MB-60E EI

OPIS TECHNICZNY
TECHNICAL DESCRIPTION
ТЕХНИЧЕСКОЕ ОПИСАНИЕ
TECHNISCHE BESCHREIBUNG

Technical Description

1. DESCRIPTION OF THE STRUCTURE

The MB-60E EI system of fireproof walls and doors is intended for execution of internal or external fireproof partitions with single or double doors and technical windows featuring fireproof EI15, E20, EW20, EI20, E30, EW30, EI30 according to PN-EN 13501-2+A1. The system has been classified as non-fire propagating (NFP).
The application of glazed fireproof barriers in building industry should be subject to the technical documentation of the building, designed in accordance with applicable standards and regulations.

FEATURES OF THE MB-60E EI SYSTEM:

- The construction of the system is based on aluminium profiles with thermal spacers belonging to the MB-60E system. The constructional depths of profiles is 60 mm.
- Elements of the GKF fire insulation are inserted in the insulation spaces between the profiles.
- Working required to connect profiles is reduced to minimum due to the application of aluminium connecting members and auxiliary accessories provided with the system. Corner connections of the “L” type are executed by trimming the ends of the frame or leaf profiles at the angle of 45°, followed by crimping or pinning and gluing (with two-component glue CORALGLUE®) to aluminium corner cleats embedded in the inner chambers of profiles. Crosswise joints of the “T” type are performed by pinning of crosspieces to the inserted corner cleats and gluing with CORALGLUE®.
- The glass panels are additionally protected on the outside with steel holders, screwed to the inner and outer profile with sheet metal screws.
- Glazing beads of closed shape fitted on the inner side allow for installation of infills of high resistance. EPDM positioning rollers are fitted in these beads to facilitate the installation of beads in the frame.
- Inner glazing seals are deeply embedded in glazing beads, hence they are hardly visible on the outside.
- The system allows for application of all standard fireproof glass panels of various classes within the range between 6 and 41 mm.
- The system enables glazing with all standard fireproof glass panels of thickness ranging from 4,5 to 40,5 mm. Glazing shims are made from fireproof material.
- Each structure of the MB-60E EI system, designed to be fitted in external developments must be equipped with an efficient drainage and ventilation system deflecting water from the glass pane chamber. The working and the diagram with the layout of drainage and ventilation holes are presented in the section “Working”.
- Allowable dimensions of door leaves: height Hs=2475 mm, width Ls=1400 mm.
- The MB-60E EI system of fireproof partitions with doors is compatible to a large extent with the MB systems, in particular with the MB-60E, MB-86 and MB-78EI systems (a large number of common profiles, details, hardware, workings, etc.).

Conformance with the instructions presented in this catalogue guarantees that the finished product will meet expectations of users over many years’ operation.
In the event of any queries or doubts, ALUPROF S.A.’s specialists are always ready with their assistance and advice.

Each structure made from elements of the MB-60E EI system must have authorisation for use in accordance with regulations applicable in the country in which it is mounted.
A reference document used by the manufacturer to declare conformity at the stage of marketing a fire protection product strictly defines the range of structures authorised for use in a particular country, including detailed solutions. Only the solutions presented herein may be applied in the production of the product.

Solutions presented in this catalogue are subject to additional restrictions resulting from approvals for use applicable in the country where they are used. The said restrictions are specified in supplements, which form an integral part of this catalogue.

WARNING:
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2. TECHNICAL DESCRIPTION OF RAW MATERIALS AND MATERIALS

2.1. ALUMINIUM PROFILES

Aluminium profiles are made in the process of mechanical working of the aluminium alloy EN AW-6060 as per PN-EN 573-3, T66 temper, according to the standard PN-EN 515 or from the alloy AlMgSi0,5 F22 according to DIN 1725 T.1.
Profiles are conformant with the PN-EN 755-1 standard.
Mechanical properties of profiles comply with PN-EN 755-2.
Tolerances on dimensions and form - according to PN-EN 12020-2.
Surfaces of profiles should be finished with anodic oxidation coatings according to the Qualanod requirements or with polyester powder coatings according to the Qualicoat requirements - as protection against corrosion.

2.2. THERMAL SPACERS

Thermal spacers are made of polyamide strips strengthened with fibreglass PA 6.6 GF25 as per DIN 16941 T.2 (they have manufacturer's certificate).
Thermal spacers feature very high resistance and their thermal expansion is similar to aluminium, which excludes the risk of joint deformation and prevents tearing of joints on the polyamide / aluminium border when the face of buildings is exposed to significant changes in temperature during the normal use.
Properly crimped thermal spacers ensure such resistance of compound profile as provided under the relevant standard.

2.3. FIRE INSULATION ELEMENTS

Infills are made of GKF plasterboards. Fire- resistant expanding strips are cut off from boards or supplied in rolls. These elements are performed in accordance with the applicable standards and relevant technical approvals.

2.4. SEALS

Glazing and closing seals are made from synthetic EPDM rubber as per DIN7863 and working standard DIN7715 E2 or ISO3302-1. The seals are joined in the process of gluing.

