SWISS-PARK

A LÖDIGE INDUSTRIES COMPANY

SEMI-AUTOMATED PARKING SYSTEM - MAX2M



Technical data sheet

- ✓ CE certified
- ✓ Space saving
- ✓ Independent parking
- ✓ Low maintenance cost
- ✓ Flexible parking
- ✓ Low noise

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Max2M (Max2M-R)

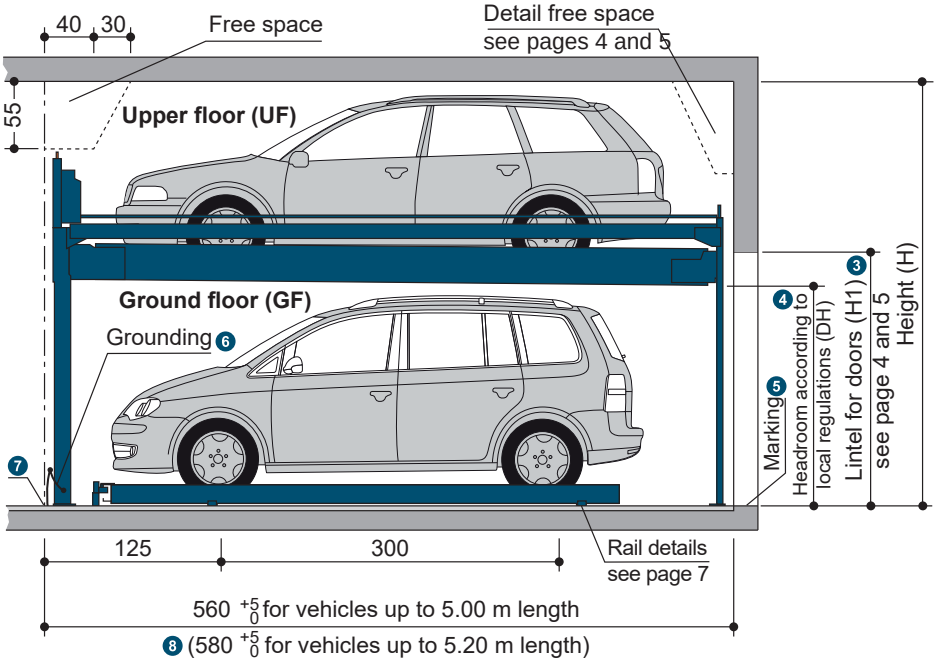
► Semi-automated parking system



► Specification

- Independent parking
- Horizontal access
- Grid arrangement
  - ► Minimum 2 grids for 6 vehicles
  - ► Maximum 10 grids for 38 vehicles
- Car heights = 150 cm to 220 cm
- Car length = 500 cm to 520 cm
- **Max2M (Standard) :** Load capacity = 2000 kg per parking place, Usable platform width up to 270 cm
- **Max2M-R (Reinforced) :** Load capacity = 2600 kg per parking place. Usable platform width up to 270 cm

► Garage without door



► Notes

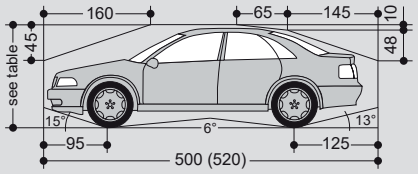
1. To comply with the minimum finished dimensions, the tolerances according to VOB, Part C (DIN 18330 and 18331) and DIN 18202 must also be considered.
2. Car width for 230 cm platform width. For the greatest possible ease of use, we recommend platform widths of 250 to 270 cm. If wider platforms are used, it is possible to park wider cars.
3. For standard version, no doors are necessary. Dimension depends on the type and size of the door. In accordance with DIN EN 14010, the doors should be selected.
4. Must be at least as high as the greatest car height + 5 cm.
5. In compliance with DIN EN 14010, 10 cm wide yellow-black markings compliant to ISO 3864 must be applied by the customer to the edge of the platform in the entry area to mark the danger zone (see "**Load plan**", page 8).
6. Grounding of the system to be connected to the central grounding on-site (to be provided by the customer).
7. At the transition section between the pit floor and walls, no hollow mouldings/coves are possible. If hollow mouldings/coves are required, the systems must be designed smaller or the pits accordingly wider.
8. For comfortable use of your parking space and to accommodate longer cars, we recommend a pit length of 580 cm.

⚠ If sprinklers are required make sure to provide the necessary free spaces during the planning stage.

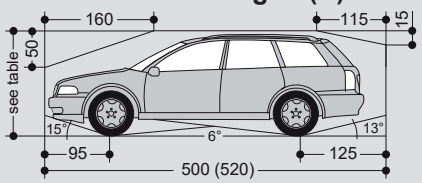
Dimensions

- All dimensions specified are the minimum, finished dimensions.
- Tolerances for the dimensions $^{+3}_{0}$. 1
- Dimensions are in cm.
- Evenness of the carriageway floor are strictly in accordance with DIN 18202, chart 3, line 3.

Standard passenger car (L)



Standard station wagon (K)



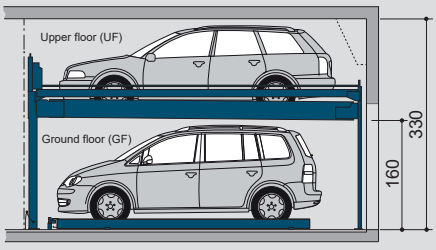
Standard passenger cars are vehicles without any sports options such as spoilers, low-profile tyres, etc.

Parking possibilities

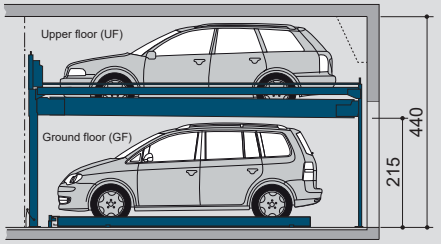
	Standard **Max2M**	Reinforced **Max2M-R**
Width in cm	190 2	190 2
Weight in kg	max. 2000	2600
Wheel load in kg	max. 500	650

Height dimensions

All pit and height variants can be found on page 2.



