SWISS-PARK

A LÖDIGE INDUSTRIES COMPANY

CAR STACKER - S3



Technical data sheet

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

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S3 (S3-R)
▶ Car Stacker

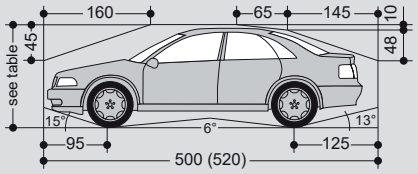




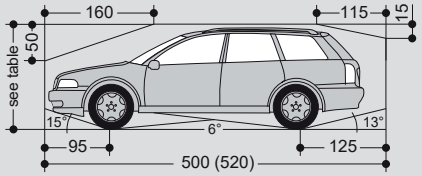
Dimensions

- All dimensions specified are the minimum, finished dimensions.
- Tolerances for the dimensions $^{+3}_{0}$. (1)
- Dimensions are in cm.

Standard passenger car (L)



Standard station wagon (K)



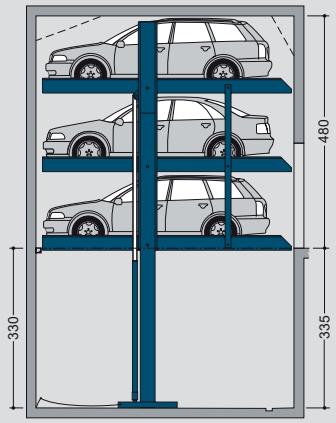
Standard passenger cars are vehicles without any sports options such as spoilers, low-profile tyres, etc.

Parking possibilities

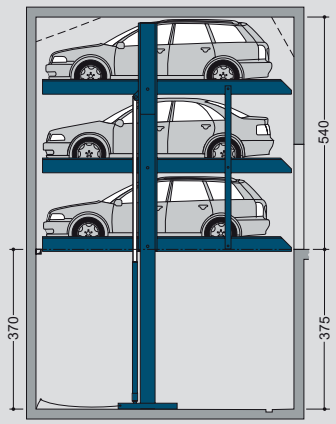
	Standard S3	Reinforced S3-R
Width in cm	190 (2)	190 (2)
Weight in kg	max. 2000	2500
Wheel load in kg	max. 500	625

Height dimensions

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



Smallest version

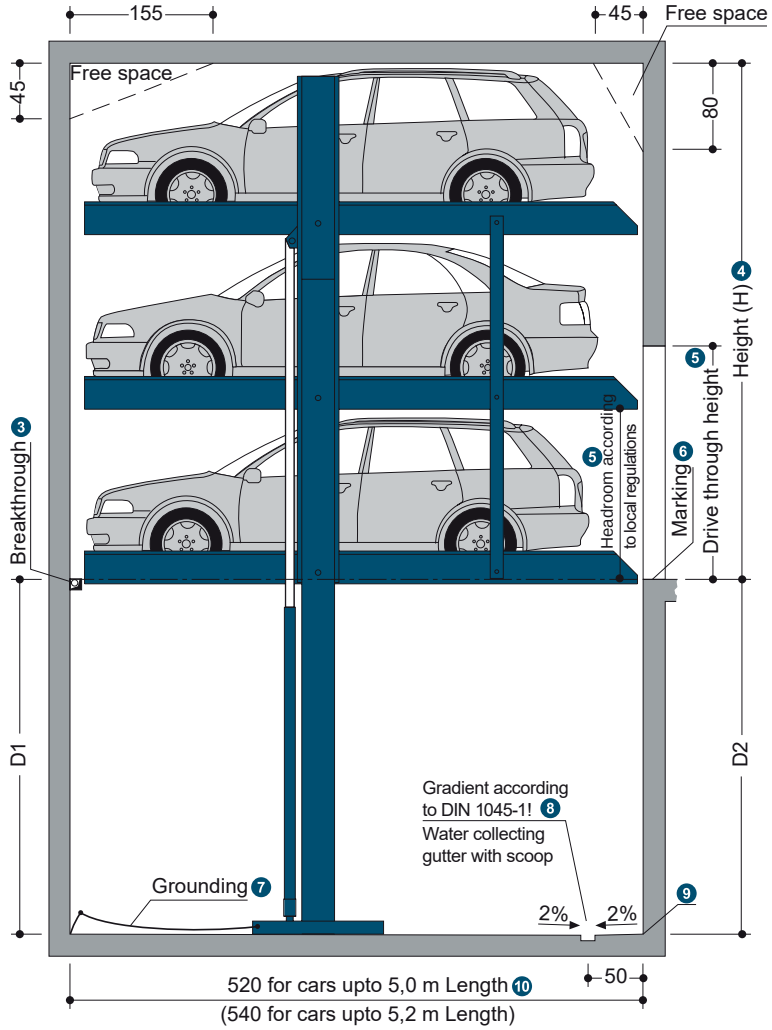


Largest version

▶ Specification

- EB (single platform) = 3 vehicles
- DB (double platform) = 6 vehicles
- Independent parking
- Horizontal access to both levels
- Car heights = 150 cm to 210 cm
- Car length = 500 cm to 520 cm
- **S3 (Standard) :** Load capacity = 2000 kg per parking place, Usable platform width up to 270 cm for EB and up to 500 cm for DB
- **S3-R (Reinforced) :** Load capacity = 2500 kg per parking place, Usable platform width up to 270 cm for EB

▶ 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
a) S3 - platform widths of 250 to 270 cm (EB) or 500 cm (DB).
b) S3-R - platform widths of 260 to 270 cm (EB).
(3) For dividing walls: cutting through 10 x 10 cm.