2.5. GLASS PANES

Transparent fields are glazed with special glass panes, selected to meet the requirements provided for the fireproof safety class EI15, EI30 and thermal and acoustic insulation performance of rooms.
All glass panes installed in the MB-60E EI system must be certified as admitted for use in the relevant fireproof constructions, according to the regulations applicable in a particular country.

2.6. INFILLS OF NON-TRANSPARENT FIELDS

Infills of non-transparent sections are built as sandwiched elements selected to meet the requirements provided for the fire-proof safety EI15, E20, EW20, EI20, E30, EW30 or EI30. All the infills fitted in the MB-60E EI system must be certified as admitted for use in relevant fireproof constructions, according to regulations applicable in a particular country.

2.7. FASTENERS

Fasteners used to make connections (self-tapping screws, screws, rivets, nuts, washers) used to make joints are made of stainless or zinc-coated steel according to the standards referred to in the system documentation.

2.8. HARDWARE
Hardware should be mounted onto door and technical window profiles in accordance with the system documentation or documentation of hardware manufacturer. The type of hardware should be adjusted to the dead weight of leaves and their operational load and dimensions.
All kinds of hardware fitted in the MB-78EI system must be certified as admitted for use in the relevant fireproof constructions, according to the regulations applicable in a particular country.

2.9. AUXILIARY MATERIALS
Auxiliary elements (glazing shims, glues, mineral wool, polyurethane foam and silicones used to seal joints) – in accordance with the system documentation.

3. SUPPLEMENTARY INFORMATION

3.1. PROFILE CONSTRUCTION
The profiles applied in the MB-60E EI system are built as a three-chamber construction, the core of which is an insulating chamber placed between thermal spacers 24 or 16 mm wide.
The system of connections by means of a thermal spacer enables application of dual-colour profiles – different on the inside and different on the external part of the façade of the building. The shape of thermal spacers guarantees good thermal insulation performance and proper drainage of the inner chambers of profiles.

3.2. STRENGTH CALCULATIONS
Proper selection of optimal structure profiles should be made on the basis of guidelines contained in the section “Structural Analysis”. This section also provides information on maximum dimensions of partitions, door leaves and sashes of technical windows.

3.3. SMOKE-PROOF CONSTRUCTIONS
The system allows putting up the following smoke-proof structures classified as per PN EN 13501-2+A1.

- Single and double door in individual and display window developments without a doorsill and with a sealing strip 80004327 and sealing details 80111330. Smoke-proof single-leaf door build according to 3 point automatic lock .Smoke control class : S_a and S_{200}.

The above smoke-proof structures may be executed to meet the requirements set for the fireproof class EI15, EW30, EI30. There is no need to use self-adhesive expanding gaskets in smoke-resistant doors without fireproof abilities. As a door panes of a smoke resistant doors of Aluprof MB-60E EI system without the fire resistance ability the minimum glass thickness is 8 mm of a hardened glass.

3.4. EXTERNAL DEVELOPMENT
External structures must be equipped with drainage and ventilation holes.

3.5. WORKING
Decorative surfaces of profiles should be covered with a protective film in order to protect them against any damage during working.
Linear and angular dimensional tolerance, disregarding individual designation of tolerance, as per PN-EN 22768-1, Class of tolerance – m (medium accuracy level). Any splinters which occur in the process of working should be deburred.

3.6. STORAGE AND TRANSPORTATION

- Storage
  Aluminium profiles and sections, details, infills, glass panes, windows and doors should be stored in dry rooms in order to be protected against mechanical damage and damage to anodised or painted coatings.
  Elements of GKF fire insulation should be stored in original packaging in the horizontal position. If it is necessary to repack the inserts, the following rules must be followed:
  - inserts must rest in the horizontal position on a hard and flat surface ((e.g. on a particle board);
  - subsequent layers must be separated by PE film (e.g. thin plastic sheeting);
  - maximum number of layers in one packaging – 25, but the stack must not be higher than 600 mm.

  They should be stored in storehouses, in normal weather conditions, i.e. in the temperature between 5° and 25°C and humidity ranging between 50 and 80%.
  After opening the package and taking out the required number of inserts, the packaging should be covered with a protective film. Packaging should be protected against dampness and excessive drying up Inserts should be carried with care to avoid the risk of damage – cracking.

- Transportation
  Aluminium sections, details, elements of GKF fire insulation, infills, glass panes, windows and doors may be transported by any means of transport provided they are protected against soiling, dust and exposure to any damage during transportation.

3.7. ASSEMBLY GUIDELINES AT THE BUILDING SITE
Walls, technical windows and doors in the MB-60E EI system, class EI15, EW30 and EI30 may be installed in:
- walls built of solid, perforated or chequer brick, at least 12 cm thick;
- concrete and reinforced concrete walls at least 8 cm thick;
- cored brick or cellular concrete walls at least 12.5 cm thick;
- light plasterboard walls featuring fireproof class not lower than EI30.

