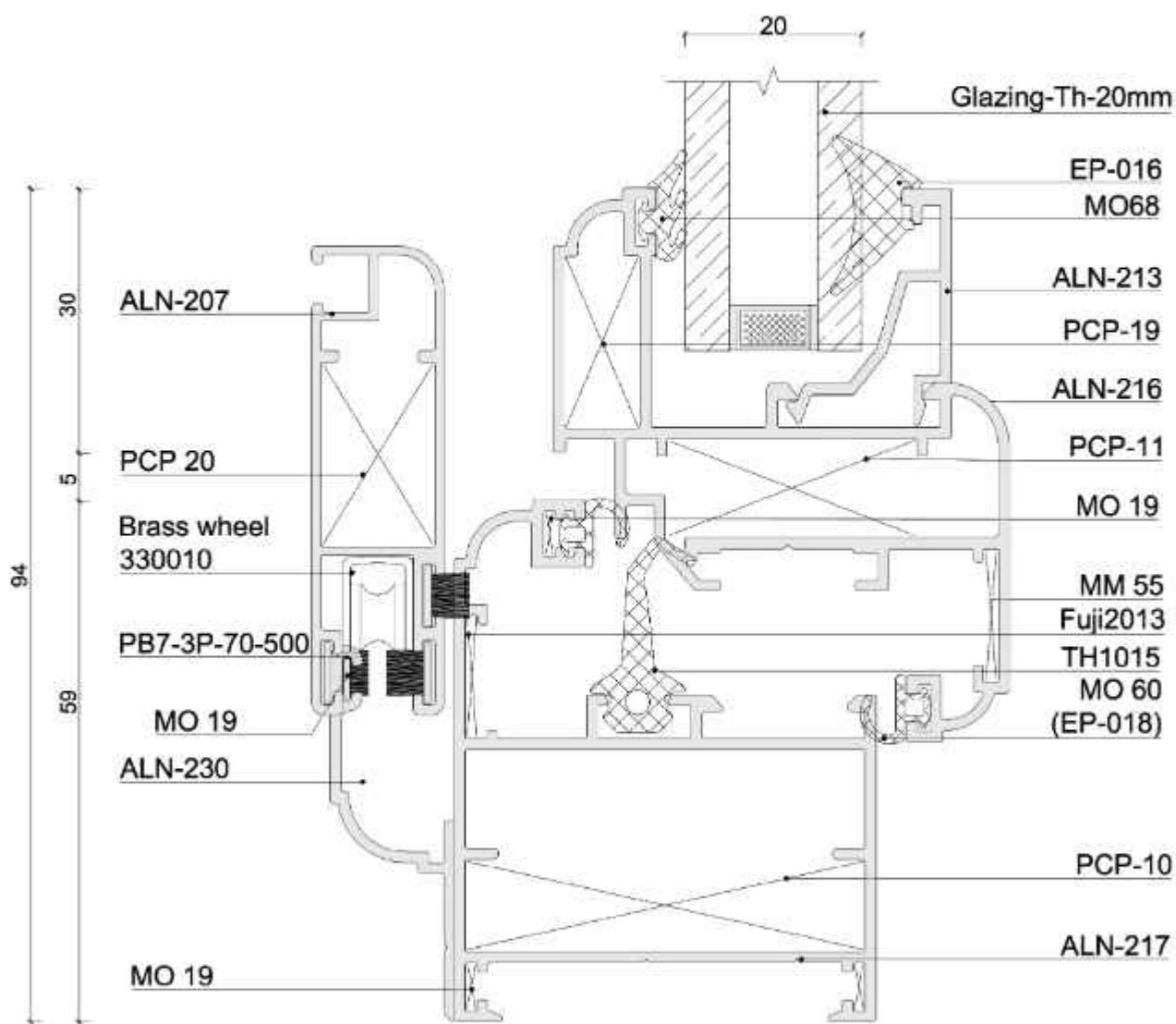
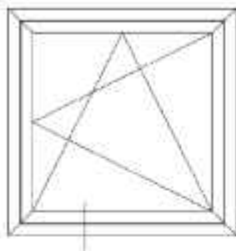
Hinged System 47 & 59 Series

Profile & Accessories Information

|                                                                                     |               |  |  |
|-------------------------------------------------------------------------------------|---------------|--|--|
|    |               |  |  |
| PB7-3P-70-500                                                                       | Weight: —     |  |  |
|  |               |  |  |
| Gasket: mo 60                                                                       | Weight :28 gr |  |  |
|                                                                                     |               |  |  |
|                                                                                     |               |  |  |

## Hinged System 47 & 59 Series

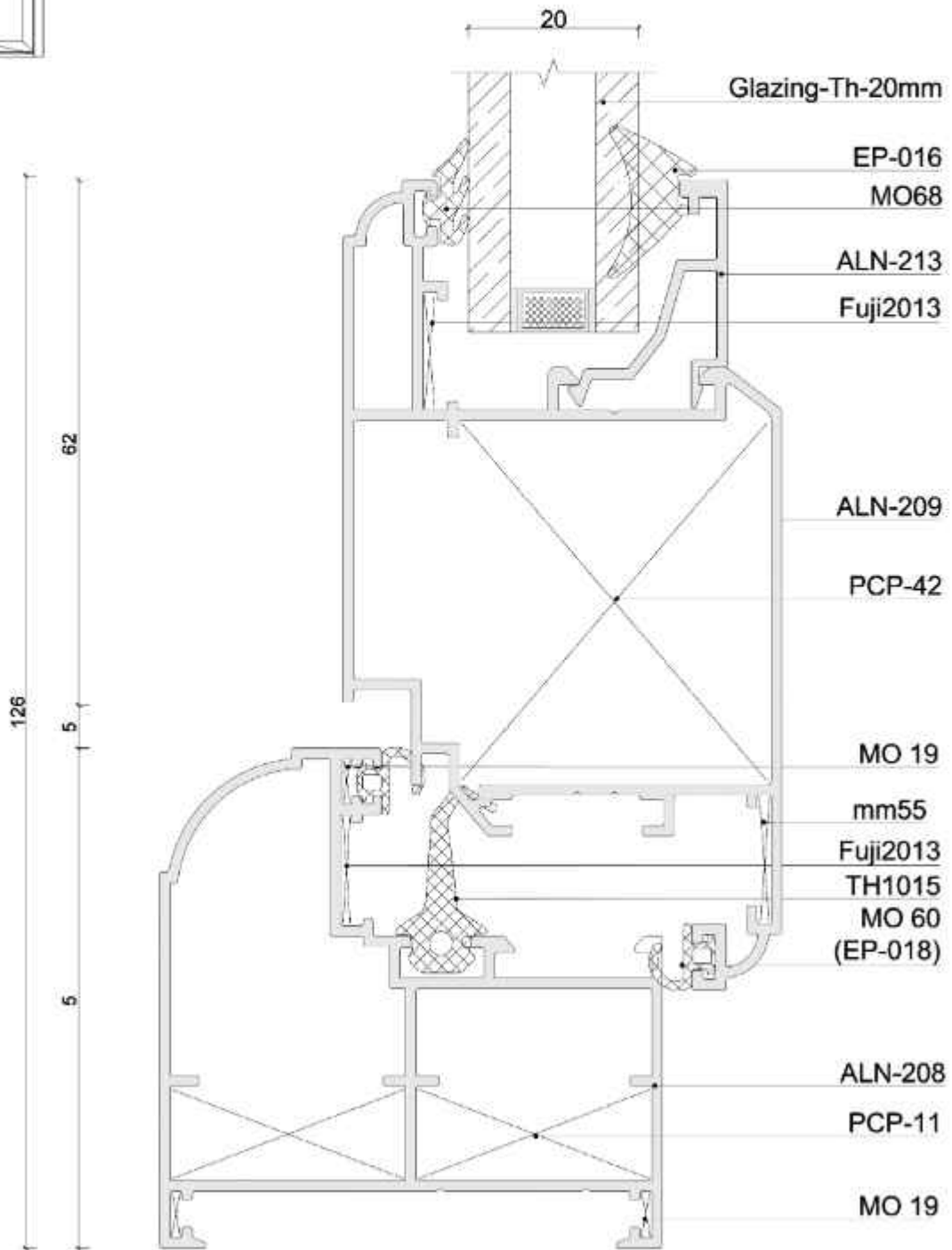
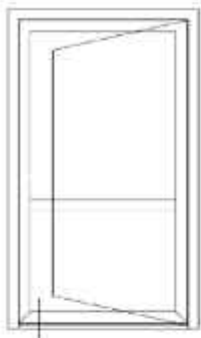
### Fabrication Details



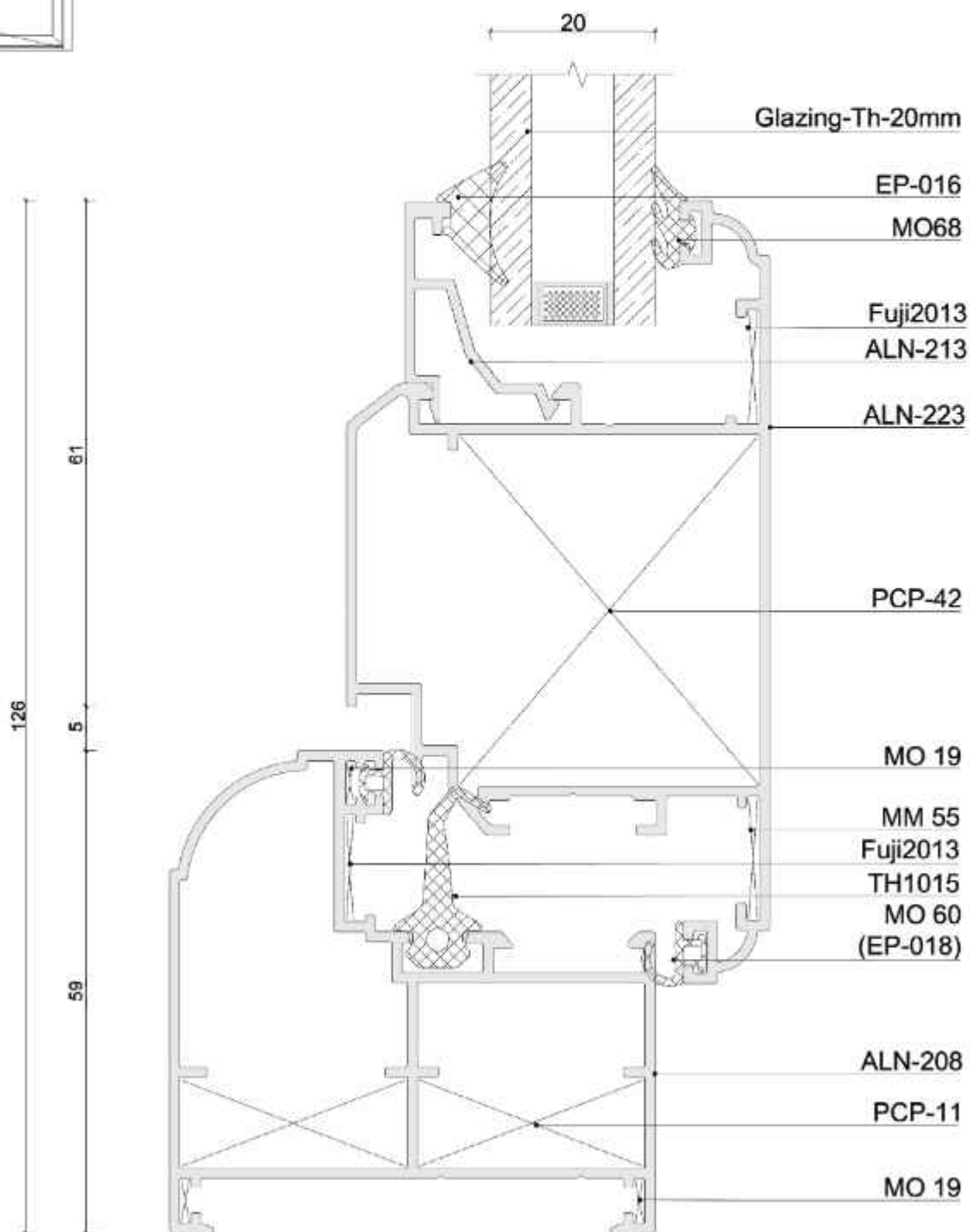


## Hinged System 47 & 59 Series

### Fabrication Details

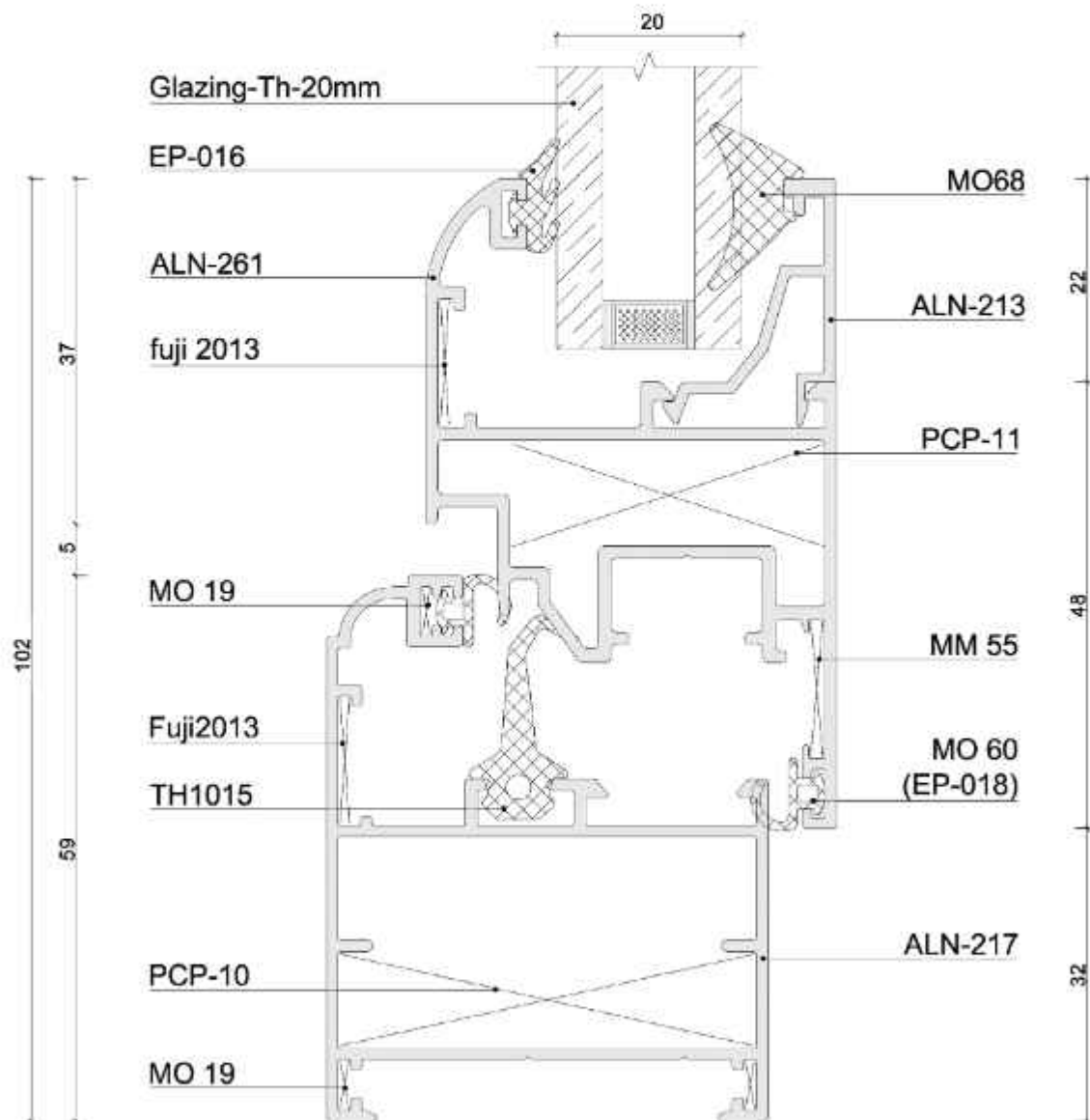
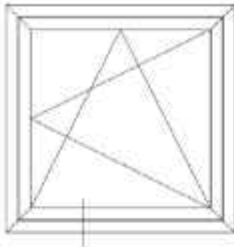


## Hinged System 47 & 59 Series Fabrication Details

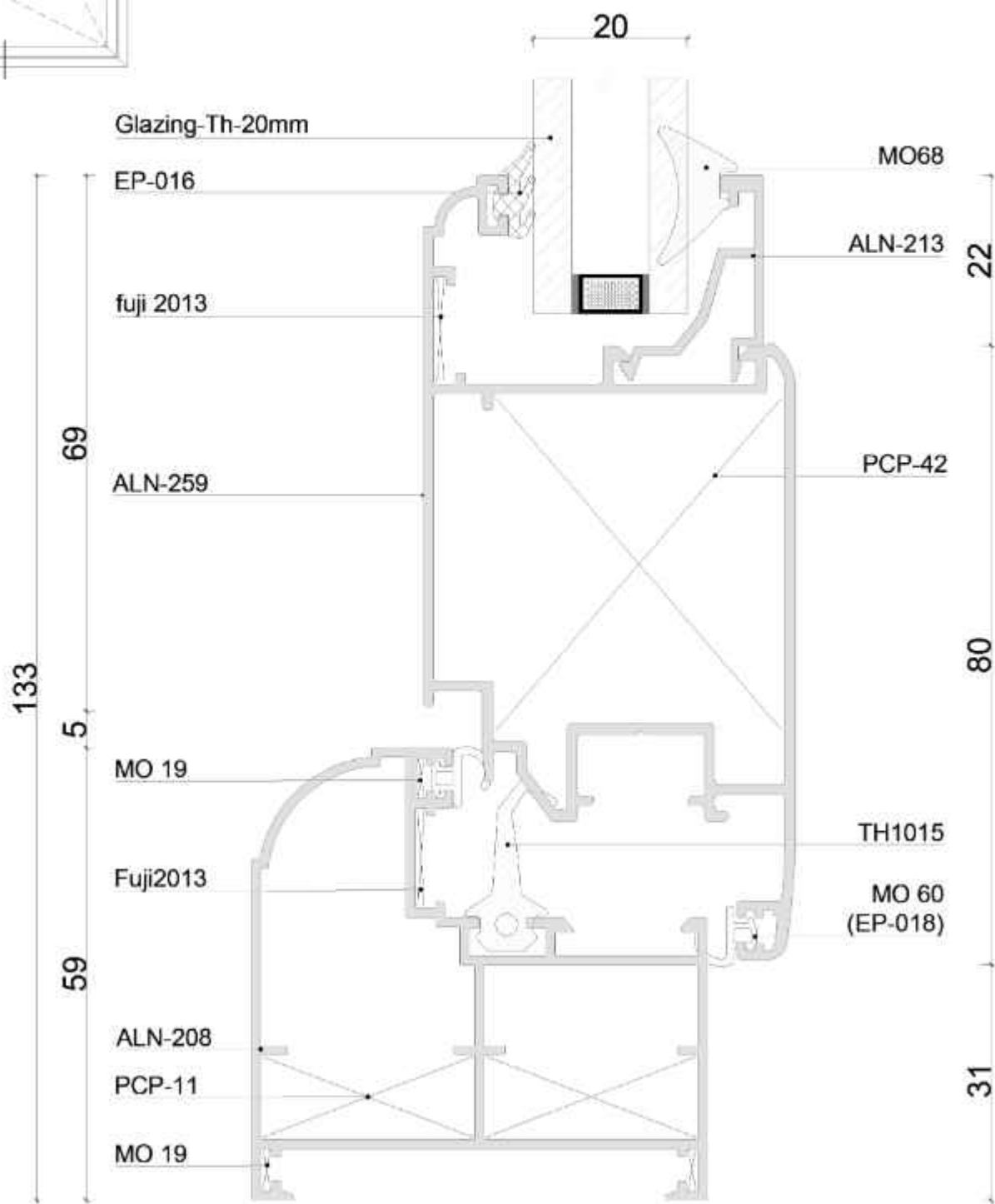
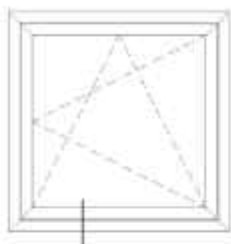




## Hinged System 47 & 59 Series Fabrication Details

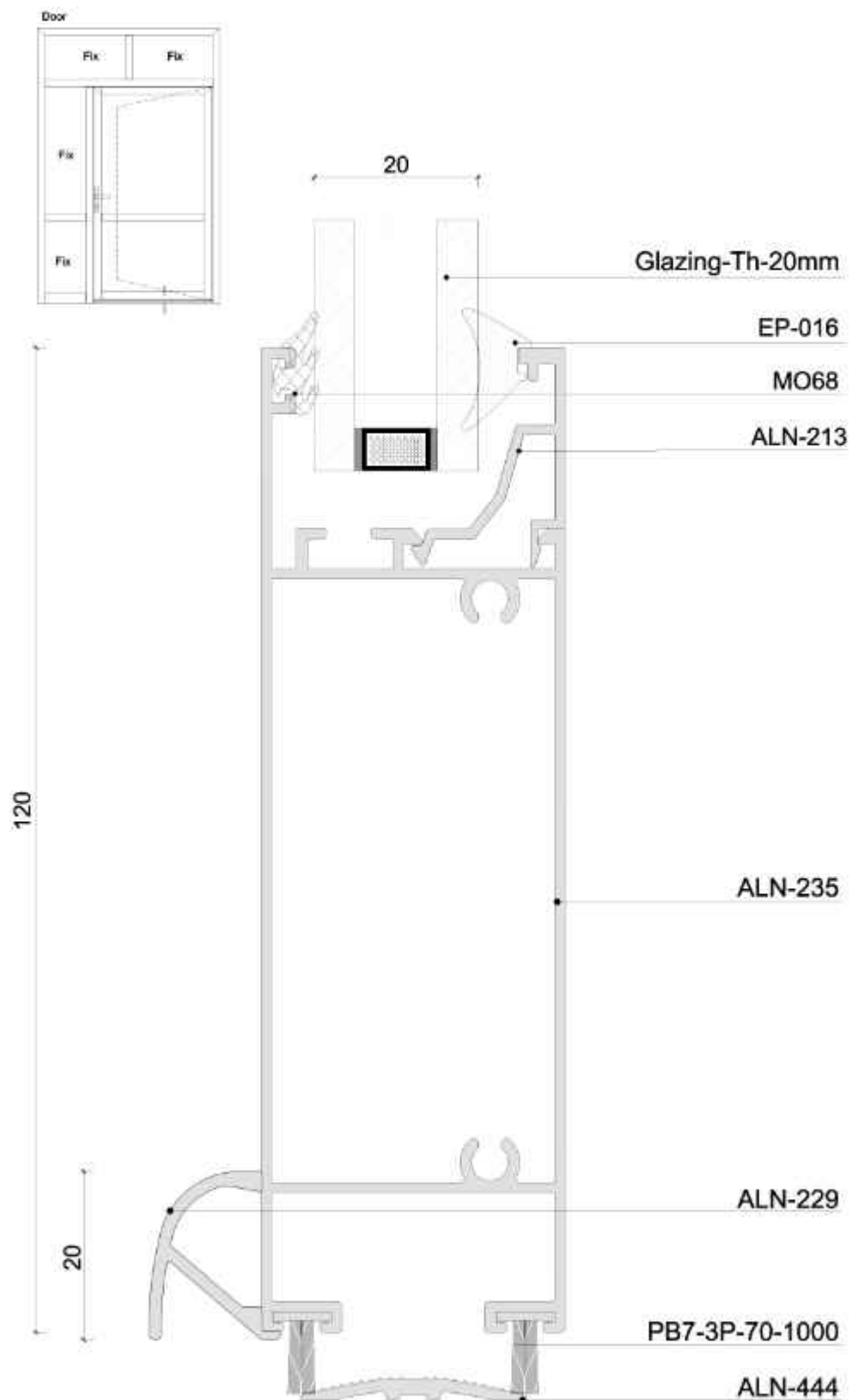


# Hinged System 47 & 59 Series Fabrication Details



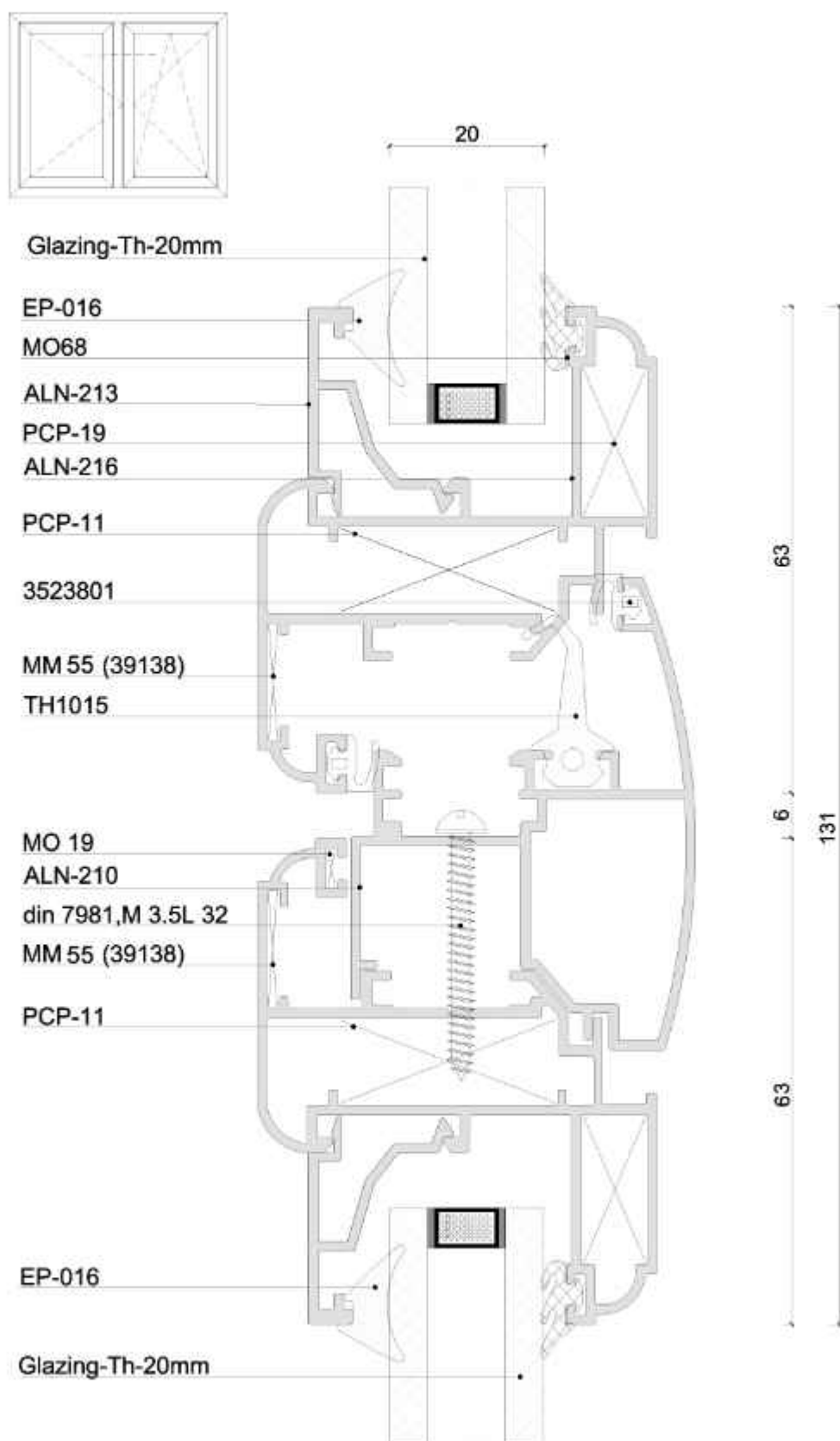


## Hinged System 47 & 59 Series Fabrication Details



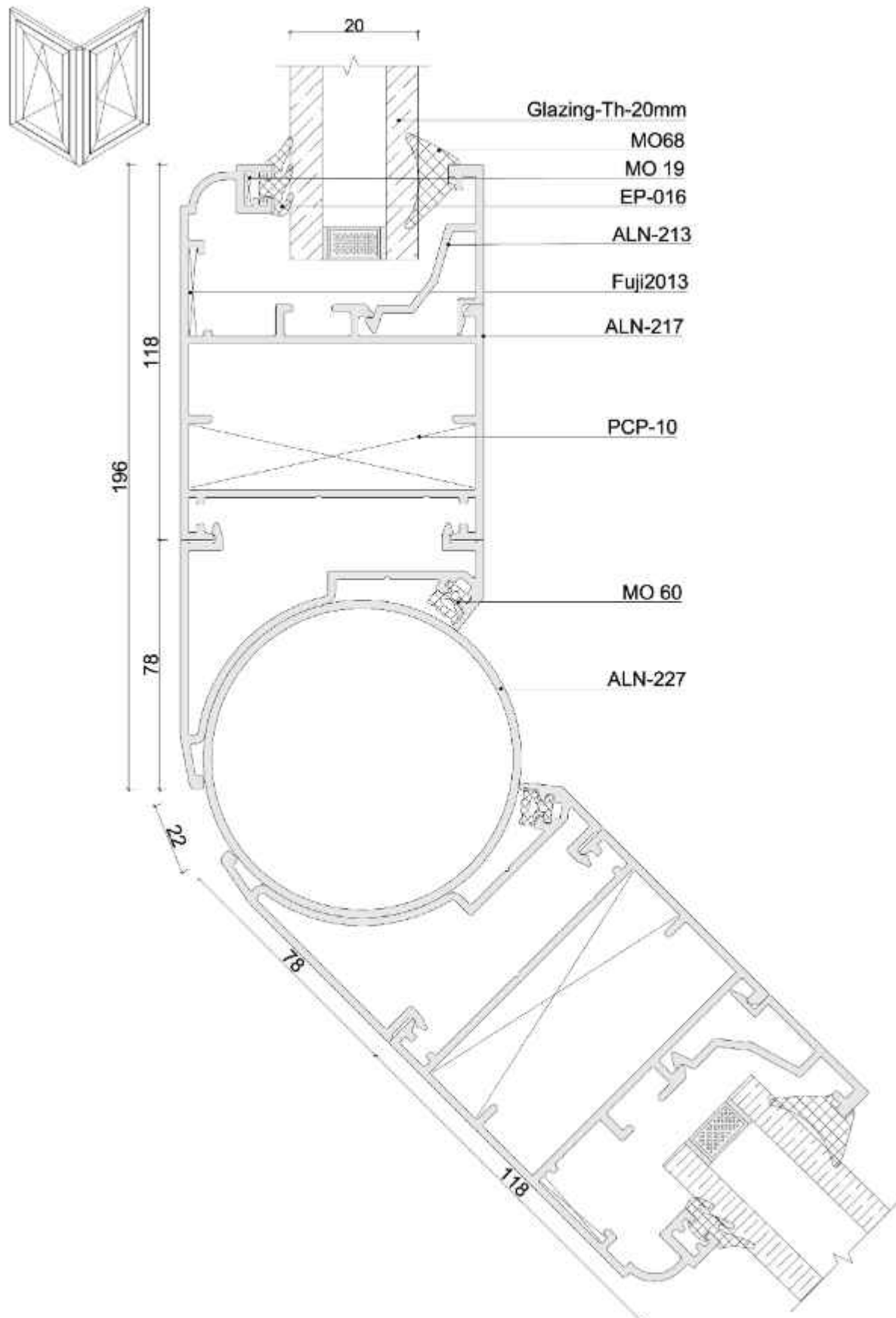
# Hinged System 47 & 59 Series

## Fabrication Details



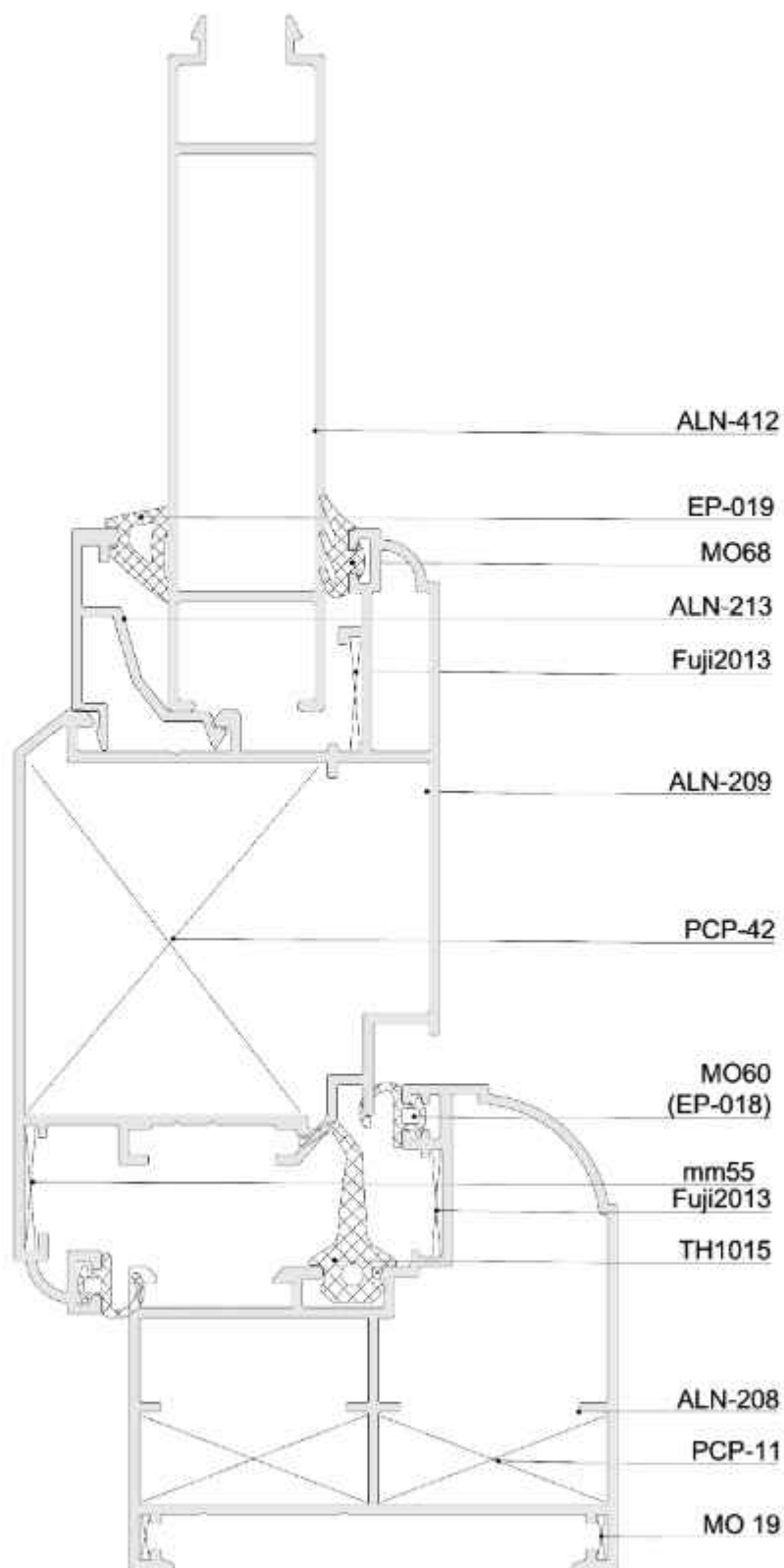


## Hinged System 47 & 59 Series Fabrication Details



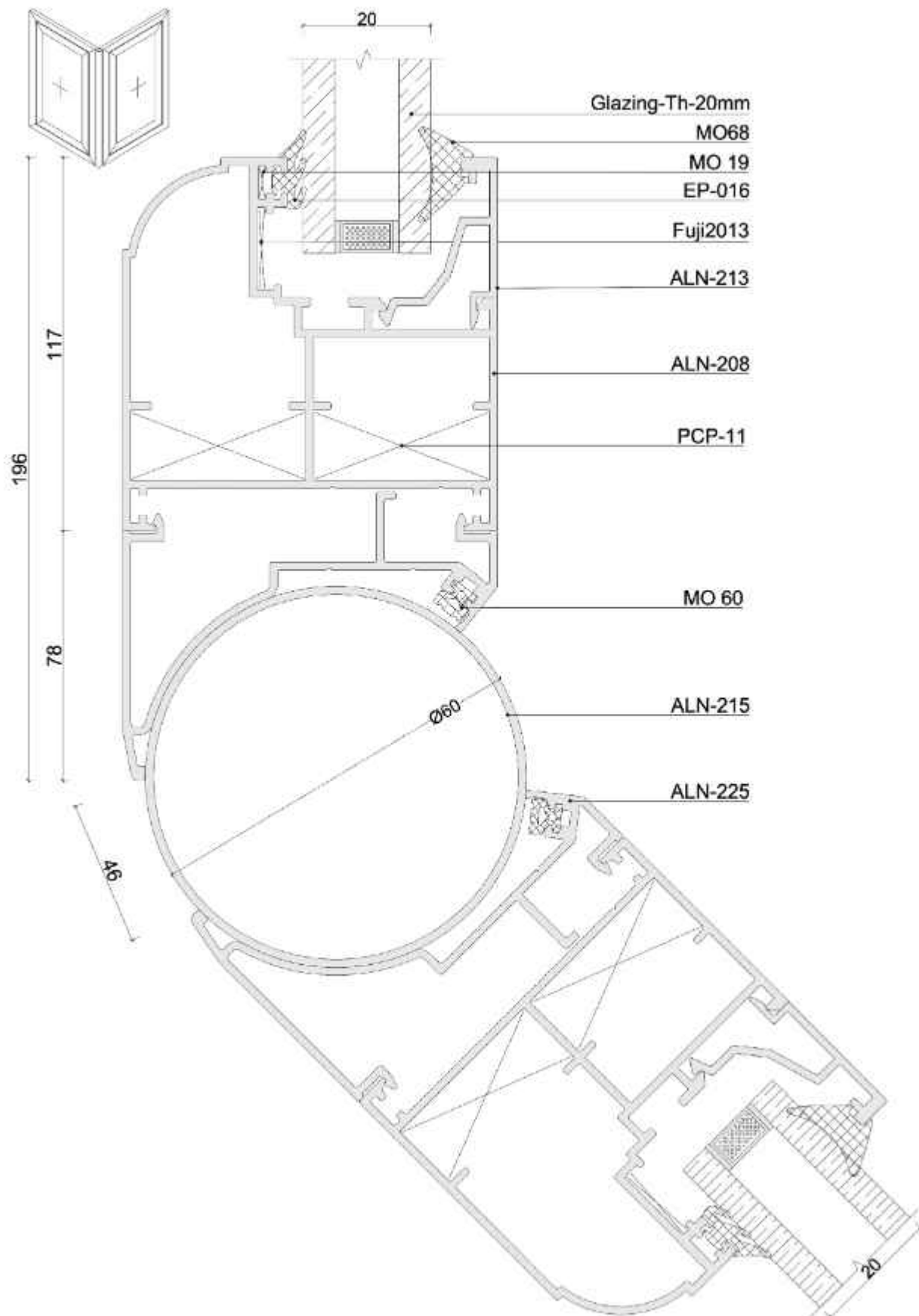
## Hinged System 47 & 59 Series

### Fabrication Details



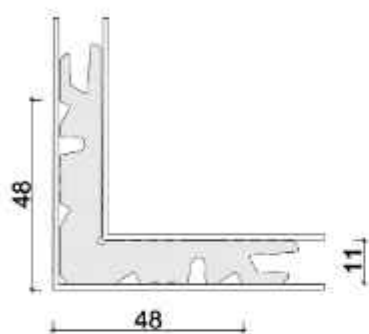


## Hinged System 47 & 59 Series Fabrication Details

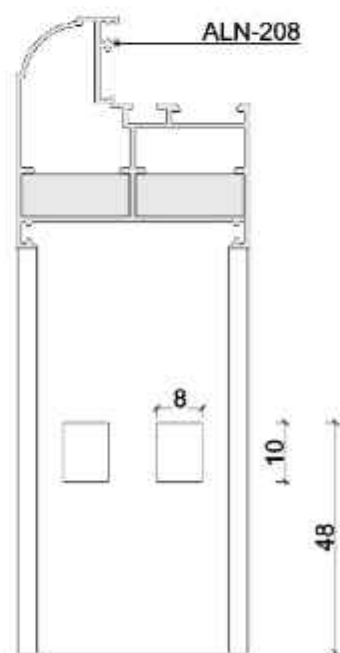
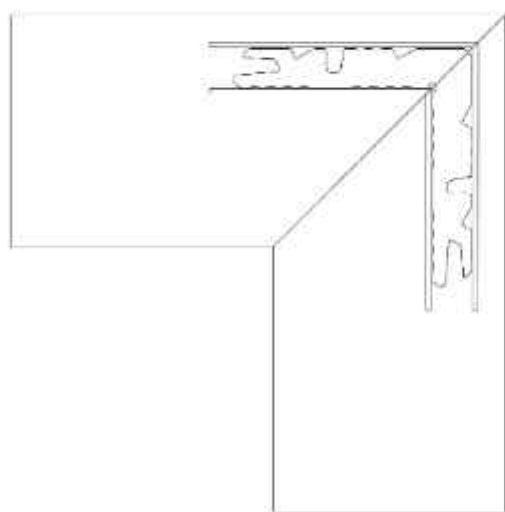
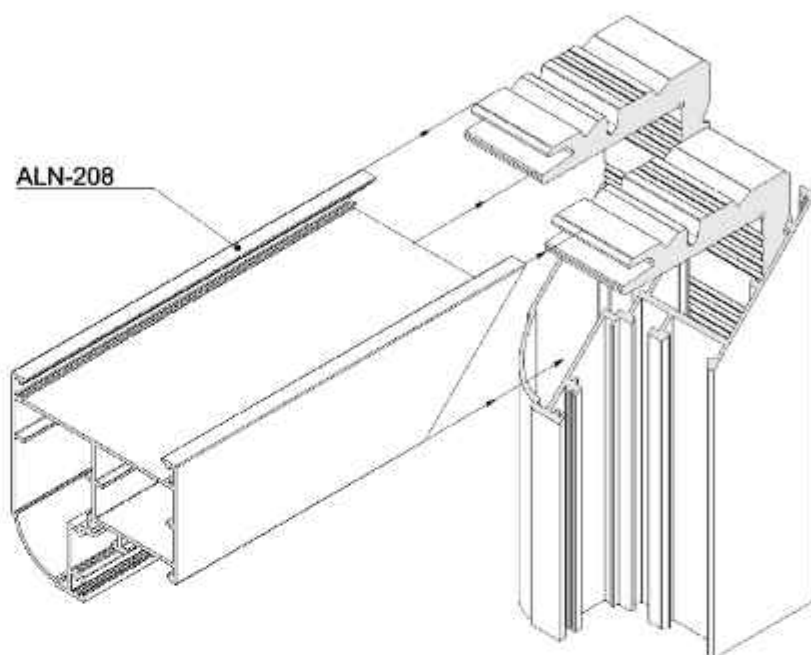


# Hinged System 47 & 59 Series

## Assembly Drawing



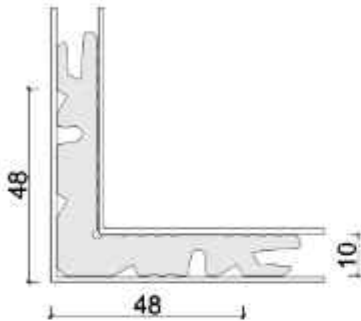
PCP-11 / 26 mm



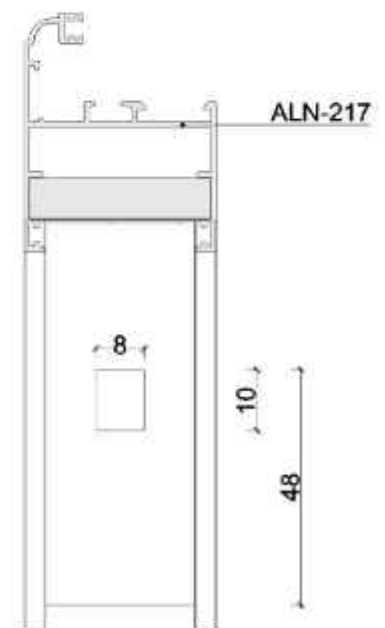
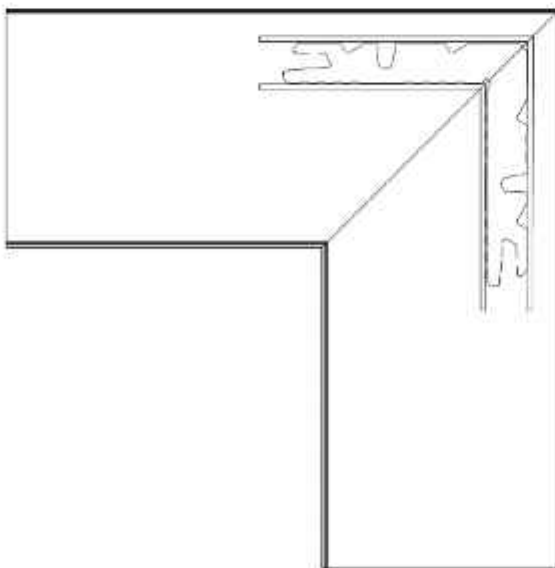
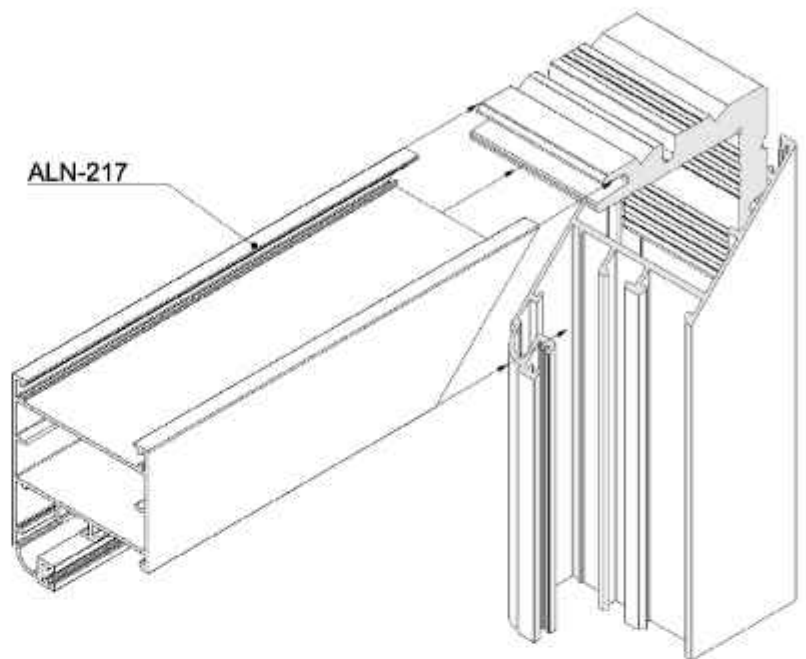


# Hinged System 47 & 59 Series Assembly Drawing

ALN-217

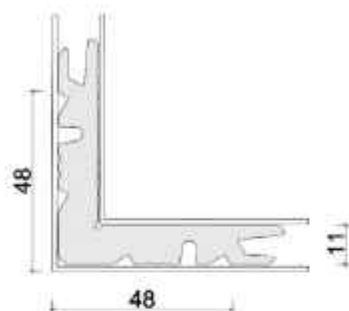


PCP-10 / 44 mm

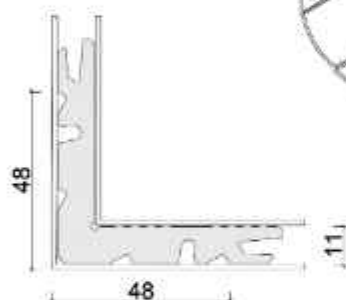


# Hinged System 47 & 59 Series Assembly Drawing

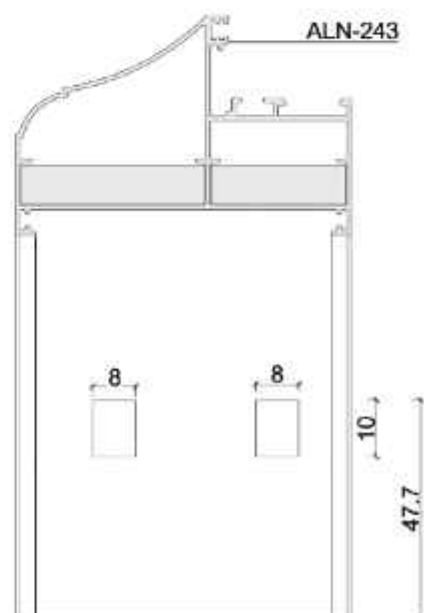
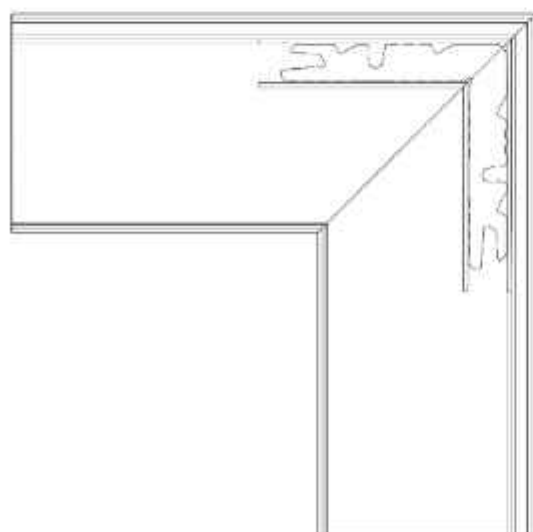
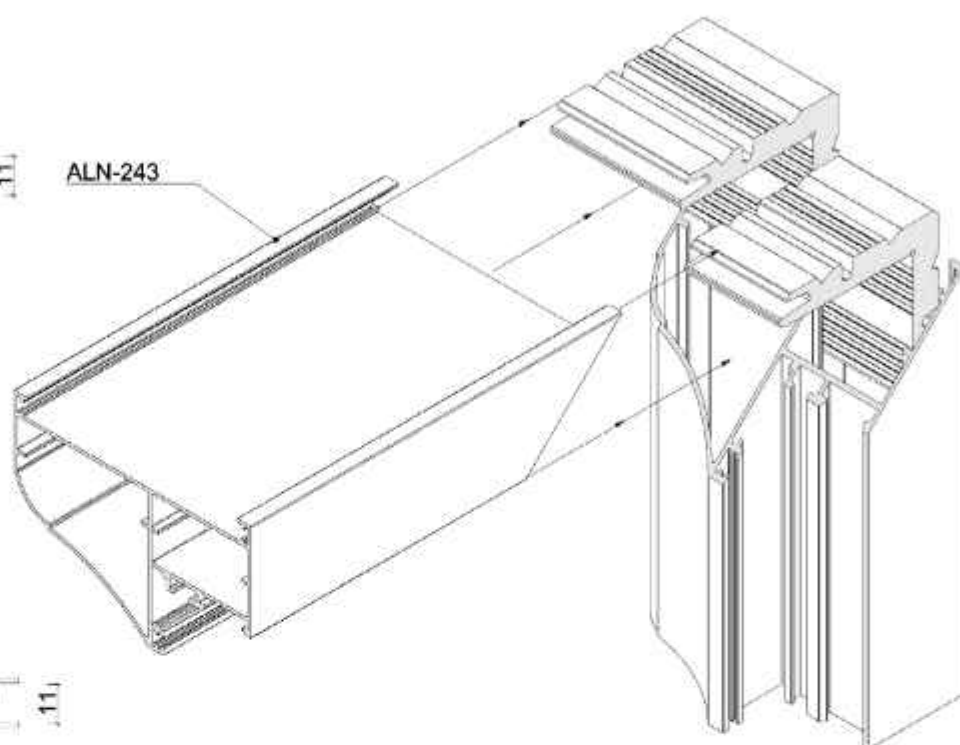
ALN-243



PCP-11 / 36 mm

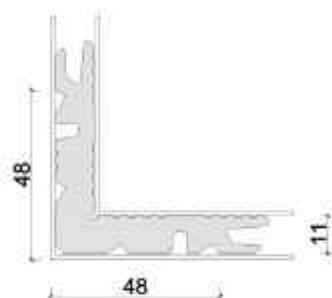


PCP-11 / 49 mm

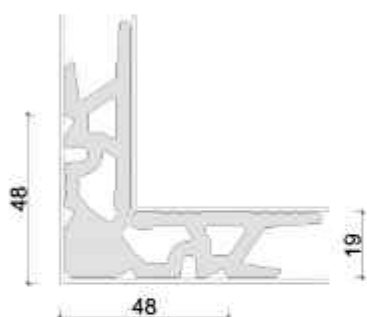




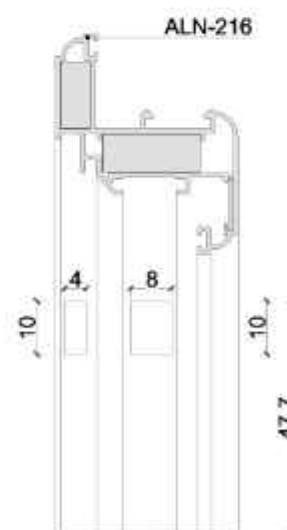
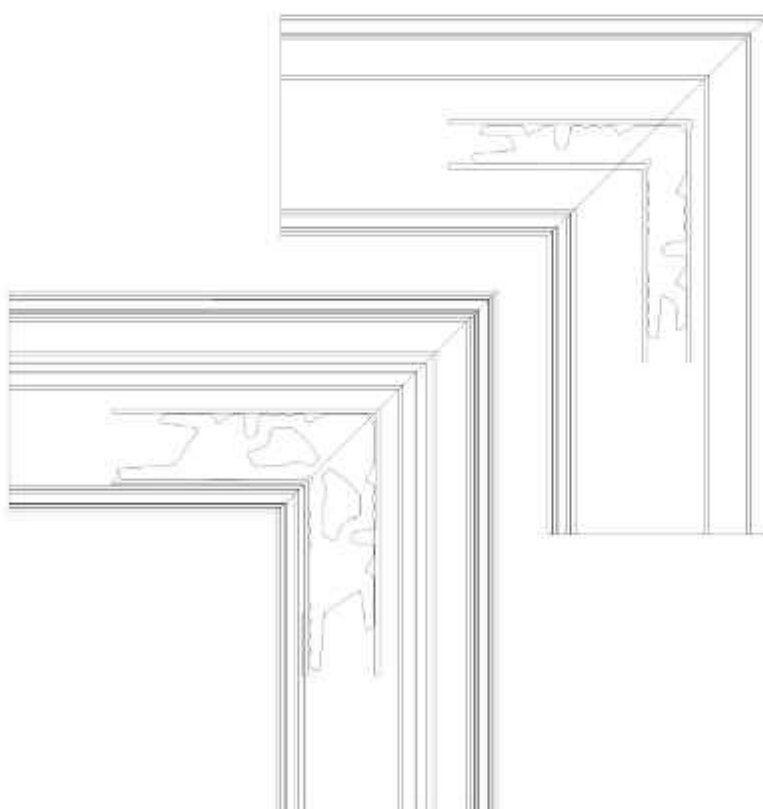
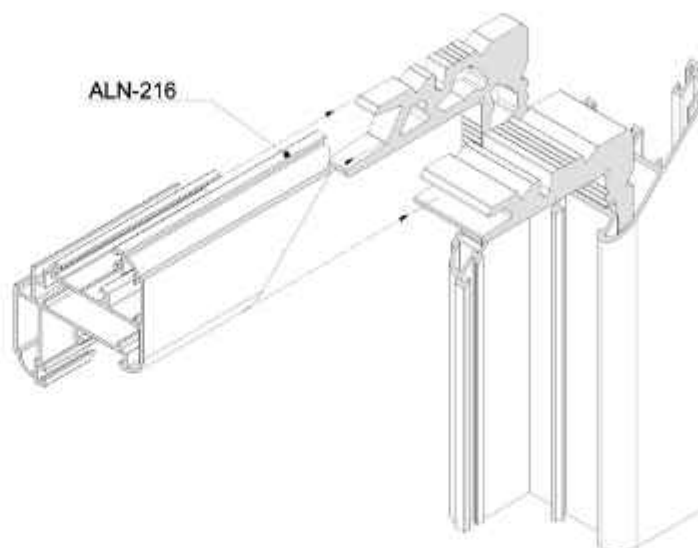
# Hinged System 47 & 59 Series Assembly Drawing



PCP-11 / 27 mm

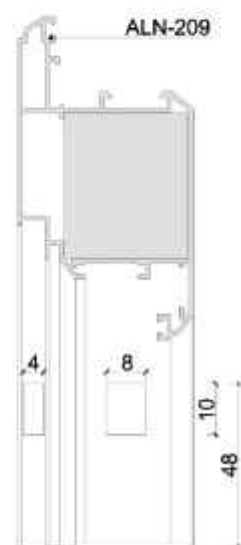
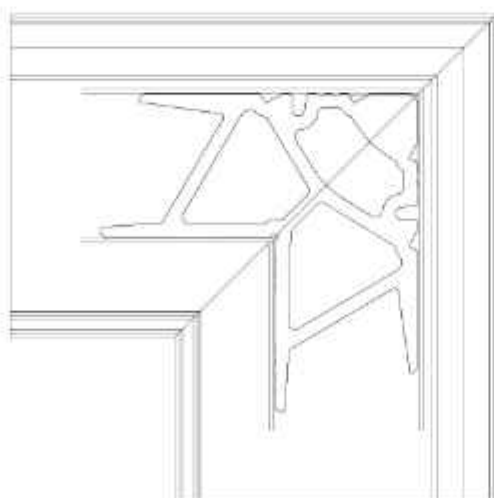
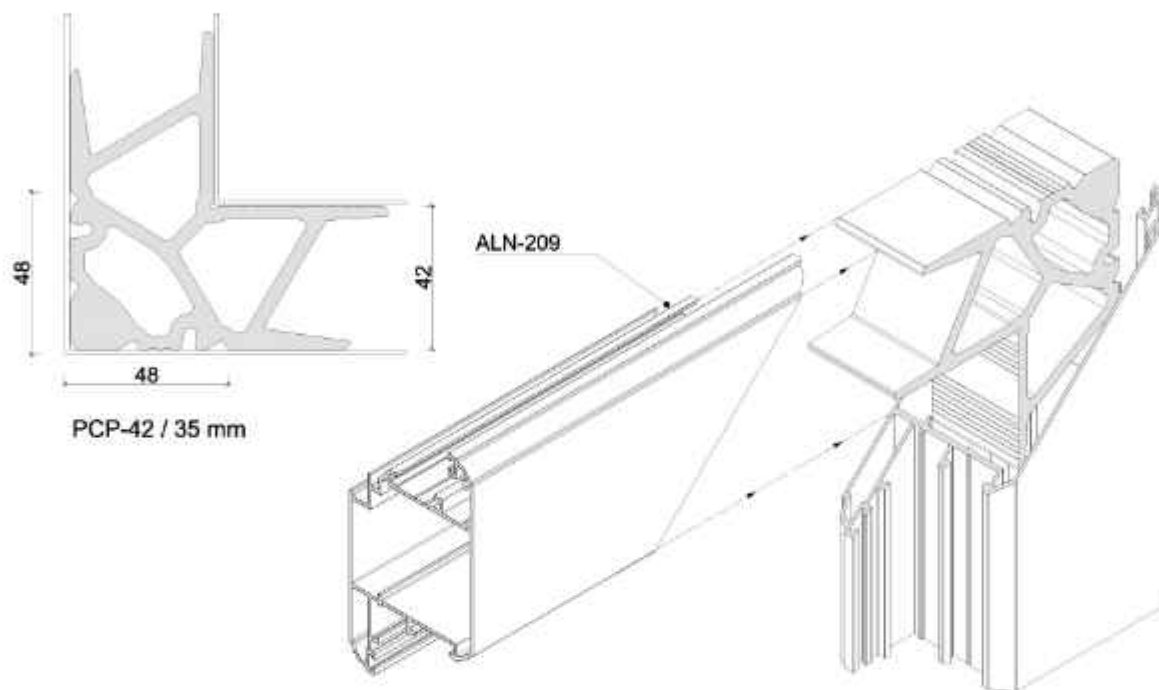


PCP-19 / 8 mm



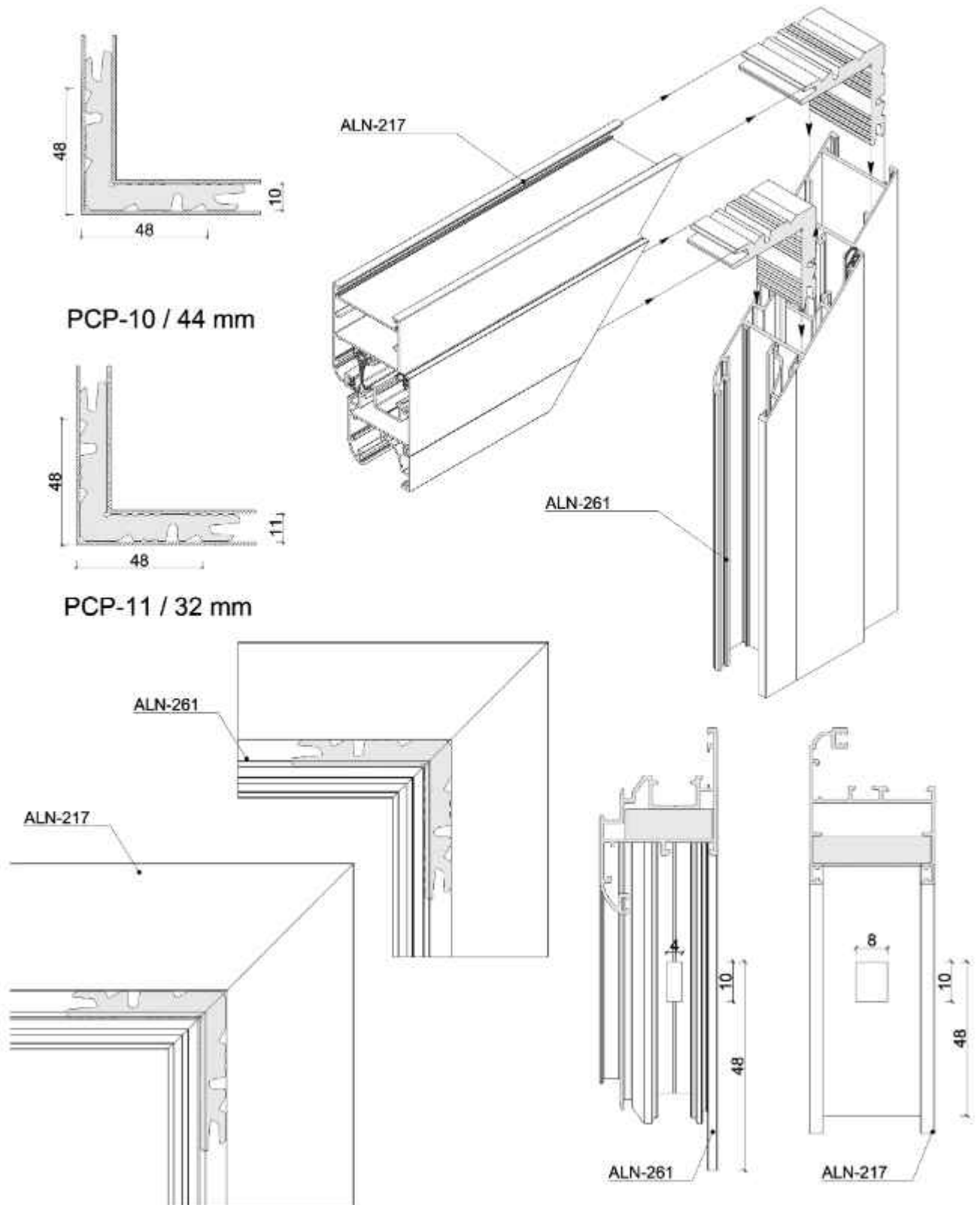
# Hinged System 47 & 59 Series

## Assembly Drawing



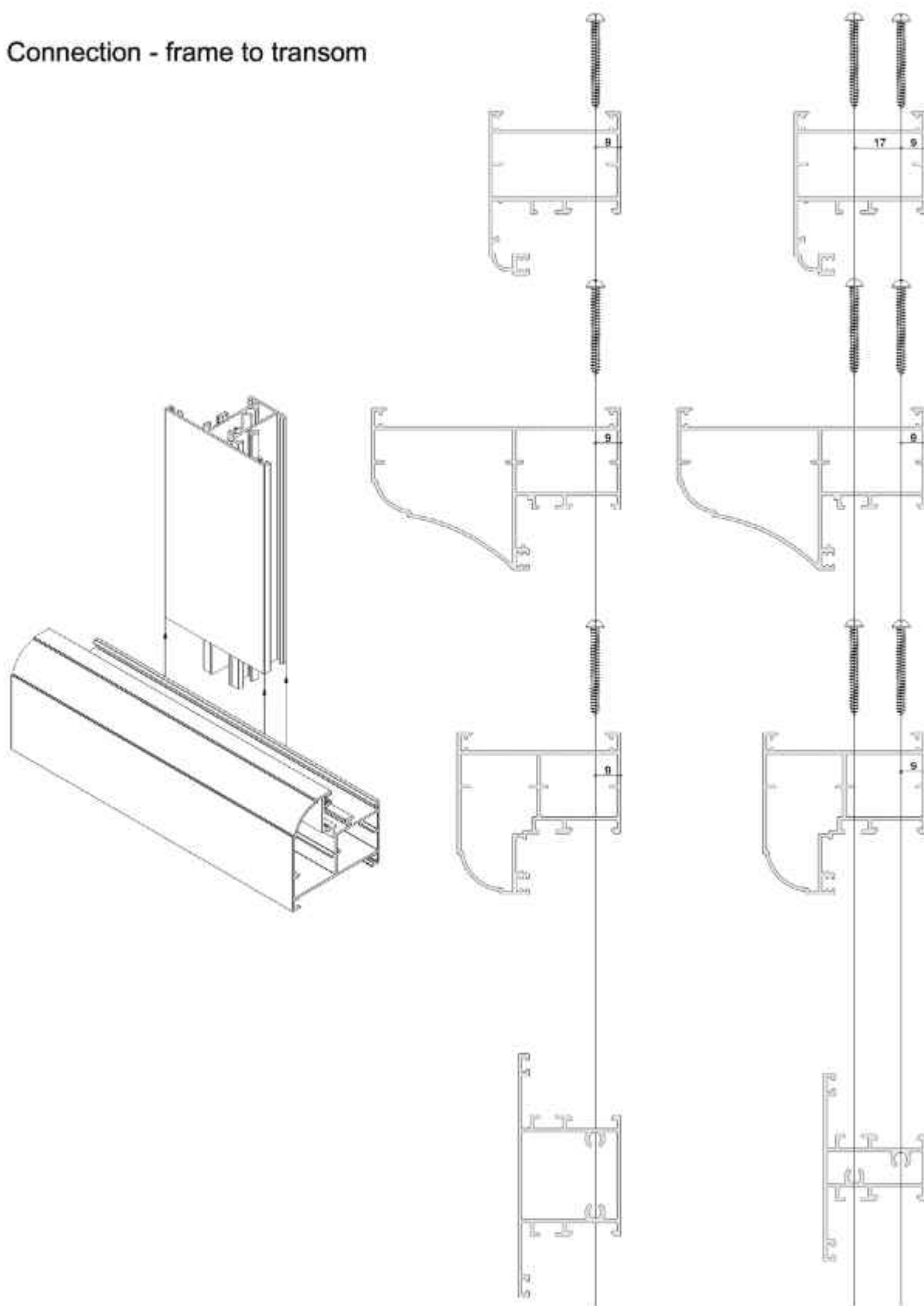


# Hinged System 47 & 59 Series Assembly Drawing



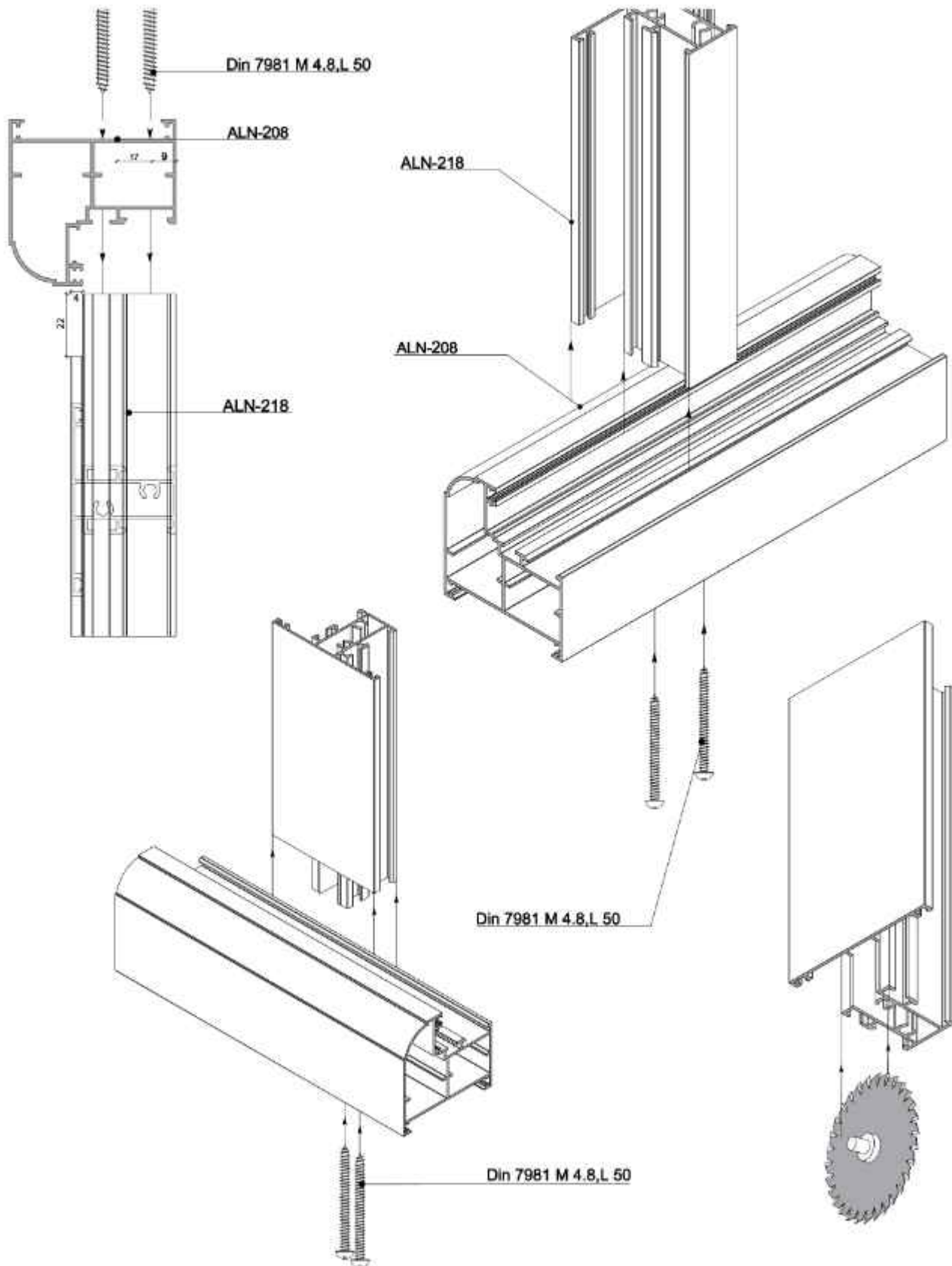
# Hinged System 47 & 59 Series Assembly Drawing