Page 1 Sections, dimensions, car data
Page 2 Variants and Height dimensions
Page 3 Width dimensions
Page 4 Garage door dimensions
Page 5 Parking position, Approach, Wall clearance
Page 6 Load plan, Space for duct installation
Page 7 Installation data / electrical installation
Page 8 Technical hint
Page 9 Facilities from customer
Page 10 Description EB + DB

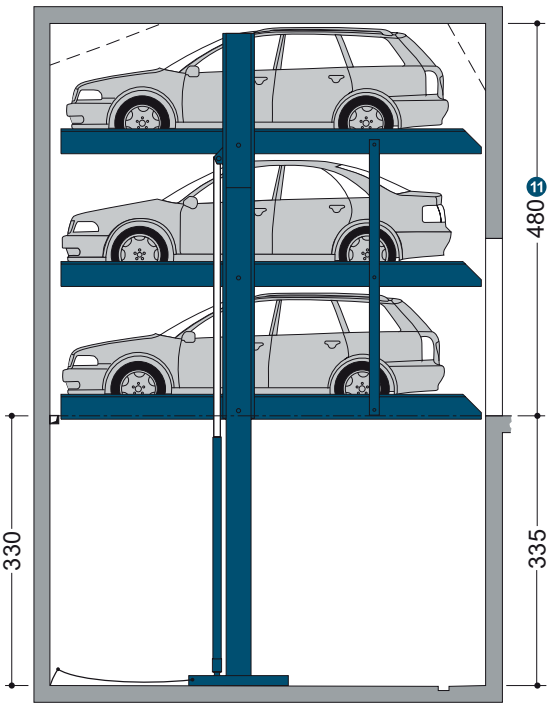
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Page 1 Sections, dimensions, car data
Page 2 Variants and Height dimensions
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Page 7 Installation data / electrical installation
Page 8 Technical hint
Page 9 Facilities from customer
Page 10 Description EB + DB

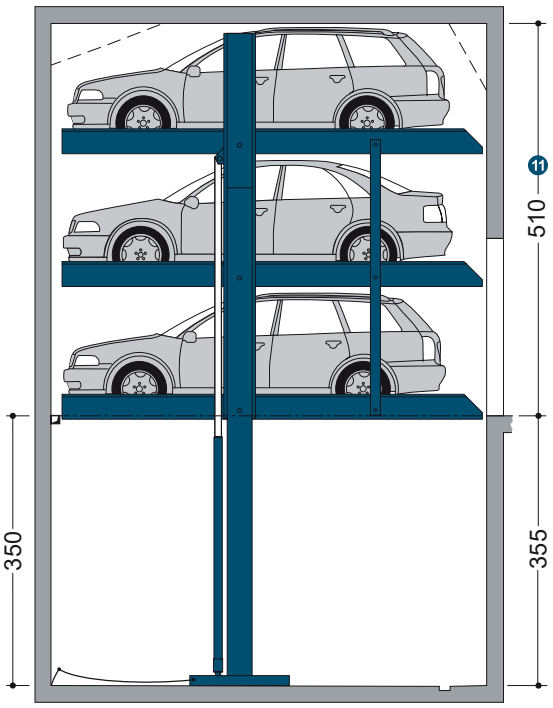
4 If a higher ceiling height is available, higher cars can be parked.
5 Must be at least as high as the greatest car height + 5 cm.
6 In compliance with DIN EN 14010, 10 cm wide yellow-black markings compliant to ISO 3864 must be applied by the customer to the edge of the pit in the entry area to mark the danger zone (see "**Load plan**", page 6).
7 Grounding of the system to be connected to the central grounding on-site (to be provided by the customer).
8 Slope with drainage channel and sump.
9 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.
10 For cars up to a length of 5.20 m, we recommend a pit length of 5.40 m (with tow bar 5.50 m).