The MB-60E EI walls may be installed vertically or at an angle of ±10° to the vertical; however doors and technical windows may be installed only in a vertical position.
The installation of walls, technical windows and doors on a building site should be carried out in the temperature not lower than 5° C. During its installation, the structure should be protected against exposure to weather conditions, such as water, snow and any type of mortar and dust.
The walls and frames of technical windows and doors should be installed with the use of steel expansion bolts min. Ø10 mm, steel system anchors, bolts or screws min. Ø5 mm (M5), spaced up to 600 mm but their distance from the corners must not exceed 250 mm and 200 mm from the wall pillars.
The gaps formed between the wall, technical window or door and masonry should be filled with non-flammable mineral wool of min. density 70 kg/m^3 or with any other fireproof filling, admitted for use in fireproof structures and then closed with non-flammable material (e.g. plasterboard, concrete-lime plaster, fireproof caulk, aluminium profile, steel profile or flashings).
Detailed information regarding the assembly of products is contained in the section “Examples of Development”.

3.8. MAINTENANCE
Anodised or paint-coated aluminium profiles should be washed with a soft cloth and mild cleaning agents. Alkaline-based liquids are not allowed, as they may damage the anodic oxidation coatings or varnished coatings. Cleaning agents with ph below 5 or over 8 must not be used. While cleaning, the temperature of coatings and the temperature of water must not exceed 25°C. After each cleaning the surface must be immediately rinsed with clean and cold water.
Regular cleaning prevents formation of obstinate and difficult to remove dirt.
Maintenance of hardware should be performed in accordance with the instructions provided by manufacturers of the hardware.

3.9. CATALOGUE UPDATES
The catalogue should be updated by downloading PDF files at https://aluprof.com in the authorised section “Catalogues”.

3.10. AVAILABILITY OF CATALOGUE PRODUCTS
Rules and availability dates of the elements presented in the catalogue have been specified in Aluprof SA Price List, included in the authorised section of the website https://aluprof.com in the section “Price Lists”

4. INFORMATION ON THE SUSTAINABILITY OF ALUPROF SA PRODUCTS

Aluprof, as a leading manufacturer of aluminum systems, places the utmost importance on to sustainable development, minimizing the impact of their activities on the environment.
Since 2014, the Company has been a member of the UN Global Compact, committing to comply with international principles regarding human rights, labour standards and environmental protection.
Aluprof has in place an Environmental Management System in accordance with the PN-EN ISO 14001:2015 standard, which confirms the Company's commitment to environmental protection and concern for the natural environment. Aluprof's systems comply with standards and are developed in accordance with the requirements of legislation and other environmental obligations, and the continuous improvement of the environmental management system significantly improves the awareness and environmental performances of the Company.
In 2022, Kęty Group, of which Aluprof is a part, received a new Environmental Product Declaration (EPD) for their aluminium profiles, based on EN 15804 and verified in accordance with ISO 14025 by an external auditor.
Aluprof systems can be fully recycled and the materials obtained in this process can be reused without loss of quality.

This action contributes significantly to extending the product life cycle, which in practice means reducing waste to a minimum. If a customer has a used product, he or she can easily return it to the collection centre, from where the material for the manufacture of new Aluprof products is obtained. However, in the case of aluminum products delivered directly to the Company, they are carefully sorted and coatings removed. The material is then scrapped, providing the Company with raw material that will be reused for new products. Both aluminum from the collection points and the Company goes to the Kęty Group's stamping plant, where new products are made from it. Thanks to this, Aluprof not only cares about the environment, but also ensures the high quality of their products by recycling and reusing materials. As an active member of the World Green Building Council and DGNB (*Deutsche Gesellschaft für Nachhaltiges Bauen*), Aluprof supports global and local initiatives promoting low-emission construction and the development of sustainable cities. The carbon footprint of the production of Aluprof profiles is only 3.3 kg CO2e/kg, compared to the average of 9.0 kg CO2e/kg of the European Aluminum Association. Aluprof creates a sustainable supply chain and encourages their suppliers to pursue a responsible environmental policy. The Company supports the development of green building and promotes technologies that reduce energy consumption in buildings, cooperating with the Polish Green Building Council (PLGBC) and acting as an Ambassador for Passive Building.Thanks to these activities, Aluprof sets high standards in the construction industry, striving to create a greener and more sustainable future.

5. GRAPHIC SYMBOLS USED IN THE CATALOGUE

Nº	Number		Working
!	Remarks		Compatible elements
	Total area [dm^2/m]		Cut
	Decorative area [dm^2/m]	G	Glue with two-component glue
	Angle of cut [º]	MS	Glue and seal
	Dimensions [mm]	S	Seal with silicone
1..	Number of items	G	Glue
	Material	_ _ _ _ _	Perform with the use of: _ _ _ _ _
N	Standard		
	Scale		