Smallest version



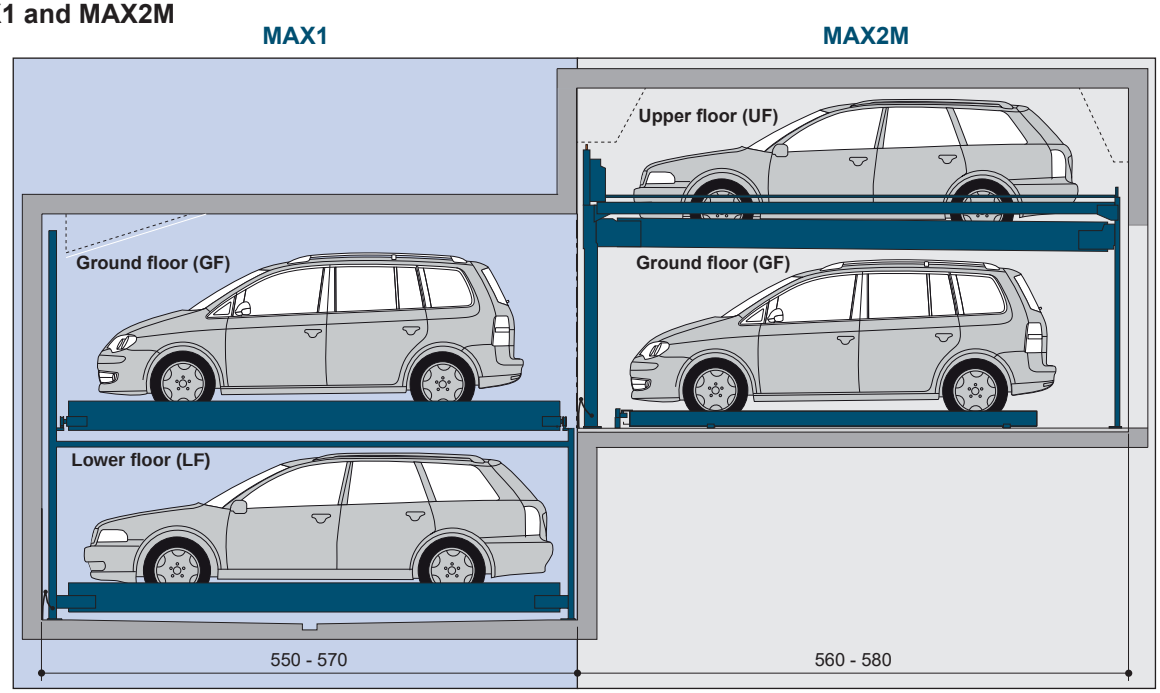
Largest version

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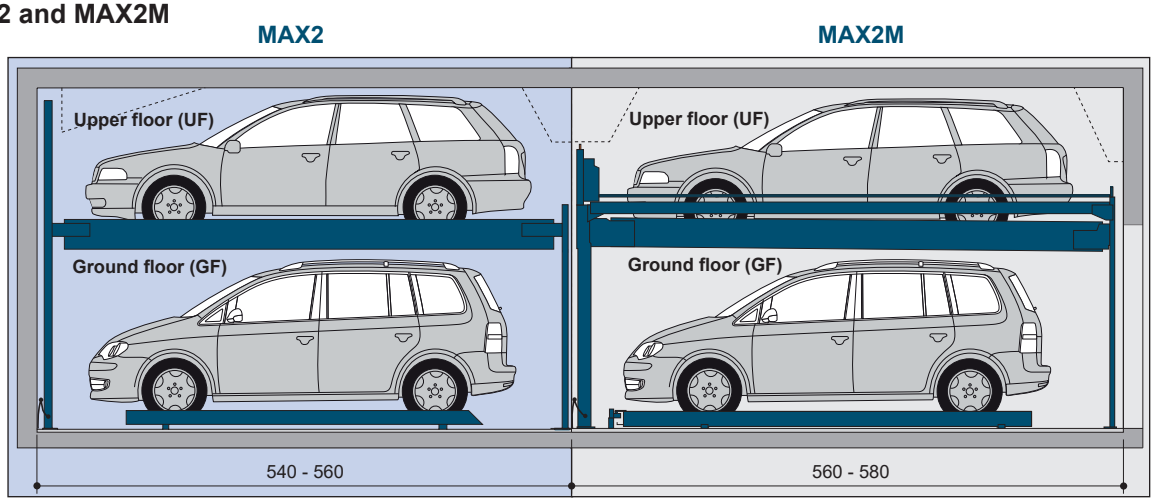
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▶ Parking system combinations

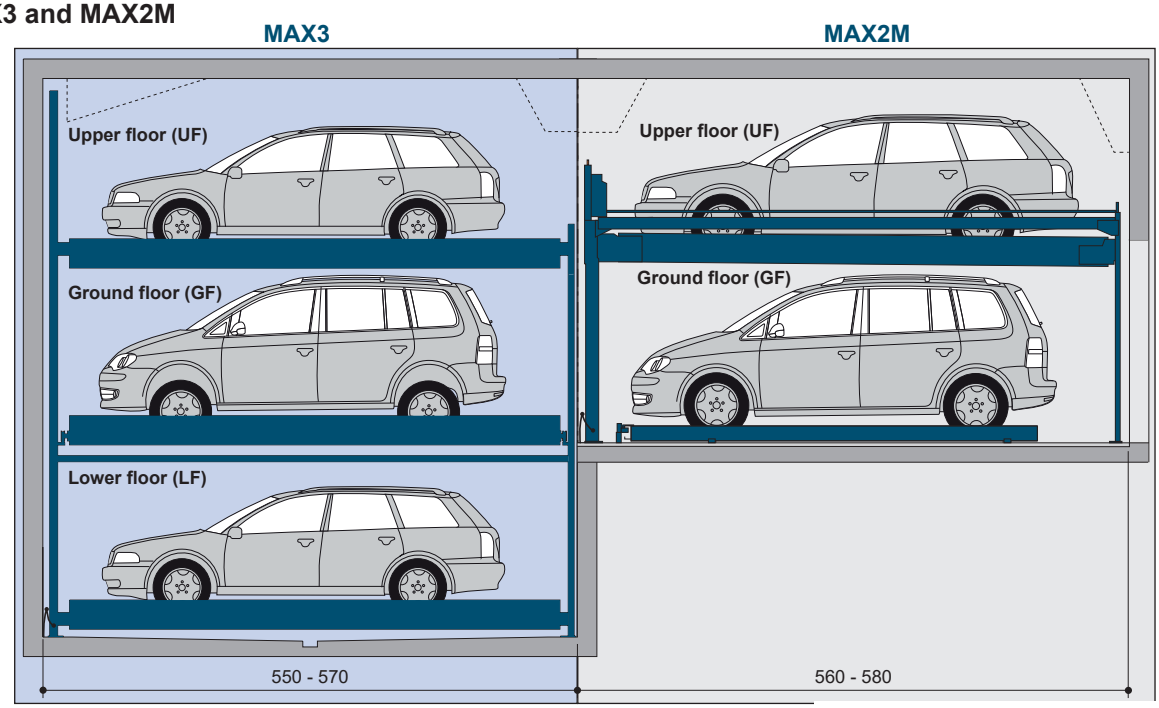
▶ MAX1 and MAX2M



▶ MAX2 and MAX2M



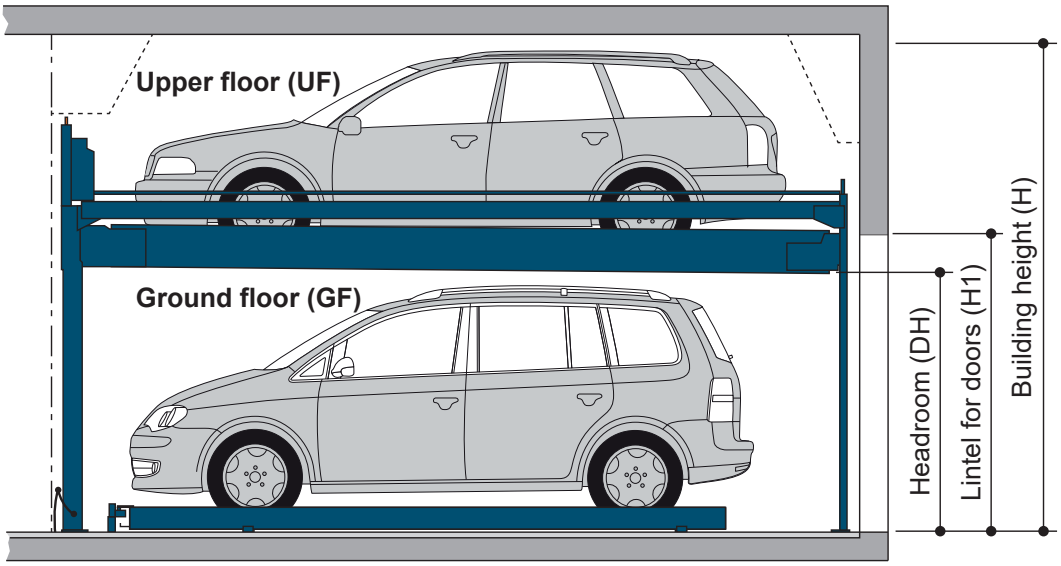
▶ MAX3 and MAX2M



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▶ Overview of parking system variants and building heights



