Rittal – The System.

Faster – better – everywhere.

Aisle containment

Project-specific:		3311.229
Series:	3311.161	3311.200
	3311.163	3311.210
	3311.170	3311.270
	3311.180	3311.280
	3311.190	

Montage-, Installations- und Bedienungsanleitung
Assembly and operating instructions

FRIEDHELM L O H GROUP

RITTAL

Foreword

Dear Customer!

We thank you for choosing one of our aisle containment products!

Please take the time to read this documentation carefully, and pay particular attention to the safety instructions in the text and to section 2 "Safety instructions".

This is the prerequisite for:
– the safe installation of the aisle containment,
– the safe handling and
– the most trouble-free operation possible.

Please keep the complete documentation readily available so that it is always on hand when needed.

We wish you every success!

Your,
Rittal GmbH & Co. KG

Rittal GmbH & Co. KG
Auf dem Stützelberg

35745 Herborn
Germany

Tel.: +49(0)2772 505-0
Fax: +49(0)2772 505-2319

E-mail: info@rittal.de
www.rimatrix5.com
www.rimatrix5.de

We are always happy to answer any technical questions regarding our entire range of products.

Contents

EN

1 Notes on documentation

1.1 Storing the documents

The assembly, installation and operating instructions as well as all applicable documents are integral components of the product. They must be handed out to those persons who are engaged with the aisle containment and must always be available and on hand for operating and maintenance personnel.

1.2 Symbols in these operating instructions

The following symbols are used in this documentation:

⚠️ **Danger!**
A dangerous situation for which the failure to comply with this note causes death or severe injury.

⚠️ **Warning!**
A dangerous situation for which the failure to comply with this note can cause death or severe injury.

⚠️ **Caution!**
A dangerous situation for which the failure to comply with this note can cause (minor) injuries.

☞ Note:
Information concerning individual procedures, explanations, or tips for simplified approaches. Also indicates situations which may result in material damage.

■ This symbol indicates an "Action Point" and shows that you should perform an operation/procedure.

1.3 Other applicable documents

In conjunction with these assembly, installation and operating instructions, the superordinate system documentation (if available) also applies.

Rittal GmbH & Co. KG is not responsible for any damage which may result from failure to comply with these assembly, installation and operating instructions. The same applies to failure to comply with the valid documentation for accessories used.

1.4 Normative instructions

1.4.1 Legal information concerning the operating instructions

We reserve the right to make changes in content. Rittal GmbH & Co. KG will not be held liable for any mistakes in this documentation. Liability for indirect damages associated with the supply or use of this documentation is excluded to the extent allowable by law.

1.4.2 Copyright

The distribution and duplication of this document and the disclosure and use of its contents are prohibited unless expressly authorised.
Offenders will be liable for damages. All rights created by a patent grant or registration of a utility model or design are reserved.

1.4.3 Revision

Rev. 01A of June 23, 2015

2 Safety instructions

Although the aisle containments produced by Rittal GmbH & Co. KG are developed and produced with due regard to all safety precautions, some unavoidable dangers can result, in particular during the assembly. The safety instructions provide you with an overview of these dangers and the necessary safety precautions.

In the interests of your safety and the safety of others, please read these safety instructions carefully before assembly and commissioning of the aisle containment!

2.1 Important safety instructions:

Danger! Injury due to falling loads!
Do not stand under suspended loads when transporting the components after delivery on pallet with a hoist trolley, a forklift, or a crane.

Danger! Electric shock!
Contact with live electrical parts may be lethal.
Before installation, ensure that it is not possible to come into contact with live electrical parts.

Danger! Cut wounds, especially those caused by sharp edges of the profiled sheets!
Put on protective gloves before beginning all assembly work!

Caution! Risk of malfunctions!
Proper aisle containment operation can be ensured only when it is operated under the intended ambient conditions. As far as possible, be sure that the ambient conditions for which the unit is designed are complied with, e.g. temperature, humidity, air purity.

Caution! Risk of malfunctions!
During running operation, keep the doors of the aisle containment open for a short a time as possible and then close them again.

Caution! Risk of malfunctions!
To prevent damage to any previously installed IT equipment, ensure absolute cleanliness for all assembly work.

2.2 Operating and qualified staff

The installation, commissioning, maintenance and repair of the aisle containment may be performed only by qualified mechanically trained personnel.

2.3 Notes for the cleanliness at the workplace

Appropriate cleanliness must be observed, in particular when the aisle containment is assembled in an area where IT equipment has already been installed.

This includes, for example:

– Sawing work, such as the shortening of U-sections, must be performed outside the installation room.
– After drilling work that must be performed in the installation room, for example for the attachment of U-sections, all cuttings must be removed using a vacuum cleaner.
– Appropriate gloves must be worn for the placement of polycarbonate panels in order to prevent fingerprints on the panels.

3 General description

3.1 Description of the aisle containment

In server rooms not designed as a data centre, the permanent mixing of cooled and heated air often causes cooling deficits. Warm-air nests further impair the operation of the IT equipment.

To ensure the required cooling efficiently in such situations, Rittal has designed an aisle containment.

This offers the following advantages:

– The inlet air (cold) and outlet air (warm) do not mix.
– A higher temperature level can be deployed in the complete system.
– Thanks to the higher temperature difference between the cold and warm air, the CRAC devices operate with maximum efficiency.
– Modular, scalable and upgradeable.
– Simple arrangement.
– Low-cost solution in order to provide optimised cooling for existing data centres.

The aisle containment is comprised of the following components:

– Rear panel at the rear of the aisle containment (optional).
– Sliding doors at the front of the aisle containment for access to the front of the IT enclosures
– Ceiling elements with polycarbonate panels

3.2 Installation procedure

Install the aisle containment in the following sequence:
1. Preparatory tasks
2. Install the door elements
3. Install the fastening strips and guide rails
4. Install the rear panel
5. Prepare and attach the doors
6. Install the ceiling elements

Fig. 1: Overview of the aisle containment

Legend
1 Rear panel (optional) (section 6)
2 Ceiling elements (section 8 or section 9)
3 Fastening strips (section 5.3) and guide rails (section 5.4)
4 Side panel (section 5.2)
5 Front doors (section 7.2)
6 U-sections on the base (section 5.1)

The door element is installed during the first part of the installation. An appropriate kit 3311.161 (1000 mm enclosure depth) or 3311.163 (1200 mm enclosure depth) is required depending on the enclosure depth.
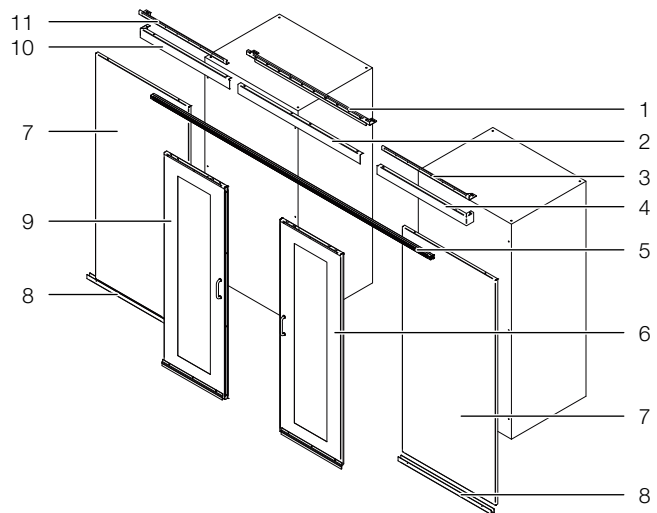
Fig. 2: Individual components of the door element

Legend
1 Fastening strip, centre
2 Trim panel, centre
3 Fastening strip, right
4 Trim panel, right
5 Top rail
6 Sliding door, right
7 Side panel
8 U-section for the side panel
9 Sliding door, left
10 Trim panel, left
11 Fastening strip, left

3.3 Orientation and designations

The designations "front", "rear", "left" and "right" refer to an observer standing outside the aisle containment in front of the two doors looking at the opposite optional rear panel.

Fig. 3: Top view and orientation

Legend
1   Rear panel (optional)
2   Aisle containment
3   Right-hand IT enclosure suite
4   Front doors
5   Left-hand IT enclosure suite

4   Preparatory tasks

4.1   Transport

The aisle containment is delivered shrink-wrapped on a pallet. Accompanying shrink-wrapped long sections lie separately on the pallet.

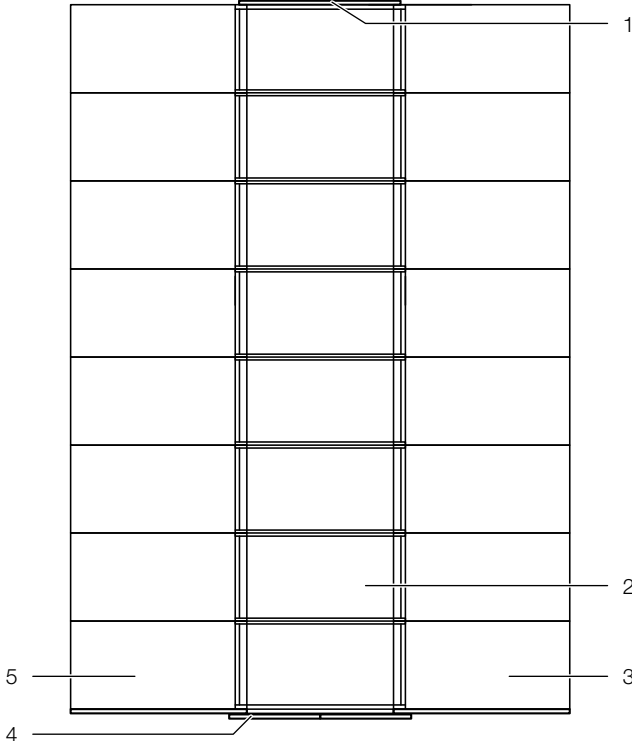Fig. 4:   Delivery of the aisle containment (example)

Legend
1   Pallet with the main components (doors, etc.)
2   Long sections are separate

⚠ **Caution! Injury due to falling loads!**
Use only suitable and technically sound lifting gear and load-bearing devices with sufficient load capacity.

■ Transport the pallets and any separately delivered accessory parts with appropriate hoisting gear (e.g. hoist trolley of sufficient load capacity) from the delivery location to the subsequent installation location of the aisle containment.

4.2   Unpacking

■ Remove the aisle containment's packaging materials.

☞ Note:
After unpacking, the packaging materials must be disposed of in an environmentally friendly way. They consist of the following materials:
Wood, polyethylene film (PE film), strap, edge protectors.

■ Check all components of the aisle containment for transport damage and for completeness in accordance with the delivery note.