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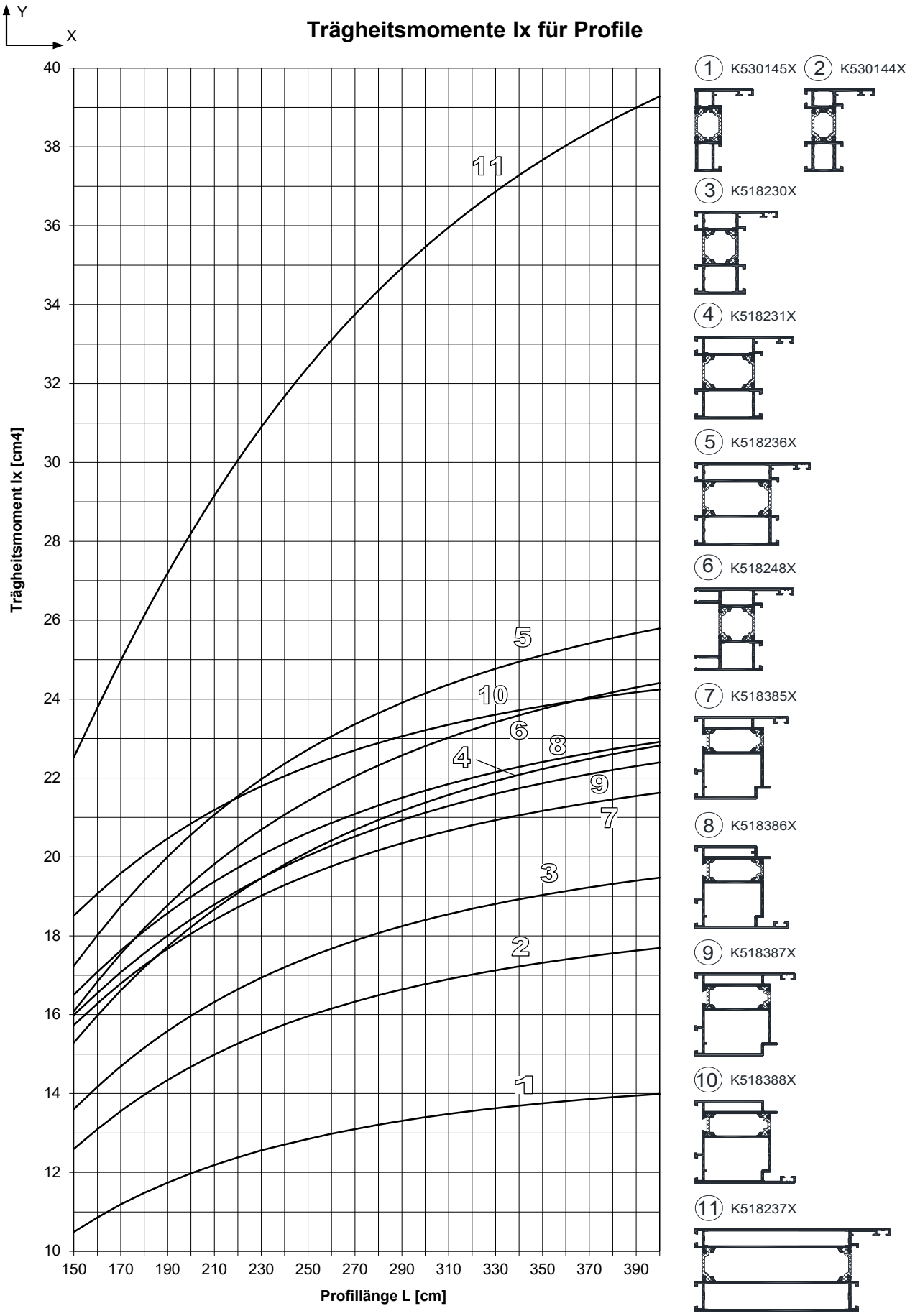
STATYKA
STRUCTURAL ANALYSIS
СТАТИКА
STATIK

STRUCTURAL ANALYSIS

For the purpose of structural analysis, use the information, methods and graphs contained in the production catalogue MB-60, section 02.