► Overview of car stacker variants and building height

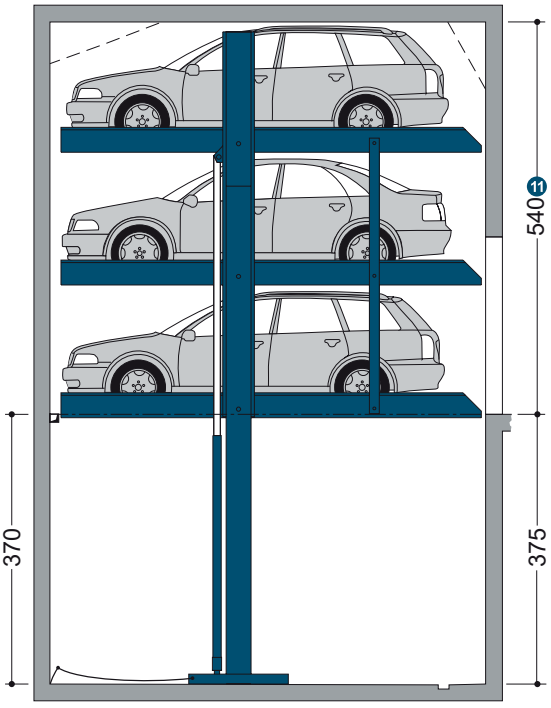
S3-330



S3-350



S3-370



Type	Car height		
	Top	Middle	Below
S3-330	150	150	150
S3-350	160	160	160
S3-370	170	170	170

11 If the ceiling height is higher, correspondingly higher vehicles can be parked on the top.

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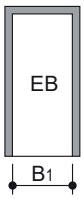
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Page 1 Sections, dimensions, car data
Page 2 Variants and Height dimensions
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Page 9 Facilities from customer
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▶ Width dimensions for garage without door

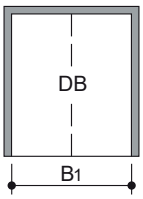
Dividing walls

Single platform (EB)



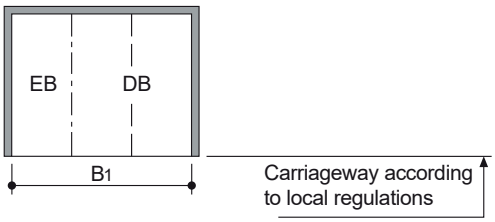
Usable platform width	Garage width **B1**
230*	270
240	280
250	290
260	300
270	310

Double platform (DB)



Usable platform width	Garage width **B1**
460*	500
470	510
480	520
490	530
500	540

Single and double platform (EB + DB) – Example

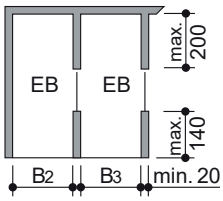


Usable platform width	Garage width **B1**
230+460*	770
240+470	790
250+480	810
250+490	830
270+500	850

*Standard type

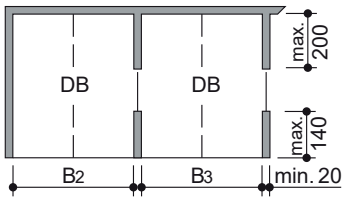
Columns in pit

Single platform (EB)



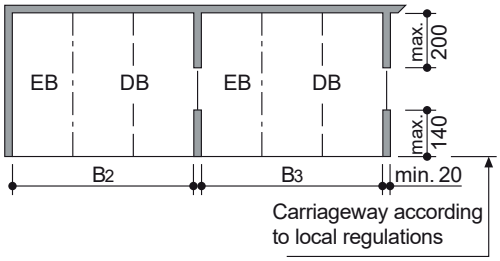
Usable platform width	Garage width	
	B2	**B3**
230*	260	250
240	270	260
250	280	270
260	290	280
270	300	290

Double platform (DB)



Usable platform width	Garage width	
	B2	**B3**
460*	490	480
470	500	490
480	510	500
490	520	510
500	530	520

Single and double platform (EB + DB) – Example

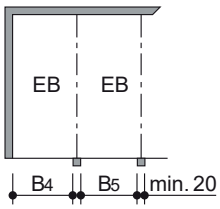


Usable platform width	Garage width	
	B2	**B3**
230+460*	760	750
240+470	780	770
250+480	800	790
250+500	820	810
270+500	840	830

*Standard type

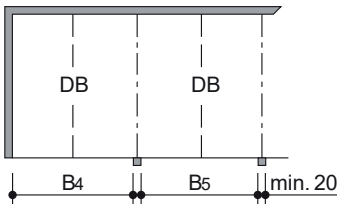
Columns outside pit

Single platform (EB)



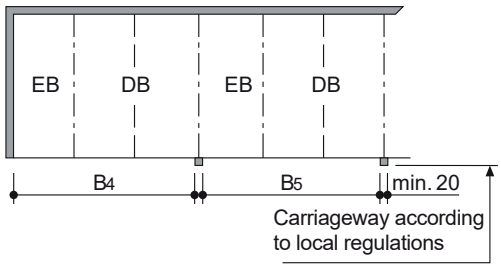
Usable platform width	Garage width	
	B4	**B5**
230*	260	250
240	270	260
250	280	270
260	290	280
270	300	290

Double platform (DB)



Usable platform width	Garage width	
	B4	**B5**
460*	490	480
470	500	490
480	510	500
490	520	510
500	530	520