## Connection - frame to transom

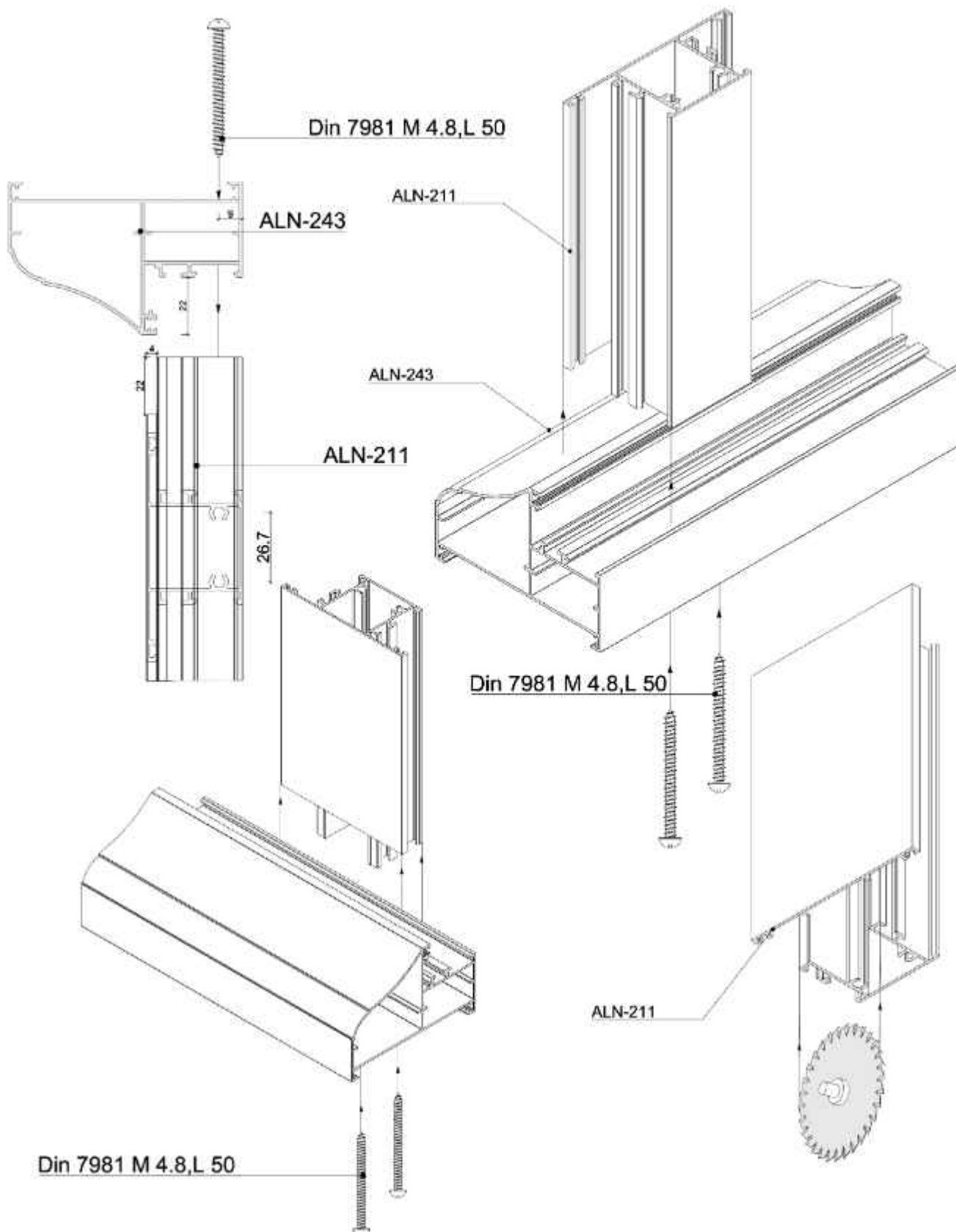




# Hinged System 47 & 59 Series Assembly Drawing

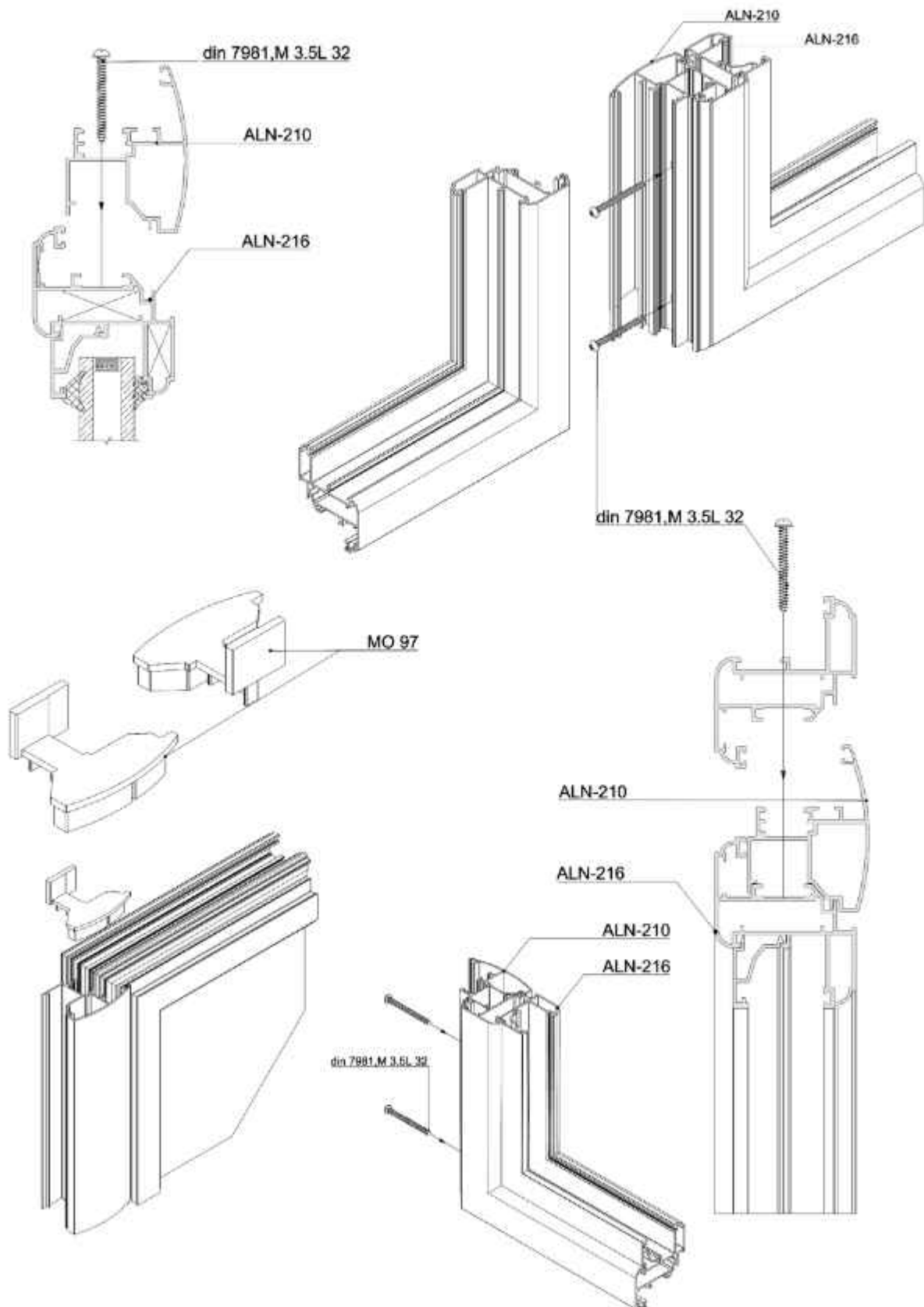


# Hinged System 47 & 59 Series Assembly Drawing





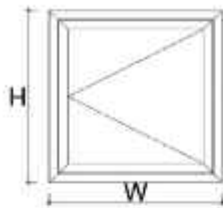
# Hinged System 47 & 59 Series Assembly Drawing



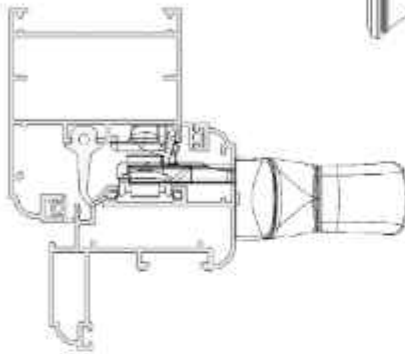
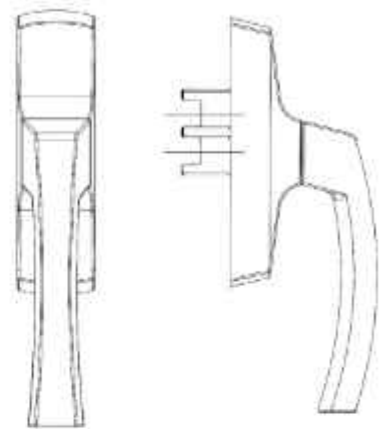




## Hinged System 47 & 59 Series Hardware Installation

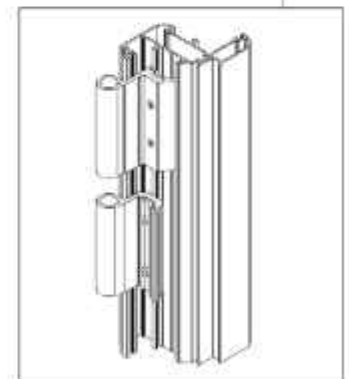
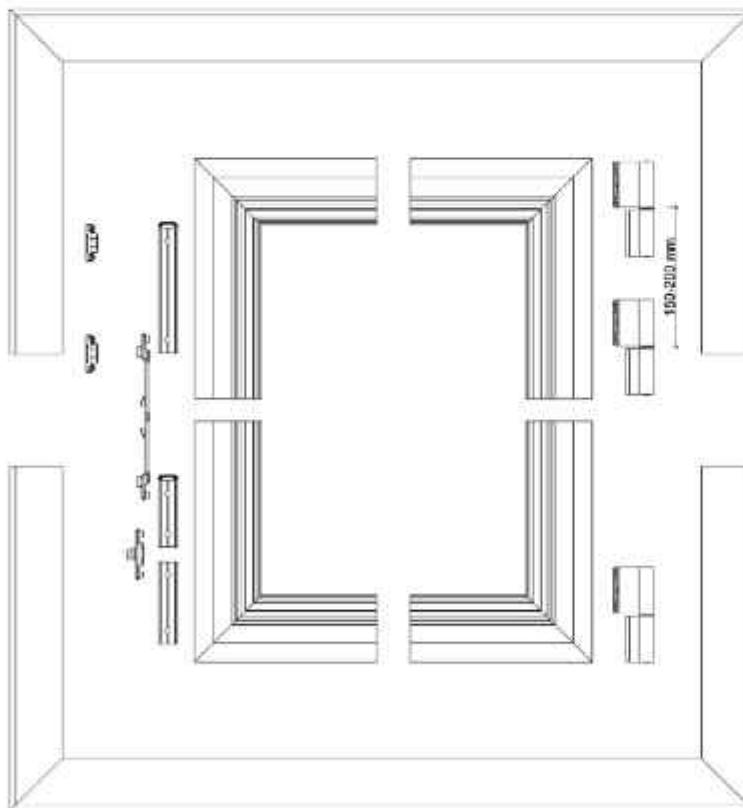
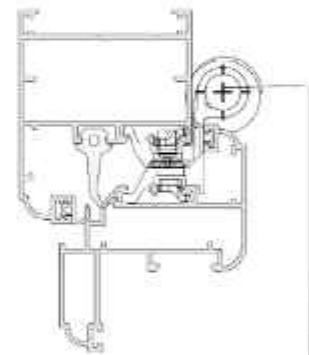


Machining for handle



$$1200 \geq H$$

$$1200 \geq W$$

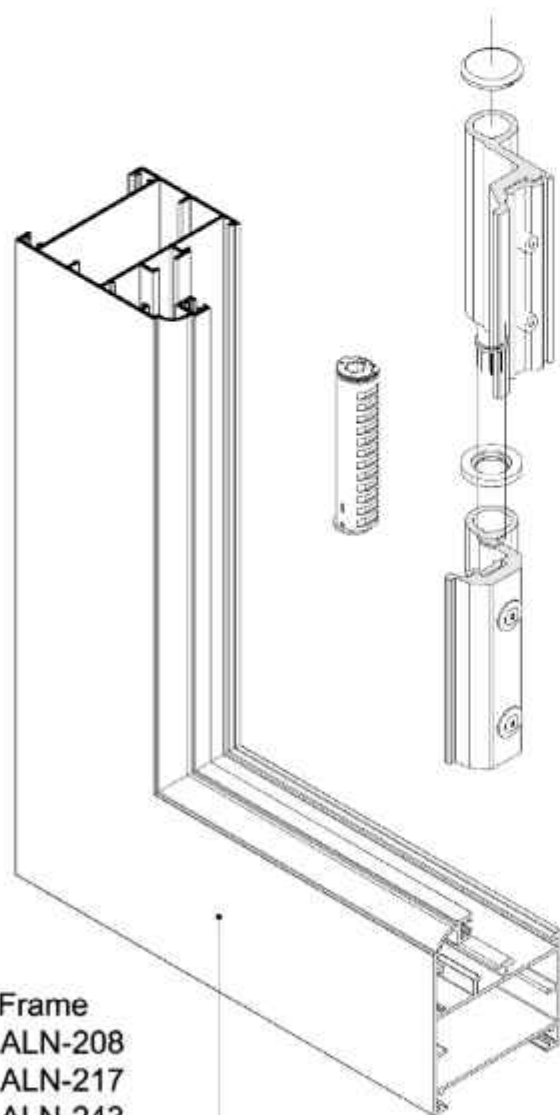
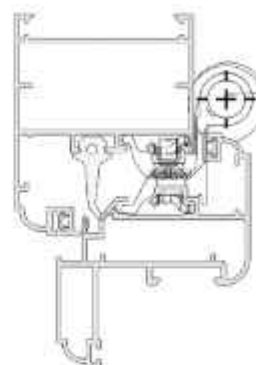
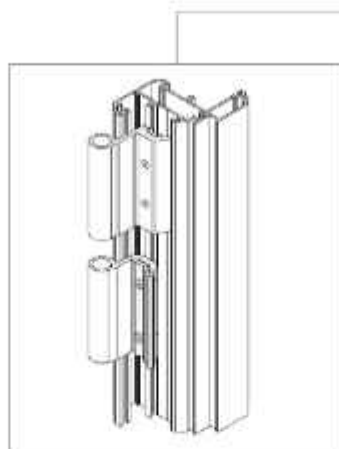
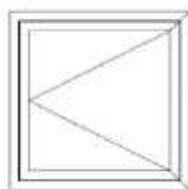


Installation of turn hardware

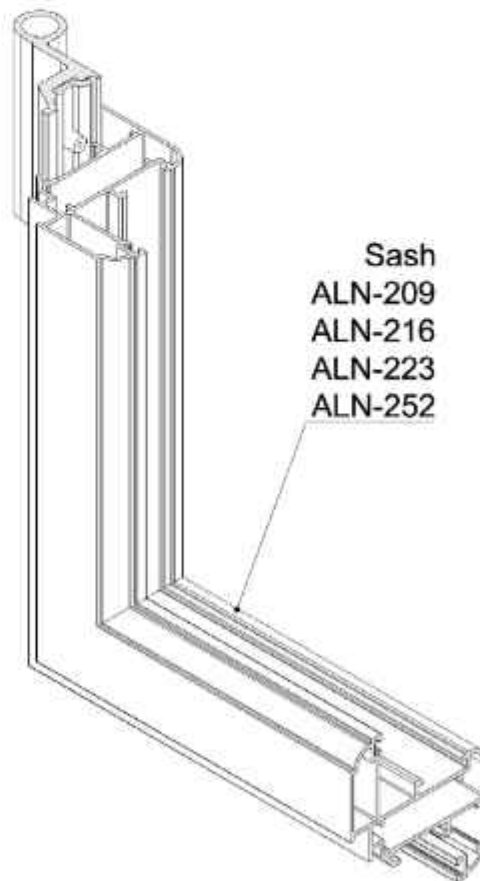


## Hinged System 47 & 59 Series

### Hardware Installation



Frame  
ALN-208  
ALN-217  
ALN-243



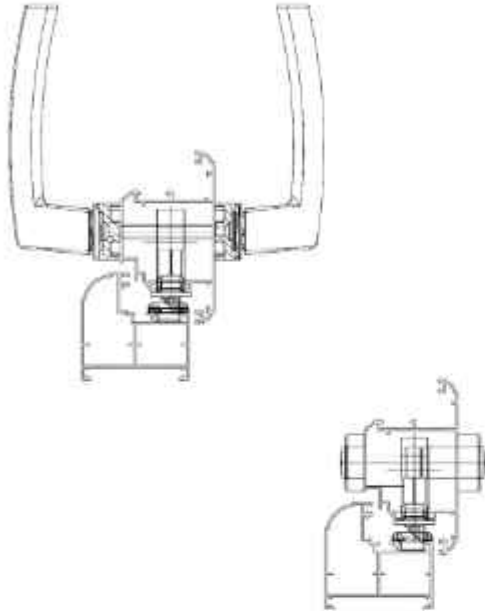
Sash  
ALN-209  
ALN-216  
ALN-223  
ALN-252

Installation of window hinges

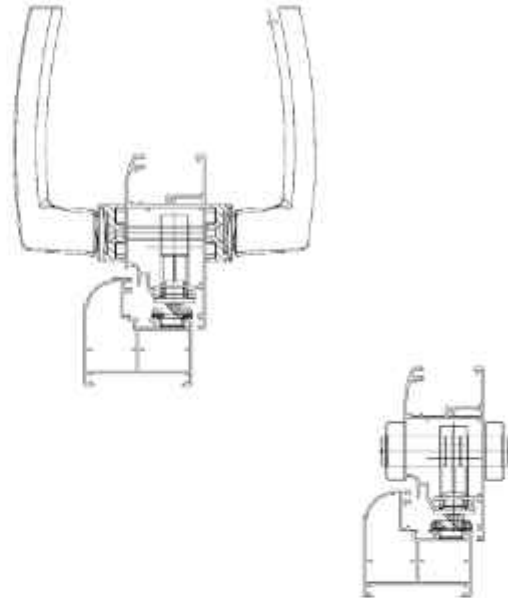


## Hinged System 47 & 59 Series Hardware Installation

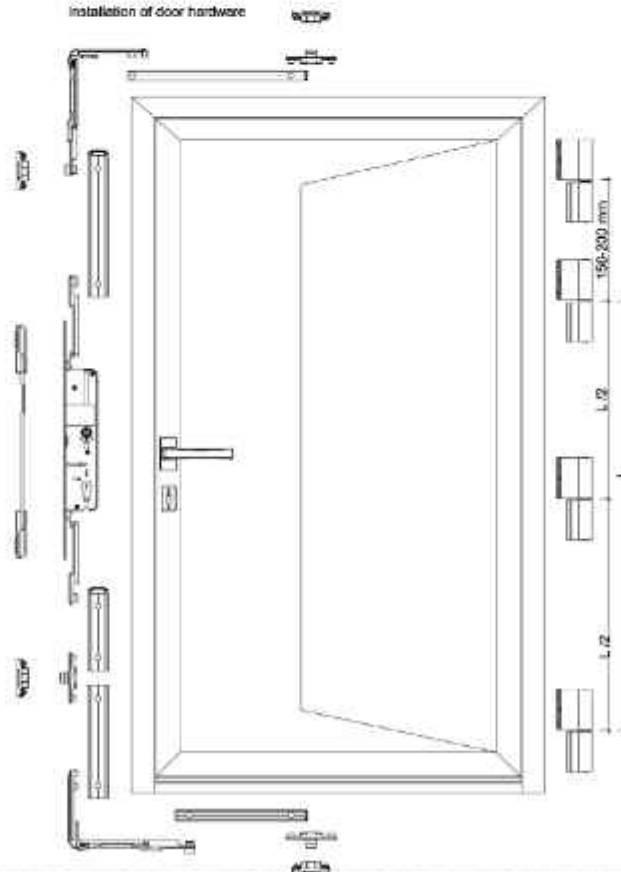
### Outward opening



### Inward opening



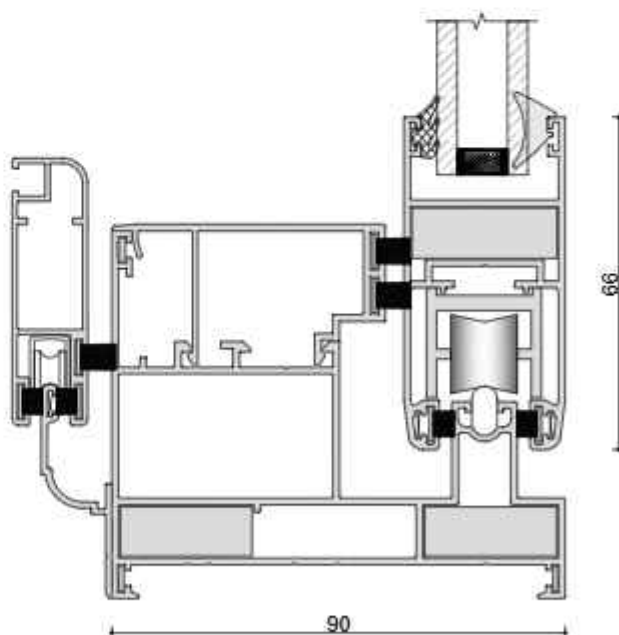
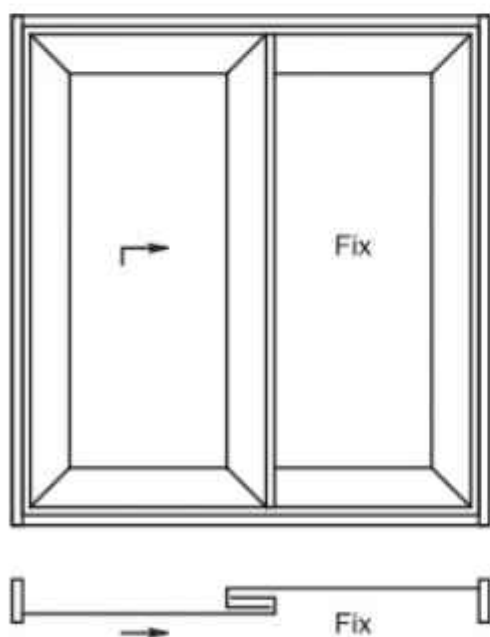
Installation of door hardware





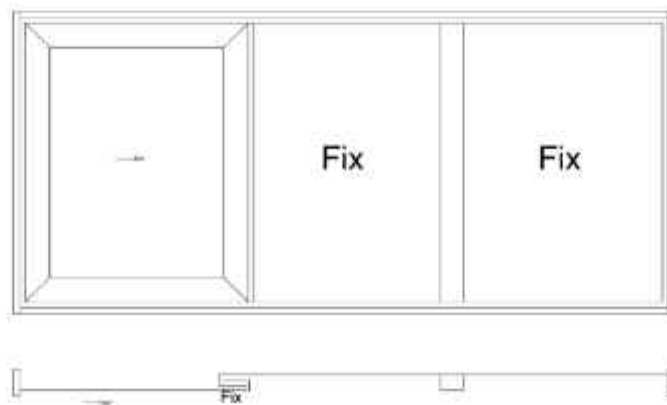
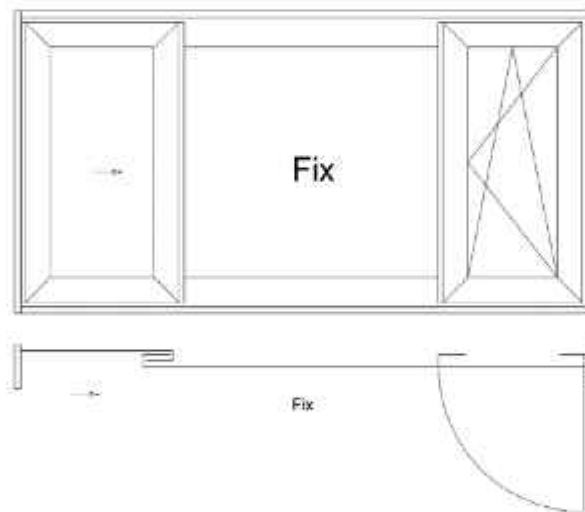
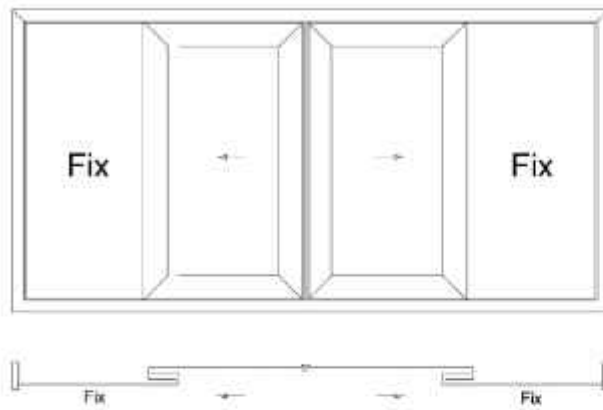
## Monorail Sliding System 90 Series

|                           |                  |
|---------------------------|------------------|
| Profile width:            | 90 mm            |
| Vent width:               | 32 mm            |
| Rubber description:       | EPDM DIN 7863    |
| Glass thickness:          | 8 -14 -16 -18 mm |
| Aluminum alloy extrusion: | EN AW 6063 T5    |
| Safety drainage system    |                  |
| Various typologies        |                  |





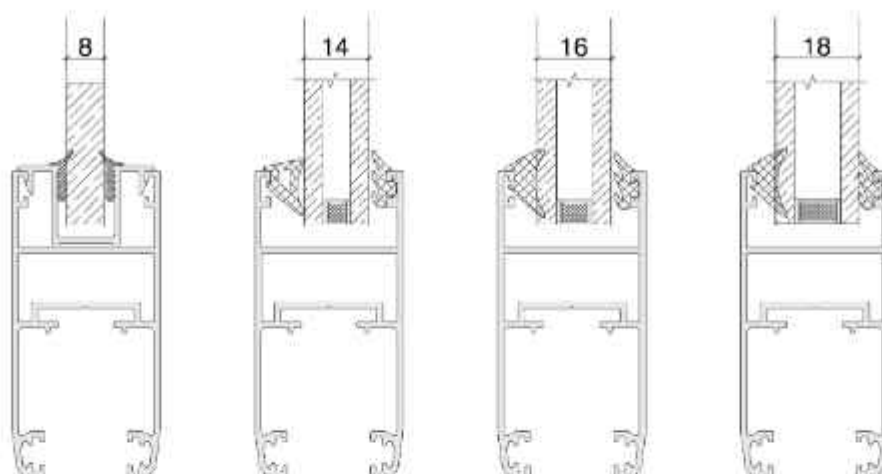
## Monorail Sliding System 90 Series Typologies



## Monorail Sliding System 90 Series

### Glazing Table

ALN - 203



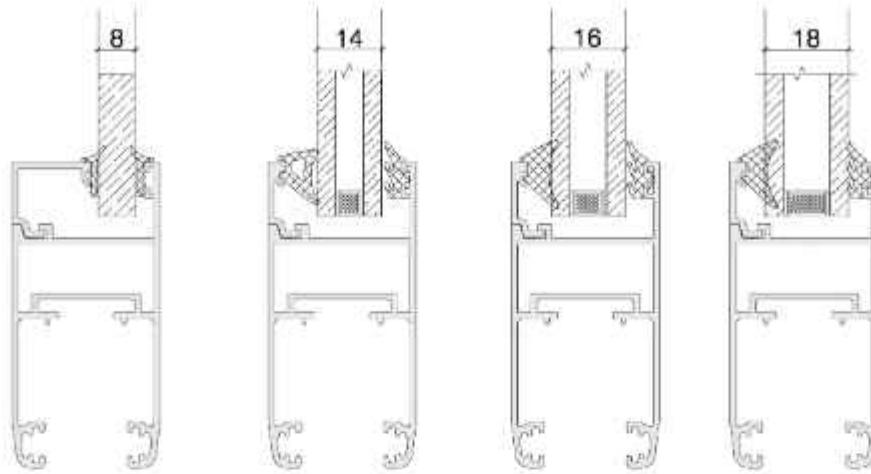
| Glazing Thickness | Gasket Inside                                                                                 | Gasket Outside                                                                                  |
|-------------------|-----------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|
| 8 mm              | <br>EP-015 | <br>EP-015 |
| 14 mm             | <br>EP-019 | <br>MO68   |
| 16 mm             | <br>EP-016 | <br>MO68   |
| 18 mm             | <br>EP-016 | <br>MO68   |



## Monorail Sliding System 90 Series

### Glazing Table

ALN - 231



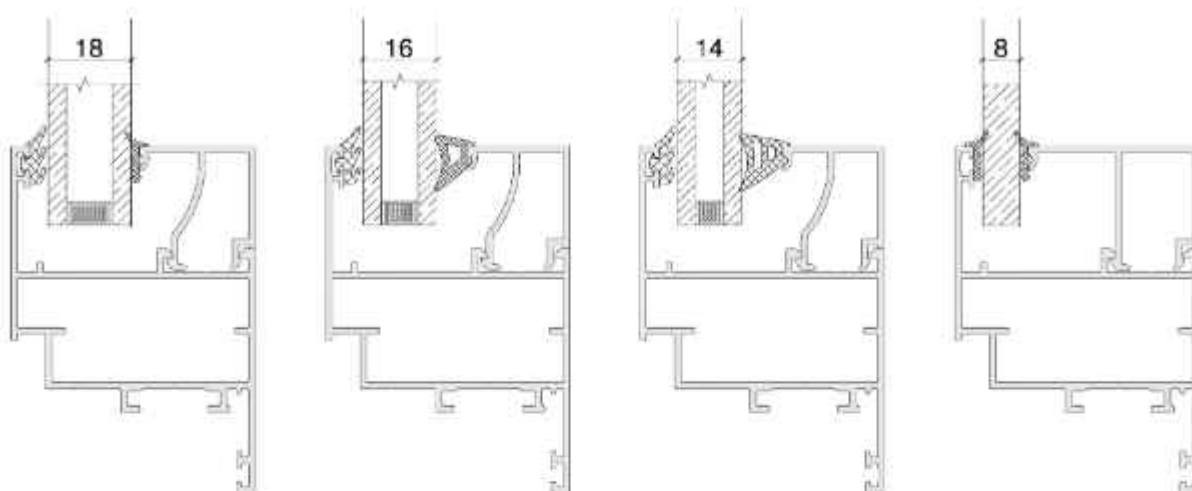
| Glazing Thickness | Gasket Inside                                                                                 | Gasket Outside                                                                                | Glazing Bead                                                                                     |
|-------------------|-----------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|
| 8 mm              | <br>EP-015 | <br>EP-015 | <br>ALN-234 |
| 14 mm             | <br>EP-019 | <br>MO68   | <br>ALN-233 |
| 16 mm             | <br>EP-016 | <br>MO68   | <br>ALN-233 |
| 18 mm             | <br>EP-016 | <br>MO68   | <br>ALN-233 |



## Monorail Sliding System 90 Series

### Glazing Table

ALN - 276



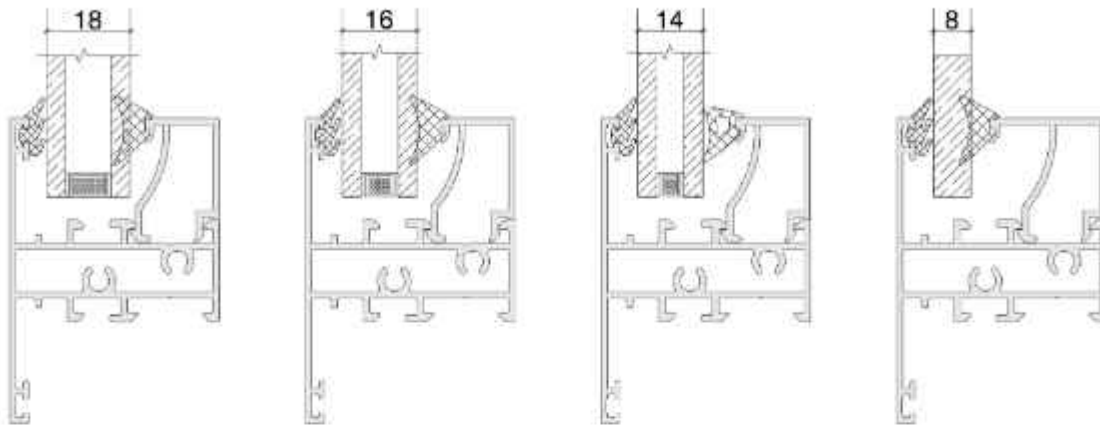
| Glazing Thickness | Gasket Inside                                                                                 | Gasket Outside                                                                                | Glazing Bead                                                                                     |
|-------------------|-----------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|
| 8 mm              | <br>EP-015 | <br>EP-015 | <br>ALN-497 |
| 14 mm             | <br>EP-021 | <br>MO68   | <br>ALN-323 |
| 16 mm             | <br>EP-016 | <br>MO68   | <br>ALN-323 |
| 18 mm             | <br>EP-015 | <br>MO68   | <br>ALN-421 |



## Monorail Sliding System 90 Series

Glazing Table

ALN - 274



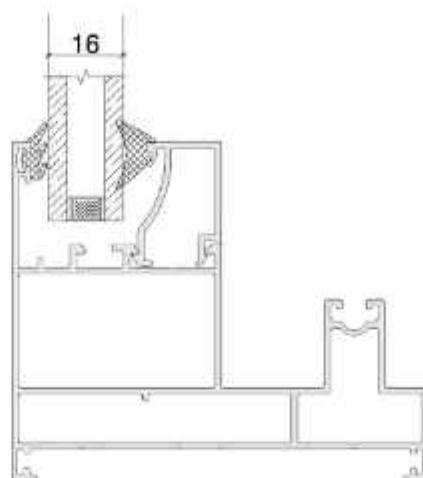
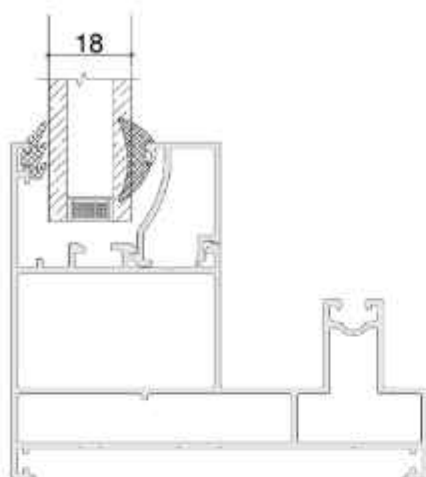
| Glazing Thickness | Gasket Inside                                                                                 | Gasket Outside                                                                              | Glazing Bead                                                                                     |
|-------------------|-----------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|
| 8 mm              | <br>EP-016 | <br>MO68 | <br>ALN-421 |
| 14 mm             | <br>EP-019 | <br>MO68 | <br>ALN-423 |
| 16 mm             | <br>EP-016 | <br>MO68 | <br>ALN-423 |
| 18 mm             | <br>EP-016 | <br>MO68 | <br>ALN-423 |



## Monorail Sliding System 90 Series

### Glazing Table

ALN - 271



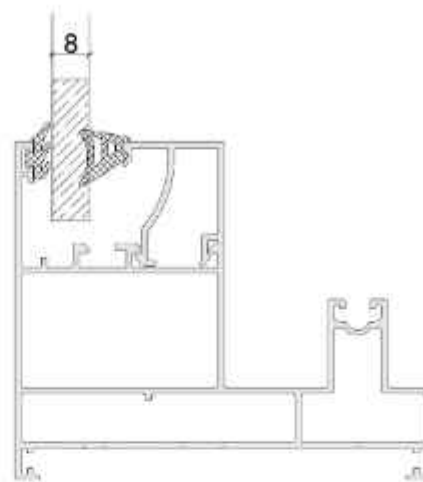
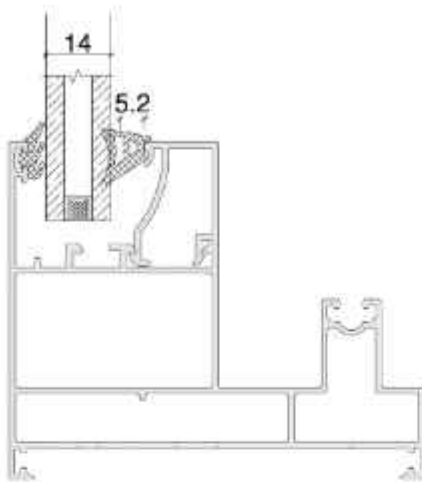
| Glazing Thickness | Gasket Inside                                                                                           | Gasket Outside                                                                              | Glazing Bead                                                                                     |
|-------------------|---------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|
| 8 mm              | <br>EP-021           | <br>MO68 | <br>ALN-323 |
| 14 mm             | <br>EP-019           | <br>MO68 | <br>ALN-423 |
| 16 mm             | <br>EP-016           | <br>MO68 | <br>ALN-423 |
| 18 mm             | <br>1008/Gasket 3 mm | <br>MO68 | <br>ALN-423 |



## Monorail Sliding System 90 Series

Glazing Table

ALN - 271

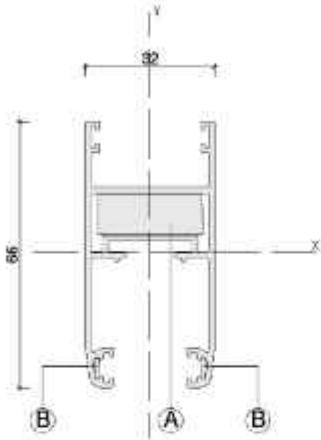
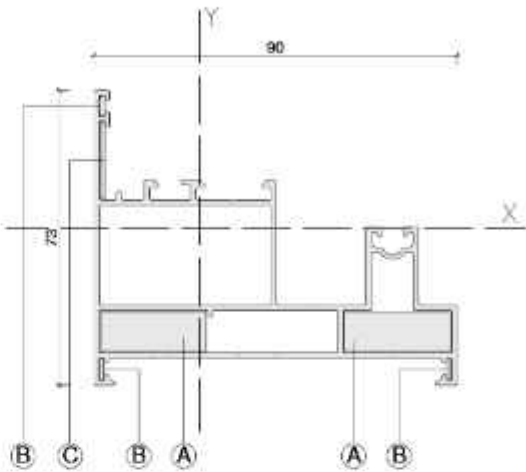
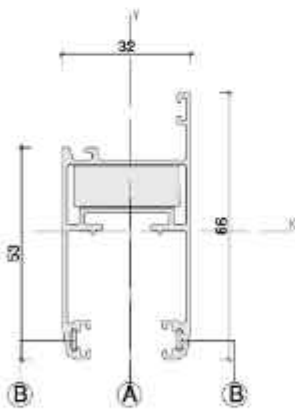
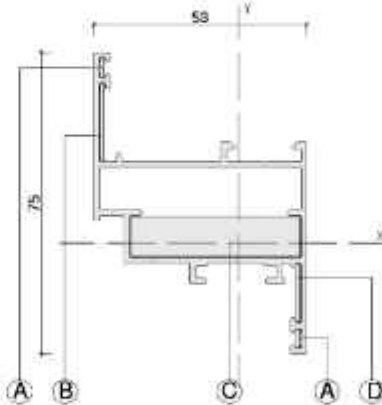


| Glazing Thickness | Gasket Inside                                                                                 | Gasket Outside                                                                              | Glazing Bead                                                                                     |
|-------------------|-----------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|
| 8 mm              | <br>EP-021 | <br>MO68 | <br>ALN-323 |
| 14 mm             | <br>EP-021 | <br>MO68 | <br>ALN-423 |
| 16 mm             | <br>EP-016 | <br>MO68 | <br>ALN-423 |
| 18 mm             | <br>EP-015 | <br>MO68 | <br>ALN-423 |



## Monorail Sliding System 90 Series

### Profile & Accessories Information

|                                                                                     |                                                                                                       |                                                                                      |                                                                                                         |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------|
|    |                                                                                                       |    |                                                                                                         |
| $I_x$ : 11.20 cm <sup>4</sup>                                                       | $I_y$ : 5.52 cm <sup>4</sup>                                                                          | $I_x$ : 17.90 cm <sup>4</sup>                                                        | $I_y$ : 51.05 cm <sup>4</sup>                                                                           |
| Sash : ALN-203                                                                      | A: PCP-10 / 26 mm  | Frame : ALN-271                                                                      | A: PCP-10 / 26 mm  |
| Weight: 872 gr/m                                                                    | B: MO19            | Weight: 1537 gr/m                                                                    | B: MO19            |
|                                                                                     |                                                                                                       |                                                                                      | C: fuji 2000       |
|  |                                                                                                       |  |                                                                                                         |
| $I_x$ : 9.64 cm <sup>4</sup>                                                        | $I_y$ : 5.01 cm <sup>4</sup>                                                                          | $I_x$ : 9.75 cm <sup>4</sup>                                                         | $I_y$ : 13.54 cm <sup>4</sup>                                                                           |
| Sash : ALN-231                                                                      | A: PCP-10 / 26 mm  | Sash : ALN-276                                                                       | A: MO19            |
| Weight: 832 gr/m                                                                    | B: MO19            | Weight: 912 gr/m                                                                     | B: fuji 2000       |
|                                                                                     |                                                                                                       |                                                                                      | C: PCP-10 / 42 mm  |
|                                                                                     |                                                                                                       |                                                                                      | D: MM 77           |



## Monorail Sliding System 90 Series

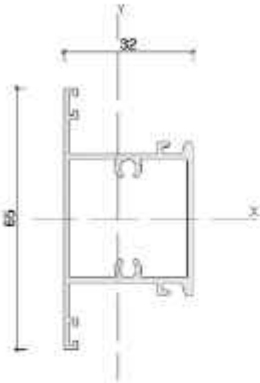
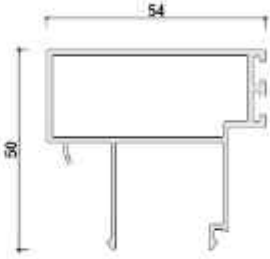
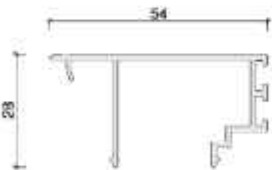
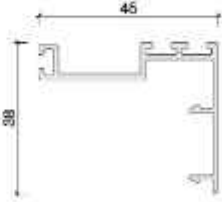
### Profile & Accessories Information

|                               |                                        |                              |                               |
|-------------------------------|----------------------------------------|------------------------------|-------------------------------|
|                               |                                        |                              |                               |
| $I_x$ : 11.96 cm <sup>4</sup> | $I_y$ : 35.26 cm <sup>4</sup>          | $I_x$ : 6.03 cm <sup>4</sup> | $I_y$ : 21.30 cm <sup>4</sup> |
| Frame : ALN-243               | A: PCP-11 / 38 mm<br>B: PCP-11 / 49 mm | Transom : ALN-202            | —                             |
| Weight: 1170 gr/m             | C: fuji 2000<br>D: MO 19               | Weight: 918 gr/m             | —                             |
|                               |                                        |                              |                               |
| $I_x$ : 9.75 cm <sup>4</sup>  | $I_y$ : 13.54 cm <sup>4</sup>          | $I_x$ : 5.03 cm <sup>4</sup> | $I_y$ : 10.37 cm <sup>4</sup> |
| Transom : ALN-274             | —                                      | Transom : ALN-240            | —                             |
| Weight: 912 gr/m              | —                                      | Weight: 805 gr/m             | —                             |



## Monorail Sliding System 90 Series

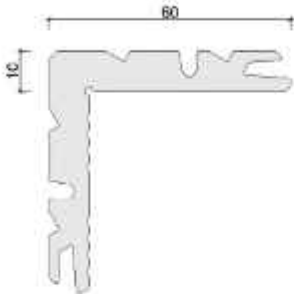
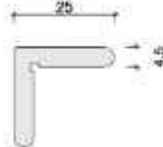
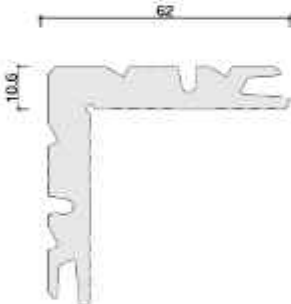
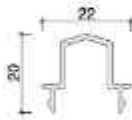
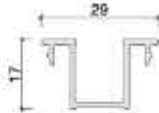
### Profile & Accessories Information

|                                                                                     |                          |                                                                                      |                   |
|-------------------------------------------------------------------------------------|--------------------------|--------------------------------------------------------------------------------------|-------------------|
|    |                          |    |                   |
| $x: 7.46 \text{ cm}^4$                                                              | $I_y: 3.94 \text{ cm}^4$ |                                                                                      |                   |
| Transom : ALN-232                                                                   | —                        |                                                                                      |                   |
| Weight: 721 gr/m                                                                    | —                        | Profile: ALN-273                                                                     | Weight : 759 gr/m |
|  |                          |  |                   |
| Profile: ALN-272                                                                    | Weight : 451 gr/m        | Profile: ALN-275                                                                     | Weight : 424 gr/m |



## Monorail Sliding System 90 Series

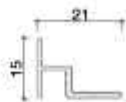
### Profile & Accessories Information

|                                                                                     |                    |                                                                                       |                  |
|-------------------------------------------------------------------------------------|--------------------|---------------------------------------------------------------------------------------|------------------|
|    |                    |    |                  |
| Corner joint: PCP-10                                                                | Weight : 2454 gr/m | Corner : MO 19 399012                                                                 | Weight: 533 gr/m |
|  |                    |  |                  |
| Corner joint: PCP-11                                                                | Weight : 2549 gr/m | Profile : ALN-205                                                                     | Weight: 176 gr/m |
|  |                    |  |                  |
| Corner joint: MM77                                                                  | Weight : -         | Profile : ALN-206                                                                     | Weight: 232 gr/m |



## Monorail Sliding System 90 Series

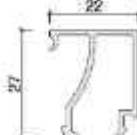
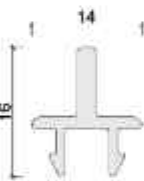
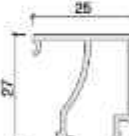
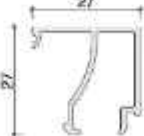
### Profile & Accessories Information

|                                                                                     |                   |                                                                                       |                   |
|-------------------------------------------------------------------------------------|-------------------|---------------------------------------------------------------------------------------|-------------------|
|    |                   |     |                   |
| Fly screen : ALN-207                                                                | Weight: 448 gr/m  | Flange profile: ALN-221                                                               | Weight : 300 gr/m |
|  |                   |  |                   |
| Fly screen : ALN-220                                                                | Weight: 626 gr/m  | Flange profile: ALN-222                                                               | Weight : 254 gr/m |
|  |                   |  |                   |
| Flange profile: ALN-219                                                             | Weight : 362 gr/m | Profile : ALN-228                                                                     | Weight: 135 gr/m  |



## Monorail Sliding System 90 Series

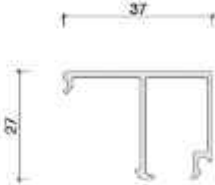
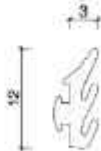
### Profile & Accessories Information

|                                                                                     |                   |                                                                                       |                   |
|-------------------------------------------------------------------------------------|-------------------|---------------------------------------------------------------------------------------|-------------------|
|    |                   |    |                   |
| Fly screen: ALN-230                                                                 | Weight : 200 gr/m | Glazing bead: ALN-323                                                                 | Weight : 302 gr/m |
|  |                   |  |                   |
| Profile : ALN-257                                                                   | Weight: 149 gr/m  | Glazing bead: ALN-421                                                                 | Weight : 313 gr/m |
|  |                   |  |                   |
| Rail : ALN-462                                                                      | Weight: 119 gr/m  | Glazing bead: ALN-422                                                                 | Weight : 321 gr/m |



## Monorail Sliding System 90 Series

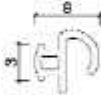
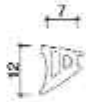
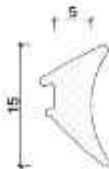
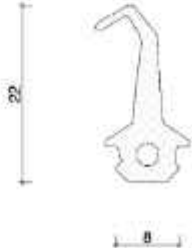
### Profile & Accessories Information

|                                                                                     |                   |                                                                                       |                   |
|-------------------------------------------------------------------------------------|-------------------|---------------------------------------------------------------------------------------|-------------------|
|    |                   |     |                   |
| Glazing bead: ALN-423                                                               | Weight : 281 gr/m | Glazing bead: ALN-497                                                                 | Weight : 350 gr/m |
|  |                   |  |                   |
| Glazing bead : ALN-233                                                              | Weight: 95 gr/m   | Glazing bead: ALN-213                                                                 | Weight : 211 gr/m |
|  |                   |  |                   |
| Glazing bead : ALN-234                                                              | Weight: 143 gr/m  | Gasket: MO68                                                                          | Weight : 46 gr/m  |



## Monorail Sliding System 90 Series

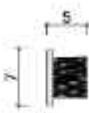
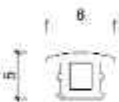
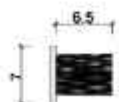
### Profile & Accessories Information

|                                                                                     |                  |                                                                                       |                 |
|-------------------------------------------------------------------------------------|------------------|---------------------------------------------------------------------------------------|-----------------|
|    |                  |    |                 |
| Gasket: EP-015                                                                      | Weight : 21 gr/m | Gasket: EP-019                                                                        | Weight: 61 gr/m |
|  |                  |  |                 |
| Gasket: EP-018                                                                      | Weight : 27 gr/m | Gasket: EP-021                                                                        | Weight: 78 gr/m |
|  |                  |   |                 |
| Gasket: EP-016                                                                      | Weight : 77 gr/m | Gasket: TH1015                                                                        | Weight : -      |



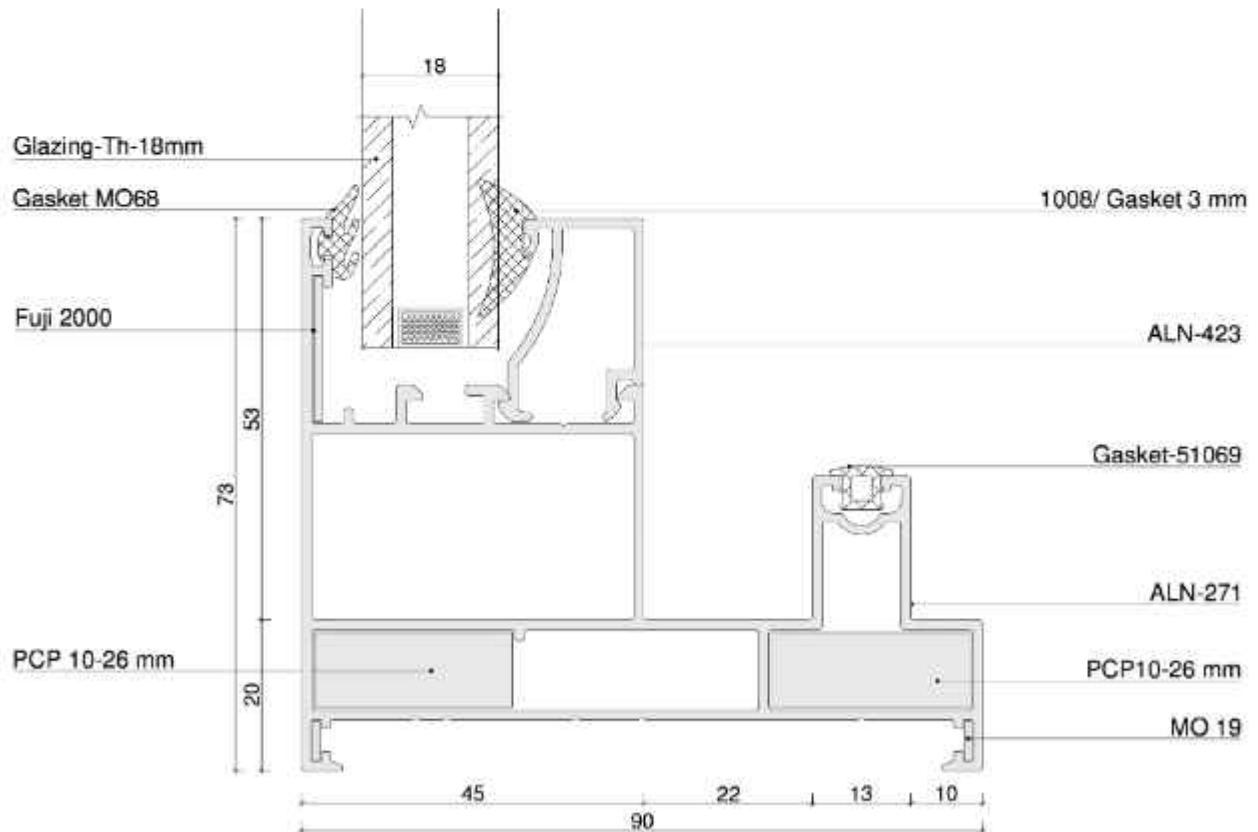
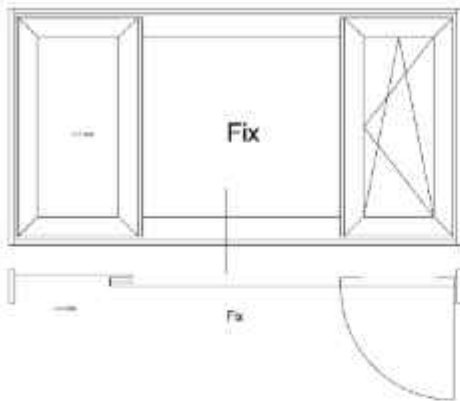
## Monorail Sliding System 90 Series

### Profile & Accessories Information

|                                                                                     |            |                                                                                     |          |
|-------------------------------------------------------------------------------------|------------|-------------------------------------------------------------------------------------|----------|
|    |            |  |          |
| Gasket: 1008/Gasket 3mm      Weight : -                                             |            | Gasket: PB7-3P-70-500                                                               | Weight : |
|  |            |                                                                                     |          |
| Gasket: 51069                                                                       | Weight : - |                                                                                     |          |
|  |            |                                                                                     |          |
| Gasket: PB7-3P-70-650                                                               | Weight : - |                                                                                     |          |

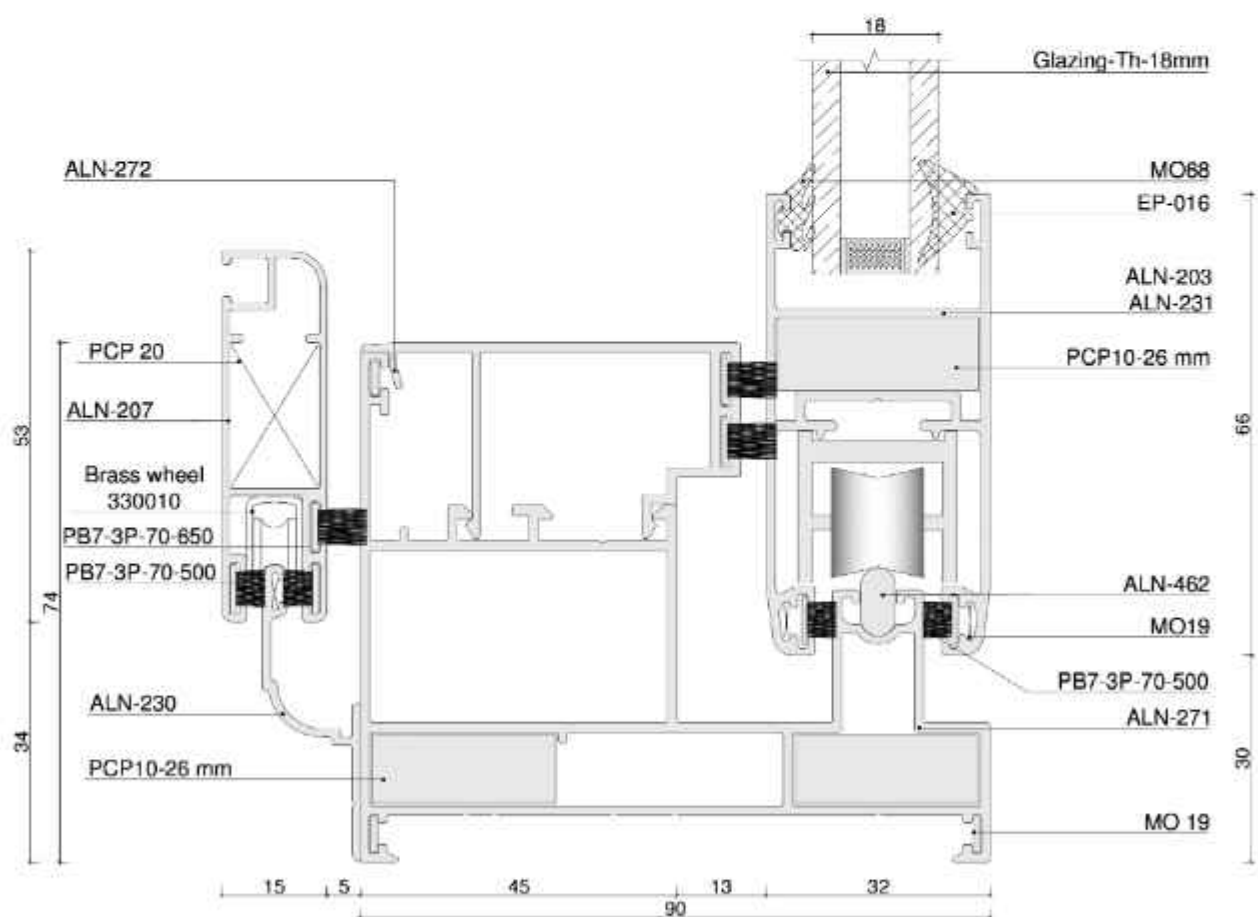
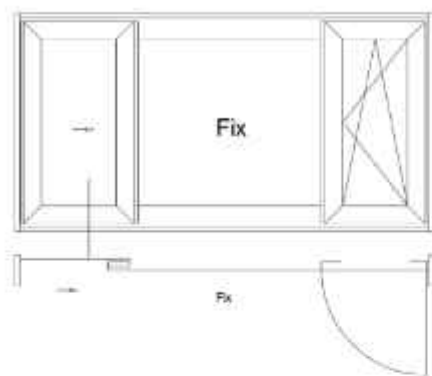


## Monorail Sliding System 90 Series Fabrication Details



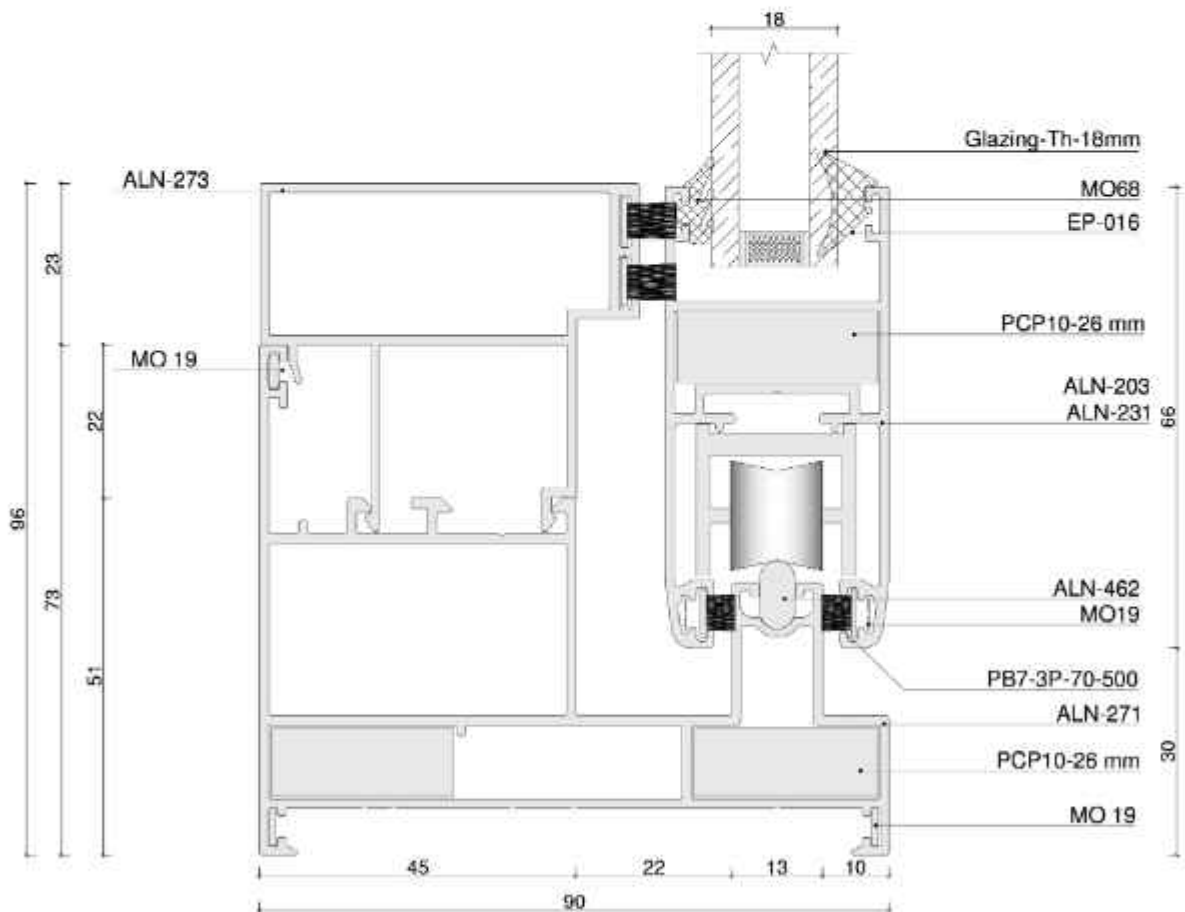
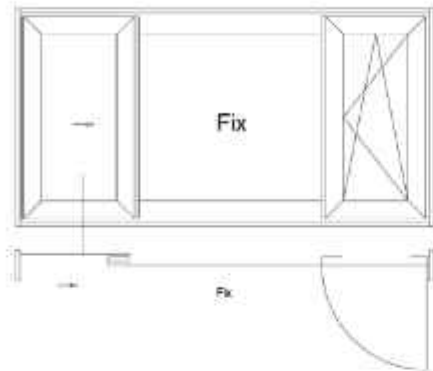
## Monorail Sliding System 90 Series

### Fabrication Details



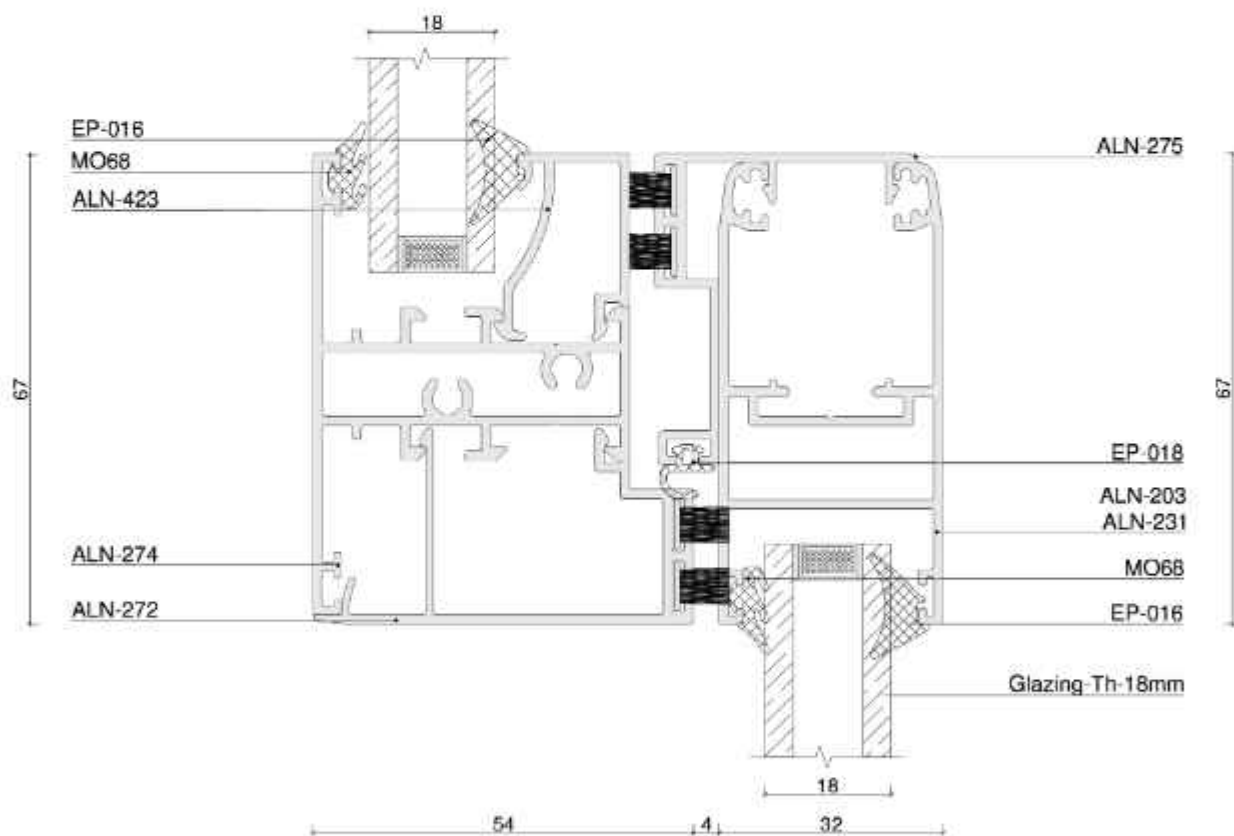
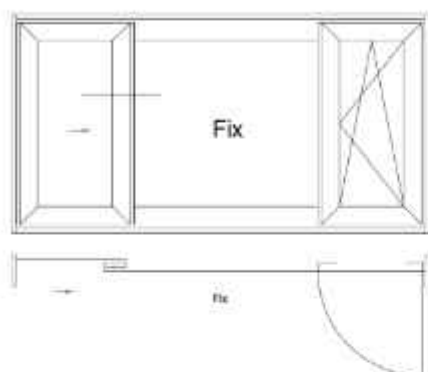


## Monorail Sliding System 90 Series Fabrication Details



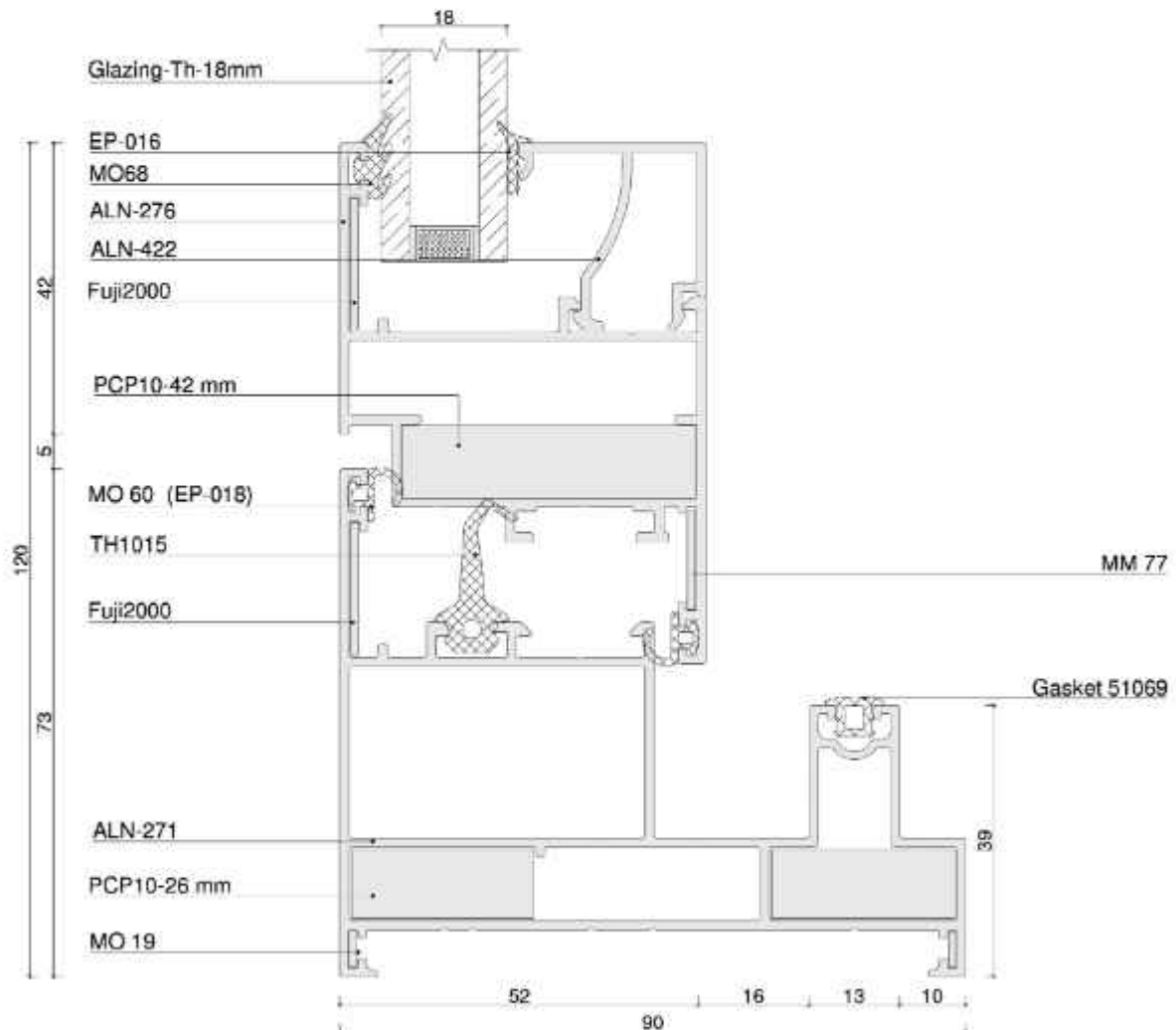
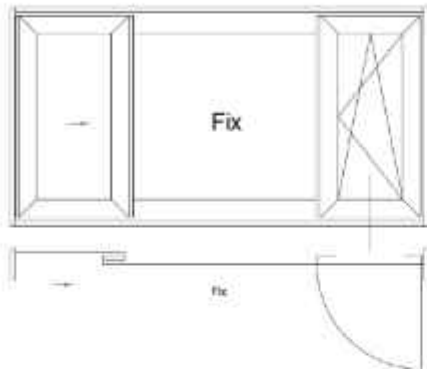
## Monorail Sliding System 90 Series