Type	Head room (DH)	Vehicle height (Ground Floor)	Vehicle height (Upper floor)												
			150	155	160	165	170	175	180	185	190	195	200	205	
Max2M/160	160	**150**	330												**Building height (H)**
Max2M/175	175	**165**	345	350	355	360									
Max2M/180	180	**170**	350	355	360	365	370								
Max2M/185	185	**175**	355	360	365	370	375	380							
Max2M/210	210	**200**	380	385	390	395	400	405	410	415	420	425	430		
Max2M/215	215	**205**	385	390	395	400	405	410	415	420	425	430	435	440	

The permitted vehicle height on the ground floor must be equal or higher than the vehicle height on upper floor!

Example of a configuration

Vehicle height (Ground floor) = 170 cm

Vehicle height (Upper floor) = 160 cm

Using the vehicle height data in the below table, we can find the Type, Pit depth and Building height.

Type : Max2M / 180 / 380

Head room (DH) : 180 cm

Building height (H) : 360 cm

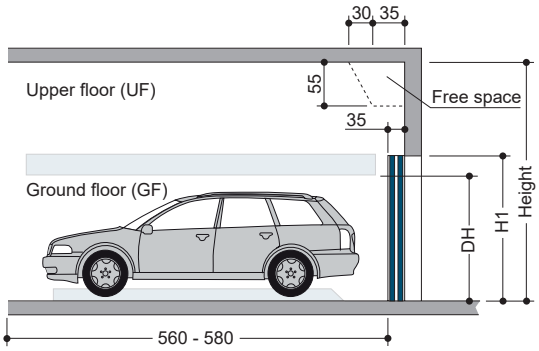
Type	Head room (DH)	Vehicle height (Ground Floor)	Vehicle height (Upper floor)												
			150	155	160	165	170	175	180	185	190	195	200	205	
Max2M/160	160	**150**	330												**Building height (H)**
Max2M/175	175	**165**	345	350	355	360									
Max2M/180	180	**170**	350	355	360	365	370								
Max2M/185	185	**175**	355	360	365	370	375	380							
Max2M/210	210	**200**	380	385	390	395	400	405	410	415	420	425	430		
Max2M/215	215	**205**	385	390	395	400	405	410	415	420	425	430	435	440	

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► Width dimensions with garage door

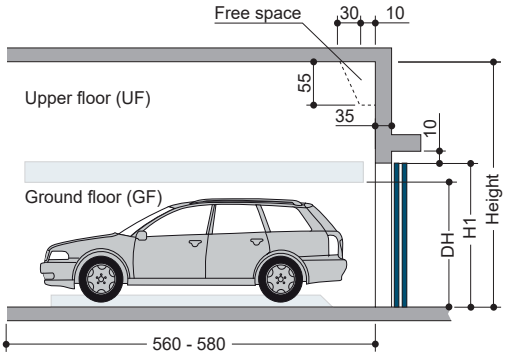
► Sliding door behind columns



Maximum Car height	150	155	160	165	170	175	180	185
Drive through height (H1)	210	210	210	210	210	210	210	210

Maximum Car height	190	195	200	205
Drive through height (H1)	210	210	215	220

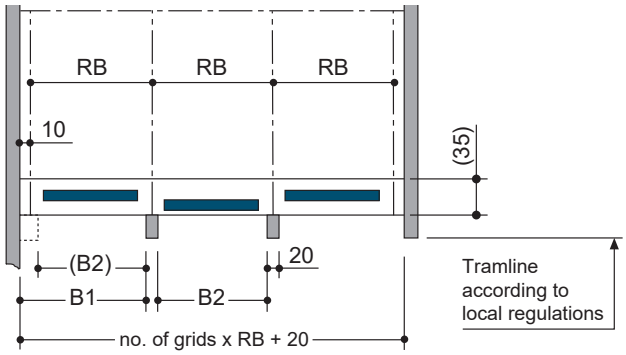
► Sliding door in front of columns



Maximum Car height	150	155	160	165	170	175	180	185
Drive through height (H1)	210	210	210	210	210	210	210	210

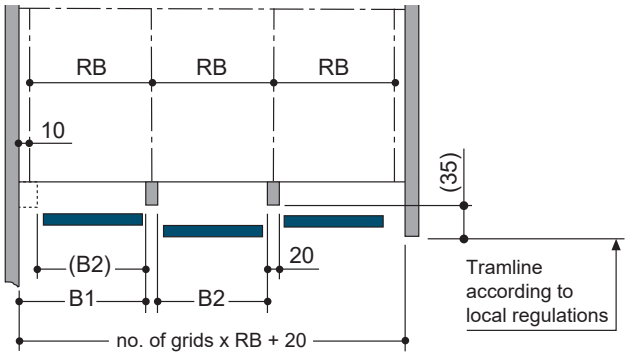
Maximum Car height	190	195	200	205
Drive through height (H1)	210	210	215	220

Columns per each grid unit



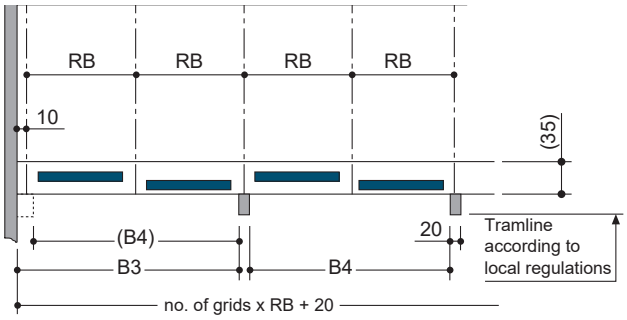
usable platform width		Grid width (RB)	Garage width	
UF	GF		B1	B2
230	220	250	250	230
240	230	260	260	240
250	**250**	**270**	**270**	**250**
260	**250**	**280**	**280**	**260**
270	**260**	**290**	**290**	**270**

