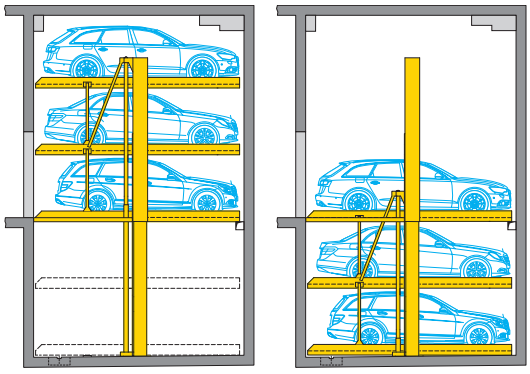
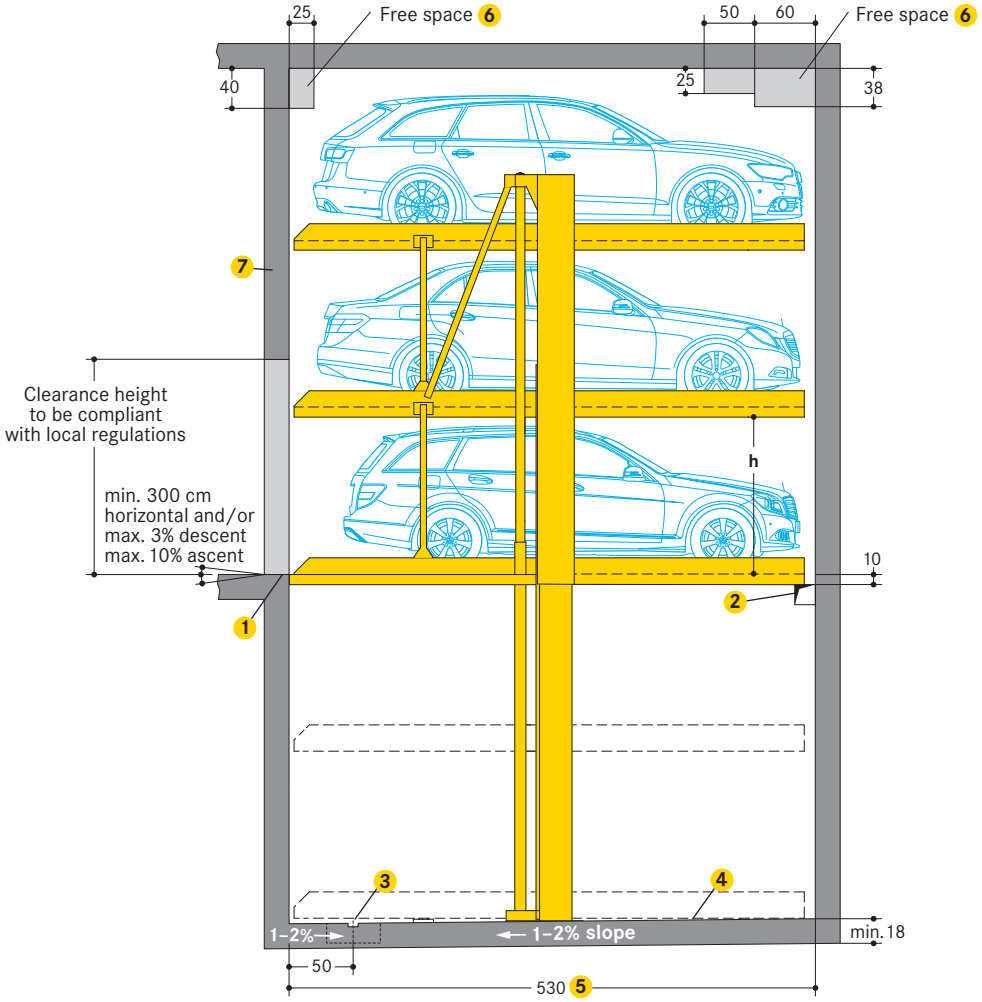
Data Sheet
WÖHR PARKLIFT 413

- **Single units: 3 cars**
  Double units: 6 cars
- **Platform load options:**
  – max. 2000 kg, load per wheel 500 kg
- **Platforms are in horizontal position to drive on**



Length dimensions underground car park (height dimensions see page 2)



1 Yellow-black safety marking (performed by the customer):
– compliant to ISO 3864, 10 cm wide, along the pit edges (see page 5 »Static calculations and construction works requirements«)

2 In case of intermediate walls (performed by the customer):
– 15 x 15 cm opening for electric and hydraulic system cables and piping
– after installation, do not close the opening

3 Drainage channels (performed by the customer):
– 10 x 2 cm, with a 50 x 50 x 20 cm drainage pit
– in case of installation of a sump pump, it is necessary to comply with the drainage pit dimensions specified by the pump manufacturer
– above-ground garages: if there is a slope on the entrance side, a drainage channel in front of the pit edge is recommended

4 Channels or undercuts/concrete haunches (performed by the customer):
– not allowed along the pit floor-to-wall joints
– should channels or undercuts be necessary, the system width needs to be reduced or the pit needs to be wider

5 500 cm vehicle length = 530 cm pit length
– for longer vehicles: vehicle length + 30 cm safety distance = pit length (pit length max. 550 cm)

6 Free spaces:
– please ask WÖHR for the dimension sheets

7 Lintel

Dimensions

– all dimensions specified are the minimum, finished dimensions
– tolerances must be taken into consideration
– all dimensions are given in cm

