



«CARLO PORTE»<sup>®</sup>

# iDoors Door Set Description



Папа Карло<sup>®</sup>  
фабрика дверей



2021

## 1. General Description

The iDoors collection design is based on a combination of hidden door frames made of anodized aluminum, and flat door leaves with surfaces prepared for further finishing (wallpapering, painting, decorative plastering, etc.)

The iDoors hidden aluminum door frames designed by Carlo Porte experts have several advantages:

1. Rigid and durable structure made of high-quality anodized aluminum;
2. Sophisticated assembly and fastening system;
3. Plastic plugs to protect the door hinge nests from cement mortar;
4. Quick-installed plastering mesh for an easy and reliable joint between the door frame edge and the external wall surface.

These unique features make the iDoors door leaves coplanar (i.e. merging with the wall surface) and guarantees a particular aesthetics of minimalism. Aluminum door frames are produced to provide two opening options: direct and reverse.

**Note:** Basic colors of the aluminum door frame are silver and black; powder coating in RAL colors is also possible.

## 2. Main materials and components

### Direct opening door leaf: PRIME and PRIME-AL models.

PRIME and PRIME-AL models represent a flat door leaf covered with primed polypropylene film or polyurethane primer (depending on the door leaf design and dimensions) to enable further finishing.

Edge decoration:

1. PRIME model: the door leaf has laminated edges for further finishing. The door leaf thickness is 40 mm.
2. PRIME-AL model: the door leaf edges are decorated with an anodized aluminum profile. The door leaf thickness is 42 mm (fig. 1).

### Reverse opening door leaf: PRIME-INSIDE and PRIME-INSIDE-AL models.

PRIME-INSIDE and PRIME-INSIDE-AL models represent a flat door leaf covered with primed polypropylene film or polyurethane primer (depending on the door leaf design and dimensions) to enable further finishing.

Edge decoration:

1. PRIME-INSIDE: the door leaf has edges of the same color as the main surface. The door leaf thickness is 46 mm.
2. PRIME-INSIDE-AL model: the door leaf edges are decorated with an anodized aluminum profile. The door leaf thickness is 46 mm (fig. 1).

**Note:** Basic colors of the aluminum profile are silver and black; powder coating in RAL colors is also possible.

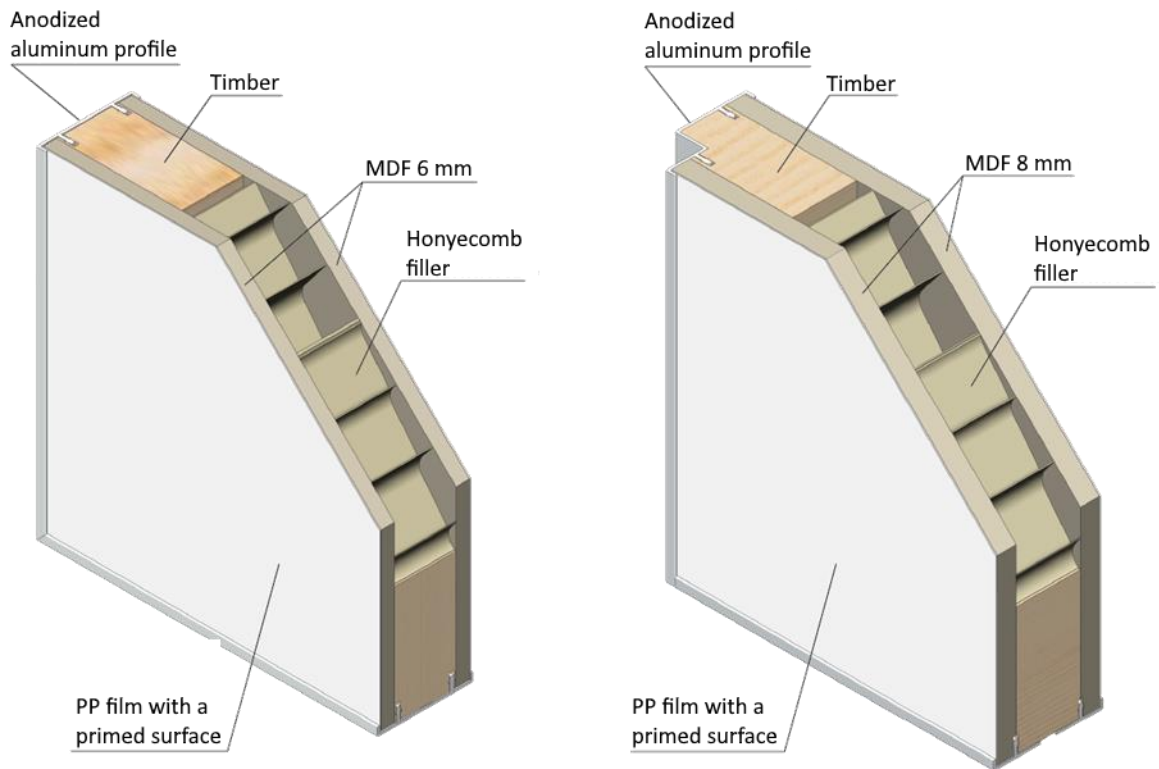


fig. 1

Straighteners are installed into the vertical timbers of the door leaf frame to ensure structure stability (fig. 2). If the door leaf height is less than 2100 mm, a single straightener is installed into the central timber. If the door leaf height is more than 2100 mm or the door has different cover materials on opposite sides (e.g., mirror on the one side and laminated material or veneer on the other side), two straighteners are installed into the timbers located at the edges of the door leaf.

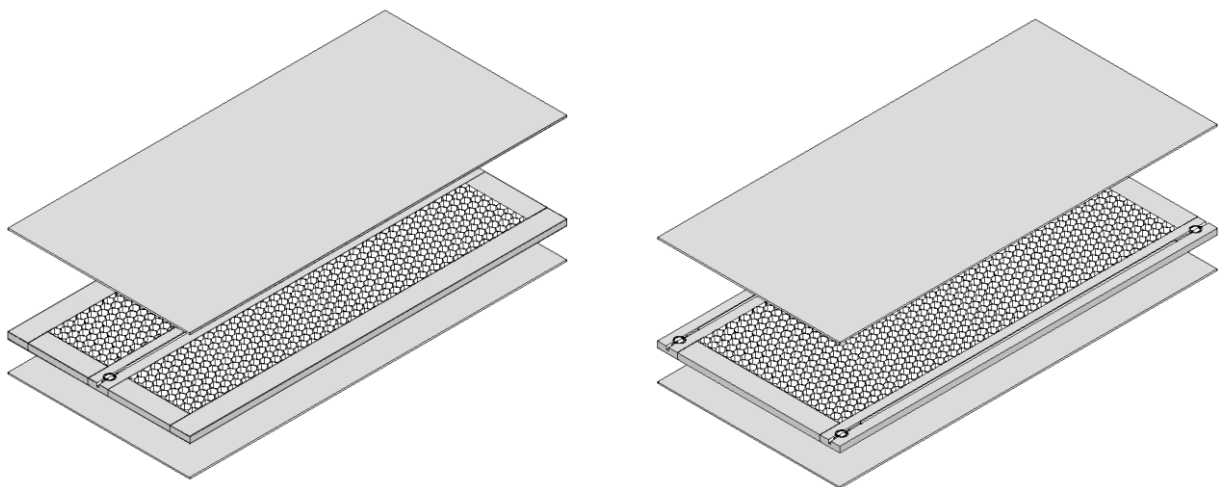


fig. 2

The door leaf alignment is performed by rotating the screws at the top and bottom edges (fig. 3) using a 5 mm hex wrench. To achieve the best result, all adjustments should be made when the door leaf lays on a flat surface.

