CAR LIFTING PLATFORM

ECH

TECHNICAL SPECIFICATIONS

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Contents

1. General description

1.1. Application

Vertical lifting platform intended for the transport of motor vehicles together with its occupants; the lifting platform is designed for use between defined landing levels and is intended for use by personnel both authorised and instructed in the use.

It is intended for installation in parkings for private residences or small buildings.

The lifting platform is designed for permanent installation in a building, with a space physically separated from the surroundings (enclosed shaftway) and with door on all accesses to the shaftway.

1.2. Regulations

The lifting platform complies with the 2006/42/EC Machine Directive and may therefore be commercialized in all countries in the European Union. The lifting platform is classified as belonging to the category of devices for the lifting of persons or of persons and goods involving a hazard of falling from a vertical height of more than three meters. Taking this classification into consideration, the procedure for the assessment of conformity with a full quality assurance system is applied.

1.3. Characteristics

Rated load

Models with rated load of 2000, 2500, 3000 and 3500 kg are available, depending on the car surface (minimum 200 kg/m^2, see "2.6. Car")

Speed

0.1 m/s

Stops

2 or 3 stops

Travel

Up to 7 meters, depending on the available pit and headroom.

Please enquire for larger travels.

Type of drive

Hydraulic direct action.

Electric characteristics

There are two independent circuits in the lifting platform: a main circuit and an additional circuit for the lighting both of the car and of the shaft. Each of these circuits requires an independent supply with the following characteristics.

Main circuit: 400 V ± 5% three-phase 50/60 Hz (other voltages available). The maximum line current consumption at full load may reach the following values:

Q (kg)	Current (A)(1)
2000	20
2500	
3000	25
3500	

(1) For supply voltage 400V

Lighting circuit: 230 V ± 5% single-phase 50/60 Hz (other voltages available). Depending on the travel of the lifting platform, the power draw may reach 1100 W.

2. Detailed description

2.1. Drive

Direct acting hydraulic drive. The lifting platform has two facing guiding columns, one on each side of the car. The sling and the cylinders are supplied preassembled on these columns.

Cylinder

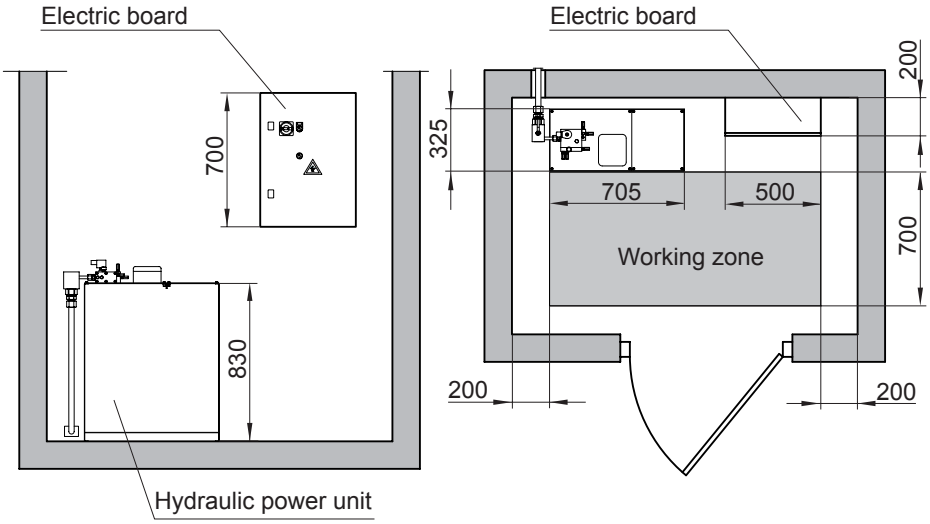
Cylinders with inner hydraulic buffering, with interconnected rupture valves to ensure simultaneous actuation, oil leakage collection in the cylinder head and oil inlet in the lower section of the cylinder.

Depending on the dimensions of the car, the travel and the values of pit and headroom, the cylinders may be simple with a 8 diameter of 80 or 90 mm, or telescopic with 2 or 3 expansions with a 60 mm diameter rod.

2.2. Machine

Both the hydraulic power unit and the electric board shall be installed in a closed machine room for the exclusive use of the lifting platform, or inside the optional machine cabinet. This machine room shall have a permanent lighting installation and appropriate ventilation.