Columns per each grid unit



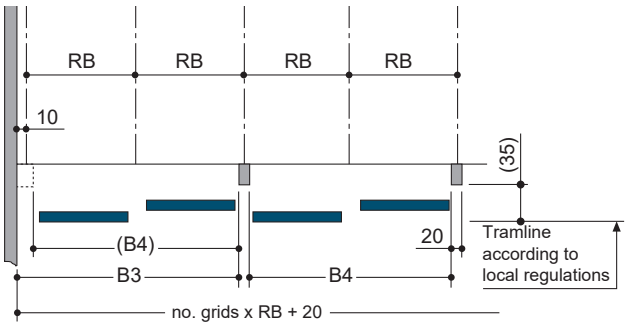
usable platform width		Grid width (RB)	Garage width	
UF	GF		B1	B2
230	220	250	250	230
240	230	260	260	240
250	**250**	**270**	**270**	**250**
260	**250**	**280**	**280**	**260**
270	**260**	**290**	**290**	**270**

Columns every second grid unit



usable platform width		Grid width (RB)	Garage width	
UF	GF		B3	B4
230	220	250	500	480
240	230	260	520	500
250	**250**	**270**	**540**	**520**
260	**250**	**280**	**560**	**540**
270	**260**	**290**	**580**	**560**

Columns every second grid unit



usable platform width		Grid width (RB)	Garage width	
UF	GF		B3	B4
230	220	250	500	480
240	230	260	520	500
250	**250**	**270**	**540**	**520**
260	**250**	**280**	**560**	**540**
270	**260**	**290**	**580**	**560**

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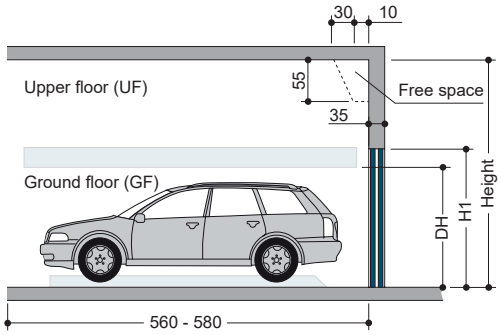
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► Width dimensions with garage door

► Sliding door between columns



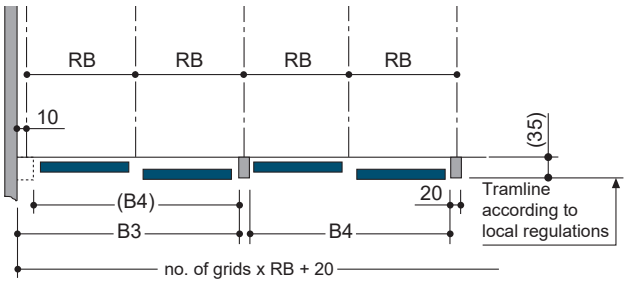
Maximum Car height	150	155	160	165	170	175	180	185
Drive through height (H1)	220	220	220	220	220	220	220	220

Maximum Car height	190	195	200	205
Drive through height (H1)	220	220	225	230

Columns per each grid unit

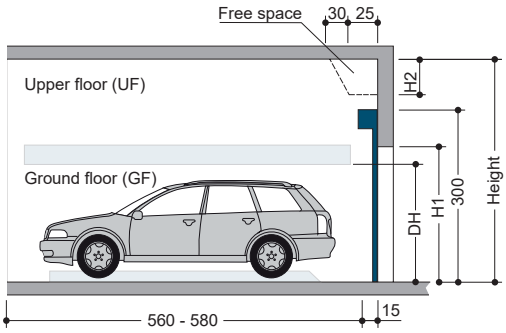
Option not possible!

Columns every second grid unit



usable platform width		Grid width (RB)	Garage width	
UF	GF		B3	B4
230	220	250	500	480
240	230	260	520	500
250	**250**	**270**	**540**	**520**
260	**250**	**280**	**560**	**540**
270	**260**	**290**	**580**	**560**

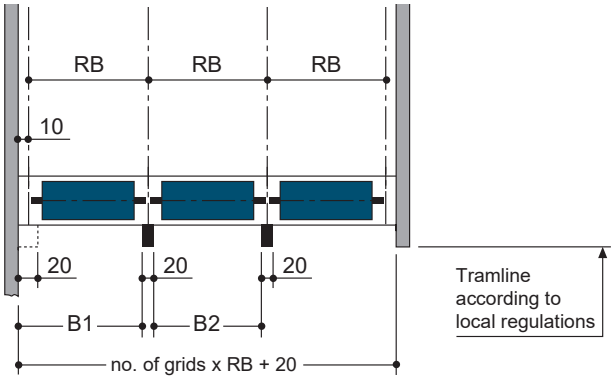
► Roller shutter



Maximum Car height	150	155	160	165	170	175	180	185
Drive through height (H1)	220	220	220	220	220	220	220	220

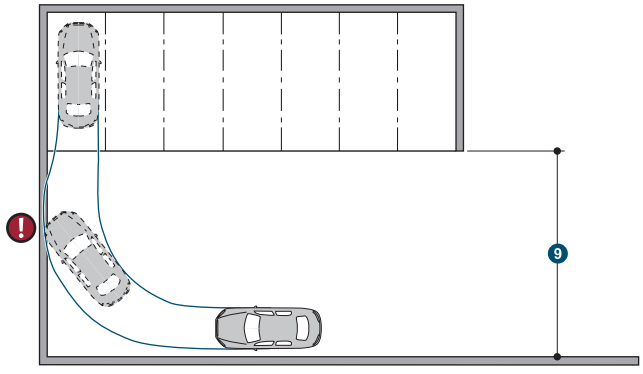
Maximum Car height	190	195	200	205
Drive through height (H1)	220	220	225	230

Columns per each grid unit



usable platform width	Grid width (RB)	Garage width	
		B3	B4
230	250	500	480
240	260	520	500
250	**270**	**540**	**520**
260	**280**	**560**	**540**
270	**290**	**580**	**560**

► Wall clearance



We recommend platform widths of a minimum of 270 cm for edge boxes and boxes with partitions and driving lane widths of 650 cm so that vehicles can comfortably enter and leave the **swiss-park**-systems without difficulty.

Narrower platforms may impede parking according to the following criteria.

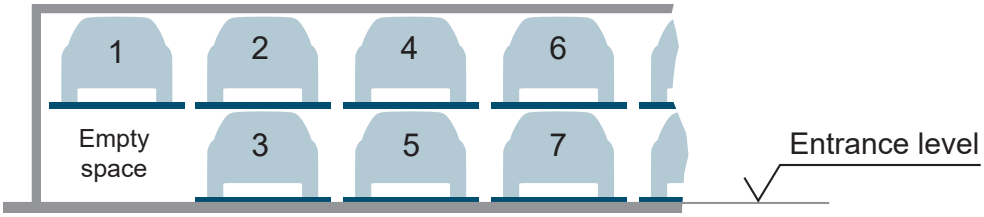
- Driving lane width
- Entrance conditions
- Vehicle dimensions

9 Observe minimum driving lane width in accordance with local regulations!

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▶ Numbering

The standard numbering of the car parking space is as follows:



In the default setting, the platform no. 1 is on the ground level (according to safety regulations).

Different numbering is only possible at extra charge.