The following components must be included in the scope of supply:
– Divider panels and sliding doors
– Carton with accessory parts

– Short sections
– Separate long sections

☞ Note:
Damage and other deficiencies, e.g. incomplete delivery, should immediately be reported to the shipping company and to Rittal GmbH & Co. KG in writing.

4.3   Checking the drawing dimensions

Before starting the actual work, we recommend that you check the dimensions specified in the drawing with the actual dimensions at the installation location of the aisle containment.

■ Check, for example, the width and the depth of the IT enclosures using a rule.
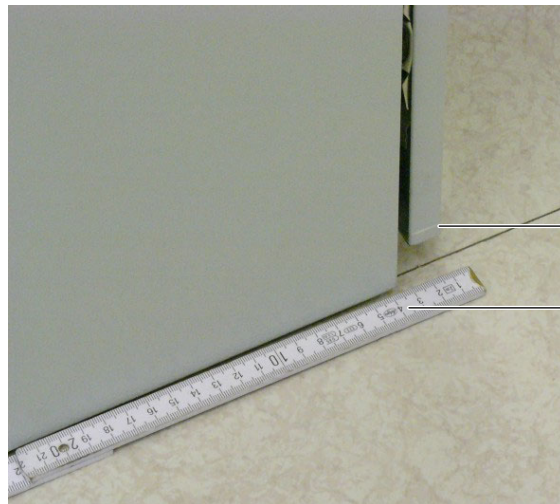
Fig. 5:   Placing the rule

Legend
1   IT enclosure front edge
2   Rule
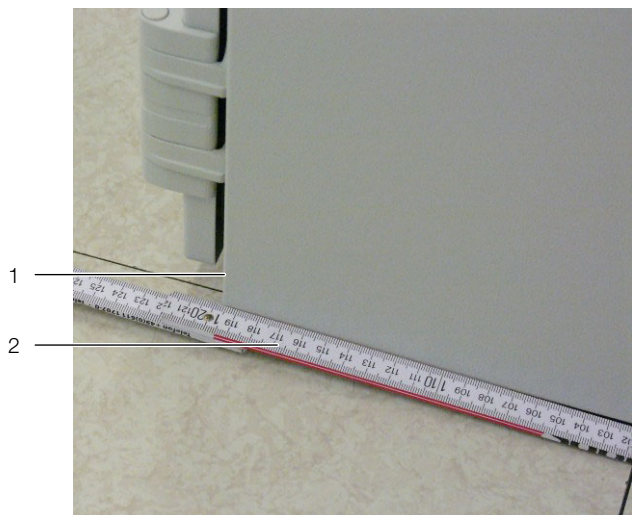
Fig. 6:   Read out the width

Legend
1   IT enclosure rear edge
2   Rule

Mount rating plate A46151 at the right-hand top inside the door! Write the year of production and model number with a permanent marker on the rating plate!

Attach the Rittal logo to the trim panel at the top right.

Rack height

Front access height

Door width   Door width

Rack depth   Aisle width   Rack depth

Rack width

Rack width

Rack width

LCP

Rack width

Rack width

Polycarbonate aisle covering, 6 mm

Hole distance from rack to rack

Fig. 7:   Installation plan (example)

EN

5 Installing the door elements

Before you start the installation, use a spirit level to check whether the front two IT enclosures are horizontal, because only then can the correct operation of the sliding doors be guaranteed.

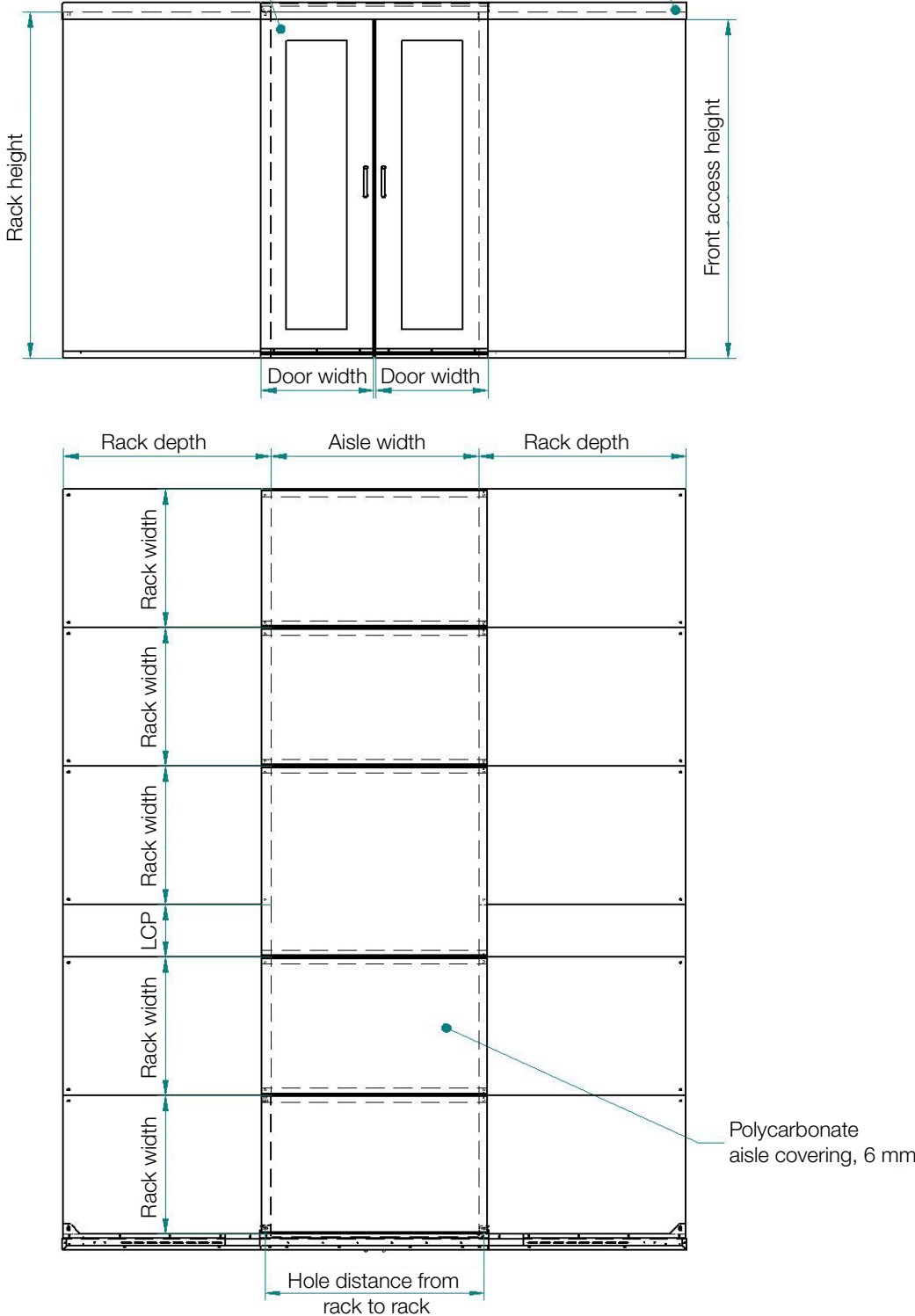The additional side panels at the front of the enclosure suites are required to achieve an appropriate load-carrying and exactly-oriented wall on which the guide rails of the doors can be fastened. The side panel is placed in a U-section (40 x 32 mm) and also bolted to the side panel of the IT enclosure.

To install the series version, an appropriate kit is required depending on the enclosure depth:

Model no.	Enclosure height x depth x aisle width
3311.161	2000 x 1000 x 1200 mm
3311.163	2000 x 1200 x 1200 mm

Note:
The installation of the door elements is identical for the project-specific version and the series version.

5.1 Installing the U-section on the base

■ Move a U-section appropriate for the width of the side panel to be installed later (e.g. 1200 mm) from the front at the side panel of the first IT enclosure in the left-hand enclosure suite.
■ Align the U-section so that it is flush at the left-hand side with the side panel of the IT enclosure.
■ Use a 3.2 mm drill to make two fastening holes in the left- and right-hand edge area of the U-section.

Fig. 8:   Drilling the fastening holes

Legend
1   U-section
2   Base
3   Side panel of the IT enclosure

■ Fasten the U-section with two 4.8 x 19 mm self-tapping screws and an A 6.4 washer to the base.

Fig. 9:   Screwing in the U-section

Legend
1   Side panel of the IT enclosure
2   Fastening screw and washer
3   U-section

5.2 Installing the side panel

■ Place the side panel from above in the U-section.
■ Ensure that the side panel
  – is flush with the upper edge of the IT enclosure roof,
  – is flush at the left- and right-hand side with the side panel of the IT enclosure as well as
  – is vertical in both directions (check using a spirit level).
■ Fasten the left- and right-hand side panels from inside the IT enclosure to the outside using six 4.2 x 16 mm self-tapping screws (top – centre – bottom). Place the six screws (also for visual reasons) as near as possible to the front enclosure frame.

Fig. 10:   Screwing the side panel

Legend
1   Enclosure frame of the first IT enclosure
2   Hexagonal self-tapping screw, 4.2 x 16 mm

The left-hand side panel is now fully installed. The right-hand side panel in front of the right-hand IT enclosure suite is installed similarly.

5.3   Installing the fastening strips

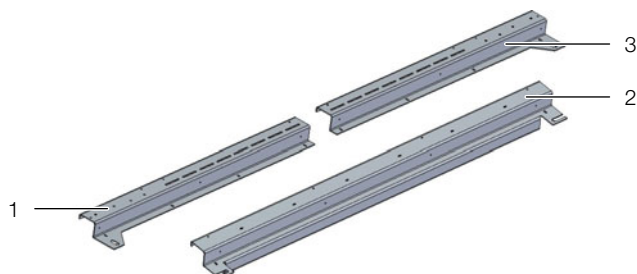The fastening strips are installed at the top on the side panels and in the centre between the enclosures.