Single and double platform (EB + DB) – Example



Usable platform width	Garage width	
	B4	**B5**
230+460*	760	750
240+470	780	770
250+480	800	790
250+500	820	810
270+500	840	830

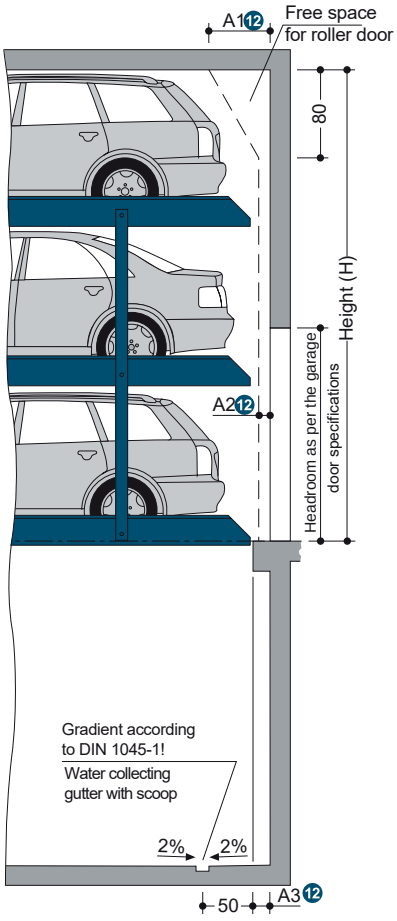
*Standard type

HINT : End parking spaces are generally more difficult to drive into. Therefore, we recommend for end parking spaces our wider platforms. Parking on standard width platforms with larger vehicles is difficult. This depends on the type of vehicle, approach and above all on the individual driver´s skill. For maximum comfort, we generally recommend our maximum platform widths of 270 cm for a single platform (EB) and 500 cm for a double platform (DB).

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Page 1 Sections, dimensions, car data
Page 2 Variants and Height dimensions
Page 3 Width dimensions
Page 4 Garage door dimensions
Page 5 Parking position, Approach, Wall clearance
Page 6 Load plan, Space for duct installation
Page 7 Installation data / electrical installation
Page 8 Technical hint
Page 9 Facilities from customer
Page 10 Description EB + DB

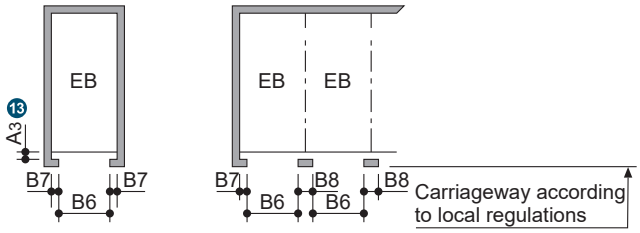
▶ Garage with door



12 Dimensions A1, A2 and A3 must be coordinated with the door supplier.
For all-roller doors, coordination between the door manufacturer and **Lödige Industries** is necessary.

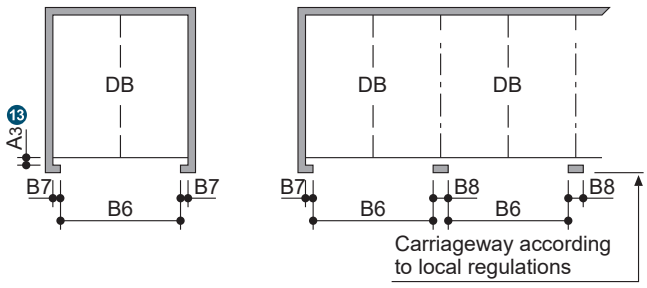
▶ Width dimensions for garage with door

Single platform (EB)



Usable platform width	Door entrance width **B6**	**B7**	**B8**
230	**230**	16	30
240	**240**	15	30
250	**250**	20	40
260	**260**	20	40
270	**270**	20	40

Double platform (DB)



Usable platform width	Door entrance width **B6**	**B7**	**B8**
460	**460**	12	25
470	**470**	17	35
480	**480**	12	25
490	**490**	15	30
500	**500**	20	40

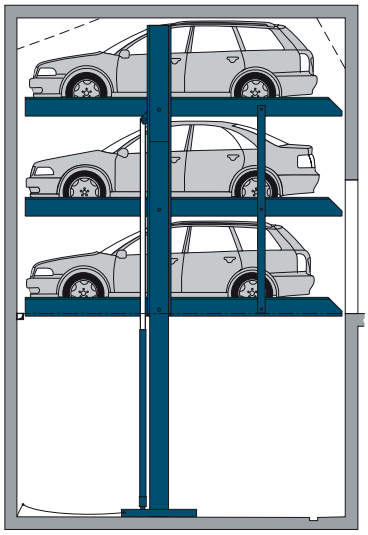
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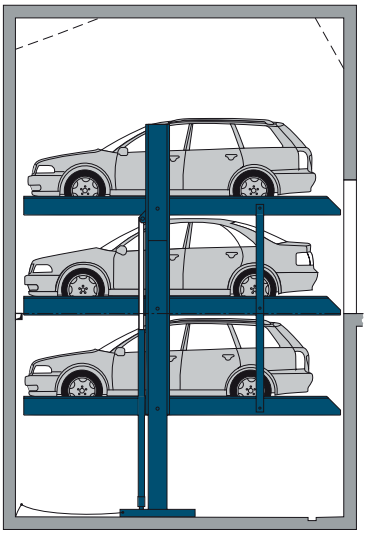
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▶ Parking position