### Fabrication Details



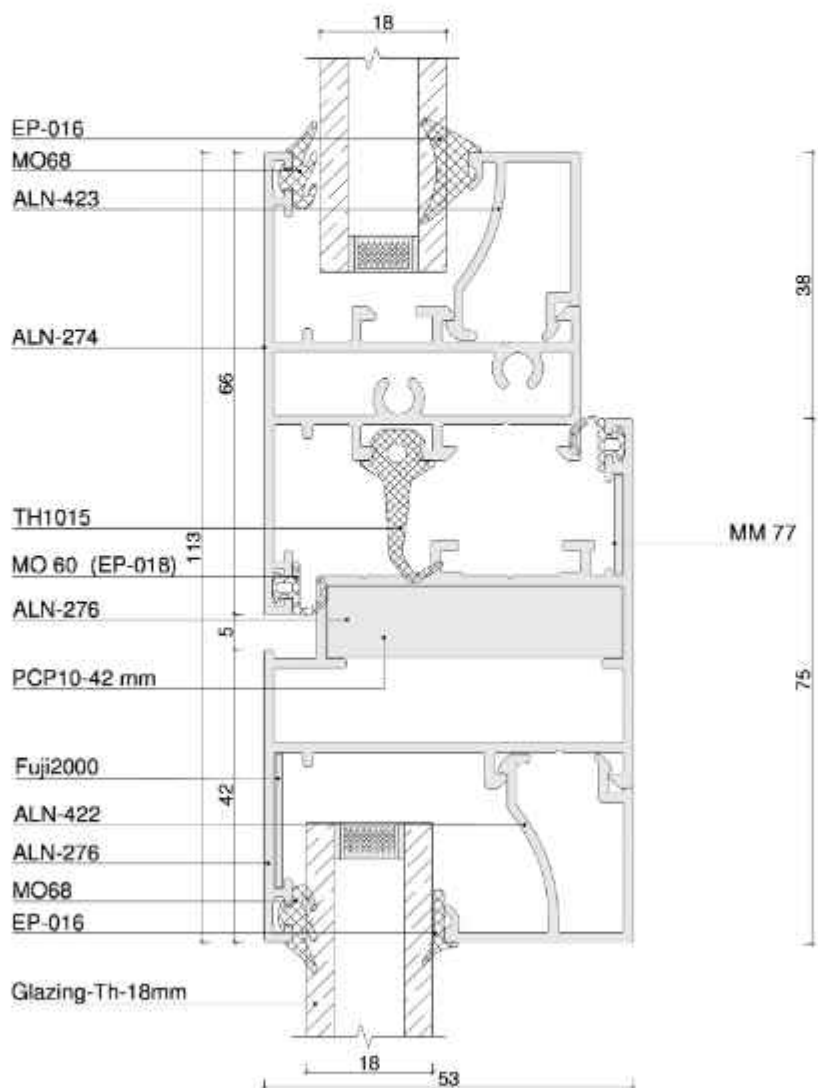
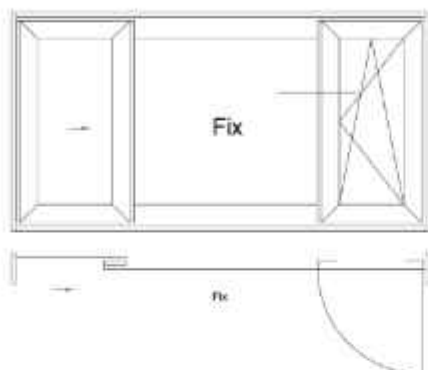


## Monorail Sliding System 90 Series Fabrication Details



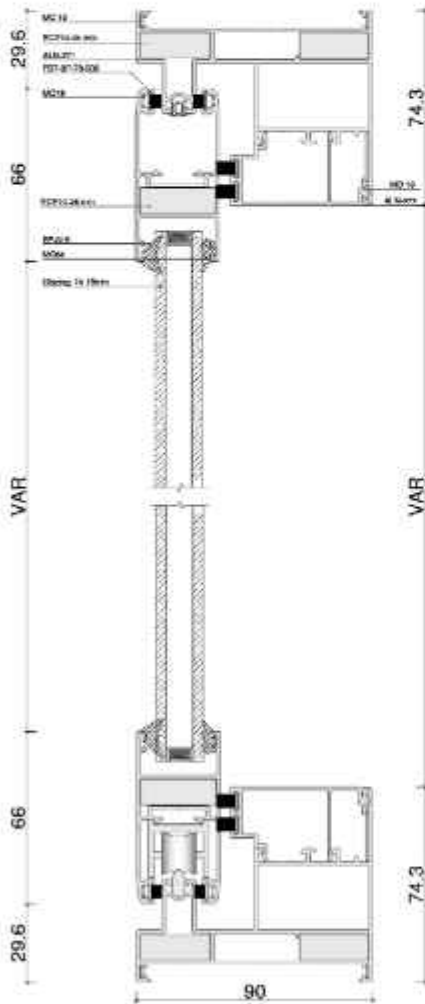
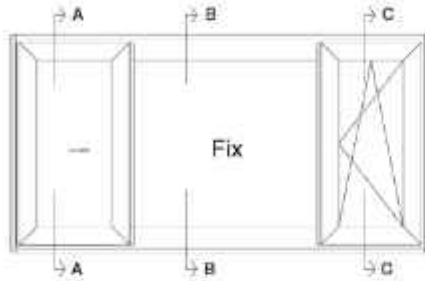
## Monorail Sliding System 90 Series

### Fabrication Details

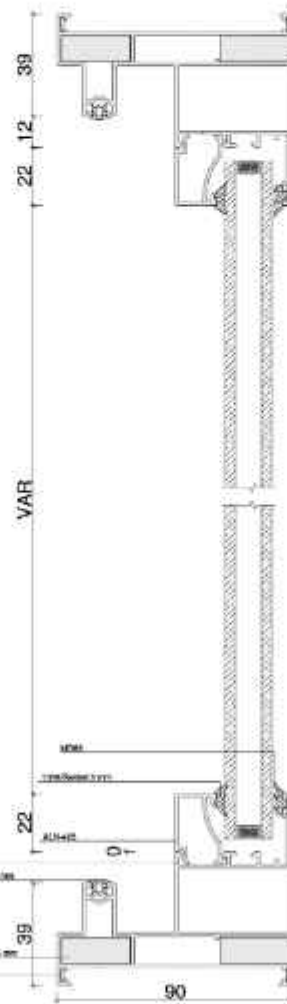


## Monorail Sliding System 90 Series

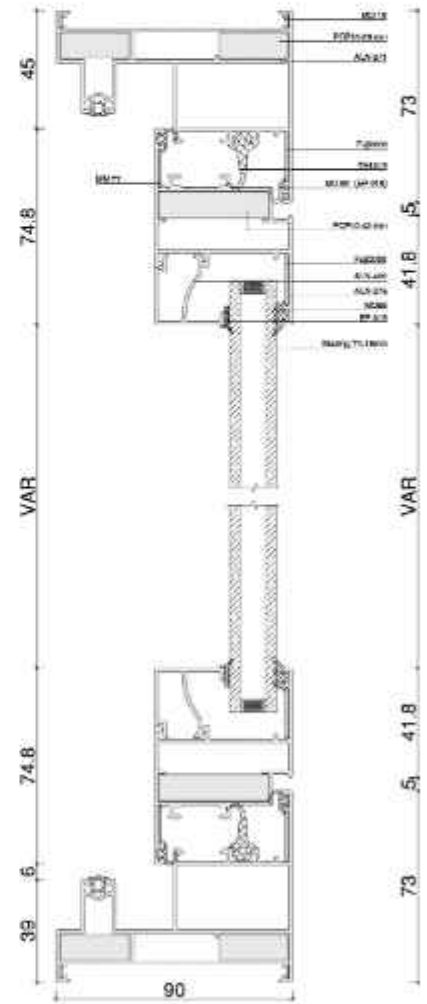
### Fabrication Details



Section A-A



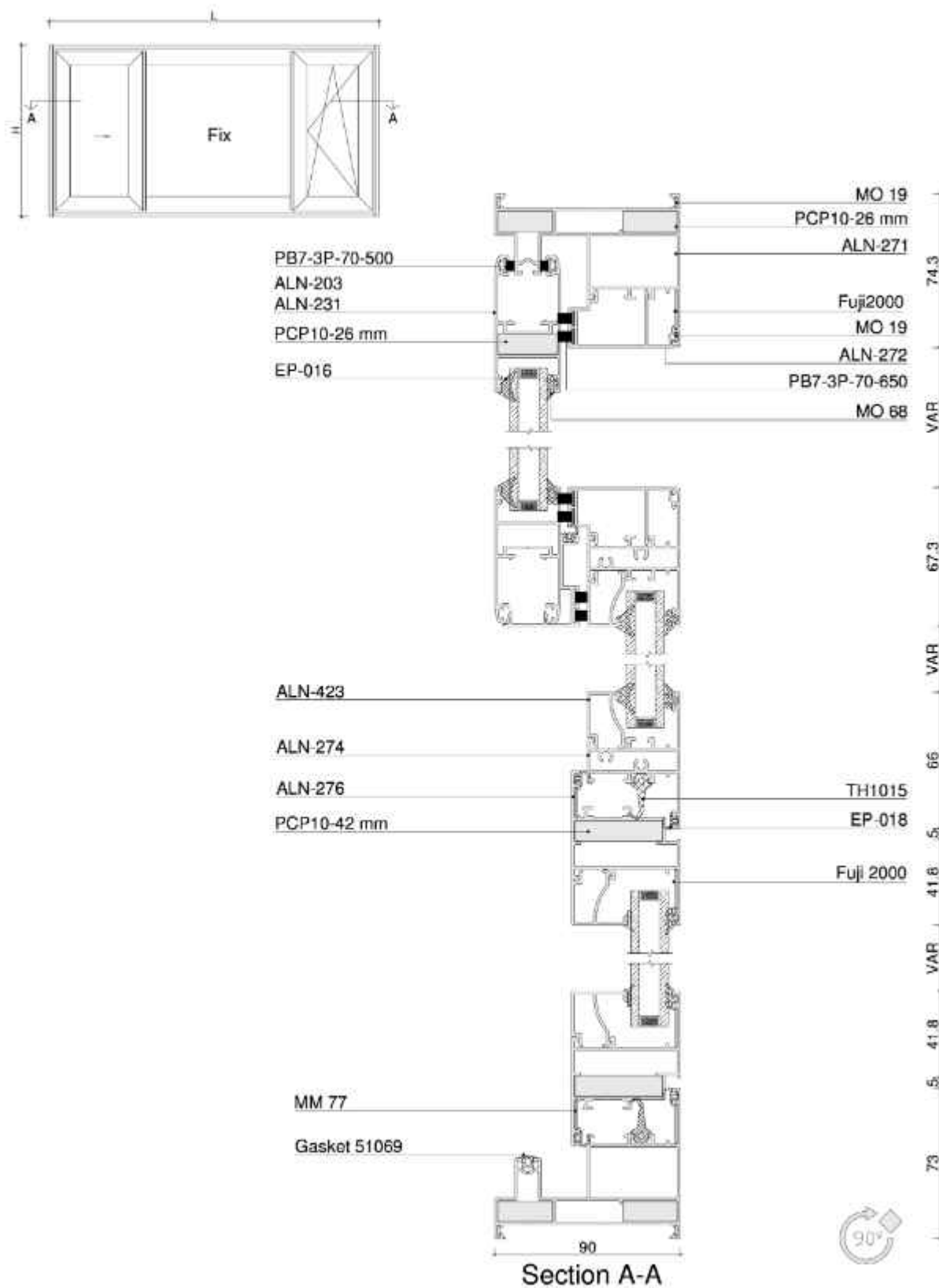
Section B-B



Section C-C

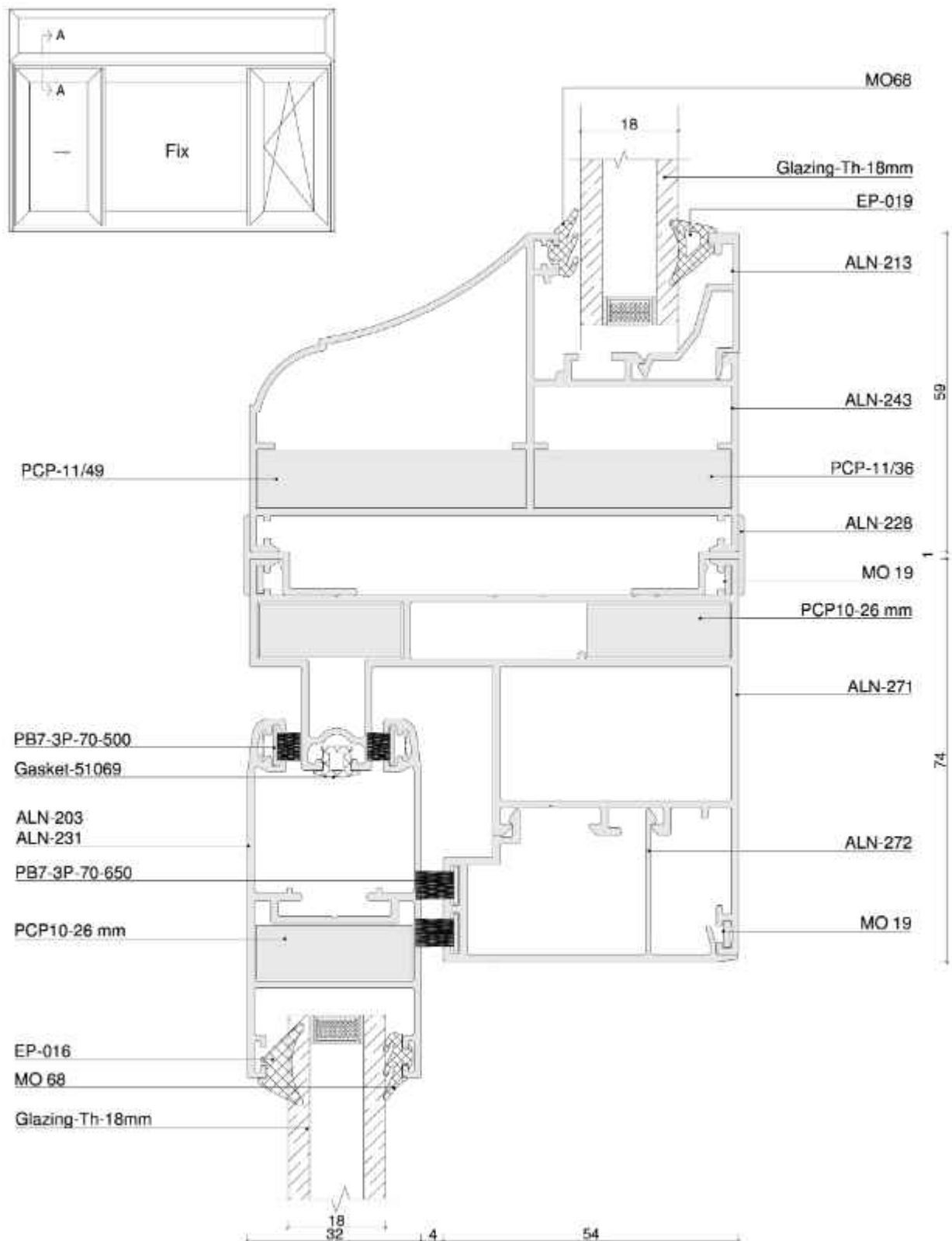
## Monorail Sliding System 90 Series

### Fabrication Details

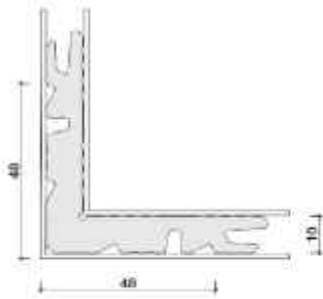




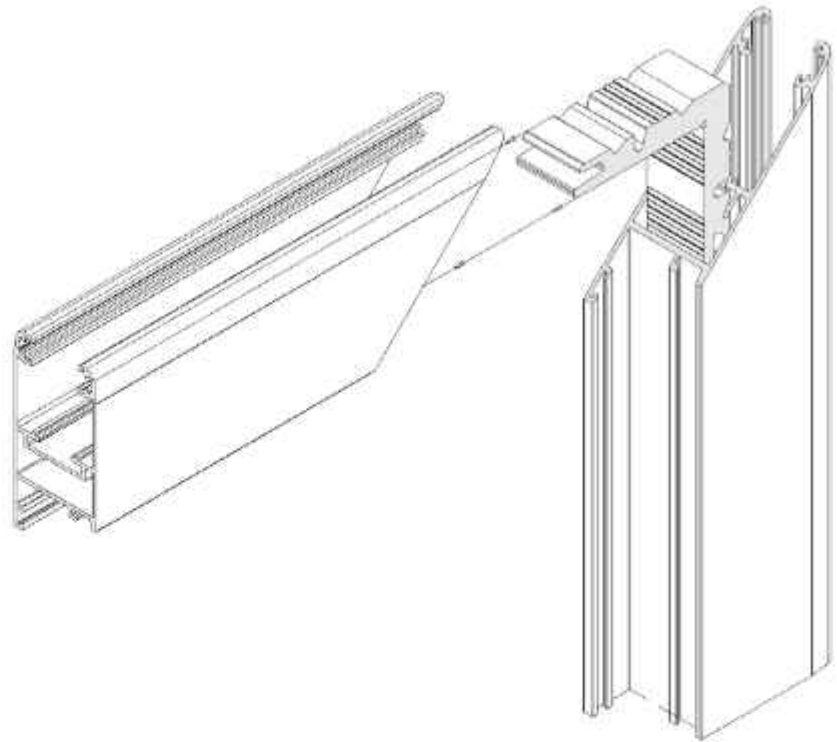
## Monorail Sliding System 90 Series Fabrication Details



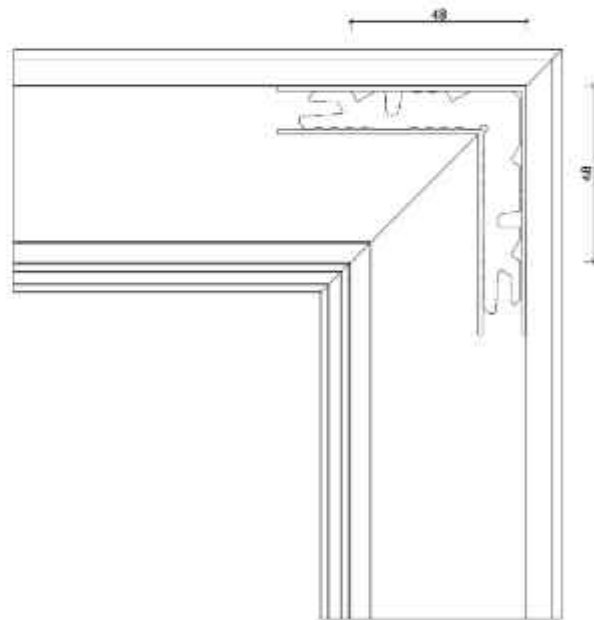
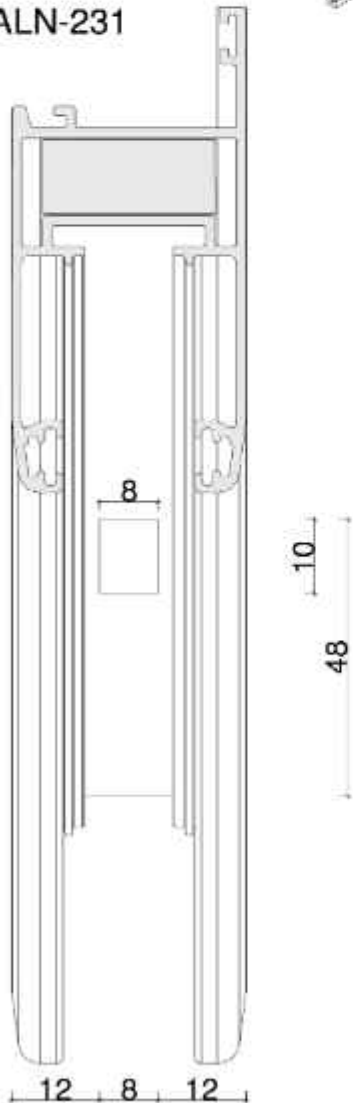
# Monorail Sliding System 90 Series Assembly Drawing



A:PCP-10 / 26 mm

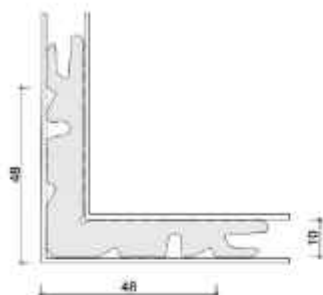


ALN-231

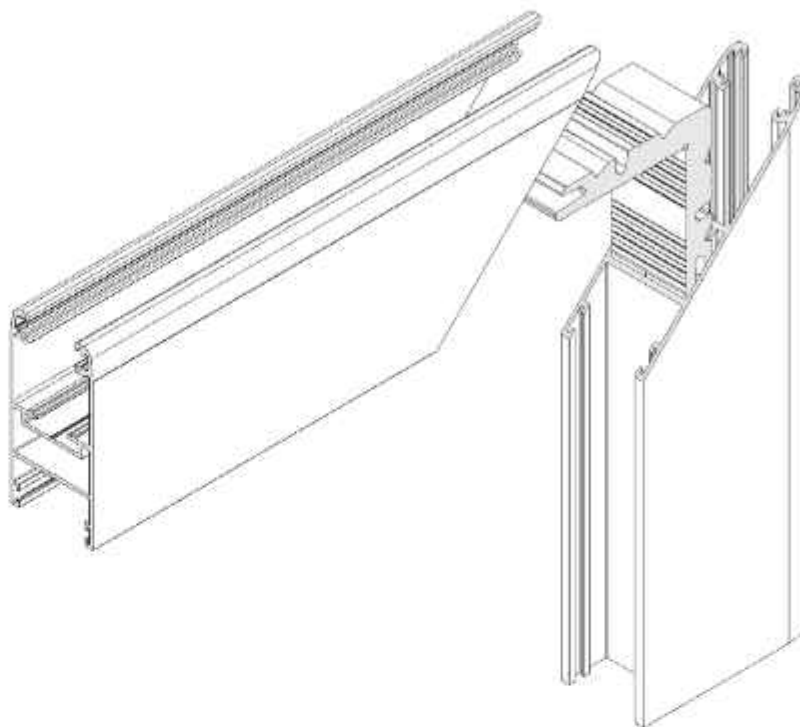




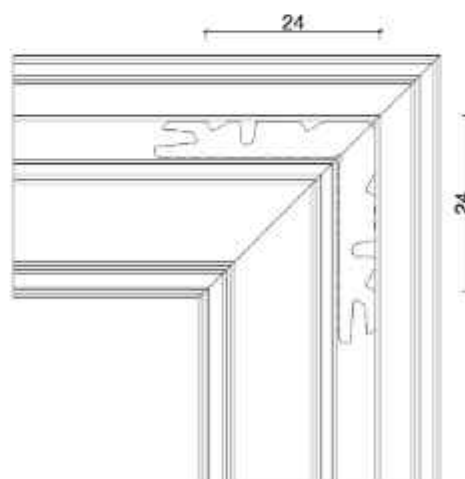
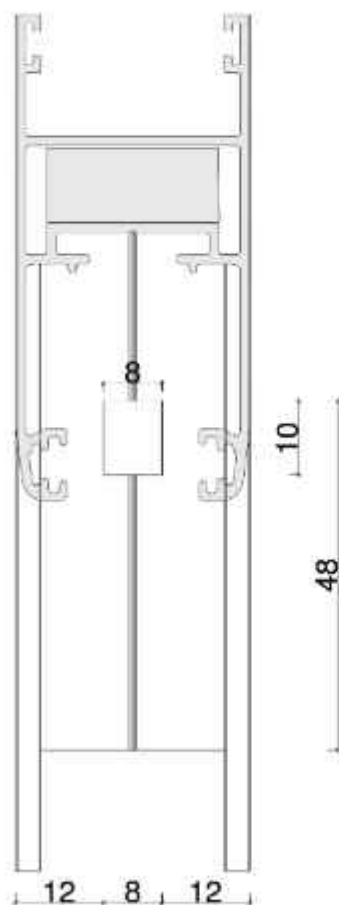
# Monorail Sliding System 90 Series Assembly Drawing



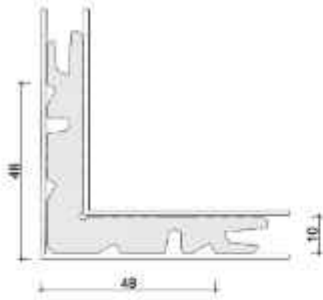
A:PCP-10 / 26 mm



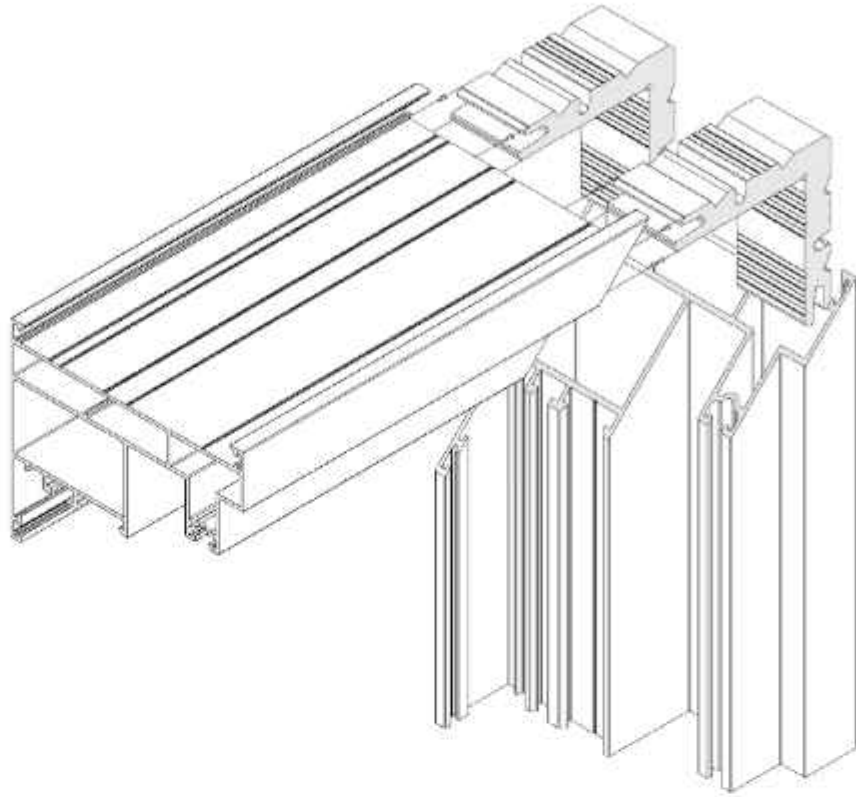
ALN-203



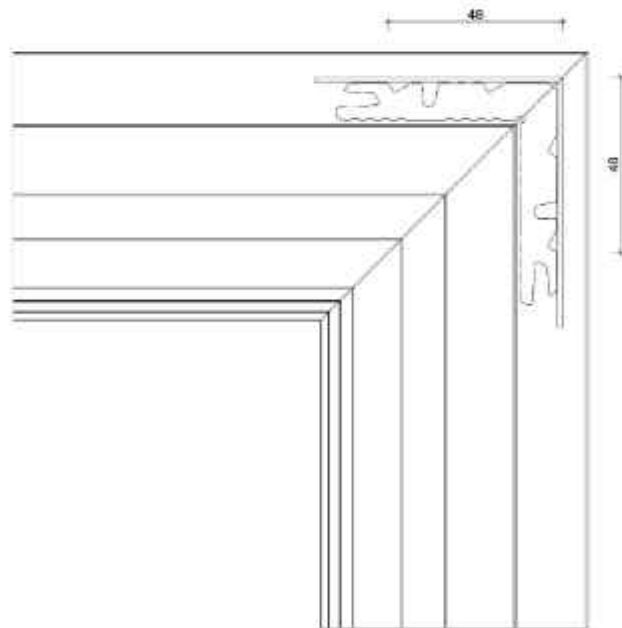
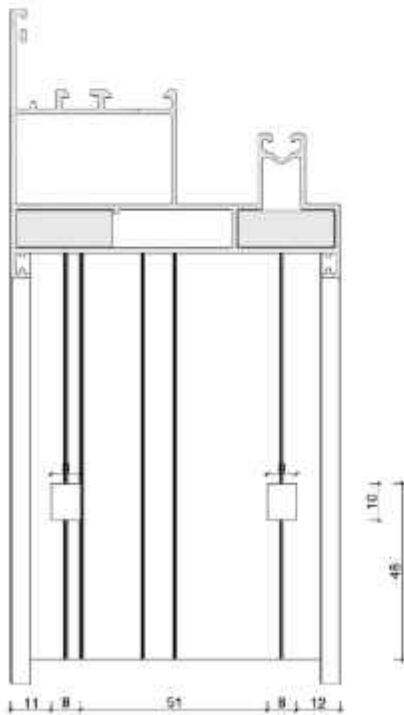
## Monorail Sliding System 90 Series Assembly Drawing



A:PCP-10 / 26 mm  
A:PCP-10 / 26 mm

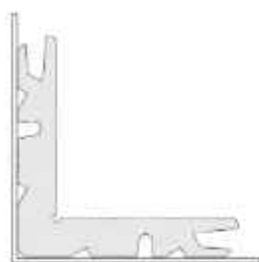


ALN-271



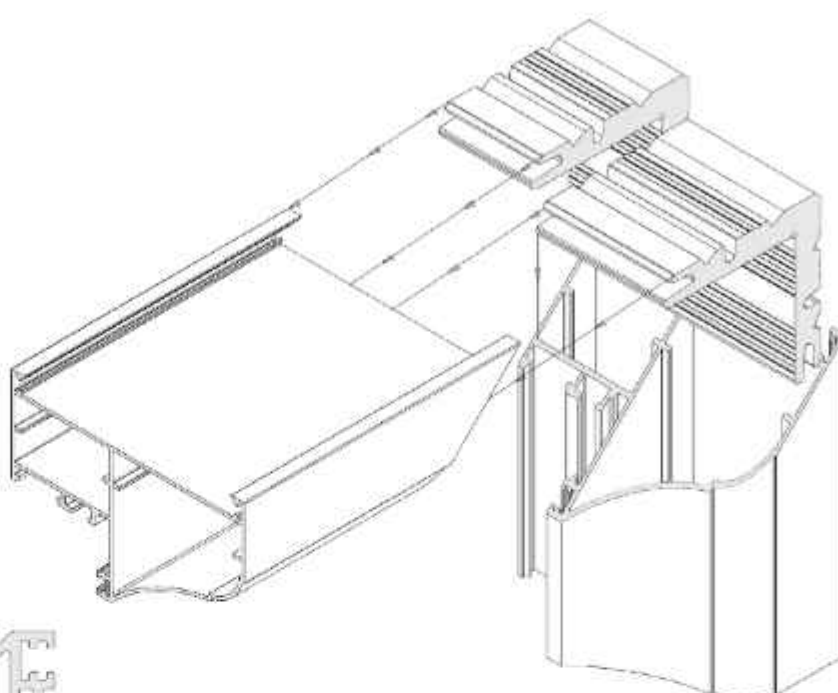


# Monorail Sliding System 90 Series Assembly Drawing

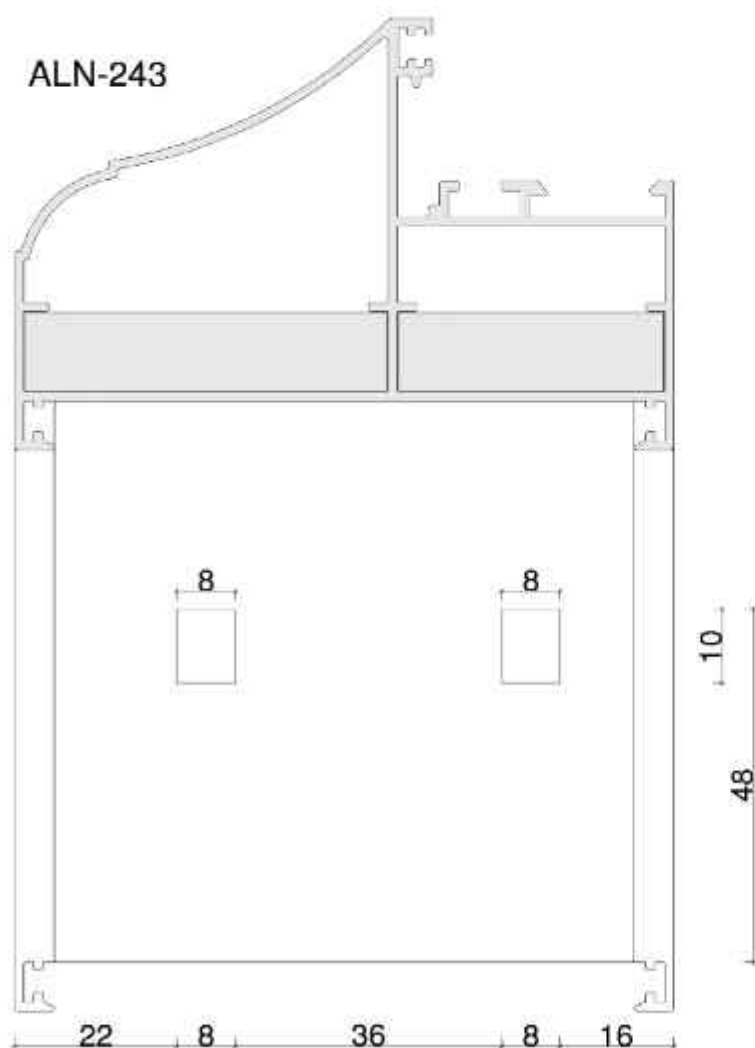


A:PCP-11 / 36 mm

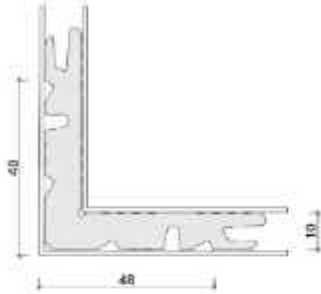
B:PCP-11 / 49 mm



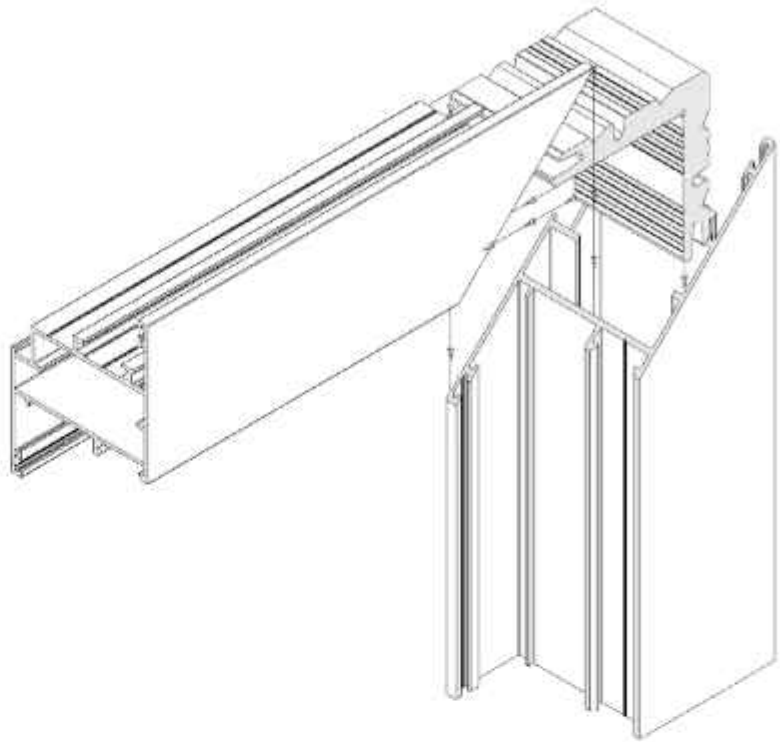
ALN-243



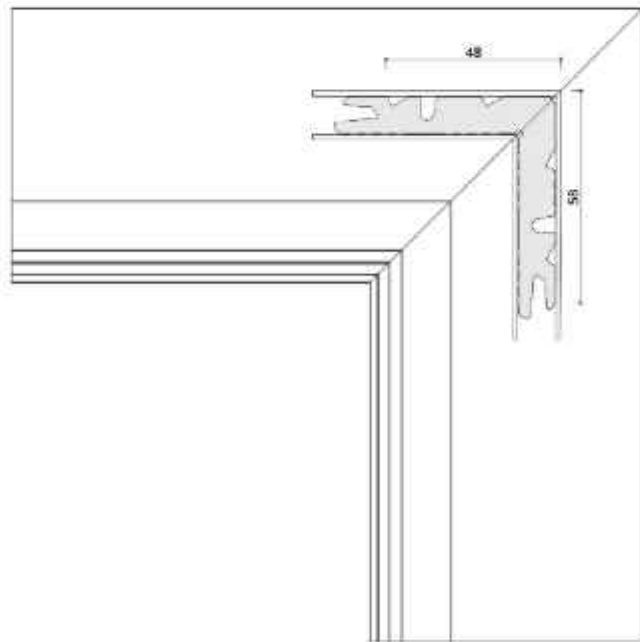
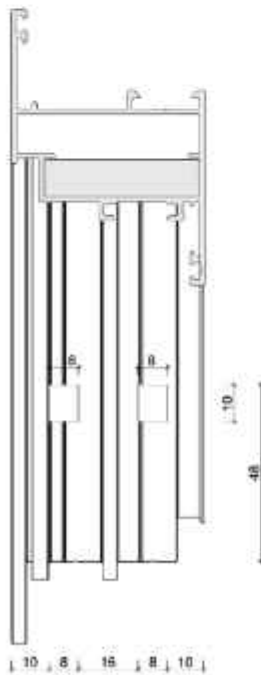
## Monorail Sliding System 90 Series Assembly Drawing



A:PCP-10 / 42 mm

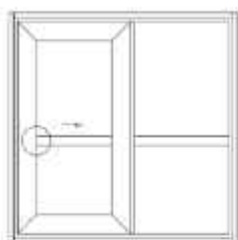


### ALN-276



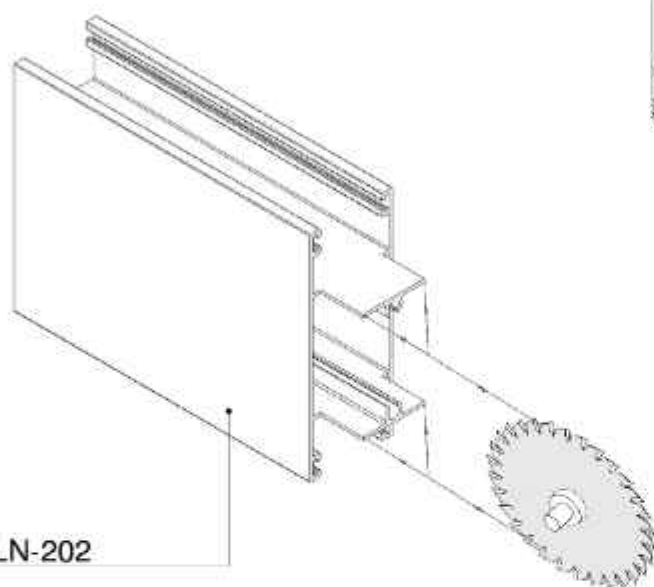
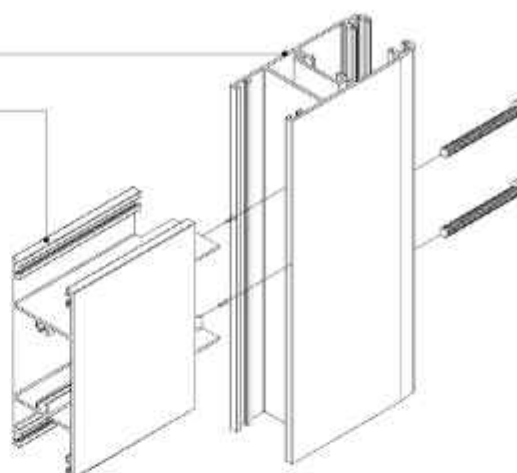


# Monorail Sliding System 90 Series Assembly Drawing



ALN-203

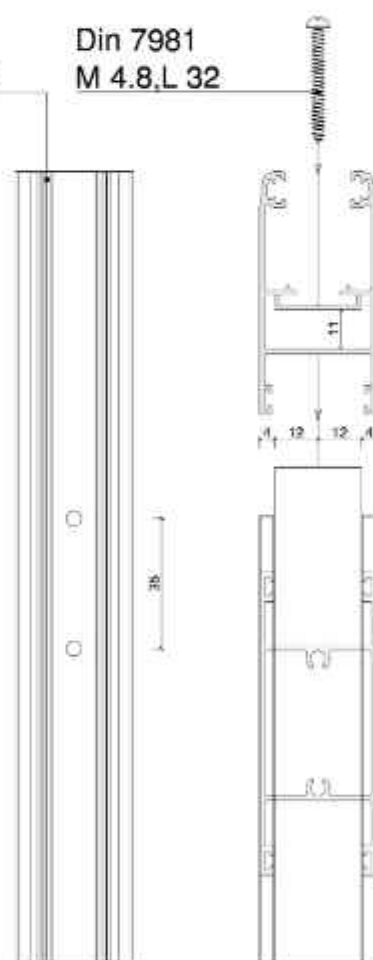
ALN-202



ALN-202

ALN-203

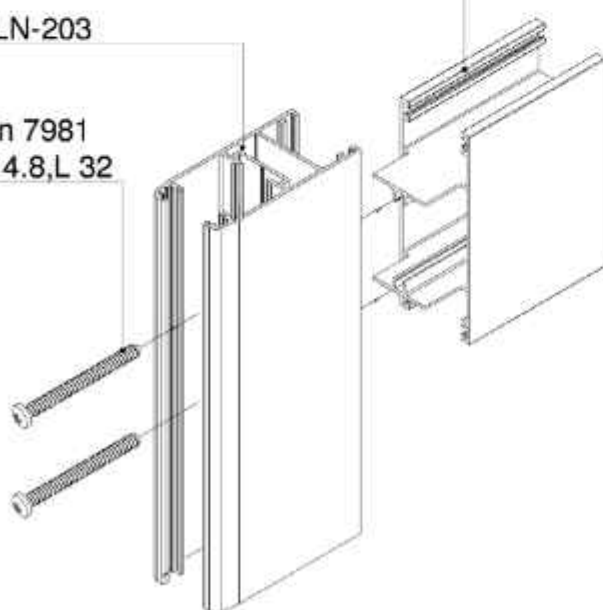
Din 7981  
M 4.8, L 32



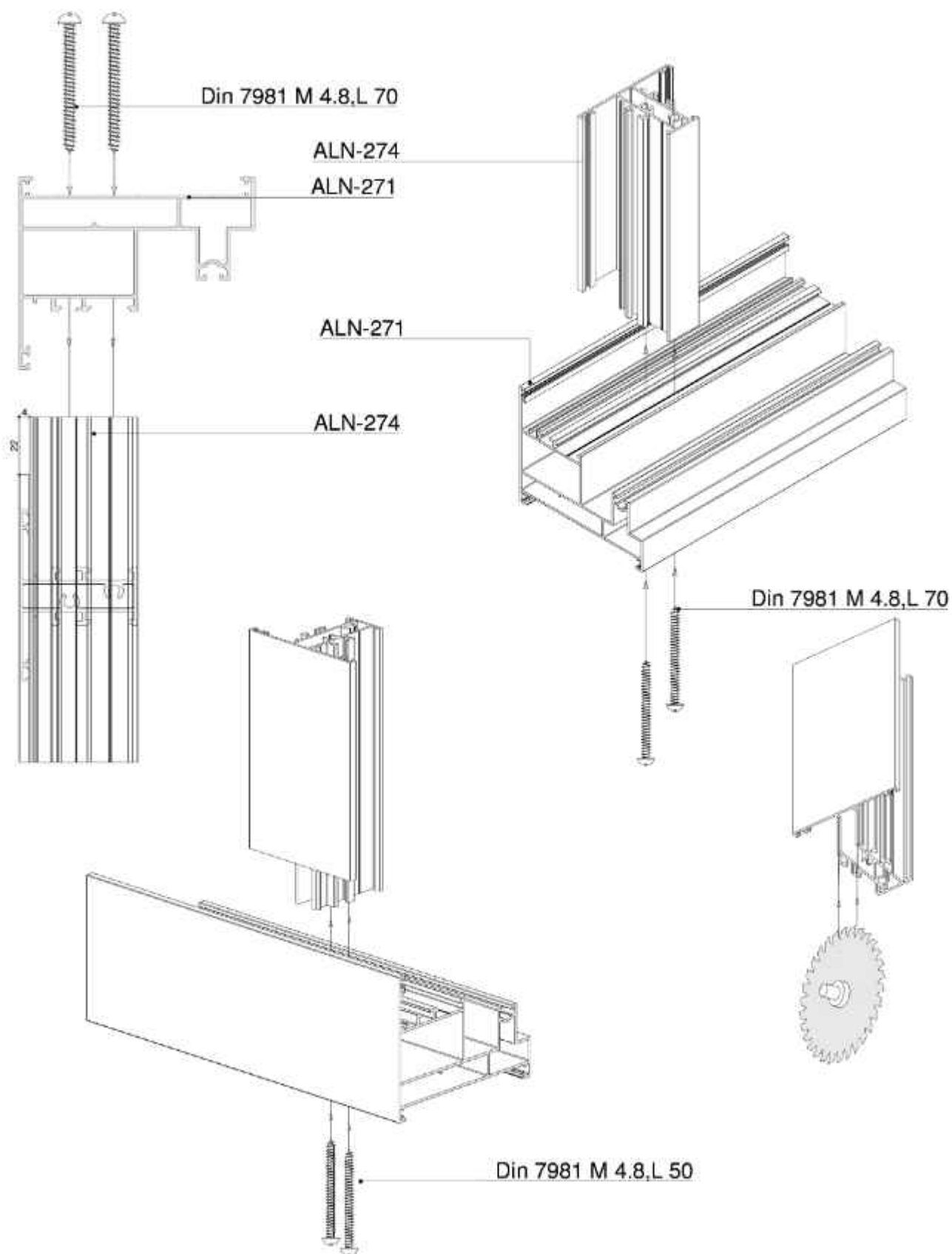
ALN-202

ALN-203

Din 7981  
M 4.8, L 32



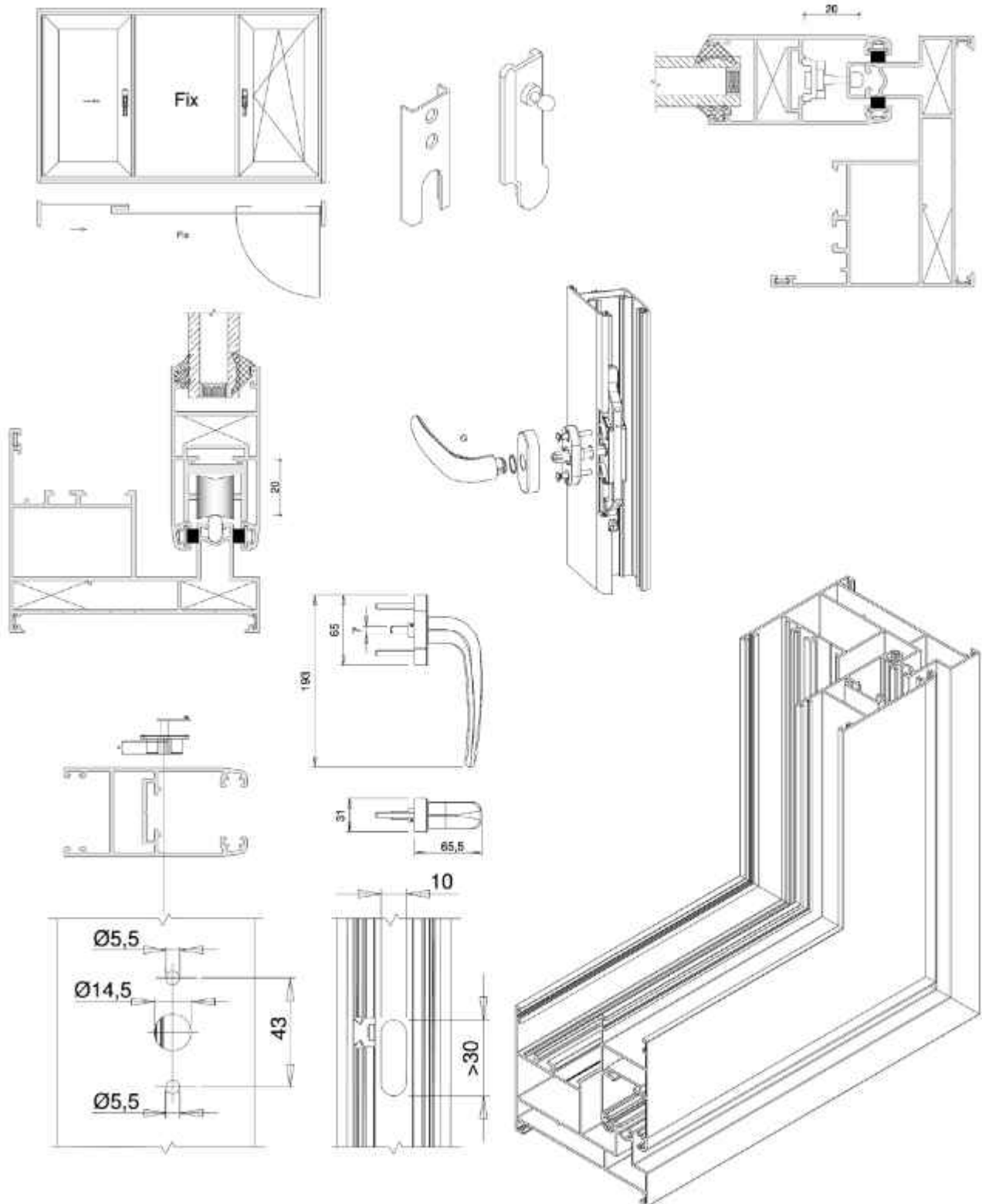
## Monorail Sliding System 90 Series





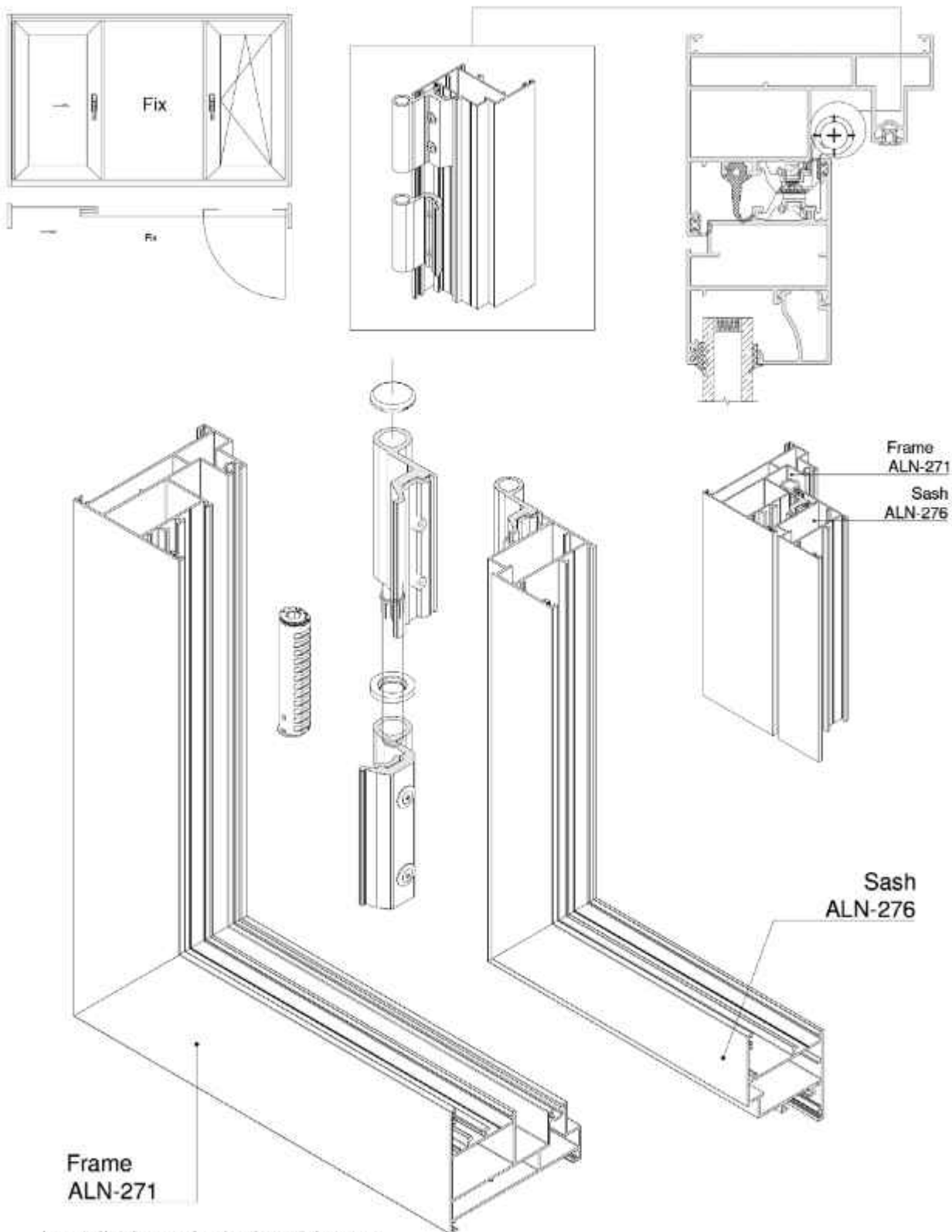
## Monorail Sliding System 90 Series

### Hardware Installation



## Monorail Sliding System 90 Series

### Hardware Installation

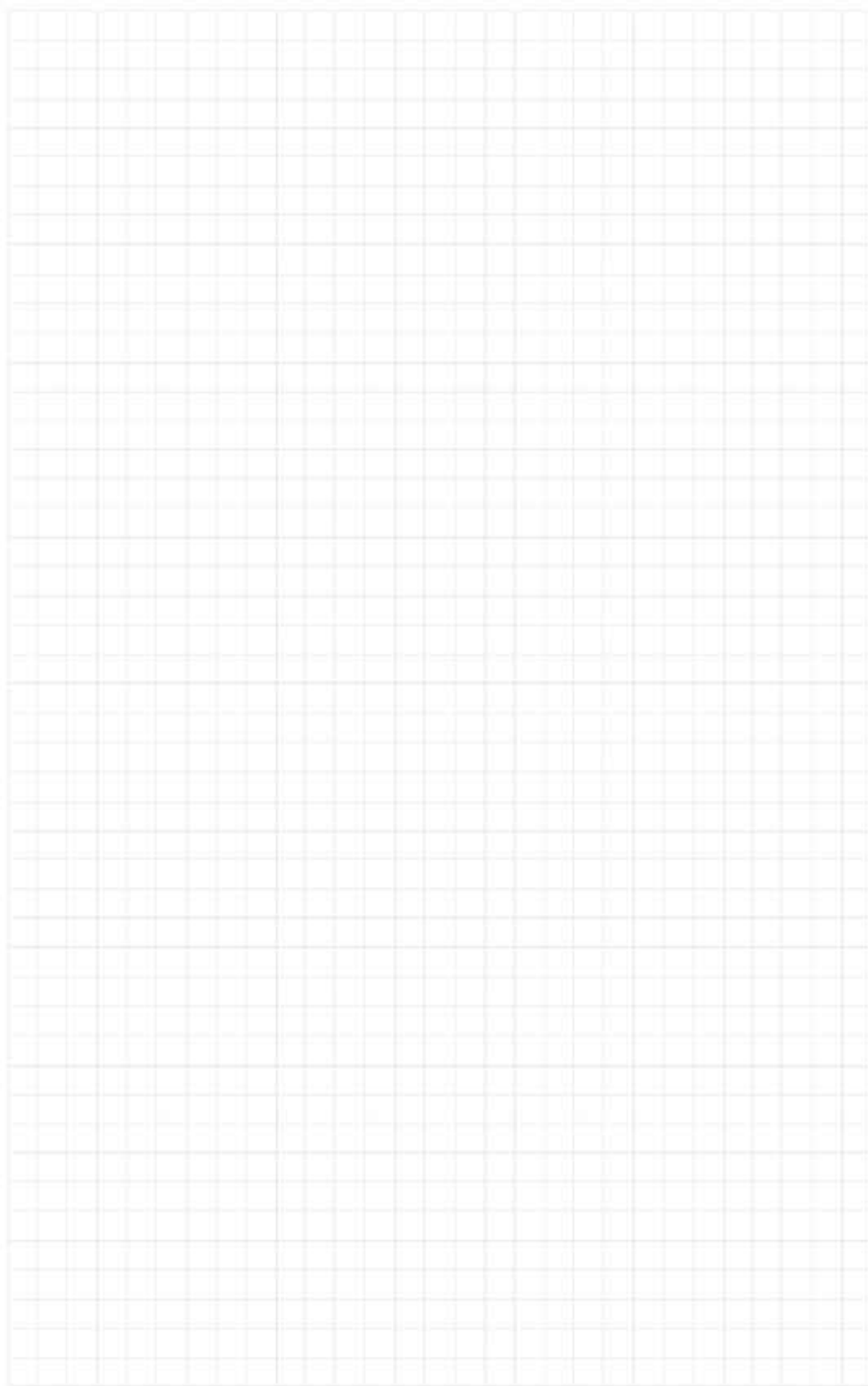


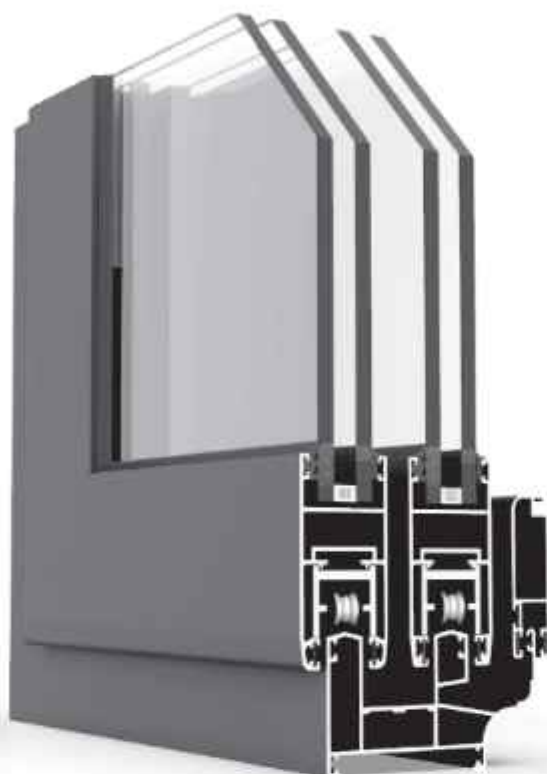
Installation of window hinges



**AKROLL**

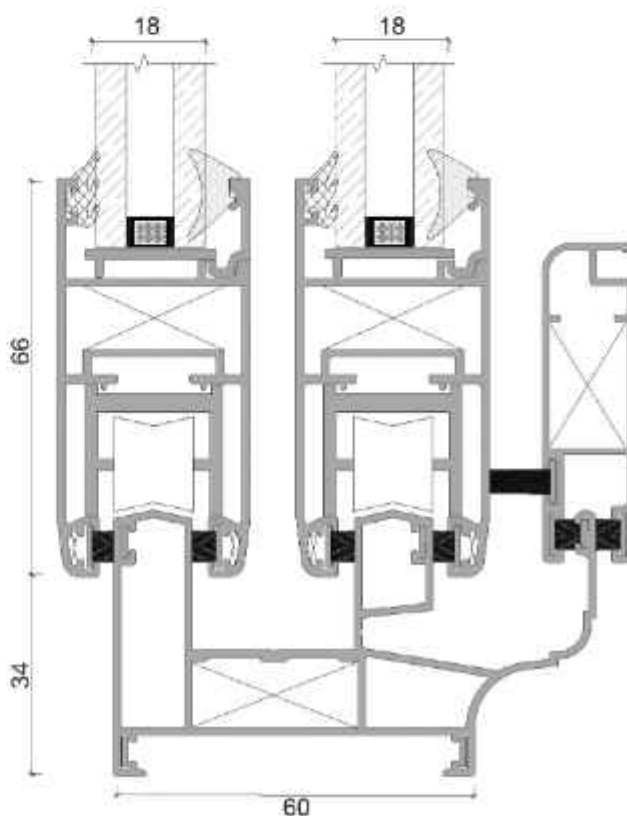
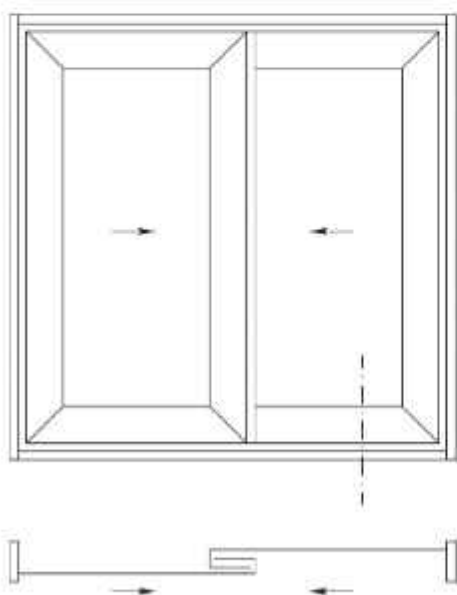
Product of Alumroll Novin Co.