Fig. 11:   Fastening strips

Legend
1   Universal fastening strip, right
2   Fastening strip, centre
3   Universal fastening strip, left

The guide rails for the two doors are fastened later to the fastening strips.
■ First, remove the two front fastening screws of the IT enclosure roof at the first left-and the right-hand IT enclosure.
■ Place the centre fastening strip over the aisle containment so that each of the openings in the fastening strip matches the openings in the IT enclosure.
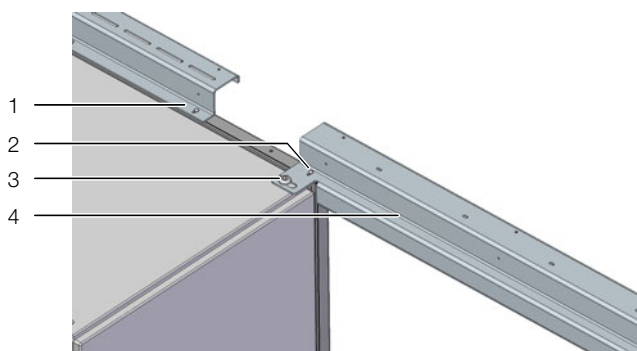

Fig. 12:   Centre fastening strip over the aisle containment

Legend
1   Universal fastening strip, right
2   Oval-head self-tapping screw, 4.2 x 16 mm
3   IT enclosure roof fastening screw
4   Fastening strip, centre

■ Fasten the centre fastening strip with the two fastening screws at the top on the IT enclosure roof.
■ To stabilise the structure, also fasten the fastening strip with two 4.2 x 16 mm self-tapping screws from the top onto the side panel.
■ Now fasten the fastening strip on the left-hand side (and similarly on the right-hand side) with the fastening screws at the top on the associated IT enclosure.
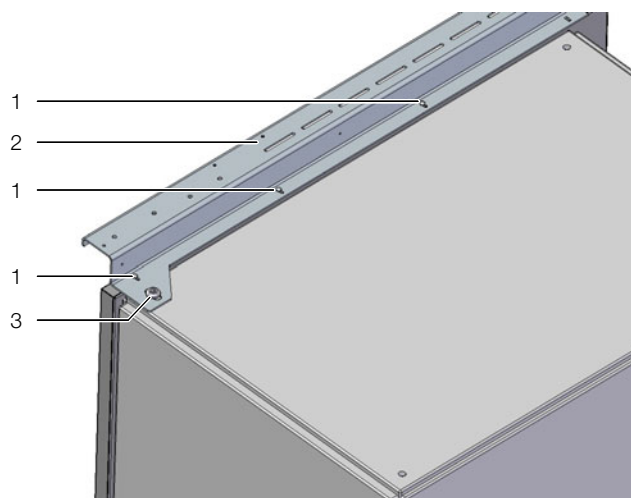

Fig. 13:   Fastening strip, right

Legend
1   Oval-head self-tapping screw, 4.2 x 16 mm
2   Universal fastening strip, right
3   IT enclosure roof fastening screw

■ To stabilise the structure, also fasten the fastening strip with additional screws from the top onto the side panel.

5.4   Installing the guide rail

The shared guide rail for the two doors is installed directly on the fastening strip. The guide rail does not need to have the same length as the fastening strip.

However, for stability reasons (to have the largest possible number of fastening points available), it should only be approximately 20 to 50 mm shorter than the fastening strip.

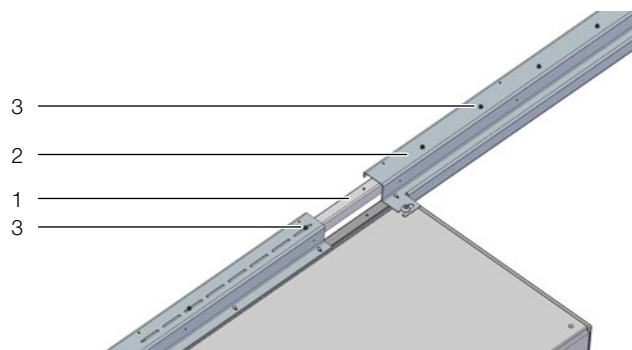■ If necessary, shorten the guide rail appropriately.

Fig. 14:   Fastening the guide rail to the fastening strip

Legend
1   Guide rail
2   Fastening strip, centre
3   Fastening screw and nut (fig. 15)

■ Place guide rail from below to the fastening strips, centre the holes and use clamps to attach to the fastening strip.
■ Use a spirit level to recheck that the guide rail is still horizontal.
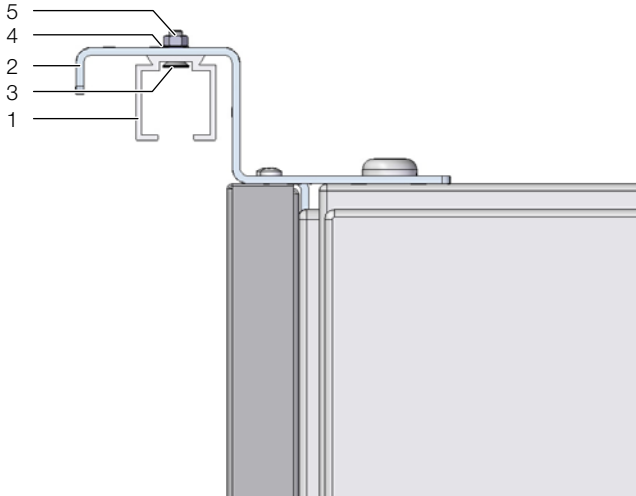
5 Installing the door elements

Fig. 15:   Fastening the guide rail

Legend
1   Guide rail
2   Fastening strip
3   Countersunk screw M5 x 14 mm
4   Serrated lock washer A5.3
5   Hexagonal nut M5

- Fasten the guide rail over its complete length with M5 x 14 mm countersunk screw and M5 nut to the fastening strip (fig. 15).
- Clean the guide rail several times over its complete length.
- Place a rolling apparatus in the guide rail and traverse it over the complete path of the door.
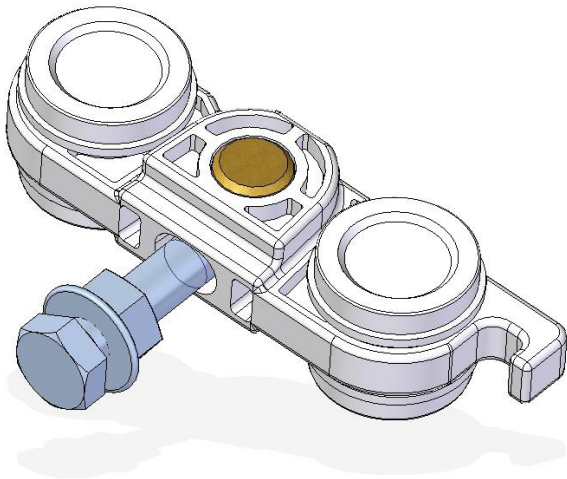

Fig. 16:   Rolling apparatus

This ensures that there is no contamination that prevents the door opening and closing.

6 Positioning the rear panel (optional)

A project-specific version of the rear panel may need to be installed at the rear end of the aisle containment in order to close the aisle containment in this direction. This is necessary when the rear IT enclosures are not placed directly against a building wall and no door element should be installed at the front of the enclosure suites (e.g. because of space limitations).

The rear panel is positioned in principle like the side panels in front of the IT enclosures. The U-section in which the rear panel is placed runs, however, over the complete width of the aisle containment and extends to a certain extent behind the IT enclosures.

6.1 Fastening the fastening strip on the rear panel

At the rear end of the aisle containment, a fastening strip is installed between the enclosures at the top, similar to the fastening strip at the front end above the door.
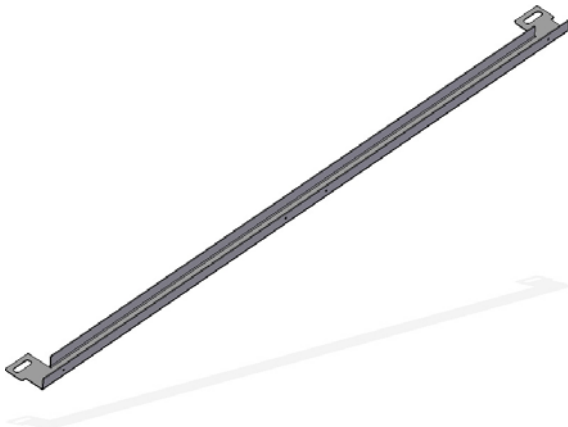

Fig. 17: Fastening strip for the rear panel

■ First, remove the two rear fastening screws of the IT enclosure roof at the last left- and the right-hand IT enclosure.
■ Place the fastening strip over the aisle containment so that each of the openings in the fastening strip matches the openings in the IT enclosure.

The rear panel is screwed upwards onto this fastening strip. The rear angle section for accepting the last polycarbonate panel of the roof element is fastened there later (see section 9.2.2 "Fastening the terminating strips").

6.2 Installing the U-section on the base

The U-section for positioning the rear panel is mounted behind the last IT enclosures on the base.

■ Move the U-section from the rear to the rear side panel of the IT enclosure and align it so that it protrudes approximately 50 mm behind the IT enclosures on both sides.
■ Use a 3.2 mm drill to make two fastening holes in the left- and right-hand edge area of the U-section.

■ Fasten the U-section with two 4.8 x 19 mm self-tapping screws and an A 6.4 washer to the base.

6.3 Positioning the rear panel

■ Place the rear panel from above in the U-section.
■ Ensure that the rear panel
  – is flush at the left- and right-hand side with the U-section on the base, and
  – is vertical in both directions (check using a spirit level).

6.4 Installing the rear panel

■ Fasten the rear panel in the correct position on the IT enclosure as far as possible.

Fasten the left- and right-hand rear panel from inside the IT enclosure to the outside using three 4.8 x 19 mm self-tapping screws (top – centre – bottom). Place the three screws (also for visual reasons) as near as possible to the front enclosure frame.
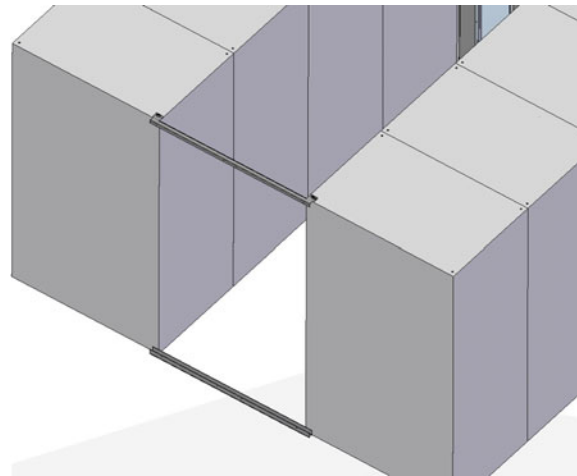

Fig. 18: Fastening strip and U-section for the rear panel installation
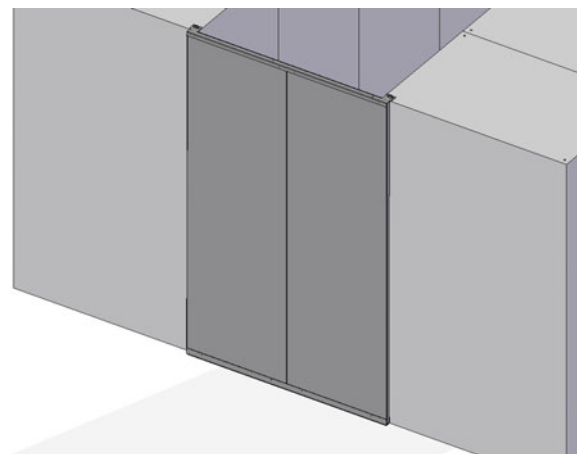

Fig. 19: Rear panel installation

7 Preparing and installing the doors

7.1 Preparing the doors for installation

On the upper side of both doors, install two flanges, to which the rolling apparatus was attached previously, 72 mm from the outer edge of each door (fig. 20).