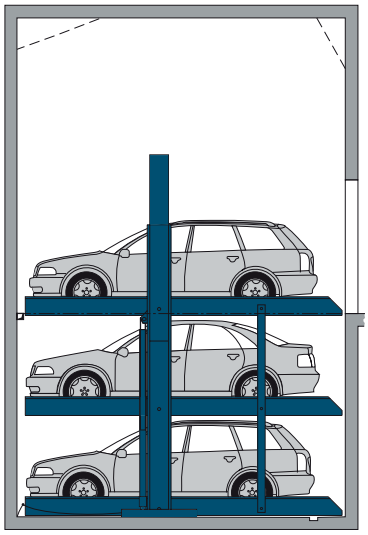
System raised



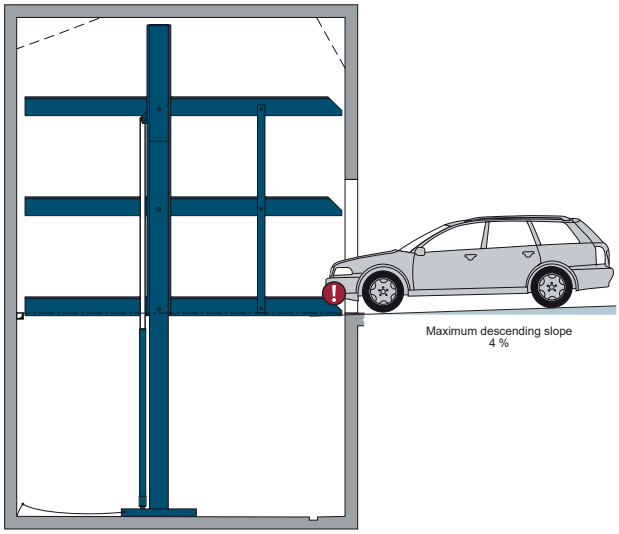
System in middle

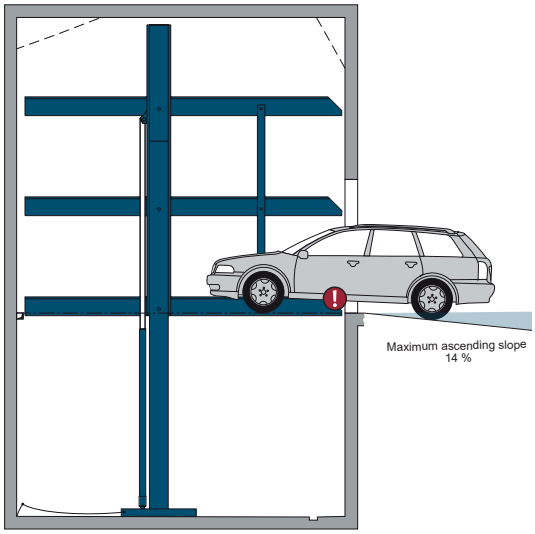


System lowered



▶ Approach

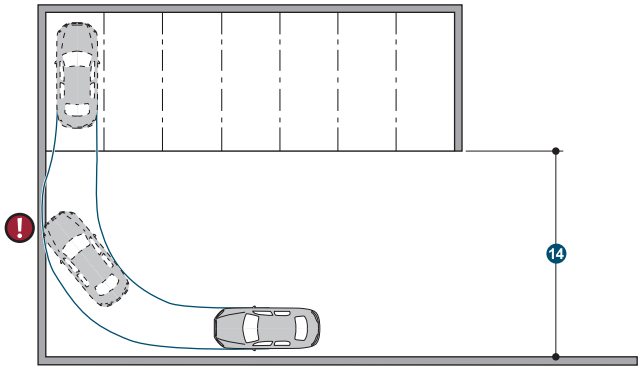




The illustrated maximum approach angles must not be exceeded.

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

▶ Wall clearance



We recommend platform widths of a minimum of 250 cm 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

⑭ Observe minimum driving lane width in accordance with local regulations!

