

TECHNICAL SPECIFICATIONS

VERTICAL LIFTING PLATFORM

PH-400



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1. General description

1.1. Application

Lifting platform intended for the vertical transport of persons with impaired mobility for operation between two defined landing levels in houses, commercial establishments and public buildings.

The lifting platform is designed for permanent installation in a building within a space physically separated from the surroundings (enclosed liftway) and with doors on all accesses to the shaft. For lifting platforms with travel up to 3 m it is permitted that the shaft only be enclosed up to a height of 1100 mm above the upper landing level.

The dimension and rated load range are appropriate for a passenger either in a wheelchair or standing up, and also for a wheelchair user with an attendant. The dimensions are appropriate for users of both manual and motorised and compact and maneuverable wheelchairs for indoor use and which may overcome some obstacles outdoors (classes A and B according to the European standard EN 12184), as well as for medium-sized scooters. The range of dimensions and the entrance layouts mean that wheelchairs can turn on the platform surface in the event of a 90° boarding layout.

1.2. Regulations

The lifting platform complies with the 2006/42/EC Machinery Directive and may therefore be commercialised in any country in the European Union. It is also made in accordance with the EN 81-41 harmonized standard.

1.3. Characteristics

Rated load (Q)	300 or 400 kg
Rated speed (v)	0.15 m/s
Travel (R)	Up to 4 metres.
Type of drive	Direct acting hydraulic drive
Electrical characteristics	230V \pm 5% single-phase 50/60Hz. Other single-phase voltages available. The power draw at full load may reach 2000 W (8.5 A at 230 V).

2. Detailed description

2.1. Drive and guiding

Drive	<p>Direct acting hydraulic drive with side push effect.</p> <p>Double or triple acting telescopic cylinders, depending on the pit and travel values. Both cylinders with a 35 mm diameter piston, with inner hydraulic buffering, lower oil inlet, rupture valve and oil leakage collection in the cylinder head.</p>
Guiding	<p>The guiding of the sling of the lifting platform is by means of T65 calibrated lift guide rails. The guiding structure is supplied in a pre-assembled set consisting of two T65 calibrated guide rails soldered to UF50.120.3 cold-formed profiles, braced to each other and with the sling and the cylinder already installed.</p> <p>Depending on the travel, this guiding structure may be supplied in one section (up to 3000 mm) or in two sections (for travels larger than 3000 mm).</p>
Finishing	<p>Welded assembly and protection panels painted with epoxy-polyester paint in colour gray RAL 7035.</p> <p>Possibility of finishing in other colours in the RAL chart.</p>

2.2. Machine

Installation conditions	<p>Both the hydraulic power unit and the electric components of the lifting platform are located inside a small and compact cabinet.</p> <p>For lifting platforms with side access on the lower landing level, the cabinet is foreseen to be installed inside the hoistway in a position adjacent to the lower landing door on the side of the guide assembly (see installation details in section "3. Dimensions for installation"). The cabinet rests on the pit floor and, depending on the pit height, on the cutout prepared for the fixation of the lower landing level door (see section "2.5. Installation").</p> <p>For lifting platforms without side access on the lower landing level, the cabinet shall be installed outside the hoistway, in a position not adjacent to the guide and at a maximum distance of 10 meters from the guide assembly (see "3.7. Location of the machinery").</p>
Hydraulic power unit	<p>Hydraulic power unit with external motor, screw pump and valve block with soft starting and stopping in descent and soft starting in ascent. Additionally, starting in descent is adjustable. The valve block includes a descent electrovalve, a non-return valve and an overpressure valve, as well as a return filter and a pressure gauge with a protection valve. A manual descent push button is included in the block as means for emergency actuation to rescue passengers. A shut-off valve is also included in the cabinet.</p>
Electric board	<p>The control board is located inside the cabinet and it consists of the following components: main switch, motor circuit breaker, contactors, transformer battery packs and the main control board of the lifting platform. Terminals where a shaft lighting system could be connected are also included. A power socket is also included on the outside surface of the cabinet for inspection and maintenance operations.</p>
Finishing	<p>Cabinet painted with epoxy-polyester paint in colour gray RAL 7035.</p> <p>Possibility of finishing in other colours in the RAL chart, associated with the colour of the lower landing door and in the same colour as the door.</p>

2.3. Vehicle

The vehicle has an appropriately sized platform for use by persons in a wheelchair and a side protection wall on the side of the guiding column (on the side without access to the platform).

Push button panel

Control elements installed on an aluminium profile located on the upper section of the side protection wall on the side of the guide assembly.

Emergency alarm device

A sound alarm is available, activated by a push button installed on the push button panel to allow the passengers on the lifting platform to call for outside assistance in the event of breakdown.

In order to guarantee conformity of the lifting platform with the Machinery Directive 2006/42/EC the additional supply of one of the two following communication systems is mandatory (optional on request):

- Emergency telephone for use with telephone line integrated in the push button panel, which permits a two-way voice communication allowing permanent contact with a rescue service.
- Interphone for private line to allow communication with a fixed point such as a reception desk, integrated in the push button panel.

Miscellaneous

Stainless steel Ø30 handrail on the side wall protection.

Platform dimensions

Width (A): between 870 and 1100 mm

Depth (B): between 1250 and 1400 mm

Minimum dimensions for wheelchair users:

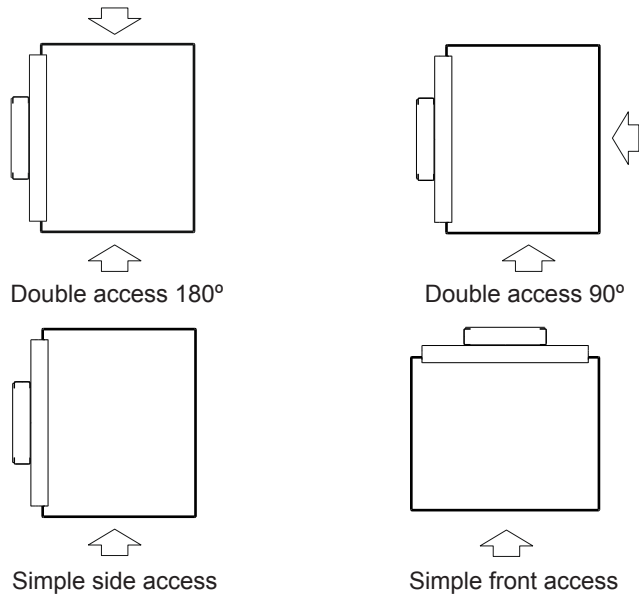
Use	A (mm)	B (mm)
Wheelchair	870	1250
Wheelchair with an attendant	900	1400
Wheelchair with an attendant in platforms with adjacent entrances at 90°	1100	1400

Maximum surface according to the rated load (Q):

Q (kg)	A·B (m ²)
300	1.20
400	1.54

Access layout

Double at 180°, double at 90°. Possibility of simple entrance.



Finishing

Protection panels and outside surfaces of the platform painted with epoxy-polyester paint in colour gray RAL 7035.

Possibility of protection panels and outside surfaces of the platform painted in other colours in the RAL chart.

Push button panel painted with epoxy-polyester paint in colour black RAL 9005.

Black vinyl anti-slip flooring.

Sensitive edges

The vehicle is equipped with a sensitive edge on the perimeter of the floor on every side of the platform except on the side protection wall on the guide assembly side.

An additional sensitive edge is included in the upper command profile on the surface facing the guide assembly.

2.4. Landing doors

Types

The following types of doors are available.

Semiautomatic swing door, glazed with a clear height of 2000 mm.

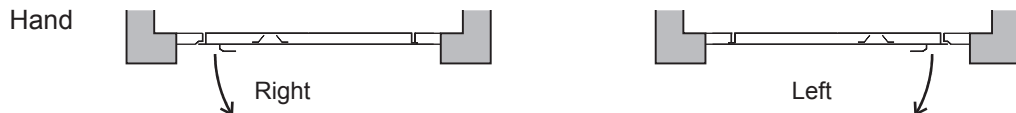
Semiautomatic swing door, glazed, without a lintel and a height of 1100 mm (only available for travels up to 3 m).

Semiautomatic swing door, glazed with a clear height of 2000 mm.

Swing door with clear height 2000 mm

Finishing Painted with epoxy paint in colour gray RAL 7035 with handle, push plate and glass frame in black. Possibility of finishing in other colours in the RAL chart.