For doors that run synchronously, a door follower is installed centred (fig. 21).

The alignment of the doors must be observed. The raised window frames must be located on the rear of the doors, namely point into the aisle containment. The factory-installed vertical brush strips are also located on this side.

■ Unscrew the screw from the rolling apparatus and remove the nut.

■ As shown in fig. 20, insert the screw through the flange, reattach the locking nut and retighten the screw into the rolling apparatus. This allows the doors to be aligned parallel to the base or to the guide rail later.
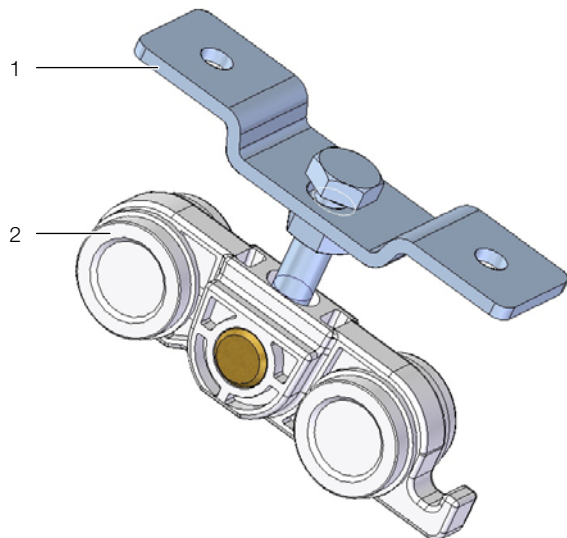

Fig. 20:   Flange with rolling apparatus pre-installation

Legend
1   Flange
2   Rolling apparatus

■ Fasten both flanges and the door follower with two 4.2 x 16 mm self-tapping screws from the accessory pack through the drilled holes at the top edge of the door.
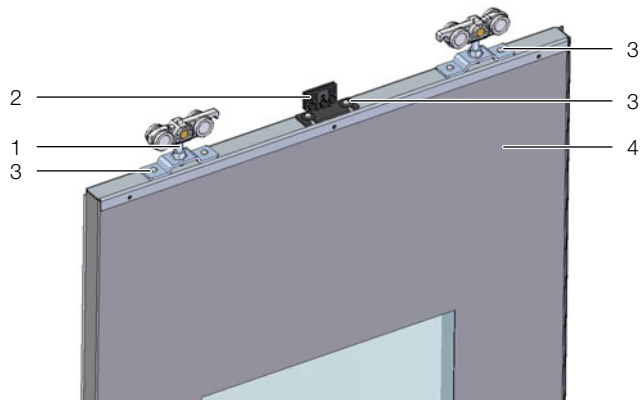

Fig. 21:   Installing the flanges and the door follower to the left-hand door

Legend
1   Flange with rolling apparatus (2 items)
2   Door follower 2
3   Oval-head self-tapping screw, 4.2 x 6 mm (6 items)
4   Left-hand sliding door front
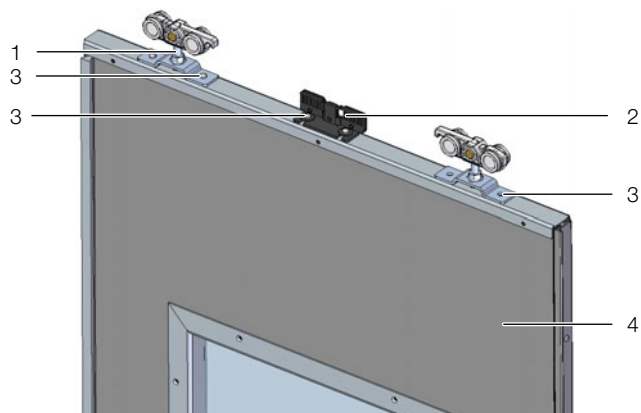

Fig. 22:   Installing the flanges and the door follower to the right-hand door

Legend
1   Flange with rolling apparatus (2 items)
2   Door follower 1
3   Oval-head self-tapping screw, 4.2 x 16 mm (6 items)
4   Right-hand sliding door rear

7.2 Installing and aligning the doors

In the next step, the doors are inserted in the guide rails from the outer side.

■ For sliding doors **without self-closing**, introduce a door stopper from the left- and the right-hand side in the guide rail so that each "tongue" for stopping the track rollers points outwards (fig. 23).

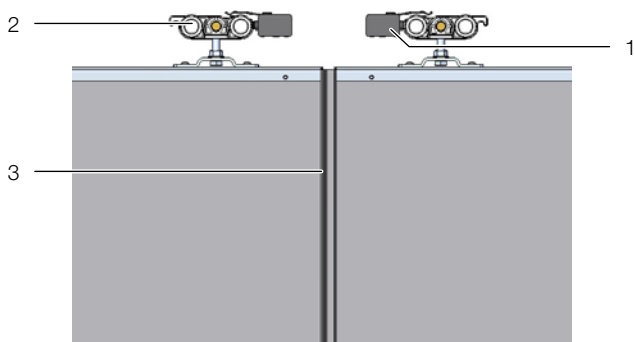■ Move the stopper to approximately the centre of the aisle containment.

Fig. 23: Door stopper and rolling apparatus inside without self-closing installation location

Legend
1   Door stopper
2   Rolling apparatus
3   Centre aisle partition

For sliding doors **with self-closing** (with pulley), a SmartStop rather than the two door stoppers is installed in the centre (fig. 24).
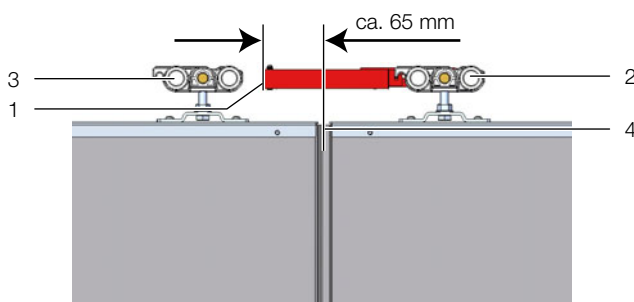

Fig. 24: SmartStop

Legend
1   Follower fork

Fig. 25: SmartStop and rolling apparatus inside with self-closing installation location, left-hand pulley

Legend
1   SmartStop
2   Rolling apparatus on the right-hand door
3   Rolling apparatus on the left-hand door
4   Centre aisle partition

■ Insert the SmartStop unit into the guide rail and fix approx. 65 mm from the aisle centre.
■ Clamp the damper unit.
   To do this, move the follower fork (fig. 24) with a screwdriver to the end position until it latches into the slot.

Note:
Clamp the SmartStop into the guide rail only in the installed state!

If the pulley sits on the left-hand side, the follower fork must latch into the rolling apparatus of the right-hand door.
If the pulley sits on the right-hand side, the follower fork must latch into the rolling apparatus of the left-hand door.
■ Turn the rolling apparatus appropriately before installing the door.
■ Introduce the doors vertically with the carriages in the guide rail.
The doors must be aligned so that they are parallel and run with an appropriate, small clearance (maximum 3 to 5 mm) above the base. Any remaining residual gap above the base is covered with the brush strip.
■ If necessary, raise or lower the door by turning the fastening screw in or out after loosening the locking nut.
■ Adjust the fastening screws differently on the left- and right-hand side to change the door inclination.
■ Once the correct setting has been found, secure the position of the fastening screws with the locking nut.
■ Adjust the brush strip.

7.3   Installing the lower door guides
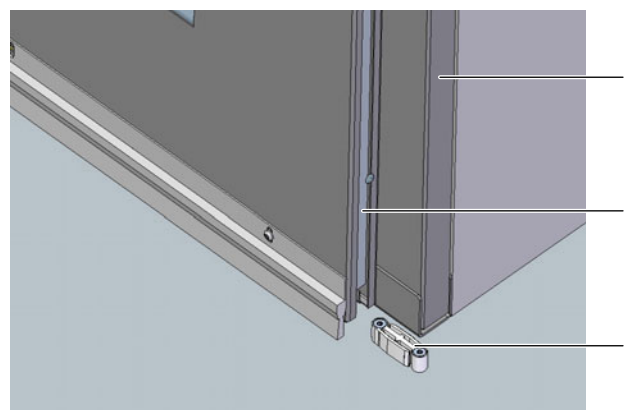Two door guides are installed on the base so that both doors also run guided at the bottom.

Fig. 26: Installation position of the left-hand door guide

Legend
1   Inside edge of the side panel (to the inside of the aisle containment)
2   Guide slider
3   Left-hand door

The side position of the guide should be chosen so that approximately half of the guide slider protrudes into the aisle. At the front, the centre of guide slider should be mounted approximately 22 mm from the side panel.
■ Mark the position of the door guide on the base.

- On the right-hand side of the door, use a screwdriver to carefully raise and completely remove the covering section.
  This must be done in order to introduce the door in the door guide.
- Initially, drill an appropriate 3.2 mm hole in the base through a fastening hole of the door guide.
- Use a 4.5 x 45 mm countersunk-head screw to loosely "screw" the door guide to the base.
- Introduce the door from inside into the door guide and open the door until the centre of the door is positioned over the door guide.
  The door guide should automatically align itself correctly.
- Then carefully move the door in the inside aisle containment direction completely from the door guide.
- In this position, predrill the second fastening points of the door guide in the base.
- Fix the door guide to the base with another 4.5 x 45 mm countersunk-head screw.
- Then reintroduce the door into the door guide.

The door guide for the right-hand door is installed similarly. The following must be observed:

- Initially fasten the door guide only with one screw.
- Then close both doors together in the centre.
- If necessary, use a screwdriver to move the position of the right-hand door guide so that the closed doors are parallel.

7.4   Installing the outer stopper

Two stoppers are installed in the guide rails at appropriate positions on the left- and right-hand side. These two stoppers keep the doors open in the fully opened position, e.g. for maintenance work. They also ensure that any excessively wide opening in the inside of the aisle containment does not cause any danger of being trapped between the door handle and the IT enclosures.