The lifting platform is foreseen to be installed with the machine room at a maximum distance of 10 m from the oil inlet to the cylinder. Enquire in case of larger distances.



Hydraulic power unit

Single speed hydraulic power unit with a motor-pump assembly with a submerged motor and low noise level screw pump.

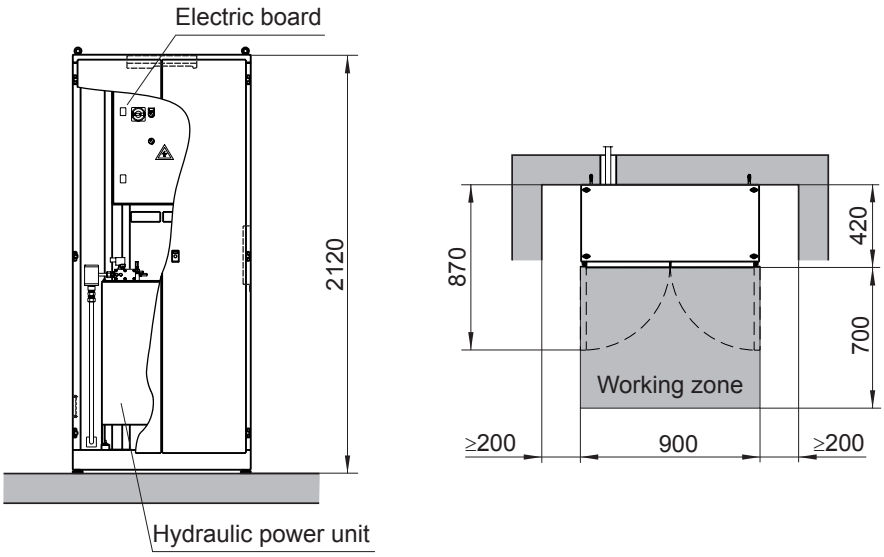
The valve block includes a pressure gauge with a protection shut-off valve and a non-return valve. A manual descent push button as an emergency system for the rescue of the vehicle and its occupants is included, together with a minimum operation pressure valve. The hydraulic power unit includes a return filter and a shut-off valve.

Electric board

Electric board in a metal cabinet with a main switch located on the outside of the door of the cabinet and which is lockable with a padlock. The switch cuts off power to all the circuits except the lighting circuit. A switch for the car lighting circuit and another for the shaft lighting circuit are also provided, both located by the main switch.

Cabinet

As an option, the hydraulic power unit and the electric board may be installed inside a metallic cabinet of size 900x420x2120 mm. This cabinet includes a fan as well as independent lighting with an integrated switch and power socket.



2.3. Guiding and installation

Guiding

For the guiding of the lifting platform each of the columns consists of a guide assembly made of a soldered structure of IPE160 profiles braced together. The car sling moves along this guide assembly with metallic rollers that roll along the inside of the IPE160 profiles.

The guide assemblies are supplied in two sections, and with the cylinder and sling already assembled in the lower section.

Installation of the guides

The guiding columns are foreseen for fixatin to the floor of the pit and to the shaft walls of the lifting platform; in order to handle the columns during installation, two hooks or beams shall be available on the shaft ceiling and located in the vertical projection of the guide assemblies, both with a resistance of at least 1500 kg each.

All the required material for the fixation of the guide assemblies to the shaft walls is supplied, with brackets fixed to the wall with mechanical anchorages and adjustable profiles that are fixed to the guiding structure.

The shaft walls to which the guides are fixed shall be made of structural concrete; the material supplied is appropriate for this type of wall. In case of walls made of hollow brick or other materials, alternative solutions for the fixation of the columns are required, such as the installation of a structure of metal profiles embebbed in the wall to which the fixations may be soldered and which can withstand the transmitted reactions, which are indicated in the assembly instructions.

The position of the fixations is also indicated in the assembly instructions; a fixation every maximum of 1.5 m is included together with additional fixations at 0.5 m from the upper end of the guide and on both sides of the joints of the two guiding columns.

2.4. Hydraulic installation

Flexible double metal mesh hydraulic hoses, individually tested for pressure together with the corresponding connectors; the result of the test is marked on the pipe.

Oil inlet in the lower section of the cylinder through the rupture valve.