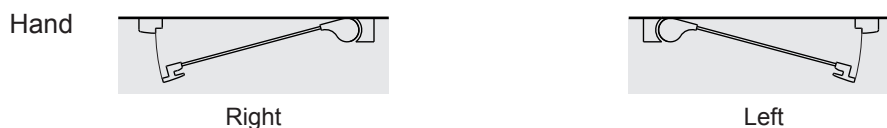
Dimensions Clear height (HL): 2000 mm
Clear opening (PL): 700, 800 (minimum for wheelchair users) or 900 mm.



Swing door without lintel height 1100 mm

Finishing Glazed leaf and posts and aluminium handle painted with epoxy-polyester paint in gray colour RAL 7035. Possibility of finishing in other colours in the RAL chart.

Dimensions Height (HL): 1100 mm
Clear opening (PL): 800, 900 mm



Automatic option

Automatic opening and closing of the doors.

Operator integrated inside the door lintel for swing doors with a 2000 mm clear height, and with a direct-current gear motor controlled by an electronic circuit with a microcontroller for swing doors without a lintel and height 1100 mm, with automation system integrated inside the post on the hinged side of the door.

Operation of the doors is completely integrated with the lifting platform control.

2.5. Installation

Installation of the lifting platform is foreseen inside a hoistway completely enclosed with construction walls, or inside an optional steel structure which allows both the fixation of the guide column and the enclosure of some or all the side walls so that no further brickwork would be necessary (see "2.6. Structure and enclosure").

In case of fixation of the guide on the wall, the column is intended to be fastened to the floor of the pit and to one of the walls of the hoistway at the height of the upper level slab and at the top end of the guide. In case of guides in a single section, a double fixation at the height of the upper level slab is provided for, for cases when there are no structural elements to which the top end of the guide may be fastened.

All the material required for the fixation of the guide assembly with mechanical anchorages for concrete is supplied. Possibility of chemical anchorages for fixation to other types of supports.

In case the guide is installed on the optional structure, the column shall be fixed to the crossbeams in the side wall of the structure and to the pit floor.

The reaction forces transmitted to the wall on which the guide is fastened are specified in the assembly instructions.

Electric and hydraulic

The hydraulic installation is supplied completely pre-assembled and requires only a connection between the hydraulic power unit in the cabinet and the guide. Connection is with a rigid pipe section when the machine cabinet is installed adjacent to the guide. When the cabinet is installed in a different location, connection shall be with metal double-mesh flexible hydraulic hosing, individually tested for pressure together with the corresponding connectors.

Oil inlet to the cylinder on the lower section through the rupture valve.

The electrical installation is also supplied completely pre-assembled, with the wiring in the vehicle and the guide assembly fully installed; only the connection between the vehicle and the guide assembly is required (with plug-in connectors), along with the connection between the guide assembly and the doors to the cabinet.

The installation requires that a lighting system that guarantees a minimum lighting level of 50 lux on the floor of the platform as well as on the area of the controls and near the landing doors is provided (not supplied). The switch for such a system (not supplied) shall be installed in a location protected from unauthorized actuation.

Doors

Door without lintel, height
1100 mm

The door is intended to be fastened directly on the floor of the upper landing level in case of fixation on the building, or on one of the crossbeams of the structure, so as to make a uniform and continuous surface towards the inside of the shaft of the lifting platform on the boarding edge (see "3. Dimensions for installation").

All of the material required for the fixation to the floor is provided and side fastening to other elements is not required. Three types of fastening are available as optional:

- Directly to the floor. This type of fastening requires no building preparation. A 6-mm thick panel is used that is attached to the floor using screws and sleeves for chemical studs. A 1-mm stainless steel plate is mounted on this panel as trim, which hides any imperfections of the visible edge of the floor, with a small ramp to bridge the difference in level between the plate and the panel. See "3.6. 1100 mm high swing door with no lintel".
- Using a panel embedded below the floor and attached to the structural concrete. This type of fastening requires building preparation, but leaves no differences in level in the transitory area because no plate is used on the floor. See "3.6. 1100 mm high swing door with no lintel".
- On a crossbeam of the structure. It is attached to it by means of nuts to the threaded studs provided. This type of fastening leaves no protrusion in the transitory area. See "3.6. 1100 mm high swing door with no lintel".

Door with a clear height
2000 mm

The door is foreseen to be fixed on all four sides. The fixation to the structure is bolted to the crossbeams and side pillars. In case the door is installed on the building brickwork, the side fixation is with metal brackets integrated in the jambs and with an upper fixation with brackets bolted to the lintel. The fixation of the sill on the lower landing level is foreseen with a support with an adjustable height fixed directly on the floor of the pit, for pits up to 130 mm deep. For larger pits and for the fixation of the upper landing level door, a small preparation of the shaft is required, consisting of a cutout for the fixation of the support (see details in section "3.5. 2000 mm clearance swing door").

All the required material for the fixation of the door is supplied.

2.6. Structure and enclosure

The structure is foreseen to be installed adjacent to the walls of the building, reducing or eliminating the need for further masonry work.

The structure may consist of a complete enclosure on all four side walls of the shaft so that no further masonry work is required, or it may consist of a partial enclosure only in some of the side walls, intended for installation attached to one or two walls of the building; this makes installation easier and reduces the need for further masonry works. The layout possibilities allow for installation in a large variate of situations (see "3.4. Structure dimensions in plan view").

For lifting platforms with door without lintel with a height of 1100 mm on the upper landing level, the structure reaches a height of 1100 mm above the landing level, and it is at level with the landing door and thus granting a partial vertical enclosure (see "3.6. 1100 mm high swing door with no lintel").

The structure is designed to be fixed to the pit floor and to the slab of the upper landing level. No intermediate fixations of the structure are required. All the material required for the fixation of the structure to the building with mechanical anchorages appropriate for concrete are supplied. Possibility of chemical anchorages for fixation to other types of supports.

The structure is of a modular design, made of folded metal sheet with bolted joints that require no welding during installation, and enclosure panels that are installed on the support profiles.

Layout

A basic configuration is available consisting of the enclosure of two side walls of the shaft, to which the two remaining side walls can be added, as options, until a completely enclosed structure on the four side walls can be configured.

The basic layout consists of the enclosure of two adjacent side walls which are always different to the side wall where the guide assembly is fixed and the wall where the access on the upper landing door is located. In this way, the structure consists of a corner which can be attached to the building.

As an option, enclosure of the remaining two side walls may be added:

- Side wall for fixation of the guide assembly: the resulting structure consists of three enclosed side walls, and with the side where the access door to the upper landing level installed on the building.
- Side wall for access on the upper landing level: the enclosure of the side wall for the fixation of the guide assembly is also required; the resulting structure is a complete enclosure on the four sides and with the access door to the upper landing level installed on the structure itself.

Finishing

Enclosure panels made of folded metal sheet or glazed with clear or frosted glass.

Painted with epoxy-polyester paint colour gray RAL 7035 as standard finishing for the profiles and the enclosure panels.

Options

Finishing of the profiles and enclosure panels in other colours in the RAL chart.

2.7. Control

The lifting platform includes a control panel on each landing level and also controls inside the vehicle.

Landing push button panels

One push button panel on each landing level to be installed on the frame of the landing doors. Push button panels with flush mounting controls installed on a stainless steel plate.

The following elements are included in the push button panels:

- Key enabling switch for restriction of use.
- Call push button with indication of busy lifting platform with outer illuminated ring.

Vehicle controls

Integrated in the upper aluminium profile in the side protection wall on the side of the guiding column, and at an appropriate height for use by wheelchair users. The following elements are included:

- Key enabling switch for restriction of use.
- Ascend and descend independent push buttons, with light indication of the actuation.
- Push button for the sound alarm, and, where applicable, for the activation of the emergency telephone.
- Emergency stop push button with light indication of activation.
- Acoustic and light overload indicator.
- Integrated emergency telephone, where applicable.
- Characteristics plate with indication of the load, use, logotype and reference. The emergency lighting is also included.

Control features

Control based on integrated electronics with microcontroller with the following main features:

- Automatic movement of the lifting platform (not hold to run operation) from the landing push button panels.
- Movement from the vehicle controls with hold to run control.
- Priority of the vehicle commands over the landing push button panel commands.
- Landing detection with magnetic switches.
- Movement of the car is subject to the landing doors being closed and locked and to the sensitive edges not being actuated.
- Relevelling with open doors.