Please take note of the following specifications:

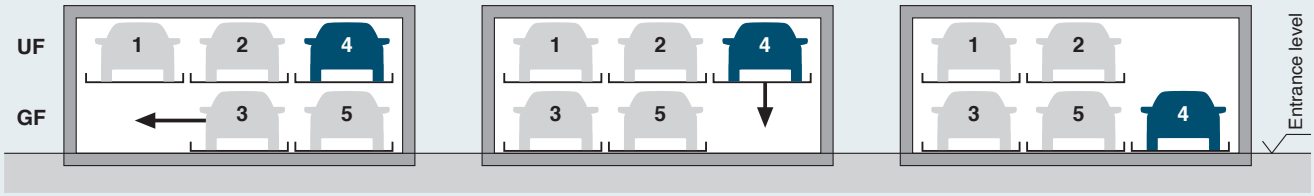
- In general, the empty space must be arranged to the left.
- The numbers must be provided 8 – 10 weeks before the delivery date.

▶ Function

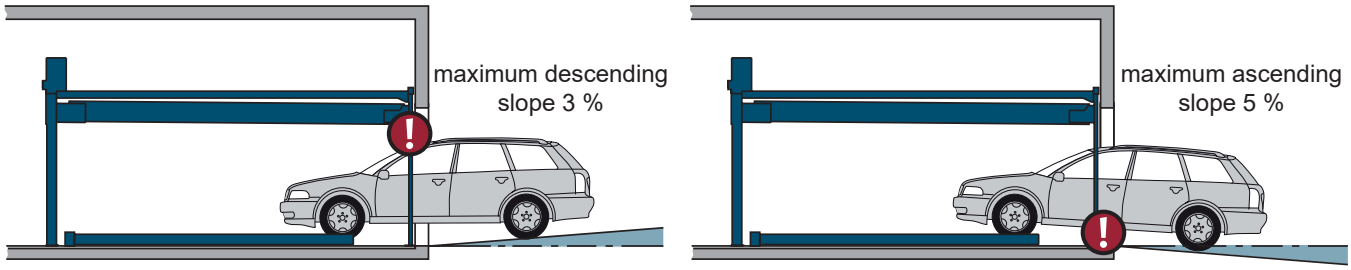
Example :

For accessing parking space No. 4:

- Check first that all doors are closed, then select No. 4 on operating panel.
- For driving the vehicle off platform No. 4 the ground floor parking platforms are shifted to the left.
- The empty space is now below the vehicle which shall be driven off the platform. The platform No. 4 will be lowered.
- The vehicle on platform No. 4 can now be driven off the platform.



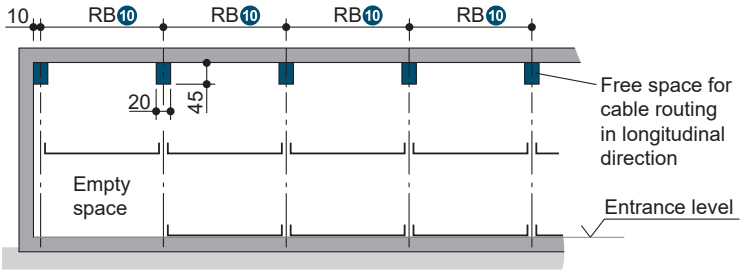
▶ Approach



The illustrated maximum approach angles must not be exceeded.

Incorrect approach angles will cause serious manoeuvring and positioning problems on the parking system for which the company **Lödige Industries** accepts no responsibility.

▶ Space for duct installation



⑩ For dimension RB, see **"Width dimensions"**, pages 4 and 5.

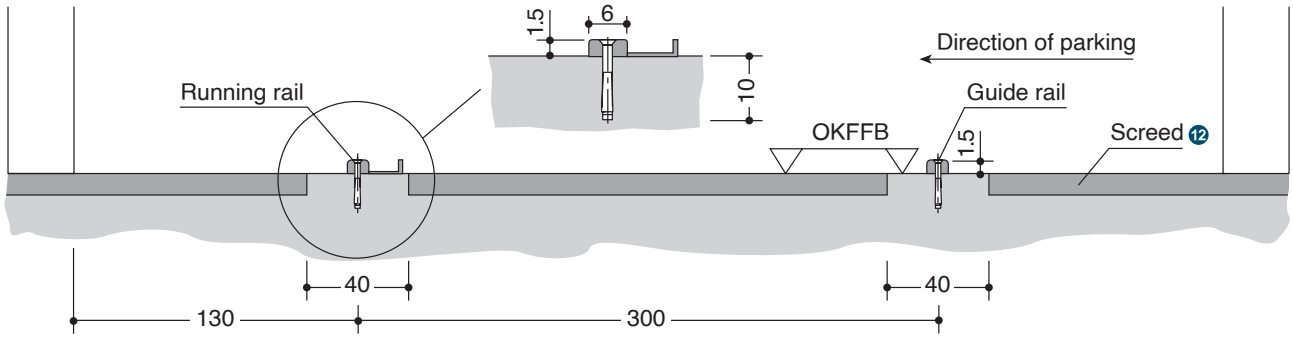
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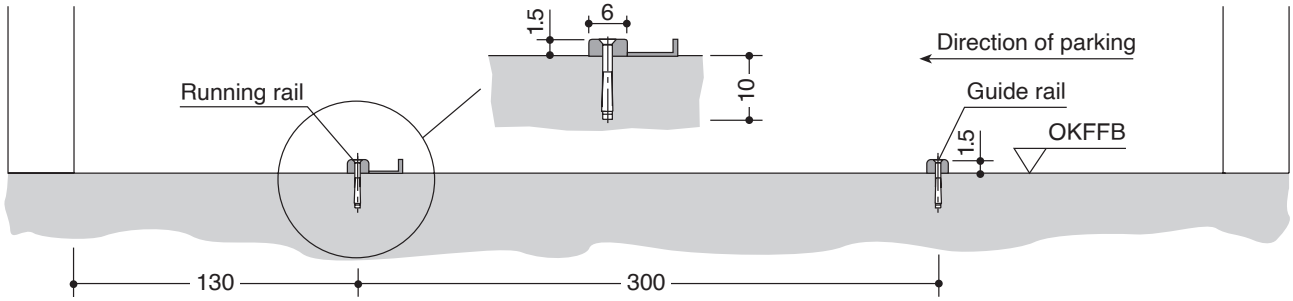
▶ Rail system

Dependent upon the structural conditions of the garage, several different options are available for installation of the rails.

Fixing before floor finish ⓫



Fixing on finished floor ⓫

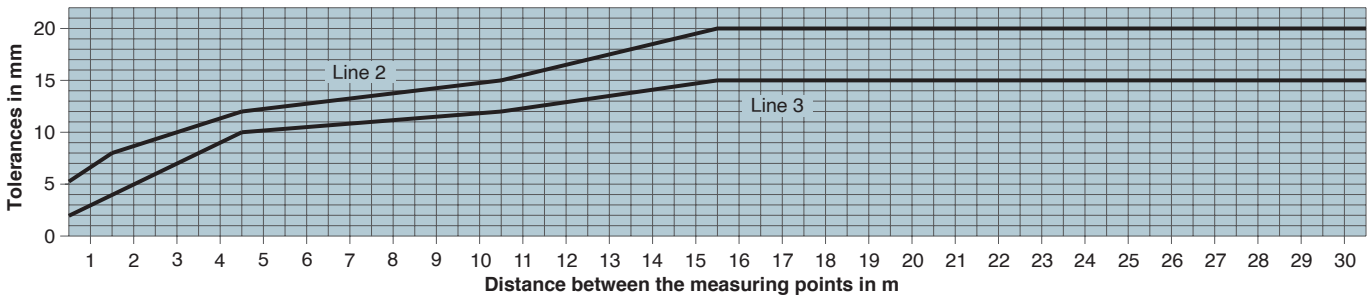


⓬ Screed to be concrete.