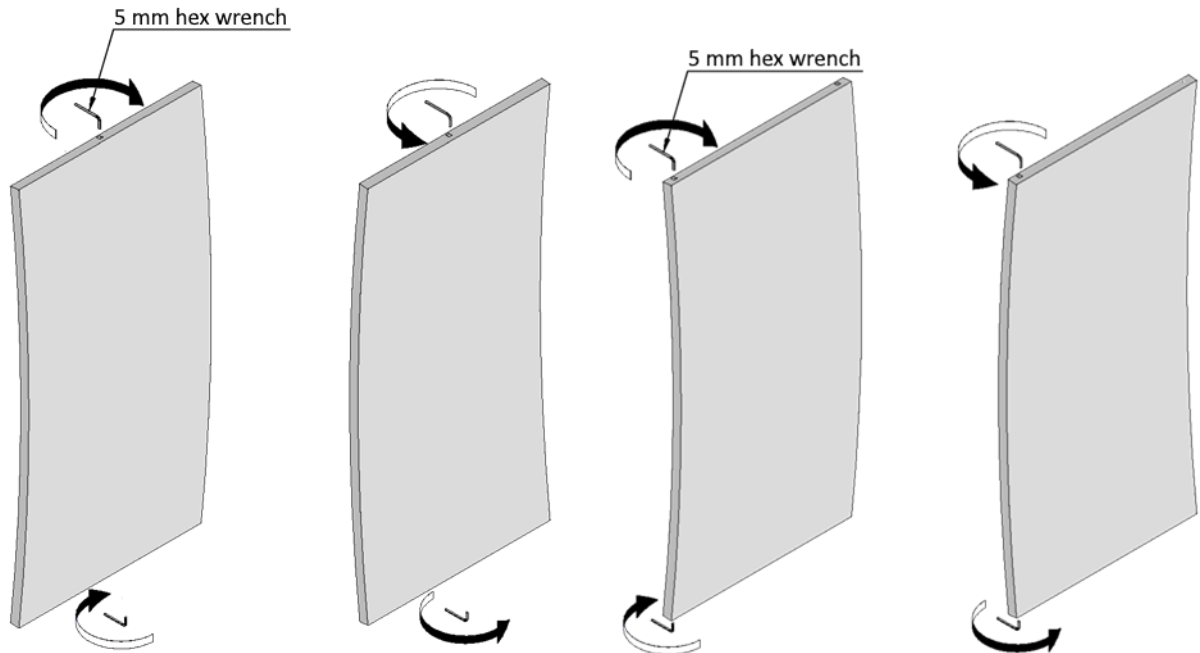


fig. 3

### Aluminum door frame

The aluminum profile design (fig. 4 – a cross-section of the frame for a direct opening door and fig. 5 – a cross-section of the frame for a reverse opening door) allows manufacturing of the door sets up to 2700 mm in height with door leaves weighing up to 80 kg.

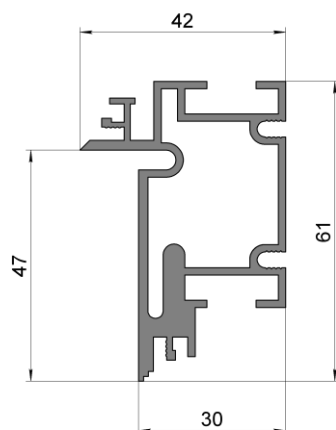


fig. 4

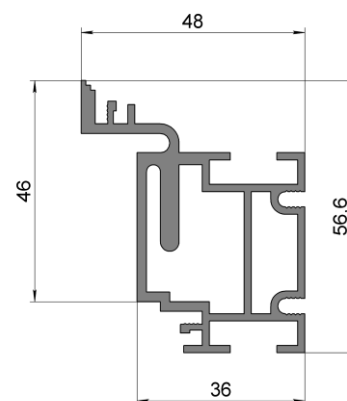


fig. 5

### 3. Door set sizes

You can order the iDoors door sets in standard and non-standard dimensions.

#### Standard dimensions (direct opening doors):

- Door leaf: 2000 x 610 / 710 / 810 / 910 mm;
- Door set: 2033 x 676 / 776 / 876 / 976 mm;
- Wall opening size (recommended): 2060 x 700 / 800 / 900 / 1000 mm.

**Note:** maximum door leaf dimensions – 2700 x 910 mm (consequently, maximum door set dimensions – 2733 x 976 mm).

#### Standard dimensions (reverse opening doors):

- Door frame: 2012 x 610 / 710 / 810 / 910 mm;
- Door set: 2051 x 688 / 788 / 888 / 988 mm;
- Wall opening size (recommended): 2080 x 710 / 810 / 910 / 1010 mm.

**Note:** maximum door leaf dimensions – 2700 x 910 mm (consequently, maximum door set dimensions – 2751 x 988 mm).

The difference in the height of the direct and reverse opening door sets is foreseen to ensure that the door leaves of different opening directions (if installed nearby) have the same height when looking from the front side of the door leaves (fig. 6).