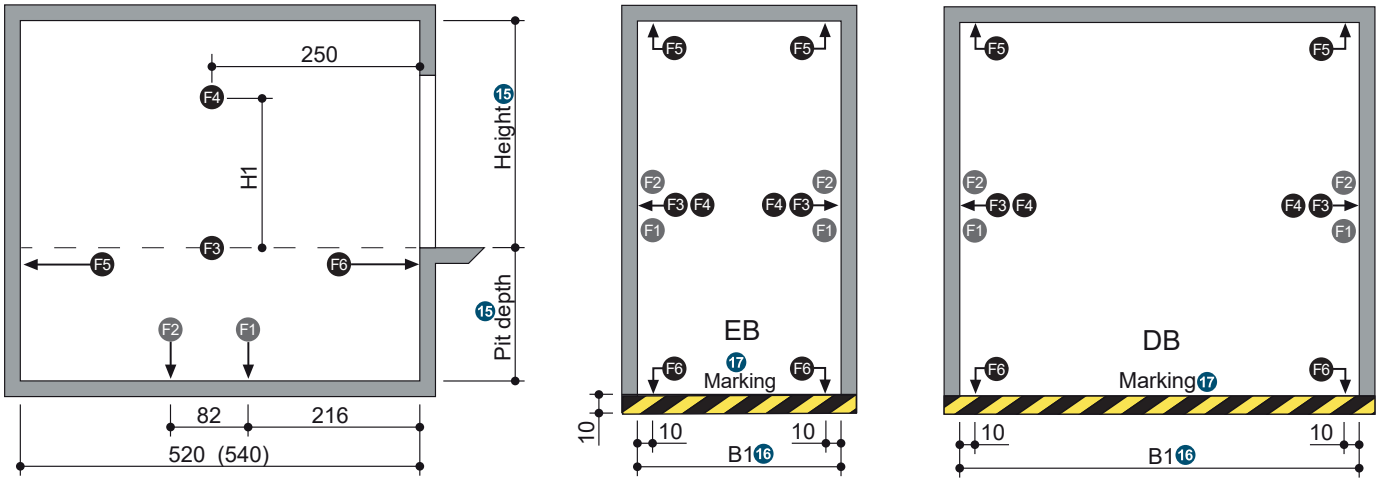
Page 1 Sections, dimensions, car data
Page 2 Variants and Height dimensions
Page 3 Width dimensions
Page 4 Garage door dimensions
Page 5 Parking position, Approach, Wall clearance
Page 6 Load plan, Space for duct installation
Page 7 Installation data / electrical installation
Page 8 Technical hint
Page 9 Facilities from customer
Page 10 Description EB + DB

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Page 1 Sections, dimensions, car data
Page 2 Variants and Height dimensions
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Page 10 Description EB + DB