2.5. Electric installation

The electrical installation of both the platform and the shaft are supplied pre-wired and with plug-in terminals to connect to the electric board and to the connection box located under the car floor.

The shaft lighting (optional on request) is supplied with the lights and the pit switch pre-wired and with a plug-in connector for connection with the electric board.

2.6. Car

For the transport of the vehicles and of the occupants, the lifting platform has a car with no ceiling or car doors, with controls inside and equiped with a light curtain at the entrance.

Sling

Two central support beams are bolted between the two slings, to support the floor of the lifting platform. Two addittional support beams are included on the entrance edges of the floor of the lifting platform; these two support beams are brace to the upper section of the slings.

Floor

The floor of the car is a soldered grid made of hot rolled profiles (IPN 80 profiles and 80.40 tubes) and cold rolled profiles (UF80.40), with a 4 mm threaded plate as a loading surface. The floor is supplied in two sections.

Floor finishing with epoxy-polyester paint colour gray RAL7004.

Walls

Wall panels made of steel plate painted with epoxy-polyester paint colour gray RAL7035. An upper reinforcement structure made of galvanised steel tubes is included to give the assembly resistance.

Side protections are included on the side walls against crashes, made in steel plate with the same finishing as the side walls.

Wooden protections available on request (optional).

Lighting

With a surface mounted light with fluorescent lamps (2x36W) and electronic ballast, installed on the central upper reinforcement tubes of the car.

Two-way communication

An emergency telephone is supplied installed in the car push button panel. It is a remote alarm device which allows the passengers to get in touch with an outer assistance. It enables a two-way voice communication with permanent contact with a certain contact number which is programmable from the device.

Dimensions

Width (A): between 2000 and 3000 mm

Depth (B): between 4000 and 6000 mm

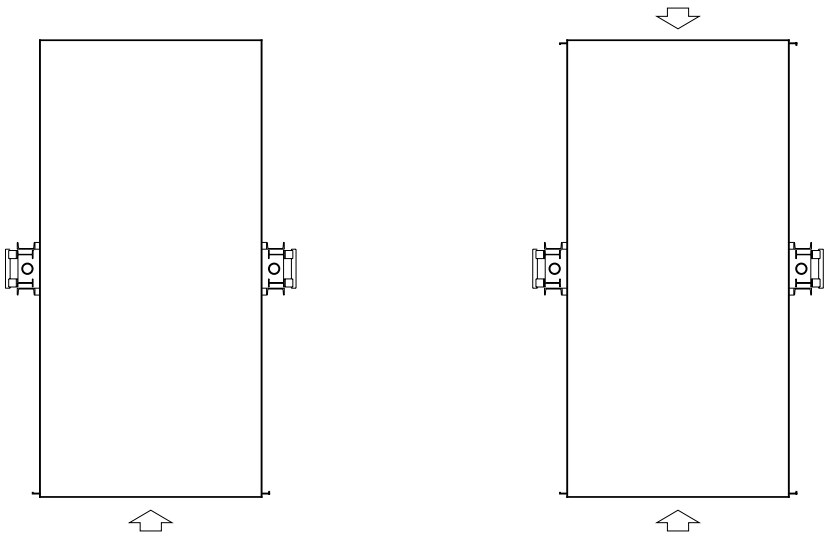
Height of the walls (H): 2000 mm

The maximum car surface is determined by the rated load according to the relation 200 kg/m^2 as detailed bellow.

Q (kg)	A·B (m^2)
2000	10.0
2500	12.5
3000	15.0
3500	17.5

Accesses

1 or 2 at 180º.



Simple access

Double 180º access

2.7. Landing doors

Type

Articulated slat sliding door, with a single side opening leaf, which takes advantage of the existing space between the car and the shaft wall.

The leaf is made of aluminium slats 40 mm thick and without intermediate hinges; the slats fit into one another perfectly due to their shape, thus obtaining great resistance and uniformity when closed and making substitution of slats in case of repair an easy task.

Fire resistant doors according to the EN 81-58 standard with slats made of steel plate, available as an option.

Automatic operation with a toothed drive belt driven by a direct current gearmotor controlled by an electronic circuit with a microprocessor; the control is fully integrated with the operation of the lifting platform.

Locking with electric lock.

Battery operated emergency re-opening in case of loss of electric supply.