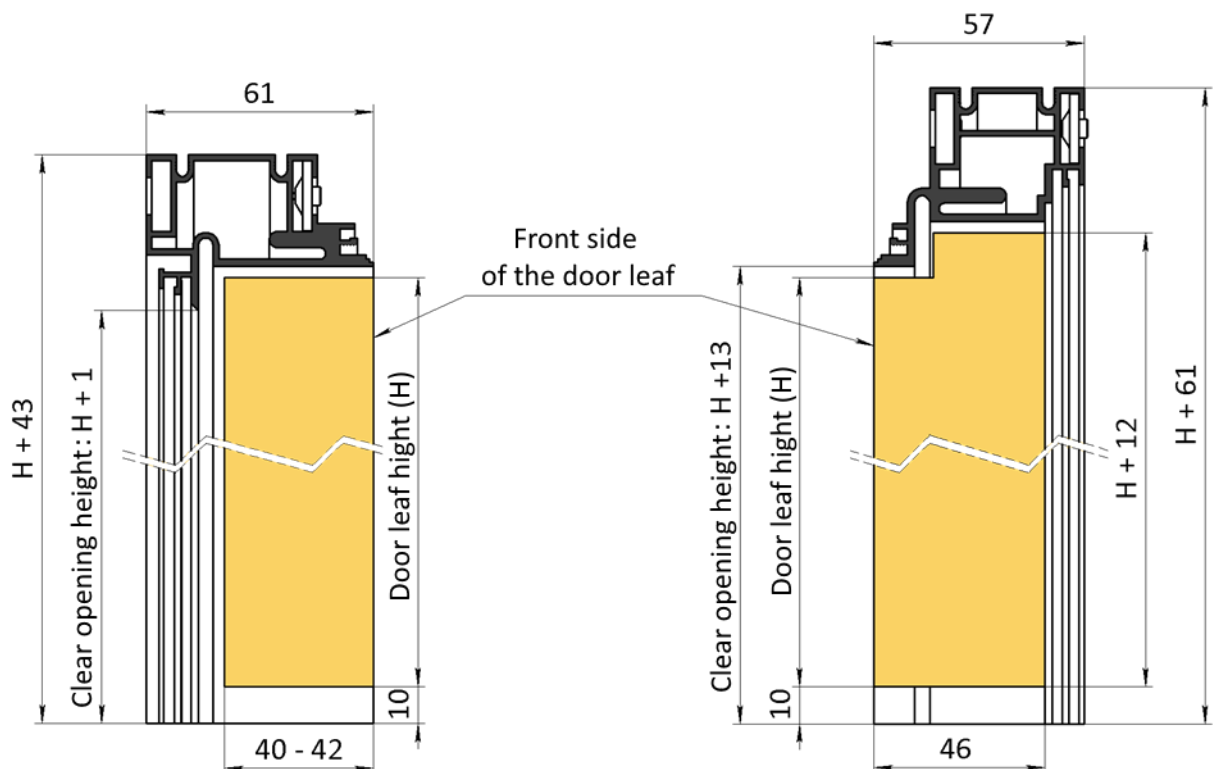


fig. 6

**Door leaf dimensions calculation (direct opening door)**

The formulas for calculating the width and height of the direct opening door leaf are presented in fig. 7 and fig. 8.

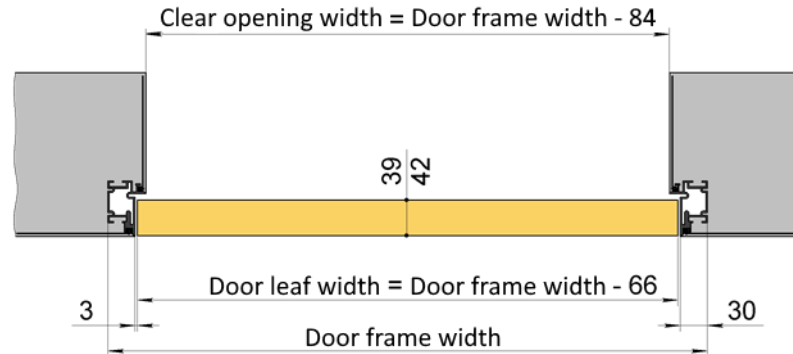
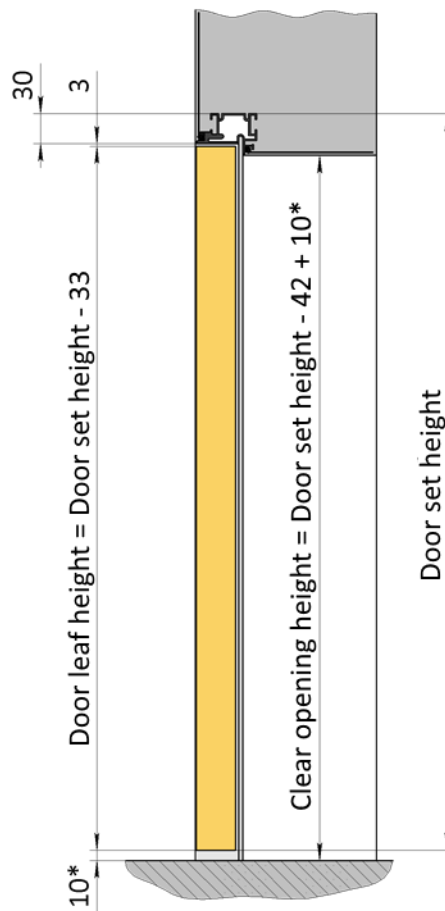


fig. 7



\* - recommended gap

fig. 8

### Door leaf dimensions calculation (reverse opening door)

The formulas for calculating the width and height of the reverse opening door leaf are presented in fig. 9 и fig. 10.

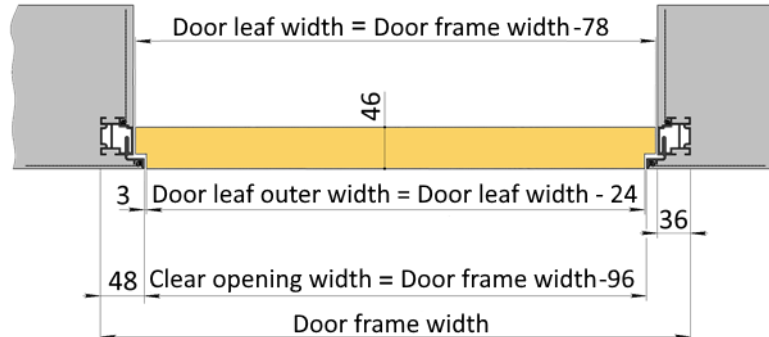


fig. 9

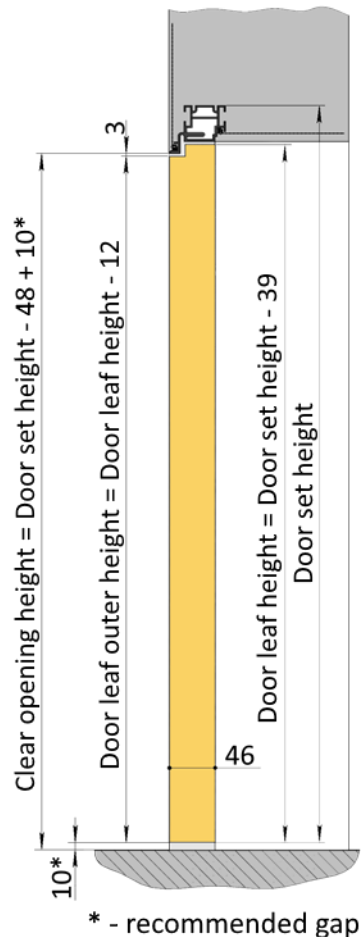


fig. 10

**Note:** It should be taken into account that the jambs are cut in such a way to ensure a 10 mm gap between the floor and the door leaf. If the gap of more than 10 mm is needed, it should be mentioned in the manufacturing order.