- Open the door sufficiently wide so that the inside edge of the door's window frame closes with the inside edge of the side panel (the inside of the aisle containment is so largely free, see fig. 28).
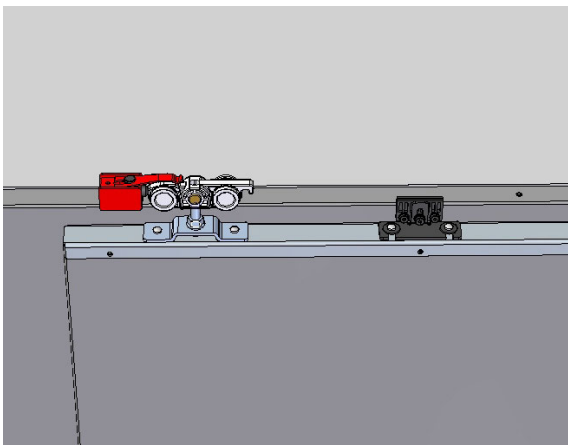

Fig. 27:   Positioning the outer stopper

- Mark the outer edge of the carriage facing away from the inside of the aisle containment in this position on the guide rail.
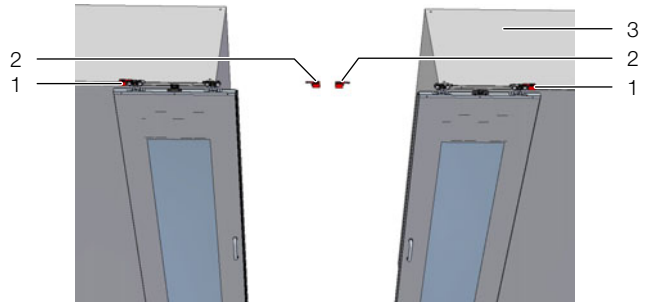 The inside edge of the stopper fastening block sits later at this position.

Fig. 28:   Positioning the outer stopper

Legend
1   Outer door stopper
2   Inner door stopper
3   IT enclosure

- Introduce the stopper from the open side into the guide rail so that the "tongue" points to the door.
- Secure the stopper from below with the two screws in the guide rail at the previously determined position.
- Open the door against the resistance of the stopper and check whether the door is arrested in the correct position.
- If necessary, correct the position and the closing force using the setting screw of the stopper tongue.
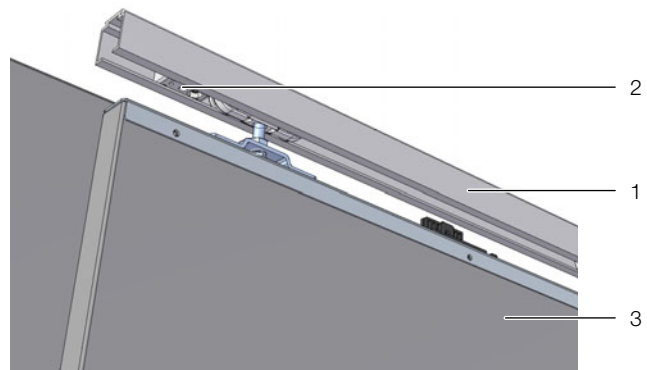
The stopper on the second door is installed similarly.

Fig. 29:   Positioning the outer stopper

Legend
1   Top rail
2   Left-hand outer door stopper
3   Left-hand door

7.5   Installing the door handles

To close the doors, a door handle is installed on the inside and outside of both doors. The centre of the handle should be at a height of approximately 1050 mm with a side clearance of approximately 50 mm from the inside door edge.
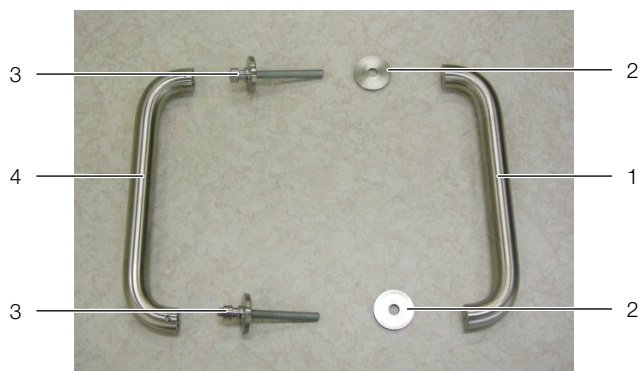
Fig. 30:   Individual components of the door handle

Legend
1   Outer door handle
2   Covers (two)
3   Through screws
4   Inner door handle

■ Insert the through screws from the inner side of the aisle containment through the drilled holes in the door.
■ On the outer side, first attach the covers to the through screws.
■ Then fasten the screws in the door handle.
■ Place the door handles from the inner side on the heads of the through screws and snap in so that each of the clamping screws in the handles points outside to the IT enclosure.
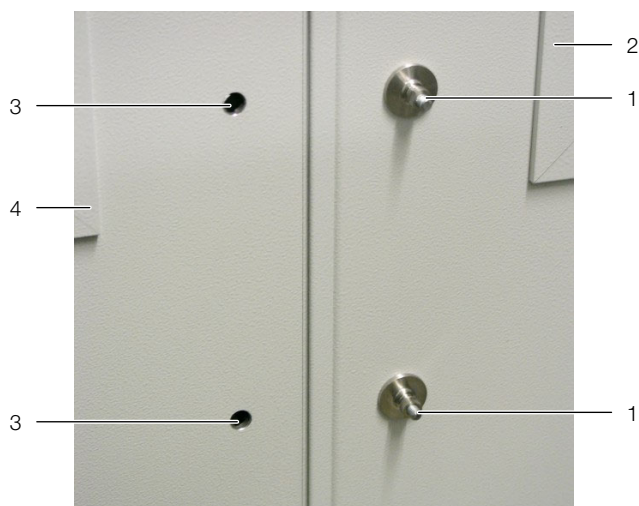

Fig. 31:   Fastening the door handles

Legend
1   Through screws (two)
2   Left-hand door, window frame inner side
3   Drilled holes for the through screws
4   Right-hand door, window frame inner side

Fig. 32:   Placing the door handles

Legend
1   IT enclosure
2   Side panel
3   Door handle
4   Aisle containment door

7.6   Installing the guide pulleys and the toothed belt

The two doors are opened synchronously using two guide pulleys and the toothed belt.
■ Insert the guide pulleys into the left- and right-hand guide rail, and position at approximately 50-100 mm from the door stopper. Fasten the guide pulleys from below with the clamping bolt.
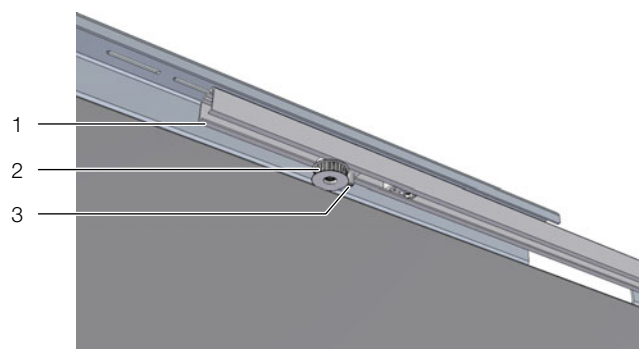

Fig. 33:   Installing the guide pulleys

Legend
1   Top rail
2   Guide pulley
3   Guide pulley clamping bolt

■ Loosen slightly the fastening screws of the toothed-belt connection plate on the right-hand door and fasten one end of the toothed belt at the right (fig. 34). Ensure that at least six teeth of the toothed belt engage.
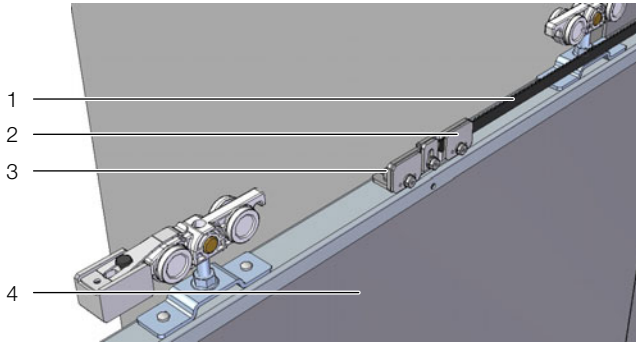
Fig. 34: Fasten the toothed belt to the right-hand door

Legend
1   Toothed belt
2   Right-hand toothed-belt connection plate
3   Door follower 1
4   Right-hand door

Fig. 35: Toothed-belt guide on the guide pulley

Legend
1   Toothed belt
2   Guide pulley
3   Top rail

■ Route the toothed belt from the front around the right-hand guide pulley to the left-hand guide pulley and then back to door follower 1 on the right-hand door. Fix the second end of the toothed belt at the left-hand side in door follower 1.
■ The toothed belt is tightened by moving the guide pulley.
■ Fix the toothed belt in door follower 2 on the left-hand door (fig. 36).
■ Check by opening and closing one door whether the other door opens and closes synchronously.

Fig. 36: Fasten the toothed belt to the left-hand door

Legend
1   Toothed belt
2   Door follower 2
3   Left-hand door

7.7   Final tasks

The following covers are installed finally:
– Door cover sections
– Guide rail cover (trim panels)

7.7.1   Installing the cover sections of the doors

■ Reinstall the cover sections of the doors on the side edge of the door, in particular those removed to install the door guides on the base.
■ If necessary, hit the cover section lightly with a soft hammer to press it over the complete height.