Finishing

Painted with epoxy-polyester paint, colour gray RAL7035.

Dimensions

Clear opening (PL): between 2000 and 3000 mm

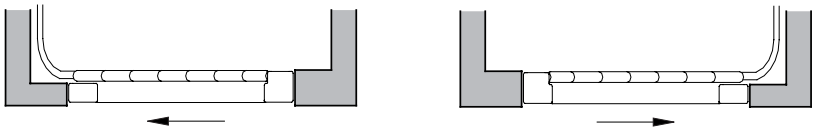
Clear height (HL): 2000 mm

Installation

The door is designed for the sill to be built into the edge of the floor in such a way that a uniform surface with no protrusions towards the interior of the shaft of the platform is obtained on the access side (see "3.1. Minimum shaft dimensions in elevation"). All the required material is supplied for the fixation of the door to the shaft walls with supports and anchorages.

All the motorization and control devices are accesible from the landing level through the cover on the lintel.

Hand



2.8. Control

Operation

The lifting platform allows call operation of the car from any of the landing levels. Addittionally, call commands may also be issued by the user to any of the landing levels from inside the vehicle in the car of the lifting platform.

Controls

The lifting platform has a control push button panel at each landing level and two control push button panels in the car.

Landing push button panels

Push button panels designed to be embebbed at each landing level, either on the wall or on the frame of the landing doors. Push button panels with flush mounting controls and waterproof on the outer face mounted 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 light indication of busy car in outer illuminated ring.

As an option, remote controls for the car of the car from one or from all the landing levels may be supplied.

Car push button panel

Two car push button panels are included, situated in an appropriate position and height so that they may be actuated by the user from the inside of the vehicle. Push button panels with flush mounting control mounted on a stainless steel plate.

The following elements are included in the push button panels:

- Key enabling switch for restriction of use.
- Push buttons for each landing, with indication of actuation in outer illuminated ring.
- Sound alarm push button; it also activates the emergency telephone.
- Emergency stop push button with light indication of activation.
- Emergency telephone.

Main control features

- Control based on a programmable logic controller.
- Movement of the car with hold to run control from the car push button panels, and automatic (not hold to run) from the landing push button panels.
- Priority of the car commands over the landing push button panel commands.
- Landing detection with magnetic detectors.
- Movement of the car is subject to the landing doors being closed and locked and to the light curtain not being interrupted.
- Re-levelling with open doors.
- Parking with closed doors.
- Selfadjustment of the travel and operation parameters of the landing doors.
- Car light timming with automatic turn-off for energy consumption reduction.

Re-levelling

When there is a loss in level of the car during loading or unloading, or due to a long inactivity period, the car will automatically regain the landing level at reduced speed; this is obtained activating the motorpump assembly. The system shall re-levell even with open doors.

2.9. Safety elements

Among the safety meassures of the lifting platform, the following may be highlighted:

General

- Rupture valve as a safety measure against free fall due to rupture of piping.
- Doors with electric control both of closure and locking.
- Re-levelling with open door system as a safety measure against car creepage.
- Upper final limit switch.
- Control of the maximum motor and electrovalve electric supply time.

Use

- Light curtain as safety measure against trapping hazards in the loading area. The curtain also aids during the access to the car to prevent the vehicle from protruding from the edge of the car, including an accoustic signal when the curtain is interrupted. Additionally it prevents the automatic doors from closing when the curtain is interrupted.
- Load control system with pressure transducer.
- System for the limitation of the closing force of the landing doors with a reopening system in case an obstacle is detected.
- Emergency stop push button in the car.
- Accoustic alarm push button inside the car to warn an external assistance in case of being trapped inside the car due to breakdown.
- Emergency telephone inside the car, activated by the alarm push button.
- Battery operated descent operation until the landing level inmediately under the position of the car, commanded from the car in case of loss of power supply. The door open automatically on arrival at the landing level.
- Manual opening on the doors with triangular emergency key for rescue operations in case of breakdown.

Maintenance

- Designed so that maintenance operations may be carried out from the pit and the inside of the car.
- Access to the shaft elements from inside the car, above the wall panels, without crushing risks due to reducer shaft upper clearances.
- 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 accoustic signal that warns of access to the pit until the device has been activated.
- Stop push button in the pit.
- 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.
- Circuit breakers in the control panel, one for protection of the main circuit and another for the lighting circuit, as a guarantee for the existance of differential protection befory performing maintenance operations.