2.8. Safety elements

Among the safety and protection measures of the lifting platform, the following may be highlighted:

General

- Rupture valve as a safety measure against descent at excessive speed due to rupture of piping.
- Doors with electric control both of the closure and the locking of the lock.
- Re-levelling with open doors system as a safety measure against creepage.
- Upper final limit switch.
- Control of the maximum motor and descent electrovalve electric supply times.

Use

- Sensitive edge on all sides of the platform except on the protection wall on the side of the guiding column. In case of actuation, movement of the vehicle in descent direction is allowed.
- Sensitive edge on the guide side wall, integrated on the upper section of the aluminium profile. In case of actuation, movement of the vehicle in descent direction is allowed.
- Load control system with pressure transducer.
- Emergency stop push button in the vehicle.
- Sound alarm activated by a push button in the vehicle to call for outside assistance in case of being trapped inside the vehicle due to breakdown.
- Emergency alarm device in the vehicle to permit a two-way voice communication allowing permanent contact with a rescue service so that passengers may call for outside assistance (optional on demand).
- Descent operation with battery supply to the lower landing level and unlocking of the lock, commanded from the vehicle in case of power supply failure.
- Manual descent push button in the hydraulic power unit for rescue operations in case of breakdown.
- Manual opening of the doors with the triangular safety key for rescue of passengers in case of breakdown.

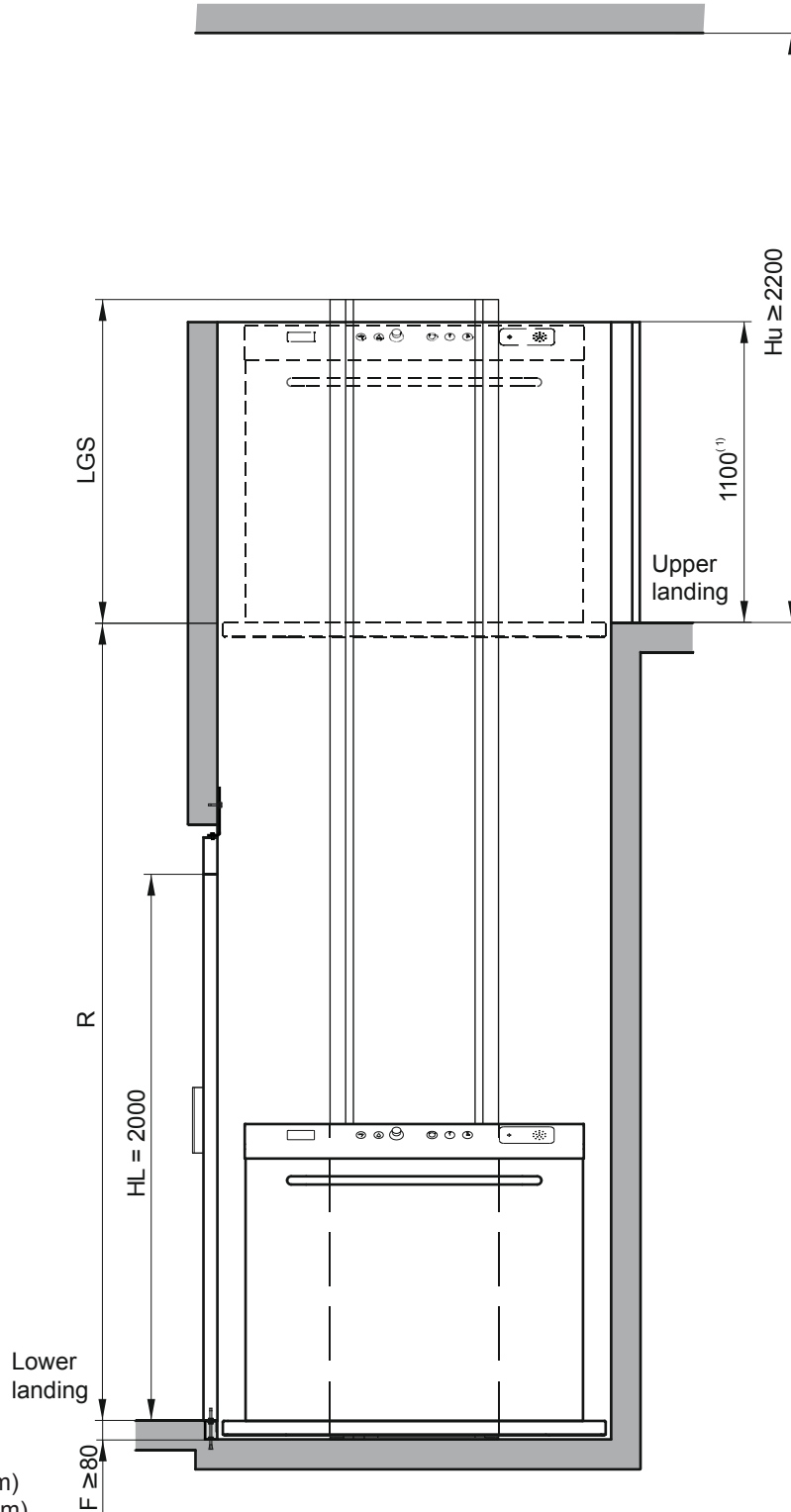
Maintenance

- Designed so that maintenance operations may be carried out from the pit and from the inside of the lifting platform.
- Movable safety blocking device to guarantee the necessary safety spaces for the maintenance operations in the pit. The device is manually activated and includes an acoustic signal that warns of access to the pit until the device has been activated.
- System for pit access detection for maintenance operations which is activated when the opening of the lower landing level door with the emergency triangular key is detected, and which prevents the normal operation of the lifting platform.

3. Dimensions for installation

3.1. Minimum shaft dimensions in elevation

Upper landing level with swing door without lintel and height 1100 mm



- R Travel (maximum 3 m)
- F Pit (maximum 300 mm)
- Hu Headroom

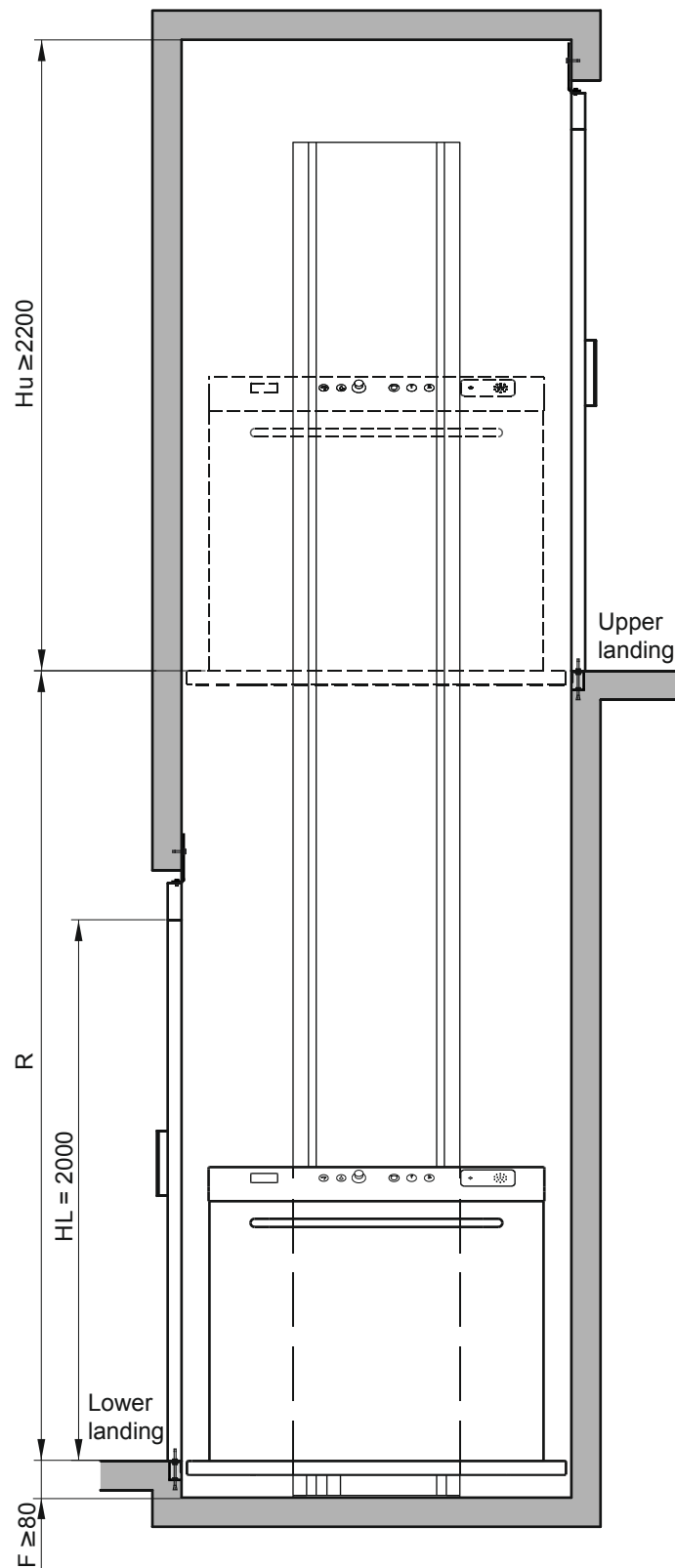
HL Clear height of swing glazed door on the lower landing level
 LGS Height of the guide assembly above the upper landing level:

1100 mm for $R \leq 2,829 \times F + 1339$ ($R_{\text{máx}} = 1550$ mm for $F = 80$ mm)

$R/2,829 - F + 627$ for $R > 2,829 \times F + 1339$ ($LGS_{\text{máx}} = 1960$ mm for $F = 80$ mm and $R = 4000$ mm)

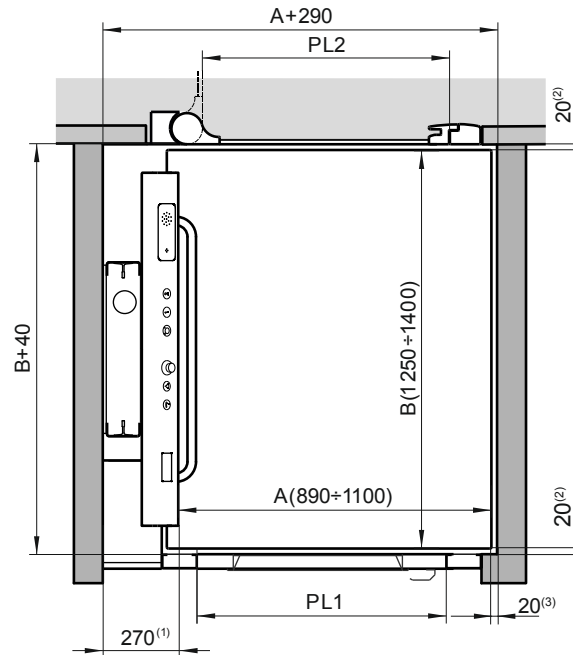
(1) Height of the enclosure on the upper landing level and height of the swing door without lintel

Upper landing level with swing door with a clear height 2000 mm

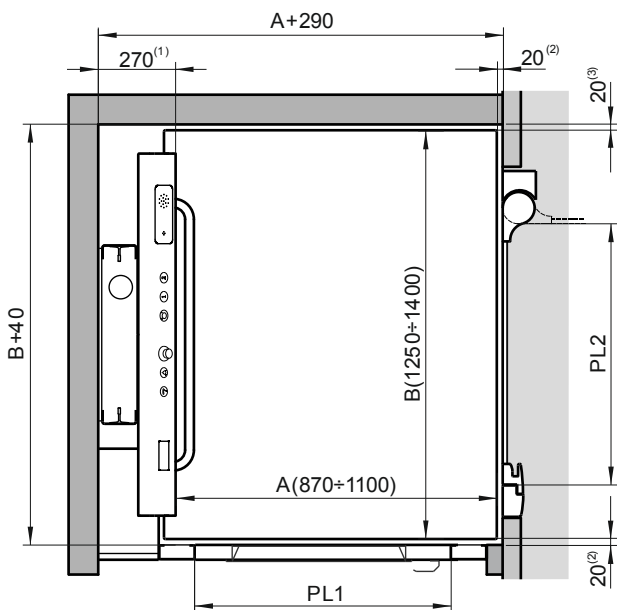


- R Travel (maximum 4 m)
- F Pit (maximum 300 mm)
- Hu Headroom
- HL Clear height of the doors

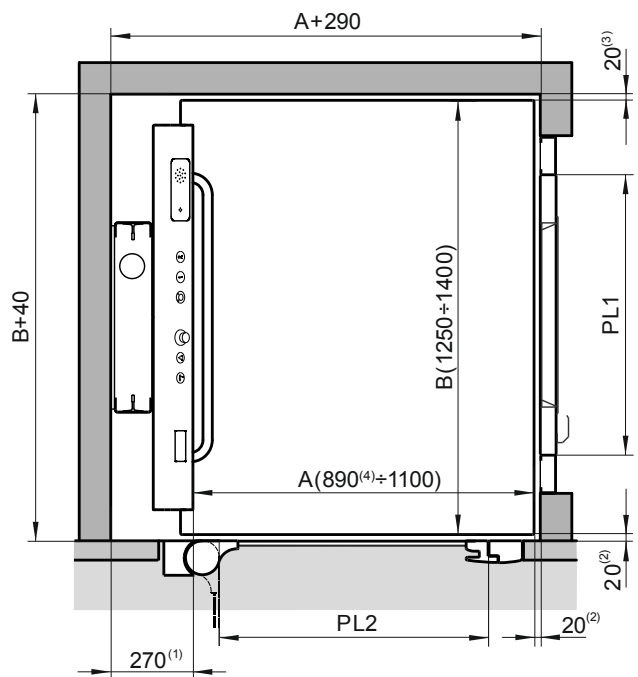
3.2. Minimum shaft dimensions in plan view