## Slide System 60 Series

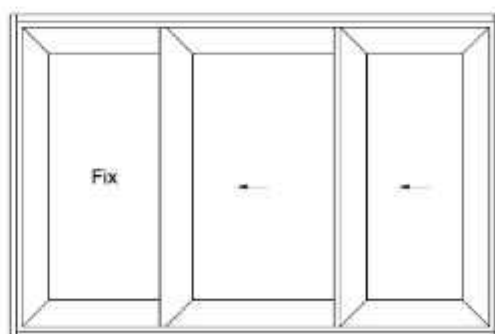
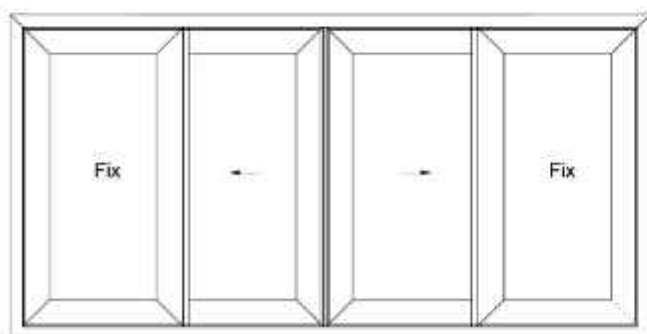
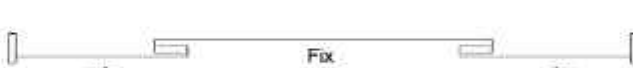
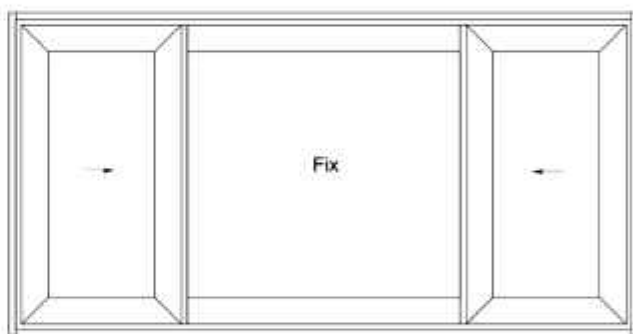
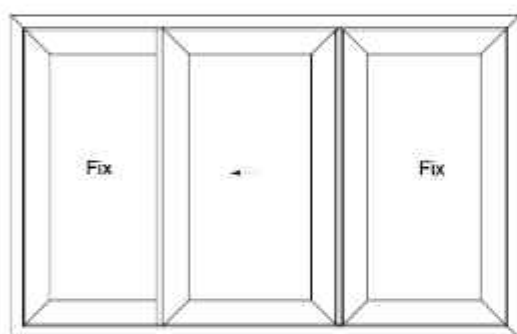
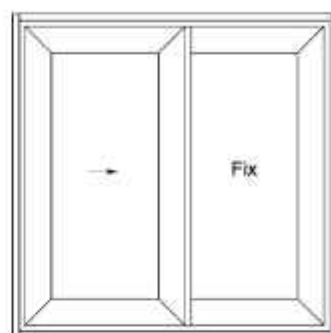
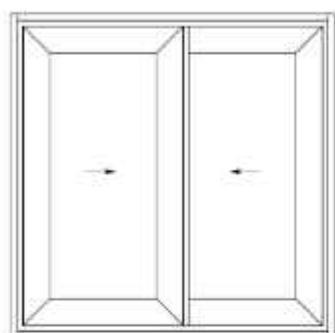
|                           |               |
|---------------------------|---------------|
| Profile width:            | 60 - 100 mm   |
| Vent width:               | 32 mm         |
| Wall thickness:           | 1.2 - 1.3 mm  |
| Rubber description:       | EPDM DIN 7863 |
| Glass thickness:          | 6 - 20 mm     |
| Aluminum alloy extrusion: | EN AW 6063 T5 |
| Safety drainage system    |               |
| Various typologies        |               |





## Slide System 60 Series

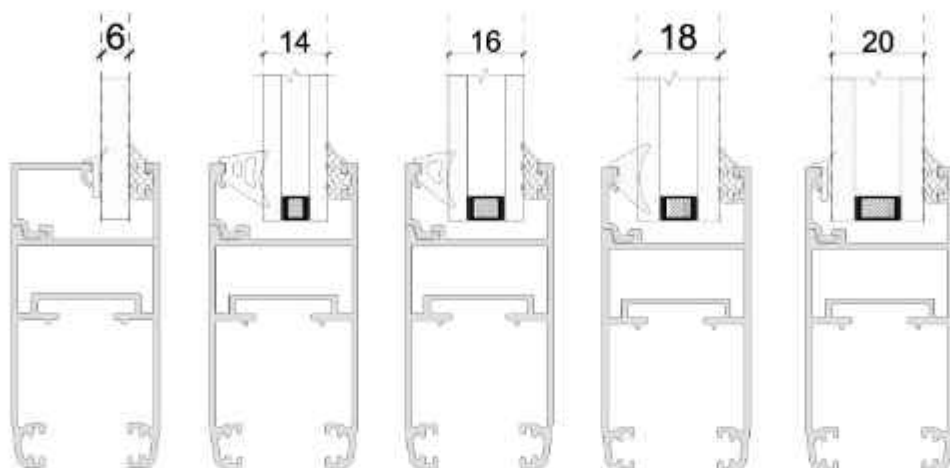
### Typologies



## Slide System 60 Series

### Glazing Table

#### ALN-231



| Glazing Thickness | Gasket Inside     | Gasket Outside | Glazing Bead |
|-------------------|-------------------|----------------|--------------|
| 6 mm              | 1.9<br><br>EP-015 | <br>MO68       | <br>ALN-234  |
| 14 mm             | 7.5<br><br>EP-021 | <br>MO68       | <br>ALN-233  |
| 16 mm             | 5.5<br><br>EP-019 | <br>MO68       | <br>ALN-233  |
| 18 mm             | 4.5<br><br>EP-016 | <br>MO68       | <br>ALN-233  |
| 20 mm             | 1.9<br><br>EP-015 | <br>MO68       | <br>ALN-233  |

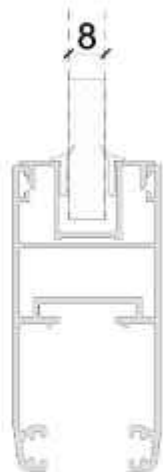
Slide System 60 Series

Glazing Table

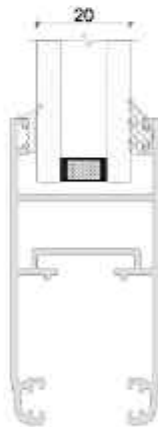
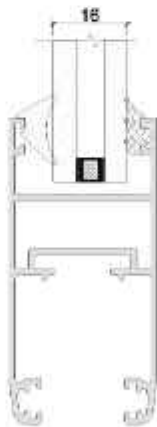
ALN-203

ALN-236

| Glazing Thickness | Gasket Inside                                                                                                      | Gasket Inside                                                                                                      | Glasing Adapter                                                                                       |
|-------------------|--------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|
| 8 mm              | <div>1.9</div>  <div>EP-015</div> | <div>1.9</div>  <div>EP-015</div> |  <div>ALN-206</div> |

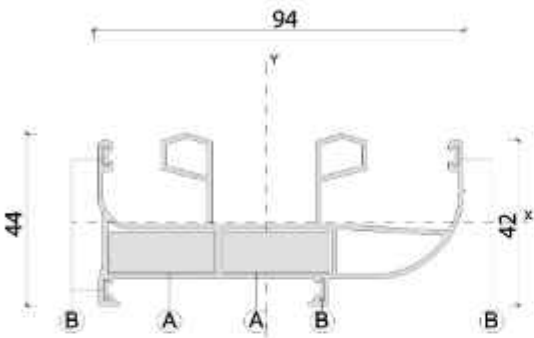
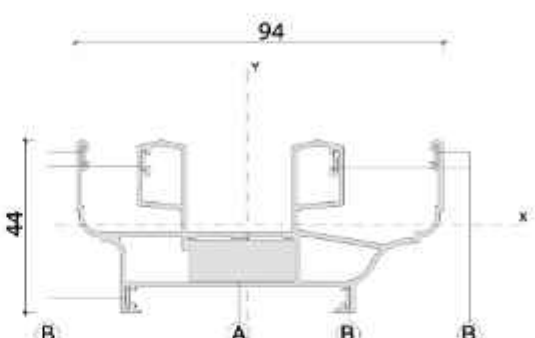
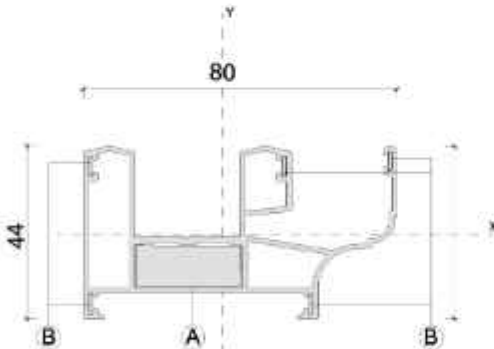
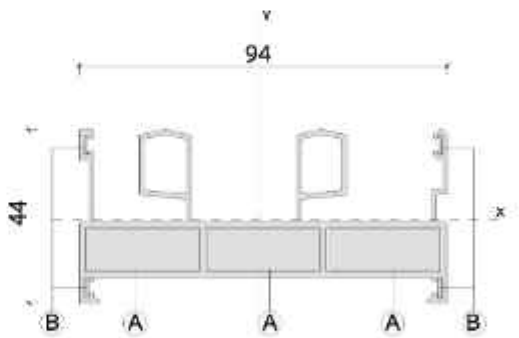


| Glazing Thickness | Gasket Inside                                                                                                        | Gasket Outside                                                                                      |
|-------------------|----------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------|
| 16 mm             | <div>4.5</div>  <div>EP-016</div> |  <div>MO68</div> |
| 20 mm             | <div>1.9</div>  <div>EP-015</div> |  <div>MO68</div> |



## Slide System 60 Series

### Profile & Accessories Information

|                                                                                     |                                                                                                       |                                                                                      |                                                                                                         |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------|
|    |                                                                                                       |    |                                                                                                         |
| $I_x: 7.45 \text{ cm}^4$                                                            | $I_y: 40.72 \text{ cm}^4$                                                                             | $I_x: 7.45 \text{ cm}^4$                                                             | $I_y: 37.62 \text{ cm}^4$                                                                               |
| Frame : ALN-200                                                                     | A: PCP-11/27 mm    | Frame : ALN-237                                                                      | A: PCP-10 / 26 mm  |
| Weight: 1323 gr/m                                                                   | B: MO19            | Weight: 1350 gr/m                                                                    | B: MO19            |
|  |                                                                                                       |  |                                                                                                         |
| $I_x: 6.85 \text{ cm}^4$                                                            | $I_y: 26.36 \text{ cm}^4$                                                                             | $I_x: 8.19 \text{ cm}^4$                                                             | $I_y: 50.67 \text{ cm}^4$                                                                               |
| Frame : ALN-201                                                                     | A: PCP-10 / 26 mm  | Frame : ALN-238                                                                      | A: PCP-11/29 mm    |
| Weight: 1172 gr/m                                                                   | B: MO19            | Weight: 1428 gr/m                                                                    | B: MO19            |



## Slide System 60 Series

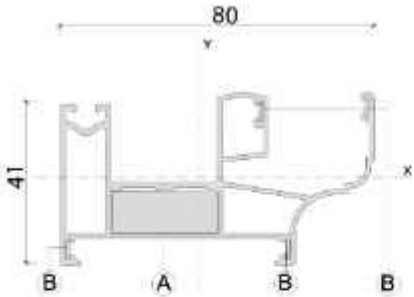
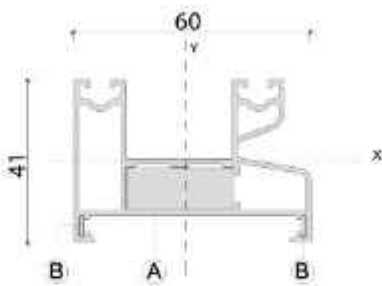
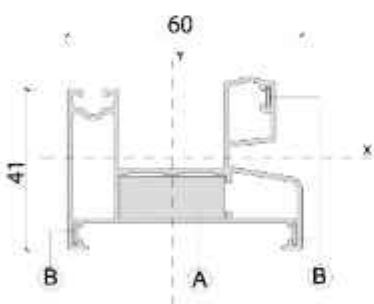
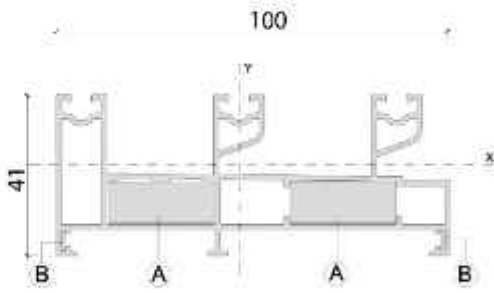
### Profile & Accessories Information

|                               |                               |                               |                               |
|-------------------------------|-------------------------------|-------------------------------|-------------------------------|
|                               |                               |                               |                               |
| $I_x$ : 6.05 cm <sup>4</sup>  | $I_y$ : 15.15 cm <sup>4</sup> | $I_x$ : 6.07 cm <sup>4</sup>  | $I_y$ : 26.09 cm <sup>4</sup> |
| Frame: ALN-239                | A: PCP-10 / 26 mm             | Frame: ALN-249                | A: PCP-10 / 26 mm             |
| Weight: 983 gr/m              | B: MO19                       | Weight: 1166 gr/m             | B: MO19                       |
|                               |                               |                               |                               |
| $I_x$ : 39.18 cm <sup>4</sup> | $I_y$ : 38.59 cm <sup>4</sup> | $I_x$ : 39.11 cm <sup>4</sup> | $I_y$ : 38.40 cm <sup>4</sup> |
| Monorail Frame: ALN-246       | A: PCP-10 / 40 mm             | Monorail Frame: ALN-253       | A: PCP-10 / 40 mm             |
|                               | B: MO19                       |                               | B: MO19                       |
| Weight: 1620 gr/m             | C: PCP- 24 / 10 mm            | Weight: 1620 gr/m             | C: PCP- 24 / 10 mm            |



## Slide System 60 Series

### Profile & Accessories Information

|                                                                                     |                                                                                                       |                                                                                      |                                                                                                         |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------|
|    |                                                                                                       |    |                                                                                                         |
| $I_x: 6.19 \text{ cm}^4$                                                            | $I_y: 25.28 \text{ cm}^4$                                                                             | $I_x: 5.25 \text{ cm}^4$                                                             | $I_y: 14.82 \text{ cm}^4$                                                                               |
| Frame : ALN-254                                                                     | A: PCP-10 / 26 mm   | Frame : ALN-258                                                                      | A: PCP-10 / 26 mm   |
| Weight: 1107 gr/m                                                                   | B: MO19            | Weight: 977 gr/m                                                                     | B: MO19            |
|  |                                                                                                       |  |                                                                                                         |
| $I_x: 5.66 \text{ cm}^4$                                                            | $I_y: 15.04 \text{ cm}^4$                                                                             | $I_x: 8.03 \text{ cm}^4$                                                             | $I_y: 58.69 \text{ cm}^4$                                                                               |
| Frame : ALN-255                                                                     | A: PCP-10 / 26 mm  | Triplerail Frame: ALN- 258                                                           | A: PCP-10 / 26 mm  |
| Weight: 983 gr/m                                                                    | B: MO19            | Weight: 1536 gr/m                                                                    | B: MO19            |



## Slide System 60 Series

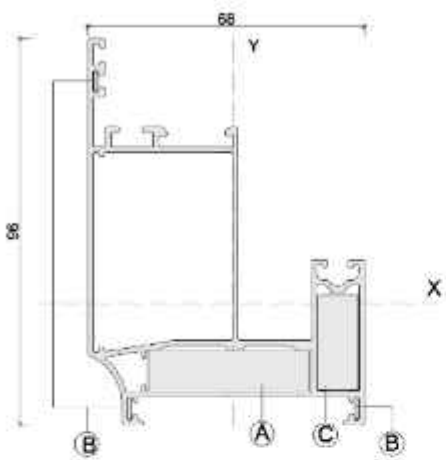
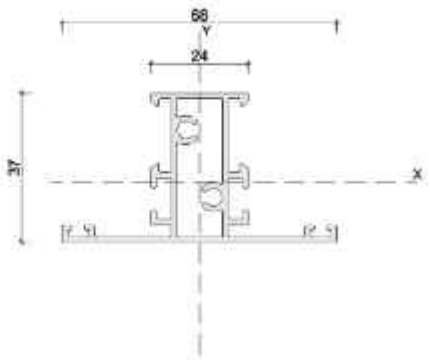
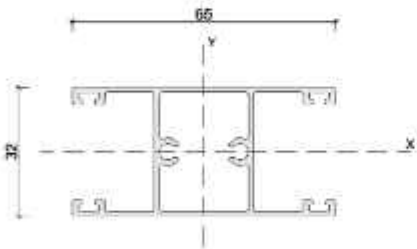
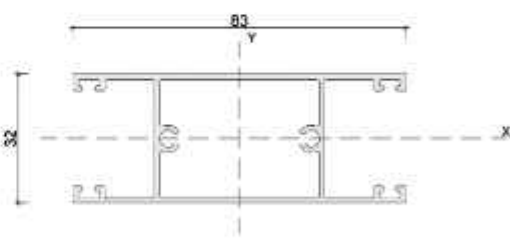
### Profile & Accessories Information

|                           |                          |                           |                          |
|---------------------------|--------------------------|---------------------------|--------------------------|
|                           |                          |                           |                          |
| $I_x: 11.20 \text{ cm}^4$ | $I_y: 5.52 \text{ cm}^4$ | $I_x: 11.18 \text{ cm}^4$ | $I_y: 5.34 \text{ cm}^4$ |
| Sash : ALN-203            | A: PCP-10 / 26 mm        | Sash : ALN-236            | A: PCP-10 / 26 mm        |
| Weight: 872 gr/m          | B: MO19                  | Weight: 867 gr/m          | B: MO19                  |
|                           |                          |                           |                          |
| $I_x: 9.64 \text{ cm}^4$  | $I_y: 5.01 \text{ cm}^4$ | $I_x: 35.77 \text{ cm}^4$ | $I_y: 7.59 \text{ cm}^4$ |
| Sash : ALN-231            | A: PCP-10 / 26 mm        | Sash : ALN-260            | A: PCP-22 / 28 mm        |
| Weight: 832 gr/m          | B: MO19                  | Weight: 1179 gr/m         | B: MO19                  |



## Slide System 60 Series

### Profile & Accessories Information

|                                                                                     |                                                                                                               |                                                                                      |                             |
|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|-----------------------------|
|    |                                                                                                               |    |                             |
| $I_x$ : 38.55 $\text{cm}^4$                                                         | $I_y$ : 31.08 $\text{cm}^4$                                                                                   | $I_x$ : 4.96 $\text{cm}^4$                                                           | $I_y$ : 6.14 $\text{cm}^4$  |
| Monorail Frame : ALN-265                                                            | A: PCP-10 / 40 mm          | Transom : ALN-218                                                                    | —                           |
| Weight: 1490 gr/m                                                                   | B: MO19  C: PCP-24 / 10 mm | Weight: 813 gr/m                                                                     | —                           |
|  |                                                                                                               |  |                             |
| $I_x$ : 5.03 $\text{cm}^4$                                                          | $I_y$ : 10.37 $\text{cm}^4$                                                                                   | $I_x$ : 6.03 $\text{cm}^4$                                                           | $I_y$ : 21.30 $\text{cm}^4$ |
| Transom : ALN-240                                                                   | —                                                                                                             | Transom : ALN-202                                                                    | —                           |
| Weight: 805 gr/m                                                                    | —                                                                                                             | Weight: 918 gr/m                                                                     | —                           |



## Slide System 60 Series

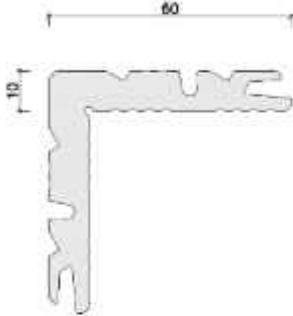
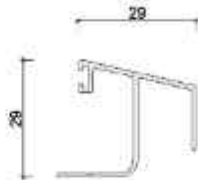
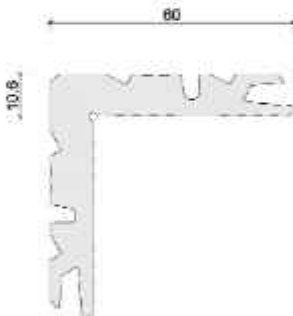
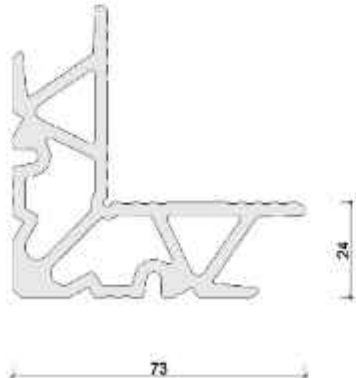
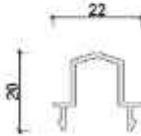
### Profile & Accessories Information

|                          |                   |                          |                   |
|--------------------------|-------------------|--------------------------|-------------------|
|                          |                   |                          |                   |
| $I_x: 7.46 \text{ cm}^4$ |                   | $I_y: 3.94 \text{ cm}^4$ |                   |
| Transom : ALN-232        |                   |                          |                   |
| Weight: 721 gr/m         |                   | Corner Joint: PCP 20     | Weight: 1375 gr/m |
|                          |                   |                          |                   |
| Cap : ALN-263            | Weight : 363 gr/m | Corner : MO 19 399012    | Weight: 533 gr/m  |



## Slide System 60 Series

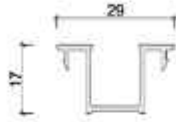
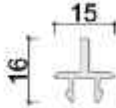
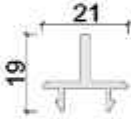
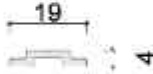
### Profile & Accessories Information

|                                                                                     |                    |                                                                                       |                  |
|-------------------------------------------------------------------------------------|--------------------|---------------------------------------------------------------------------------------|------------------|
|    |                    |     |                  |
| Corner : PCP10                                                                      | Weight: 2454 gr/m  | Cap : ALN-244                                                                         | Weight: 319 gr/m |
|   |                    |   |                  |
| Corner : PCP11                                                                      | Weight: 2549 gr/m  | Cap : ALN-247                                                                         | Weight: 386 gr/m |
|  |                    |  |                  |
| Corner: PCP-24                                                                      | Weight : 3918 gr/m | Profile : ALN-205                                                                     | Weight: 176 gr/m |



## Slide System 60 Series

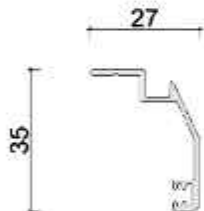
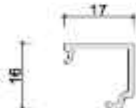
### Profile & Accessories Information

|                                                                                     |                  |                                                                                       |                   |
|-------------------------------------------------------------------------------------|------------------|---------------------------------------------------------------------------------------|-------------------|
|    |                  |    |                   |
| Profile : ALN-206                                                                   | Weight: 232 gr/m | Profile : ALN-257                                                                     | Weight: 149 gr/m  |
|  |                  |  |                   |
| Profile : ALN-241                                                                   | Weight: 194 gr/m | Profile : ALN-224                                                                     | Weight: 113 gr/m  |
|  |                  |   |                   |
| Profile : ALN-242                                                                   | Weight: 116 gr/m | Flange profile: ALN-219                                                               | Weight : 362 gr/m |



## Slide System 60 Series

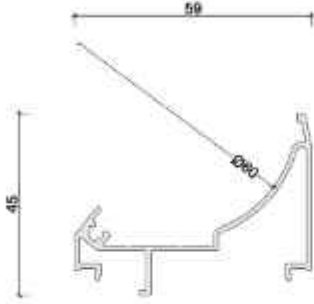
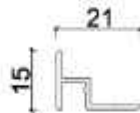
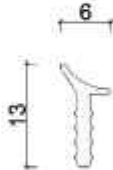
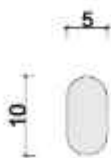
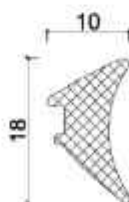
### Profile & Accessories Information

|                                                                                     |                  |                                                                                       |                  |
|-------------------------------------------------------------------------------------|------------------|---------------------------------------------------------------------------------------|------------------|
|    |                  |    |                  |
| Flange profile: ALN-221                                                             | Weight: 302 gr/m | Glazing bead : ALN-233                                                                | Weight: 95 gr/m  |
|  |                  |  |                  |
| Flange profile: ALN-222                                                             | Weight: 254 gr/m | Fly screen : ALN-207                                                                  | Weight: 443 gr/m |
|  |                  |   |                  |
| Glazing bead : ALN-234                                                              | Weight: 143 gr/m | Fly screen : ALN-220                                                                  | Weight: 626 gr/m |



## Slide System 60 Series

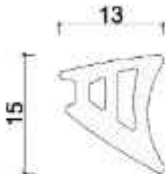
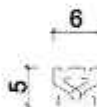
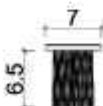
### Profile & Accessories Information

|                                                                                     |                   |                                                                                       |                  |
|-------------------------------------------------------------------------------------|-------------------|---------------------------------------------------------------------------------------|------------------|
|    |                   |    |                  |
| Profile: ALN-225                                                                    | Weight : 548 gr/m | Profile : ALN-228                                                                     | Weight: 135 gr/m |
|  |                   |  |                  |
| Profile: ALN-215                                                                    | Weight : 642 gr/m | Gasket: EP-015                                                                        | Weight : 21 gr/m |
|  |                   |  |                  |
| Rail : ALN-462                                                                      | Weight: 119 gr/m  | Gasket: EP-016                                                                        | Weight : 77 gr/m |



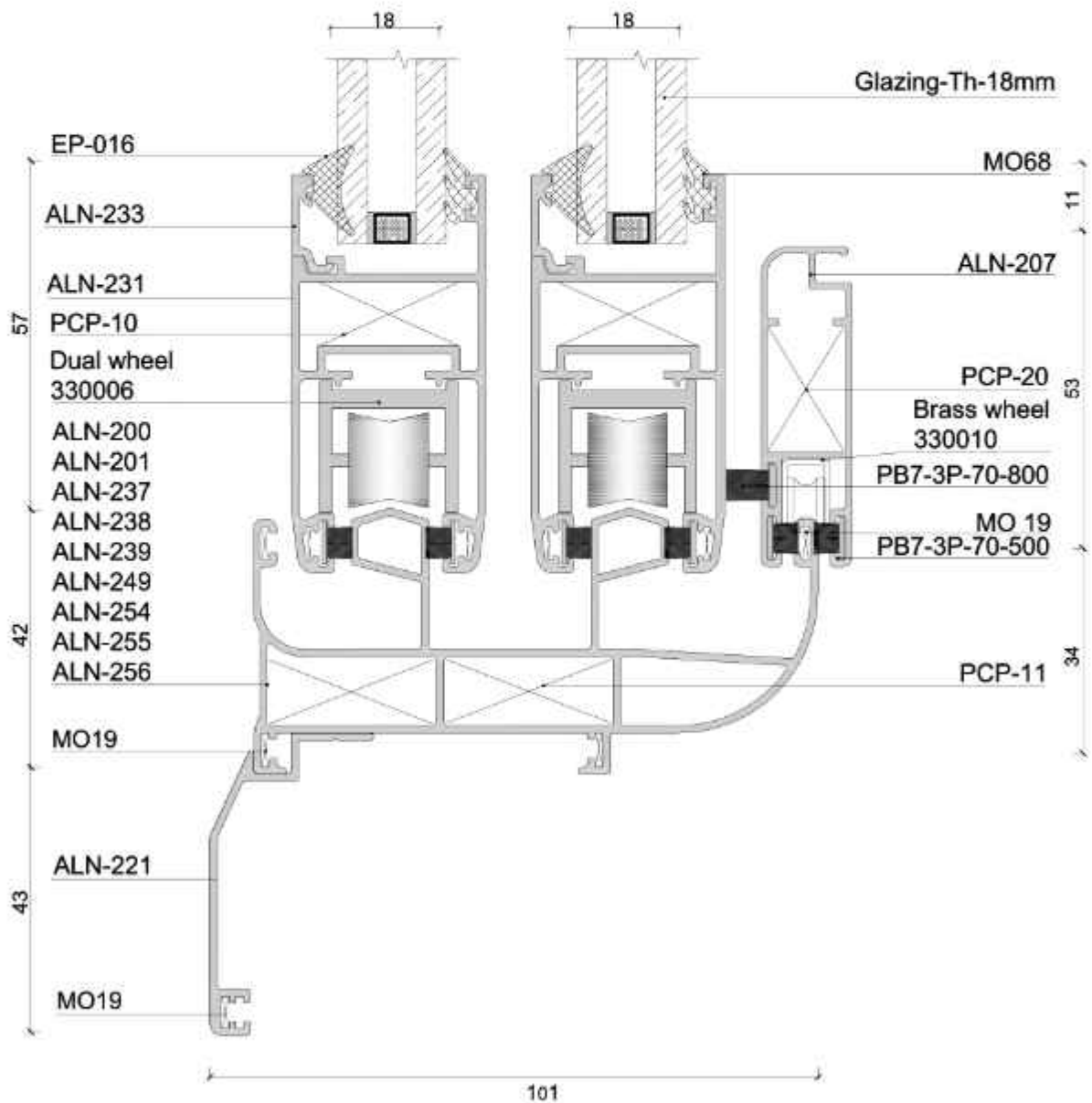
## Slide System 60 Series

### Profile & Accessories Information

|                                                                                     |                  |                                                                                       |            |
|-------------------------------------------------------------------------------------|------------------|---------------------------------------------------------------------------------------|------------|
|    |                  |    |            |
| Gasket: EP-021                                                                      | Weight : 80 gr/m | Gasket: PB7-3P-70-500                                                                 | Weight : - |
|  |                  |  |            |
| Gasket: MO68                                                                        | Weight : 46 gr/m | Gasket: MO60-1                                                                        | Weight : - |
|  |                  |                                                                                       |            |
| Gasket: PB7-3P-70-650                                                               | Weight : -       |                                                                                       |            |

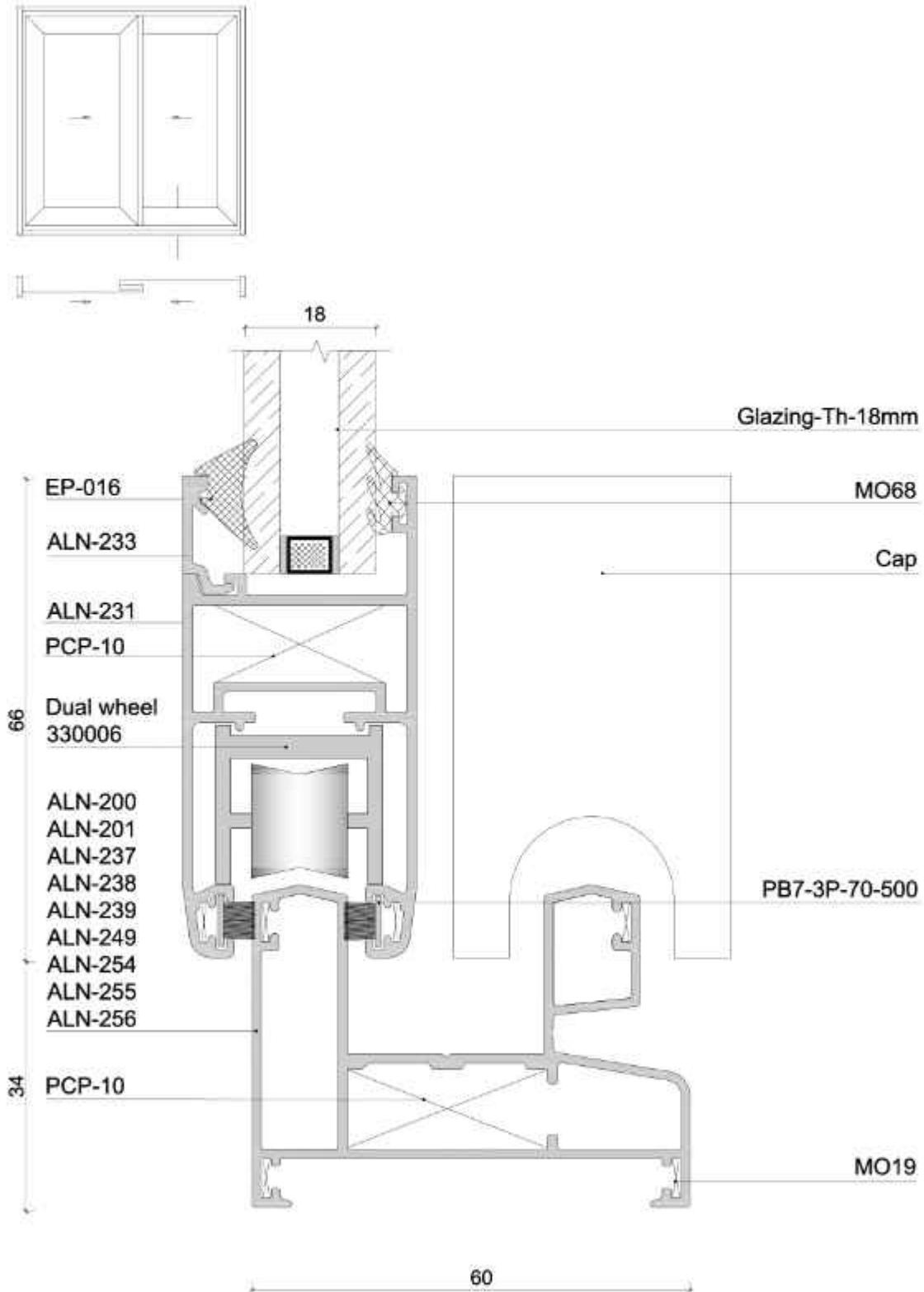


## Slide System 60 Series Fabrication Details



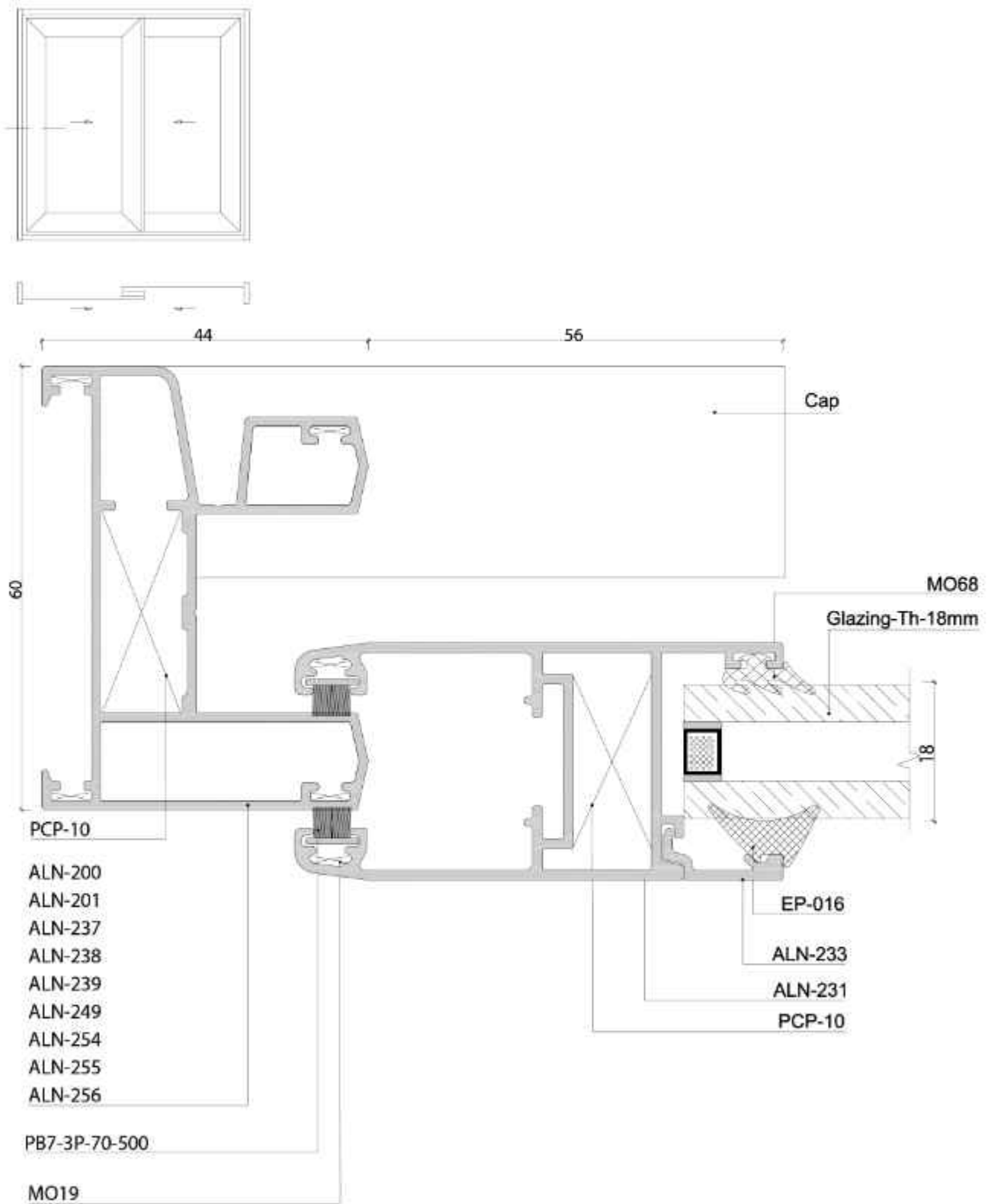
## Slide System 60 Series

### Fabrication Details



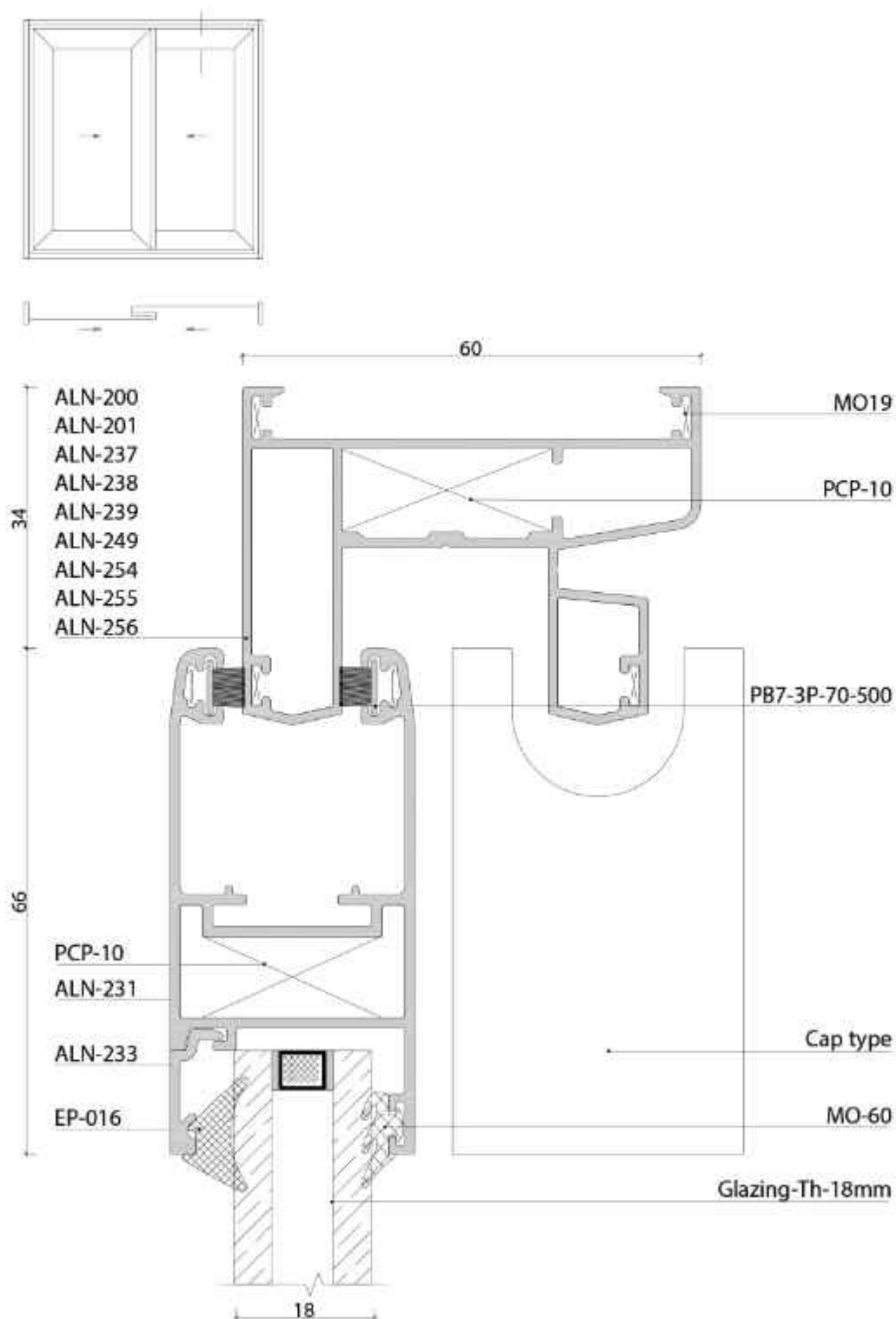


## Slide System 60 Series Fabrication Details



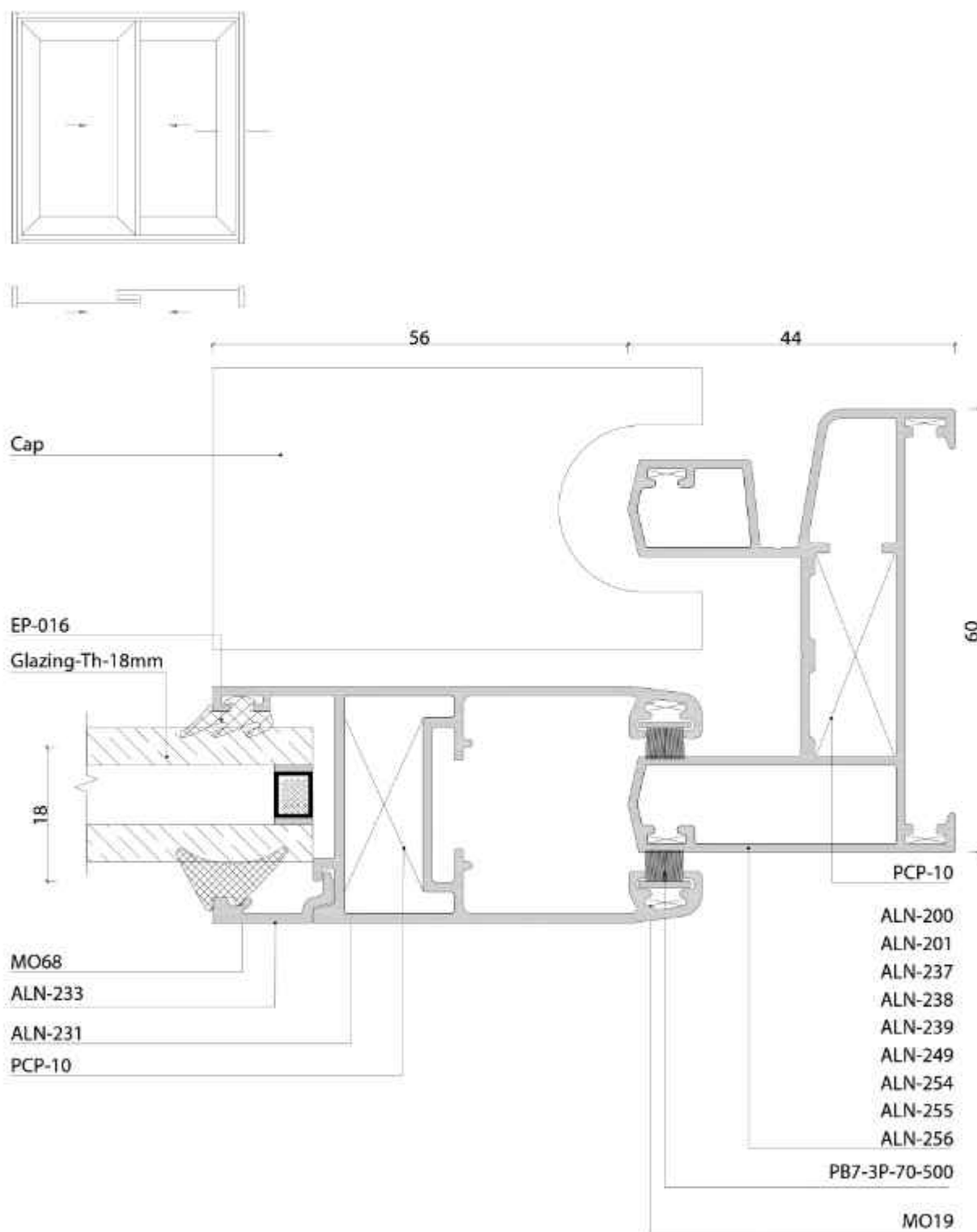
## Slide System 60 Series

### Fabrication Details



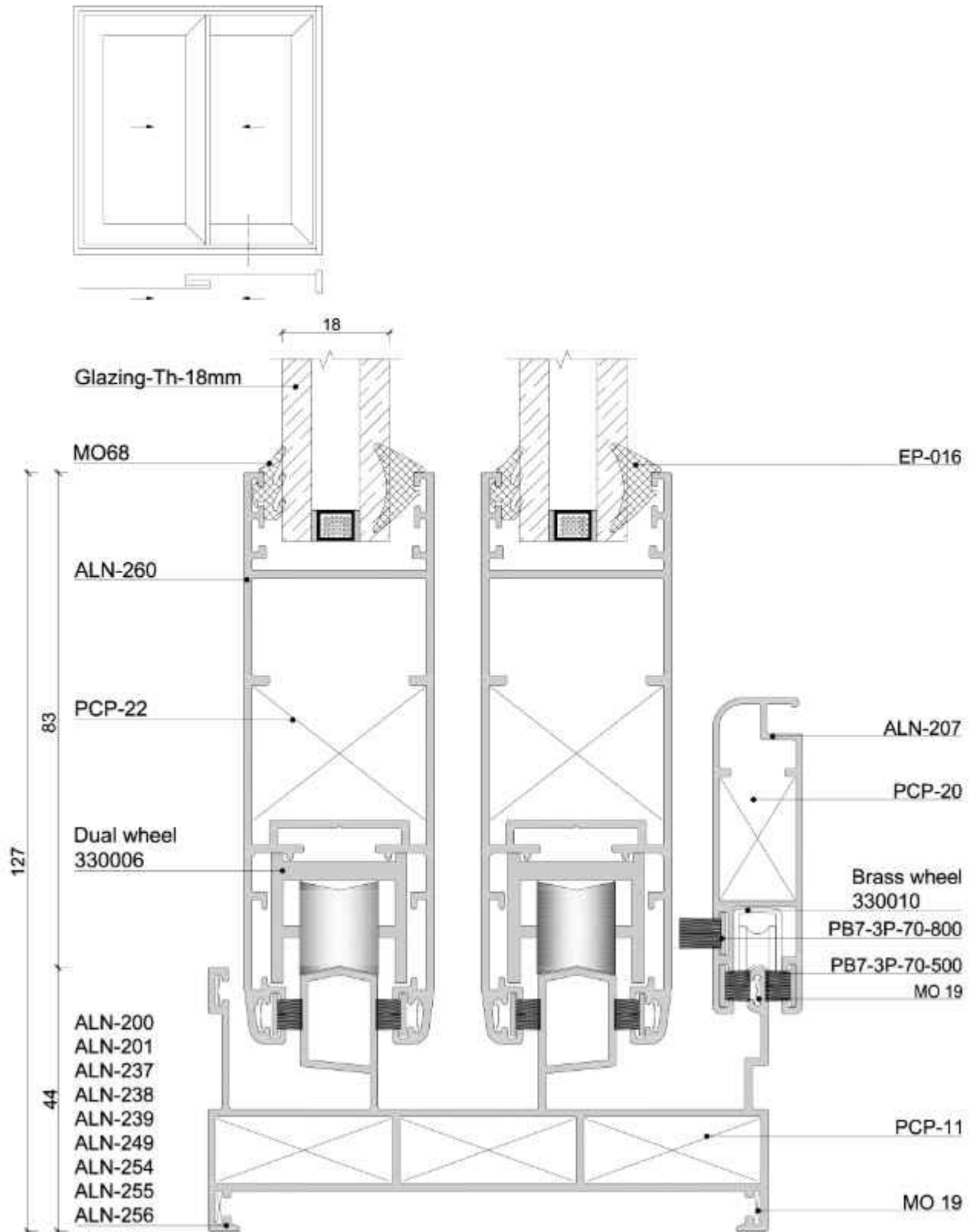


## Slide System 60 Series Fabrication Details



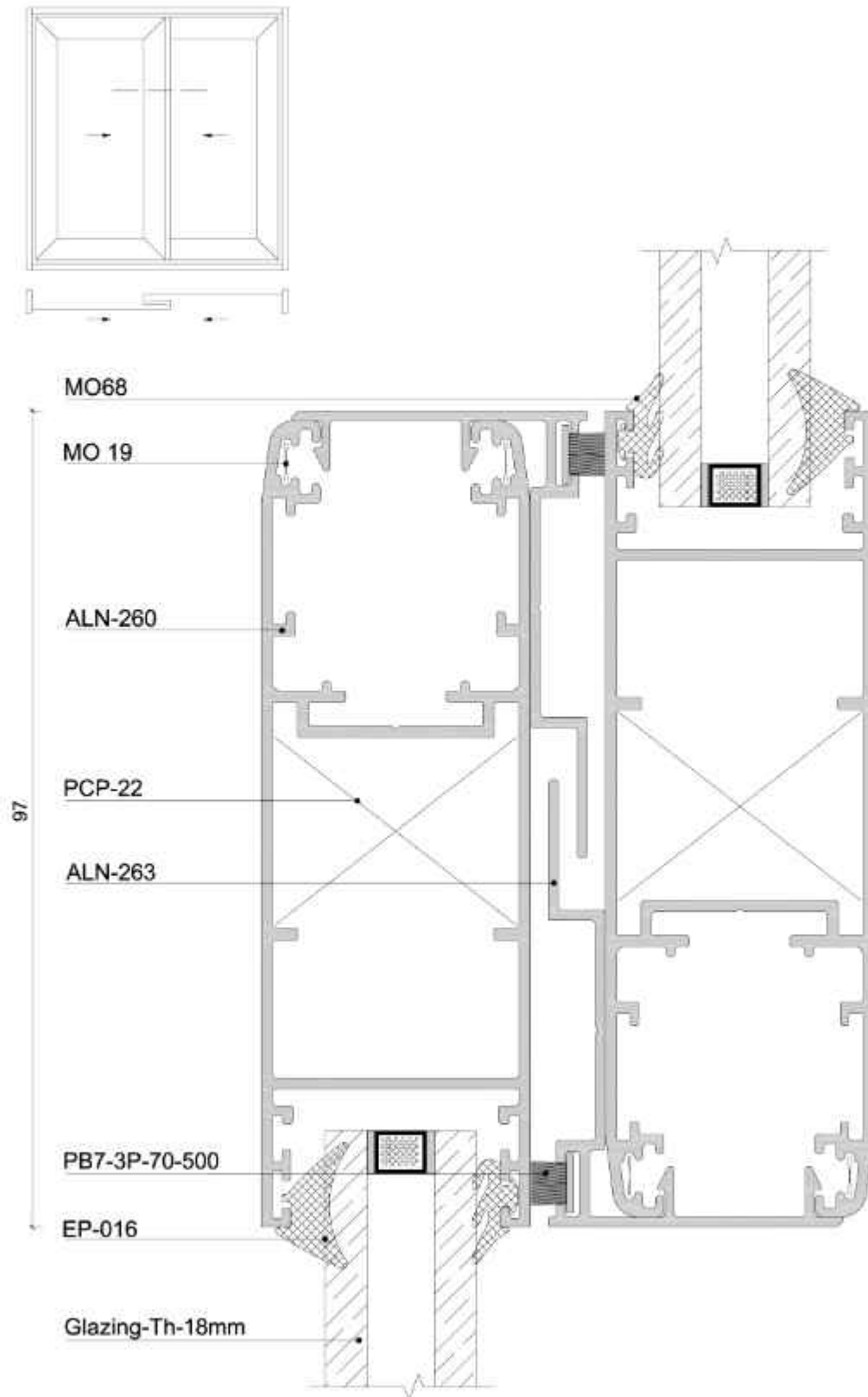
## Slide System 60 Series

### Fabrication Details



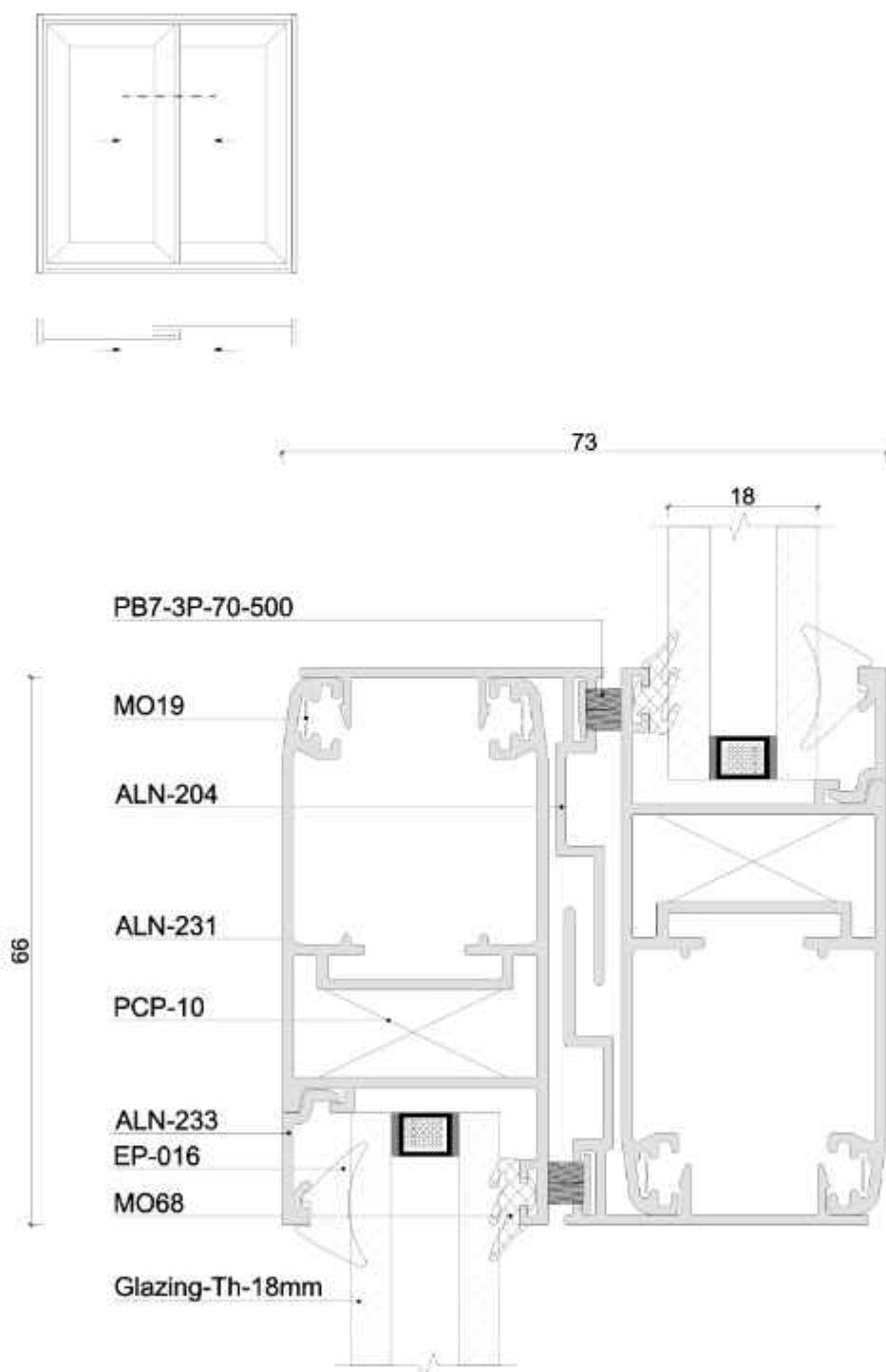


## Slide System 60 Series Fabrication Details



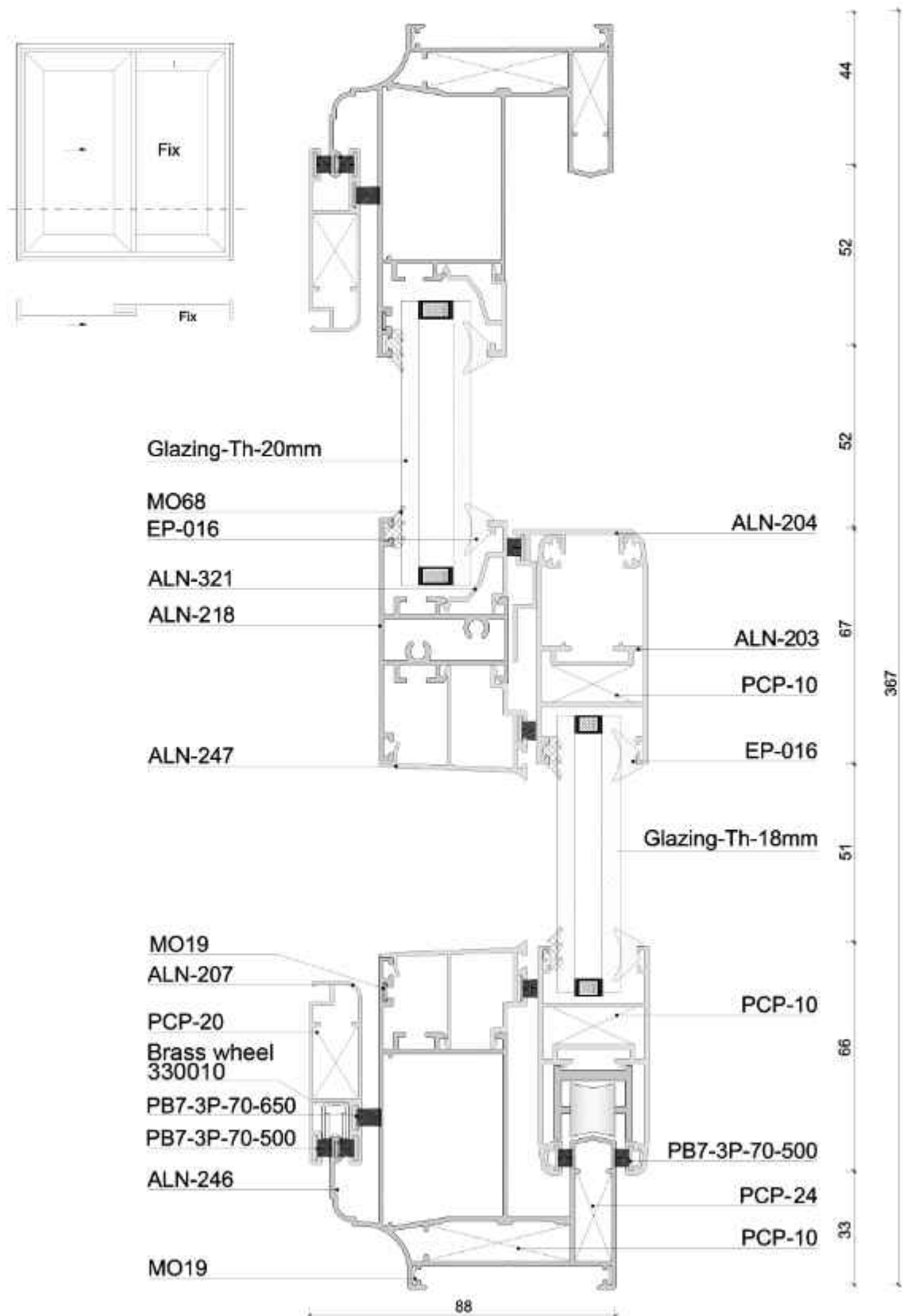
## Slide System 60 Series

### Fabrication Details



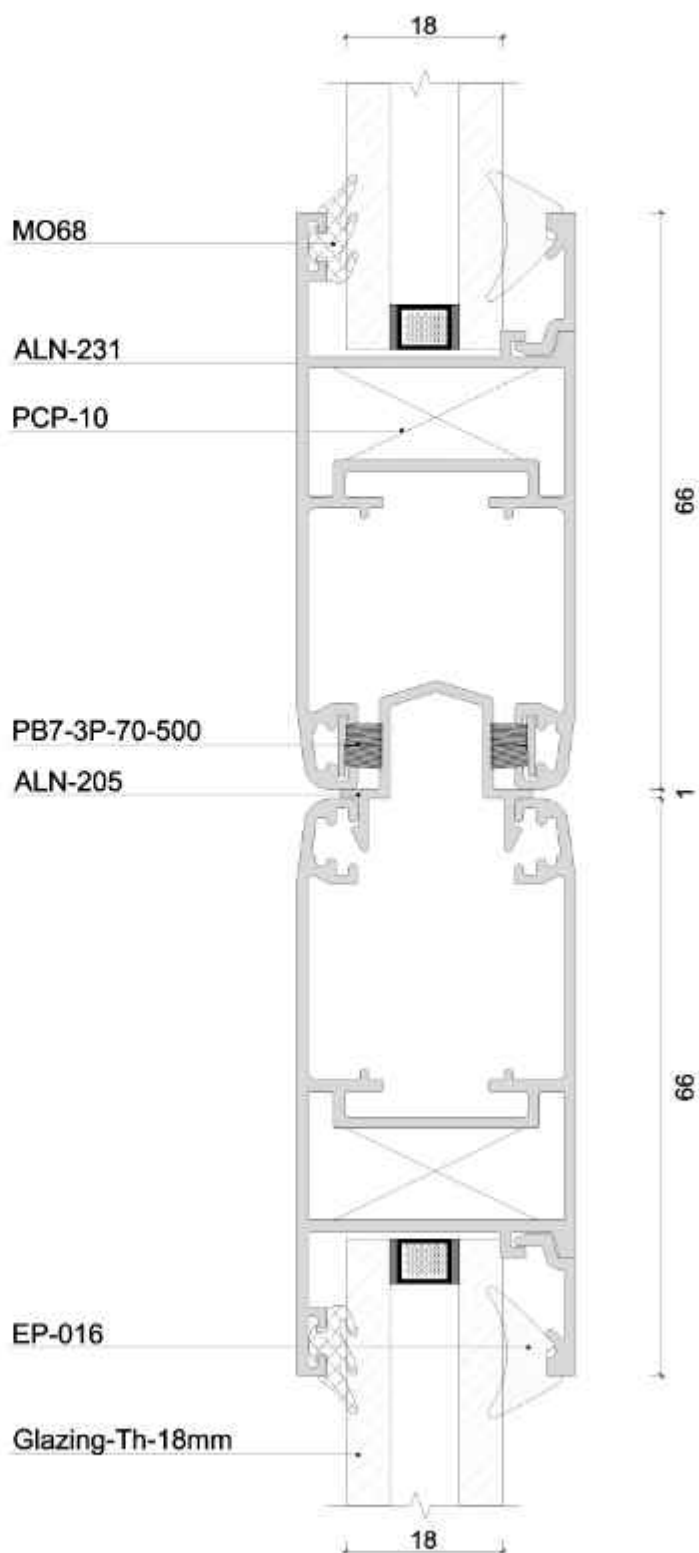
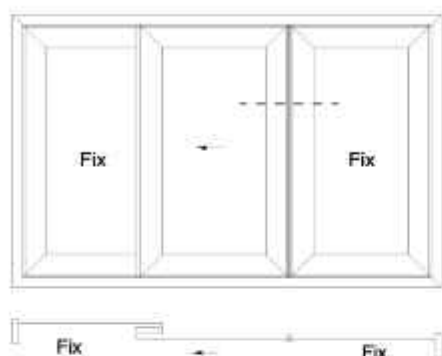


## Slide System 60 Series Fabrication Details



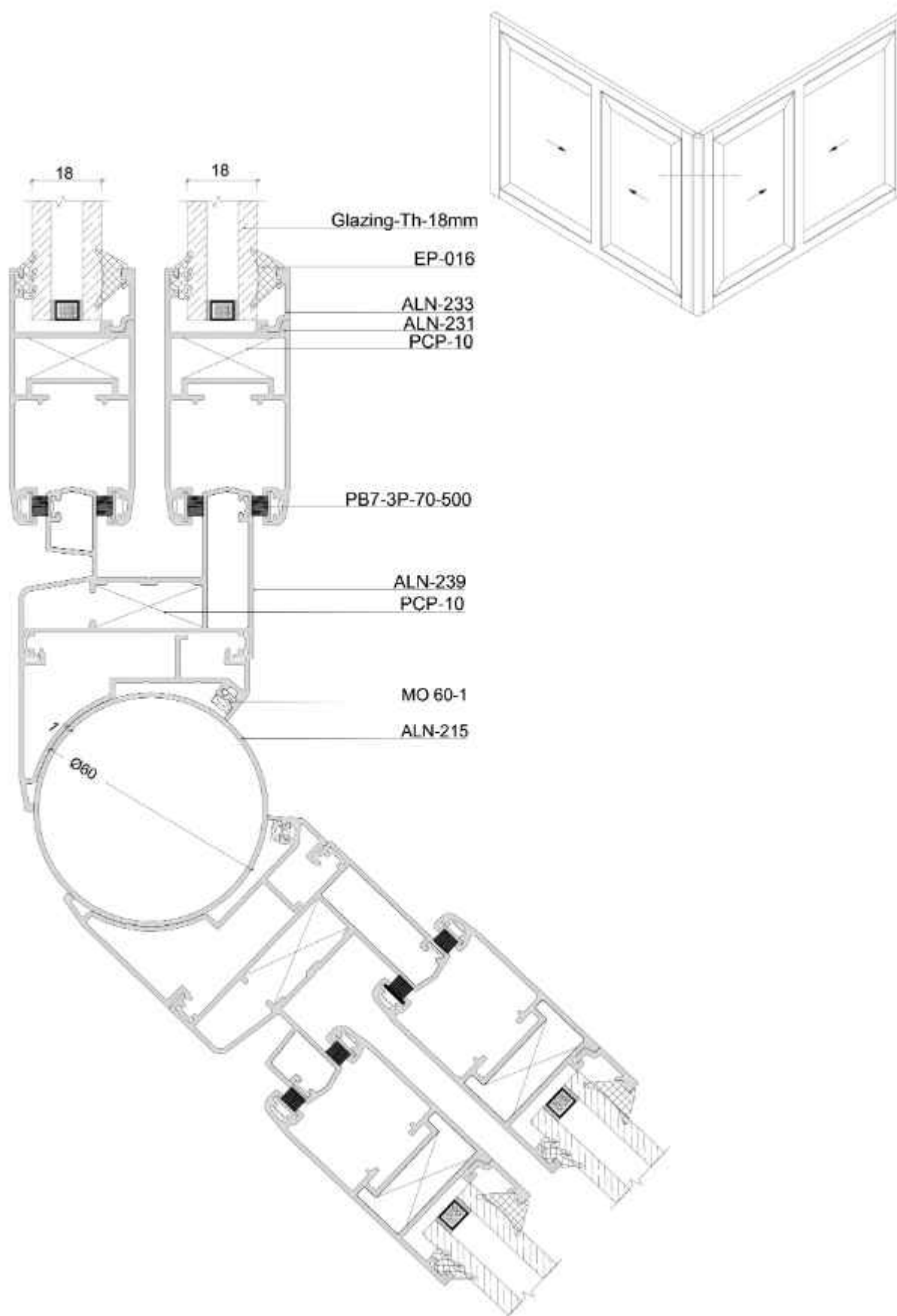
## Slide System 60 Series

### Fabrication Details



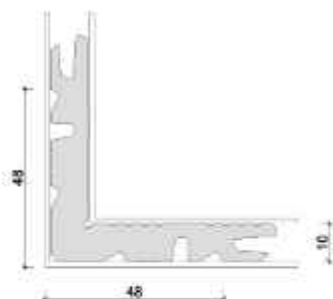


## Slide System 60 Series Fabrication Details

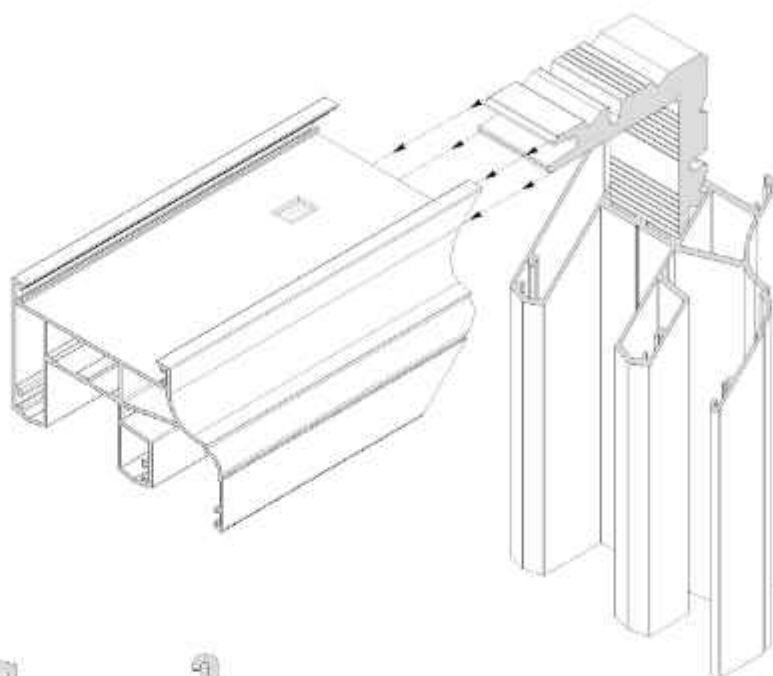


# Slide System 60 Series

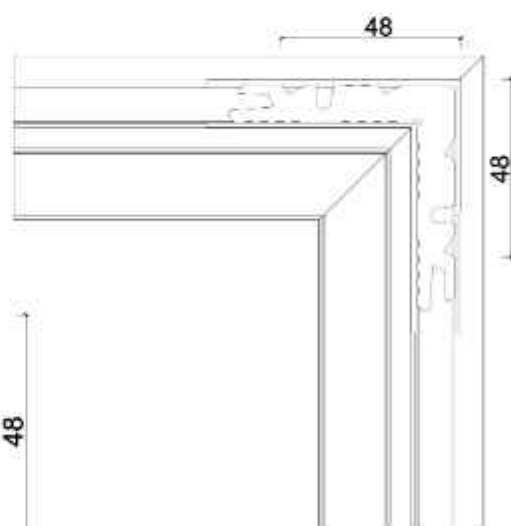
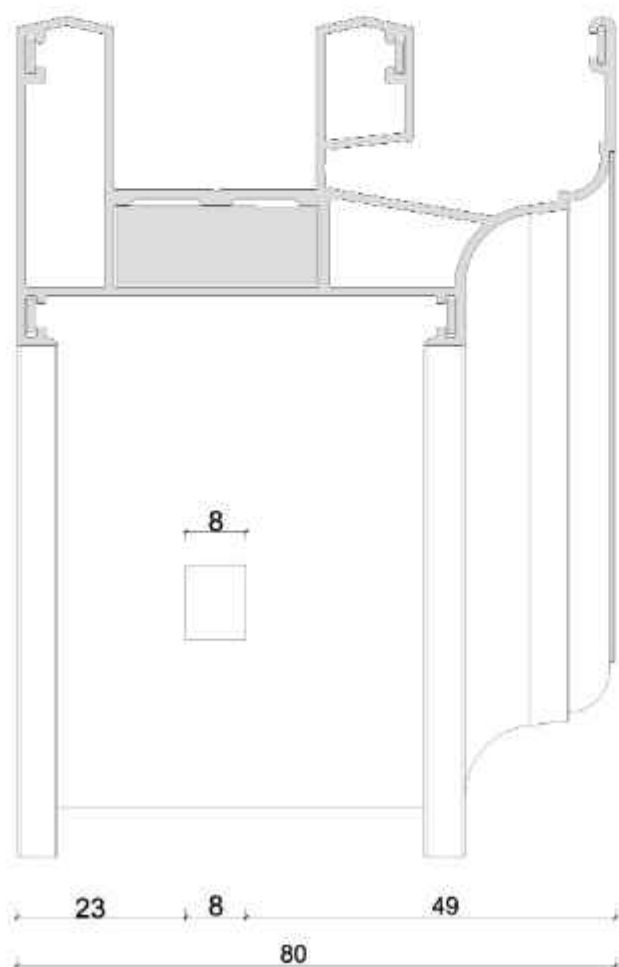
## Assembly Drawing



A:PCP-10 / 26 mm

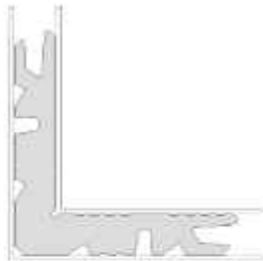


ALN-201

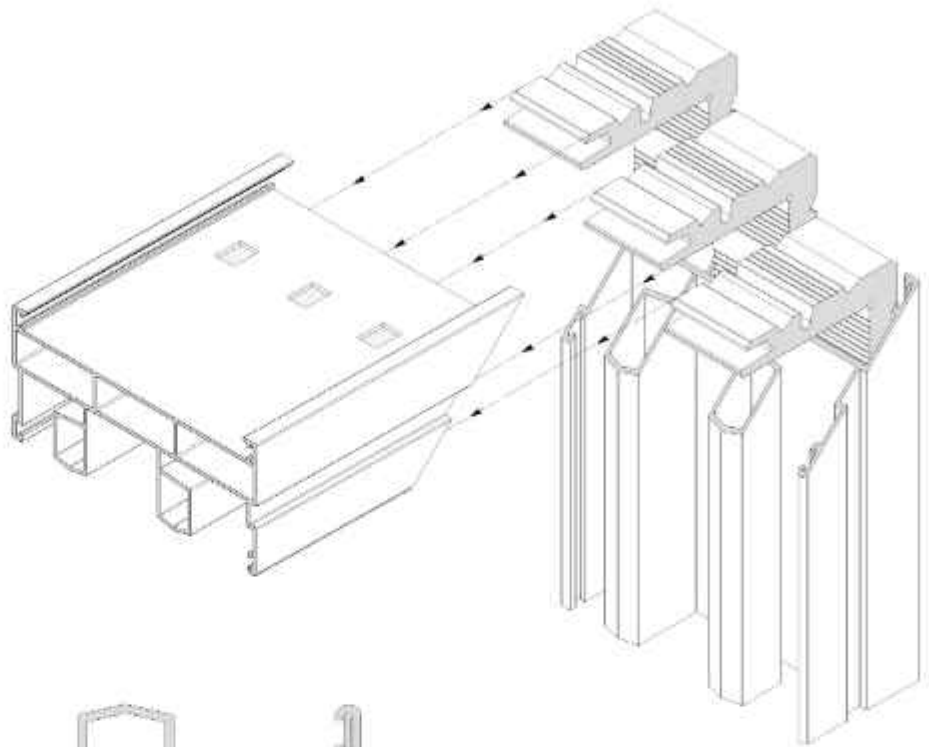




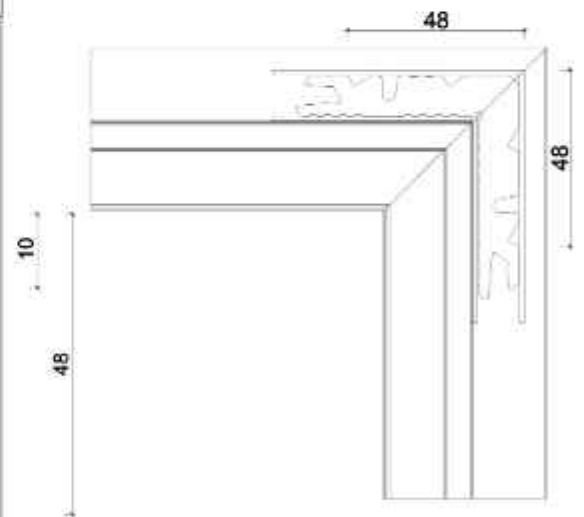
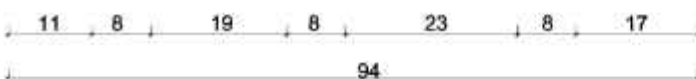
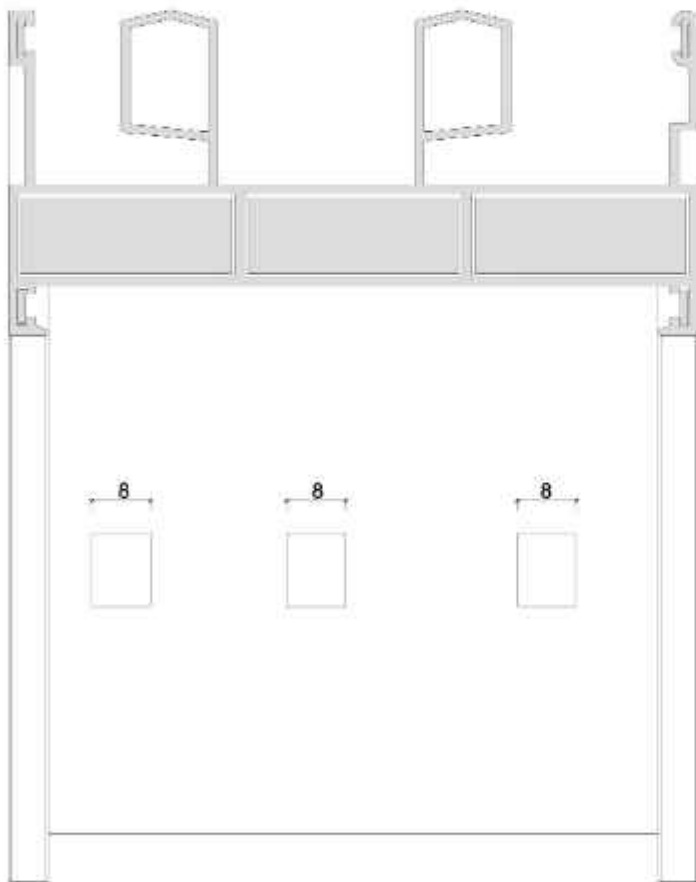
# Slide System 60 Series Assembly Drawing