3. Dimensions for installation

3.1. Minimum shaft dimensions in elevation

Minimum pit and headroom

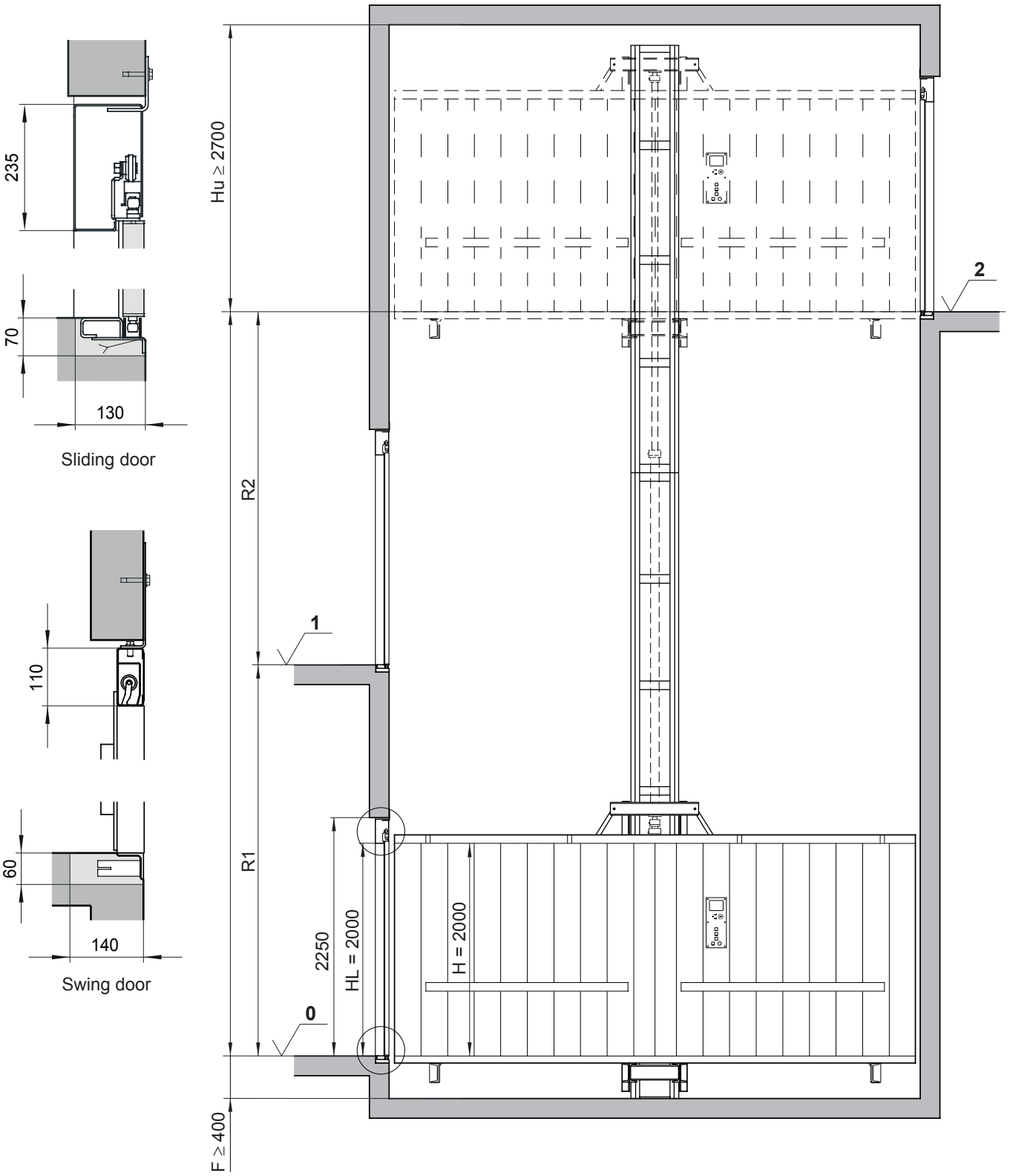
The minimum required headroom depends of the required travel of the lifting platform and of the available pit. The following condition shall be met, which is also included as a summary in table format.