Double entrance at 180°



Double entrance at 90° with side bottom access



Double entrance at 90° with front bottom access

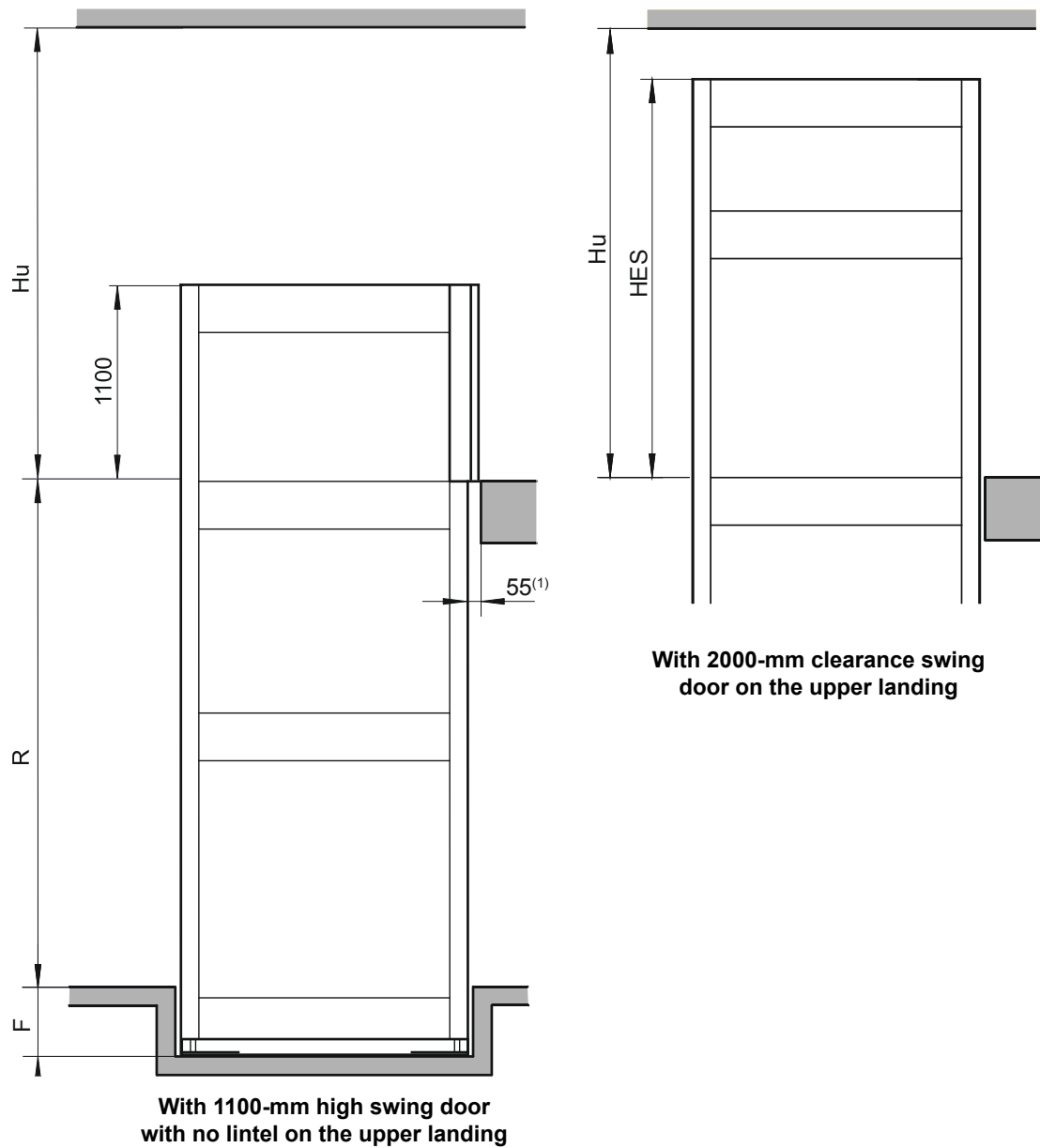
- A Platform width
- B Platform depth

PL1 Clear opening through lower landing door (at side bottom access, max. A-170)

PL2 Clear opening through upper landing door (at side top access, max. A-90 for 1100-high door with no lintel or max. A-105 for 2000-high door)

- (1) Distance between platform and guide rail fastening wall. The guide rail adjustment allows a maximum distance of 280 mm
- (2) Distance between platform and access
- (3) Distance between platform and wall on the non-boarding side
- (4) At least 870 mm for 2000-high door on upper landing

3.3. Structure dimensions in elevation



R Travel

F Pit

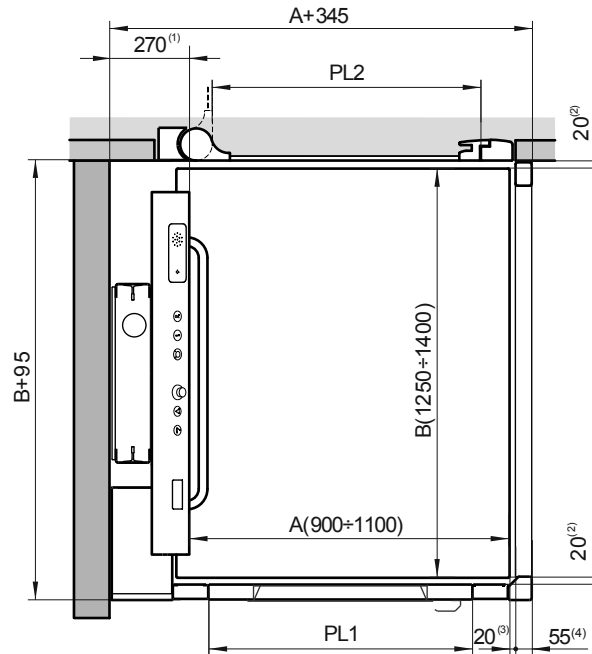
Hu Headroom

HES Height of the structure above the upper landing level

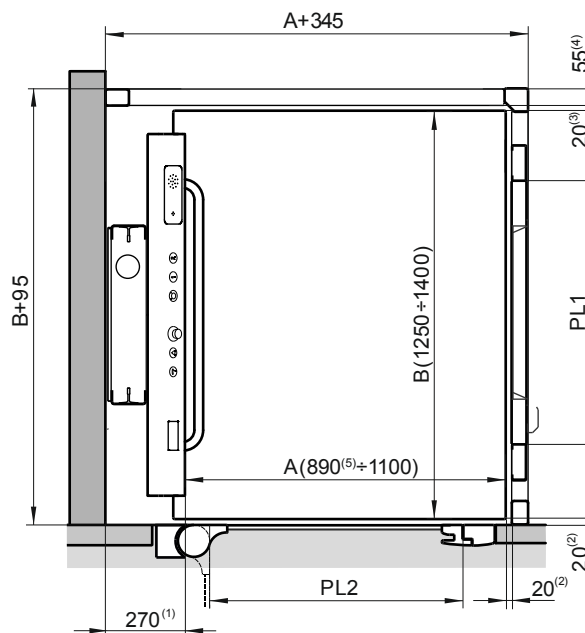
(1) Distance between structure and upper landing slab for 1100-high door with no lintel (only for four-sided enclosure)

3.4. Structure dimensions in plan view

Two-sided enclosure



Double access 180°



Double boarding 90° with front bottom access

A Platform width
 B Platform depth

PL1 Clear opening through lower landing door (at side bottom access, max. A-200)

PL2 Clear opening through upper landing door (at side top access, max. A-90 for 1100-high door with no lintel or max. A-105 for 2000-high door)

(1) Distance between platform and guide rail fastening wall. The guide rail adjustment allows a maximum distance of 280 mm

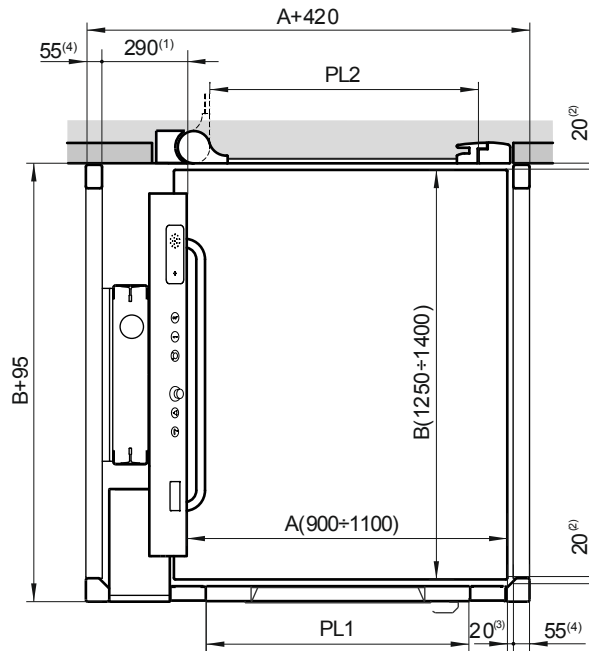
(2) Distance between platform and access

(3) Distance between platform and enclosure inside on the non-boarding side

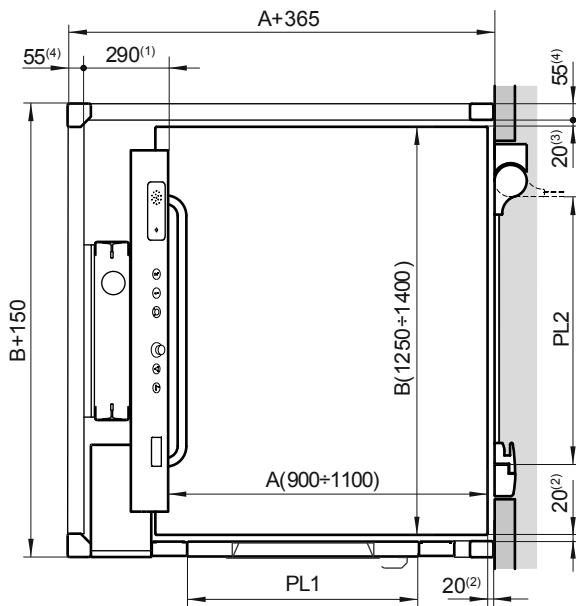
(4) Width of structure crossbeam

(5) At least 870 mm for 2000-high door on upper landing

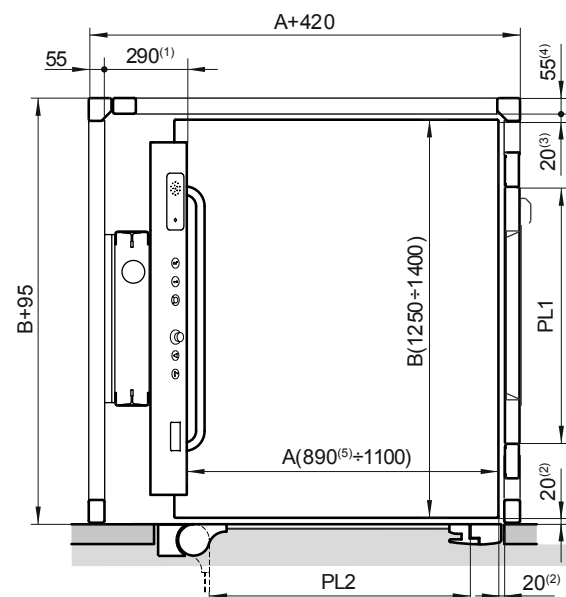
Three-sided enclosure



Double access 180°



Double boarding 90° with side bottom access



Double boarding 90° with front bottom access

A Platform width

B Platform depth

PL1 Clear opening through lower landing door (at side bottom access, max. A-200)