### Assembly details

Vertical and horizontal elements of the aluminum door frame are assembled using special L-shape connectors that are installed into the door frame grooves, as shown in fig. 11. The assembly kit includes four L-shape connectors and eight M4 screws. Two L-shape connectors are installed in each corner of the door frame (one L-shape connector from each side). It enables creating a reliable joint of the door frame elements that will not deform during the door installation and operation.



fig. 11

## 4. Installation

The door frame should be installed into the door opening before the wall finishing or drywall installation. The door frame installation should be performed when the finished floor is available, or its level is known. The recommended gap between the door leaf and the finished floor is 10 mm. The aluminum door frame can be installed with or without the door leaf.

If installed with the door leaf, the door frame elements should be assembled in a U-shaped structure using the L-shaped connectors (fig. 11). Otherwise, special-purpose distance bars (need to be ordered additionally) should be used. Except for the distance bars, the kit also includes mounting plates and screws (fig. 12)

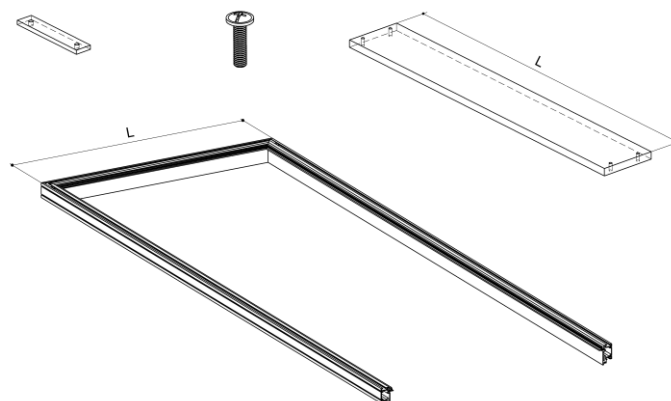


fig. 12



The distance bars are installed after the door frame elements assembly with the use of L-shaped connectors (fig. 13). For this purpose, the mounting plates are installed to the grooves on the face side of the door frame (the same ones used for L-shaped connectors installation) in the way that they are located in pairs opposite each other. One pair of the mounting plates should be installed in the bottom and the other pair in the middle of the door frame. If the door frame is higher than 2500 mm, three mounting plate pairs should be used; two of them should be located in the middle part of the door frame. The distance bars are joined with the mounting plates using screws (two screws at each side of the distance bar). This approach enables to fix the width of the door frame without the door leaf and is convenient for installation.

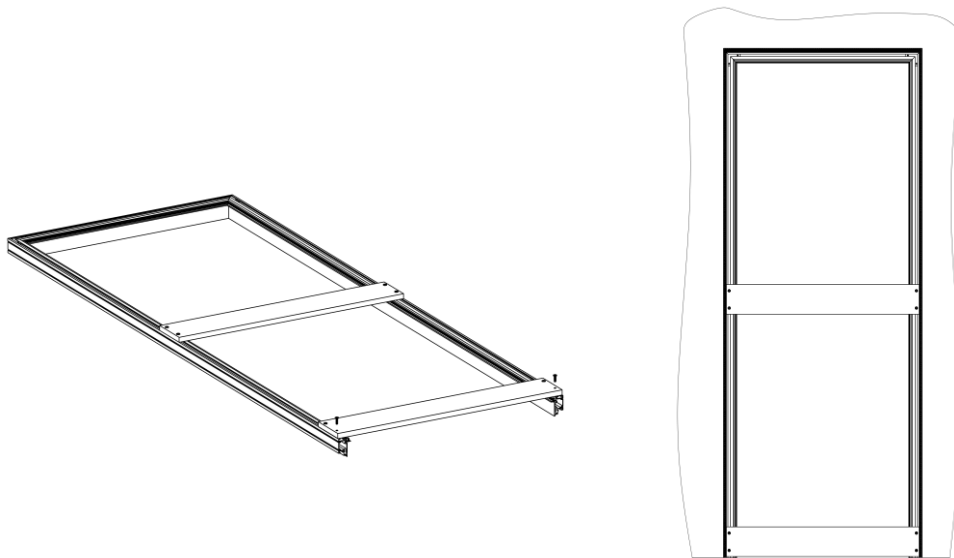


fig. 13

The factory recommends installing the iDoors door sets in two stages:

- Stage #1: Installation of the door frame into the door opening (in assembly with the door leaf or using the distance bars). After rigid fixation of the door frame, the door leaf (or distance bars) should be removed to avoid damages during the construction work.
- Stage #2: Installation of the door leaf after the construction work completion.

The door frame is fixed in the door opening with the use of tapered wedges. It is necessary to make sure that the door frame is levelled in horizontal and vertical planes.

Depending on the wall type, there are two options for the door frame fastening:

- Fasteners are installed into the edge surface of the door opening through the door frame. Considering that the weather stripe does not hide fasteners in this model, they should be installed into the door hinges (fig. 14) and door lock (fig. 15) places.



fig. 14

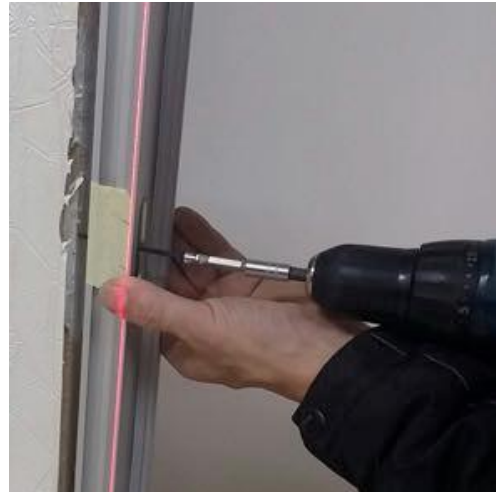


fig. 15

- Mounting plates are fixed on the back side of the door frame (3 pieces for each jamb) before the door frame installation into the door opening. Then, the plates are bent and fastened to the face surface of the wall (fig. 16).