Trägheitsmomente Ix für Profile



1 K530145X 2 K530144X

3 K518230X

4 K518231X

5 K518236X

6 K518248X

7 K518385X

8 K518386X

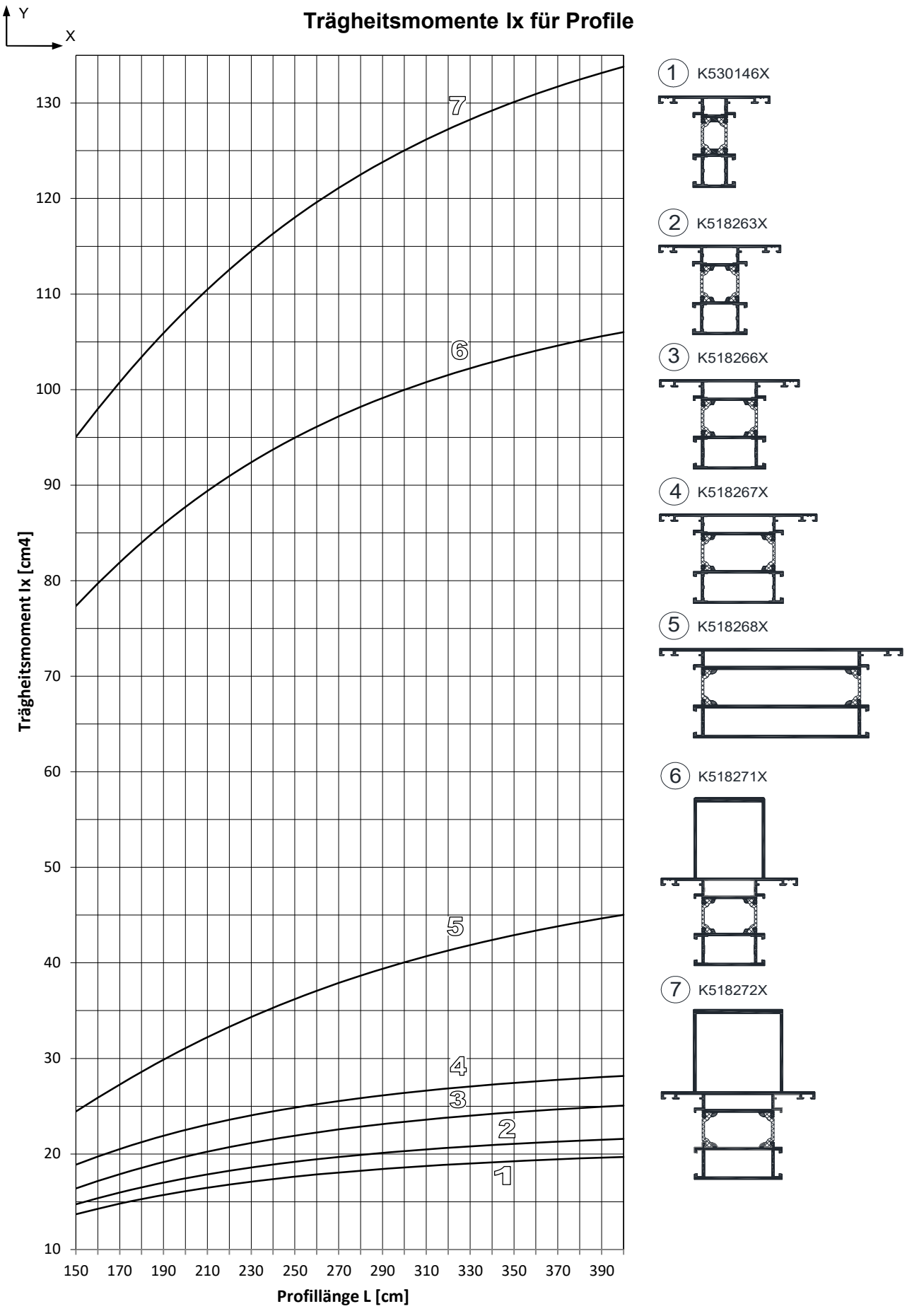
9 K518387X

10 K518388X

11 K518237X

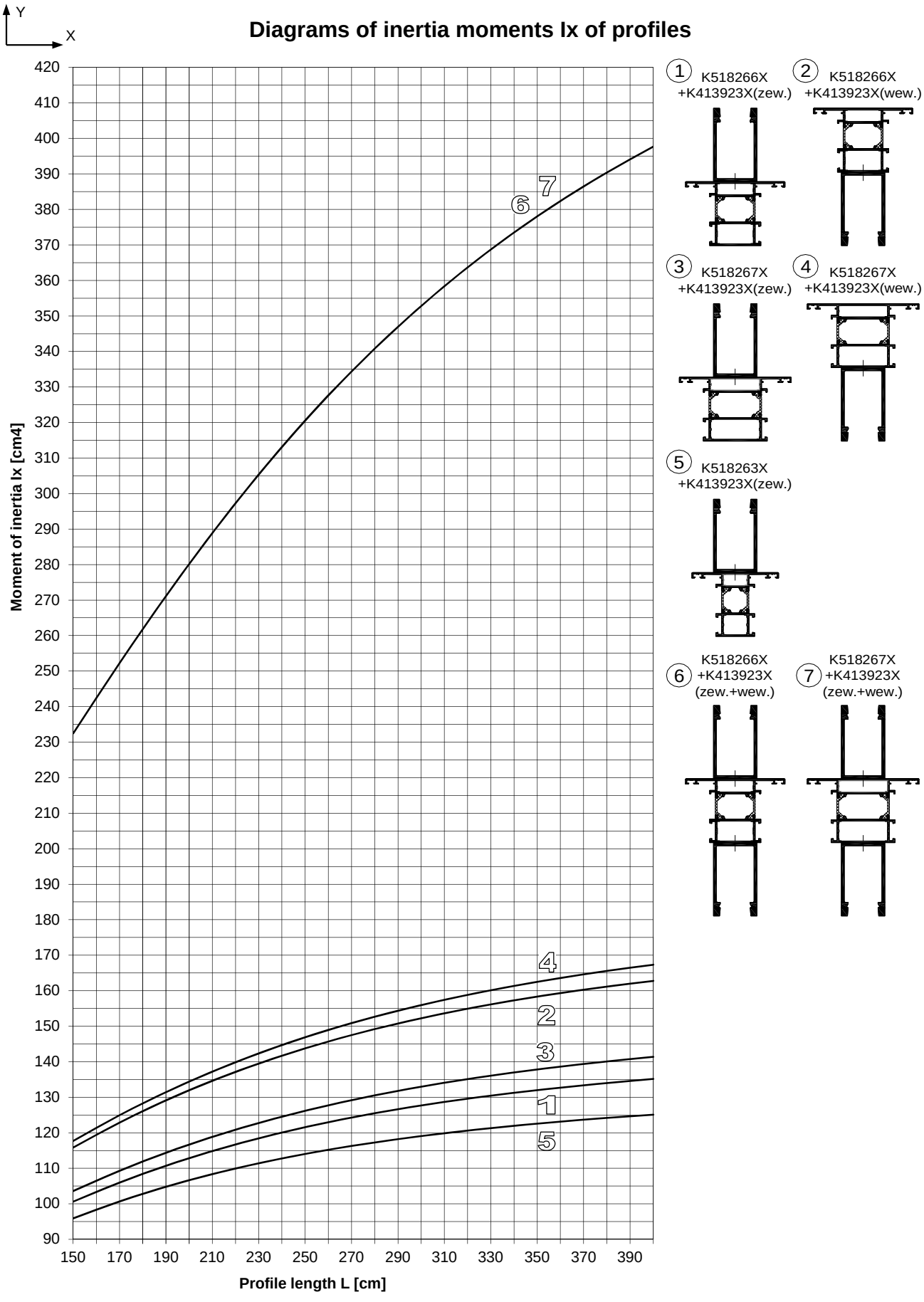
Das Verfahren der zusätzlichen Versteifung der Aluminiumprofile mit Stahlprofilen wurde im Kapitel Statik beschrieben.