PL2 Clear opening through upper landing door (at side top access, max. A-90 for 1100-high door with no lintel or max. A-105 for 2000-high door)

(1) Distance between platform and inner surface of the enclosure on the guide rail assembly side

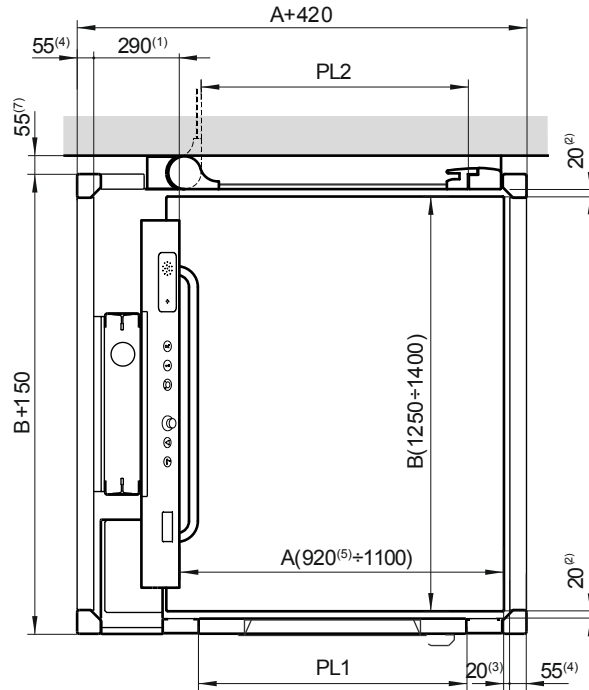
(2) Distance between platform and access

(3) Distance between platform and enclosure inside on the non-boarding side

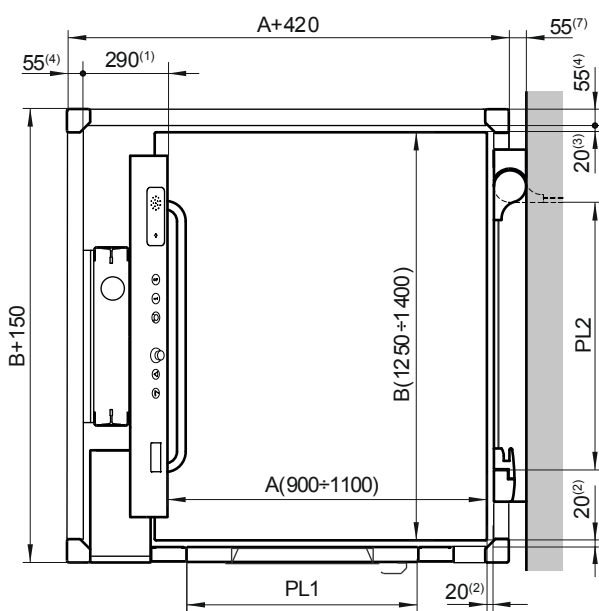
(4) Width of structure crossbeam

(5) At least 870 mm for 2000-high door on upper landing

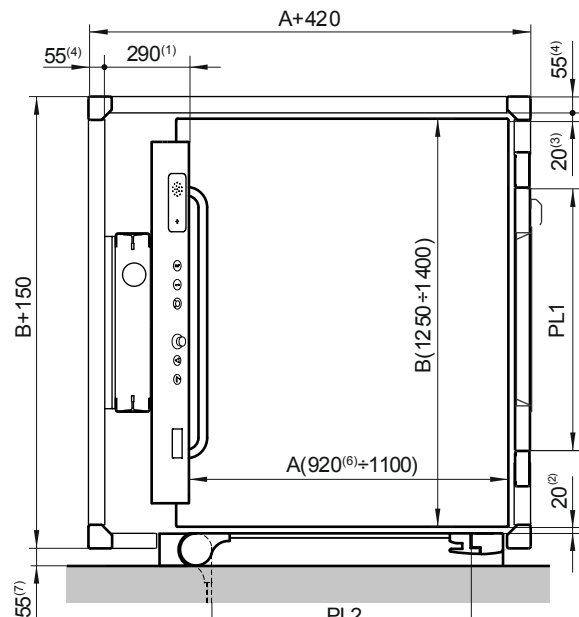
Four-sided enclosure



Double entrance at 180°



Double entrance at 90° with side bottom access

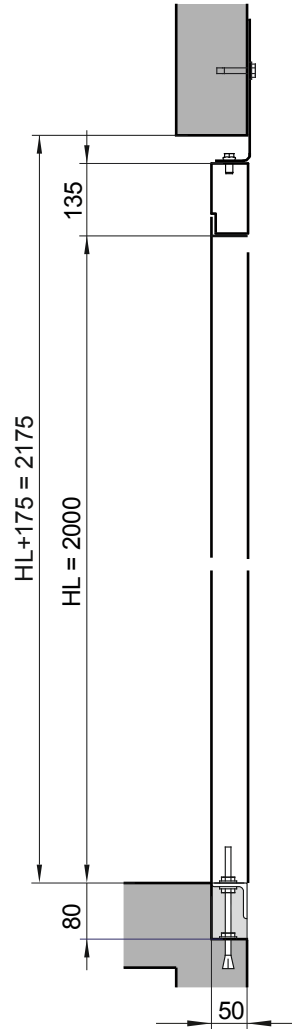


Double entrance at 90° with front bottom access

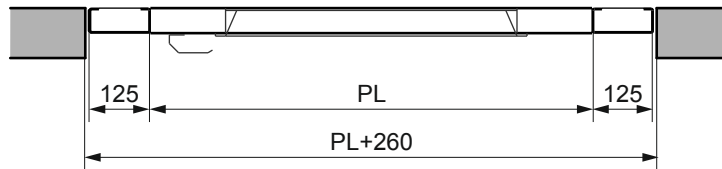
- A Platform width
- B Platform depth
- PL1 Clear opening through lower landing door (at side bottom access, max. A-200)
- PL2 Clear opening through upper landing door (at side top access, max. A-120 for 1100-high door with no lintel or max. A-135 for 2000-high door)
- (1) Distance between platform and inner surface of the enclosure on the guide rail assembly side
- (2) Distance between platform and access
- (3) Distance between platform and enclosure inside on the non-boarding side
- (4) Width of structure crossbeam
- (5) At least 900 mm for 2000 -high door on upper landing
- (6) At least 870 mm for 2000-high door on upper landing
- (7) Distance between structure and slab of the upper landing (only for 1100-high door with no lintel)

3.5. 2000 mm clearance swing door

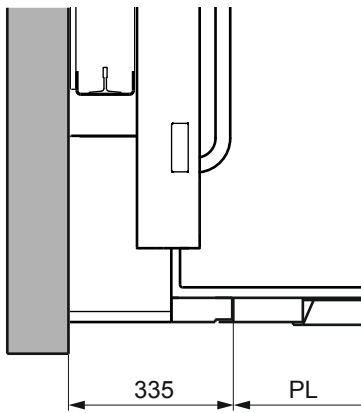
Dimensions in elevation



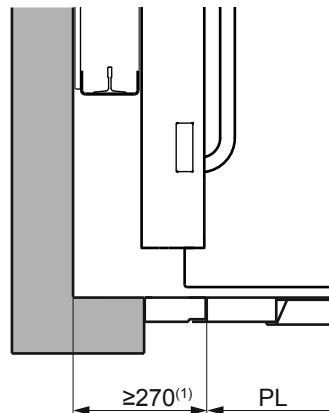
Dimensions in plain view



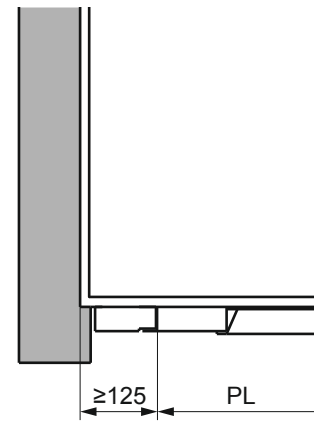
Position on the building slab



**Adjacent to the guide
at lower landing**



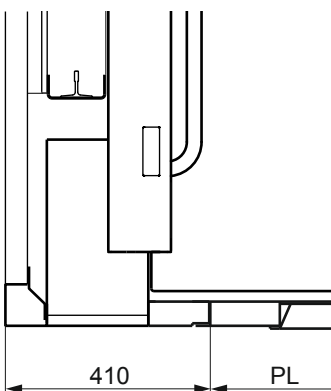
**Adjacent to the guide
at upper landing**