7.7.2   Installing the cover of the guide rail

Like the mounting brackets, the guide rail covers (trim panels) have three parts. Whereby, the left-hand trim panel is installed first, and then the right-hand trim panel.
■ Place the left-hand and the right-hand trim panel on the fastening strip, and fasten each with three M6 x 10 mm oval-head screws in the predrilled holes.
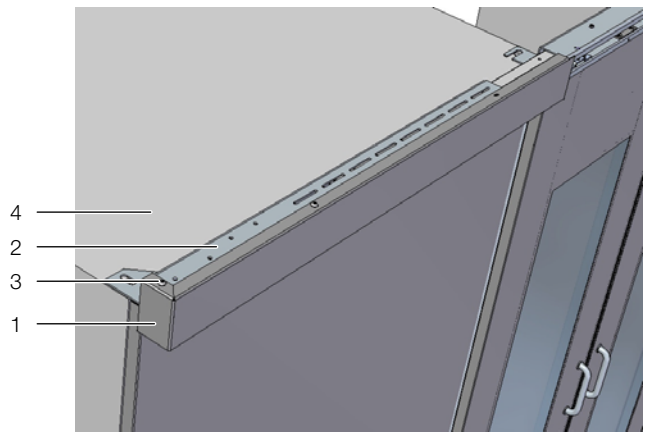

Fig. 37: Fastening the left-hand trim panel

Legend
1   Trim panel, left
2   Fastening strip, left
3   Oval-head screw, M6 x 10 mm
4   IT enclosure

■ Place the centre trim panel on the centre fastening strip and fasten with four oval-head screws M6 x 10 mm in the predrilled holes (fig. 38).
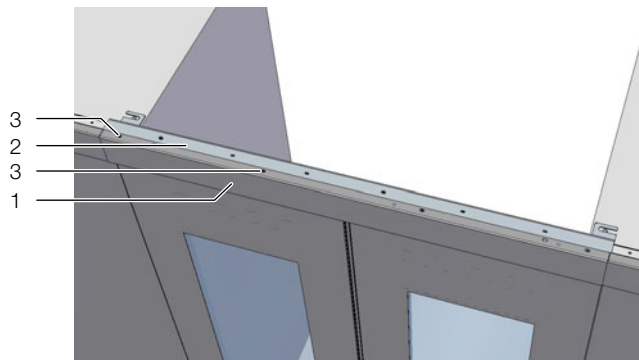

Fig. 38:   Fastening the centre trim panel

Legend
1   Trim panel, centre
2   Fastening strip, centre
3   Oval-head screw, M6 x 10 mm

7.8   Installing the front trim pieces (optional)

When installing the ceiling elements with aisle elevation (see section 9.1 "Ceiling elements with aisle elevation") trim pieces are installed on the fastening strips above the door element. These trim pieces prevent the direct view on the side of the aisle elevation.
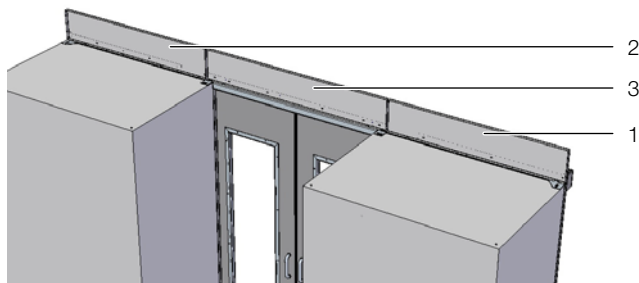

Fig. 39:   Front trim pieces (view from the rear)

Legend
1   Front trim panel, left
2   Front trim panel, right
3   Front trim panel, centre
4   Oval-head self-tapping screw, 4.2 x 9,5 mm
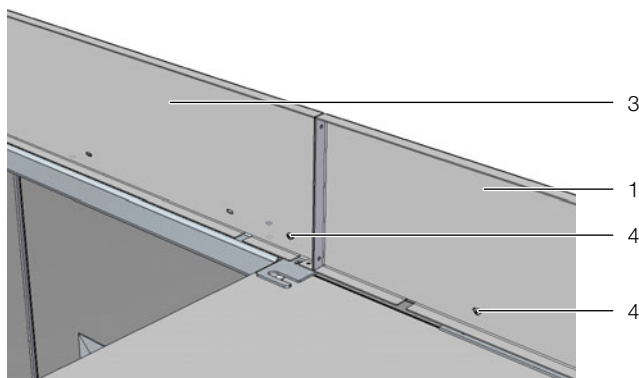

Fig. 40:   Front trim pieces (view from the rear)

■ Place the centre trim piece from the rear against the centre fastening strip, and align centred.
■ Screw with four 4.2 x 9.5 mm oval-head self-tapping screws through the predrilled holes to the fastening strip.
■ Place the left- and right-hand trim piece from the rear on the left- and right-hand fastening strip and align at the side so that it meets the centre trim piece.
■ In this position, screw the left- and right-hand trim piece over its complete length with 4.2 x 9.5 mm oval-head self-tapping screws onto the fastening strip.

7.9   Installing the self-closing mechanism

If the doors incorporate a self-closing mechanism, a pulley and a guide pulley must also be installed on the left- or right-hand side in the fastening strip.

7.9.1   Fastening the pulley and the guide pulley

Place the pulley and the guide pulley with angle bracket from below to the outer side of the fastening strip on the left- or right-hand side, and fasten each through the predrilled holes with two M6 x 12 mm hexagonal screws and M6 nuts (fig. 41).
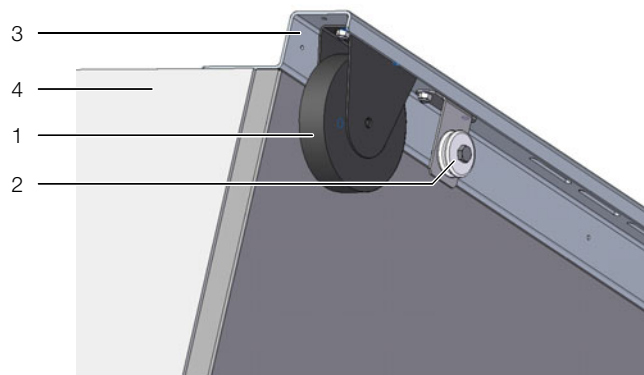

Fig. 41:   Installing the pulley and the guide pulley

Legend
1   Pulley
2   Guide pulley with angle bracket
3   Fastening strip, left
4   IT enclosure

Clamp the pulley through half a turn; do not unroll the cord! If the pulley sits on the left-hand side, the cord is fastened to the right-hand door. If the pulley sits on the right-hand side, the cord is fastened to the left-hand door.

■ Loosen the front screw from door follower 1. Route the cord end with the eyelet in front of the flanges and attach the eyelet to the screw for the door follower and refasten the screw to the door follower (fig. 42). Ensure that the cord does not rub against the flanges and the rolling apparatus
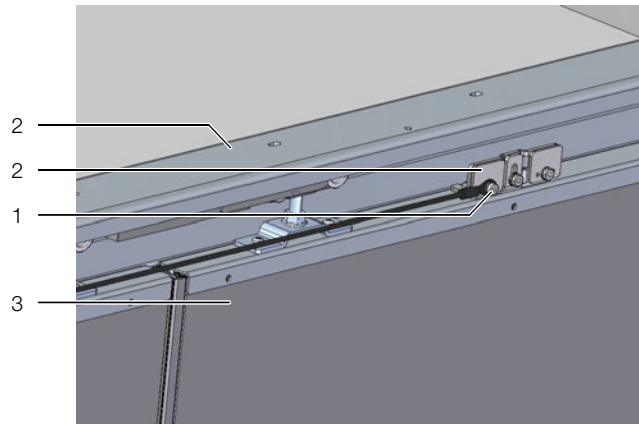
Fig. 42:   Fastening the cord end to door follower 1

Legend
1   Cord end with eyelet
2   Door follower 1
3   Right-hand door
4   Fastening strip, centre

7.9.2   Installing the pulley cover and trim panel
■ The pulley and the guide pulley must be covered. For this purpose, a shortened trim panel is installed on the left- or right-hand side (replacement for left- or right-hand trim panel in section 7.7.2).

Fig. 43:   Pulley cover and shortened trim panel

Legend
1   Pulley cover
2   Left and right trim panel, shortened

■ Place the cover with the edge fold left or right on the fastening strip, and align with the two fastening holes. Screw the cover with two M6 x 10 mm oval-head screws to the fastening strip.
■ Place the cover with the edge fold on the fastening strip, align using the two holes and fasten with two M6 x 10 mm oval-head screws.
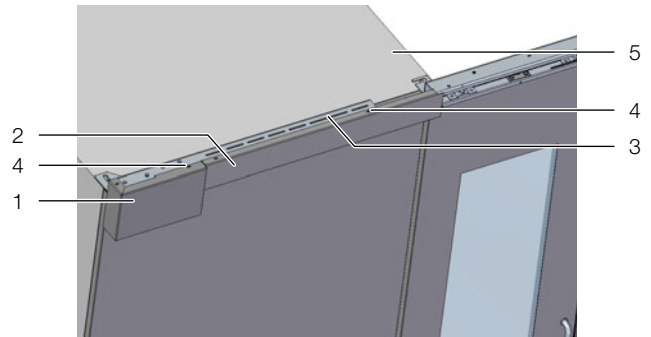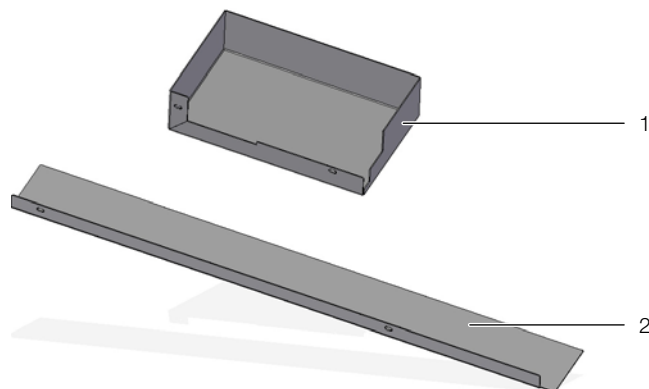Only then install the centre trim panel!

Fig. 44:   Installing the pulley cover and trim panel

Legend
1   Pulley cover
2   Trim panel, shortened
3   Fastening strip, left
4   Oval-head screw, M6 x 10 mm
5   IT enclosure, left

8 Installing ceiling elements (series version)

To seal the aisle containment at the top, ceiling elements made of polycarbonate panels are installed.

For the series version, preselect the components of the aisle covering that you require for the concrete installation situation.