▶ Load plan

- The car stacker 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.**

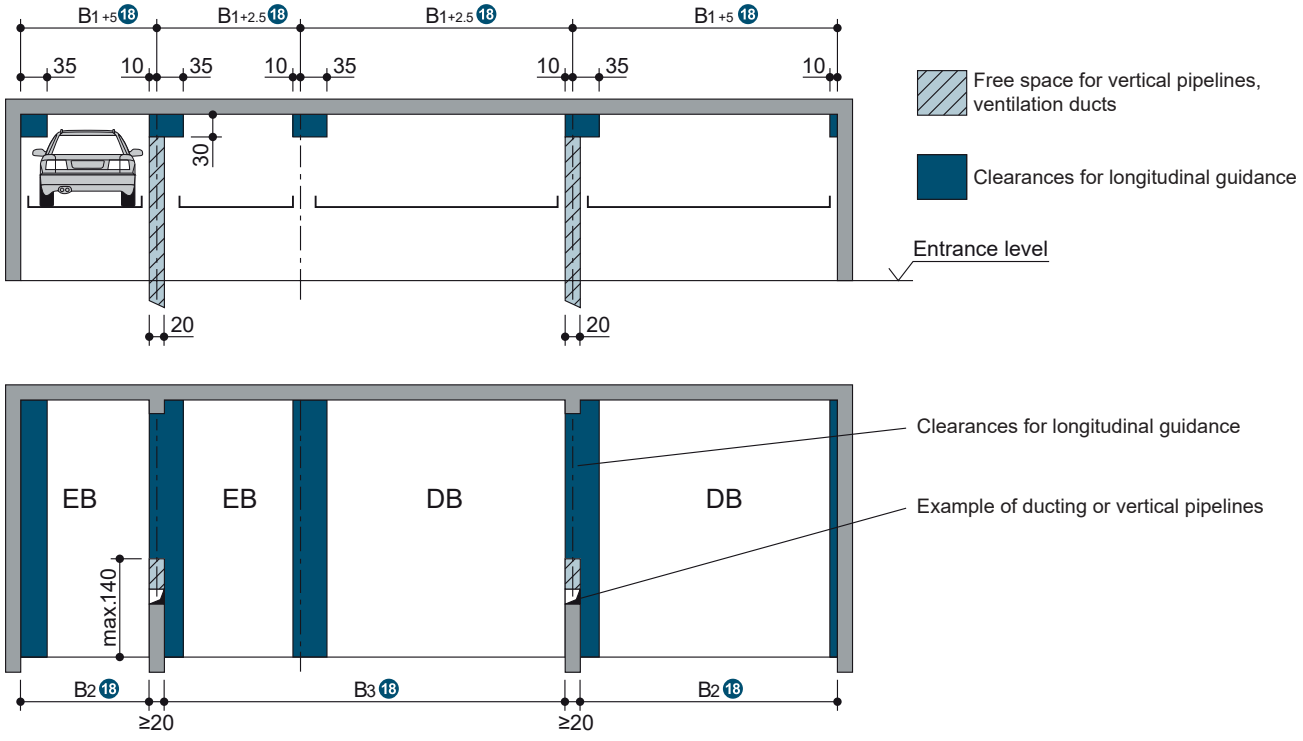


Platform load	Force (kN)					
	F1	F2	F3	F4	F5	F6
EB 2000 kg	+25	+55 -20	+3,5	+3,5	+12	+15
EB 2500 kg	+25	+63 -20	+3,5	+3,5	+12	+15
DB 2000 kg	+35	+80 -25	+4	±4	+12	+20

Type	H1
S3-330	235
S3-350	245
S3-370	265

15 Height dimensions (see **"Overview of car stacker variants and building heights"**, Page 2)
16 Width dimension B1 (see **"Width dimensions for garage with/without door"**, Page 3 and 4)
17 Marking in accordance with DIN EN 14010 (illustration colours are not consistent with DIN ISO 3864)

▶ Space for duct installation



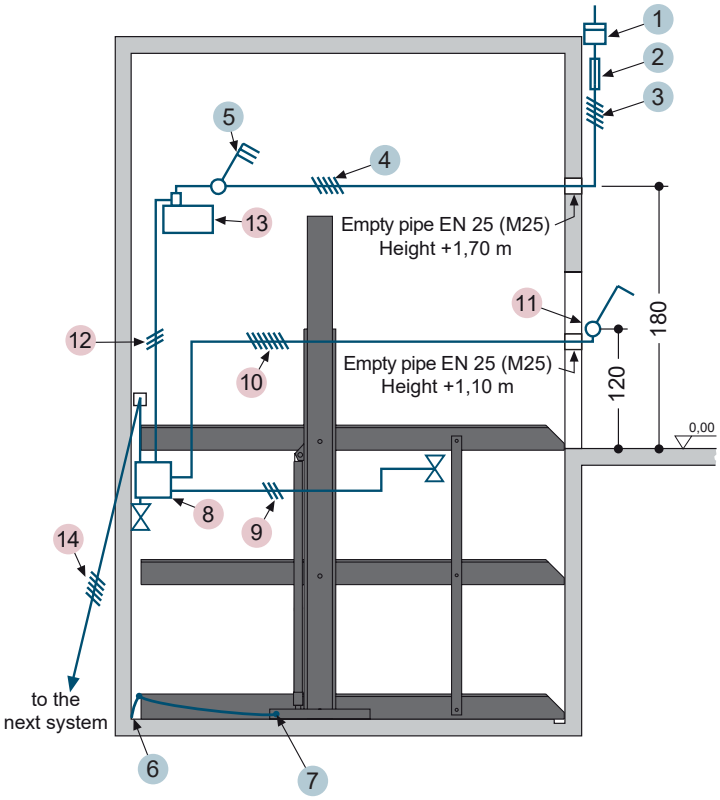
HINT : Free spaces apply only to forward parked cars with driver exit on the left side!

18 Dimensions B1, B2 and B3, see **"Width dimensions for garage without door"**, page 3.

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Page 1 Sections, dimensions, car data
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Page 5 Parking position, Approach, Wall clearance
Page 6 Load plan, Space for duct installation
Page 7 Installation data / electrical installation
Page 8 Technical hint
Page 9 Facilities from customer
Page 10 Description EB + DB

▶ Electrical installation



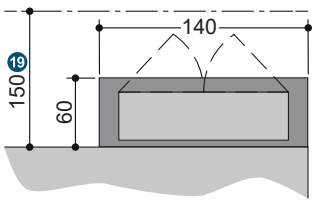
Electrical data to be performed by the customer

No.	Qty.	Description	Position	Frequency
1	1	Electricity meter	in the supply line	
2	1	Main fuse: 3 x fuse 20 A (slow) or circuit breaker 3 x 20 A (trigger characteristic K, G or C)	in the supply line	1 per 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 5 x 1,5 mm² with marked wire and protective conductor
13	Hydraulic unit 5,2 kW, three phase current, 400 V, 50 Hz
14	Control line 5 x 1,5 mm² with marked wire and protective conductor

▶ 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 car stacker. For this purpose, a foundation (140 x 60 cm) made of concrete is required (concrete quality min. C20/C25). The cabinet is doweled into the floor. The drill hole depth is approx. 10 cm.