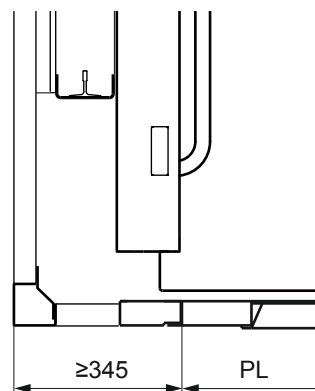
**Not adjacent to
the guide**

⁽¹⁾ At least 290 mm for structure on guide rail side up to the inside of the enclosure, .

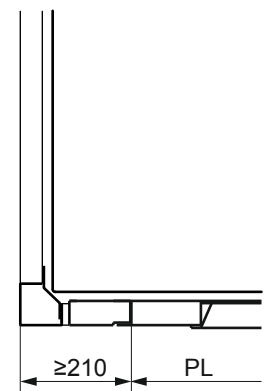
Position on the structure



**Adjacent to the guide
at lower landing**



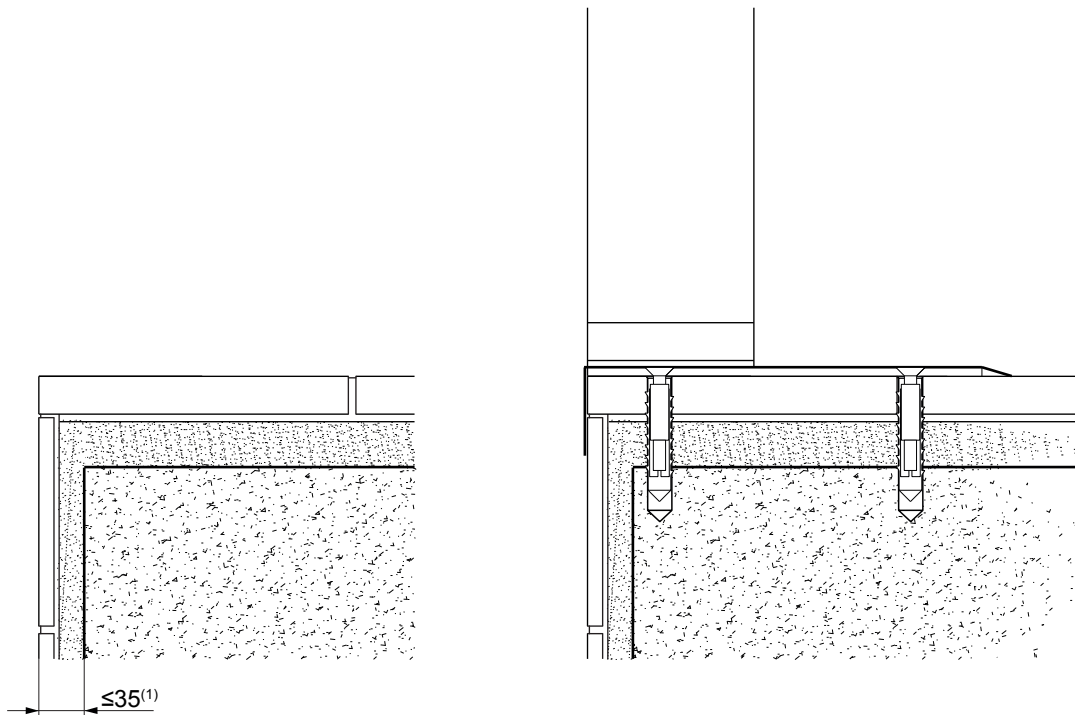
**Adjacent to the guide
at upper landing**



**Not adjacent to
the guide**

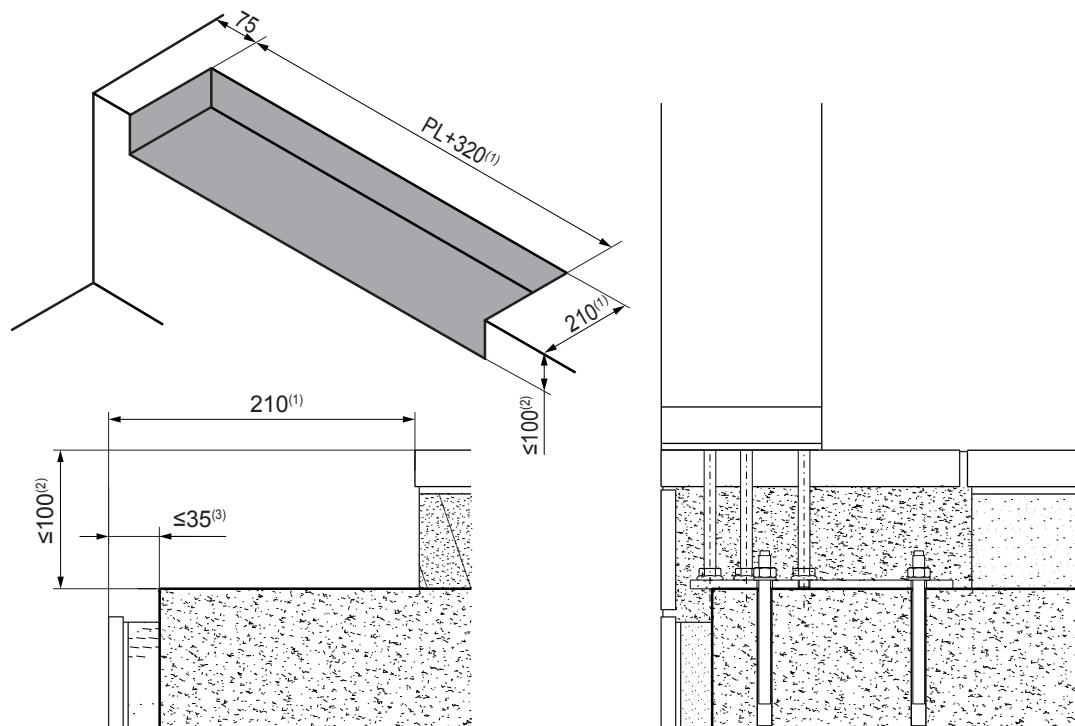
3.6. 1100 mm high swing door with no lintel