A:PCP-11 / 29 mm

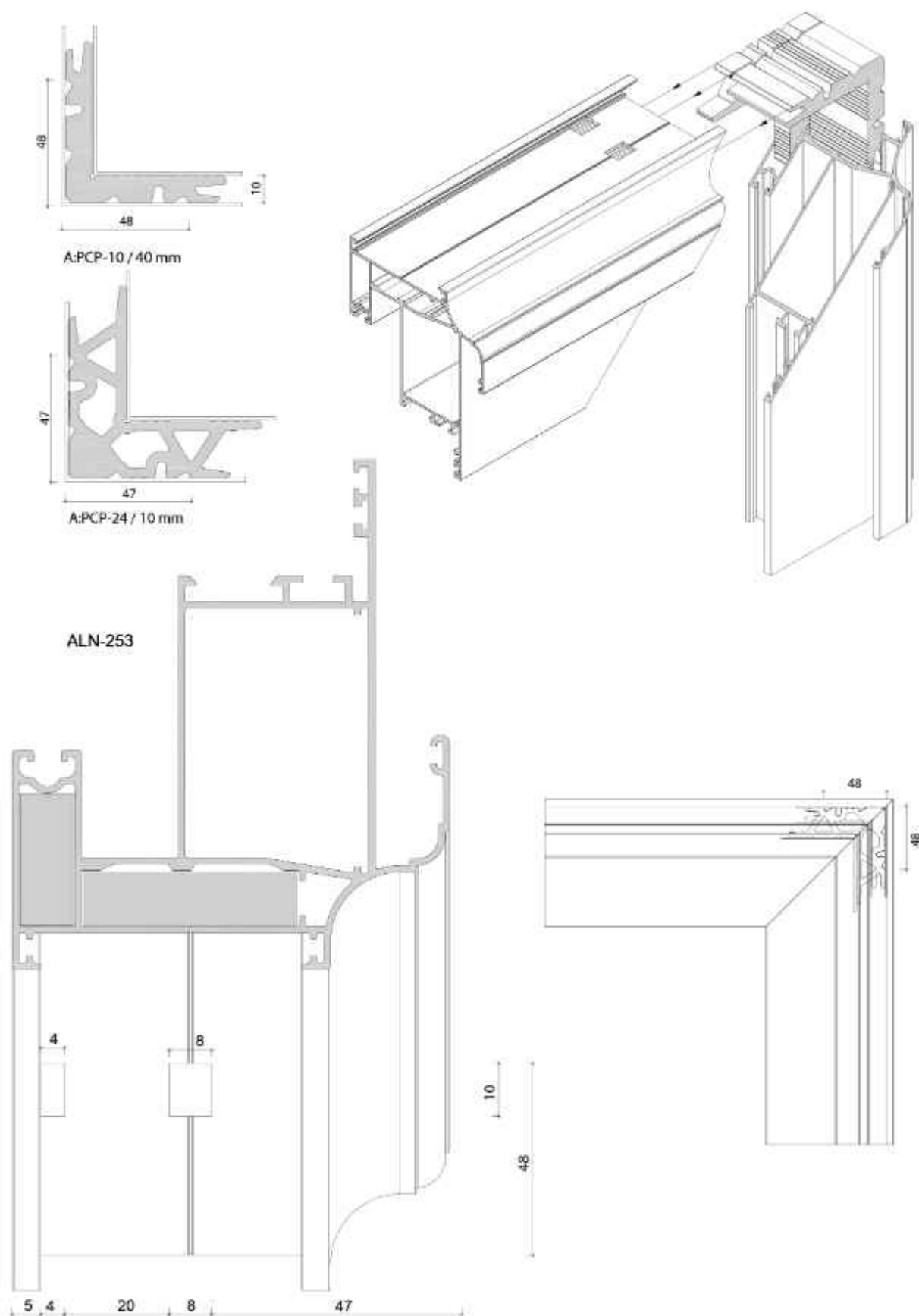


ALN-238



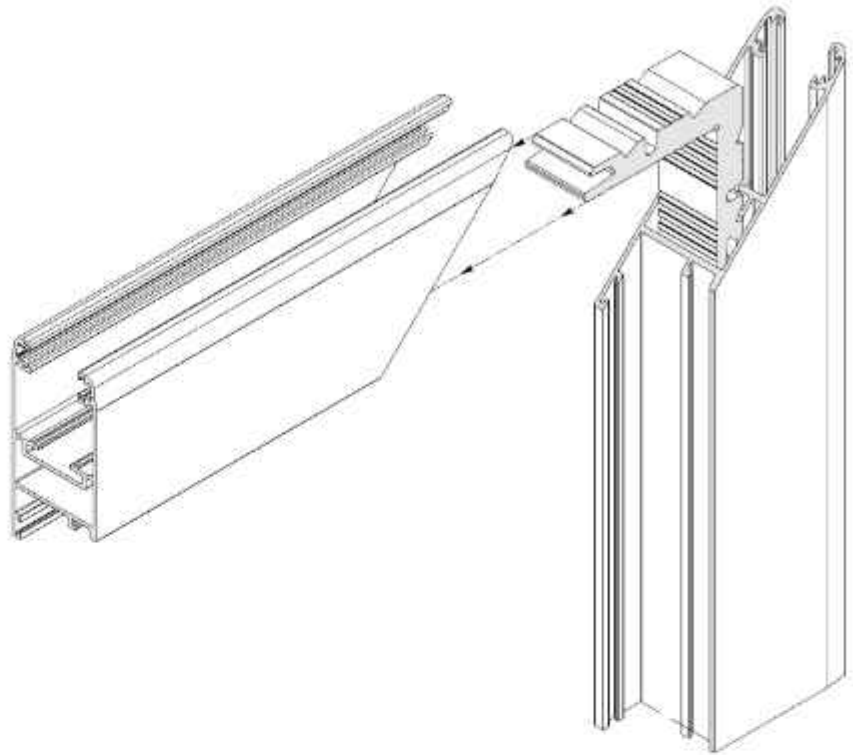
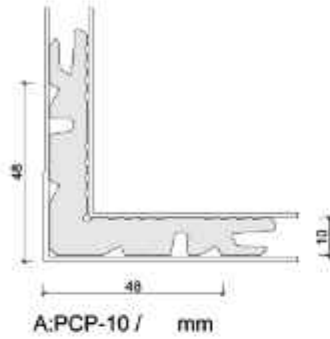
# Slide System 60 Series

## Assembly Drawing

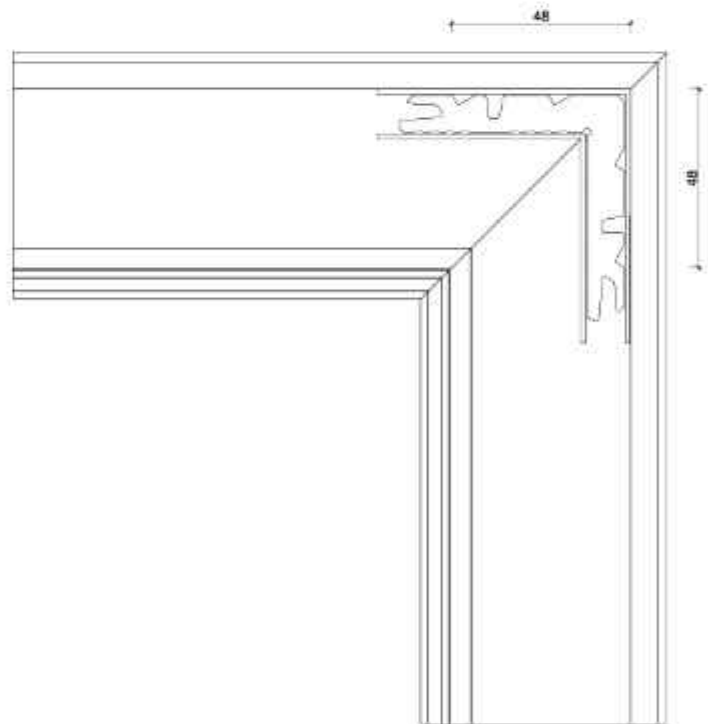
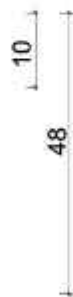
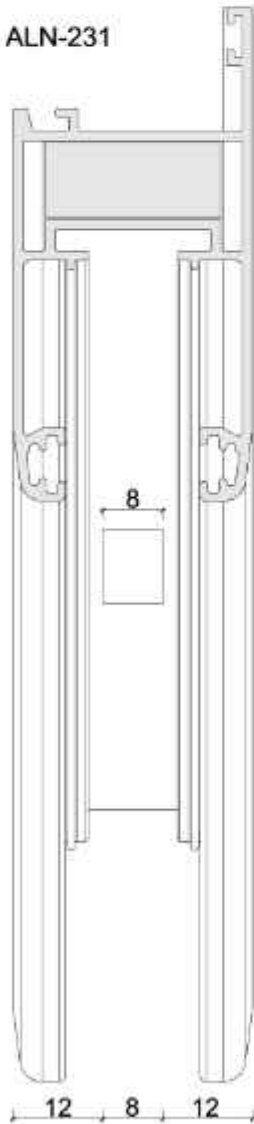




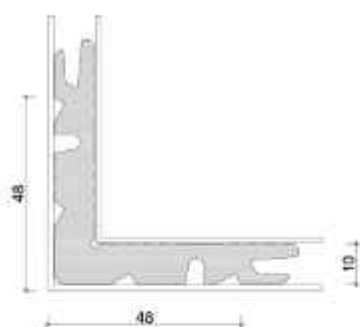
# Slide System 60 Series Assembly Drawing



ALN-231

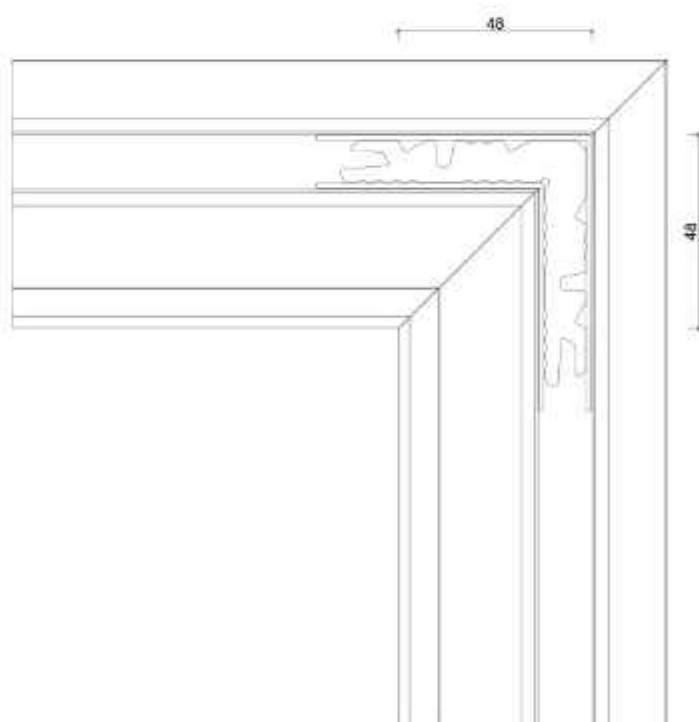
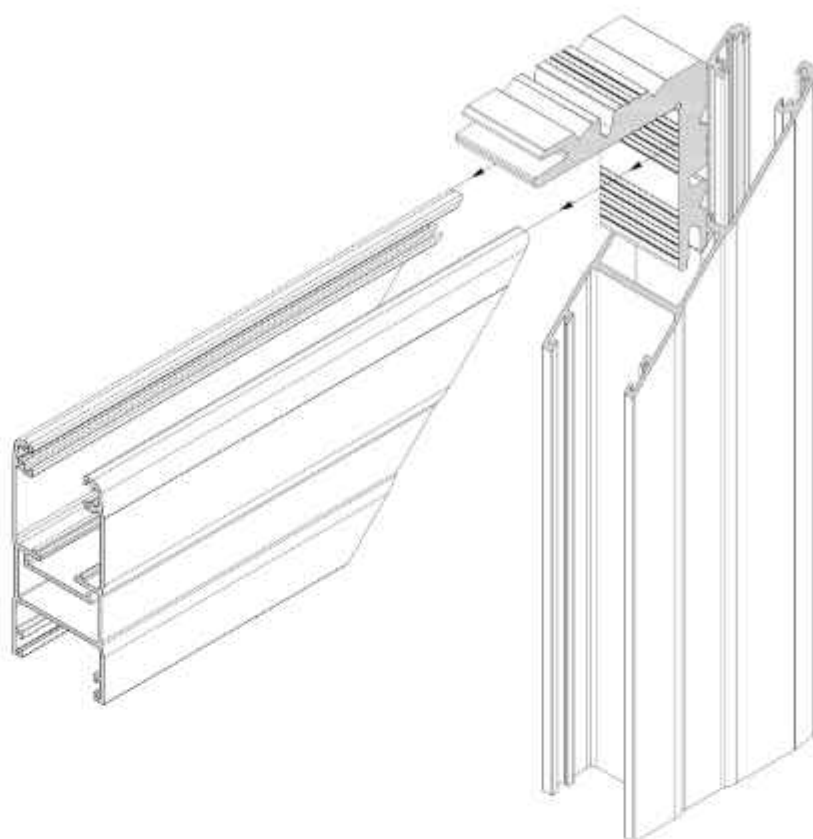
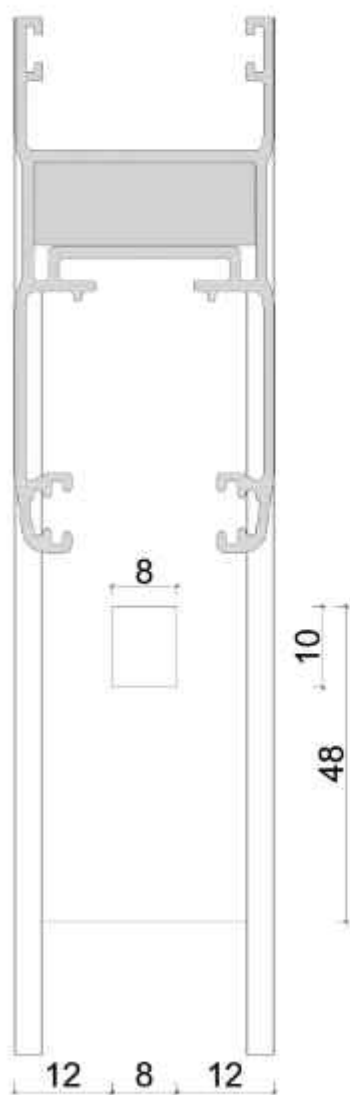


# Slide System 60 Series Assembly Drawing



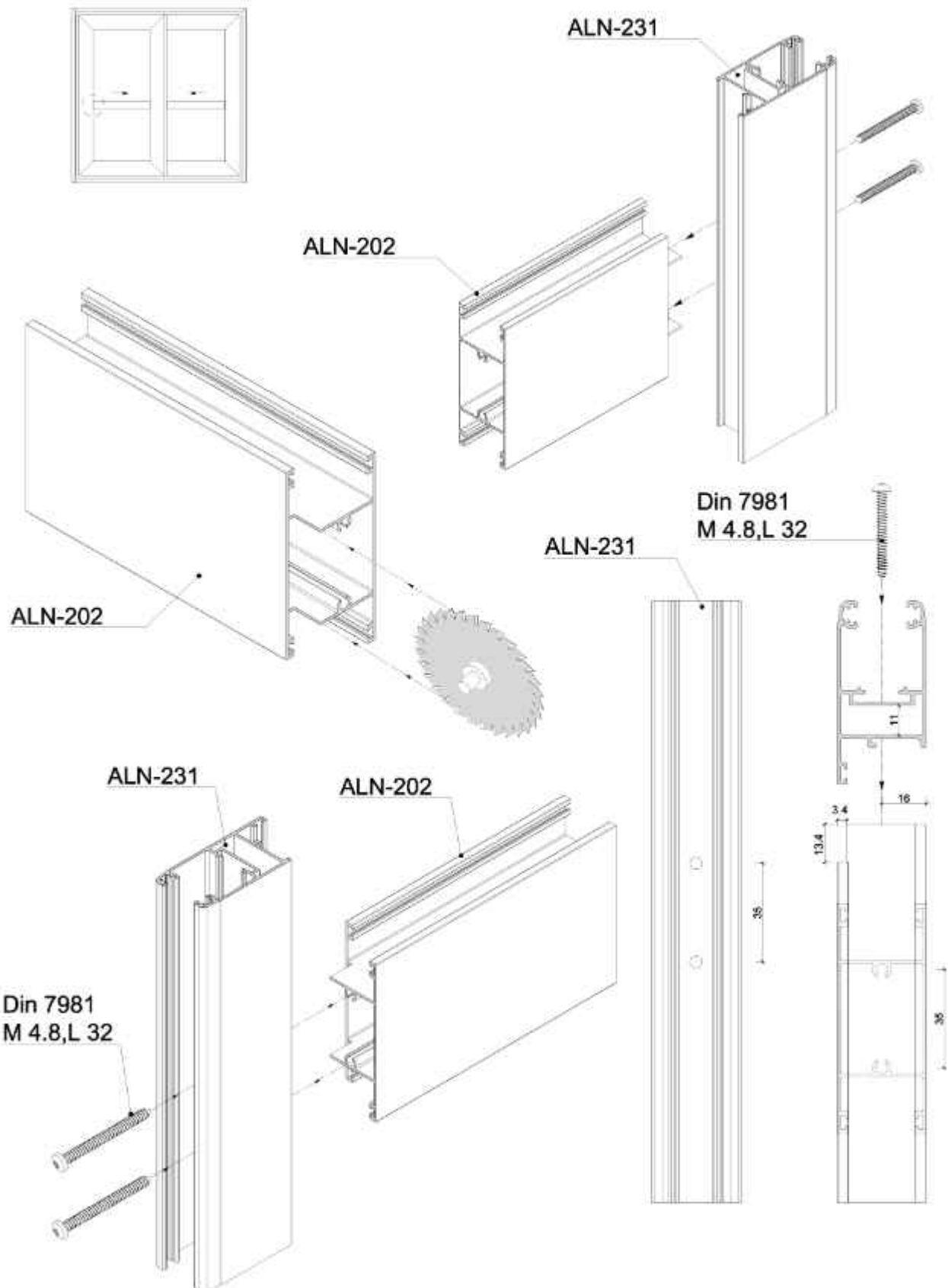
A:PCP-10 / 26 mm

ALN-236

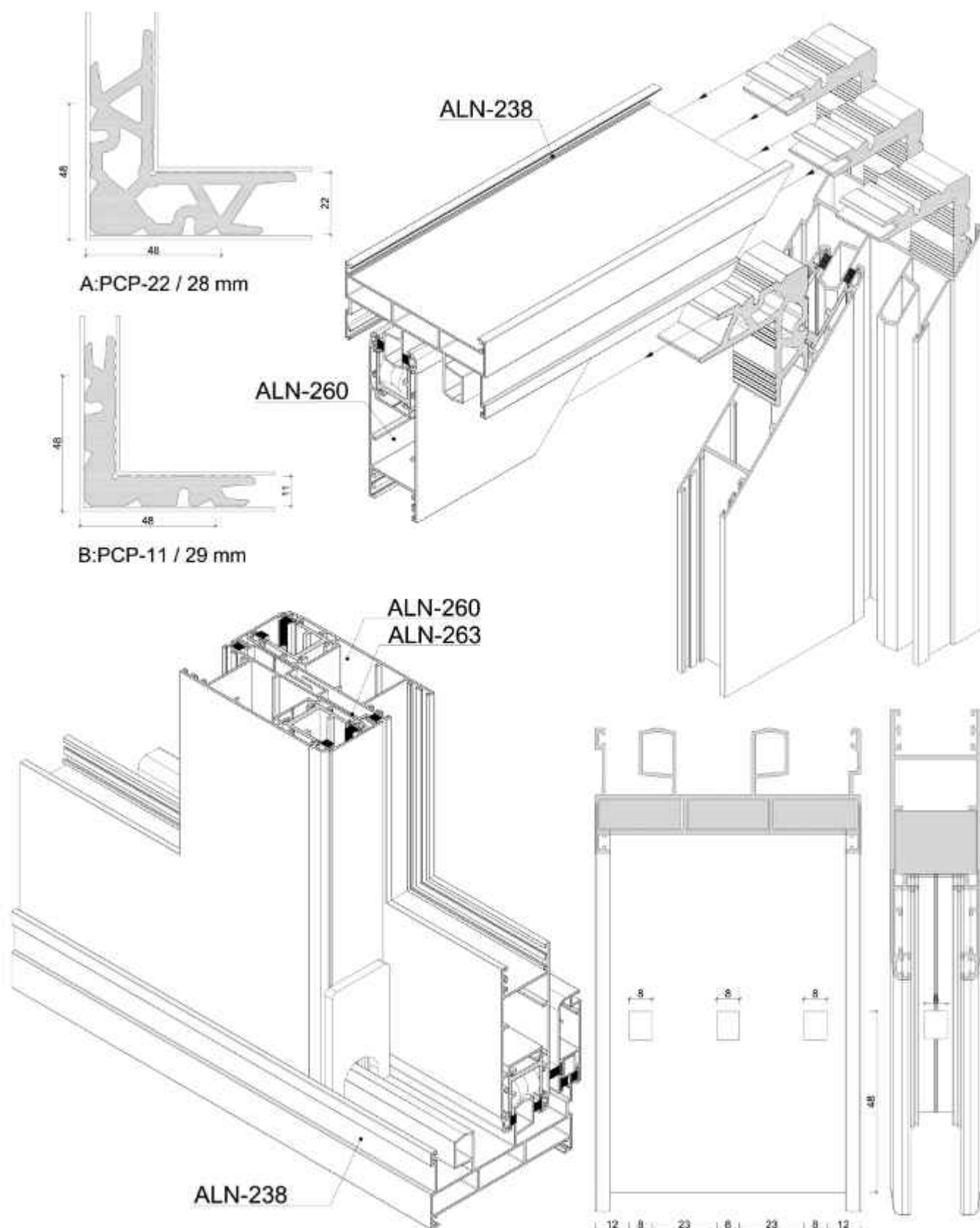




# Slide System 60 Series Assembly Drawing

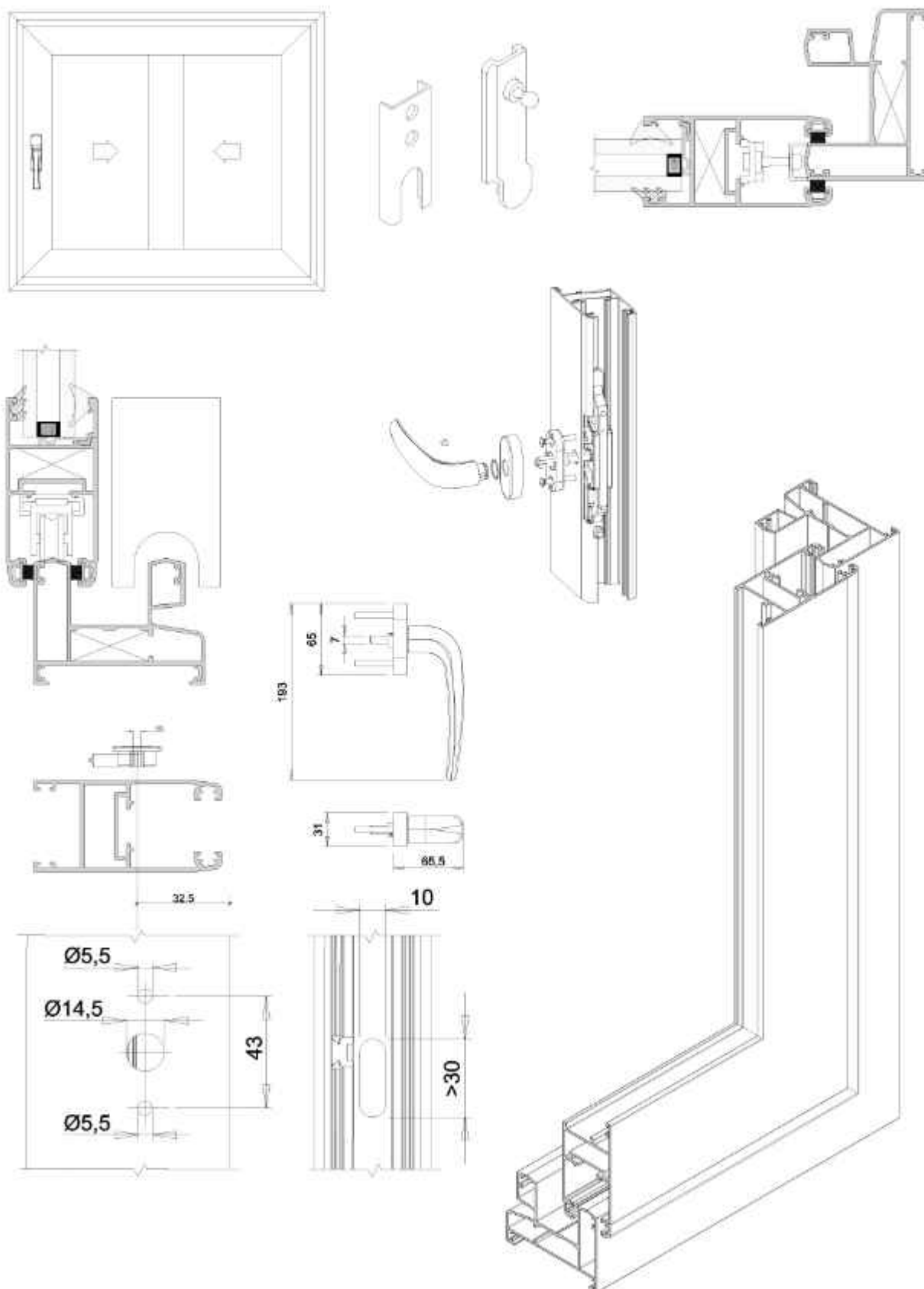


# Slide System 60 Series Assembly Drawing





## Slide System 60 Series Hardware Installation





# ALN 100

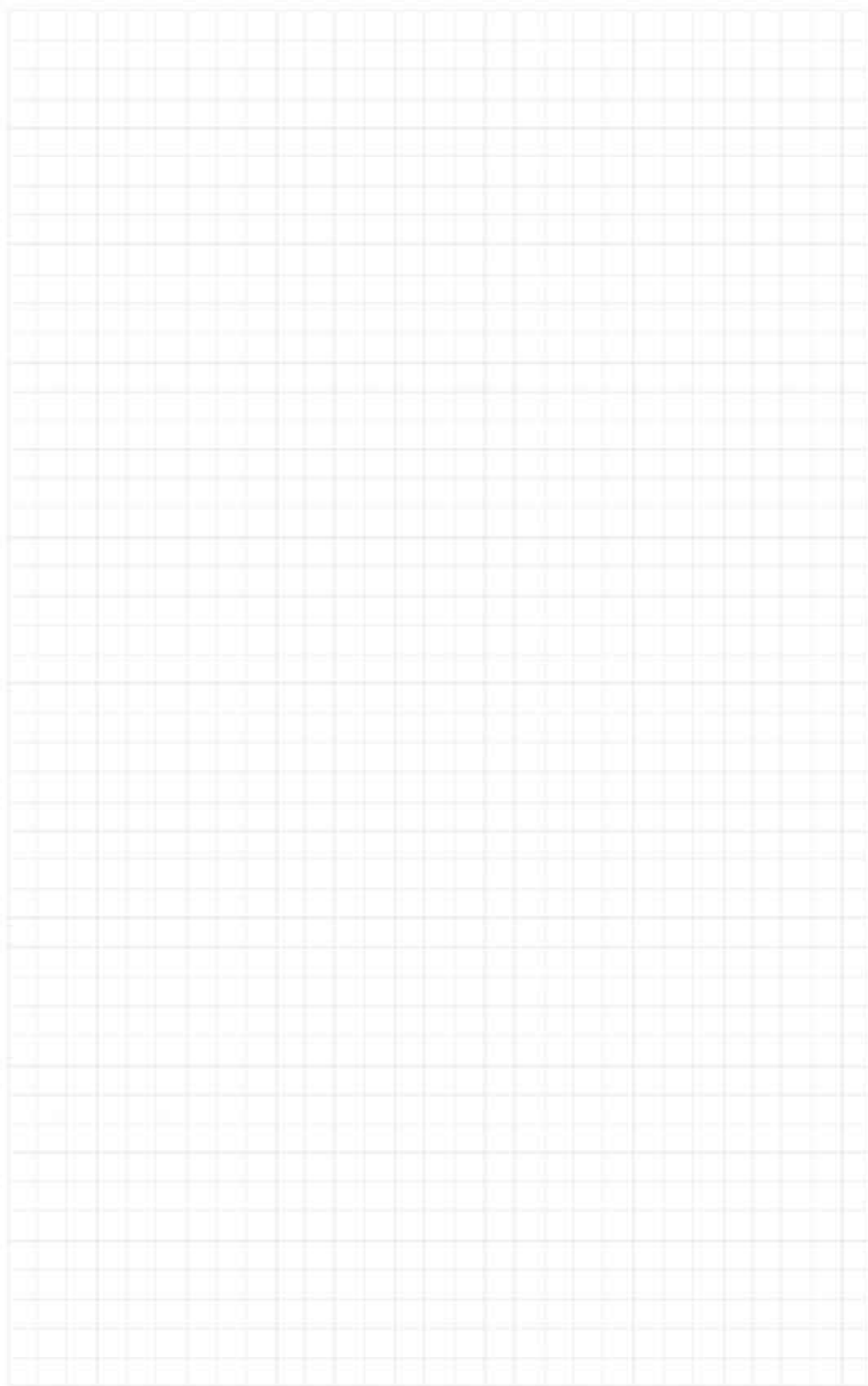
Normal Systems





**AKROLL**

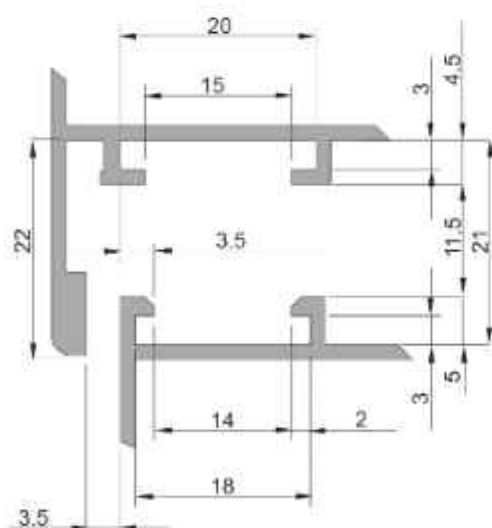
Product of Alumroll Novin Co.



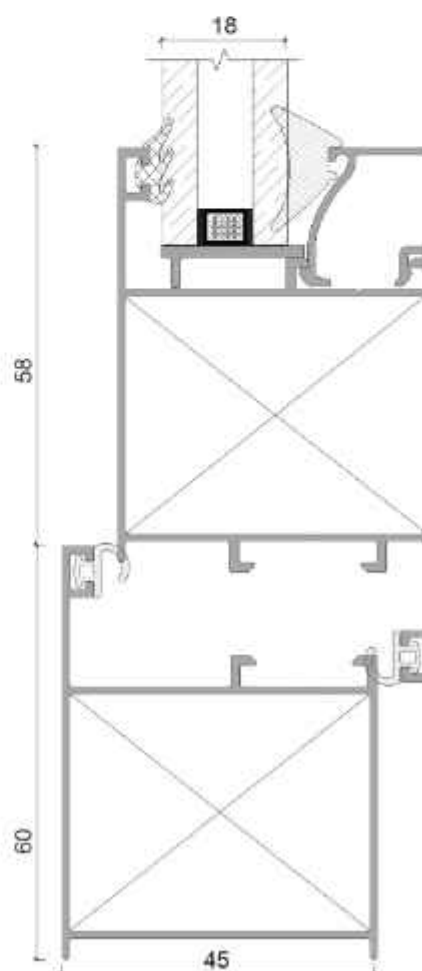


## Light Hinged System 45 Series

|                           |               |
|---------------------------|---------------|
| Profile width:            | 45 mm         |
| Vent width:               | 45 mm         |
| Wall thickness:           | 1 - 1.1 mm    |
| Rubber description:       | EPDM DIN 7863 |
| Glass thickness:          | 6 - 18 m      |
| Aluminum alloy extrusion: | EN AW 6063 T5 |
| Safety drainage system    |               |
| Various typologies        |               |

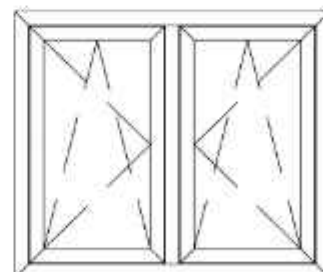
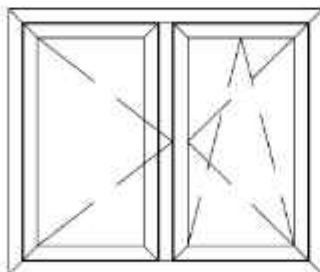
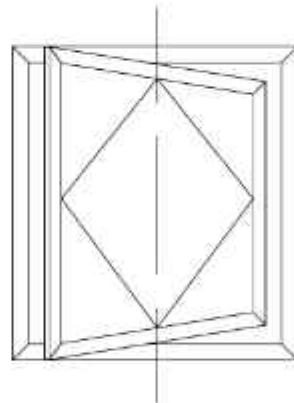
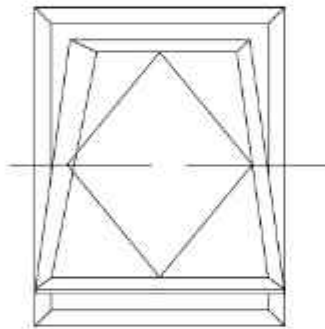
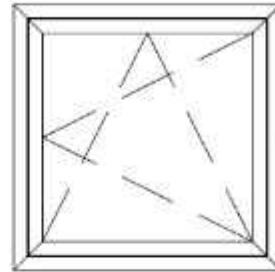
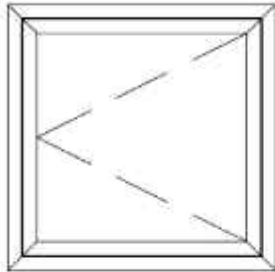


Euro Groove Section





## Light Hinged System 45 Series Typologies

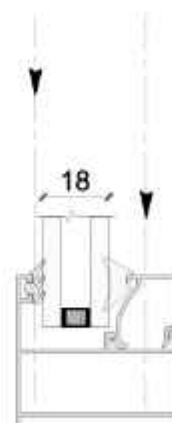
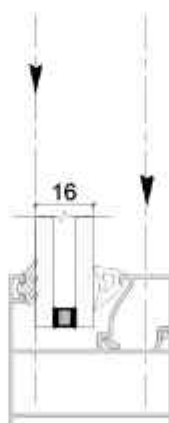
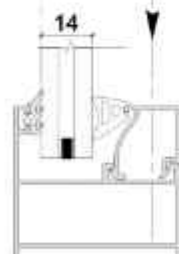


## Light Hinged System 45 Series

### Glazing Table



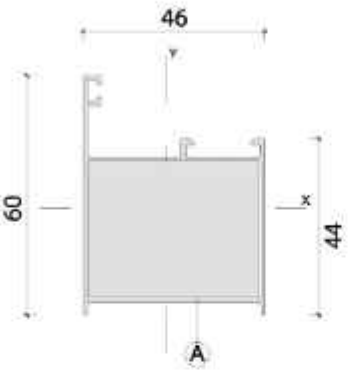
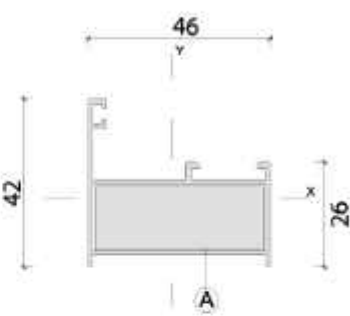
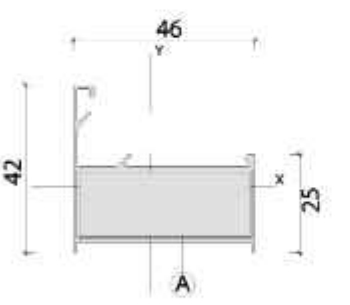
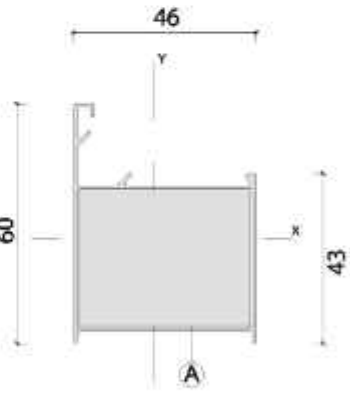
| Glazing Thickness | Gasket Inside                                                                                 | Gasket Outside                                                                              | Glazing Bead                                                                                     |
|-------------------|-----------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|
| 6 mm              | <br>EP-1008  | <br>MO68   | <br>ALN-112   |
| 14 mm             | <br>EP-021   | <br>MO68   | <br>ALN-113   |
| 16 mm             | <br>EP-019   | <br>MO68   | <br>ALN-113   |
| 18 mm             | <br>EP-016 | <br>MO68 | <br>ALN-113 |





## Light Hinged System 45 Series

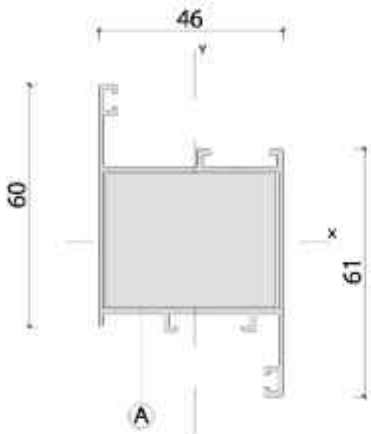
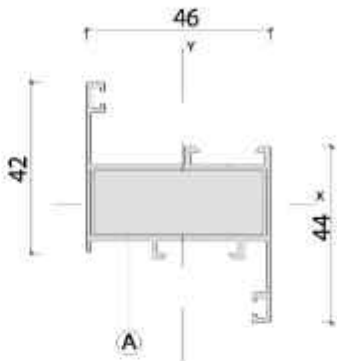
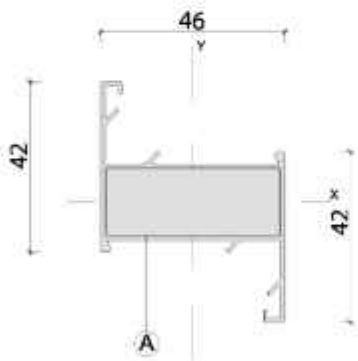
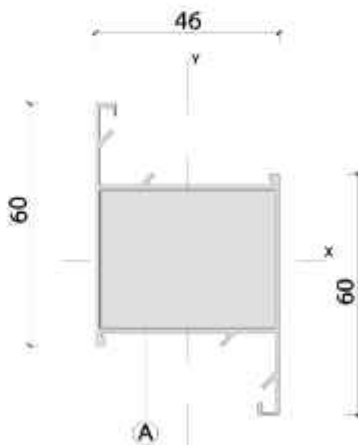
### Profile & Accessories Information

|                                                                                     |                                                                                                        |                                                                                      |                                                                                                          |
|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------|
|    |                                                                                                        |    |                                                                                                          |
| $I_x: 6.94 \text{ cm}^4$                                                            | $I_y: 7.04 \text{ cm}^4$                                                                               | $I_x: 2.32 \text{ cm}^4$                                                             | $I_y: 5.25 \text{ cm}^4$                                                                                 |
| Frame: ALN-100                                                                      | A: PCP- 34 / 43 mm  | Frame: ALN-105                                                                       | A: PCP- 16 / 43 mm  |
| Weight: 580 gr/m                                                                    | —                                                                                                      | Weight: 483 gr/m                                                                     | —                                                                                                        |
|  |                                                                                                        |  |                                                                                                          |
| $I_x: 2.06 \text{ cm}^4$                                                            | $I_y: 4.66 \text{ cm}^4$                                                                               | $I_x: 6.10 \text{ cm}^4$                                                             | $I_y: 6.30 \text{ cm}^4$                                                                                 |
| Frame: ALN-155                                                                      | A: PCP- 16 / 43 mm  | Frame: ALN-150                                                                       | A: PCP- 34 / 43 mm  |
| Weight: 421 gr/m                                                                    | —                                                                                                      | Weight: 508 gr/m                                                                     | —                                                                                                        |



## Light Hinged System 45 Series

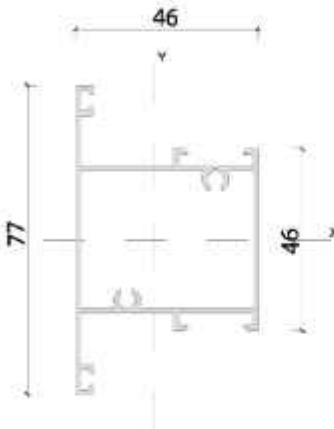
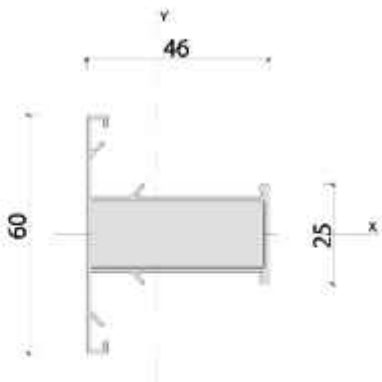
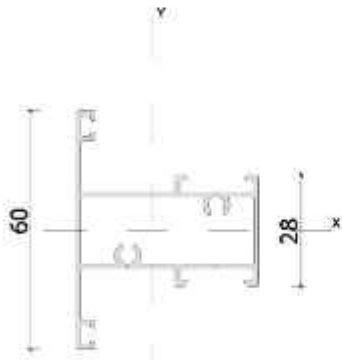
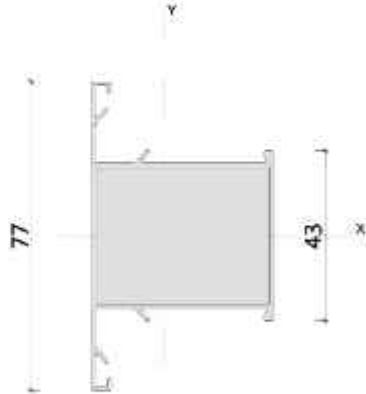
### Profile & Accessories Information

|                                                                                     |                                                                                                        |                                                                                      |                                                                                                          |
|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------|
|    |                                                                                                        |    |                                                                                                          |
| $I_x$ : 11.33 cm <sup>4</sup>                                                       | $I_y$ : 8.60 cm <sup>4</sup>                                                                           | $I_x$ : 4.58 cm <sup>4</sup>                                                         | $I_y$ : 6.89 cm <sup>4</sup>                                                                             |
| Sash : ALN-101                                                                      | A: PCP- 34 / 43 mm  | Sash : ALN-106                                                                       | A: PCP- 16 / 43 mm  |
| Weight: 702 gr/m                                                                    | —                                                                                                      | Weight: 607 gr/m                                                                     | —                                                                                                        |
|  |                                                                                                        |  |                                                                                                          |
| $I_x$ : 3.87 cm <sup>4</sup>                                                        | $I_y$ : 6.23 cm <sup>4</sup>                                                                           | $I_x$ : 9.54 cm <sup>4</sup>                                                         | $I_y$ : 7.81 cm <sup>4</sup>                                                                             |
| Sash: ALN-156                                                                       | A: PCP- 16 / 43 mm  | Sash : ALN-151                                                                       | A: PCP- 34 / 43 mm  |
| Weight: 513 gr/m                                                                    | —                                                                                                      | Weight: 599 gr/m                                                                     | —                                                                                                        |



## Light Hinged System 45 Series

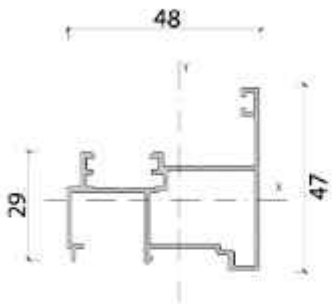
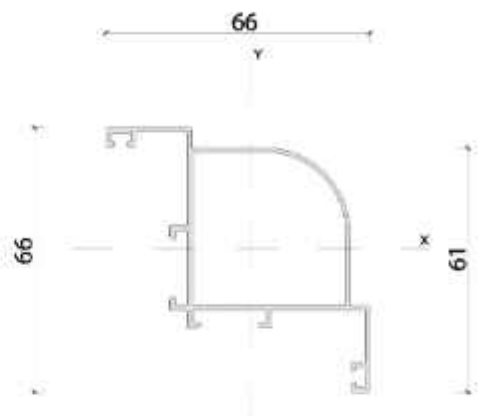
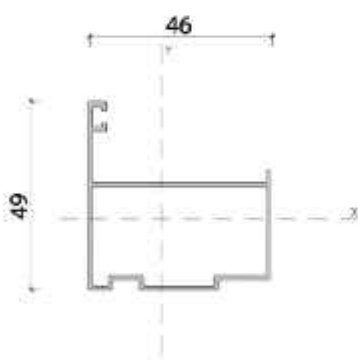
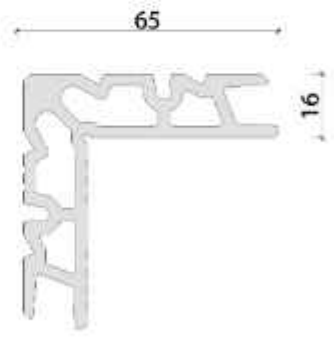
### Profile & Accessories Information

|                                                                                     |                          |                                                                                      |                                                                                                     |
|-------------------------------------------------------------------------------------|--------------------------|--------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------|
|    |                          |    |                                                                                                     |
| $I_x: 11.80 \text{ cm}^4$                                                           | $I_y: 8.74 \text{ cm}^4$ | $I_x: 3.87 \text{ cm}^4$                                                             | $I_y: 5.67 \text{ cm}^4$                                                                            |
| Transom: ALN-102                                                                    | —                        | Transom: ALN-157                                                                     | A: ALN-118/43  |
| Weight: 761 gr/m                                                                    | —                        | Weight: 513 gr/m                                                                     | —                                                                                                   |
|  |                          |  |                                                                                                     |
| $I_x: 4.65 \text{ cm}^4$                                                            | $I_y: 6.95 \text{ cm}^4$ | $I_x: 9.54 \text{ cm}^4$                                                             | $I_y: 7.33 \text{ cm}^4$                                                                            |
| Transom: ALN-107                                                                    | —                        | Transom: ALN-152                                                                     | A: ALN-117/43  |
| Weight: 667 gr/m                                                                    | —                        | Weight: 599 gr/m                                                                     | —                                                                                                   |



## Light Hinged System 45 Series

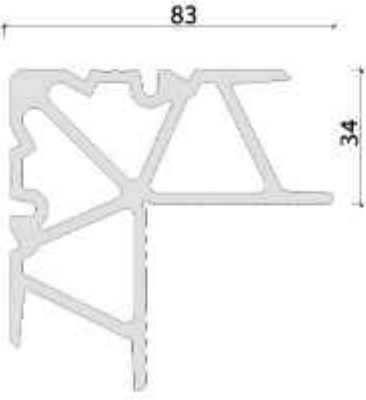
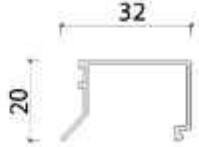
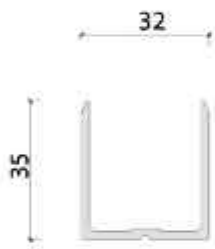
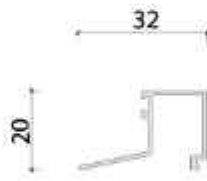
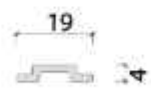
### Profile & Accessories Information

|                                                                                     |                          |                                                                                      |                           |
|-------------------------------------------------------------------------------------|--------------------------|--------------------------------------------------------------------------------------|---------------------------|
|    |                          |    |                           |
| $I_x: 3.03 \text{ cm}^4$                                                            | $I_y: 6.50 \text{ cm}^4$ | $I_x: 10.90 \text{ cm}^4$                                                            | $I_y: 10.90 \text{ cm}^4$ |
| Profile: ALN-103                                                                    | —                        | Profile: ALN-109                                                                     | —                         |
| Weight: 591 gr/m                                                                    | —                        | Weight: 794 gr/m                                                                     | —                         |
|  |                          |  |                           |
| $I_x: 3.72 \text{ cm}^4$                                                            | $I_y: 5.46 \text{ cm}^4$ | <div>Corner joint: PCP 16</div> <div>Weight: 2387 gr/m</div>                         |                           |
| Profile: ALN-108                                                                    | —                        |                                                                                      |                           |
| Weight: 497 gr/m                                                                    | —                        |                                                                                      |                           |



## Light Hinged System 45 Series

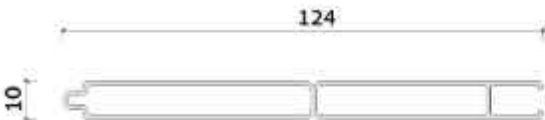
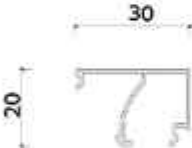
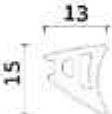
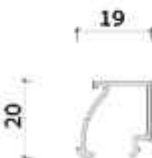
### Profile & Accessories Information

|                                                                                     |                   |                                                                                       |                  |
|-------------------------------------------------------------------------------------|-------------------|---------------------------------------------------------------------------------------|------------------|
|    |                   |    |                  |
| Corner joint: PCP 34                                                                | Weight: 3505 gr/m | Profile : ALN-110                                                                     | Weight: 211 gr/m |
|   |                   |  |                  |
| Transom bar profile:<br>ALN-117                                                     | Weight: 532 gr/m  | Profile : ALN-111                                                                     | Weight: 211 gr/m |
|  |                   |  |                  |
| Transom bar profile:<br>ALN-118                                                     | Weight: 429 gr/m  | Profile : ALN-224                                                                     | Weight: 110 gr/m |



## Light Hinged System 45 Series

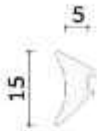
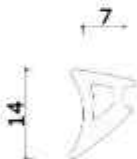
### Profile & Accessories Information

|                                                                                     |                  |                                                                                       |                  |
|-------------------------------------------------------------------------------------|------------------|---------------------------------------------------------------------------------------|------------------|
|    |                  |     |                  |
| Profile: ALN-212                                                                    | Weight: 872 gr/m | Flange profile: ALN-119                                                               | Weight: 278 gr/m |
|   |                  |  |                  |
| Glazing bead: ALN-112                                                               | Weight: 229 gr/m | Gasket: EP-021                                                                        | Weight: 80 gr/m  |
|  |                  |  |                  |
| Glazing bead: ALN-113                                                               | Weight: 178 gr/m | Gasket: 1008                                                                          | Weight: 34 gr/m  |



## Light Hinged System 45 Series

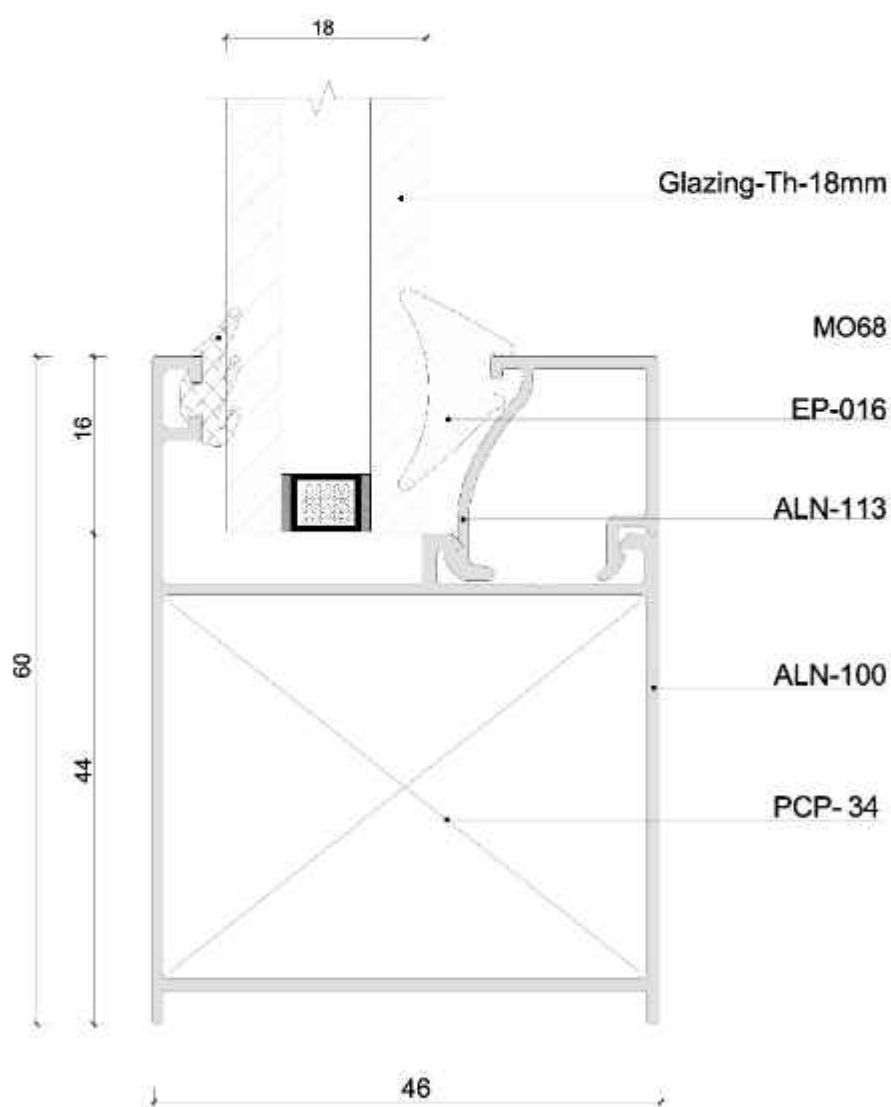
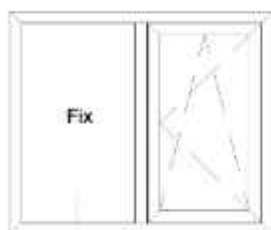
### Profile & Accessories Information

|                                                                                     |                  |                                                                                       |                  |
|-------------------------------------------------------------------------------------|------------------|---------------------------------------------------------------------------------------|------------------|
|    |                  |    |                  |
| Gasket: EP-016                                                                      | Weight : 77 gr/m | Gasket: EP-018                                                                        | Weight : 27 gr/m |
|  |                  |  |                  |
| Gasket: EP-019                                                                      | Weight : 61 gr/m | Gasket: MOB                                                                           | Weight : 21 gr/m |
|  |                  |  |                  |
| Gasket: MO68                                                                        | Weight : 48 gr/m | Gasket: MOS                                                                           | Weight : 32 gr/m |



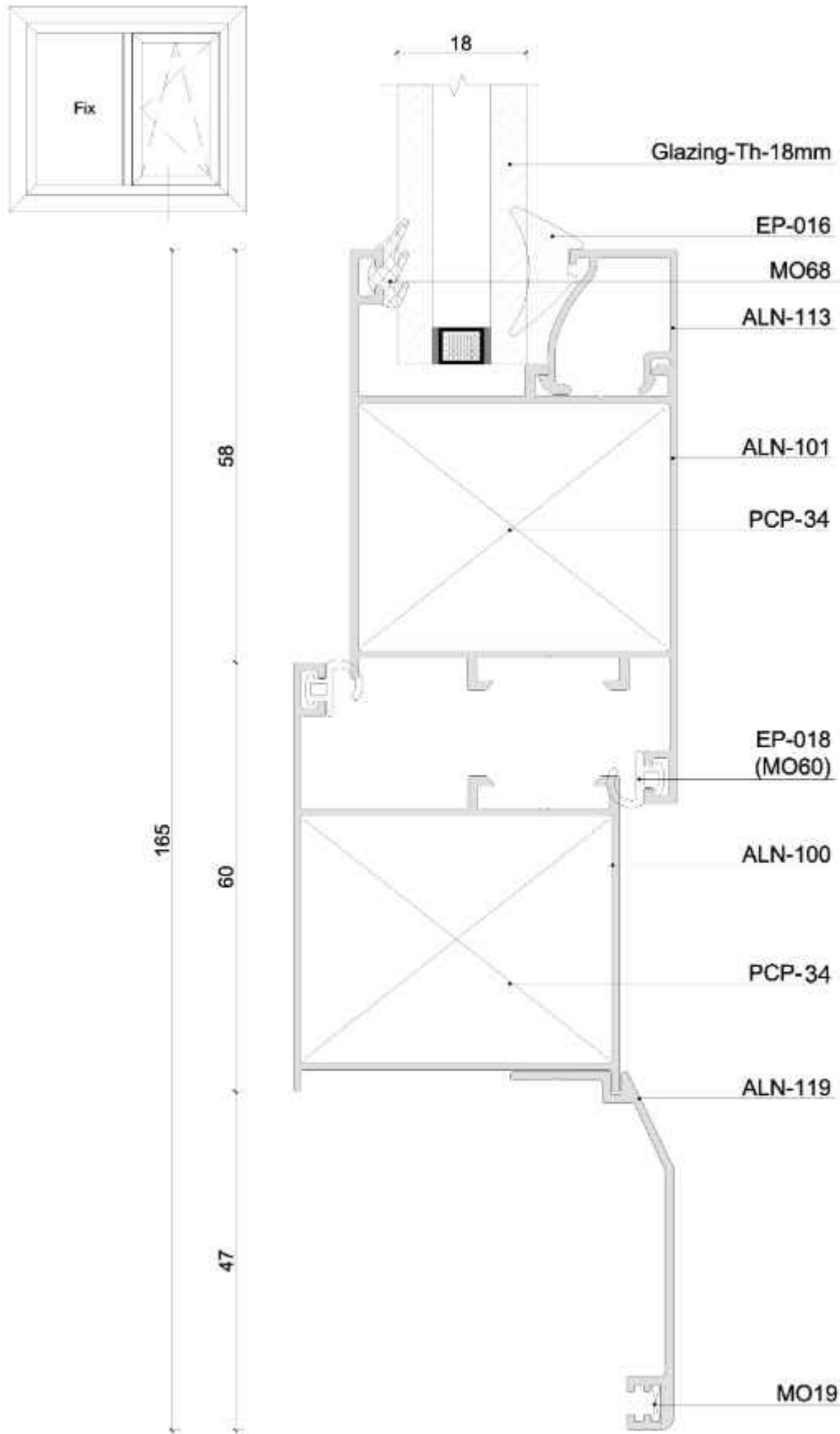
## Light Hinged System 45 Series

### Fabrication Details



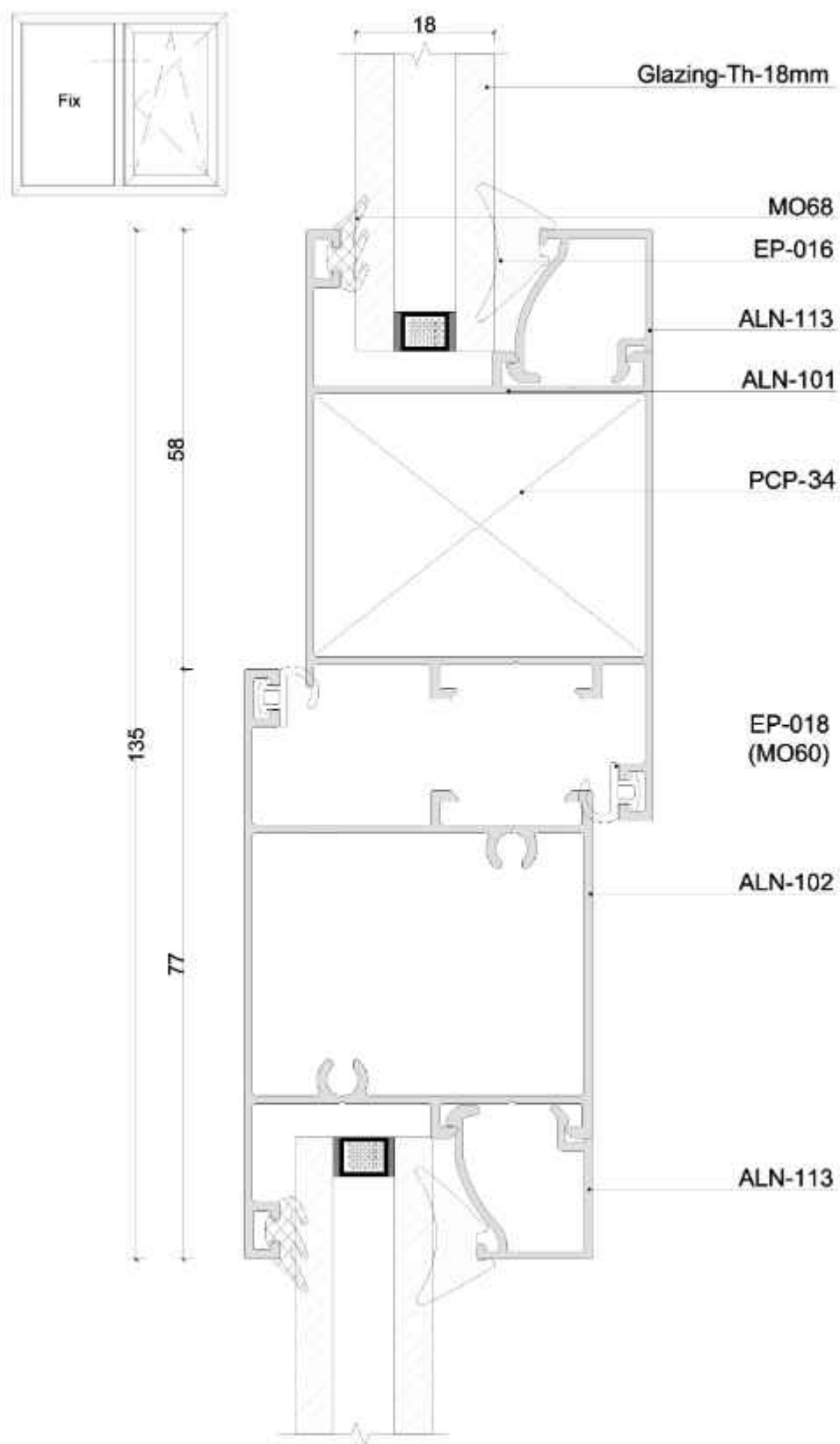


## Light Hinged System 45 Series Fabrication Details



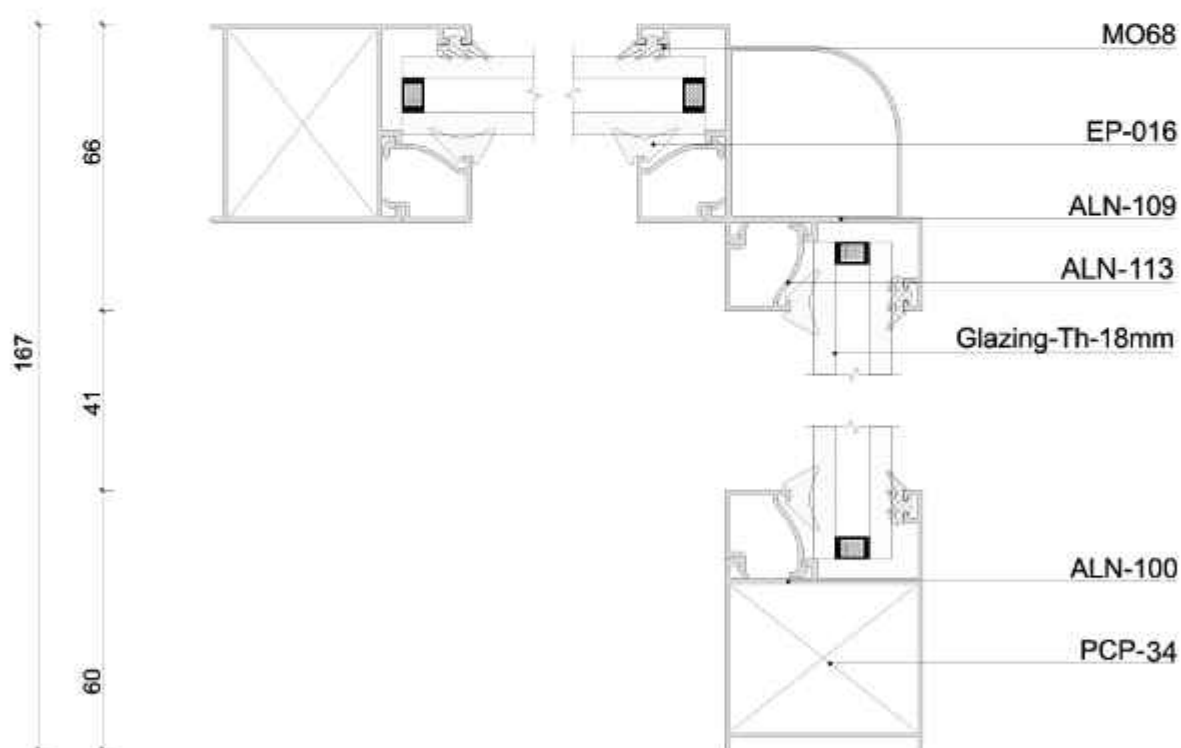
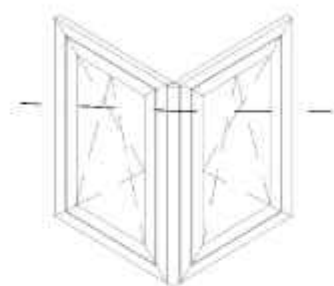
# Light Hinged System 45 Series

## Fabrication Details



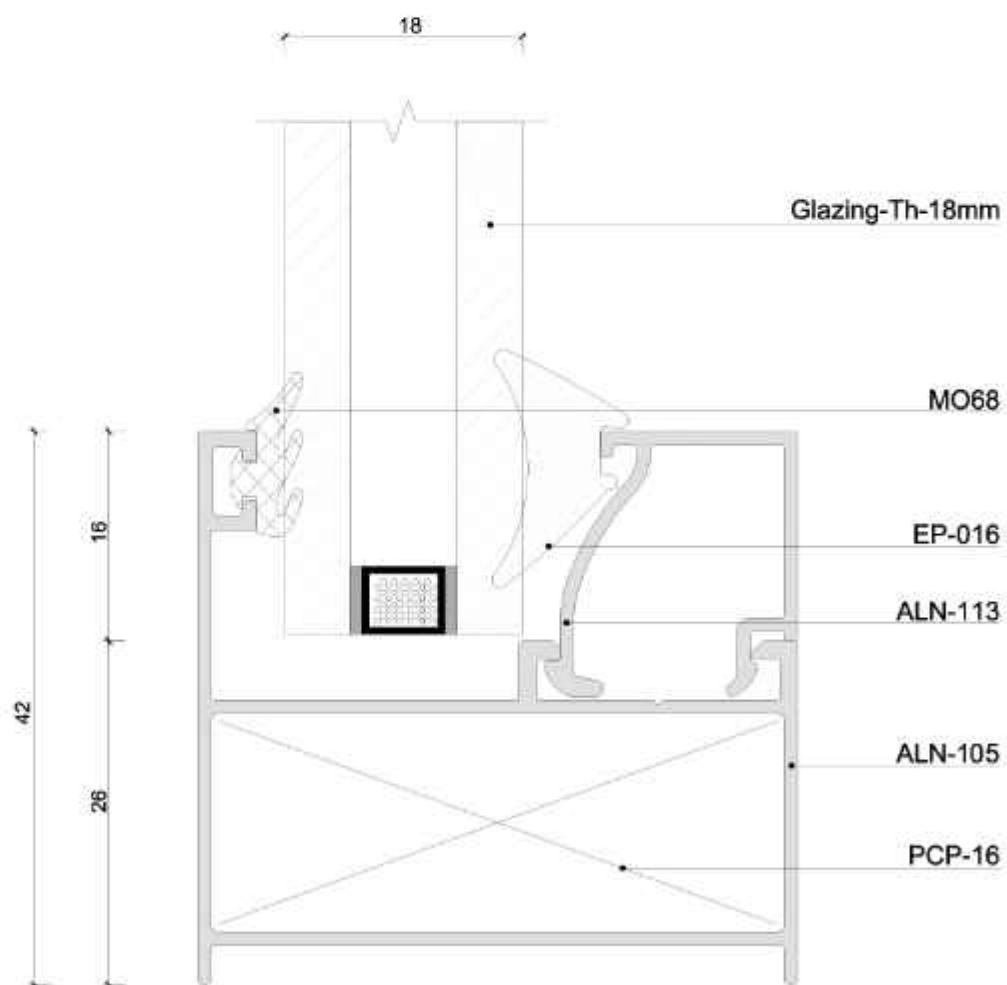
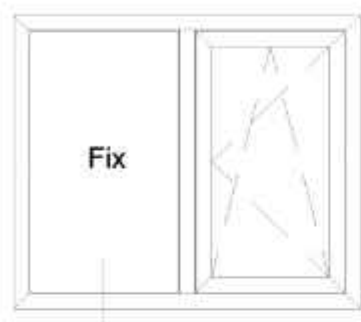