▶ Evenness and Tolerances (extract from DIN 18202, table 3) ⓫

The distance between the lower flange of the platforms and the garage ground must therefore not exceed 2 cm. To adhere to the safety regulations and DIN EN 14 010 recommendations and to get the necessary even ground, the tolerances of evenness to DIN 18202, table 3, line 3, must not be exceeded. Therefore exact levelling of the ground by the client is essential.

Column	1	2	3	4	5	6
		Vertical measurement as limits in mm with measuring points distances in m to ⓭				
Line	Reference	0,1	1	4	10	15
2	Unfinished to surface of covers, subconcrete and subsoils for higher demands, e.g. as foundation for cast plaster floor, industrial soils, paving tiles and slabstone paving, compound floor paving. Finished surfaces for minor purposes, e.g. warehouses, cellar.	5	8	12	15	20
3	Finished grounds, e.g. floor pavement serving as foundation for coverings. Coverings, tile coverings, PVC flooring and glued coverings.	2	4	10	12	15



⓭ Intermediate values are to be taken from the diagram and must be rounded-off to mm

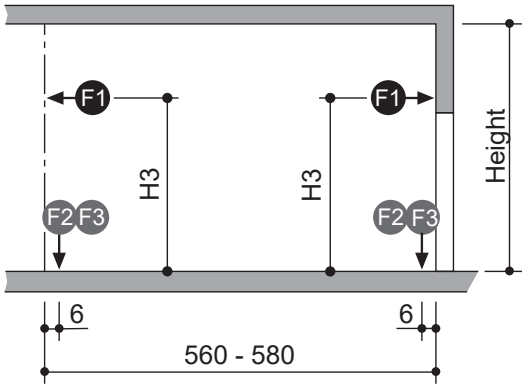
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► Load plan

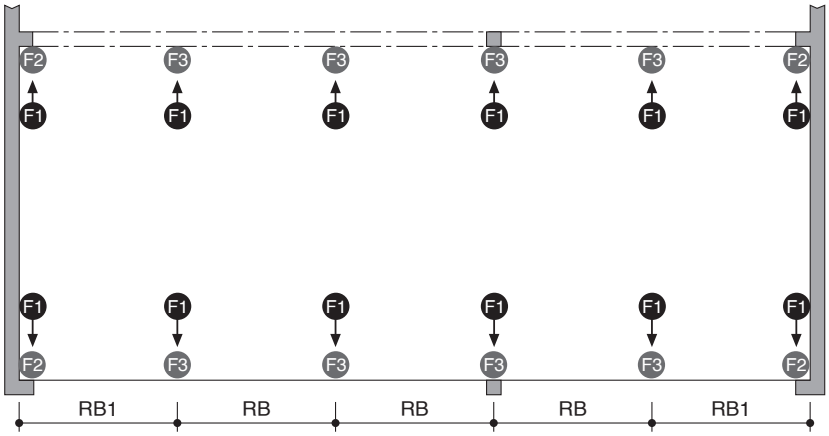
- The semi-automated parking systems are anchored into the ground. The drill hole depth on the floor is approx. 15 cm, and on the walls approx. 12 cm.
- Floor and walls below the drive-in level must be made of concrete (concrete quality min. C20/25)!
- The dimensions of the load-bearing points are approximate. If the exact dimensions are required, please consult **Lödige Industries.**

Side view :



Head room (DH) ⑭	Building height (H)	H2	H3
160	330 / 335 / 340	310	210
175	345 / 360 / 370	310	225
180	350 / 365 / 380	310	230
185	355 / 375 / 390	350	235
210	380 / 405 / 440	365	260
215	385 / 415 / 450	365	265

Top view :

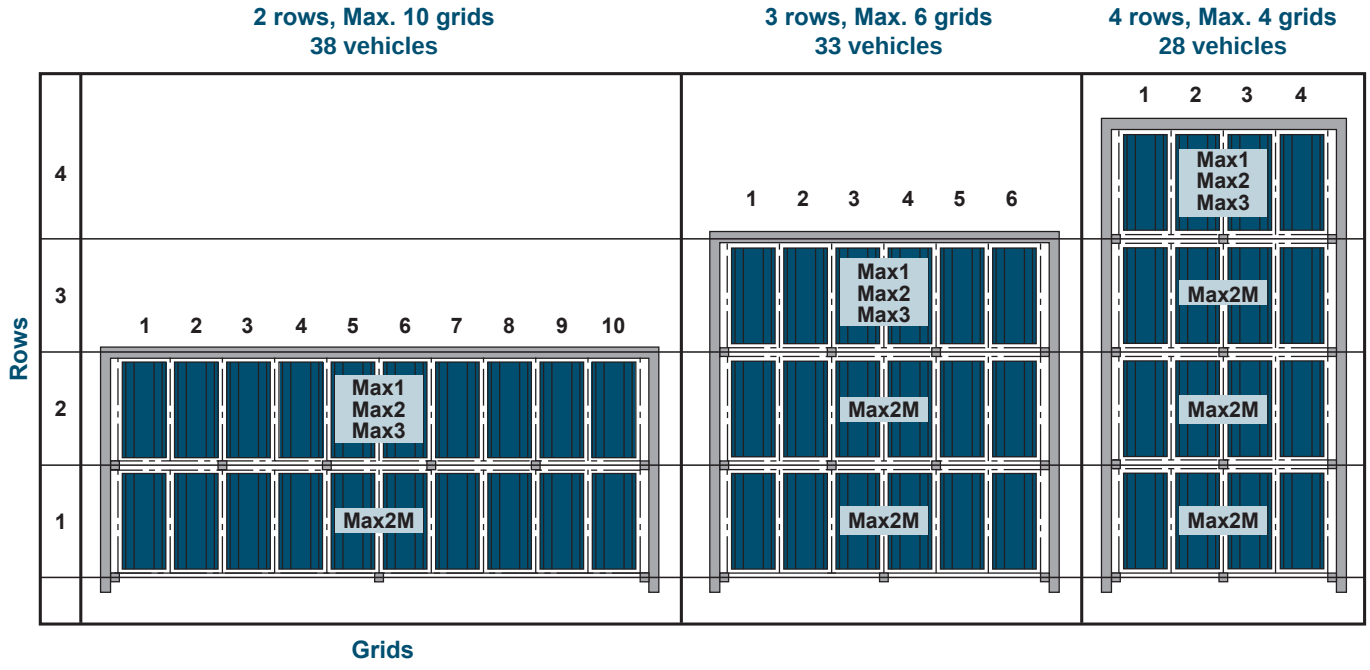


usable platform width	Grid width		
	RB	RB1	RB2
230	250	260	135
240	260	270	140
250	270	280	145
260	280	290	150
270	290	300	155

Platform load	Force (kN)		
	F1	F2	F3
2000 kg	±0.5	+8.5	+17
2600 kg	±0.75	+10	+20

⑭ Height dimensions (see **"Overview of parking system variants and building heights"**, Page 3)