Model no.	Dimensions (enclosure width x aisle width)
3311.270	600 x 1200 mm
3311.280	800 x 1200 mm

Tab. 1: Aisle covering start/end

Model no.	Dimensions (enclosure width x aisle width)
3311.170	600 x 1200 mm
3311.180	800 x 1200 mm
3311.190	300 x 1200 mm
3311.200	(600 + 300) x 1200 mm
3311.210	(800 + 300) x 1200 mm

Tab. 2: Centre aisle covering

8.1 Ceiling element start/end

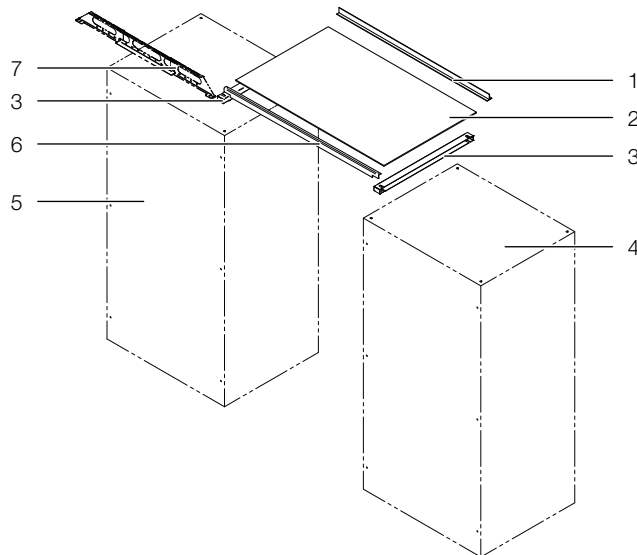An appropriate kit for the enclosure depth is required at the start and end of the aisle covering (Tab. 1)

Fig. 45: Aisle covering start/end

Legend
1   Centre roof bracket
2   Polycarbonate panel
3   Aisle elevation start/end
4   First IT enclosure, right
5   First IT enclosure, left
6   Roof bracket start/end
7   System support

Proceed as follows to install the aisle covering at the start or end of the enclosure suite:

■ Loosen the fastening screws of the first IT enclosure roof, but leave them in the roof.
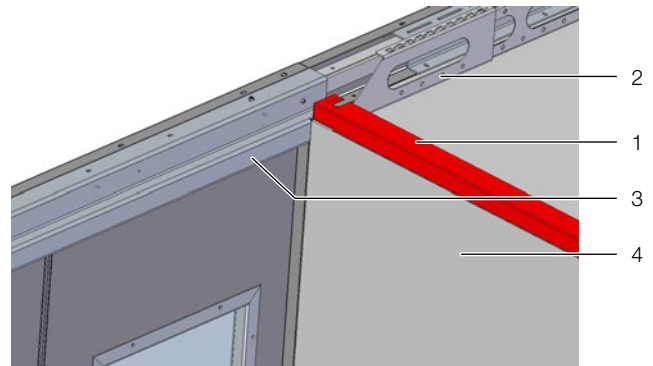

Fig. 46: Aisle elevation start/end installation

Legend
1   Aisle elevation start/end
2   System support
3   Fastening strip, centre
4   First IT enclosure

■ Place the aisle elevations (fig. 45, item 3) on the IT enclosure roof and push under the head of the fastening screw of the IT enclosure roof.
The notch in the aisle elevations on both sides allows them to be placed completely flush with the IT enclosure roof.
■ Retighten both fastening screws of the IT enclosure roof.
■ Proceed similarly for the aisle elevation on the opposite IT enclosure.
■ Place the roof bracket start (fig. 45, item 6) on the aisle elevation and fasten with two 4.2 x 9.5 mm oval-head self-tapping screws through the predrilled holes to the aisle elevation (see fig. 47).
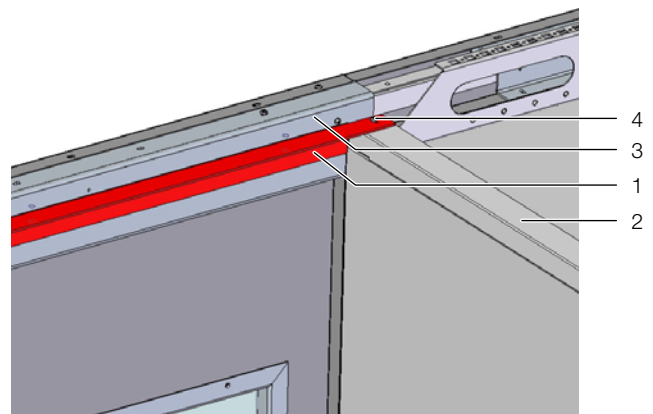

Fig. 47: Roof bracket start installation

Legend
1   Roof bracket start
2   Aisle elevation
3   Fastening strip, centre
4   Oval-head self-tapping screw, 4.2 x 9,5 mm

8.2 Centre ceiling elements

An appropriate kit for the enclosure width is required for the aisle covering on all following IT enclosures, other than the last enclosure (tab. 2).
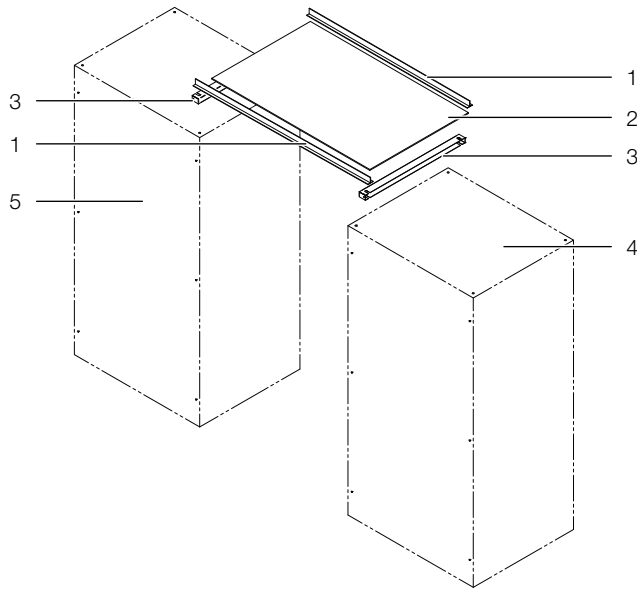

Fig. 48:   Centre aisle covering

Legend
1   Centre roof bracket
2   Polycarbonate panel
3   Centre enclosure elevation
4   Second or following IT enclosure, right
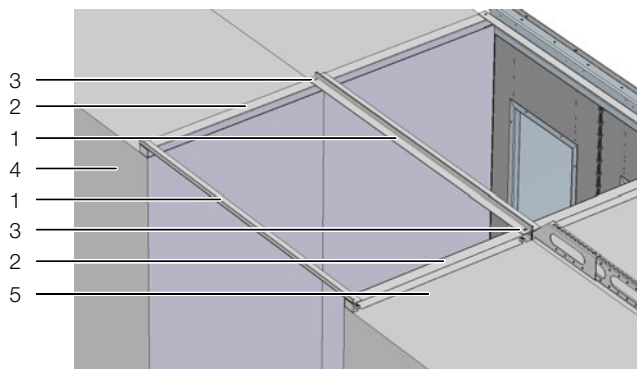5   Second or following IT enclosure, left

Fig. 49:   Centre aisle covering

Legend
1   Centre roof bracket
2   Centre enclosure elevation
3   Oval-head self-tapping screw, 4.2 x 9,5 mm
4   Second or following IT enclosure, right
5   Second or following IT enclosure, left

- Loosen the fastening screws of the IT enclosure roof, but leave them in the roof.
- Place the aisle elevations (fig. 49, item 3) on the IT enclosure roof and push under the head of the fastening screw of the IT enclosure roof.
- Retighten the fastening screw of the IT enclosure roof.

- Place the roof bracket centre flush on the aisle elevation and fasten with two screws through the predrilled holes to the aisle elevation.

8.3 Placing the polycarbonate panels

☞ Note:
To prevent fingerprints on the polycarbonate panels, wear appropriate gloves during the installation.

The polycarbonate panels are placed on the roof bracket beginning at the front.
- Attach 15 x 3 mm sealing tape to the roof bracket start (fig. 47, item 6) on the door element and to the centre on all roof brackets over their complete width.
- Attach 15 x 5 mm sealing tape (fig. 47, item 3) at the start on both aisle elevations on the left- and right-hand IT enclosure suite.
  The length of the sealing tape depends on the separation between both angle sections.

Fig. 50:   Attach the sealing tape

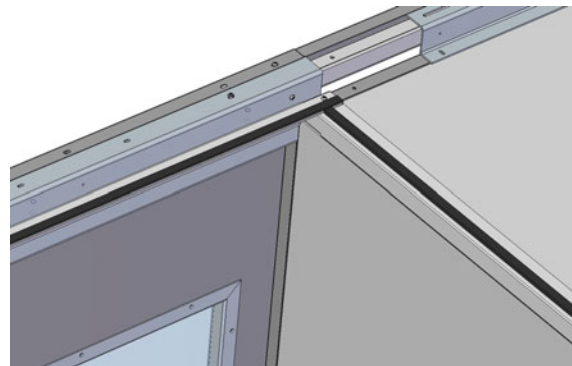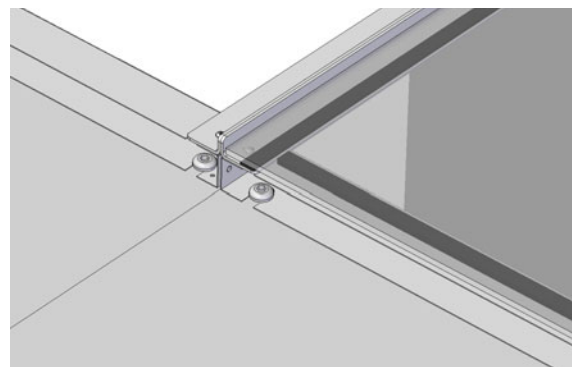Fig. 51:   Attach the sealing tape and place the plate

- Remove the protective foil from both sides of the polycarbonate panel (fig. 48, item 2).
- Place the polycarbonate panel and align it to the roof bracket start (fig. 47, item 6).
- Finally, reattach sealing tape to the aisle elevation of the next IT enclosure.
- Place all following polycarbonate panels including the last panel similarly.

9 Installing ceiling elements (project version)

To seal the aisle containment at the top, ceiling elements made of polycarbonate panels are installed. Alternatively, a seal can be made to the building ceiling of the installation room.

For the project version, all components of the ceiling elements are customised to the concrete installation situation of the associated project.

9.1 Ceiling elements with aisle elevation

9.1.1 Installing the aisle elevation (optional)

If the polycarbonate panels should not be placed directly above the IT enclosures, an aisle elevation with 100 mm or 200 mm height can be installed provisionally. The aisle elevations are supplied in 2 m units.