$$F+Hu \geq (R+2965)/2{,}855$$

R Travel
F Pit
Hu Headroom

Hu (mm)		F (mm)				
		400	**500**	**600**	**700**	**800**
R (mm)	**≤ 5800**	2700	2700	2700	2700	2700
	5900	2710				
	6000	2750				
	6100	2780				
	6200	2820	2720			
	6300	2850	2750			
	6400	2890	2790			
	6500	2920	2820	2720		
	6600	2960	2860	2760		
	6700	2990	2890	2790		
	6800	3030	2930	2830	2730	
	6900	3060	2960	2860	2760	
	7000	3100	3000	2900	2800	

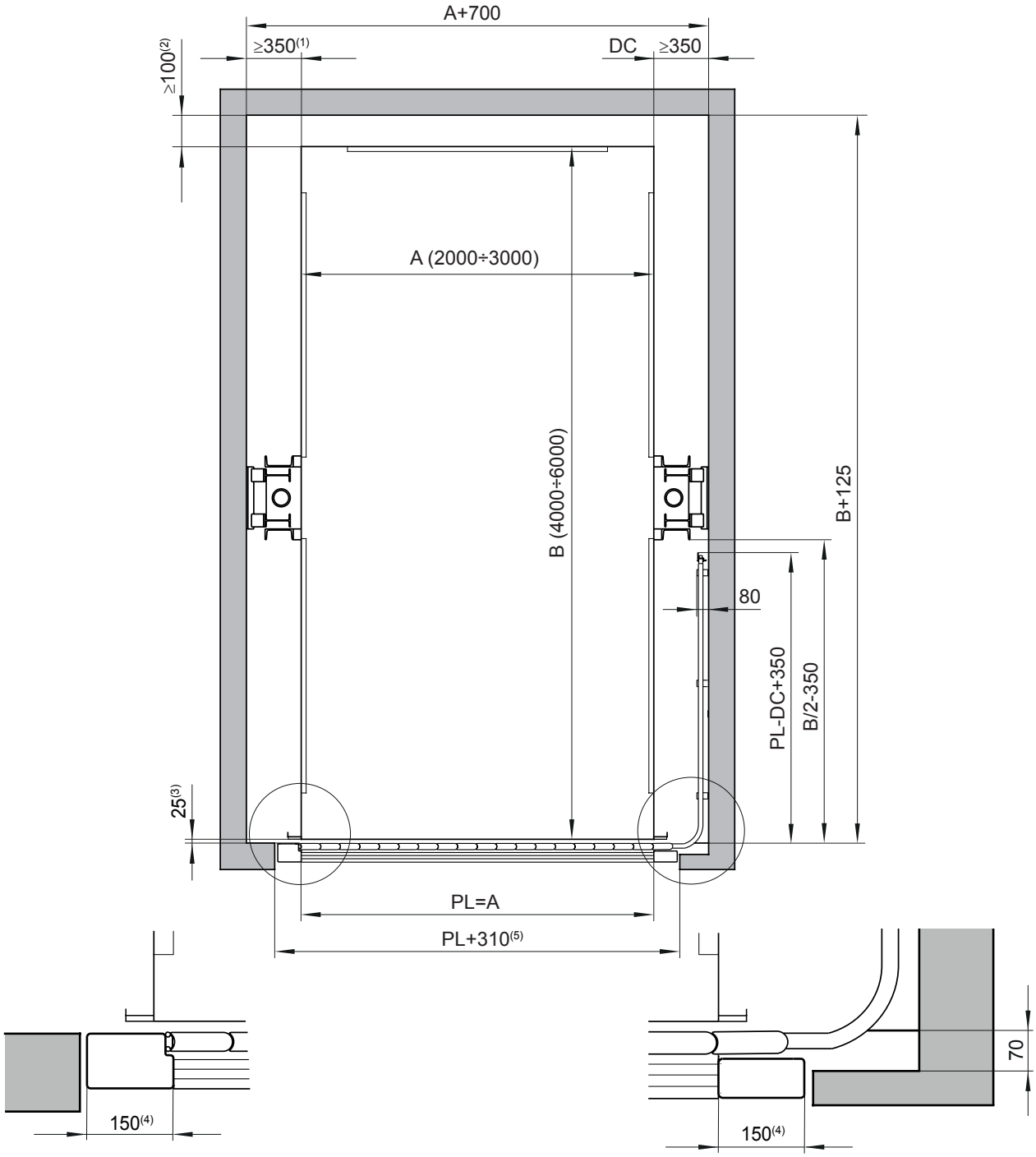
Elevation



R Travel
F Pit (maximum 800 mm)
Hu Headroom
H Car clear height
HL Door clear height