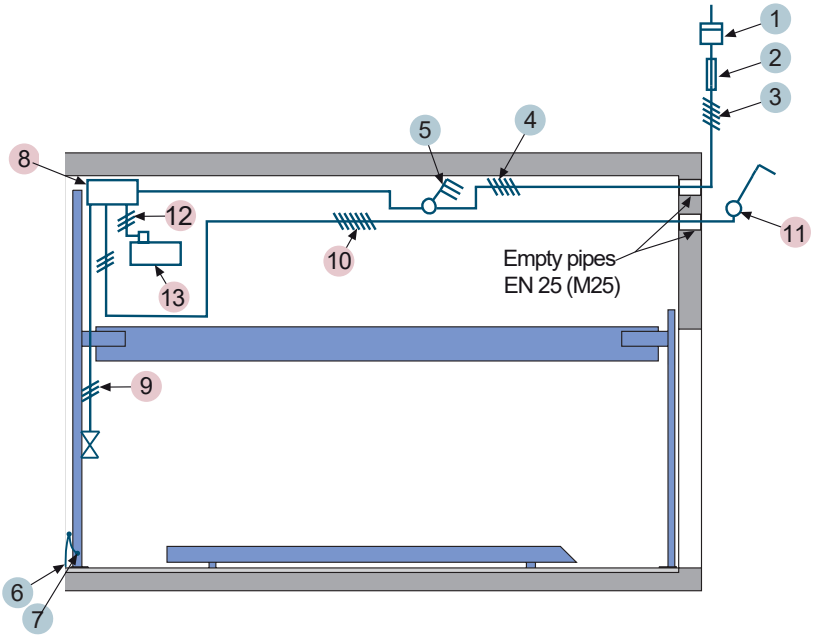
► Arrangement possibilities



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▶ Electrical installation



Electrical data to be performed by the customer

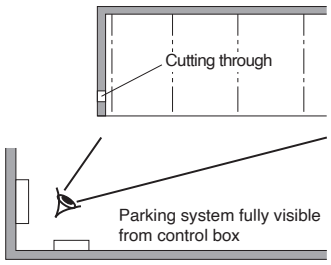
No.	Qty.	Description	Position	Frequency
1	1	Electricity meter	in the supply line	
2	1	Main fuse: 3 x fuse 16 A (slow) or circuit breaker 3 x 16 A (trigger characteristic K or C)	in the supply line	1 per 3,0 kW unit
3	1	Supply line 5 x 2.5 mm² (3 PH + N + PE) with marked wire and protective conductor	to main switch	1 per unit
4	1	Supply line 5 x 2,5 mm² (3 PH + N + PE) with marked wire and protective conductor	from main switch to unit	1 per unit
5	1	Lockable main switch	defined at the plan check	1 per unit
6	every 10 m	Foundation earth connector	corner pit floor	
7	1	Potential equalization from foundation grounding connection system according to DIN EN 60204		1 per system

Electrical data included in delivery of **Lödige Industries**

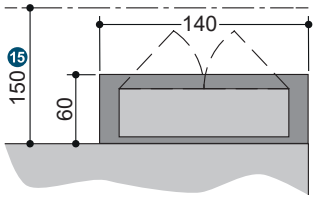
No.	Designation
8	Junction box unit
9	Control line 3 x 1 mm² (PH + N + PE)
10	Control line 4 x 1 mm² with marked wire and protective conductor
11	Operating device
12	Control line 4 x 2,5 mm² with marked wire and protective conductor
13	Hydraulic unit 3,0 kW, three phase current, 230/400 V, 50 Hz

Control box

The control box must be accessible at all times from outside! Dimensions approx. 100 x 100 x 30 cm.
Cutting through of wall from control box to parking system (contact **Lödige Industries** for clarification).



▶ Detail building construction – foundation hydraulic unit



If the installation of the hydraulic power pack is not possible in adjacent room or building, the hydraulic power pack and the electrical components must be accommodated in a cabinet (at an additional cost).

The cabinet is to be planned in the rear area of the parking system. For this purpose, a foundation (140 x 60 cm) made of concrete is required (concrete quality min. C20/C25). The cabinet is dowelled into the floor. The drill hole depth is approx. 10 cm.

15 Free space

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▶ Technical hint

Usage area
As a standard, the system is suitable for fixed number of users. If different users (e.g., short-term parking in office buildings or hotels), the **swiss-park** system requires modifications. Feel free to contact us for consultation.

Units
Low-noise hydraulic units mounted on Anti-vibration mounting plates are installed. But, we also recommend separating the garage body from the residential building. If it is not possible to install the hydraulic unit in adjacent buildings or rooms, the hydraulic unit and the electrical components must be housed in a cabinet (at an additional cost) (see **"Detail building construction – foundation hydraulic unit"**, page 9).

CE certification
The systems offered correspond to DIN EN 14010 and the EC Machinery Directive 2006/42/EC.

Building application documents
According to LBO and GaVo (garage regulations), the **swiss-park** systems are subject to approval. Please observe the local rules and regulations.

Available documents
- Wall recess plans
- Maintenance offer/contract
- Declaration of conformity

Environmental conditions
Ambient conditions for the areas around the semi-automated parking system:

- Temperature range -10 °C to +40 °C
- Relative humidity of 50% at a maximum outside temperature of +40 °C.

The lifting and lowering of the parking systems are calculated at an ambient temperature of +10 °C and with the hydraulic system positioned immediately adjacent to the parking system. The operating time of parking system increases at lower ambient temperatures or with longer hydraulic lines.

Care & Protection
To avoid corrosion damage, please follow separate cleaning and care instructions (as per the **"Corrosion protection"** sheet) and ensure that your garage is well ventilated.

Noise protection
Standard noise protection:
As per DIN 4109-1 (Sound insulation in buildings – Part 1: Minimum requirements) - Section 9:

- Maximum noise level in living and sleeping areas 30 dB (A).

Noise created by users is not considered.

The following dimensions are required for adherence to this value:

- Noise protection package in accordance with quote/order (**Lödige Industries**).
- Noise insulation dimension of the building structure of minimum weighted sound reduction index, min. R'w = 57 dB (service to be provided by the customer)

Increased noise protection (special agreement):
As per DIN 4109-5 (Sound insulation in buildings - Part 5: Increased requirements) - Section 8:

- Maximum noise pressure level in living and sleeping areas 25 dB (A).

Noise created by users is not considered.

The following dimensions are required for adherence to this value:

- Noise protection package in accordance with quote/order (**Lödige Industries**).
- Noise insulation dimension of the building structure of min. R'w = 62 dB (service to be provided by the customer)

HINT : User noises are the noises that can be influenced by individual users of our **swiss-park** systems. These are created during the accessing of the platform, slamming of vehicle doors, engine, and brake noise.

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▶ Facilities to be provided by the customer

Safety barriers
During construction of the semi-automated parking system, in accordance with DIN EN ISO 13857, safety barriers are to be placed immediately in front of, adjacent to, or behind the systems where there are roadways.

Parking space numbering
Parking space numbering, if required.

Building services
Ventilation, fire extinguishing and fire alarm systems, as well as clarification and compliance with the relevant regulatory requirements.

Lighting
The customer must observe local regulations pertaining to the illumination of parking spaces and roadways. In accordance with DIN EN 12464-1 'Light and lighting - Lighting of work places', an illumination level of min. 200 lx is recommended for the parking spaces and operating area of the system.