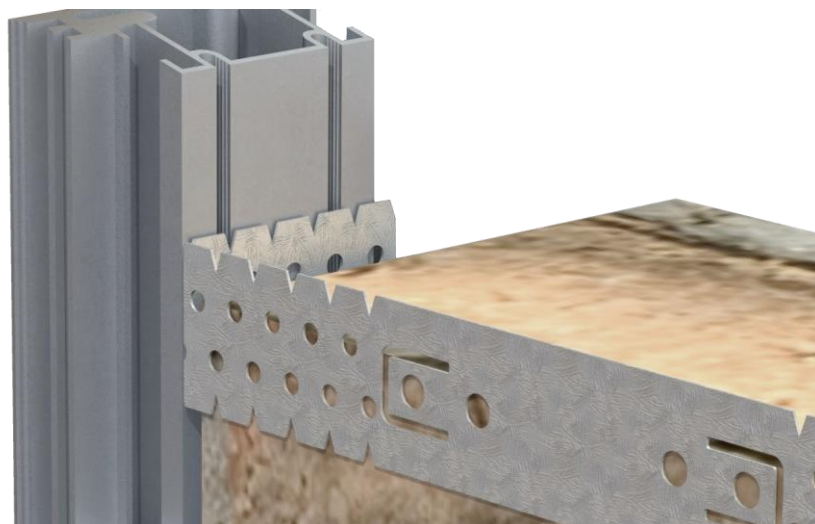


fig. 16

Next, polyurethane foam is applied to the gap between the wall and the aluminum door frame in several points along the door frame perimeter. When the foam is cured, it is necessary to control if the door frame is levelled in horizontal and vertical planes. If the result is satisfactory, the gap between the wall and door frame should be completely filled with polyurethane foam. As soon as the foam is completely cured, the wedges and the foam protruding over the wall plane should be carefully removed or trimmed off. After the door leaf dismantling, it is recommended

to install special plastic plugs into the door hinge nests to prevent the construction materials penetration into the places for hinges installation (fig. 17).

**Note:** *Plugs for concealed hinges are not included in the standard supply package. They should be ordered additionally.*



fig. 17

### Recommendations on walls and joints finishing

Please, pay attention that the aluminum door frames are more demanding for door opening preparation than wooden door sets. The reason is an absence of platbands that can hide the wall shortcomings. In the case of the wall finished with drywall, it is recommended to use a reinforced profile with increased wall thickness or a standard profile with a wooden beam put inside. It will ensure a rigid connection between the door frame and the door opening and prevent plaster cracks in the vicinity of joints during the door operation.

Different variants of the aluminum door frame installation for different wall types are shown in fig. 18 (direct opening door) and fig. 19 (reverse opening door).

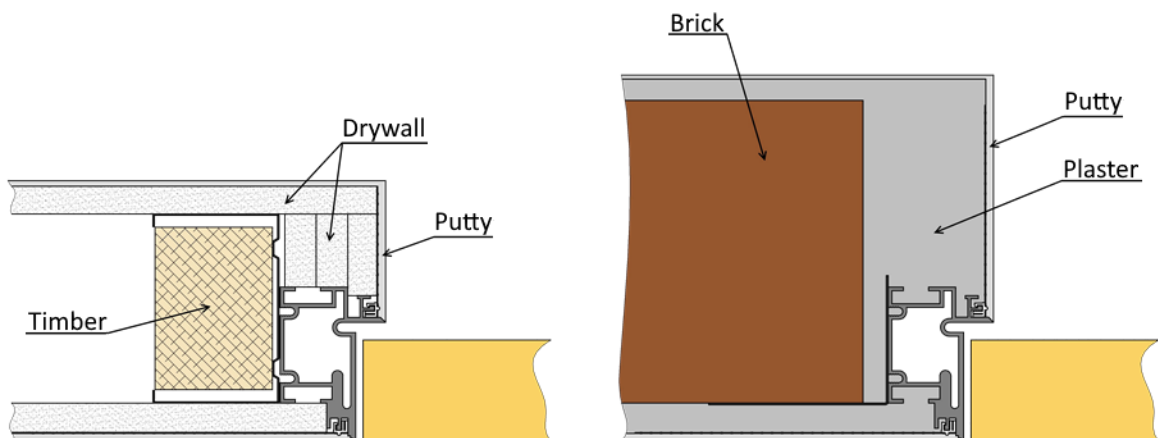


fig. 18

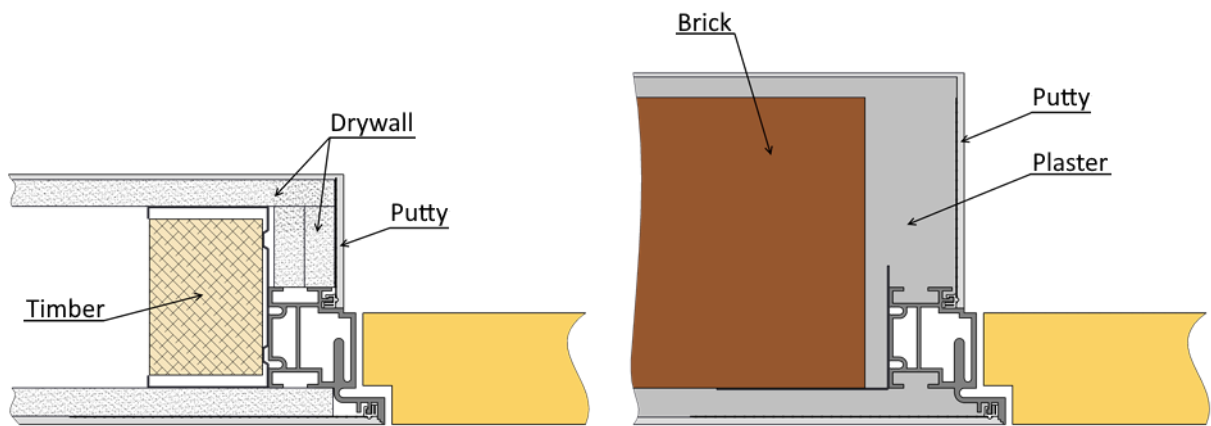


fig. 19

To ensure a reliable joint between the door frame and wall, our experts have developed a special mesh with a self-locking profile (fig. 20 and fig. 21). It enables quick and reliable fixation of the reinforcing mesh in the door frame and prevents cracks in the vicinity of the joint in the future.