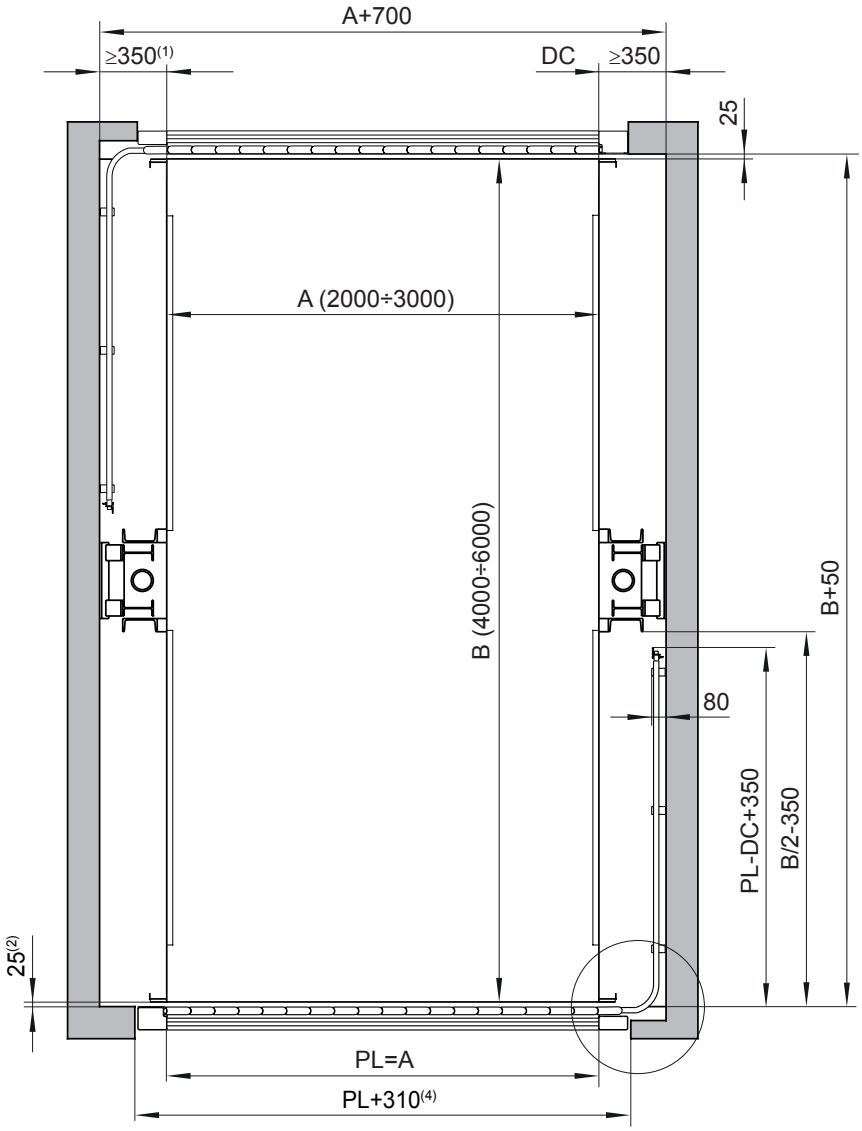
3.2. Minimum shaft dimensions in plan view

Simple access



A Car width
B Car depth
PL Clear opening
(1) Distance for guide installation (maximum 600 mm)
(2) Minimum car-wall distance at the posterior car wall
(3) Distance between entrance and car
(4) Door frame width
(5) Gap in wall for door installation

Double access



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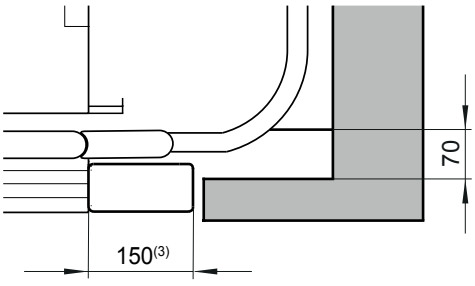

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