Drainage
For the front area of the pit, we recommend a drainage channel, which you connect to a floor drain system or sump (50 x 50 x 20 cm). The drainage channel may be inclined to the side, however not the pit floor itself (longitudinal incline is available). For reasons of environmental protection, we recommend painting the pit floor, and to provide oil and petrol separators in the connections to the public sewage network.

Wall cutout
Any necessary wall cutout to be provided by the customer.

Strip footings
If due to structural conditions strip footings must be effected, the customer shall provide an accessible platform reaching to the top of the said strip footings to enable and facilitate the mounting work.

Electrical supply to the main switch / Foundation earth connector
The customer must lay the supply cable to the master switch during assembly. Functional capability can be checked by our engineers on-site, in conjunction with the electrical engineer. If this is not possible during assembly for reasons attributable to the customer, the customer must commission an electrical engineer.

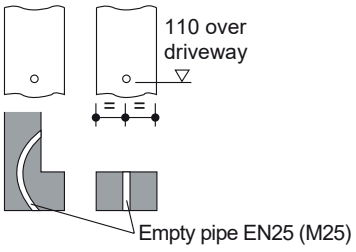
The customer must earth the steel structure with a foundation earth connection (earthing distance max. 10 m) and equipotential bonding in accordance with DIN EN 60204 (see **"Electrical installation"**, page 9)

Door suspensions
Lintel height "H1" (see **"Width dimensions"**, pages 4 and 5) specified by us are absolutely necessary. With differing heights, additional measures for door attachment (door suspensions) are done at extra cost.

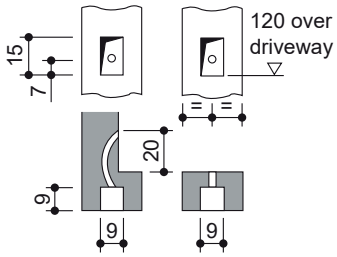
Safety enclosure shields
Safety enclosure shields are necessary if there are any gap between the door and side walls. If desired, they can be ordered from **Lödige Industries** for an additional charge.

Control panel
Empty conduits and recesses for the operating element (see **"Electrical installation"**, page 9). Consultation with **Lödige Industries** is required when using folding doors.

Control panel on plaster



Control panel under plaster



Other services on-site
- Preparation of the parking system pit
- Measures for the implementation of water protection regulations
- Measures to comply with fire protection regulations and noise protection in accordance with DIN4109
- Pit measurement
- Daily update on project photos, if required.
- Foundation grounding if necessary
- All permits and approvals

If the following are not included in the quotation, they will also have to be provided/paid for by the customer:
- Mounting of contactor and terminal box to the wall valve, complete wiring of all elements in accordance with the circuit diagram
- Costs for final technical approval by an authorized body
- Main switch
- Control line from main switch to hydraulic unit

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▶ Description - Semi-automated parking system

General description

- **swiss-park** systems are for independent parking spaces for cars, one on top of the other and side by side.
- Dimensions according to the underlying pit, width and height dimensions
- The pitches are driven horizontally and have a gradient of ±1° for proper drainage of the platforms.
- Along the complete width of the **swiss-park** system, an approach lane (driving lane in accordance with local regulations) must be available.
- The platforms of the upper floor (UF) are moved vertically, the platforms on the ground floor (GF) horizontally. At approach level (GF) there is always one parking space less available. This vacant space is used for shifting the ground floor (GF) parking spaces sideways, thus enabling the upper platform (UF) parking space located above to be lowered to approach/ground level. Consequently, a unit of three parking spaces (1 on the ground floor, 2 on the upper floor) is the smallest unit available for this parking system.
- For safety reasons, the platforms can only be moved behind electromagnetically locked doors.
- All necessary safety devices are installed. This consists mainly of a chain monitoring system, locking lever for the upper and lower platforms and electromagnetic door locks. The doors can only be opened if the selected parking space has reached the park position and all openings are secured.
- Fixing the control element usually in front of the support or on the way revealing the outside.
- Operating instructions at every operating point.

swiss-park system consisting of:

- Seriated supports
- Steel pillars with sliding platform support
- Cross and longitudinal members
- running rails for the transversely movable ground floor (GF) platforms

Platform consisting of:

- Platform profiles
- Adjustable positioning aids
- 1 wheel stop (on the right per parking space)
- Lateral beams
- Brackets
- Screws, nuts, spacer tubes, etc.

Lifting device for upper floor (UF) platforms consisting of:

- Hydraulic cylinder with solenoid valve
- Chain wheels
- Chains
- Limit switches
- The platforms are suspended on four points and guided along the supports using plastic sliding bearings.

Drive unit of transversely movable platforms on the ground floor (GF) consisting of:

- Gear motor with chain wheel
- Chains
- Running and guide rollers (low-noise)
- Power supply via cable chain

Roller shutters:

Size
Dimensions adapted to the underlying width and height dimensions.

Curtain/door profile

- Steel pipe
- End rod with electronic contact strip
- painted version

Gate operation

- Electric drive by means of a tubular motor in the shaft.
- For safety reasons, the platforms are always moved behind locked gates.
- The positions “gate open” and “gate closed” are monitored by electrical signal transmitters.

Sliding doors:

Size
Sliding door, dimensions: approx. 2500 mm x 2000 mm (width x height).

Frame

- Frame construction with vertical centre stay bar made from steel pipe.

Standard door panel

- Wire mesh: Mesh size 50 x 50 x 3.8 mm

Running rails

- The running gear of each door consists of 2 twin-pair rolling gadgets, adjustable in height.

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- The running rails of the doors are fixed to brackets or the concrete lintel, or on a building-specific door suspension using ceiling fittings.
- The guide consists of 2 plastic rollers mounted to a base plate, which is dowelled to the floor.
- Running rails, ceiling fittings and guide roller base plates are hot-dip galvanized.

Door actuation

Standard:
- Manually, i.e. the door is opened and closed by hand.

Alternatively:
- Electric drive via electric motor mounted to the rail system at the turning point of the sliding doors.
- The drive pinion engages into the chain mounted to the door.

For safety reasons, the movement of the platforms is always made behind locked doors. Position sensing, i.e. “door open” and “door closed” is effected by electric signals.

Separation (if necessary):
- Upon request

Please note:
Door panels (on the side, cover for running rails, etc.) and door suspensions are not included in the standard version but can be delivered against surcharge as special equipment.

Control system consisting of:

- Central control cabinet (operating device) used to select the desired parking space.
- With series installation, the doors are opened manually. If desired, this can also be done using electric motors.
- Electric wiring is made from the electric cabinet by the manufacturer.

Hydraulic unit consisting of:

- Hydraulic unit (low noise, installed onto a console with a rubber-bonded-to-metal mounting)
- Hydraulic oil tank
- Oil filling
- Internal gear pump
- Pump holder
- Coupling
- Three-phase motor (3.0 kW, 230/400 V, 50 Hz)
- Pressure gauge
- Pressure relief valve
- Hydraulic hoses (to reduce noise transmission to the hydraulic pipes)

We reserve the right to change these specifications without notice!

Lödige Industries reserves the right, in the course of technical and technological progress, to use newer or different technologies, systems, processes, procedures, or standards than those originally offered and ensure that the customer does not incur any disadvantage.

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