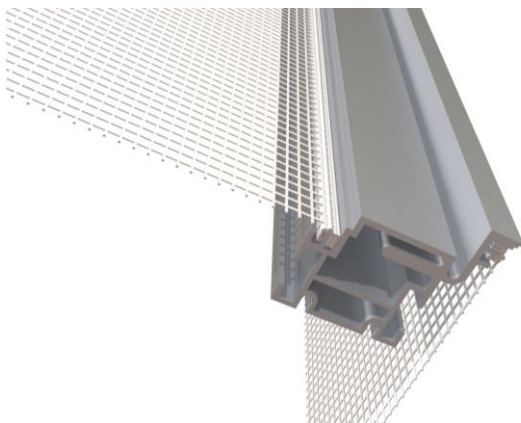


fig. 20

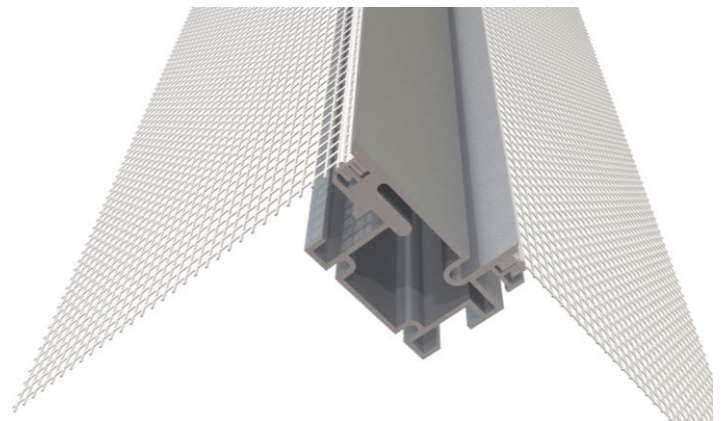


fig. 21

To strengthen the outer corners of the door opening, it is necessary to apply the reinforcing mesh with an overlap, as shown in fig. 22.

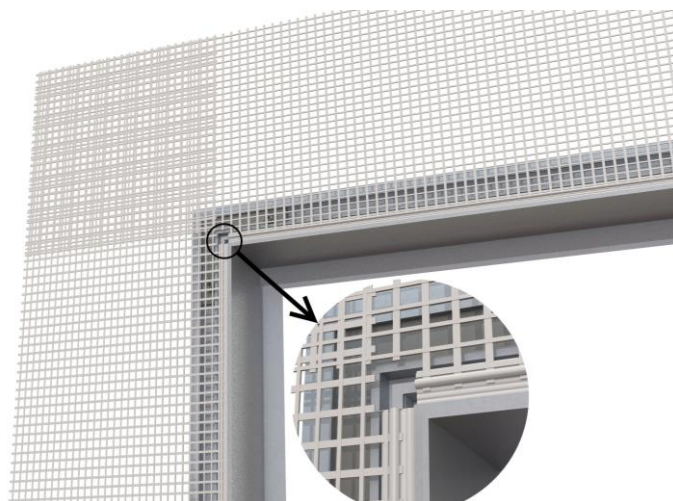


fig. 22

Polymer-modified cement plasters, which contain reinforcing micro-fibers, should be used to seal the joints and make the primary layer. Minimum two plaster layers should be applied, avoiding complete curing of the previous layer. The aluminum door frame will serve as a screed strip during the plaster application. As a result, you will receive the reinforced layer with a much higher strength than the standard plaster layer has. As soon as the surface is dry, it is ready for the finishing processes. Cross-sections of the door opening with finishing layers are shown in fig. 23 (direct opening door) and fig. 24 (reverse opening door).