## Light Hinged System 45 Series Fabrication Details



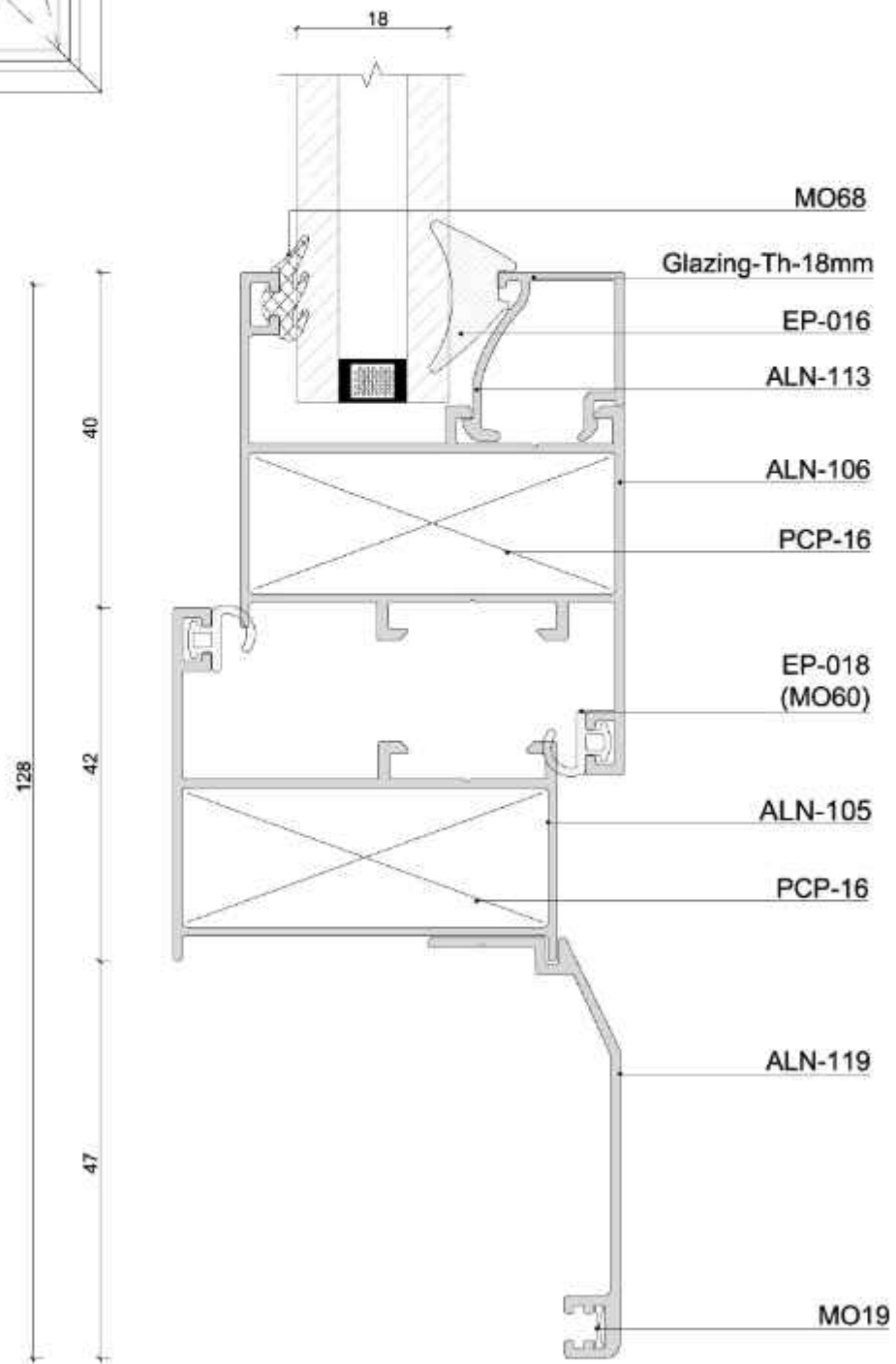
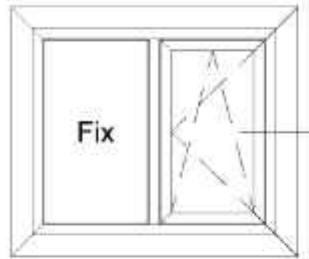
## Light Hinged System 45 Series

### Fabrication Details

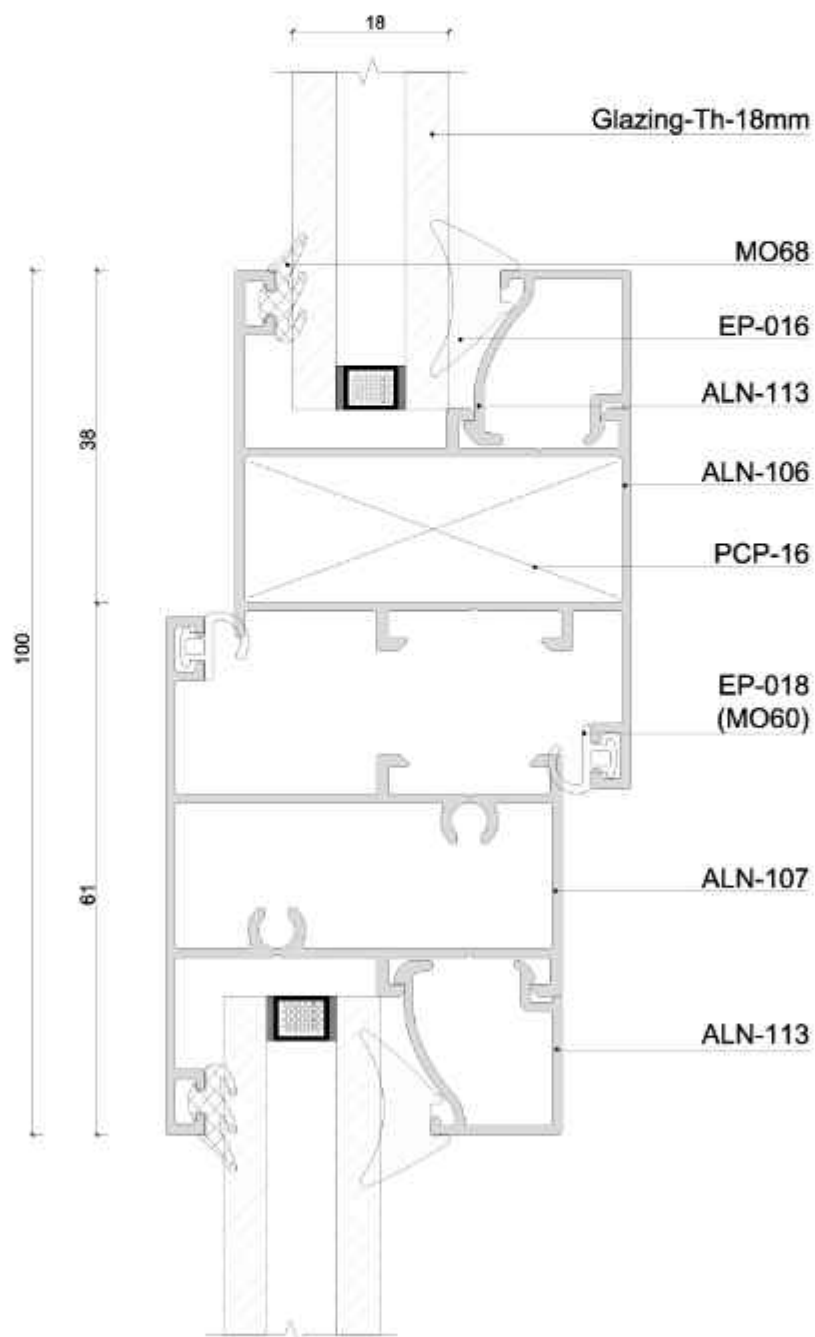
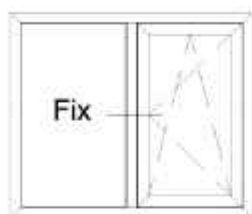




## Light Hinged System 45 Series Fabrication Details

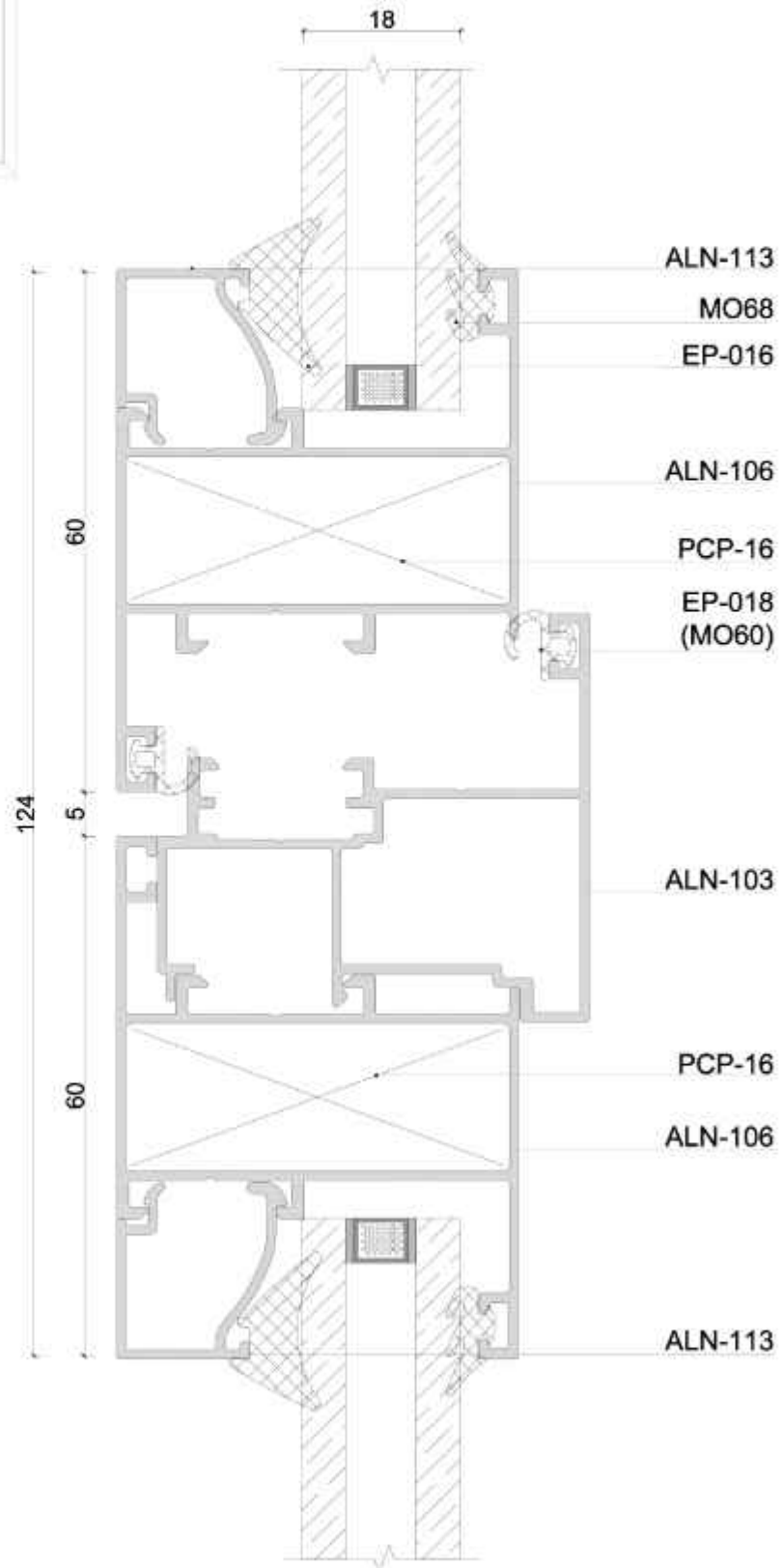
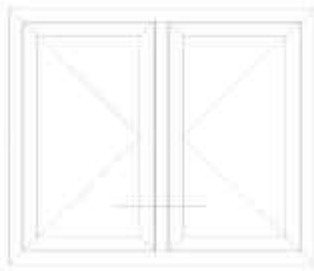


## Light Hinged System 45 Series Fabrication Details



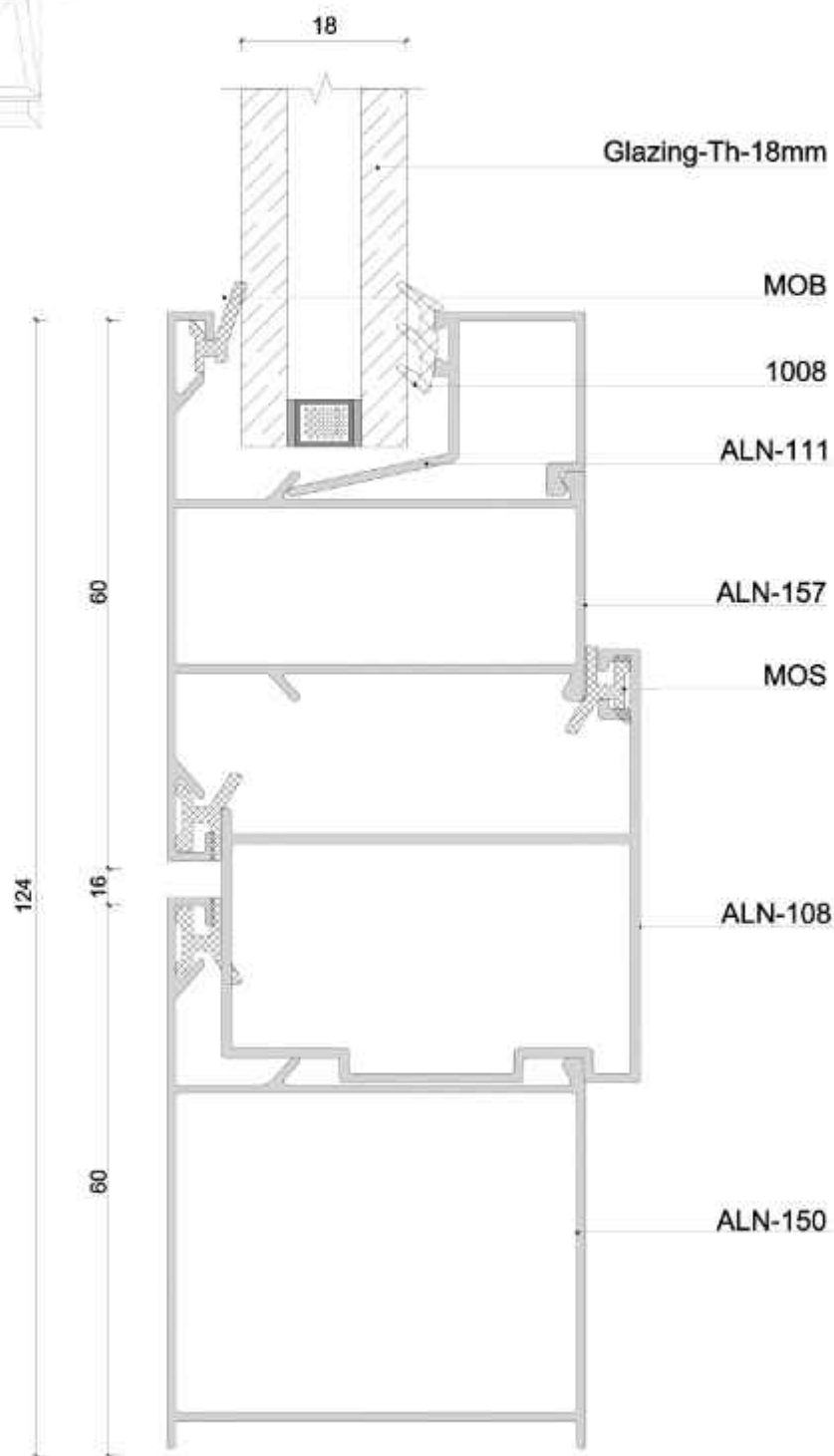


# Light Hinged System 45 Series Fabrication Details



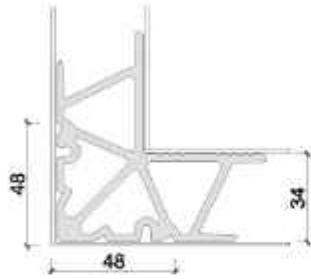
# Light Hinged System 45 Series

## Fabrication Details

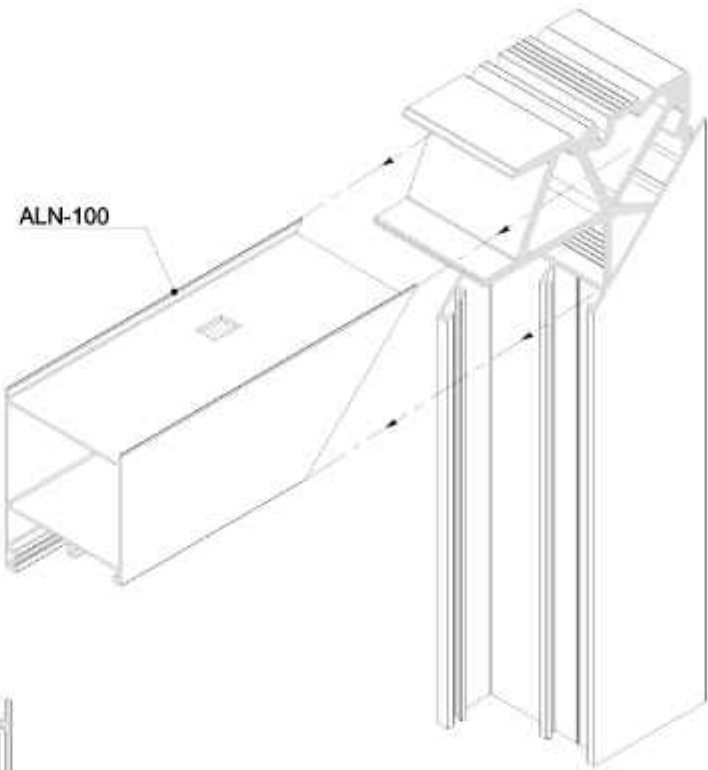




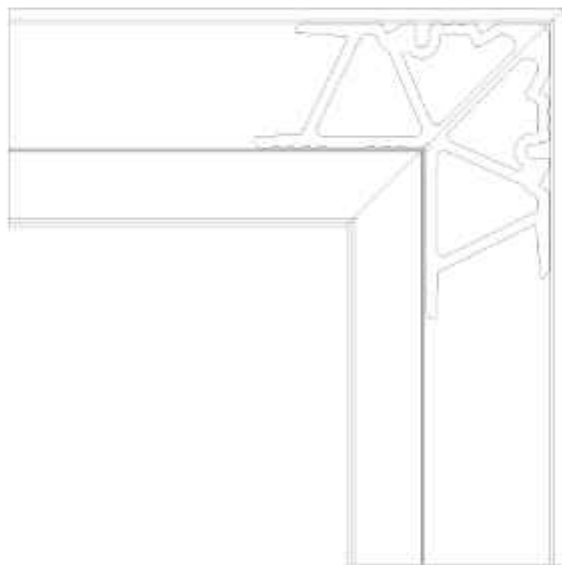
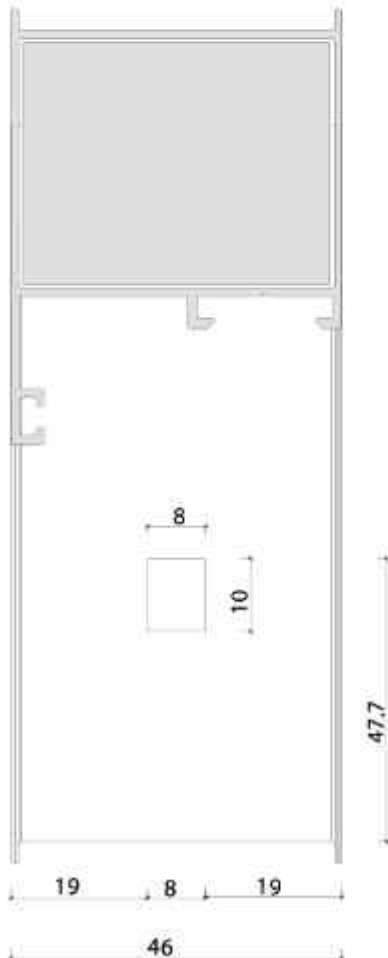
# Light Hinged System 45 Series Assembly Drawing



A: PCP-34 /43 mm

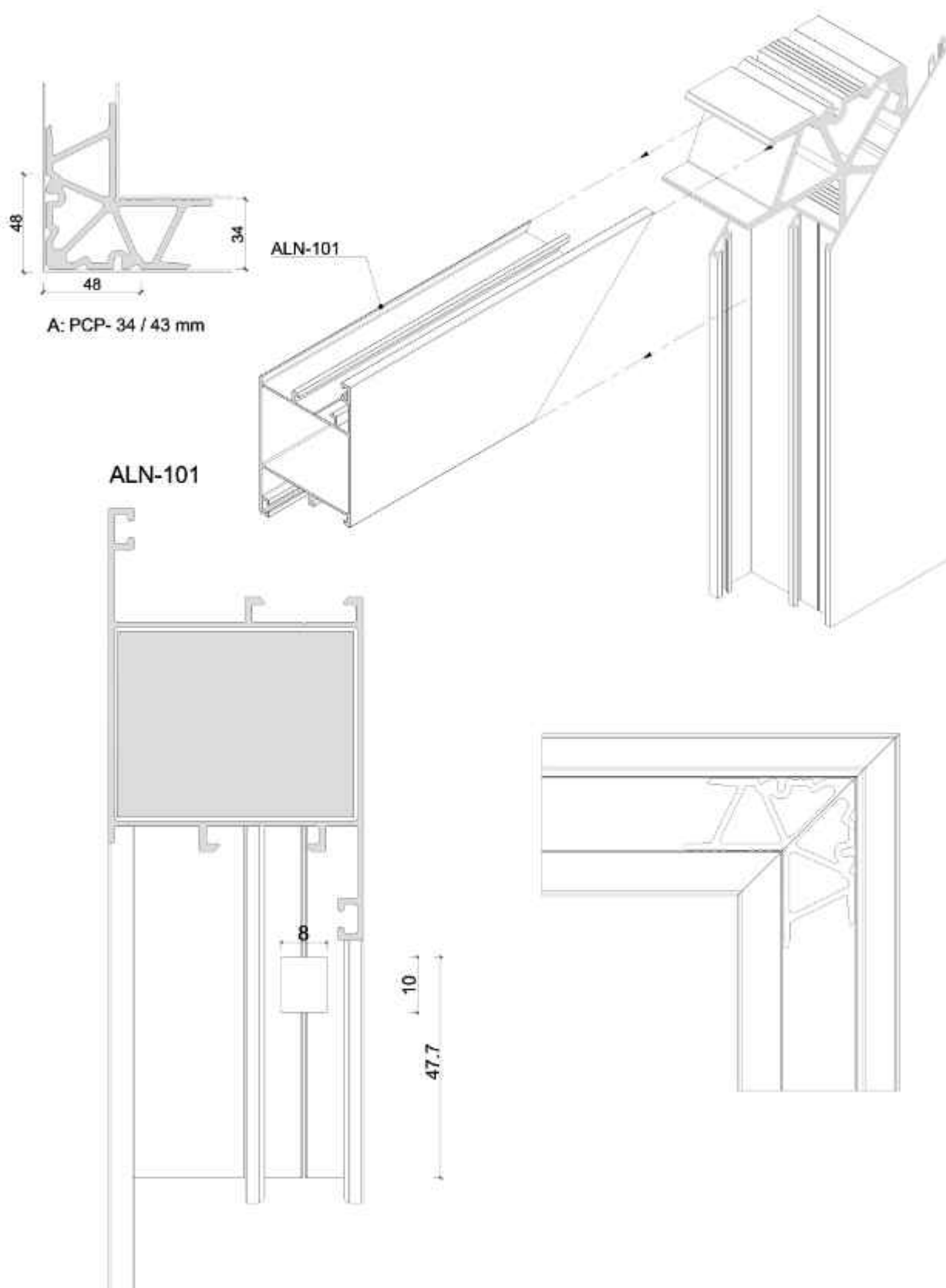


ALN-100



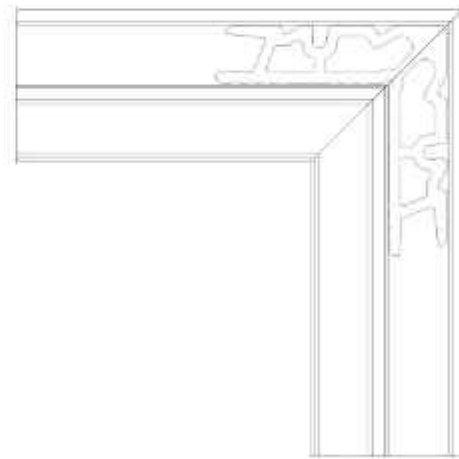
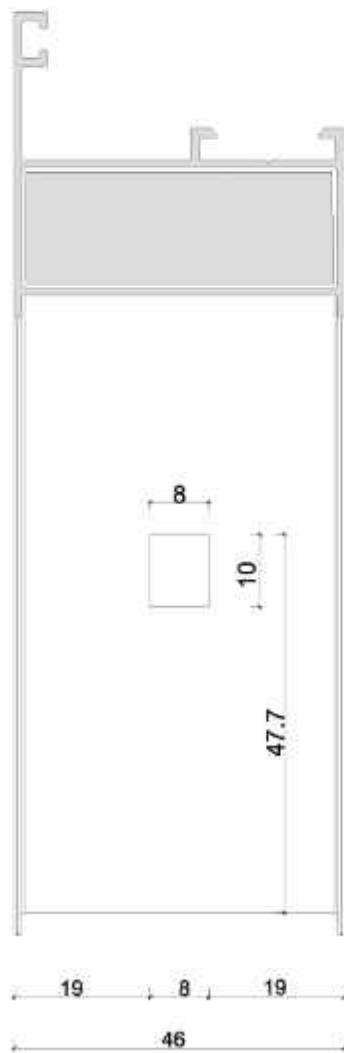
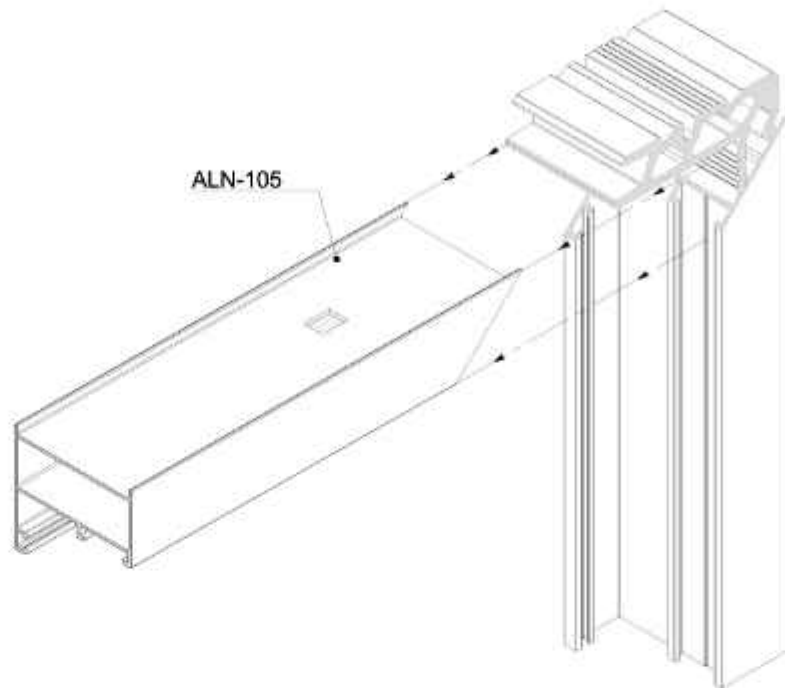
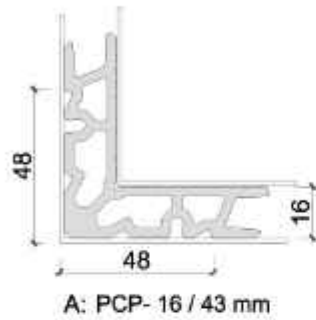
# Light Hinged System 45 Series

## Assembly Drawing

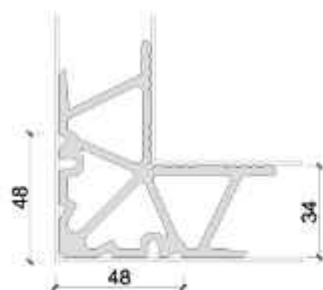




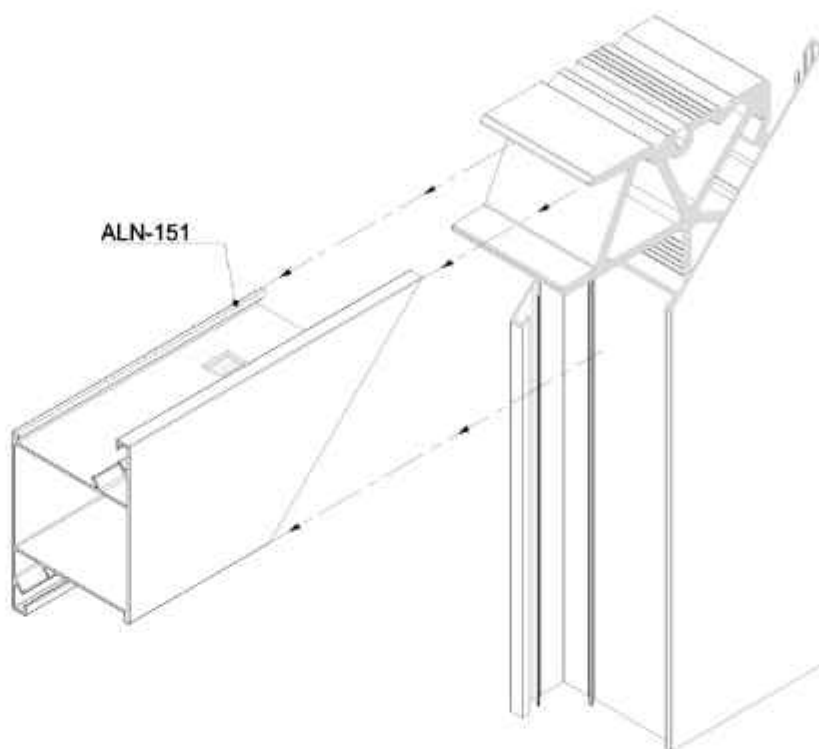
# Light Hinged System 45 Series Assembly Drawing



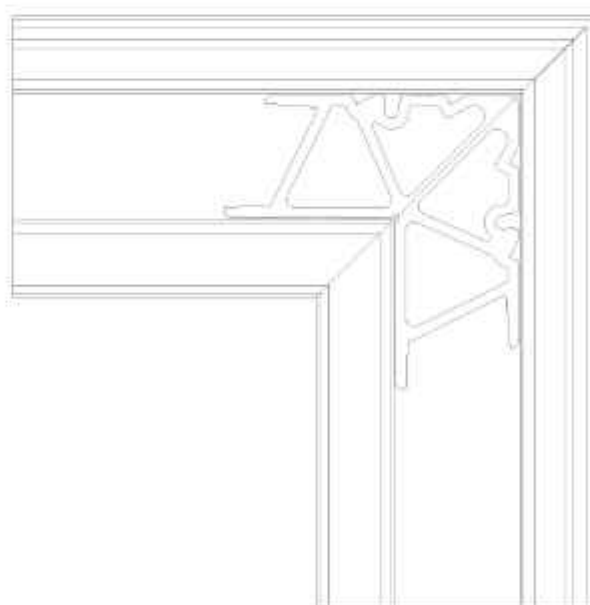
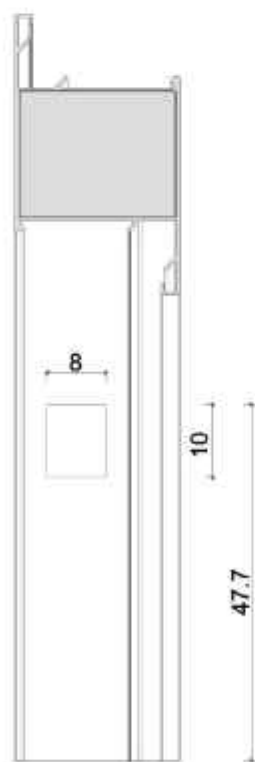
# Light Hinged System 45 Series Assembly Drawing



A: PCP- 34 / 43 mm

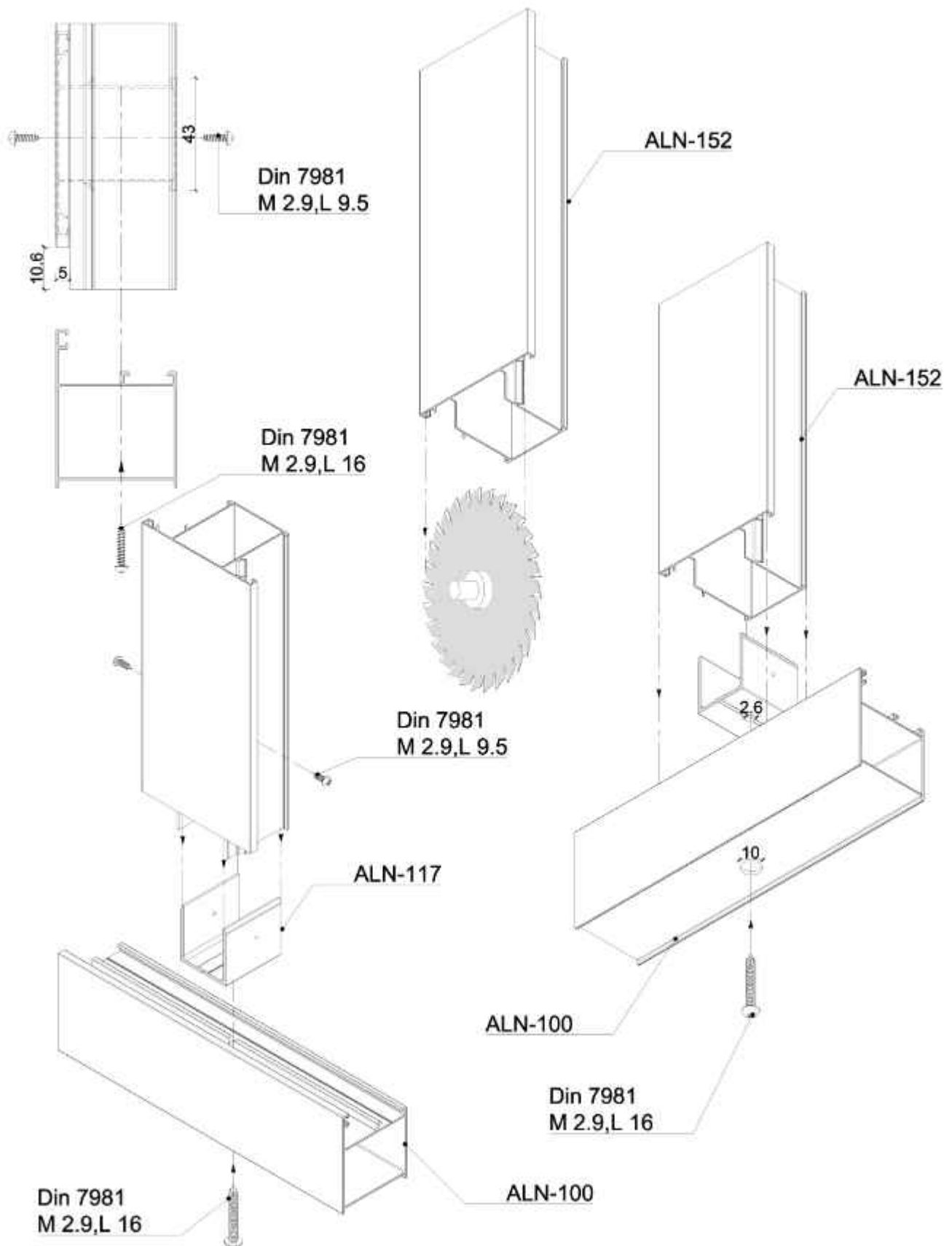


ALN-151





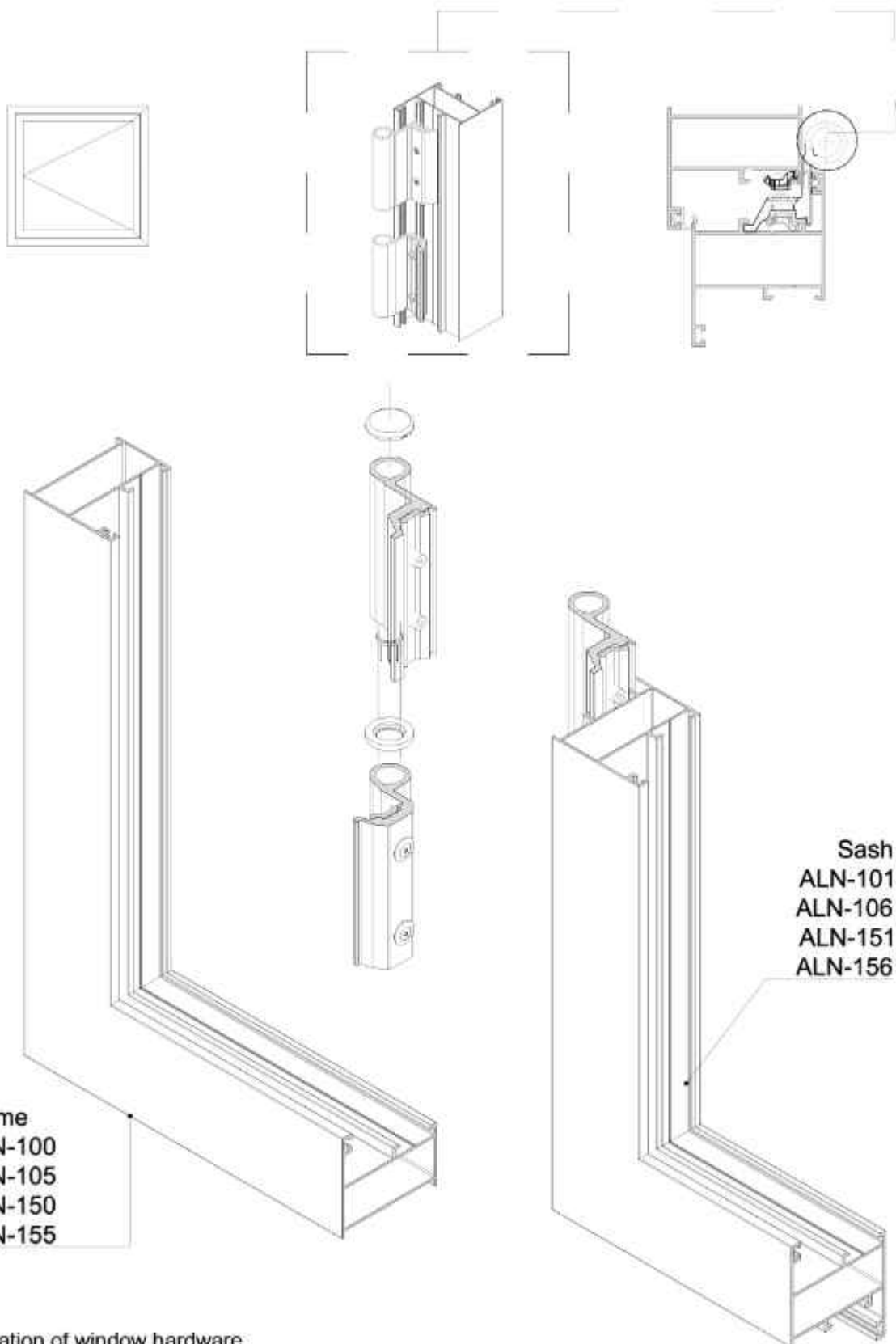
# Light Hinged System 45 Series Assembly Drawing







## Light Hinged System 45 Series Hardware Installation



Installation of window hardware





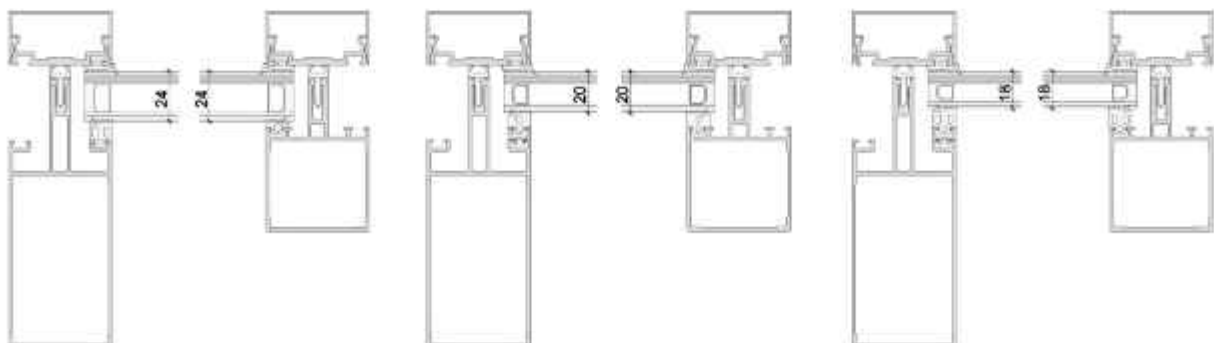
# Facade System





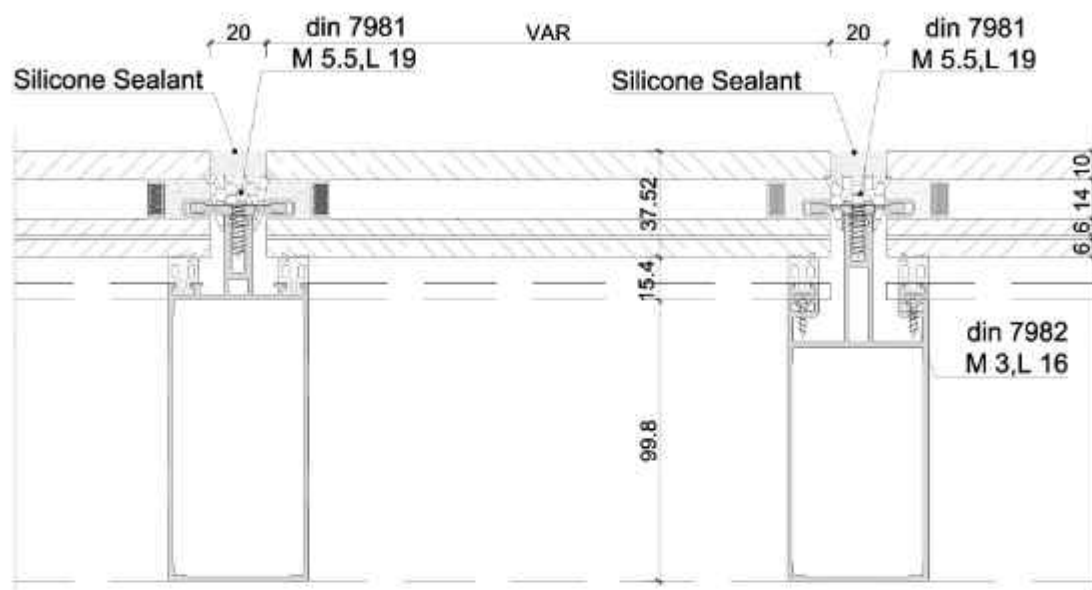
## Faca Cap System Glazing Table

| Glazing Thickness         | 34 mm                                                                                          | 30 mm                                                                                          | 28 mm                                                                                          | 26 mm                                                                                          | 24 mm                                                                                           | 20 mm                                                                                            | 18 mm                                                                                            |
|---------------------------|------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|
| Gasket Pressure Plate     | <br>EP-001    | <br>EP-001    | <br>EP-001    | <br>EP-001    | <br>EP-001   | <br>EP-001    | <br>EP-001    |
| Gasket Mullion            | <br>EP-003    | <br>EP-005    | <br>EP-005    | <br>EP-002    | <br>EP-002   | <br>EP-004    | <br>EP-005    |
| Gasket Trunsom            | <br>EP-006    | <br>EP-008    | <br>EP-006    | <br>EP-005    | <br>EP-005   | <br>EP-004    | <br>EP-005    |
| Distance Profile Mullion  | <br>FCD-136   | <br>FCD-137   | <br>FCD-137   | -                                                                                              | -                                                                                               | -                                                                                                | -                                                                                                |
| Distance Profile Trunsom  | <br>FCD-136 | <br>FCD-137 | <br>FCD-137 | -                                                                                              | -                                                                                               | <br>FCD-136 | <br>FCD-136 |
| Auxiliary Profile Mullion | <br>PA-906  | <br>PA-906  | <br>PA-905  | <br>PA-900  | <br>PA-900 | <br>PA-900  | <br>PA-900  |
| Auxiliary Profile Trunsom | <br>PA-906  | <br>PA-906  | <br>PA-905  | <br>PA-900  | <br>PA-900 | <br>PA-900  | <br>PA-900  |
| Leveling Plate Trunsom    | <br>AK-P08  | <br>AK-P08  | <br>AK-P08  | <br>AK-P04  | <br>AK-P04 | <br>AK-P04  | <br>AK-P04  |
| Glass support Trunsom     | <br>FCD-145 | <br>FCD-145 | <br>FCD-145 | <br>FCD-144 | <br>FCD-144 | <br>FCD-144 | <br>FCD-144 |



## SG System

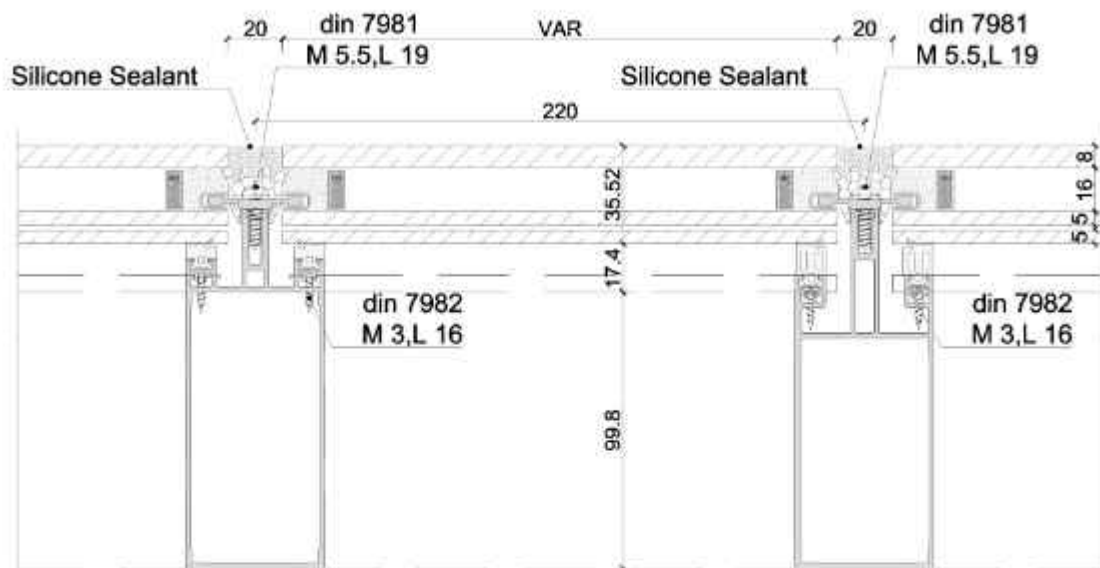
### Glazing Table



| Straight Detail - Glazing Thickness 38 mm                                           |                          |         |
|-------------------------------------------------------------------------------------|--------------------------|---------|
| IMAGES                                                                              | DESCRIPTION              | CODE    |
|  | Mullion                  | FCD-102 |
|  | Transom                  | FCD-107 |
|  | Clamp                    | FCD-140 |
|  | U-Channel                | FCD-139 |
|  | Ledge Sealing            | AK-825  |
|  | Distance Profile Mullion | FCD-136 |
|  | Glazing Gasket - Mullion | EP-005  |
|  | Glazing Gasket - Transom | EP-005  |



## SG System Glazing Table



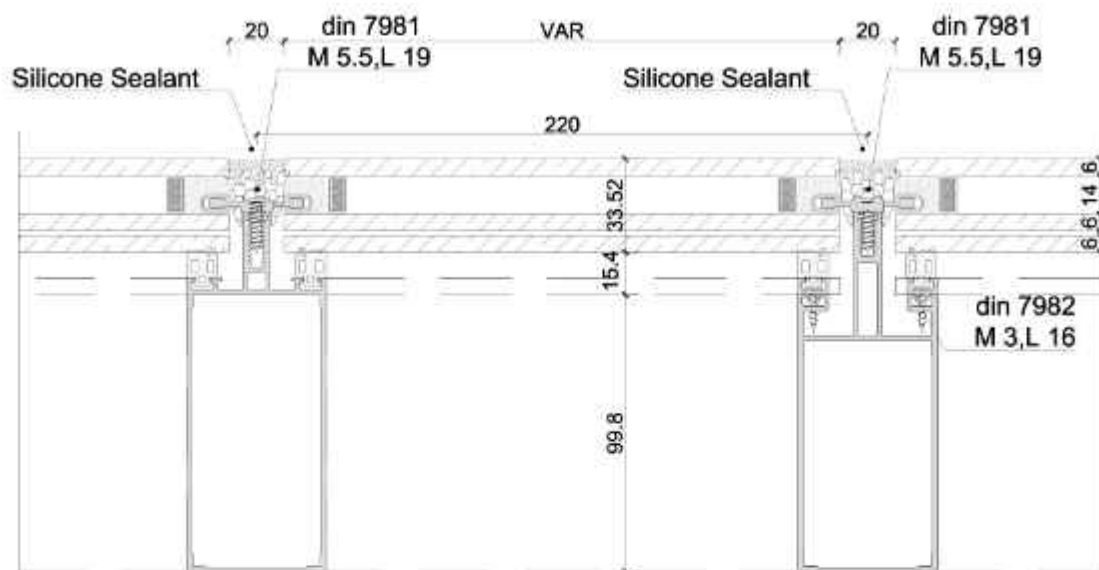
### Straight Detail - Glazing Thickness 36 mm

| IMAGES                                                                              | DESCRIPTION              | CODE    |
|-------------------------------------------------------------------------------------|--------------------------|---------|
|  | Mullion                  | FCD-102 |
|  | Transom                  | FCD-107 |
|  | Clamp                    | FCD-140 |
|  | U-Channel                | FCD-139 |
|  | Ledge Sealing            | AK-825  |
|  | Distance Profile Mullion | FCD-136 |
|  | Glazing Gasket - Mullion | EP-003  |
|  | Glazing Gasket - Transom | EP-006  |



## SG System

### Glazing Table

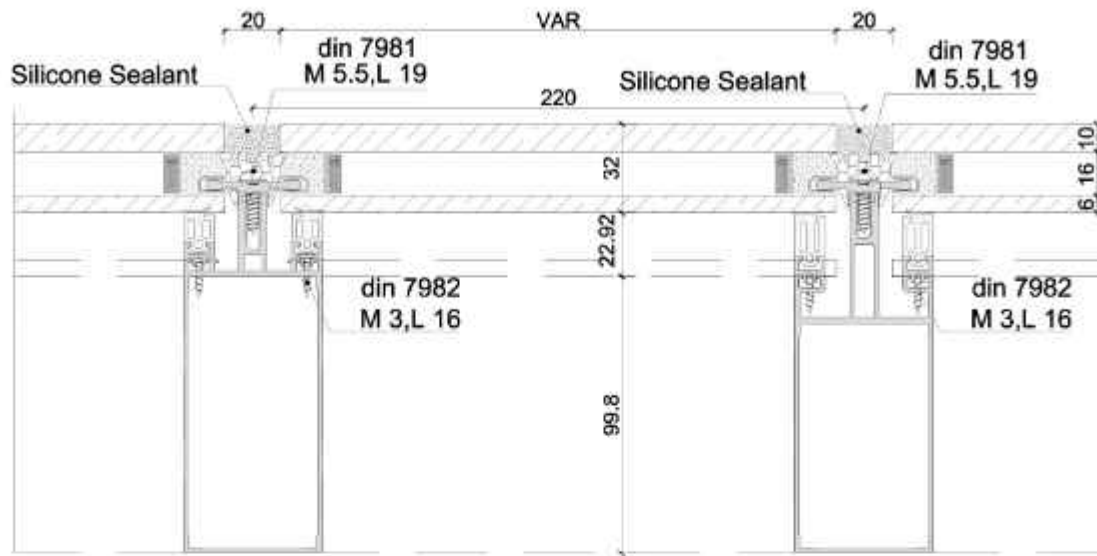


**Straight Detail - Glazing Thickness 34 mm**

| IMAGES | DESCRIPTION              | CODE    |
|--------|--------------------------|---------|
|        | Mullion                  | FCD-102 |
|        | Transom                  | FCD-107 |
|        | Clamp                    | FCD-140 |
|        | U-Channel                | FCD-139 |
|        | Ledge Sealing            | AK-825  |
|        | Distance Profile Mullion | FCD-136 |
|        | Glazing Gasket - Mullion | EP-005  |
|        | Glazing Gasket - Transom | EP-005  |



## SG System Glazing Table

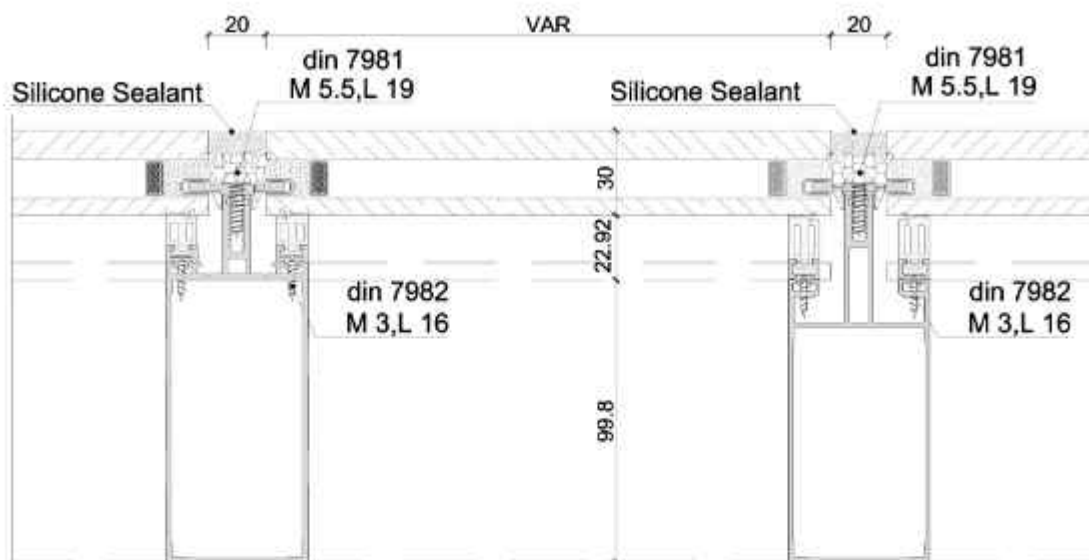


| Straight Detail - Glazing Thickness 32 mm |                          |         |
|-------------------------------------------|--------------------------|---------|
| IMAGES                                    | DESCRIPTION              | CODE    |
|                                           | Mullion                  | FCD-102 |
|                                           | Transom                  | FCD-107 |
|                                           | Clamp                    | FCD-140 |
|                                           | U-Channel                | FCD-139 |
|                                           | Ledge Sealing            | AK-825  |
|                                           | Distance Profile Mullion | FCD-137 |
|                                           | Glazing Gasket - Mullion | EP-006  |
|                                           | Distance Profile Mullion | FCD-136 |
|                                           | Glazing Gasket - Transom | EP-008  |



## SG System

### Glazing Table



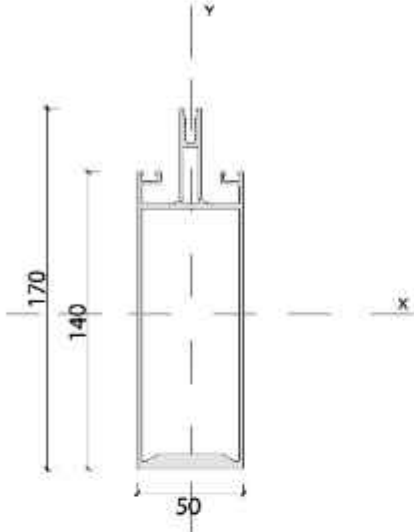
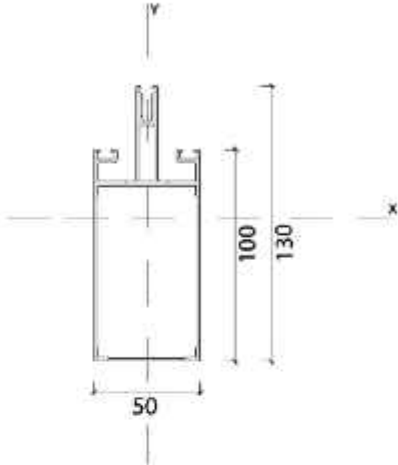
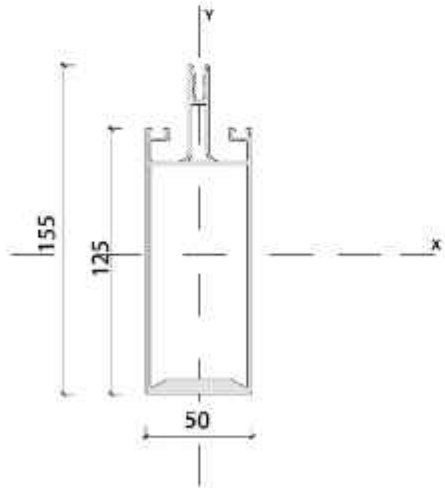
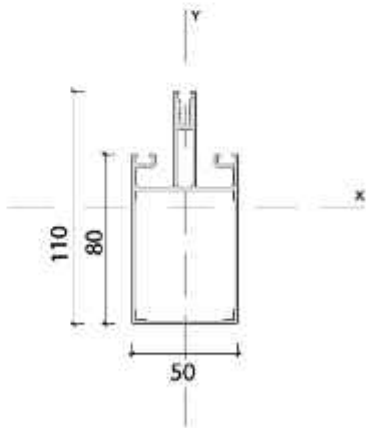
**Straight Detail - Glazing Thickness 30 mm**

| IMAGES                                                                              | DESCRIPTION              | CODE    |
|-------------------------------------------------------------------------------------|--------------------------|---------|
|  | Mullion                  | FCD-102 |
|  | Transom                  | FCD-107 |
|  | Clamp                    | FCD-140 |
|  | U-Channel                | FCD-139 |
|  | Ledge Sealing            | AK-825  |
|  | Distance Profile Mullion | FCD-137 |
|  | Glazing Gasket - Mullion | EP-006  |
|  | Distance Profile Mullion | FCD-136 |
|  | Glazing Gasket - Transom | EP-008  |



## Face cap, SG and Frameless Systems

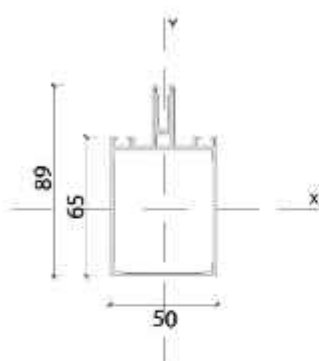
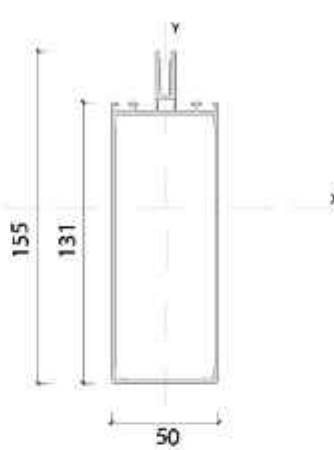
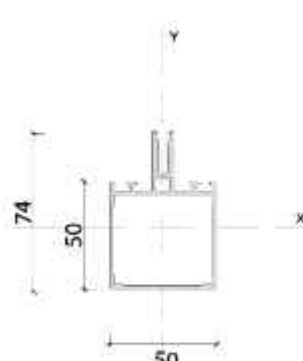
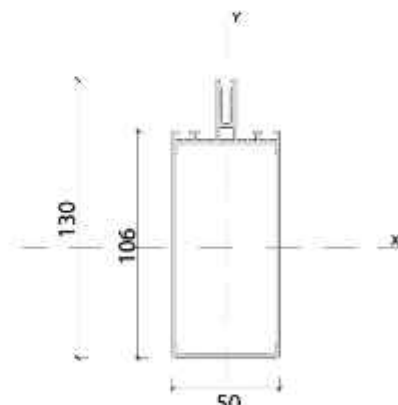
### Profile & Accessories Information

|                                                                                     |                           |                                                                                      |                           |
|-------------------------------------------------------------------------------------|---------------------------|--------------------------------------------------------------------------------------|---------------------------|
|    |                           |   |                           |
| $I_x: 385.32 \text{ cm}^4$                                                          | $I_y: 39.79 \text{ cm}^4$ | $I_x: 115.99 \text{ cm}^4$                                                           | $I_y: 24.73 \text{ cm}^4$ |
| Mullion: FCD-100                                                                    | Weight: 3156 gr/m         | Mullion: FCD-102                                                                     | Weight: 1998 gr/m         |
|  |                           |  |                           |
| $I_x: 299.75 \text{ cm}^4$                                                          | $I_y: 36.33 \text{ cm}^4$ | $I_x: 71.96 \text{ cm}^4$                                                            | $I_y: 20.98 \text{ cm}^4$ |
| Mullion: FCD-101                                                                    | Weight: 2994 gr/m         | Mullion: FCD-103                                                                     | Weight: 1825 gr/m         |



## Face cap, SG and Frameless Systems

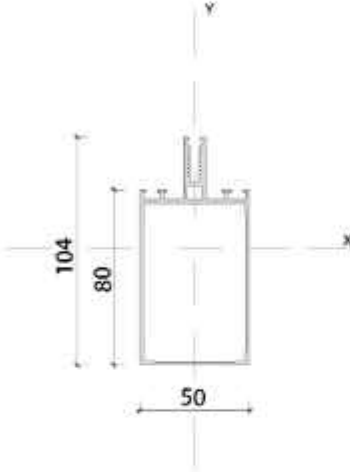
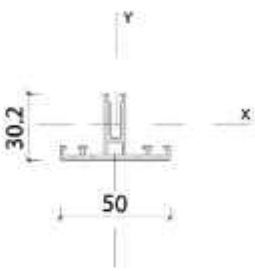
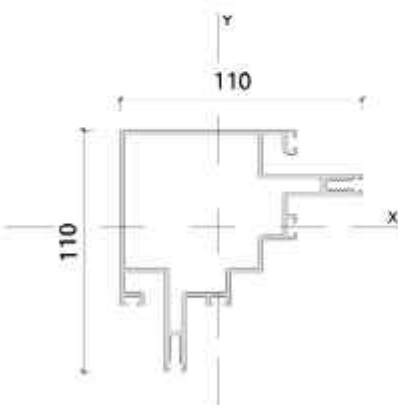
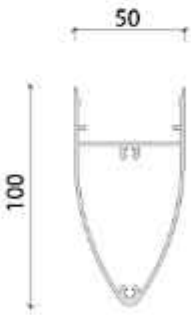
### Profile & Accessories Information

|                                                                                     |                               |                                                                                      |                               |
|-------------------------------------------------------------------------------------|-------------------------------|--------------------------------------------------------------------------------------|-------------------------------|
|    |                               |    |                               |
| $I_x$ : 42.61 cm <sup>4</sup>                                                       | $I_y$ : 16.52 cm <sup>4</sup> | $I_x$ : 197.87 cm <sup>4</sup>                                                       | $I_y$ : 28.89 cm <sup>4</sup> |
| Transom: FCD-104                                                                    | Weight: 1480 gr/m             | Transom: FCD-106                                                                     | Weight: 2049 gr/m             |
|  |                               |  |                               |
| $I_x$ : 25.19 cm <sup>4</sup>                                                       | $I_y$ : 13.70 cm <sup>4</sup> | $I_x$ : 122.36 cm <sup>4</sup>                                                       | $I_y$ : 24.20 cm <sup>4</sup> |
| Transom: FCD-105                                                                    | Weight: 1350 gr/m             | Transom: FCD-107                                                                     | Weight: 1833 gr/m             |



## Face cap, SG and Frameless Systems

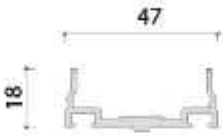
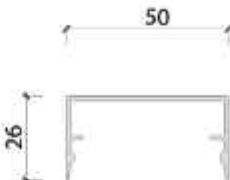
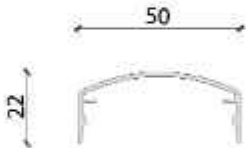
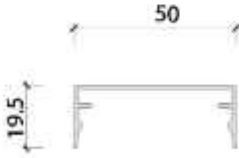
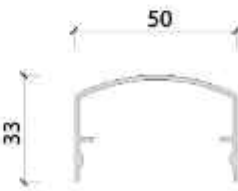
### Profile & Accessories Information

|                                                                                     |                            |                                                                                       |                          |
|-------------------------------------------------------------------------------------|----------------------------|---------------------------------------------------------------------------------------|--------------------------|
|    |                            |    |                          |
| $I_x: 65.99 \text{ cm}^4$                                                           | $I_y: 19.33 \text{ cm}^4$  | $I_x: 2.19 \text{ cm}^4$                                                              | $I_y: 3.61 \text{ cm}^4$ |
| Transom: FCD-108                                                                    | Weight: 1609 gr/m          | Transom: FCD-135                                                                      | Weight: 737 gr/m         |
|  |                            |  |                          |
| $I_x: 108.53 \text{ cm}^4$                                                          | $I_y: 108.55 \text{ cm}^4$ |                                                                                       |                          |
| Corner Profile : FCD-134                                                            | Weight: 2773 gr/m          | Cover Cap : FCD-109                                                                   | Weight : 1307 gr/m       |



## Face cap, SG and Frameless Systems

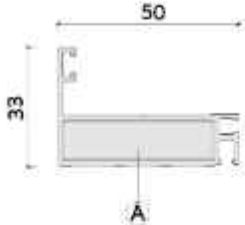
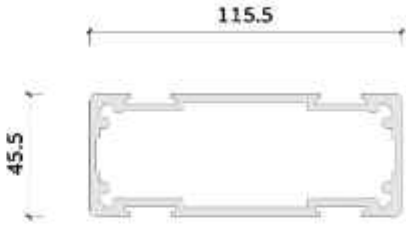
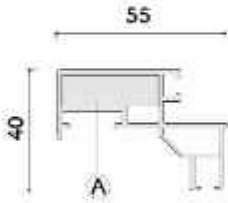
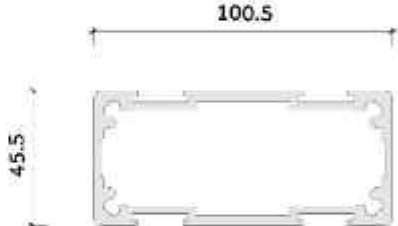
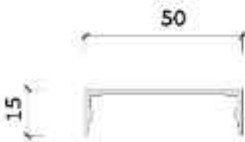
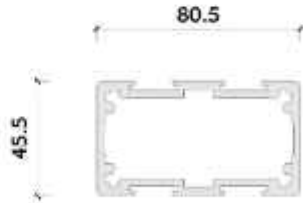
### Profile & Accessories Information

|                                                                                     |                   |                                                                                      |                   |
|-------------------------------------------------------------------------------------|-------------------|--------------------------------------------------------------------------------------|-------------------|
|    |                   |    |                   |
| Pressure Plat : FCD-110                                                             | Weight : 516 gr/m | Cover Cap : FCD-113                                                                  | Weight : 421 gr/m |
|  |                   |  |                   |
| Pressure Plat : FCD-111                                                             | Weight : 470 gr/m | Cover Cap : FCD-114                                                                  | Weight : 340 gr/m |
|  |                   |  |                   |
| Cover Cap : FCD-112                                                                 | Weight : 370 gr/m | Cover Cap : FCD-115                                                                  | Weight : 421 gr/m |



## Face cap, SG and Frameless Systems

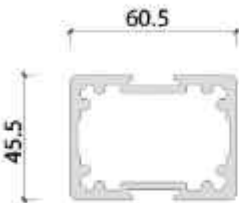
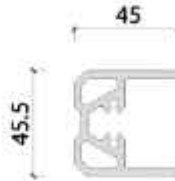
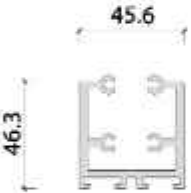
### Profile & Accessories Information

|                                                                                     |                                                                                                       |                                                                                       |                    |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|--------------------|
|    |                                                                                                       |     |                    |
| Ventilation: FCD-116                                                                | A: PCP-10/40.7 mm    |                                                                                       |                    |
| Weight : 624 gr/m                                                                   |                                                                                                       | Expansion Joint Profile : FCD-121                                                     | Weight : 3119 gr/m |
|  |                                                                                                       |   |                    |
| Ventilation: FCD-117                                                                | A: PCP-10/31.2 mm  |                                                                                       |                    |
| Weight : 880 gr/m                                                                   |                                                                                                       | Expansion Joint Profile : FCD-122                                                     | Weight : 2835 gr/m |
|  |                                                                                                       |  |                    |
| Cover Cap : FCD-118                                                                 | Weight : 329 gr/m                                                                                     | Expansion Joint Profile : FCD-123                                                     | Weight : 2457 gr/m |



## Face cap, SG and Frameless Systems

### Profile & Accessories Information

|                                                                                     |                    |                                                                                       |                   |
|-------------------------------------------------------------------------------------|--------------------|---------------------------------------------------------------------------------------|-------------------|
|    |                    |    |                   |
| Expansion Joint Profile:<br>FCD-124                                                 | Weight : 2130 gr/m | Expansion Joint Profile:<br>FCD 127                                                   | Weight: 1590 gr/m |
|  |                    |  |                   |
| Expansion Joint Profile:<br>FCD-125                                                 | Weight : 1785 gr/m | Expansion Joint Profile:<br>FCD 128                                                   | Weight: 1393 gr/m |
|  |                    |  |                   |
| Expansion Joint Profile:<br>FCD-126                                                 | Weight : 2165 gr/m | Connector Real Profile:<br>FCD 129                                                    | Weight: 378 gr/m  |



## Face cap, SG and Frameless Systems

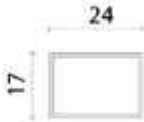
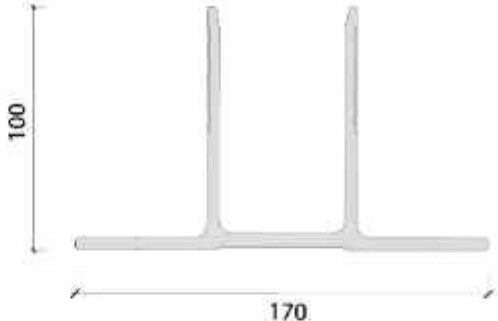
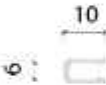
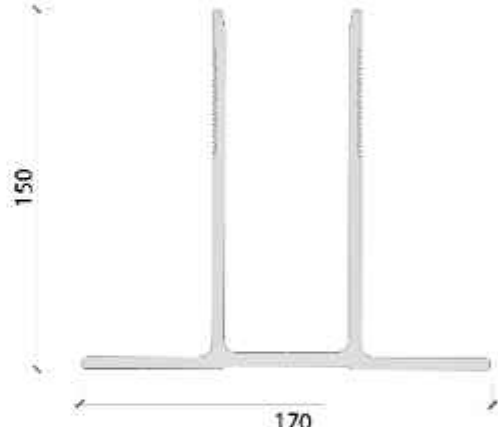
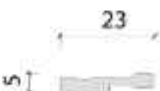
### Profile & Accessories Information

|                                             |                    |                     |                    |
|---------------------------------------------|--------------------|---------------------|--------------------|
|                                             |                    |                     |                    |
| Angular Expansion Joint<br>Profile: FCD-130 | Weight : 1670 gr/m | Cover Cap : FCD-133 | Weight : 1671 gr/m |
|                                             |                    |                     |                    |
| Cover Cap : FCD-131                         | Weight : 1264 gr/m | Adaptor: FCD-136    | Weight: 97 gr/m    |
|                                             |                    |                     |                    |
| Cover Cap : FCD-132                         | Weight : 1636 gr/m | Adaptor: FCD-137    | Weight: 104 gr/m   |