Trägheitsmomente Ix für Profile



Das Verfahren der zusätzlichen Versteifung der Aluminiumprofile mit Stahlprofilen wurde im Kapitel Statik beschrieben.

Diagrams of inertia moments Ix of profiles



The method of additional strengthening aluminium profiles with steel profiles is shown in examples contained in the section Structural Analysis.

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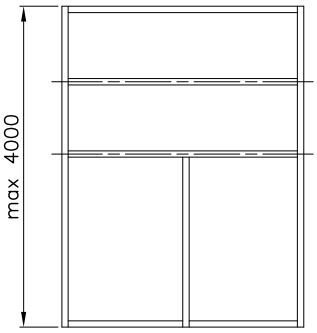
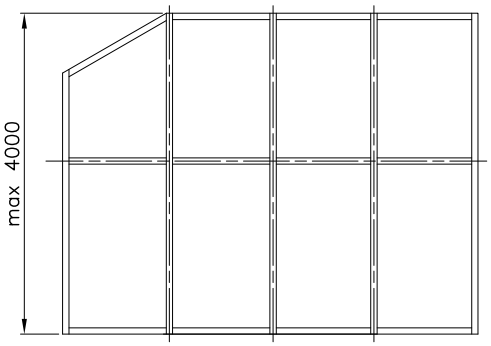
EI15 ÷ EI30. Maksymalne wymiary ścianek i drzwi

EI15 ÷ EI30. Maximum dimensions of wall segments and door

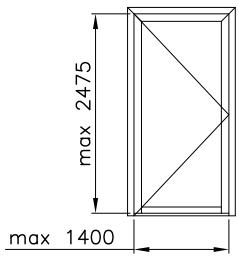
EI15 ÷ EI30. Максимальные размеры стеновых панелей и двери

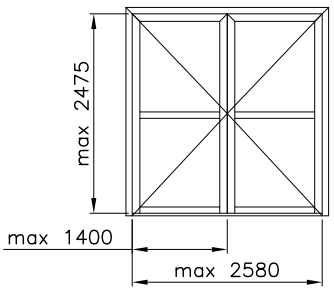
EI15 ÷ EI30. Maximale Abmessungen von Wand und Flüglige