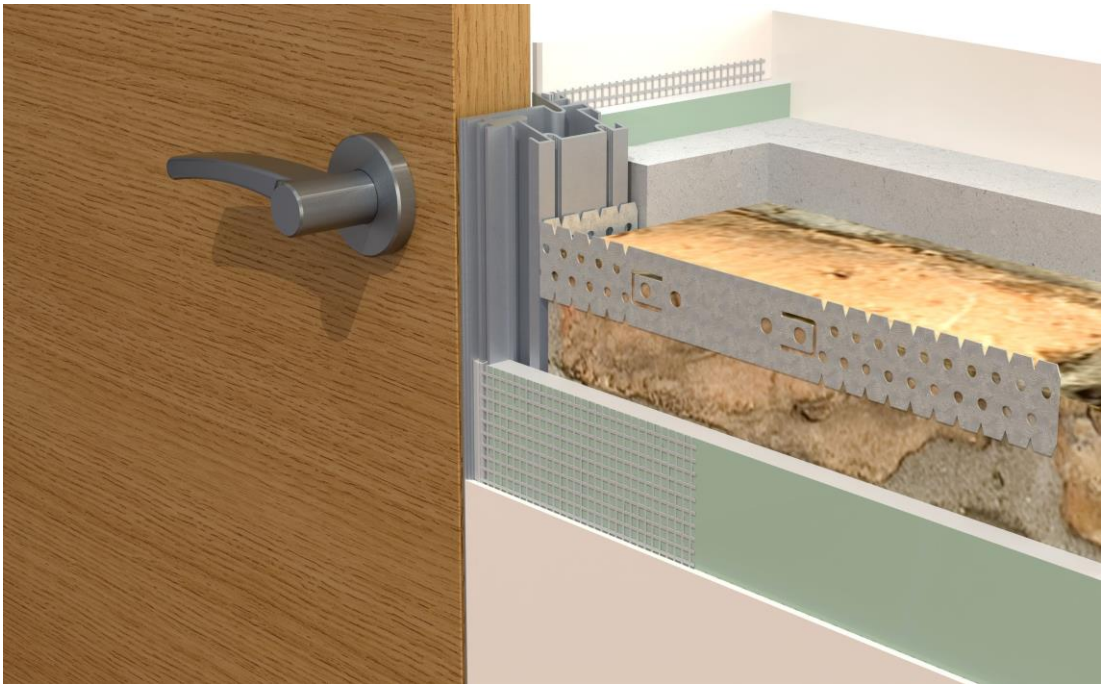


fig. 23

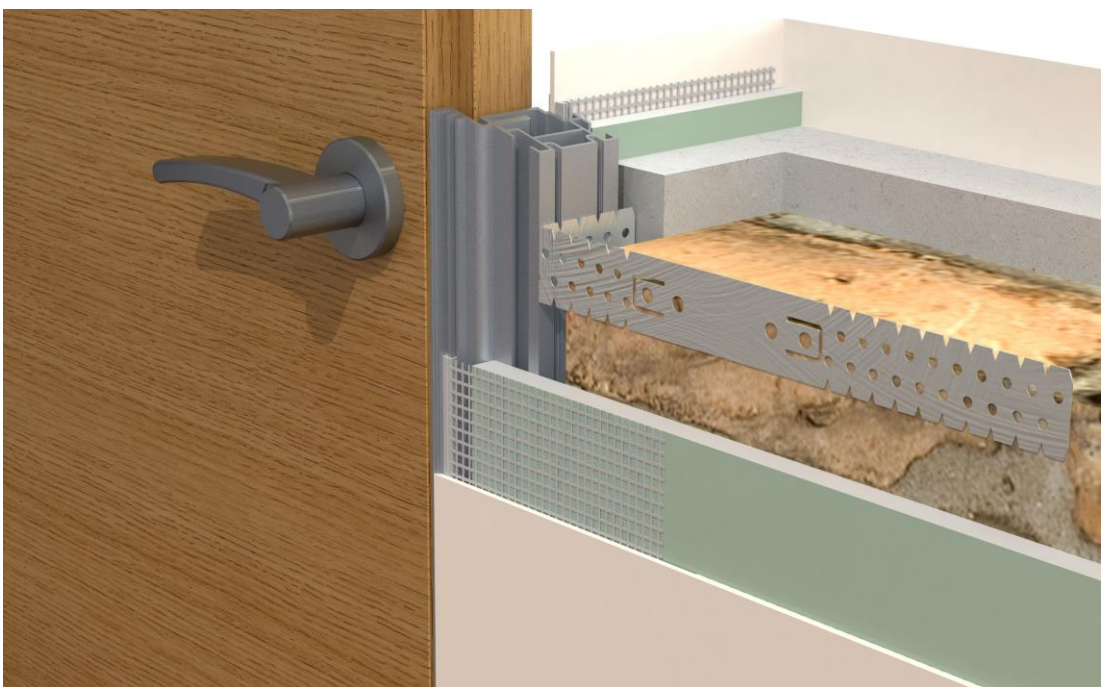


fig. 24

It is also possible to align the aluminum door frame with ceramic tiles. In this case, the door frame should be milled to ensure the space necessary for the tile installation. The fig. 25 (direct opening door) and fig. 26 (reverse opening door) schematically show how it should be done. The factory provides the service of aluminum door frame milling.

**Note:** If door frame milling for ceramic tiles is needed, it should be mentioned in the manufacturing order.

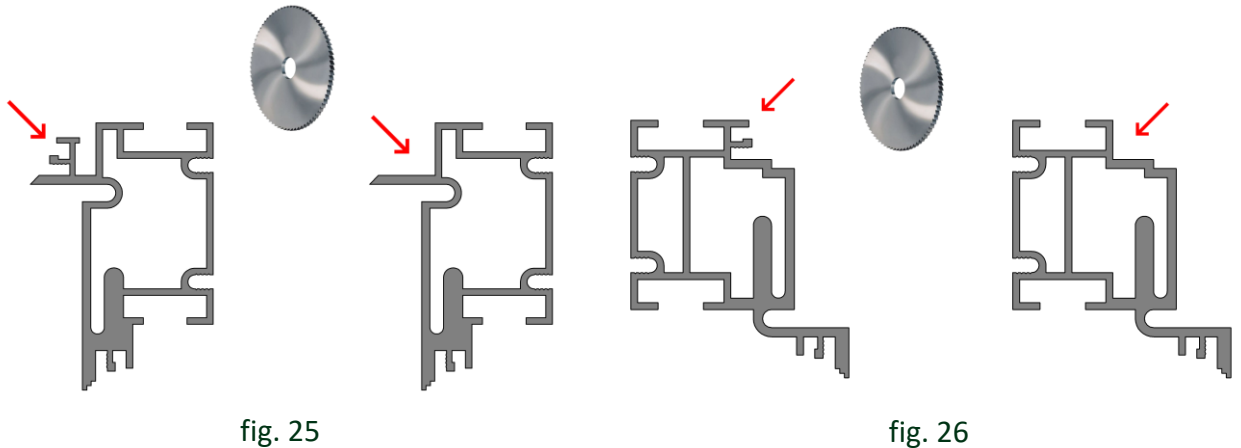


fig. 25

fig. 26

## 5. Utilized hardware

### Door hinges

There is only one type of hinges applied for the iDoors collection.

1) **Concealed hinge** (hinges are not visible when the door is closed) (fig. 27)

**Note:** By default, the following quantity of hinges is installed:

- 2 hinges in case of the door leaf height up to 2100 mm;
- 3 hinges in case of the door leaf height from 2101 to 2300 mm;
- 3 hinges in case of the door leaf height from 2301 to 2700 mm.

Hinges are available in the following colors: brushed chrome, white, black.



fig. 27

### Door lock

Door locks are available in the following colors: chrome, white and black. The strike plate is installed on the door frame at the factory.

There is only one type of door lock mechanism that is used in the iDoors collection:

1) **AGB Polaris** - mechanism with magnetic lock latch for easy closure and silent operation.

There are several door lock types:

- **latch** (door handle: one hole is drilled at the factory);
- **thumbturn** (door handle with a thumbturn: two holes are drilled at the factory to enable the door handle with a thumbturn installation; so-called WC lock);
- **key** (door handle with a key lock: two holes are drilled at the factory to enable the door handle and door lock cylinder installation).

**Note:** door lock cylinder and keys are NOT included in the standard supply package; door handle is NOT included in the standard supply package.

## 6. Additional accessories and opening options

### Fixed threshold

Fixed thresholds are not manufactured for the iDoors doors.

### Hidden thresholds

It is possible to install the hidden (drop-down) threshold to the iDoors door leaves.



fig. 28

### Sliding door system

Sliding doors are not available in the iDoors collection.

### Swinging-sliding door system

Swinging-sliding doors are not available in the iDoors collection.

### Double leaf door

Double leaf doors are not available in the iDoors collection.

Depending on the opening variant, the iDoors door sets are divided into Left-hand (LH) and Right-hand (RH). Also, the doors can have direct (fig. 29) and reverse (fig. 30) opening.

### Direct opening

In this case, the door leaf opens onto the wall side the door leaf is flush with.

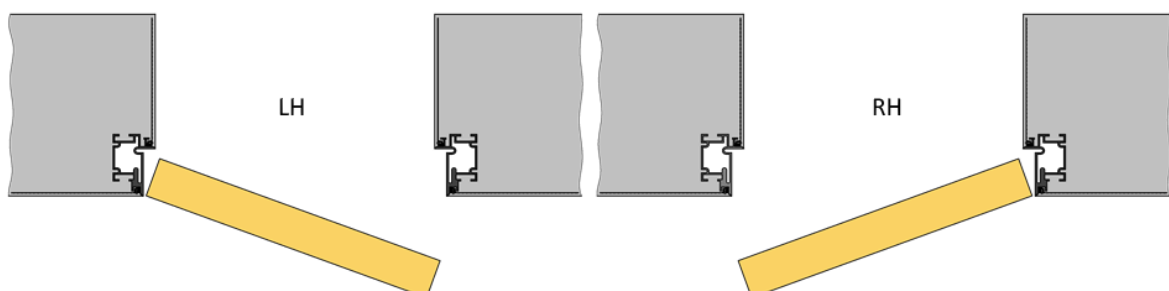


fig. 29

### Reverse opening

In this case, the door leaf is flush with one side of the wall but opens onto the other side.