⑲ Free space

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▶ Technical hint

Usage area
As a standard, the system is suitable for long-time car parking. Frequent usage of upper parking space (e.g., short-term parking in office buildings or hotels) requires structural modifications to the **swiss-park** system. 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 7).

Railings
If the permissible drop opening is exceeded, railings are to be mounted on the systems. If there are traffic routes next to or behind the installations, railings compliant to DIN EN ISO 13857 must be installed by the customer. Railings must also be in place during construction.

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 car stacker systems:

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

The lifting and lowering of car stacker systems are calculated at an ambient temperature of +10 °C and with the hydraulic system positioned immediately adjacent to the car stacker. The operating time of car stacker 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.

Page 1 Sections, dimensions, car data
Page 2 Variants and Height dimensions
Page 3 Width dimensions
Page 4 Garage door dimensions
Page 5 Parking position, Approach, Wall clearance
Page 6 Load plan, Space for duct installation
Page 7 Installation data / electrical installation
Page 8 Technical hint
Page 9 Facilities from customer
Page 10 Description EB + DB

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► Facilities to be provided by the customer

Safety barriers
During the car stacker construction, 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.

Warning labels
In accordance with DIN EN 14010, the customer must provide 10 cm wide, yellow/black marking in accordance with DIN ISO 3864 in the access area in front of the contact area of the upper platform edge to identify the hazard area (see **"Load plan"**, Page 6)

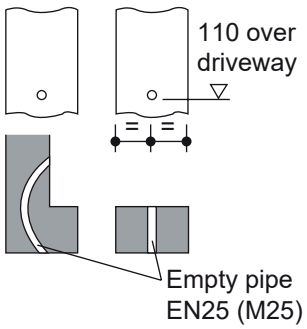
Wall cutout
Any necessary wall cutout according to page 1.

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.

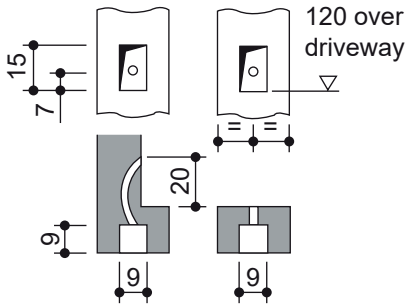
The customer must earth the steel structure with a foundation earth connection (earthing distance max. 10 m) and equipotential bonding in accordance with DIN EN 60204 (see **"Electrical installation"**, page 7)

Control panel
Empty conduits and recesses for the operating element (see **"Electrical installation"**, page 7). 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 car stacker 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
- Railing
- Floor marking

Page 1 Sections, dimensions, car data
Page 2 Variants and Height dimensions
Page 3 Width dimensions
Page 4 Garage door dimensions
Page 5 Parking position, Approach, Wall clearance
Page 6 Load plan, Space for duct installation
Page 7 Installation data / electrical installation
Page 8 Technical hint
Page 9 Facilities from customer
Page 10 Description EB + DB

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▶ Description - Single platform (EB) and Double platform (DB)

General description

- **swiss-park** systems are for independent parking of 3 cars (EB), 2x3 cars (DB) on top of each other.
- 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.
- By special arrangement of the lifting and supporting structure, the opening of the doors is not restricted.
- Passenger car positioning on each parking space by means of a positioning aid mounted on the right-hand side (to be set in accordance with the operating instructions).
- Operation via a control element with automatic reset by means of a key that closes the same way.
- Fixing the control element usually in front of the support or on the way revealing the outside.
- Operating instructions at every operating point.
- For garages with an entrance door, special dimensions must be respected.

swiss-park system consisting of:

- 2 Pillars with foundation rails (fixed to the floor)
- 2 Sliding pieces (with sliding guides attached to the pillars)
- 3 Platforms
- 1 mechanical synchronization system (for the synchronous operation of the hydraulic cylinders during lifting and lowering)
- 2 Hydraulic cylinders
- 2 rigid supports (connection of the platforms)
- 1 automatic hydraulic breakage protection (prevents involuntary lowering when driving on)
- Dowels, screws, fasteners, connecting elements etc.

Platform consisting of:

- Platform profiles
- Adjustable positioning aids
- Bevelled bumpers
- Lateral beams
- Bearing center [DB only]
- Brackets
- Screws, nuts, spacer tubes, etc.

Hydraulics consisting of:

- Hydraulic cylinder
- Solenoid valve
- Safety valves
- Hydraulic lines
- Hydraulic fittings
- High-pressure hoses
- Mounting material

Electrical system consisting of:

- Operating element (Emergency-stop, lock, 1 master key per parking space)
- Junction box unit
- Control cabinet

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 (5.2 kW, 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.

Page 1 Sections, dimensions, car data
Page 2 Variants and Height dimensions
Page 3 Width dimensions
Page 4 Garage door dimensions
Page 5 Parking position, Approach, Wall clearance
Page 6 Load plan, Space for duct installation
Page 7 Installation data / electrical installation
Page 8 Technical hint
Page 9 Facilities from customer
Page 10 Description EB + DB


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