## Face cap, SG and Frameless Systems

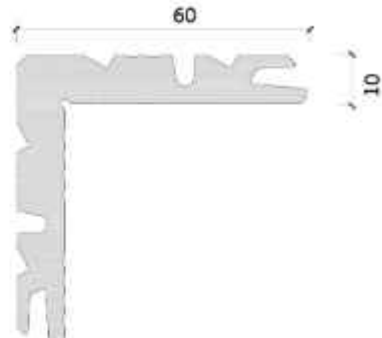
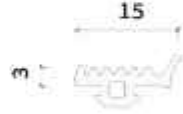
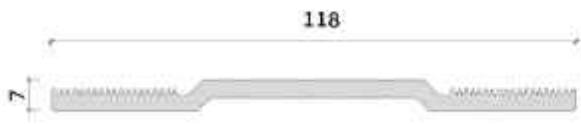
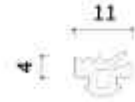
### Profile & Accessories Information

|                                                                                     |                   |                                                                                       |                    |
|-------------------------------------------------------------------------------------|-------------------|---------------------------------------------------------------------------------------|--------------------|
|    |                   |     |                    |
| Profile : FCD-138                                                                   | Weight : 211 gr/m | Profile : FCD-141                                                                     | Weight : 4860 gr/m |
|  |                   |    |                    |
| U-Channel : FCD-139                                                                 | Weight : 62 gr/m  | Profile : FCD-142                                                                     | Weight : 6210 gr/m |
|  |                   |  |                    |
| Clamp: FCD-140                                                                      | Weight : 191 gr/m | Profile : FCD-143                                                                     | Weight : 378       |



## Face cap, SG and Frameless Systems

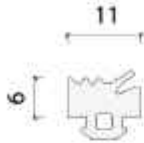
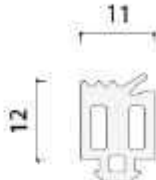
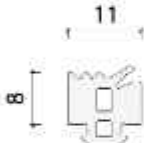
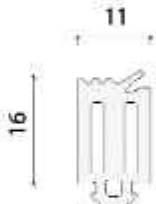
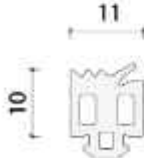
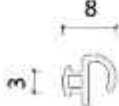
### Profile & Accessories Information

|                                                                                     |                    |                                                                                       |                    |
|-------------------------------------------------------------------------------------|--------------------|---------------------------------------------------------------------------------------|--------------------|
|    |                    |    |                    |
| Glass support: FCD-144                                                              | Weight: 232 gr/m   | Corner: PCP-10                                                                        | Weight : 2454 gr/m |
|  |                    |  |                    |
| Glass support: FCD-145                                                              | Weight: 292 gr/m   | Gasket: EP-001                                                                        | Weight : 66 gr/m   |
|  |                    |  |                    |
| Profile: FCD-146                                                                    | Weight : 1336 gr/m | Gasket: EP-002                                                                        | Weight: 60 gr/m    |



## Face cap, SG and Frameless Systems

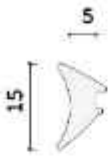
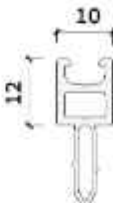
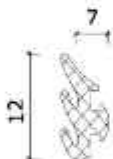
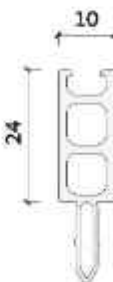
### Profile & Accessories Information

|                                                                                     |                  |                                                                                       |                  |
|-------------------------------------------------------------------------------------|------------------|---------------------------------------------------------------------------------------|------------------|
|    |                  |    |                  |
| Gasket: EP-003                                                                      | Weight: 91 gr/m  | Gasket: EP-006                                                                        | Weight: 137gr/m  |
|  |                  |  |                  |
| Gasket: EP-004                                                                      | Weight: 109 gr/m | Gasket: EP-008                                                                        | Weight: 153 gr/m |
|  |                  |  |                  |
| Gasket: EP-005                                                                      | Weight: 121gr/m  | Gasket: EP-018                                                                        | Weight : 27 gr/m |



## Face cap, SG and Frameless Systems

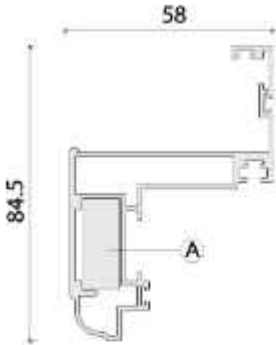
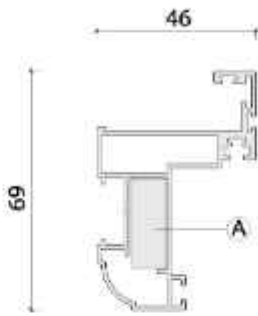
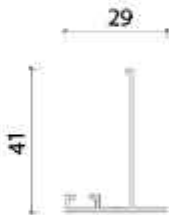
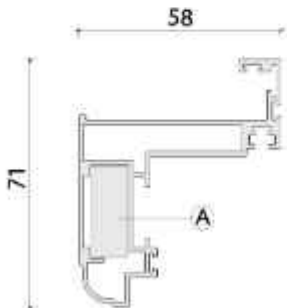
### Profile & Accessories Information

|                                                                                     |                  |                                                                                       |                  |
|-------------------------------------------------------------------------------------|------------------|---------------------------------------------------------------------------------------|------------------|
|    |                  |    |                  |
| Gasket: EP-016                                                                      | Weight : 77 gr/m | Polyamide: PA-902                                                                     | Weight: 105 gr/m |
|  |                  |   |                  |
| Gasket: MO68                                                                        | Weight: 46 gr/m  | Polyamide : PA-905                                                                    | Weight: 164 gr/m |
|  |                  |  |                  |
| Polyamide: PA-900                                                                   | Weight: 78 gr/m  | Polyamide: PA-906                                                                     | Weight: 172 gr/m |



## Face cap, SG and Frameless Systems

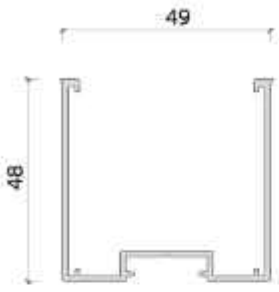
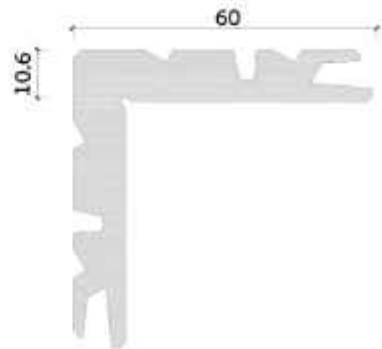
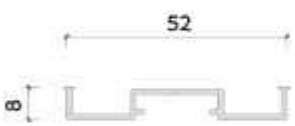
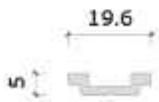
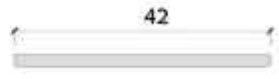
### Profile & Accessories Information

|                                                                                     |                                                                                                       |                                                                                       |                                                                                                       |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|
|    |                                                                                                       |     |                                                                                                       |
| Profile : FCD-150                                                                   | A: PCP-11/25.7 mm    | Profile : FCD-153                                                                     | A: PCP-11/25.7 mm  |
| Weight : 1156 gr/m                                                                  |                                                                                                       | Weight : 969 gr/m                                                                     |                                                                                                       |
|   |                                                                                                       |  |                                                                                                       |
| Profile : FCD-151                                                                   | A: PCP-11/25.7 mm  | Profile : FCD-164                                                                     | Weight : 265 gr/m                                                                                     |
| Weight : 1021 gr/m                                                                  |                                                                                                       |                                                                                       |                                                                                                       |
|  |                                                                                                       |  |                                                                                                       |
| Profile : FCD-152                                                                   | A: PCP-11/25.7 mm  | Profile : FCD-155                                                                     | Weight : 86 gr/m                                                                                      |
| Weight : 1102 gr/m                                                                  |                                                                                                       |                                                                                       |                                                                                                       |



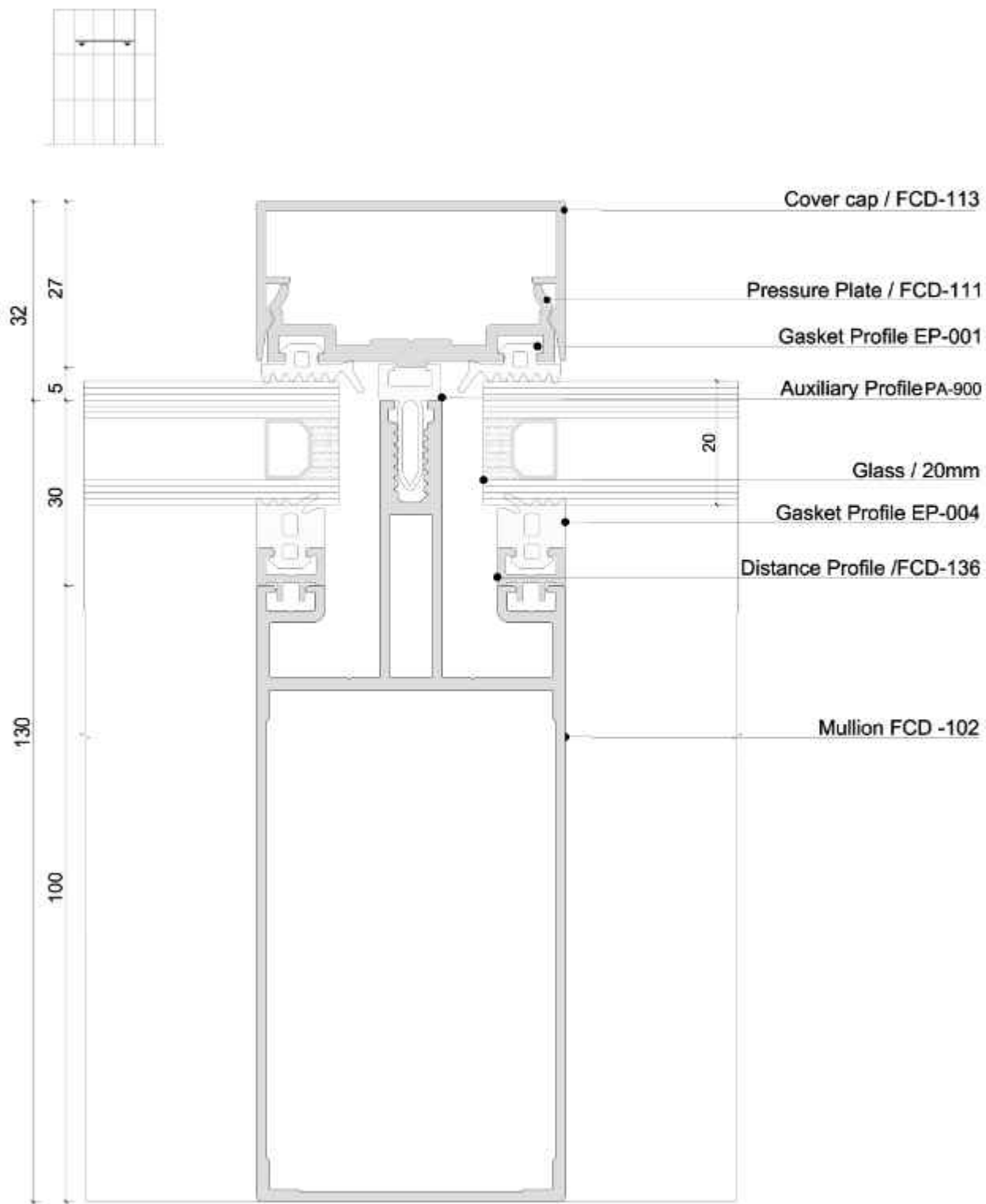
## Face cap, SG and Frameless Systems

### Profile & Accessories Information

|                                                                                     |                   |                                                                                       |                   |
|-------------------------------------------------------------------------------------|-------------------|---------------------------------------------------------------------------------------|-------------------|
|    |                   |     |                   |
| Profile : FCD-156                                                                   | Weight : 556 gr/m | Corner Joint: PCP11                                                                   | Weight: 2549 gr/m |
|  |                   |  |                   |
| Profile : FCD-157                                                                   | Weight : 265 gr/m | Leveling Plat : AK-P04                                                                | Weight : -        |
|  |                   |  |                   |
| Profile : ALN-331                                                                   | Weight : 141 gr/m | Leveling Plat : AK-P08                                                                | Weight : -        |

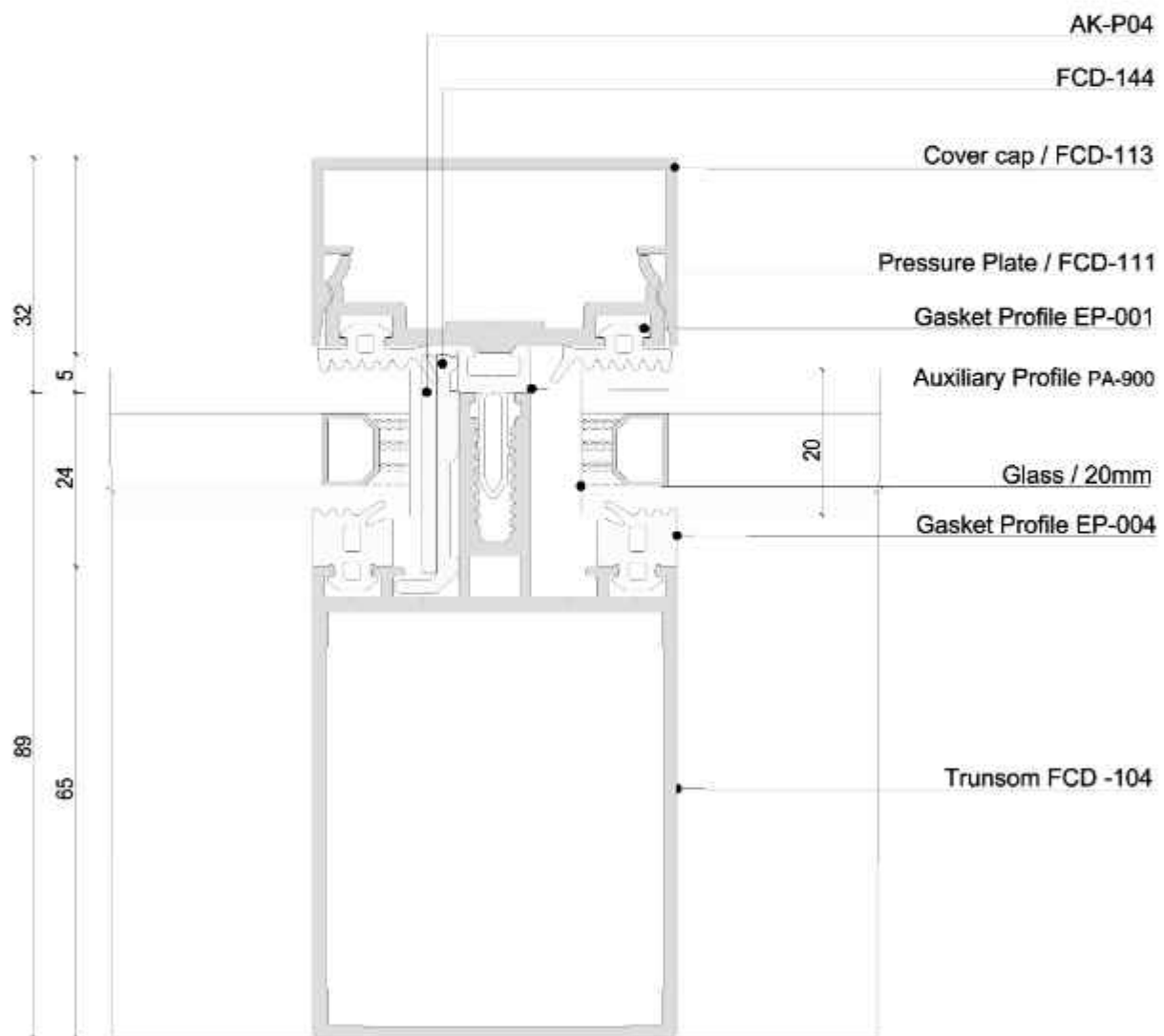


## Face cap, SG and Frameless Systems Fabrication Details

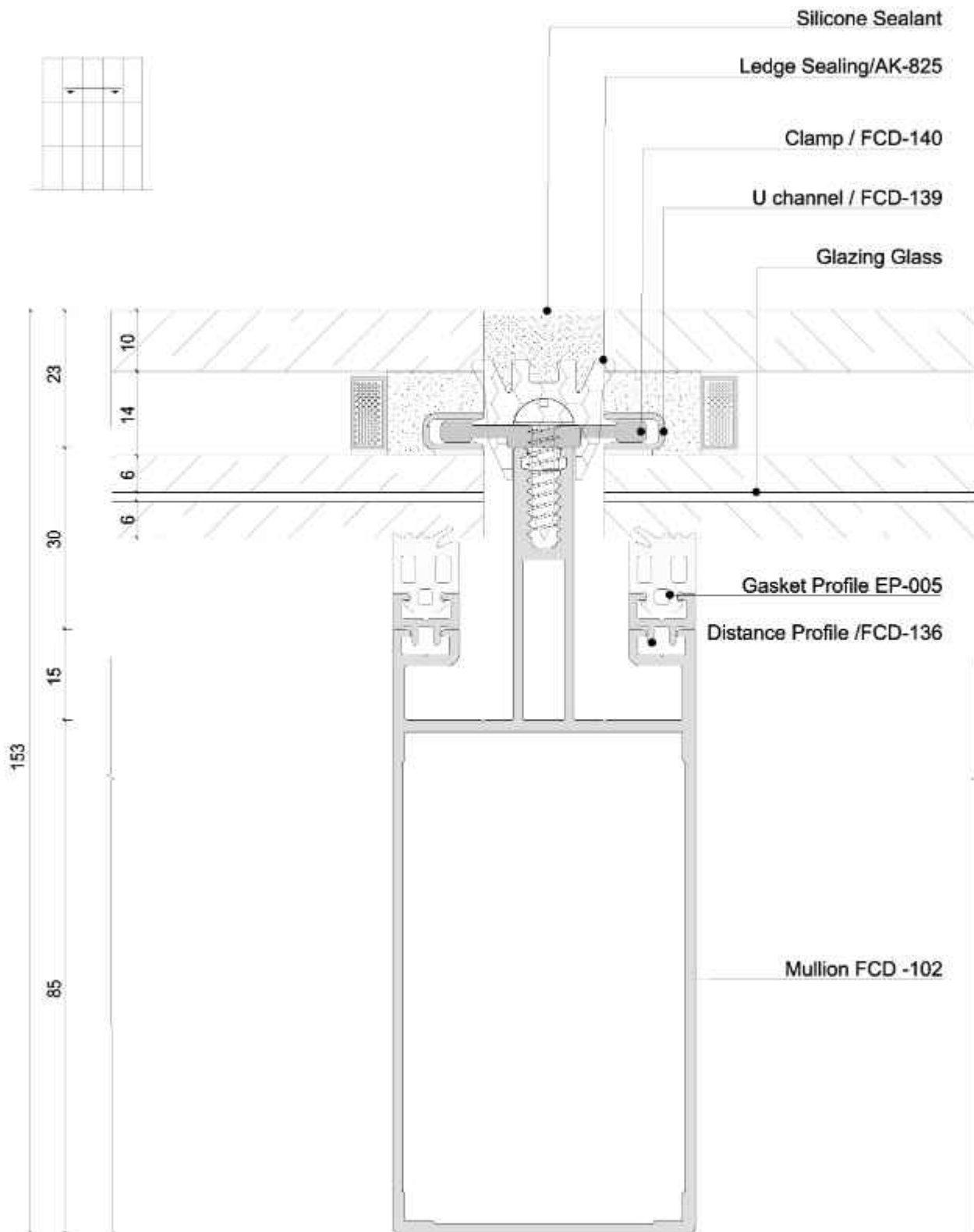




## Face cap, SG and Frameless Systems Fabrication Details

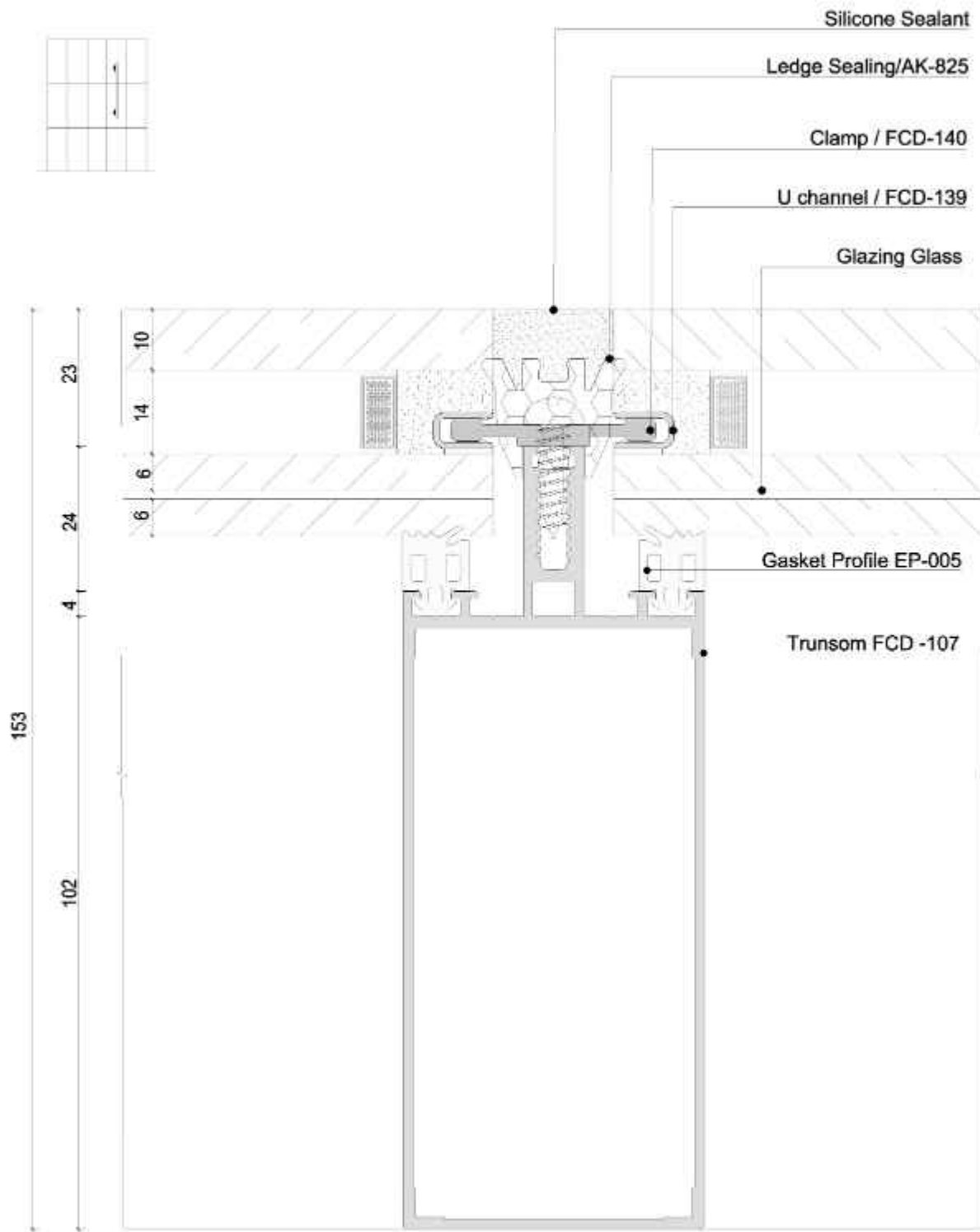


## Face cap, SG and Frameless Systems Fabrication Details

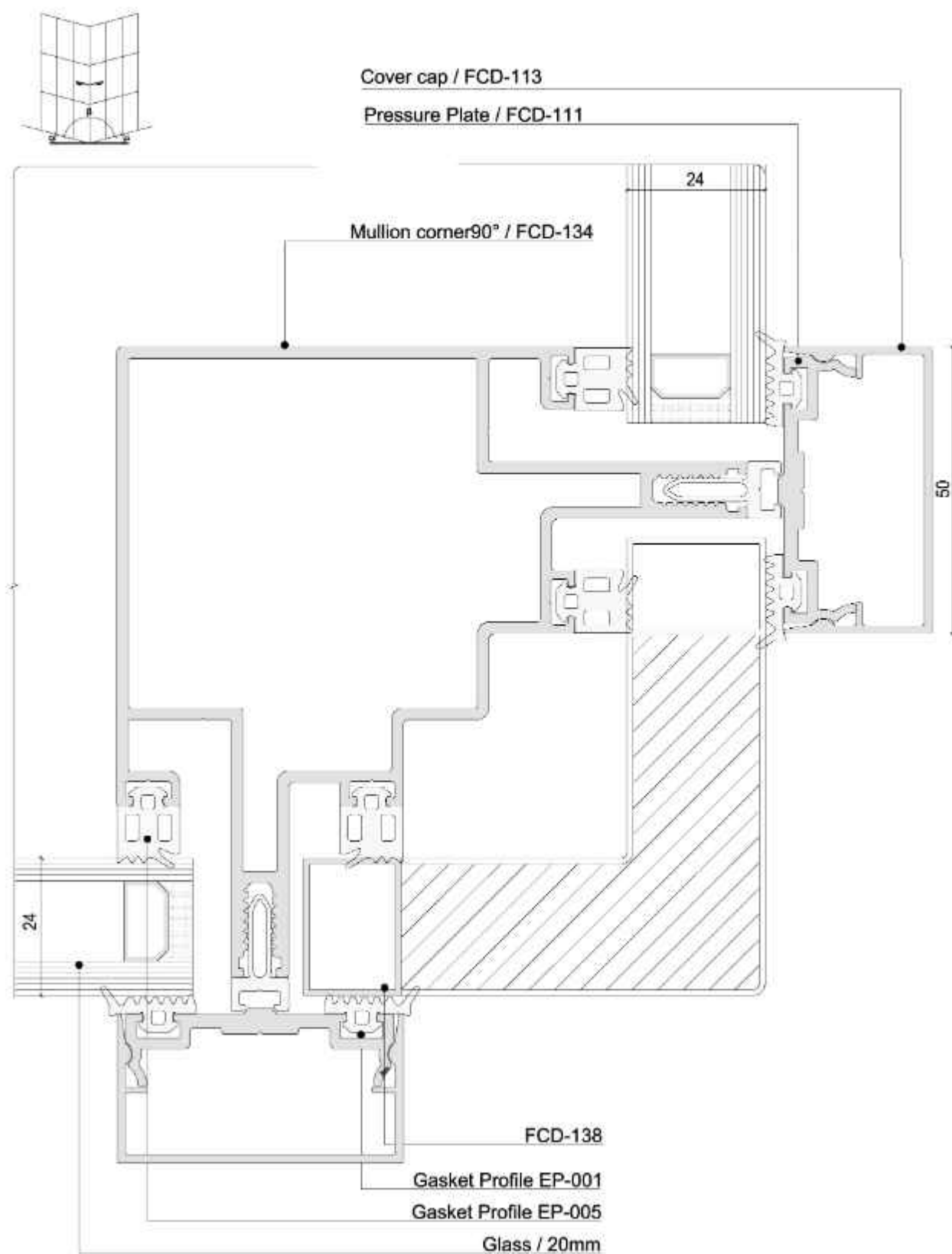




## Face cap, SG and Frameless Systems Fabrication Details

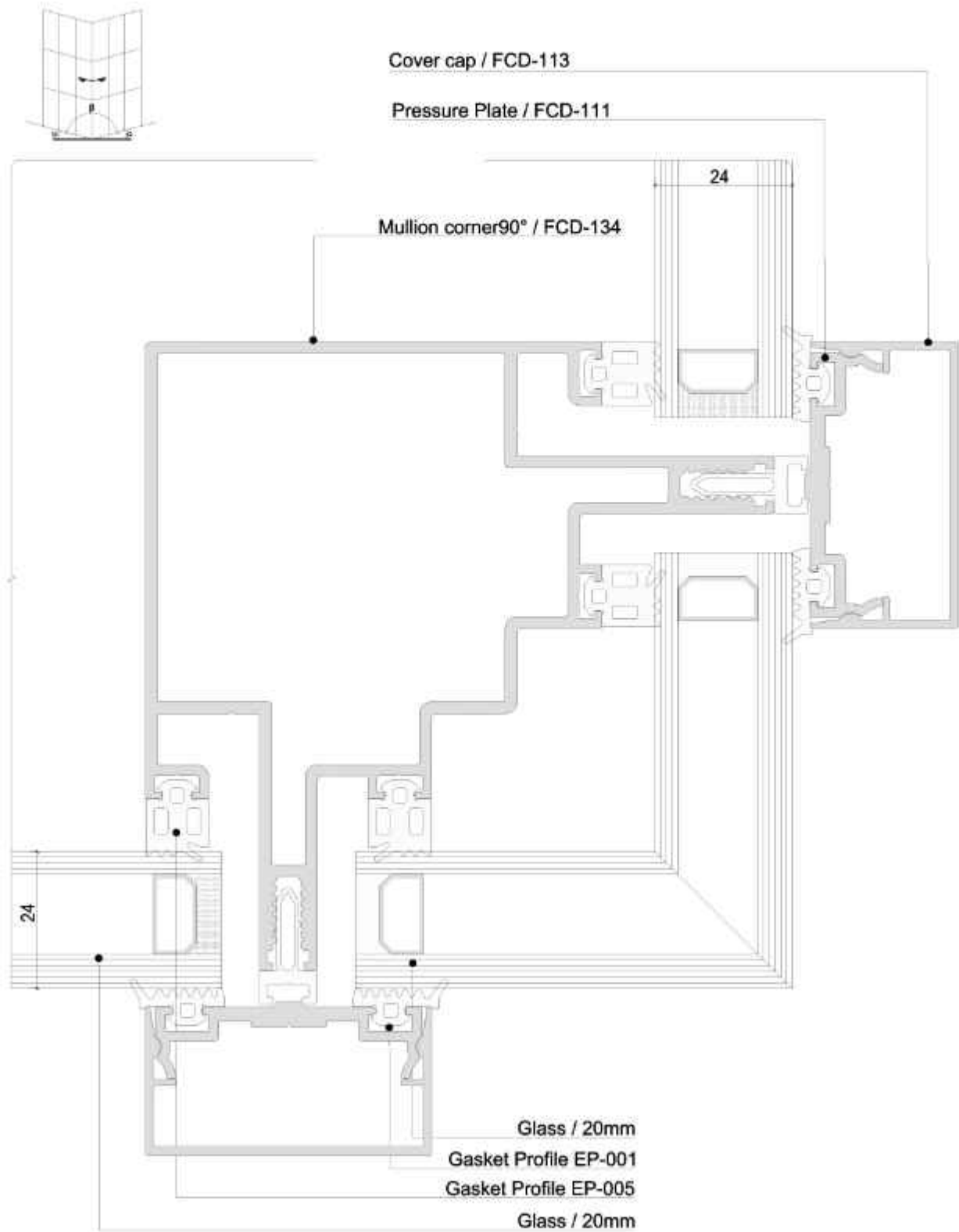


## Face cap, SG and Frameless Systems Fabrication Details

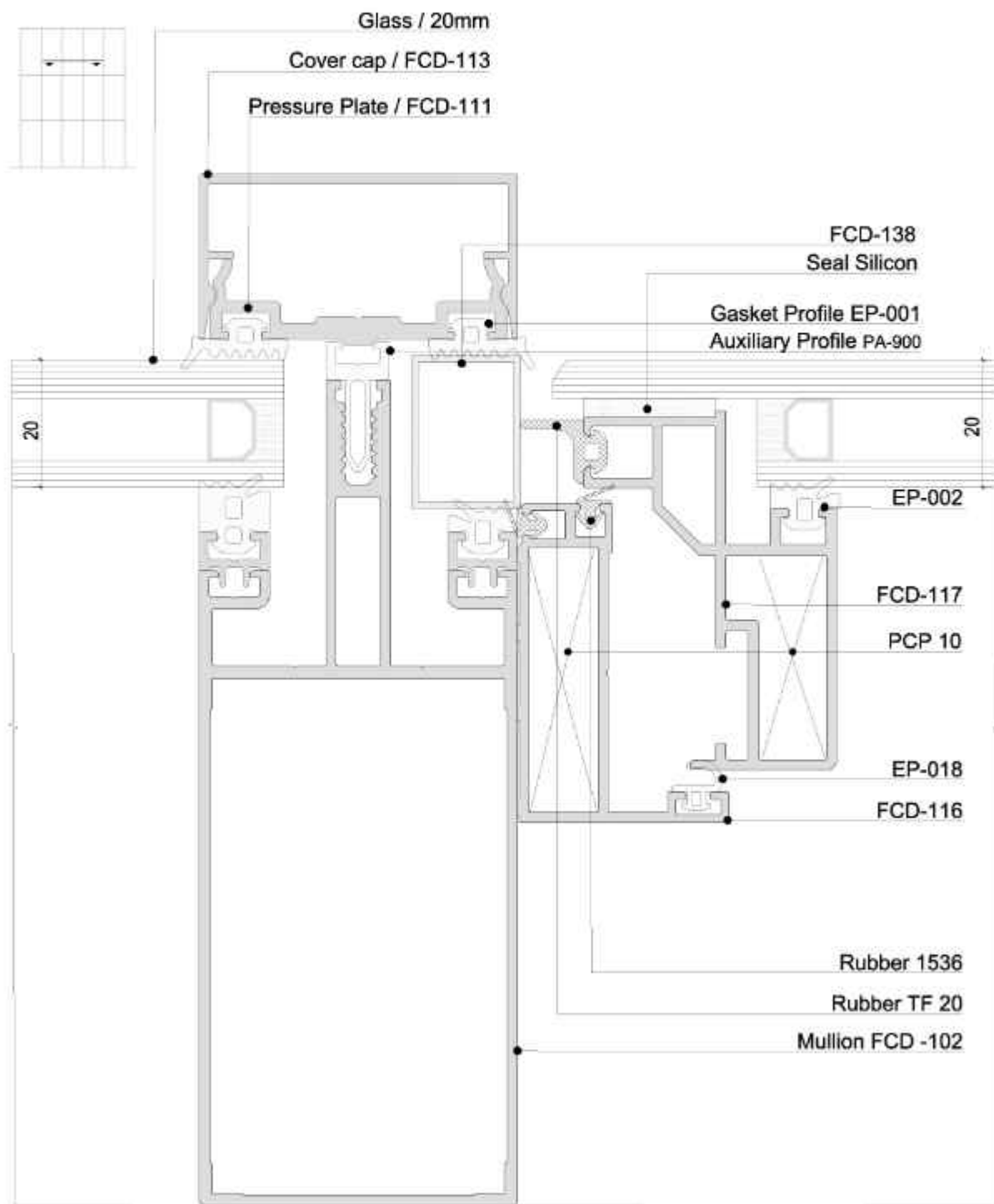


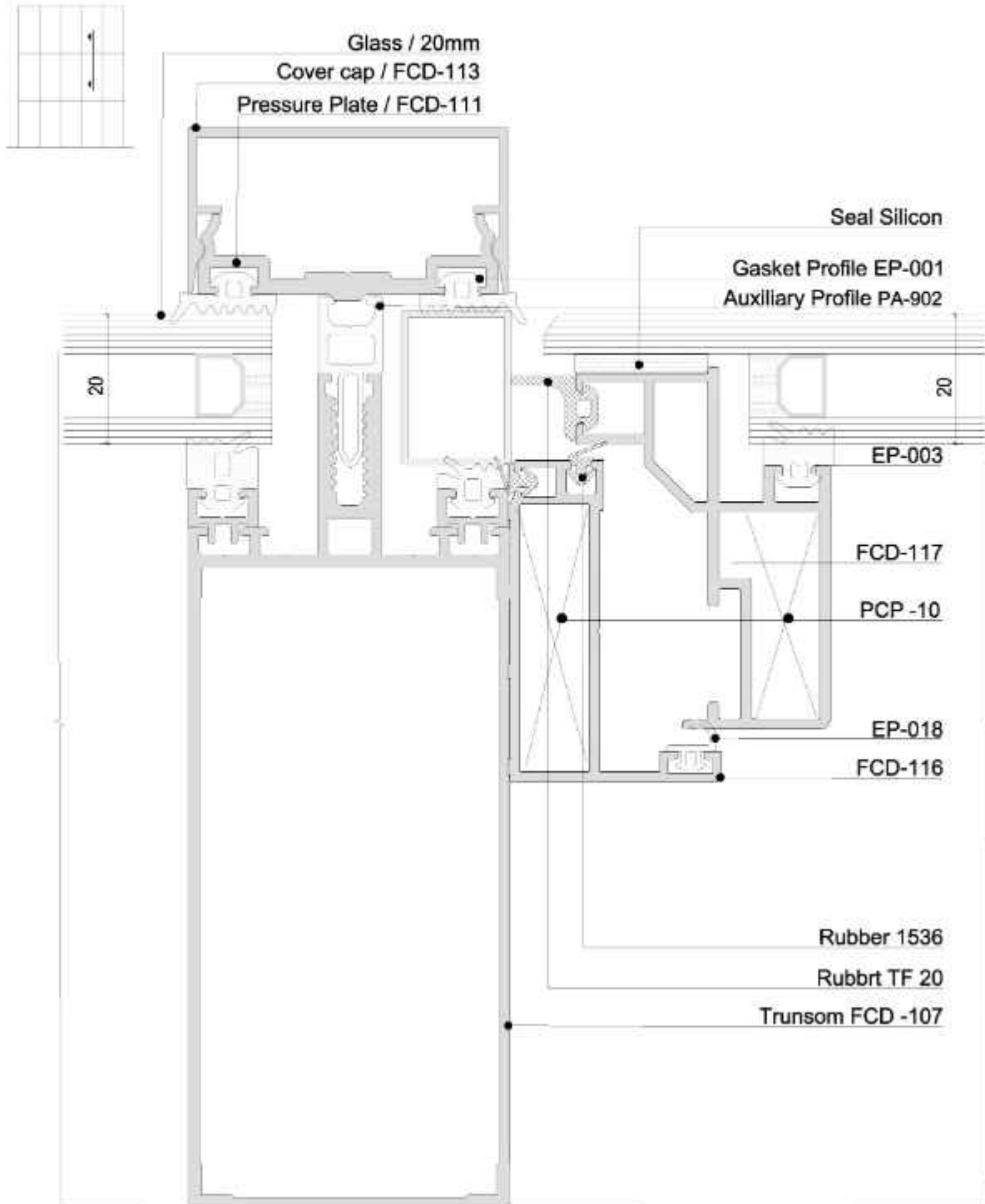


## Face cap, SG and Frameless Systems Fabrication Details

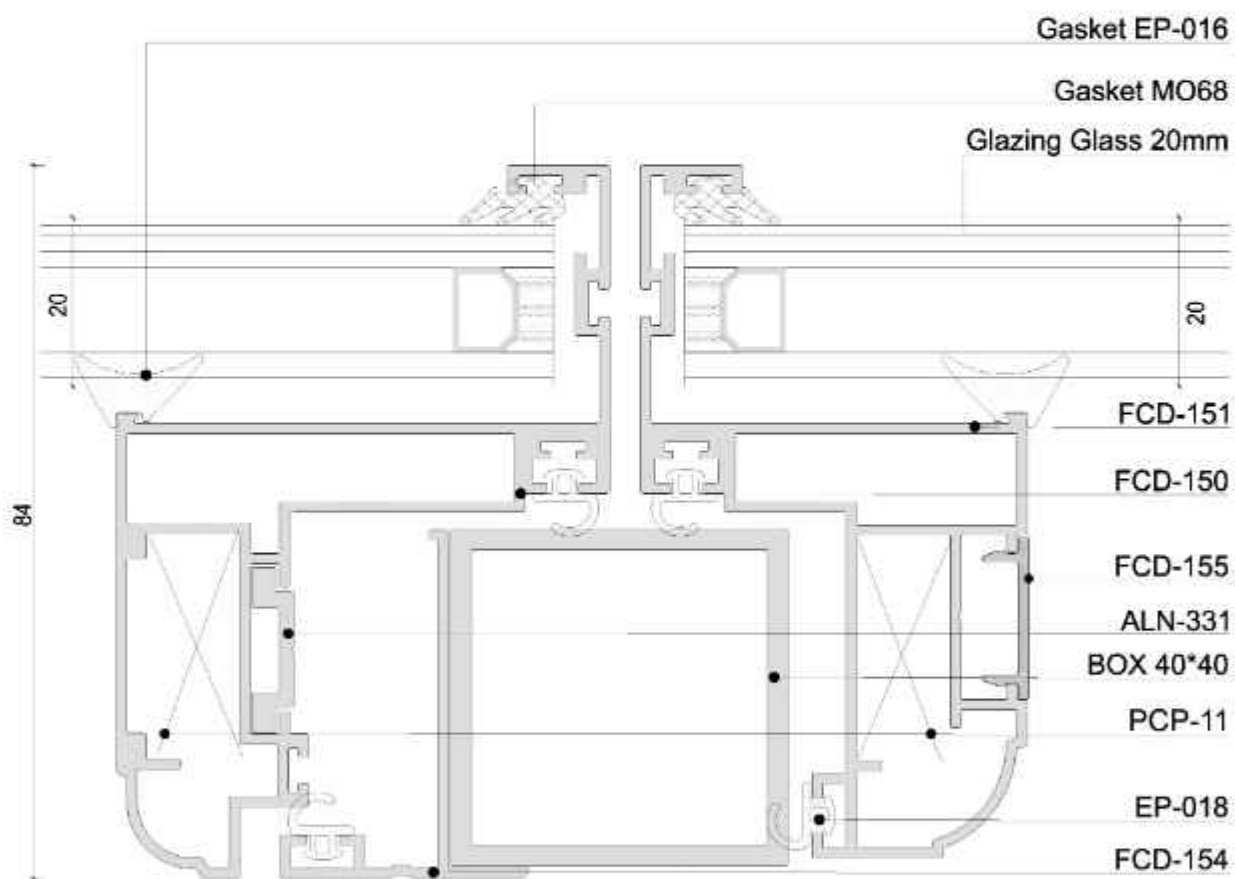


## Face cap, SG and Frameless Systems Fabrication Details



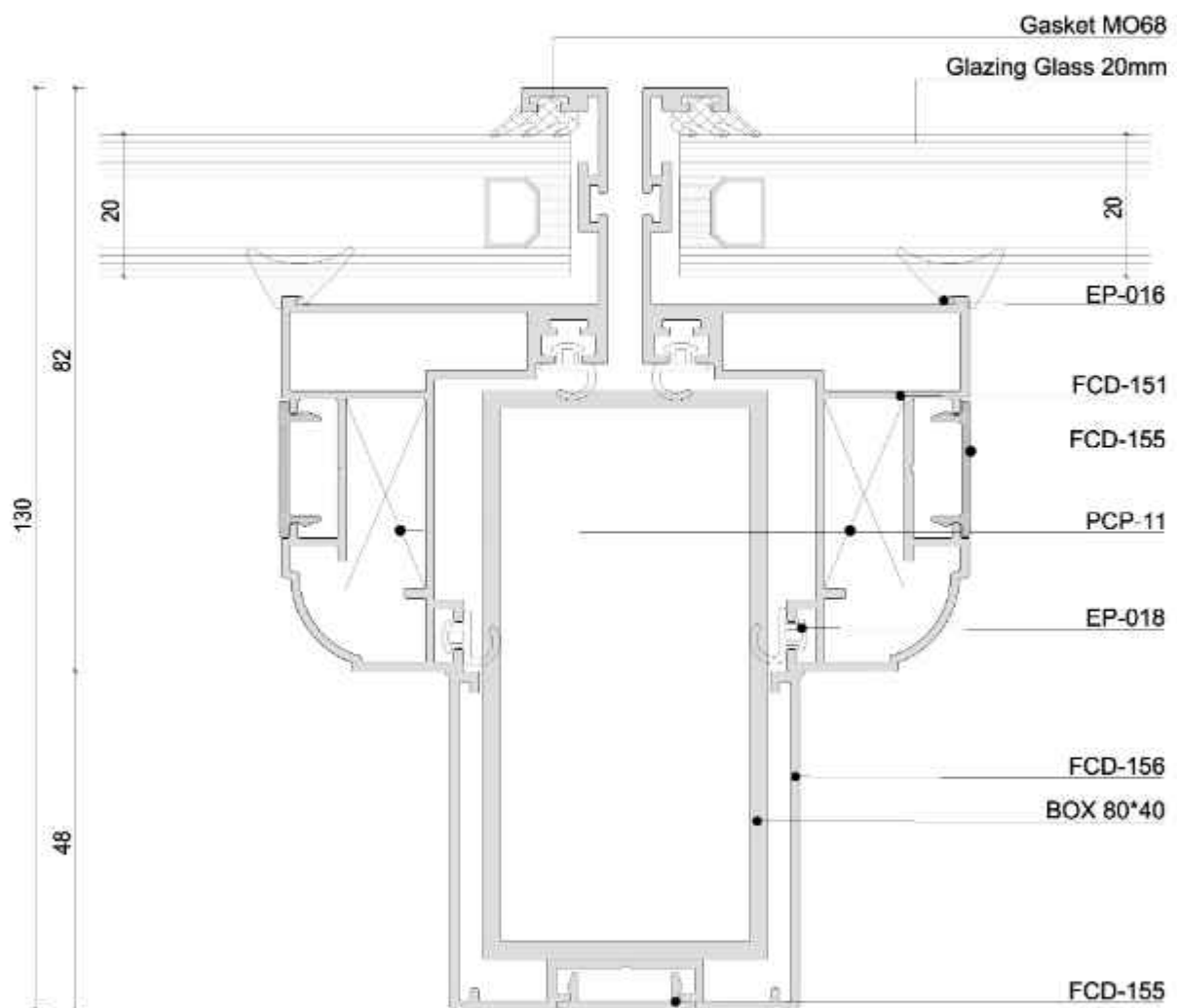


## Face cap, SG and Frameless Systems Fabrication Details

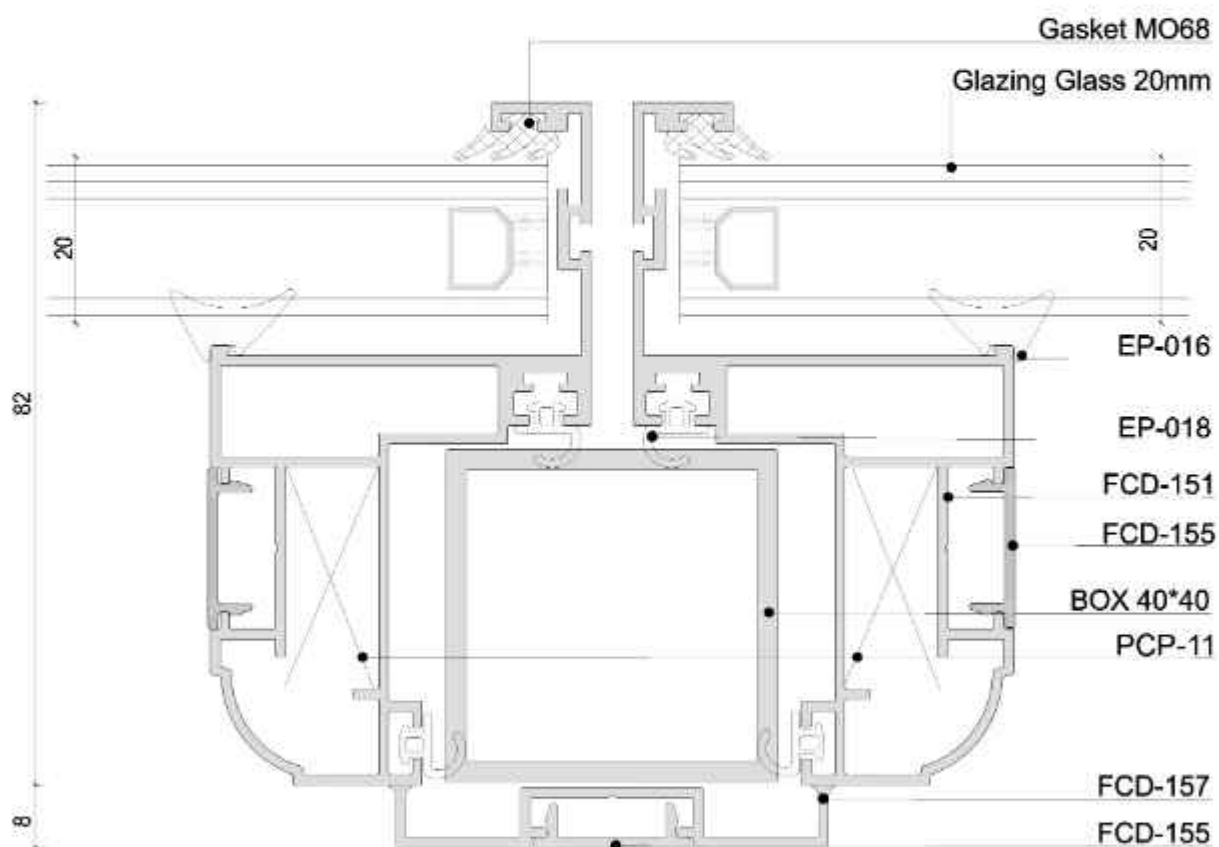




## Face cap, SG and Frameless Systems Fabrication Details



## Face cap, SG and Frameless Systems Fabrication Details



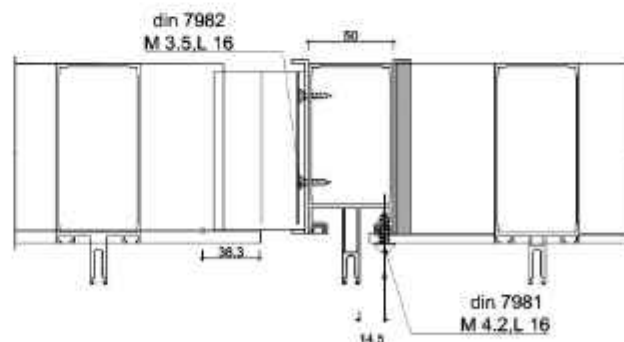
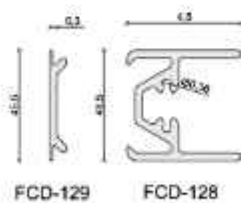
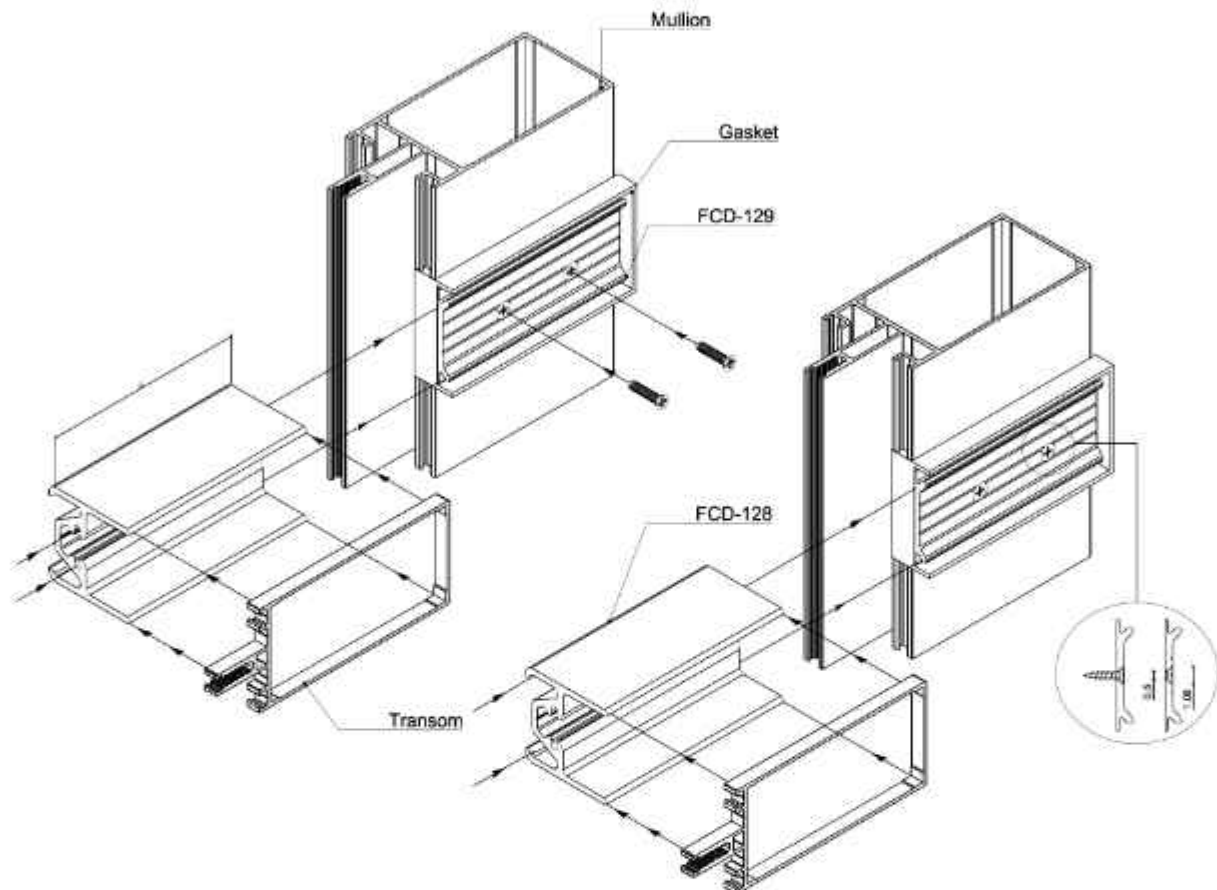


## Face cap, SG and Frameless Systems

| Mullion and Expansion Joint Profile                                                 |                        |                                                                                      |                                        |
|-------------------------------------------------------------------------------------|------------------------|--------------------------------------------------------------------------------------|----------------------------------------|
| IMAGES                                                                              | DESCRIPTION<br>Mullion | IMAGES                                                                               | DESCRIPTION<br>Expansion Joint Profile |
|   | FCD-100                |   | FCD-121                                |
|  | FCD-101                |  | FCD-122                                |
|  | FCD-102                |   | FCD-123                                |
|  | FCD-103                |   | FCD-124                                |
|  | FCD-134                |   | FCD-126                                |



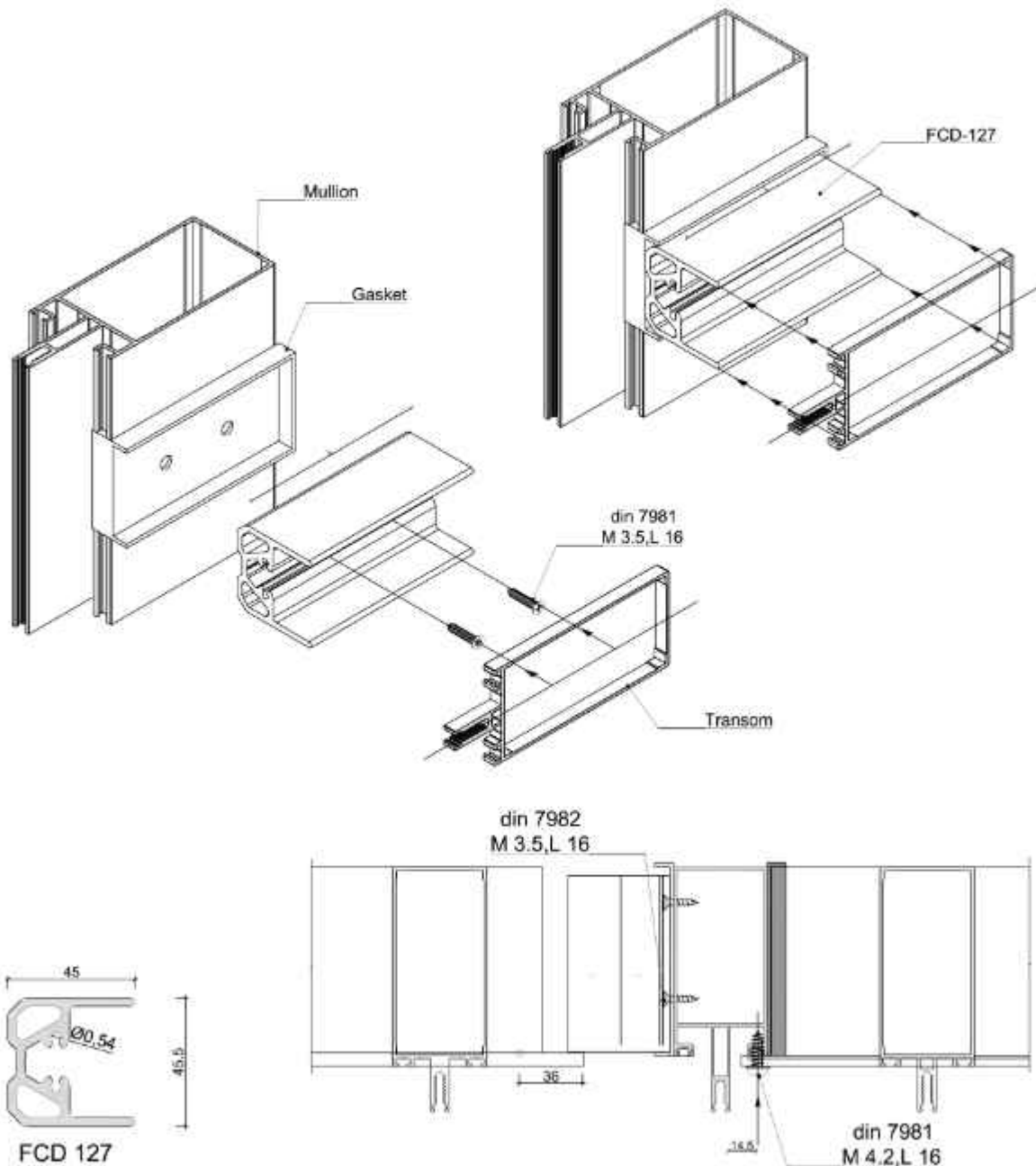
## Face cap, SG and Frameless Systems Assembly Drawing



| Transom | FCD-104 | FCD-105 | FCD-106 | FCD-107 | FCD-108 |
|---------|---------|---------|---------|---------|---------|
| FCD-129 | 56.8    | 41.8    | 122.8   | 97.8    | 71.8    |
| FCD-128 | 56.8    | 41.8    | 122.8   | 97.8    | 71.8    |



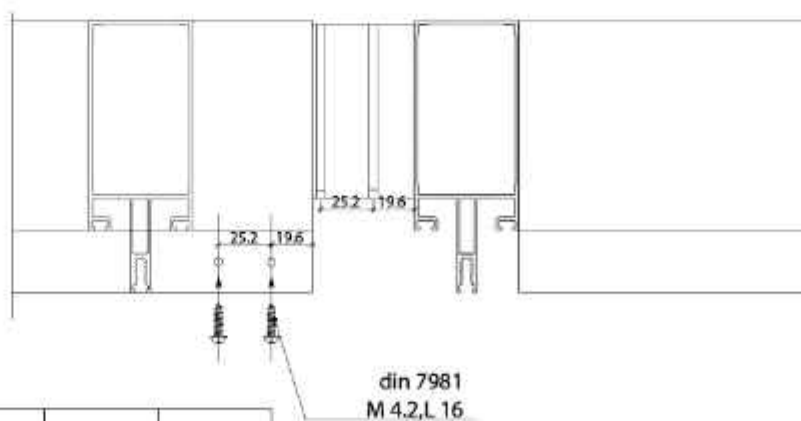
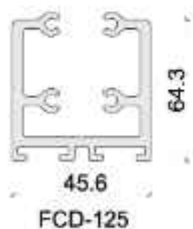
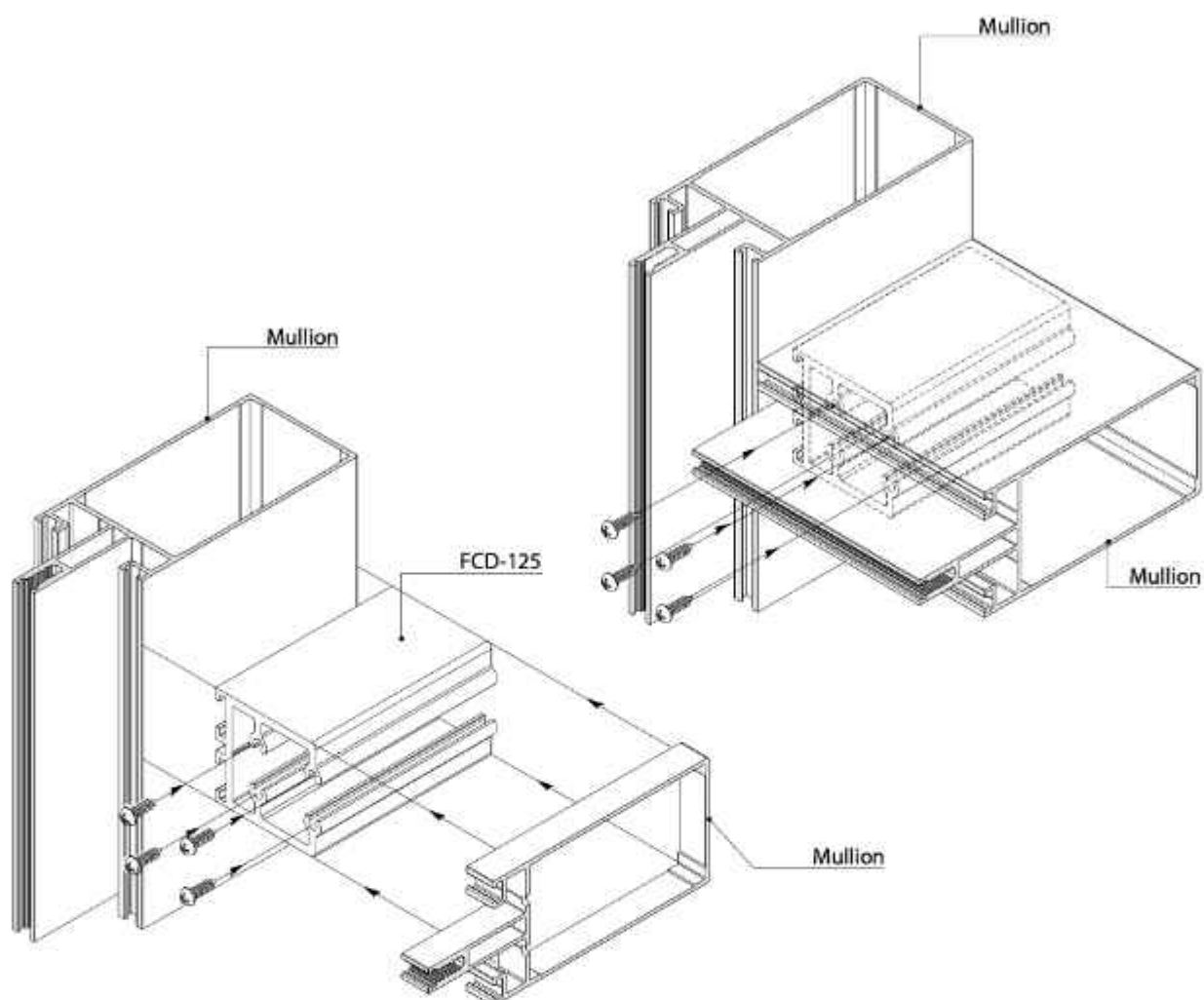
## Face cap, SG and Frameless Systems Assembly Drawing



| Transom | FCD-104 | FCD-105 | FCD-106 | FCD-107 | FCD-108 |
|---------|---------|---------|---------|---------|---------|
| FCD-127 | 56.8    | 41.8    | 122.8   | 97.8    | 71.8    |



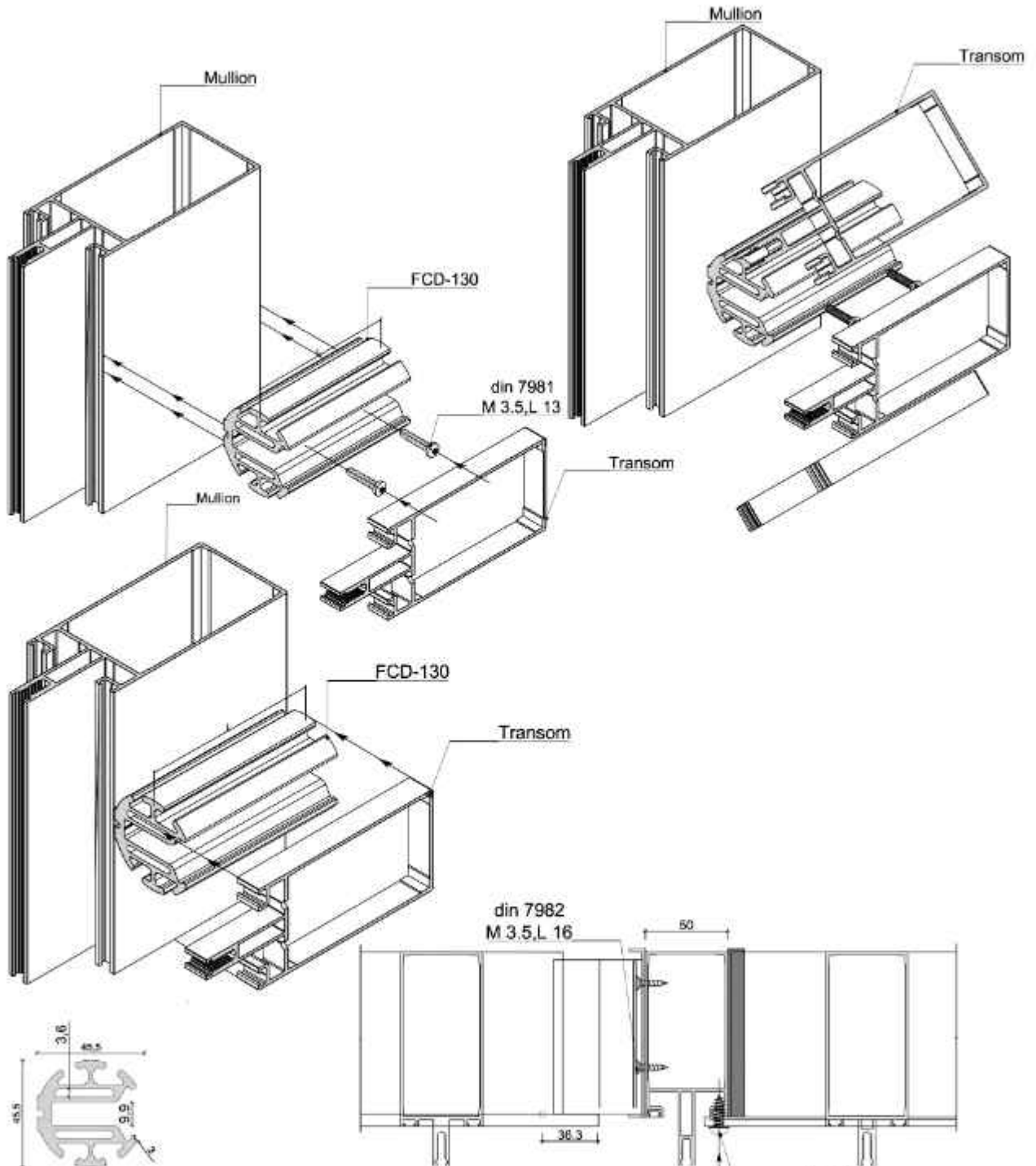
## Face cap, SG and Frameless Systems Assembly Drawing



| Mullion | FCD-100 | FCD-101 | FCD-102 | FCD-103 |
|---------|---------|---------|---------|---------|
| FCD-125 | 116     | 101     | 81      | 61      |



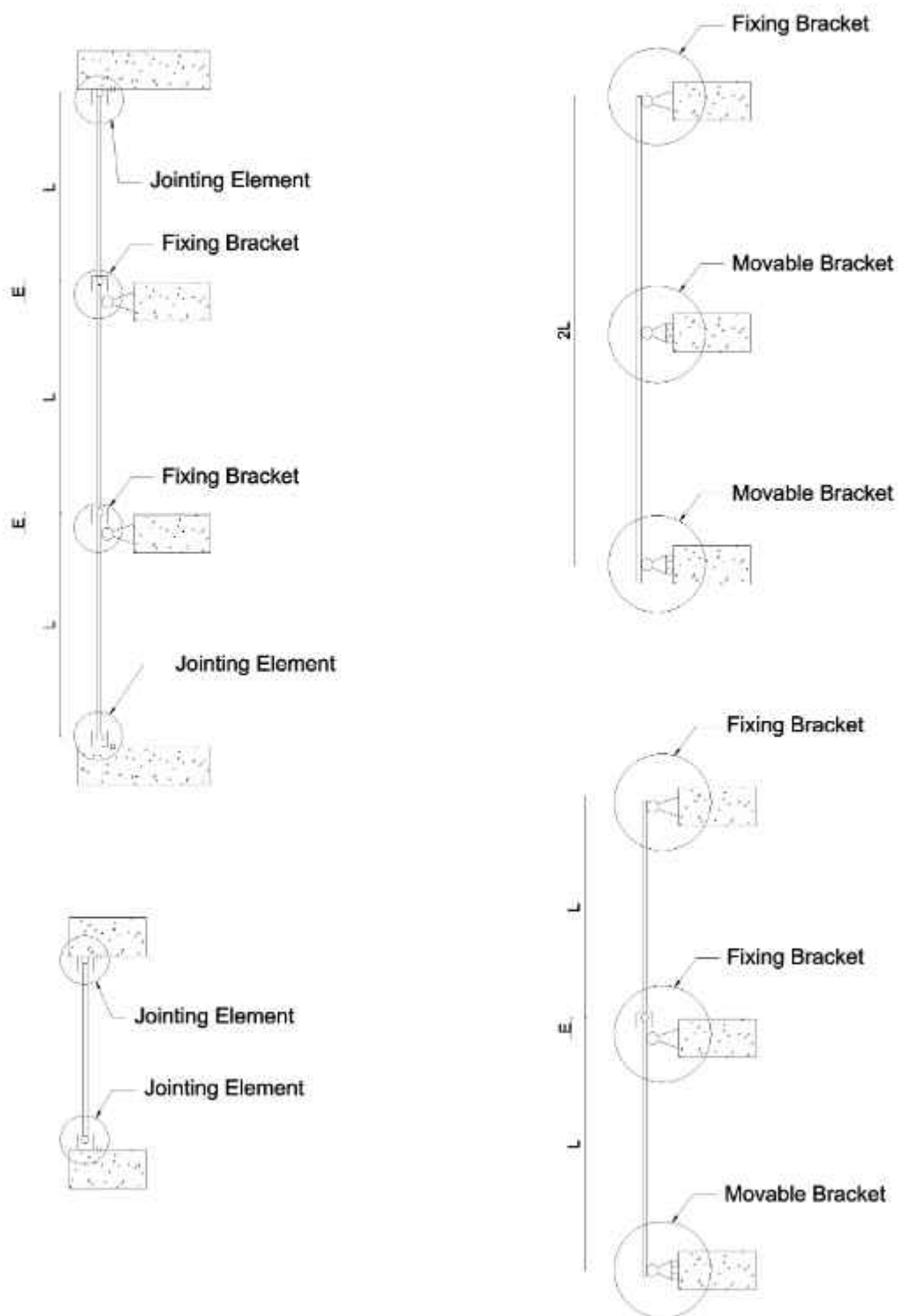
## Face cap, SG and Frameless Systems Assembly Drawing



| Transom | FCD-104 | FCD-105 | FCD-106 | FCD-107 | FCD-108 |
|---------|---------|---------|---------|---------|---------|
| FCD-130 | 56.8    | 41.8    | 122.8   | 97.8    | 71.8    |