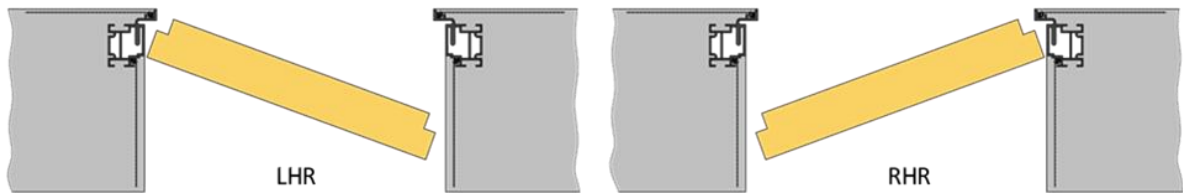


fig. 30

**Note:** Please pay special attention to the factory's definition of the side of the reverse opening doors and correctly indicate it in manufacturing orders.

## 7. Recommendations for the final decoration of the door leaf primed surfaces (iDoors collection)

The standard finishing option is door leaf painting (for example, in the color of the walls). Besides this, there are two other commonly-used options: wallpapering and decorative plaster application. These recommendations are provided to avoid potential problems during the door finishing and ensure the best result. Please, follow the recommendations while selecting finishing materials and application processes.

### Door leaf painting

Water-based acrylic silicone and acrylic emulsions are preferred among interior paints that can be used for both door leaves and wall surfaces painting.

#### **Acrylic silicone paint**

Most often, acrylic silicone paints are water-based. Silicone resins and acrylates act as a base, while water is used as a solvent. The acrylic silicone paints have many advantages:

- water resistance;
- fungus resistance;
- resistance to ultraviolet radiation and rapid temperature changes;
- dirt and dust resistance;
- resistance to alkalis (in contrast to acrylic paints);
- the longest service life among all water-based paints (20-25 years);
- stable brightness and color.

Usually, acrylic silicone paints create a matte surface. They may contain a wide variety of pigments to create the desired color. Some paints include additives that ensure specific performances of the finishing layer (e.g., fire resistance).

#### **Acrylic paint**

Acrylic paints have good film-forming and adhesive properties, strength characteristics, and corrosion resistance. Different additives protect the painted surfaces from fungi, bark beetles, moisture, etc.



There are two most commonly used types of acrylic paint:

- 1) Water-based dispersion acrylic paint consists of polymer acrylic emulsion, pigment, water, and special additives. The copolymers that are included in the mixture create a protective film highly resistant to external influence.
- 2) Water-based emulsion acrylic paint is widely used for interior decoration. Water-based compositions are very popular, not least because of affordable prices.

Acrylic paint advantages:

- water resistance;
- absence of strong odor (thanks to non-toxic solvent) and safety for health;
- resistance to low temperatures;
- long service life;
- fire safety;
- resistance to ultraviolet radiation;
- fast drying (from 30 to 120 minutes);
- possibility to remove paint if it came off on an unwanted area.

### **Wallpapering and decorative plaster application**

These finishing options are more demanding because of higher specific weight of decorative plaster or wallpaper and glue layer compared to specific weight of all paint layers. Therefore, it is recommended to apply special primers to increase the film adhesion and avoid finishing defects.

Alkyd-based primers (for example, TIKKURILA OTEX adhesion primer) are the most preferable for any base surfaces and any finishing. These primers have high adhesion to such problematic surfaces as glass, tiles, fiberglass, PVC plastic, aluminum, zinc-plated steel. They are used for indoor surface priming if an exceptionally high adhesion is required.

After the primer application, the wallpaper is put up in a usual way (like on a wall).

Application of an adhesion primer is obligatory before the decorative plaster base application. It is recommended to use either alkyd-based primer or the one specified by the plaster manufacturer.

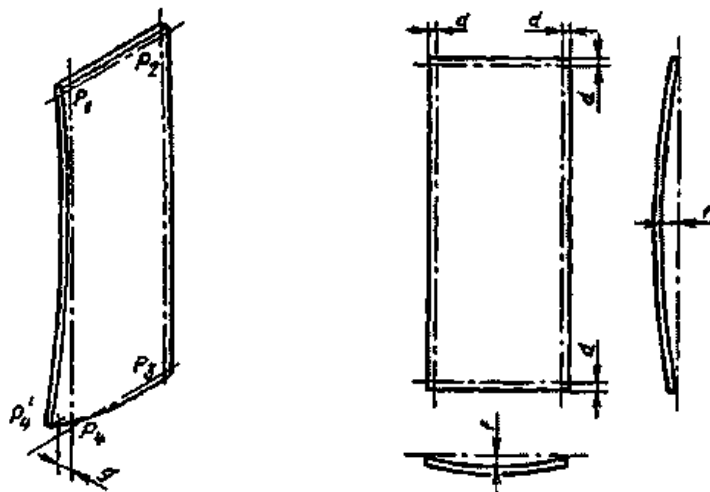
## **8. Allowable deviations of the door set geometry**

The maximum deviations of the dimensions of the fully assembled door frames and door leaves should not exceed the values given in Table 1.

Table 1

Dimensions, mm	Maximum deviation values, mm			
	Door frame internal dimensions	Door frame external dimensions	Door leaf external dimensions	Diagonal length difference
From 501 to 2000	+ 1,5	± 3,0	0 - 1,0	3,0
From 2001 to 3000	+ 2,0	± 4,0	0 - 1,5	4,0

The door set flatness deviation should be not more than 2.0 mm per 1 m along the height and width (referring to the deviations associated with the door leaves bending along the plane).

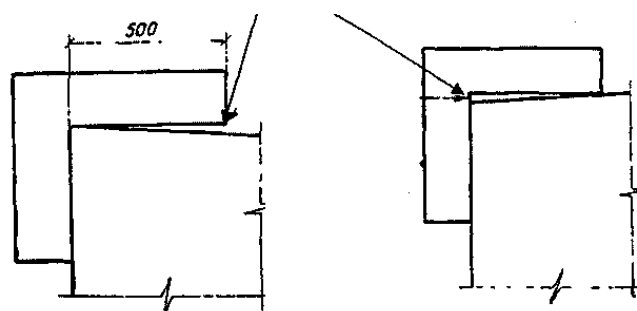


The structural element edge straightness deviation should be not more than 1.0 mm per 1 m of the length of any section of the door set elements (referring to the deviations associated with door leaf edges bending).

The surface-to-surface gap between the front surfaces of the corner joints and T-joints of adjacent elements of the door frames and door leaves, which should be installed in the same plane, should not exceed 1.0 mm (referring to the gap between the surfaces of vertical and transversal elements to be assembled in the same plane).

Gaps more than 0.2 mm in corner joints and T-joints are not allowed (referring to the gaps of the door frame corner joints and joints of vertical and transverse elements of door leaves).

The door leaf squareness deviation should be not more than 2.0 mm per 1 m of the length.



Key operation characteristics of the door sets are presented in Table 2.

Table 2

Operation characteristics	Value
Air permeability not less than, $m^3 / (\text{hour} \cdot m^2)$	1.5
Sound insulation not less than, dBA	25
Reliability of mechanisms and hinges not less than, opening-closing cycles	50 000