Direct attachment to the floor



⁽¹⁾ Maximum wall plastering or covering thickness

Attachment using a built-in plate

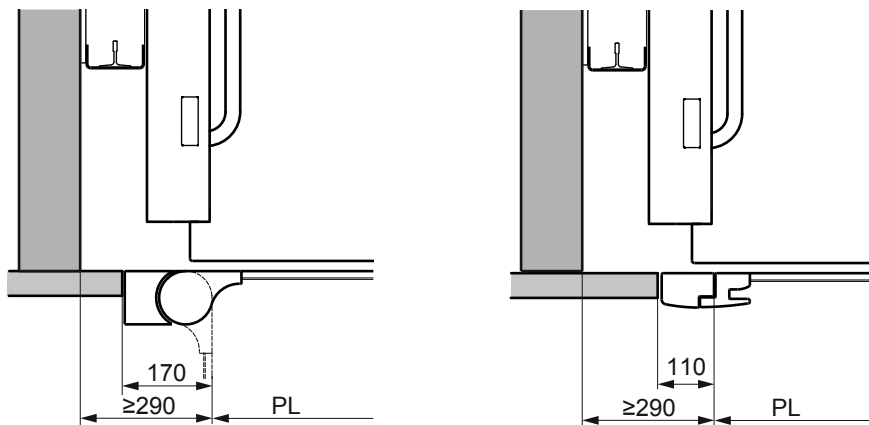


⁽¹⁾ Minimum space for base plate housing

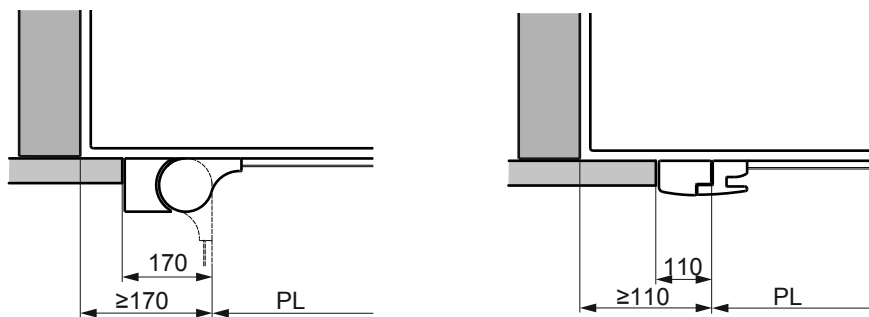
⁽²⁾ Maximum distance to concrete

⁽³⁾ Maximum wall plastering or covering thickness

Position on the building slab

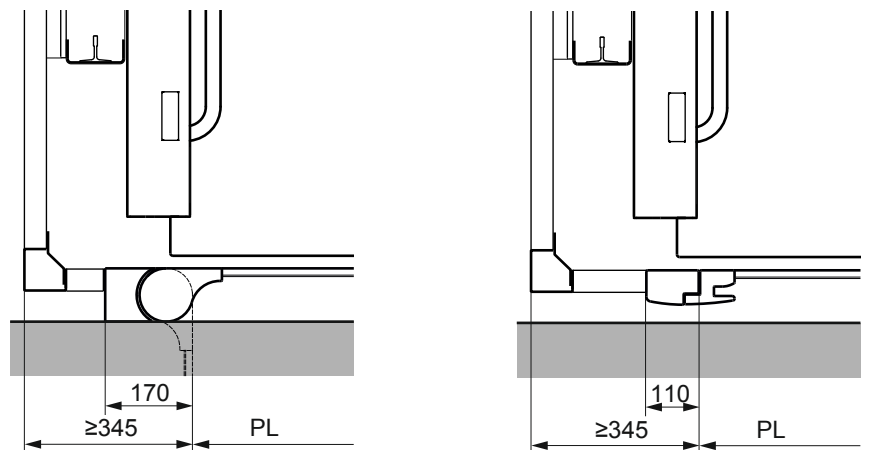


Adjacent to the guide

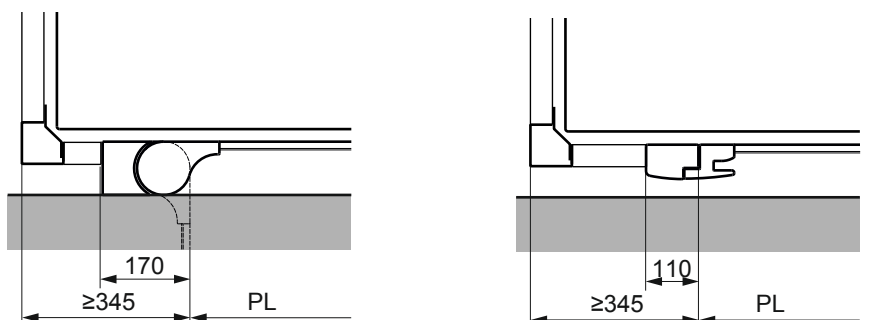


Not adjacent to the guide

Position on the structure



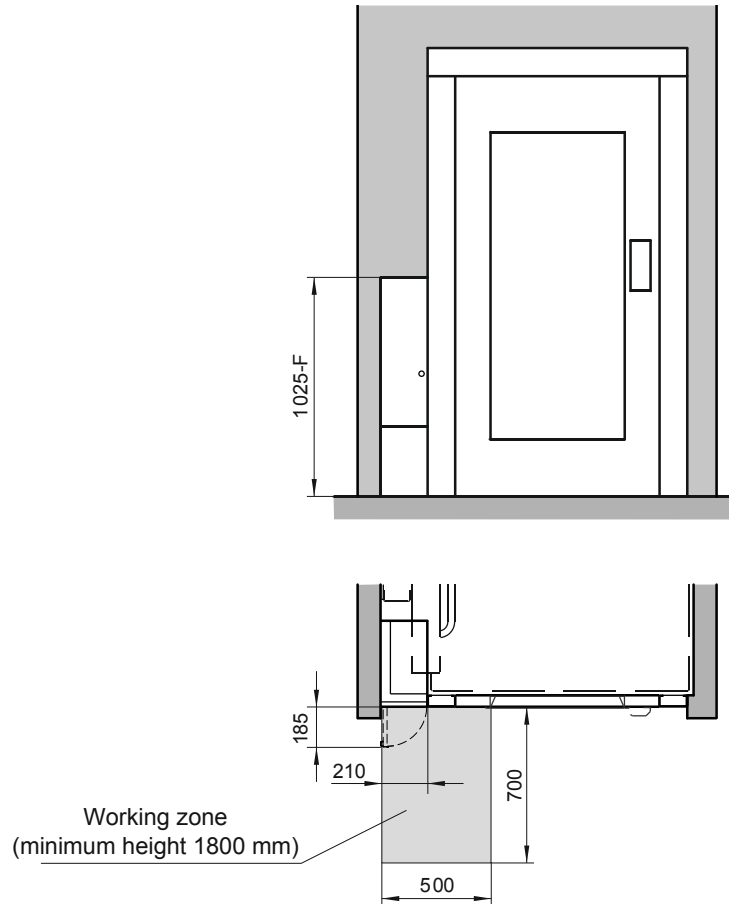
Adjacent to the guide



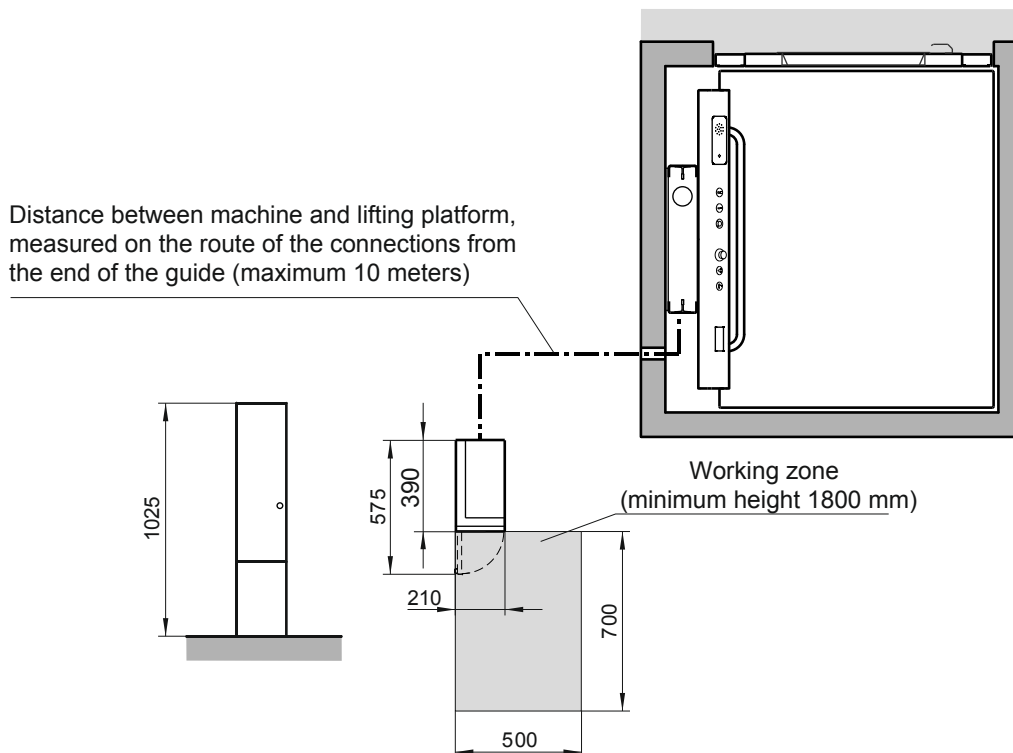
Not adjacent to the guide

3.7. Location of the machinery

Adjacent to the guide at lower landing



Not adjacent to the guide





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