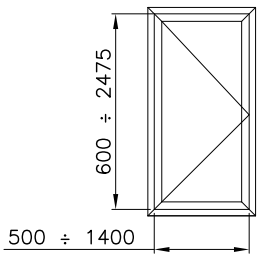


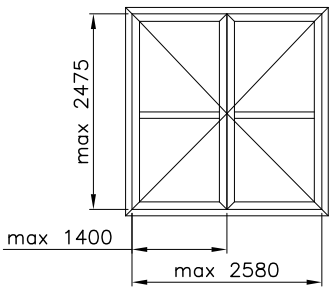
Drzwi
Door
Дверь
Tur





Okno techniczne
Technical window
Техническое окно
Technische Fenster





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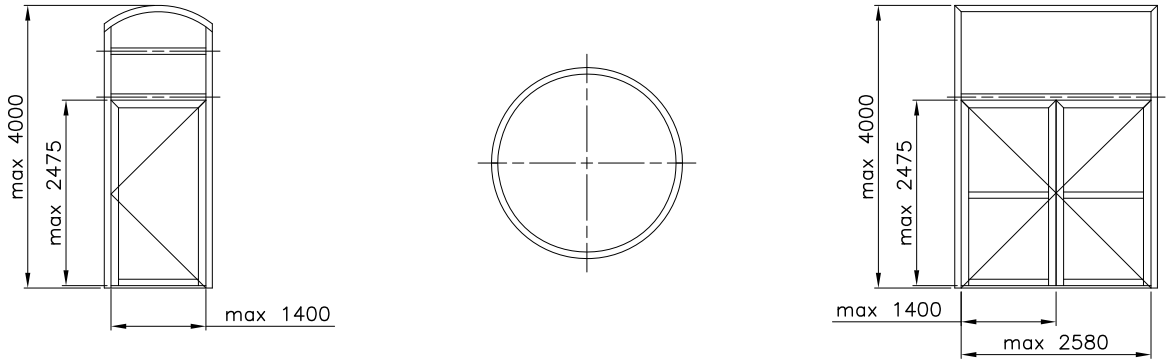
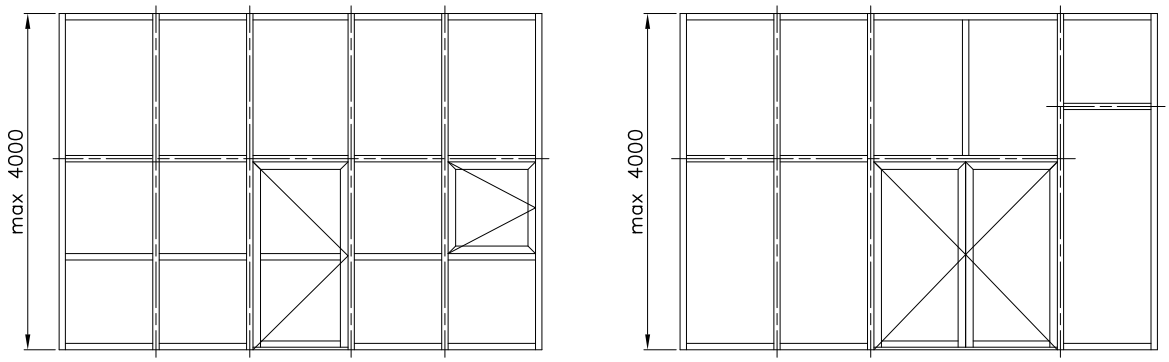
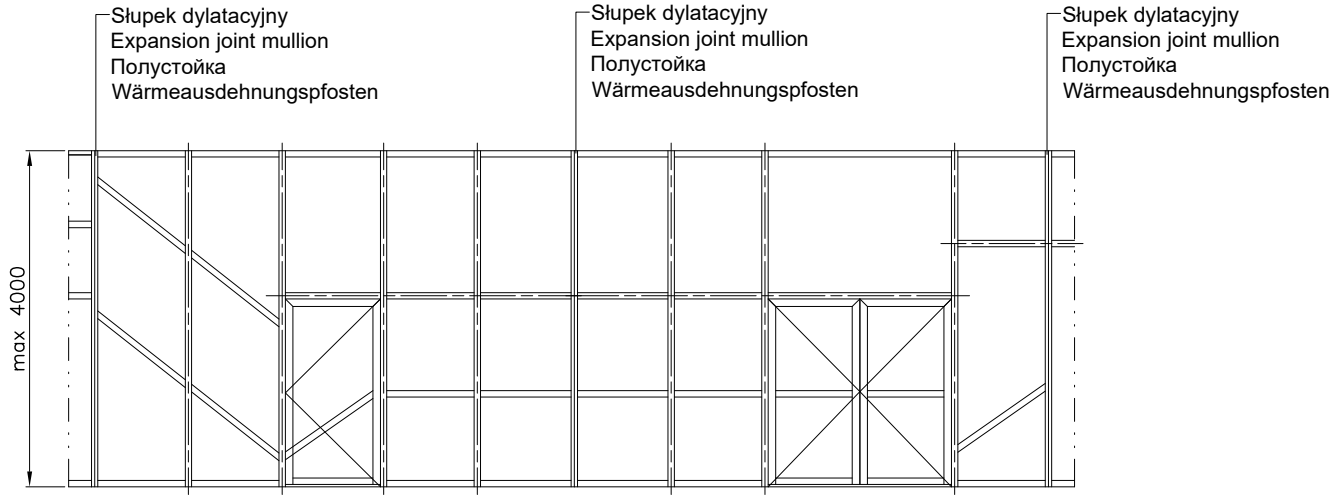
EI15 ÷ EI30. Maksymalne wymiary ścianek i drzwi
EI15 ÷ EI30. Maximum dimensions of wall segments and door
EI15 ÷ EI30. Максимальные размеры стеновых панелей и двери
EI15 ÷ EI30. Maximale Abmessungen von Wand und Flüglige