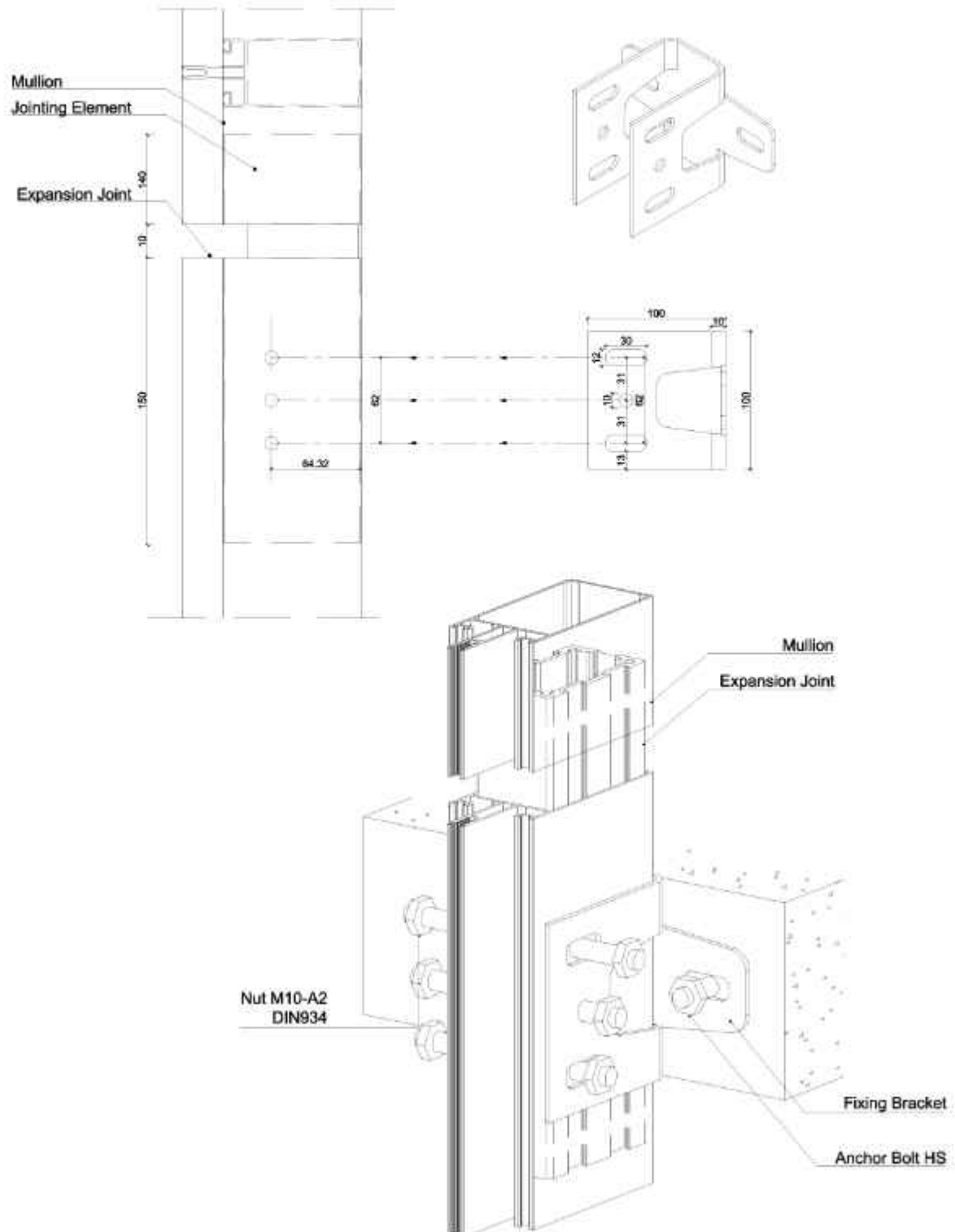


## Face cap, SG and Frameless Systems Assembly Drawing

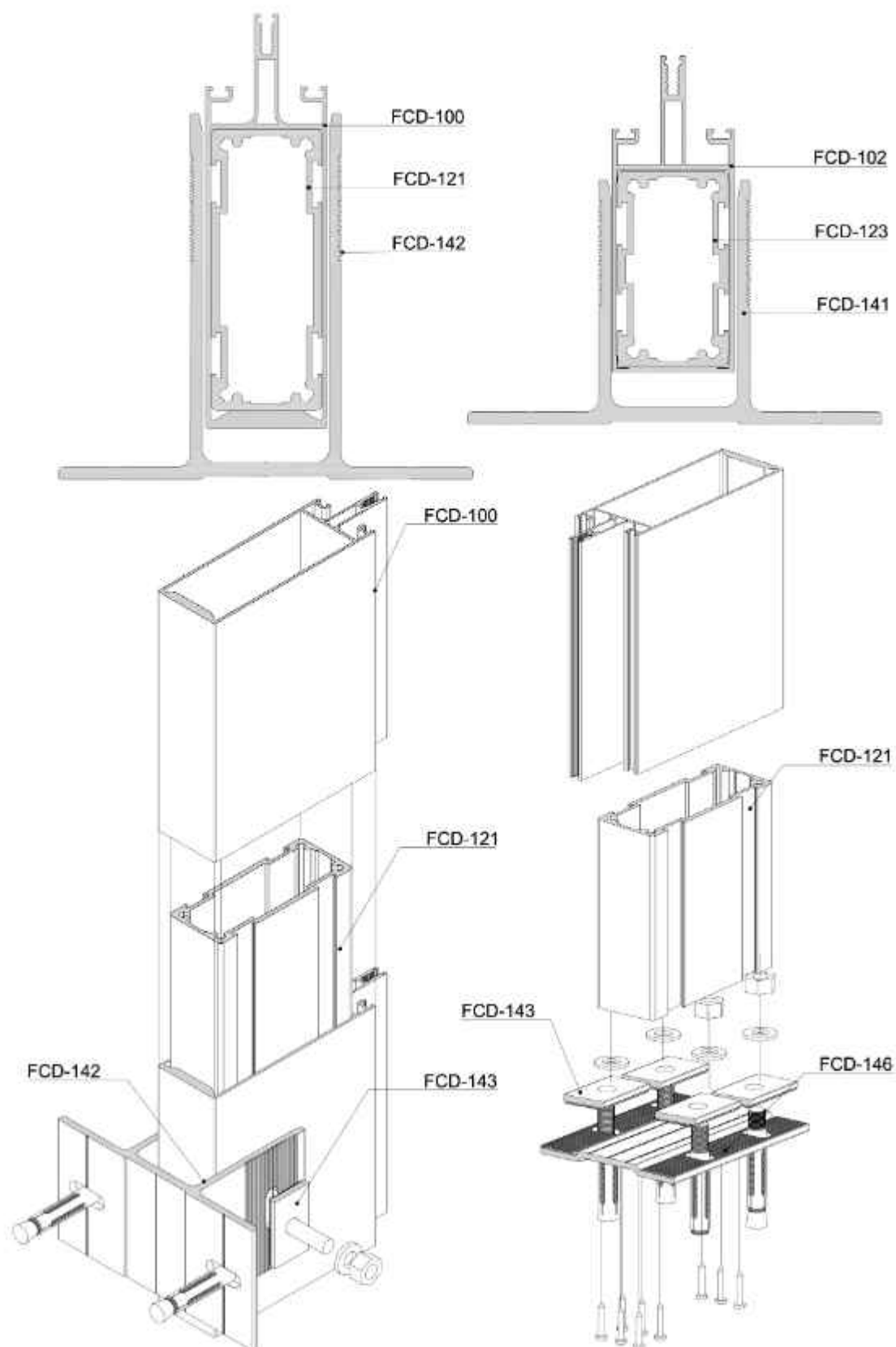




## Face cap, SG and Frameless Systems Assembly Drawing



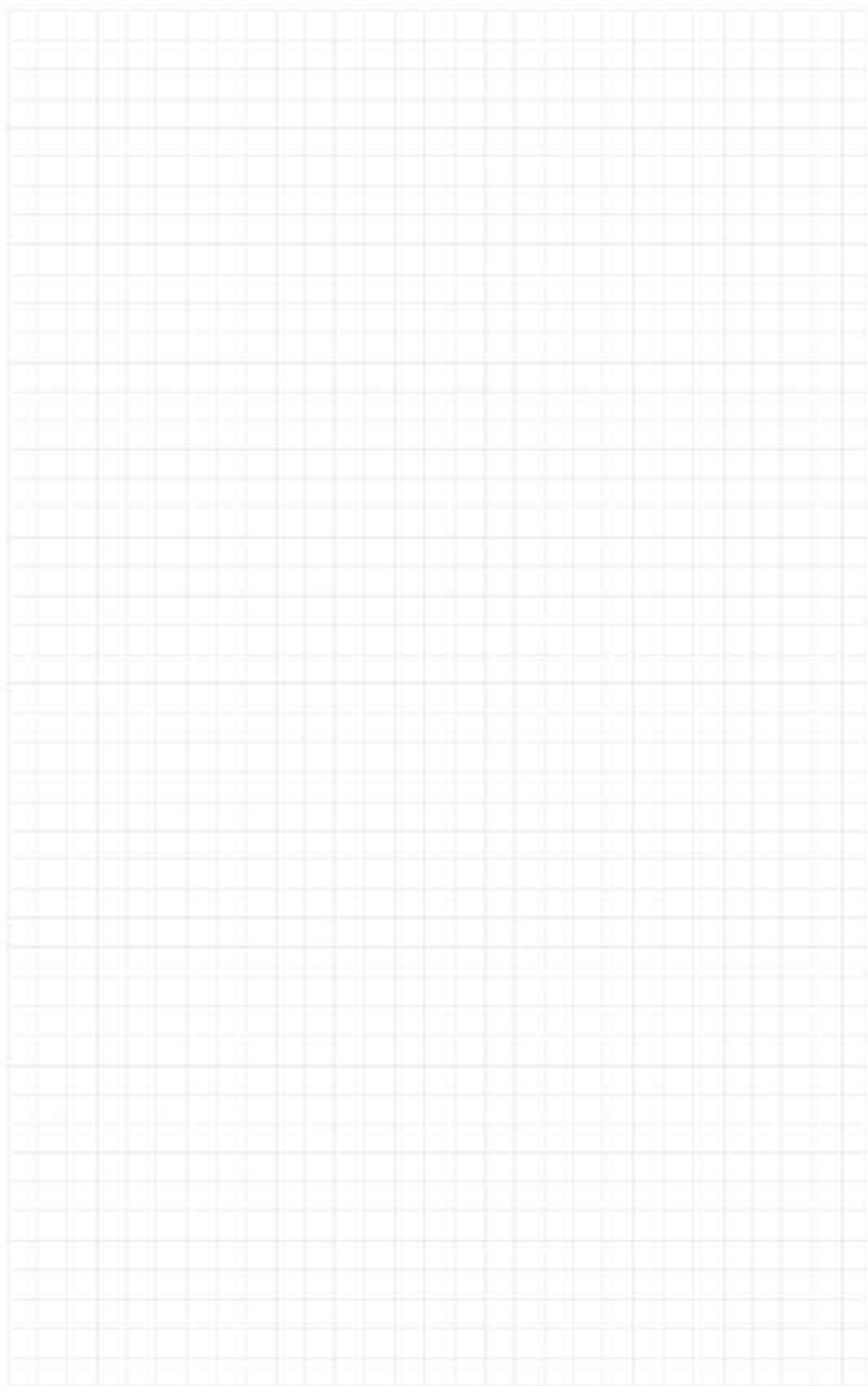
## Face cap, SG and Frameless Systems Assembly Drawing





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# Sun Shading

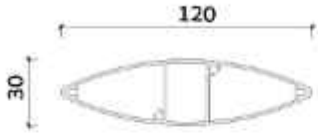
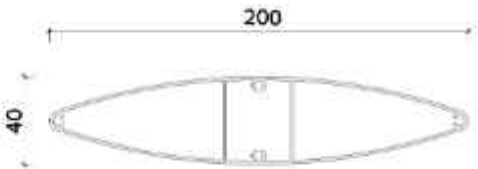
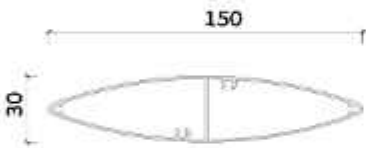
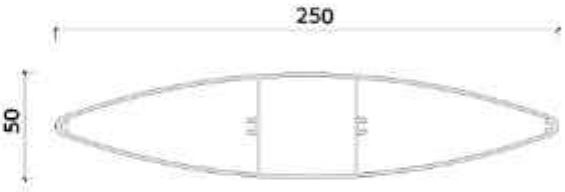
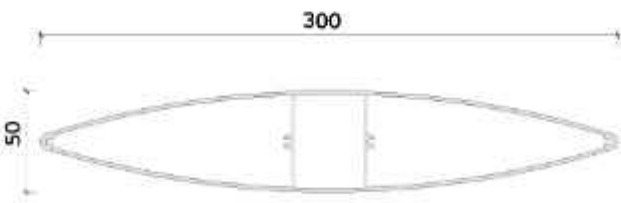
Louver System





## Louver System

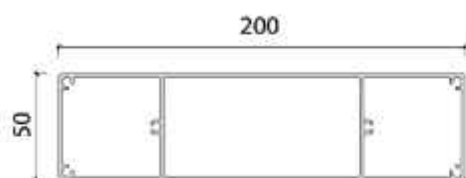
### Profile & Accessories Information

|                                                                                      |                    |                                                                                      |                    |
|--------------------------------------------------------------------------------------|--------------------|--------------------------------------------------------------------------------------|--------------------|
|     |                    |    |                    |
| Profile : ALS-100                                                                    | Weight : 1338 gr/m | Profile : ALS-102                                                                    | Weight : 2117 gr/m |
|   |                    |  |                    |
| Profile : ALS-101                                                                    | Weight : 1226 gr/m | Profile : ALS-103                                                                    | Weight : 3031 gr/m |
|  |                    |                                                                                      |                    |
| Profile : ALS-104                                                                    |                    | Weight : 3570 gr/m                                                                   |                    |



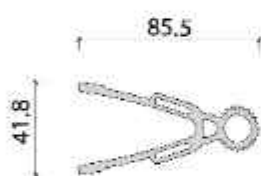
## Louver System

### Profile & Accessories Information



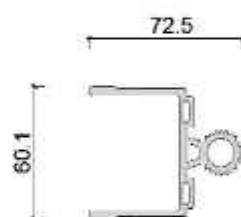
Profile : ALS-105

Weight : 2868 gr/m



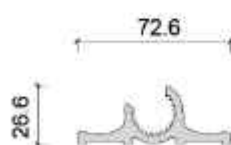
Profile : ALS-111

Weight : 1859 gr/m



Profile : ALS-113

Weight : 1902 gr/m

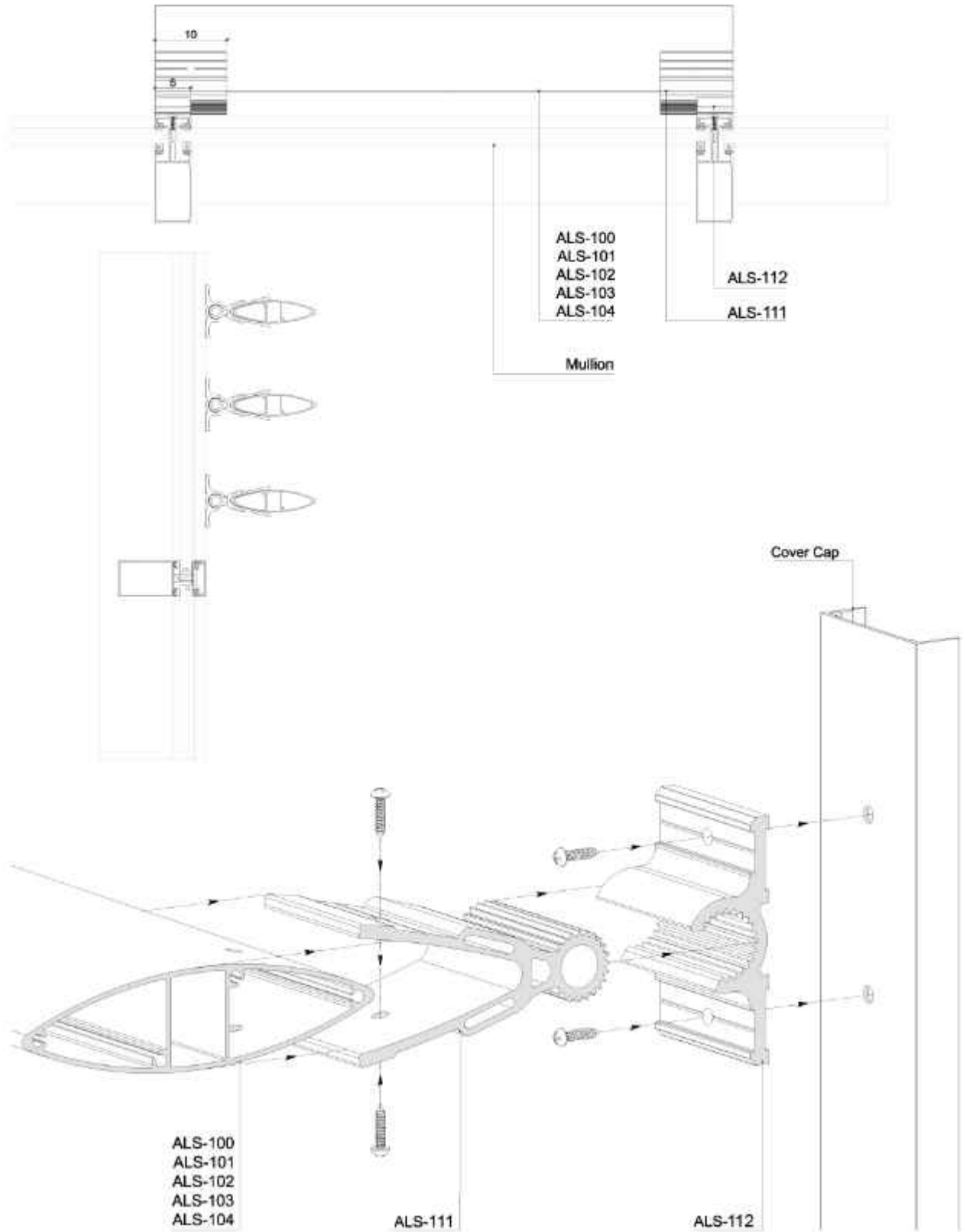


Profile : ALS-112

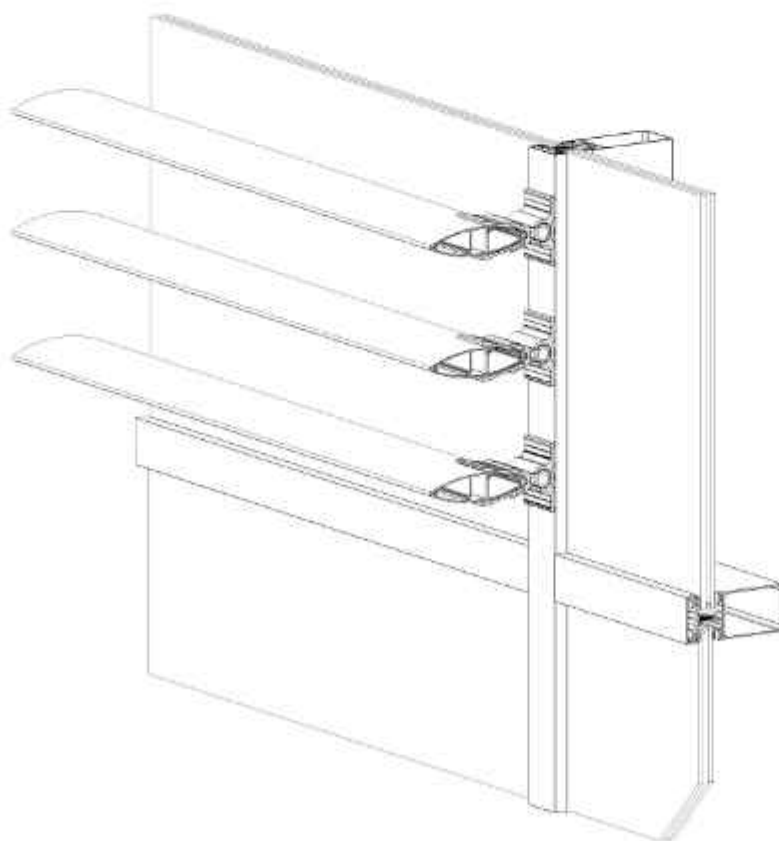
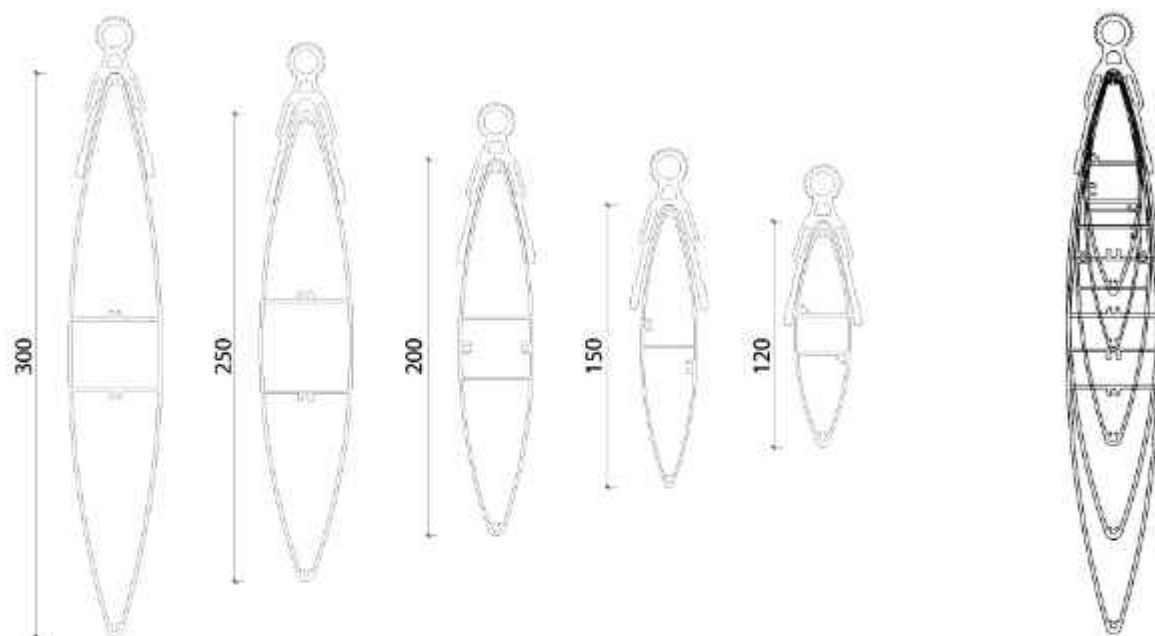
Weight : 1295 gr/m



# Louver System Assembly Drawing

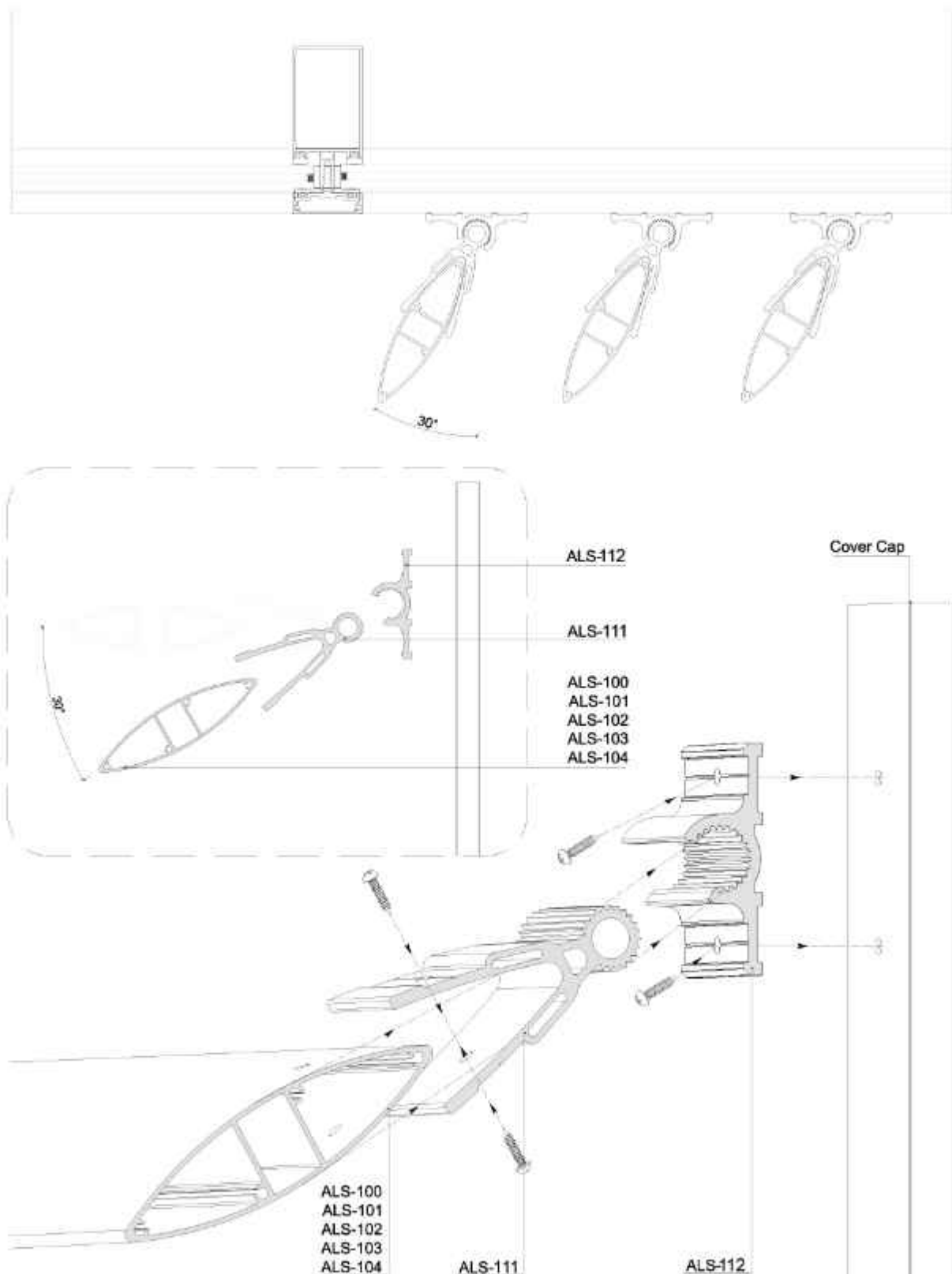


## Louver System Assembly Drawing





# Louver System Assembly Drawing





# Balustrade System

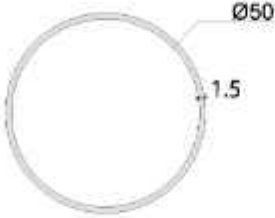
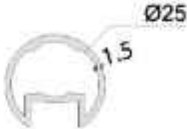
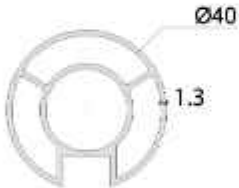
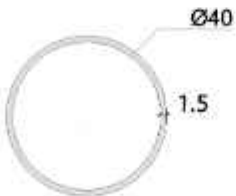
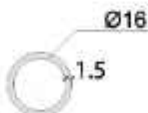
Handrail & Glass Supporting System





## Handrail & Glass supporting System

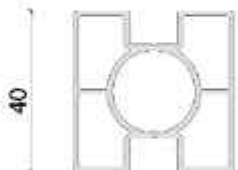
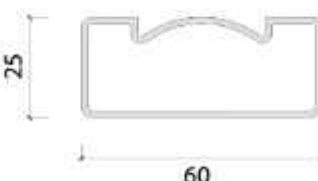
### Profile & Accessories Information

|                                                                                     |                   |                                                                                       |                   |
|-------------------------------------------------------------------------------------|-------------------|---------------------------------------------------------------------------------------|-------------------|
|    |                   |    |                   |
| Profile : BLS-100                                                                   | Weight : 618 gr/m | Profile : BLS-103                                                                     | Weight : 370 gr/m |
|  |                   |  |                   |
| Profile : BLS-101                                                                   | Weight : 745 gr/m | Profile : BLS-104                                                                     | Weight : 81 gr/m  |
|  |                   |  |                   |
| Profile : BLS-102                                                                   | Weight : 489 gr/m | Profile : BLS-105                                                                     | Weight : 184 gr/m |



## Handrail & Glass supporting System

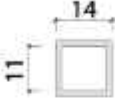
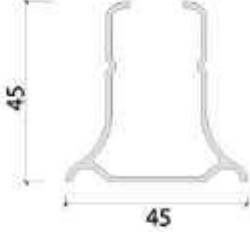
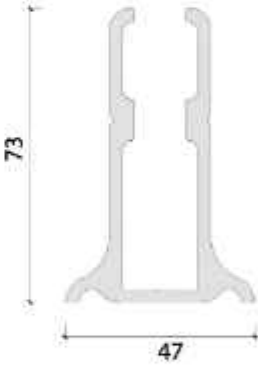
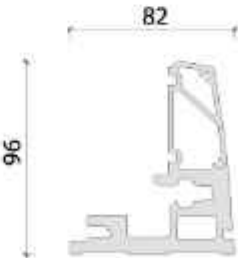
### Profile & Accessories Information

|                                                                                     |                    |                                                                                      |                   |
|-------------------------------------------------------------------------------------|--------------------|--------------------------------------------------------------------------------------|-------------------|
|    |                    |    |                   |
| Profile : BLS-106                                                                   | Weight : 721 gr/m  | Profile : BLS-122                                                                    | Weight : 872 gr/m |
|  |                    |  |                   |
| Profile : BLS-107                                                                   | Weight : 1277 gr/m | Profile : BLS-123                                                                    | Weight : 880 gr/m |
|  |                    |  |                   |
| Profile : BLS-121                                                                   | Weight : 1469 gr/m | Profile : BLS-124                                                                    | Weight : 737 gr/m |



## Handrail & Glass supporting System

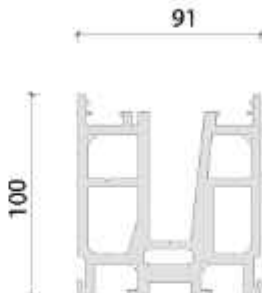
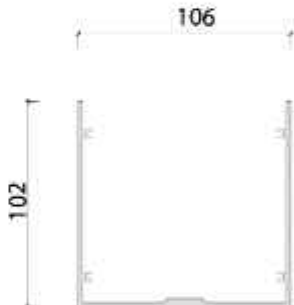
### Profile & Accessories Information

|                                                                                     |                   |                                                                                       |                    |
|-------------------------------------------------------------------------------------|-------------------|---------------------------------------------------------------------------------------|--------------------|
|    |                   |    |                    |
| Profile : BLS-125                                                                   | Weight : 192 gr/m | Profile : BLS-132                                                                     | Weight : 551 gr/m  |
|  |                   |  |                    |
| Profile : BLS-126                                                                   | Weight : 84 gr/m  | Profile : BLS-133                                                                     | Weight : 192 gr/m  |
|  |                   |   |                    |
| Profile : BLS-131                                                                   | Weight : 702 gr/m | Profile : BLS-135                                                                     | Weight : 4841 gr/m |



## Handrail & Glass supporting System

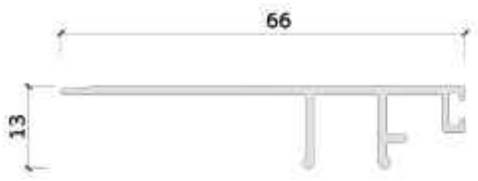
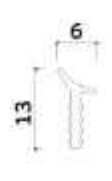
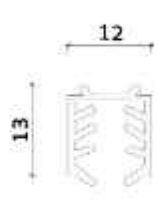
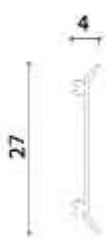
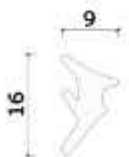
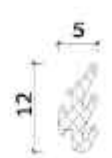
### Profile & Accessories Information

|                                                                                     |                    |                                                                                       |                    |
|-------------------------------------------------------------------------------------|--------------------|---------------------------------------------------------------------------------------|--------------------|
|    |                    |     |                    |
| Profile : BLS-136                                                                   | Weight : 2595 gr/m | Profile : BLS-140                                                                     | Weight : 8294 gr/m |
|  |                    |   |                    |
| Profile : BLS-137                                                                   | Weight : 419 gr/m  | Profile : BLS-141                                                                     | Weight : 1796 gr/m |
|  |                    |  |                    |
| Profile : BLS-138                                                                   | Weight : 767 gr/m  | Profile : BLS-142                                                                     | Weight : 610 gr/m  |



## Handrail & Glass supporting System

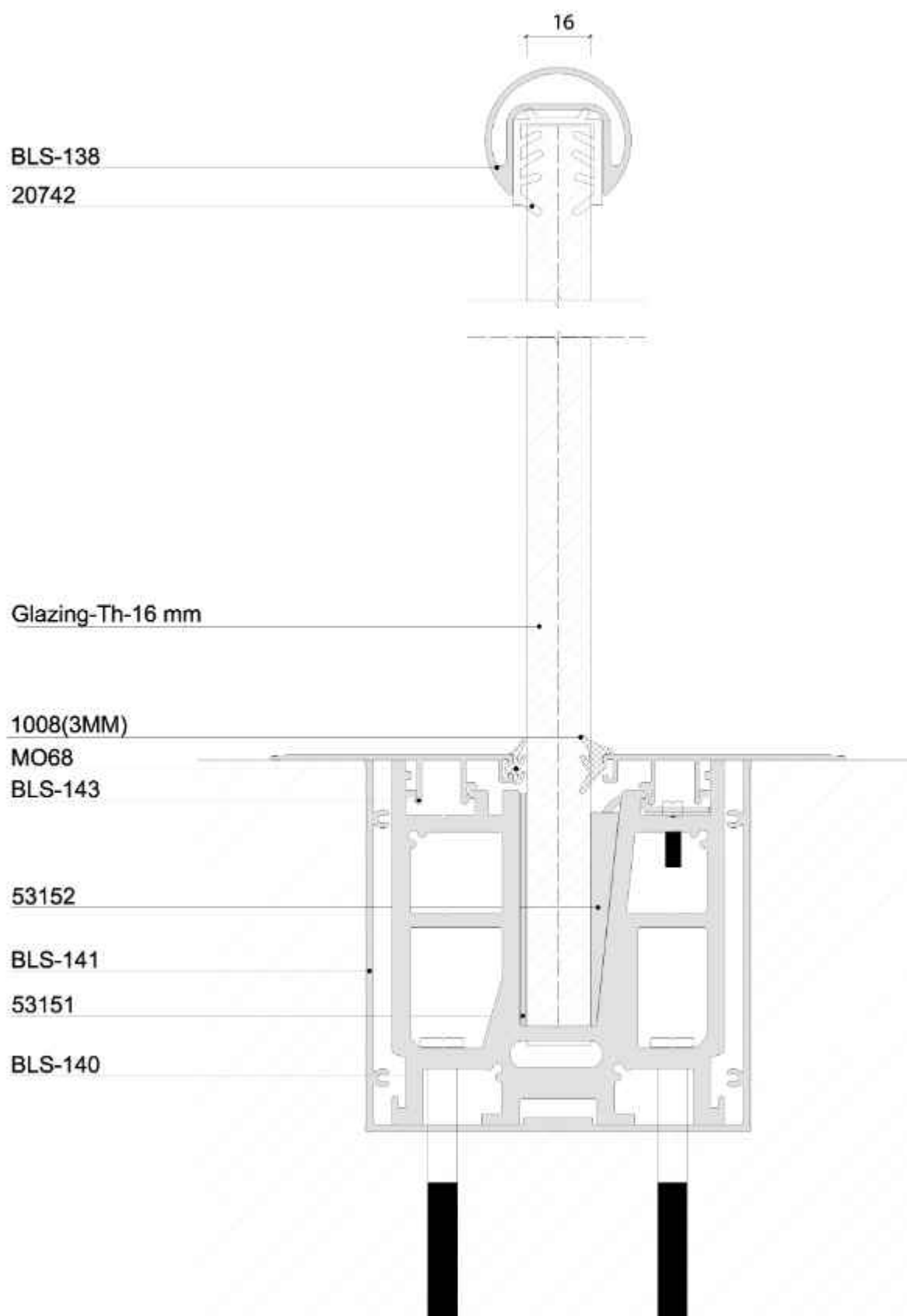
### Profile & Accessories Information

|                                                                                     |                   |                                                                                       |                  |
|-------------------------------------------------------------------------------------|-------------------|---------------------------------------------------------------------------------------|------------------|
|    |                   |    |                  |
| Profile : BLS-143                                                                   | Weight : 362 gr/m | Profile : EP-015                                                                      | Weight : 21 gr/m |
|   |                   |   |                  |
|                                                                                     |                   | Profile : 20742                                                                       | Weight : 79 gr/m |
|                                                                                     |                   |  |                  |
| Profile : BLS-144                                                                   | Weight : 599 gr/m | Profile : 20737                                                                       | Weight : 36 gr/m |
|  |                   |  |                  |
| Profile : 1008(3MM)                                                                 | Weight : 75 gr/m  | Profile : MO68                                                                        | Weight : 46 gr/m |



## Handrail & Glass supporting System

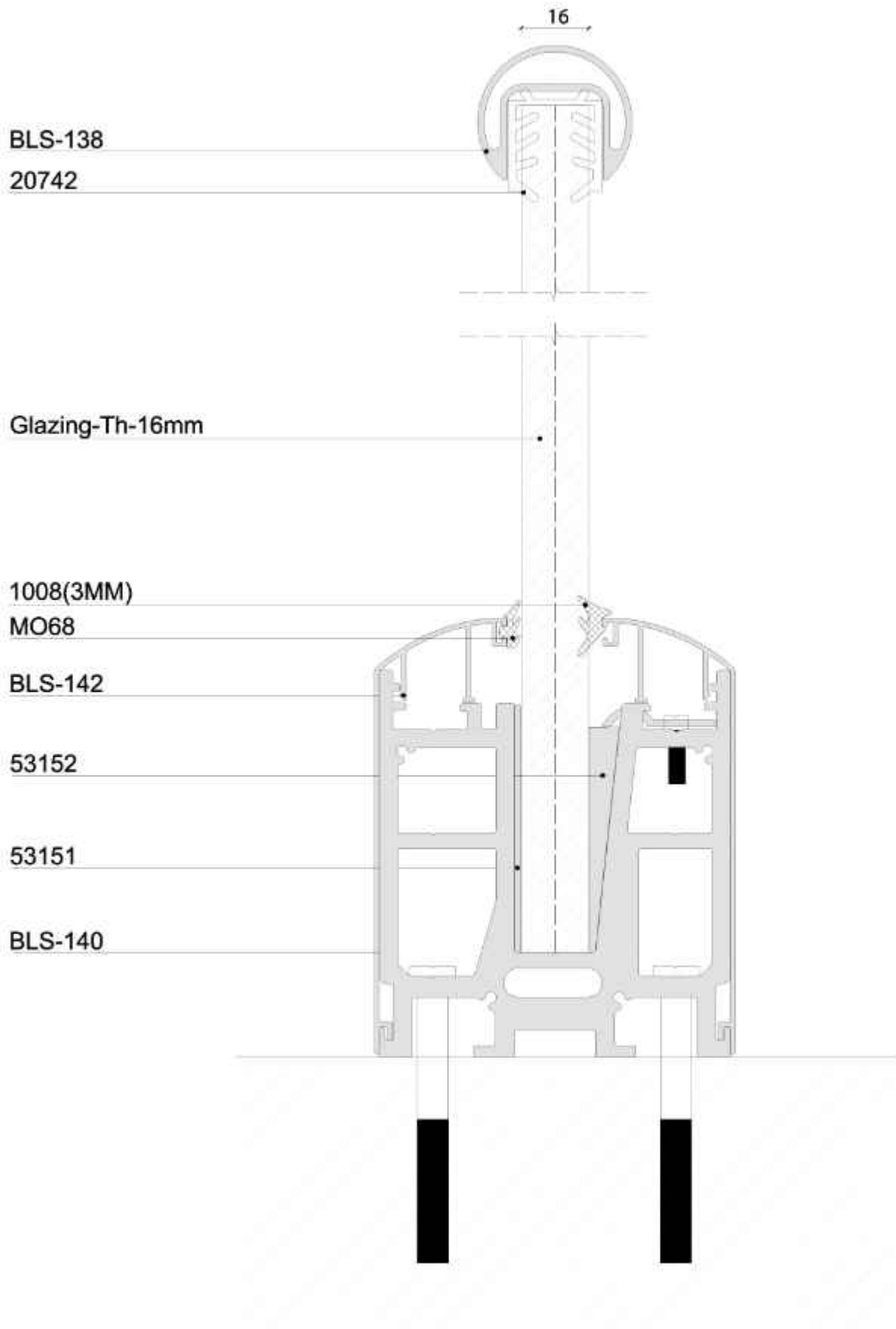
### Profile & Accessories Information





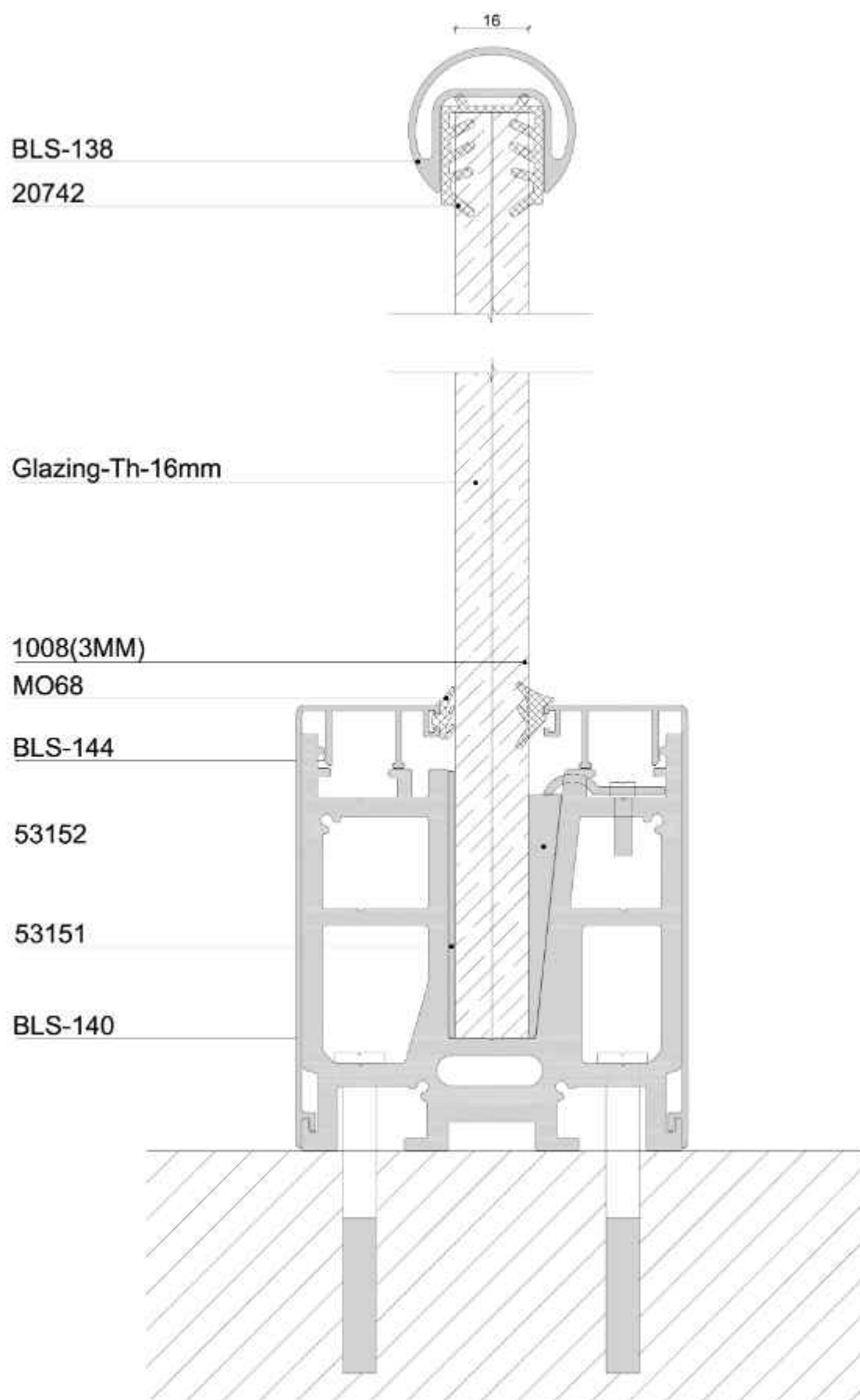
## Handrail & Glass supporting System

### Profile & Accessories Information



# Handrail & Glass supporting System

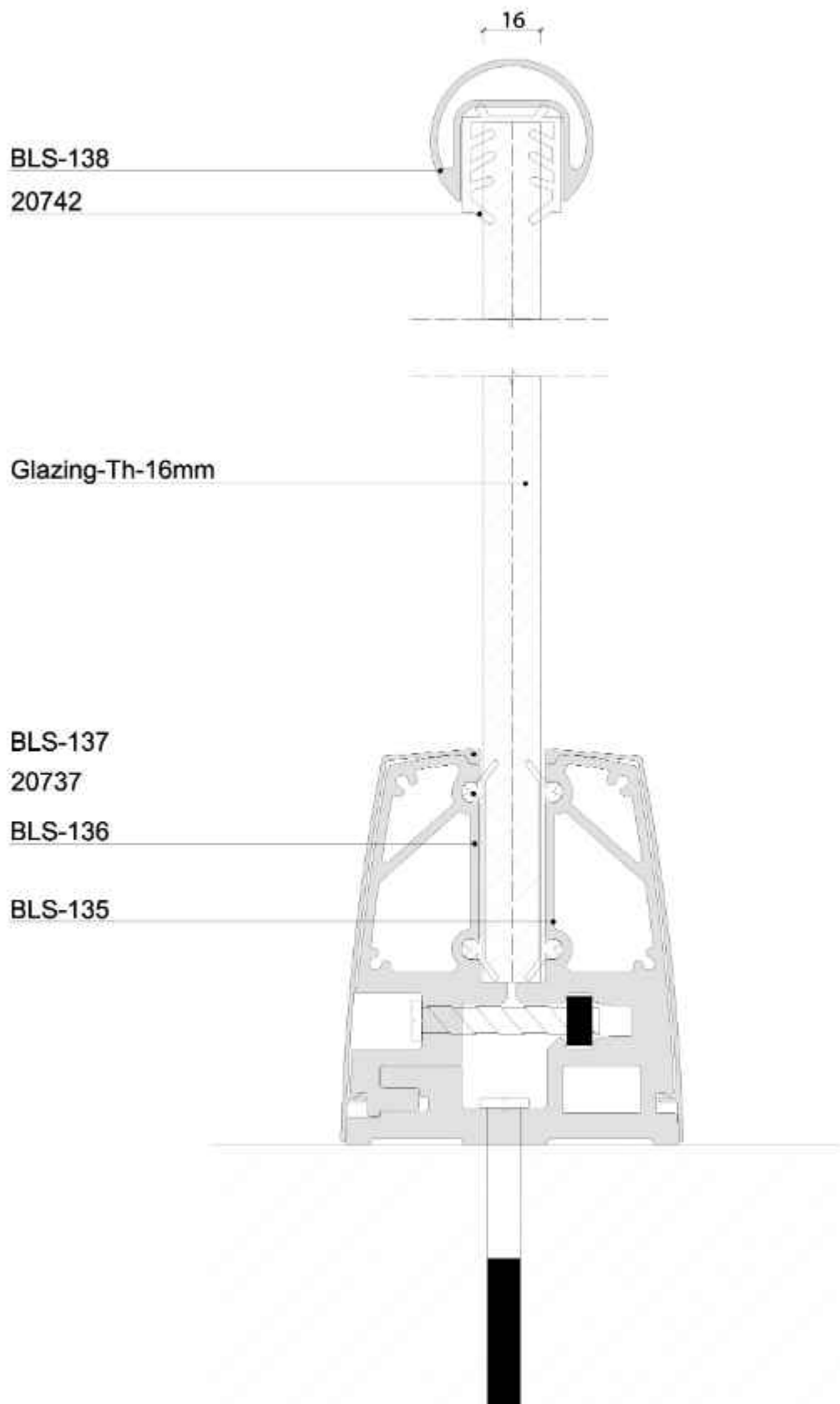
## Profile & Accessories Information





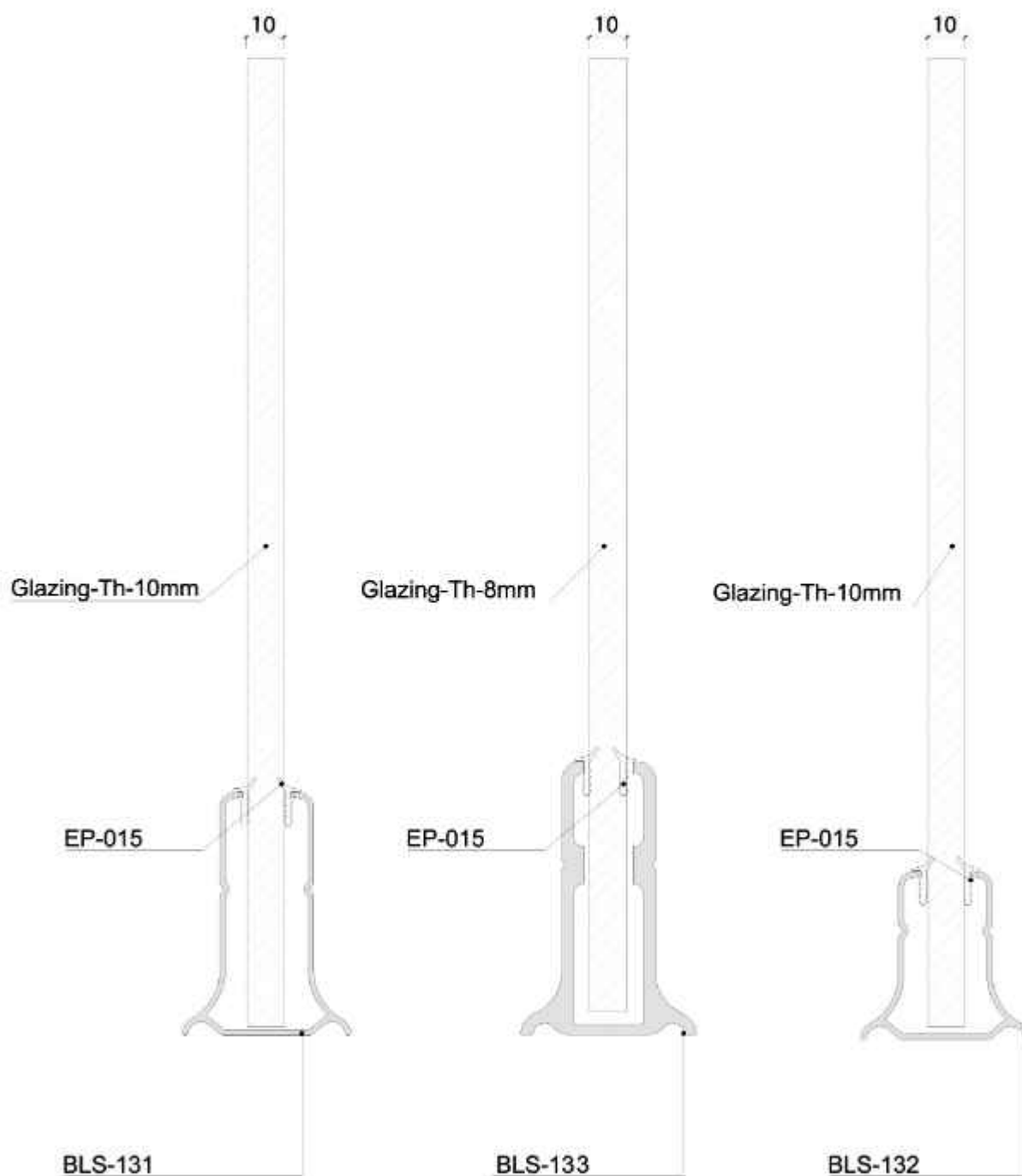
## Handrail & Glass supporting System

Profile & Accessories Information



## Handrail & Glass supporting System

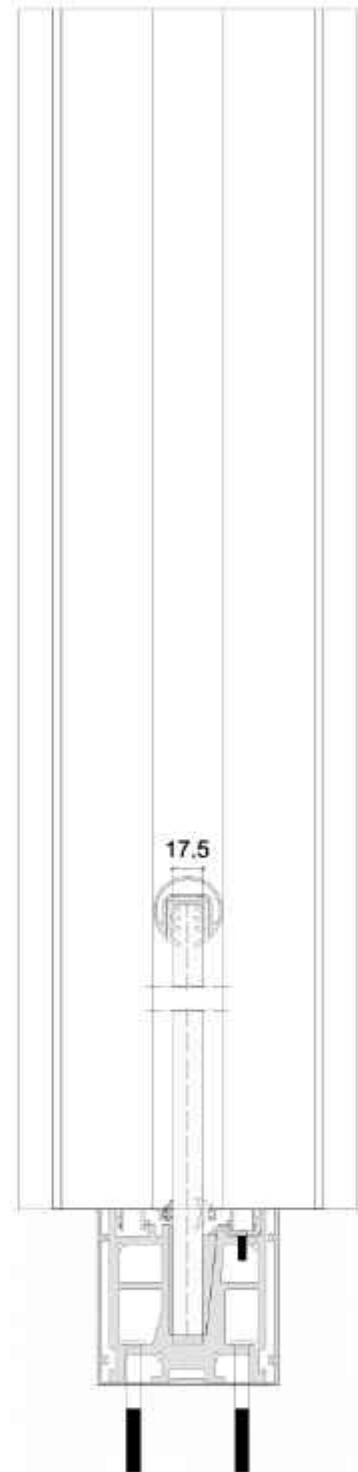
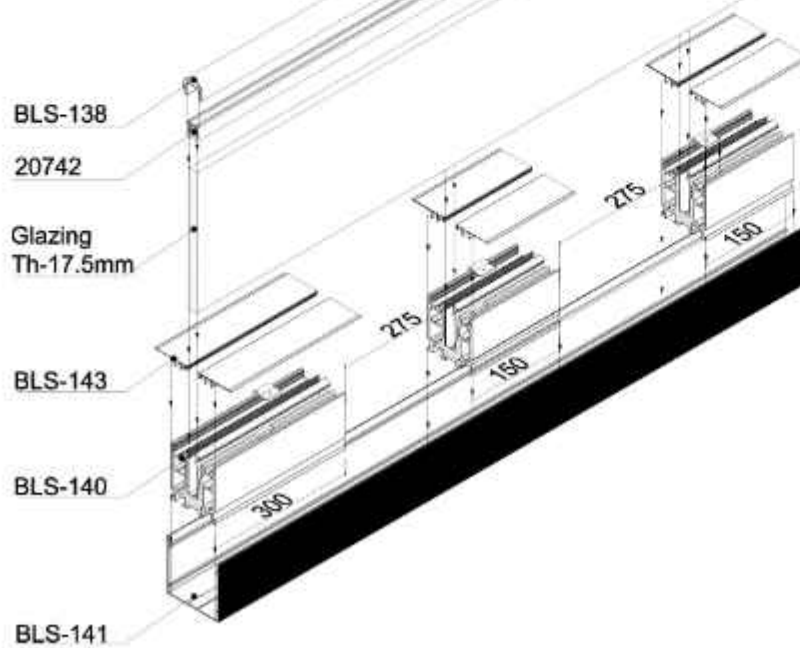
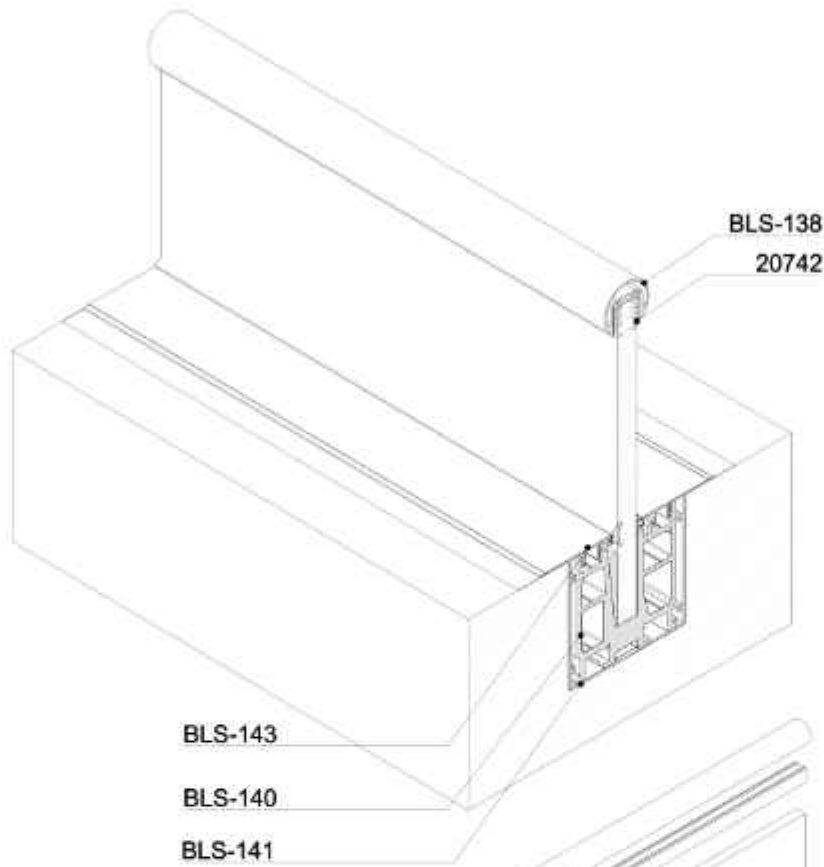
### Profile & Accessories Information





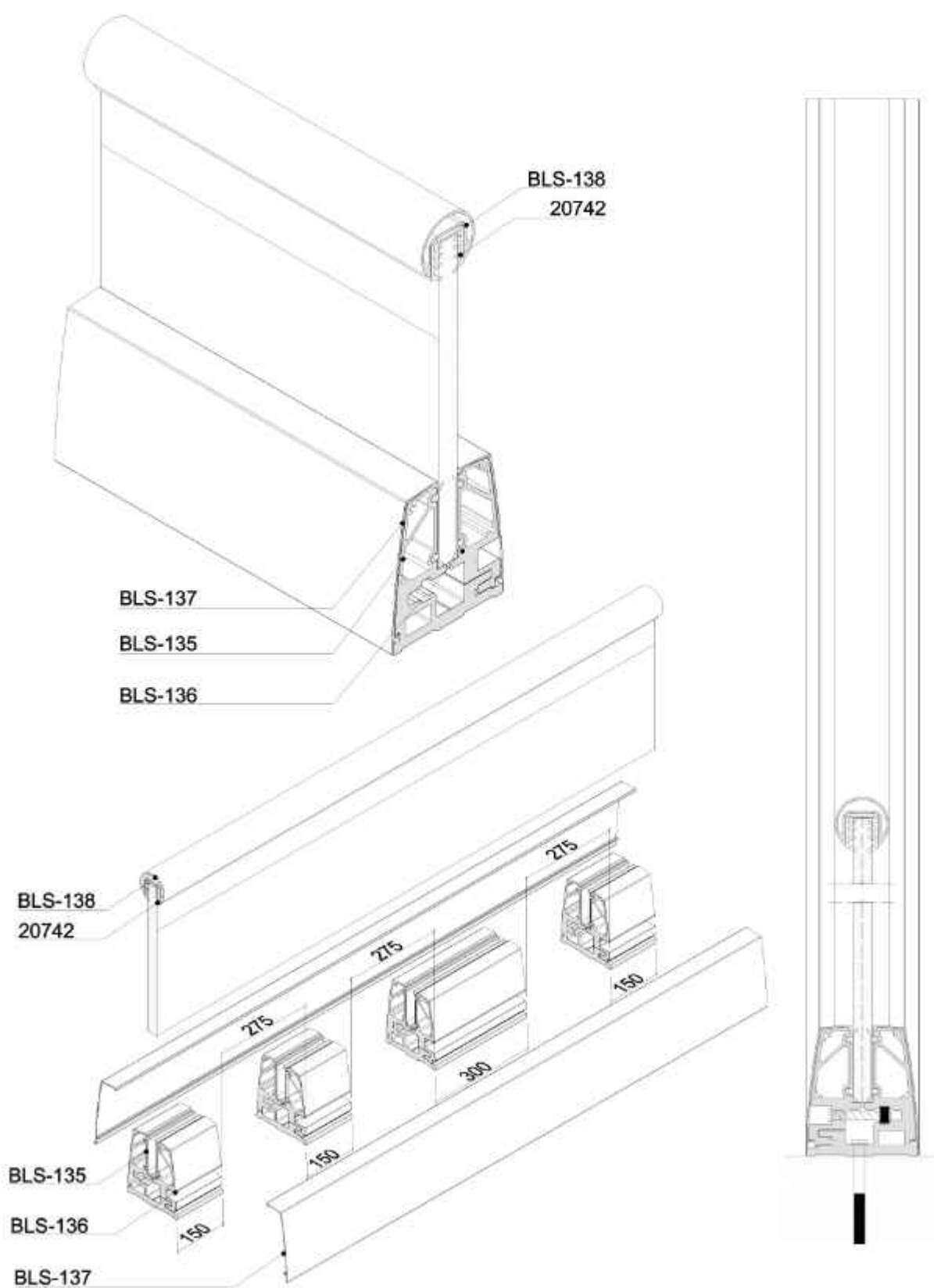
## Handrail & Glass supporting System

### Profile & Accessories Information



## Handrail & Glass supporting System

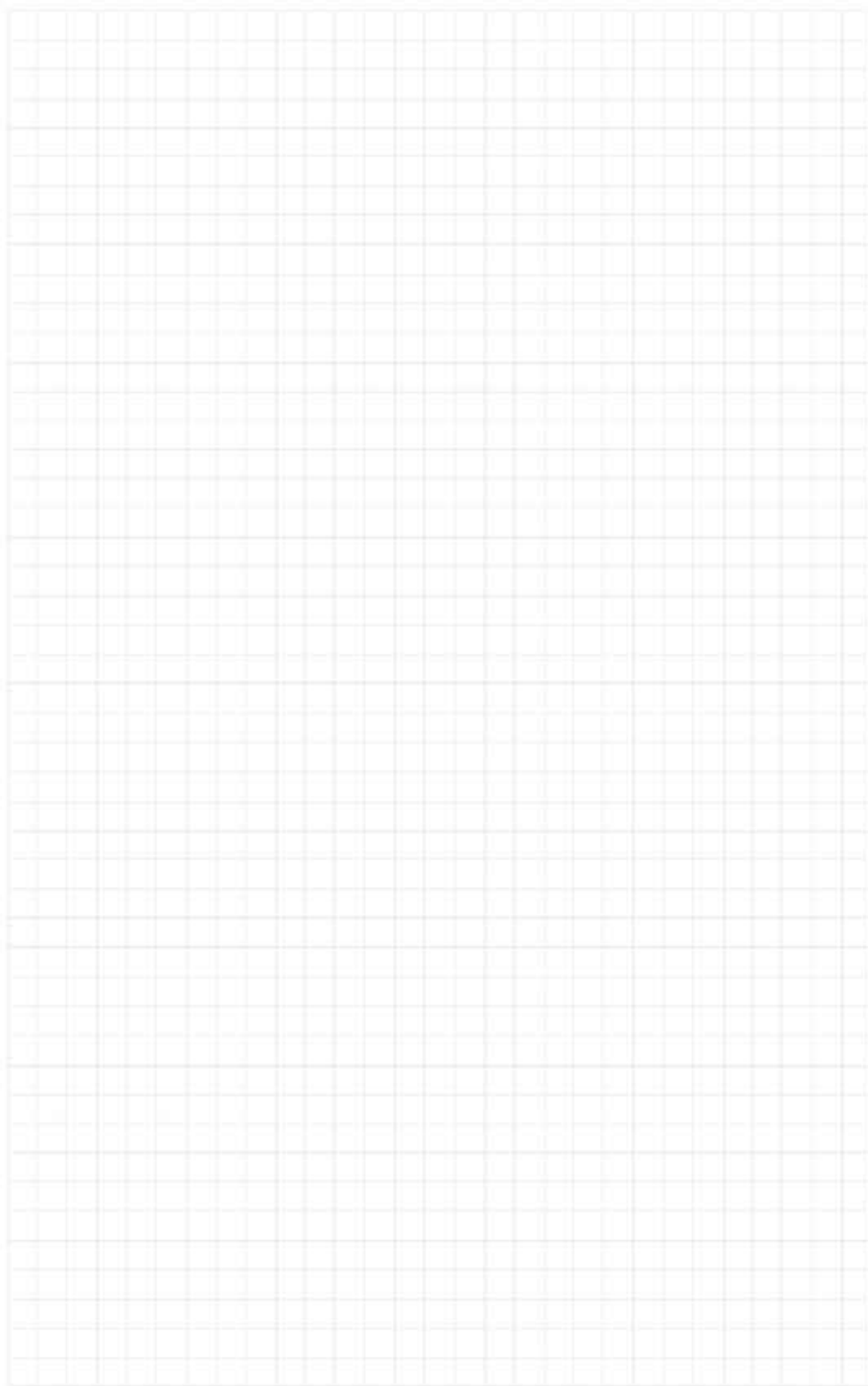
### Profile & Accessories Information





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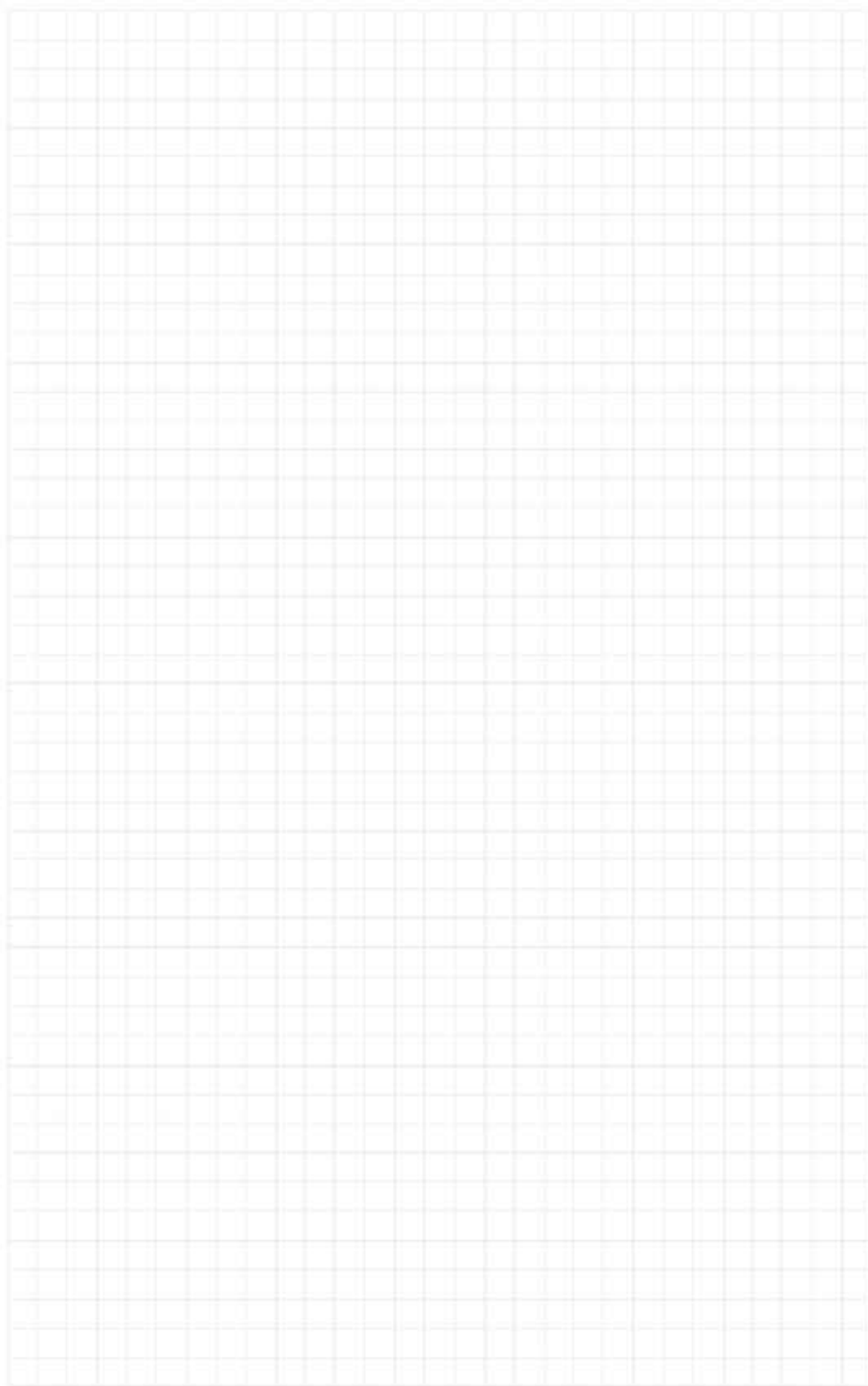
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