■ Precut the aisle elevations so that the complete length of the aisle containment is bridged.
■ Hold the aisle elevations at their fastening positions and mark the position of the fastening holes for the fastening screws of the IT enclosure roof, and then drill the holes.
■ Because the aisle elevation cannot be fastened with screws here, detach it at the position of the first and last fastening screws of the enclosure suite.
■ Loosen and remove the fastening screws of the IT enclosure roof.
■ Place the aisle elevations directly on the IT enclosure roof, also under any installed system supports.
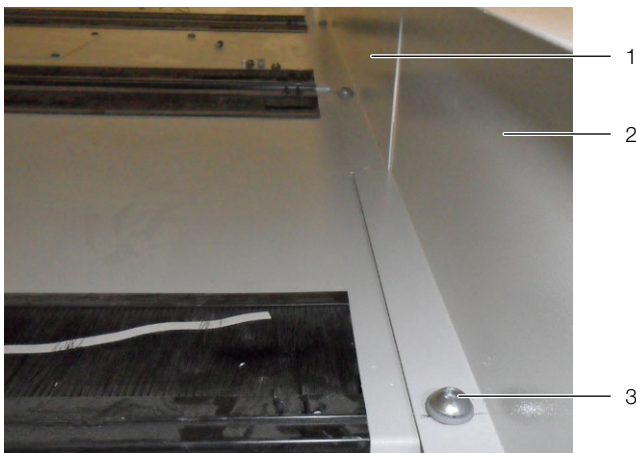

Fig. 52:   Aisle elevations (rear)

Legend
1   Aisle elevation (connection)
2   Aisle elevation
3   IT enclosure roof fastening screw

■ Reattach the fastening screw of the IT enclosure roof through any installed system supports and the aisle elevation.
■ Proceed similarly for the complete length of the aisle containment.

The upper flat surface of the aisle elevations serves later as contact surface for the polycarbonate panels. Similarly as for the deployment of rectangular tubes without aisle elevation (see section 9.2.1 "Fastening the rectangular tube"), sealing tape is applied over the complete length.

9.1.2 Fastening the roof brackets

A roof bracket is fastened at the front end of the IT enclosure suite (above the aisle containment door) and at the rear end (above the rear panel). These roof brackets prevent any sidewise movement of the polycarbonate panels and serve as separation.

Fig. 53:   Roof bracket above the aisle containment door

Legend
1   Aisle elevation
2   Roof bracket
3   Trim piece elevation

■ Place the roof bracket on the aisle elevation so that it protrudes equally at the left and right.
■ Drill a 3.2 mm hole from above through the roof bracket and the aisle elevation on the right-hand IT enclosure suite.
■ Insert a 3.2 x 10 mm blind rivet in the drilled hole and so fasten the roof bracket to the aisle elevation.
■ Similarly, attach the roof bracket to the aisle elevation of the left-hand IT enclosure suite.

Similarly, attach the roof bracket to the rear end above the rear panel.

9.2 Ceiling elements without aisle elevation

9.2.1 Fastening the rectangular tube

To provide a flat installation surface, the rectangular tube is installed completely on all IT enclosures. The aisle elevations are precut so that the complete length of the aisle containment is bridged.

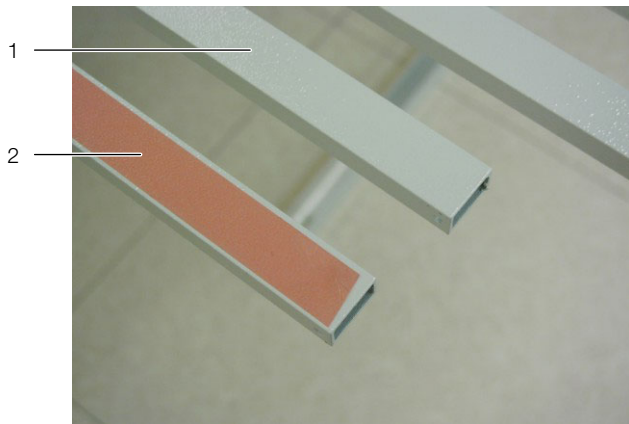■ Apply double-sided adhesive tape to one 30 mm wide side of the rectangular tube.

Fig. 54:   Rectangular tube

Legend
1   Rectangular tube
2   Double-sided adhesive tape

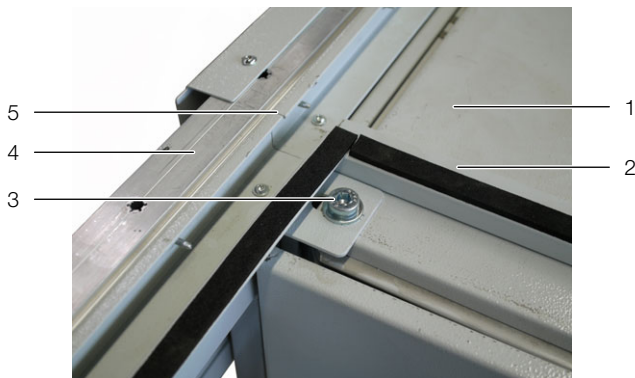■ Attach a rectangular tube to the right-hand IT enclosure suite to the right of the fastening strips.

Fig. 55:   Top view of an IT enclosure

Legend
1   IT enclosure
2   Rectangular tube
3   IT enclosure roof fastening screw
4   Guide rail
5   Fastening strip

■ Ensure that the rectangular tube lies parallel to the fastening screws over the complete length.
■ In this position, glue the rectangular tube over the complete length of the IT enclosure suite with the roofs.

Similarly, a rectangular tube is attached over the left-hand IT enclosure suite, although to the left of the fastening screws for the IT enclosure roof.

9.2.2   Fastening the terminating strips
A terminating strip is fastened at the front end of the IT enclosure suite (above the aisle containment door) and at the rear end (above the rear panel). This prevents any sidewise movement of the polycarbonate panels.
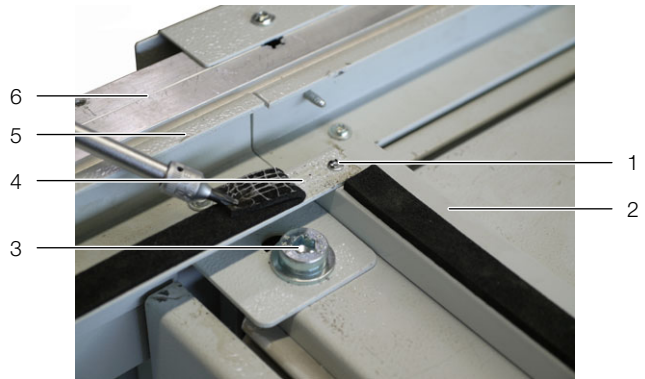

Fig. 56:   Terminating strip above the aisle containment door

Legend
1   Blind rivet
2   Rectangular tube
3   IT enclosure roof fastening screw
4   Terminating strip
5   Fastening strip
6   Guide rail

■ Place the terminating strip on the rectangular tube so that it protrudes equally at the left and right.
■ Drill a 3.2 mm hole from above through the terminating strip and the rectangular tube on the right-hand IT enclosure suite.
■ Insert a 3.2 x 10 mm blind rivet in the drilled hole and fasten the terminating strip onto the rectangular tube.
■ Similarly, attach the terminating strip to the rectangular tube of the left-hand IT enclosure suite.

Similarly, attach the terminating strip to the rear end above the rear panel.

9.3   Placing the polycarbonate panels

☞ Note:
To prevent fingerprints on the polycarbonate panels, wear appropriate gloves during the installation.

☞ Note:
The followings figures and descriptions describe the placing of the polycarbonate panels **without** aisle elevation. The installation for an aisle elevation is similar, however, on the aisle elevations rather that on the rectangular tubes and on the roof bracket rather than on the terminating strip.

The polycarbonate panels are now placed from the rear, beginning above the IT enclosures. For support and sealing, T-sections (30 x 40 mm) are laid successively in regular spacing over the complete aisle containment. These T-sections are cut appropriately to the width of the aisle containment.
This produces a separation between the T-sections that is 40 mm smaller than the panel width.

■ Attach 12 x 3 mm sealing tape to the terminating strip on the rear panel over its complete width.
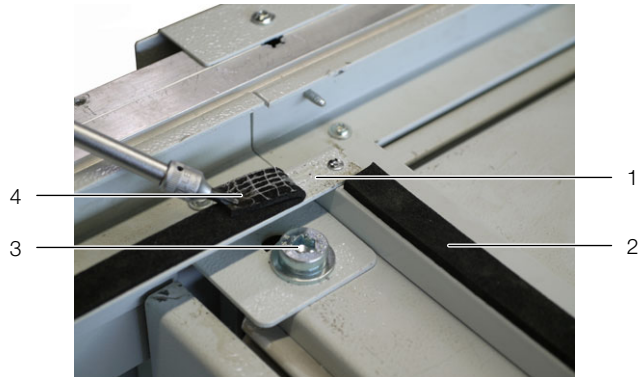

Fig. 57:   Sealing tape

Legend
1   Terminating strip
2   Sealing tape, rectangular tube
3   IT enclosure roof fastening screw
4   Sealing tape, terminating strip

■ Attach 12 x 5 mm sealing tape at the end of the terminating strip, beginning at both rectangular tubes on the left- and right-hand IT enclosure suite.
The length of the sealing tape depends on the separation between the terminating strip and the following T-section.

> Note:
> Sealing tapes with two different heights are required so that the polycarbonate panels lie flat over their complete length.

■ Remove the protective foil from both sides of a polycarbonate panel.
■ Place the polycarbonate panel and align the rear terminating strip.

Fig. 58:   Polycarbonate panel

Legend
1   T-section
2   Blind rivet for attachment of the T-section
3   Sealing tape, rectangular tube
4   Sealing tape, T-section
5   Polycarbonate panel

■ Attach sealing tape to both sides of the T-section.

■ Place the T-section initially in front of the polycarbonate panel.
■ Lift the polycarbonate panel slightly and push the T-section under so that the panel lies on the sealing tape.
■ Drill a 3.2 mm hole from above through the T-section and the rectangular tube on the right-hand IT enclosure suite.
■ Insert a 3.2 x 10 mm blind rivet in the drilled hole and so fasten the T-section on the rectangular tube.
■ Similarly, attach the T-section to the rectangular tube of the left-hand IT enclosure suite.
■ Finally, reattach sealing tape to the rectangular tube of the next subsection.
■ Place all following panels, including the last panel, between the front terminating strip above the door of the aisle containment and the first T-section.

9.4   Seal to the building ceiling
The aisle containment can also be sealed above to the building ceiling. In this case, similar as for the installation of an aisle elevation (see section 9.1.1 "Installing the aisle elevation (optional)"), install a separation that extends from the upper edge of the IT enclosures to below the building ceiling.

10 Customer service addresses

For technical questions, please contact:
Tel.: +49(0)2772 505-9052
E-mail: info@rittal.de
Homepage: www.rittal.com

For complaints or service requests, please contact:
Tel.: +49(0)2772 505-1855
E-mail: service@rittal.de

Rittal – The System.

Faster – better – everywhere.

- ■ Enclosures
- ■ Power Distribution
- ■ Climate Control
- ■ IT Infrastructure
- ■ Software & Services

06.2015 / Rev. 01A

ENCLOSURES   POWER DISTRIBUTION   CLIMATE CONTROL   IT INFRASTRUCTURE   SOFTWARE & SERVICES

RITTAL

FRIEDHELM LOH GROUP