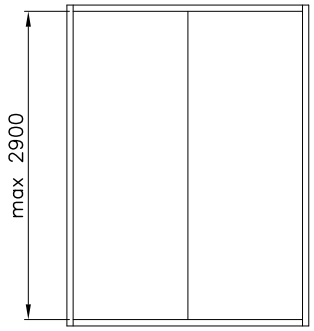


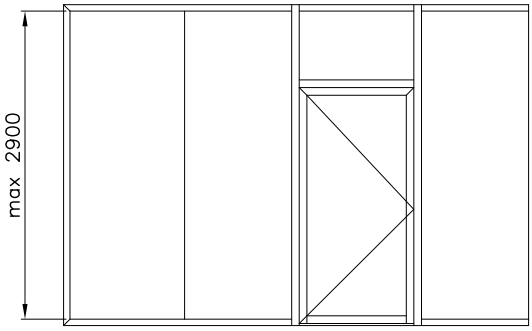


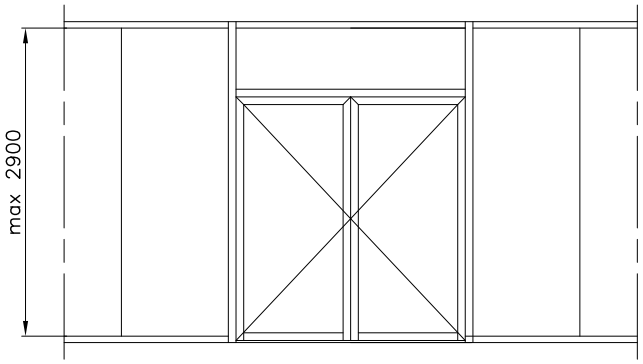
MB-60E EI

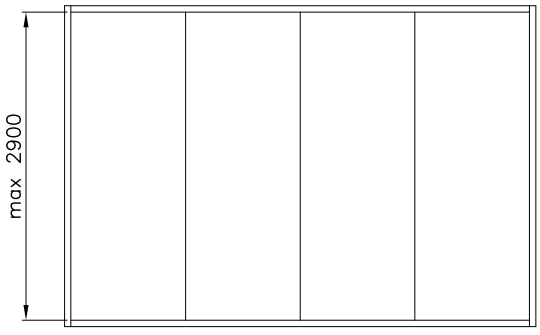
Maksymalne wym. ścianek bezszprosowych
Maximum dimensions of wall segments (buttjoint)
Максимальные размеры перегородок без шпросов
Maximale Abmessungen sprossenloser Trennwände

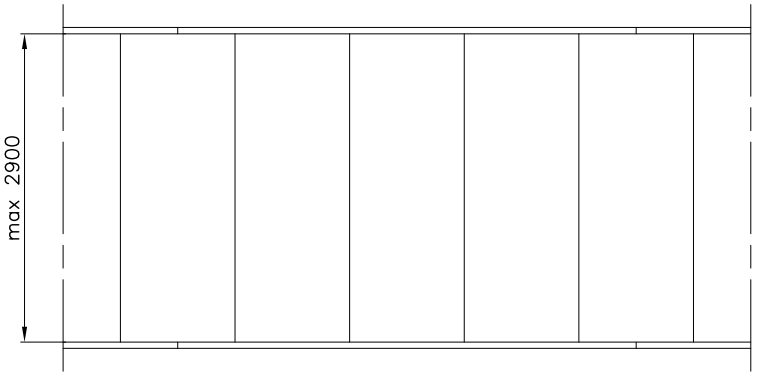
AGC











Maksymalne wymiary szyb dobrać zgodnie z dokumentacją dopuszczającą do obrotu.
The maximum dimensions of the glass panes should be performed in accordance with the approval documentation.
Максимальные размеры стёкол согласно с разрешающей документацией.
Die maximalle Glasmasse in Übereinstimmung mit der Prüfnachweisen.

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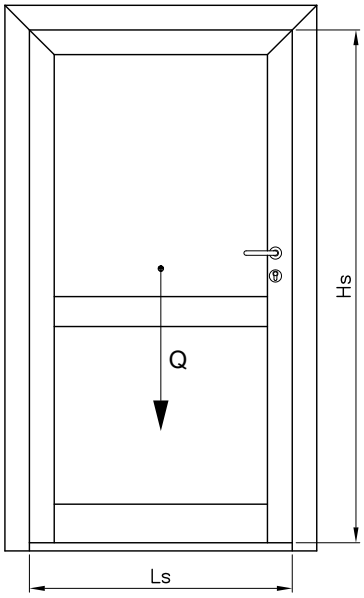
Maksymalne wymiary skrzydeł drzwi
Maximum dimensions of leaves
Максимальные размеры створок, подбор дверей
Maximale Abmessungen für Türflügel

Wymiary maksymalne mają ścisły związek z profilami, z których wykonane są skrzydła i obowiązują jedynie z kompletnymi zestawami okuć oraz po skojarzeniu ich z zakresem stosowania tych okuć przedstawionym w rozdziale "Okucia" i katalogu "Okucia"
Maximum dimensions are closely correlated with the profiles of which the sashes are made and they are applicable only with complete sets of hardware and they are subject to the application range of this hardware, presented in the section "Hardware" and "Hardware"catalogue
Максимальные размеры тесно связаны с профилями, из которых выполнены створки и обязательны только с полными наборами фурнитуры, а также после сочетания х с пределом применения этой фурнитуры, представленным во главе "Фурнитура" .
Maximale Maße stehen im engen Zusammenhang mit Flügelprofilen und gelten ausschließlich mit kompletten Beschlägen sowie ihrem Einsatzbereich (siehe Kapitel „Beschläge“ und Katalog „Beschläge“)



№	Ls max [mm]	Hs max [mm]	Q max [kg]
K518390X	1400	2475	150
K518391X			

Minimalne wymiary drzwi należy dobierać biorąc pod uwagę aktualne zalecenia przepisów i norm.
Adjust minimum dimensions of door taking into account current regulations and standards
Минимальные размеры дверей следует подобрать учитывая актуальные рекомендации положений и стандартов.
Minimale Türabmessungen haben den geltenden Vorschriften und Normen zu entsprechen.