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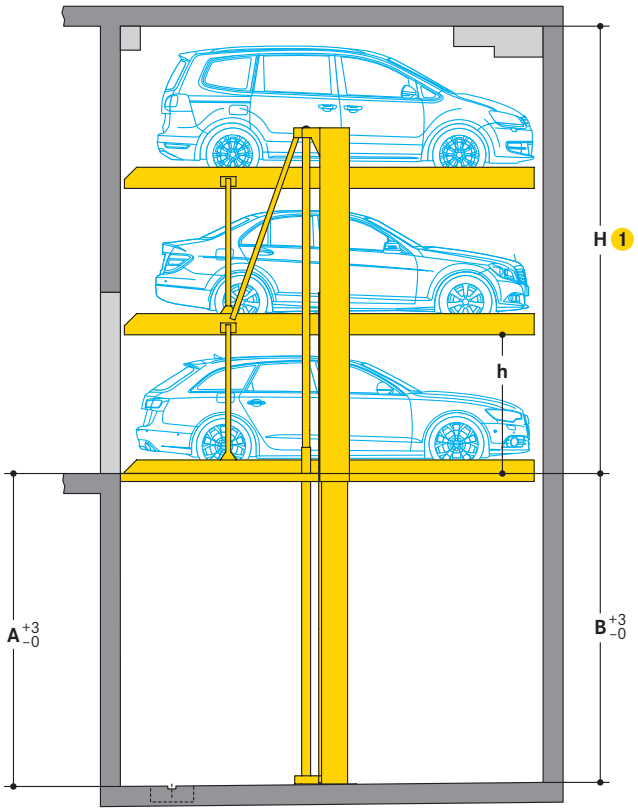
Height dimensions Standard type 413

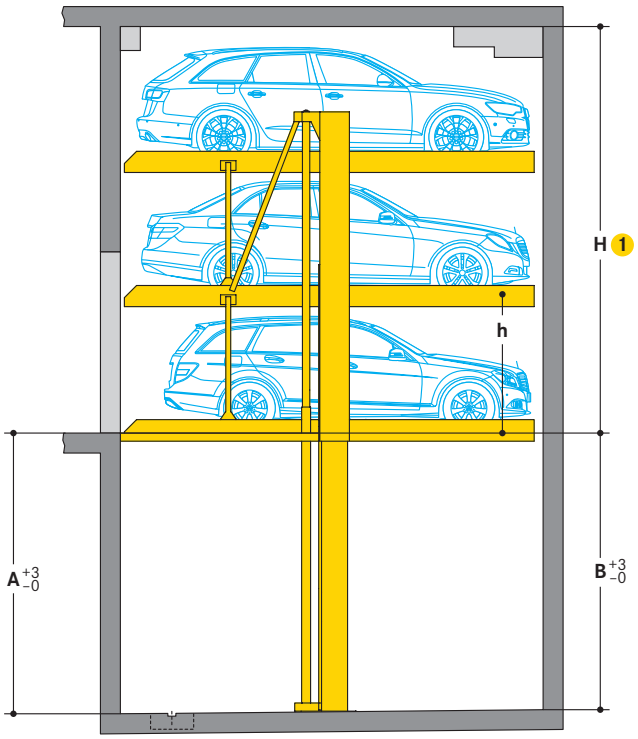


Type	Height (H) 1	Pit depth A	Pit depth B	Vehicle height 2 all levels	Platform distance (h)
413-385/380	555	385	380	L+S 175	180
413-375/370	540	375	370	L+S 170	175

1 With an increase in headroom available, correspondingly taller cars will be able to park on the upper platform.

2 L = Limousine / S = Station wagon

Height dimensions Compact type 413



Type	Height (H) 1	Pit depth A	Pit depth B	Vehicle height 2 all levels	Platform distance (h)
413-345/340	495	345	340	L+S 155	160
413-335/330	480	335	330	L+S 150	155

1 With an increase in headroom available, correspondingly taller cars will be able to park on the upper platform.

2 L = Limousine / S = Station wagon

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Decision support for the vehicle height

Choosing the right vehicle height for your project is essentially based on any building regulations, user expectations and building specifications. Criteria can include:

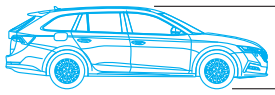
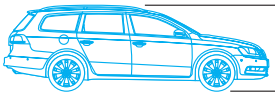
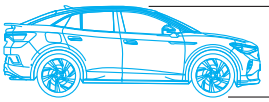
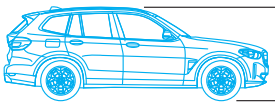
Residential buildings:
Different parking space heights are conceivable and can affect the sales price. For example, lower parking spaces could be provided for higher vehicles. This results in more convenient access to the vehicle. Less high vehicles in the upper parking spaces and thus reduced building height and less enclosed space. The ramp to the underground car park will be less steep or less long. To make it easier to sell and use parking spaces, we recommend that the vehicle heights be the same.

Office buildings:
For this parking concept, we recommend the same vehicle height for all parking spaces. If permanently assigned parking spaces are preferred for parking permittees, different parking space heights could be provided.

Hotels:
Whether city hotel, vacation hotel or vacation apartments: With changing occupancy, all parking spaces should have the same vehicle height. Maximum parking space heights should be selected to allow parking for vehicles with roof-mounted structures, if necessary.

Passenger car registrations in Germany*

Orientation aid for height dimensions: With a system type, which for example covers cars up to 175 cm in height, 92.81 % of all cars registered new in 2022 in Germany can be parked.

Height	Examples of models	Passenger car registrations
143,5	Opel Corsa	33,27 %  up to 150 cm*
144,1	VW Passat	
147,3	Audi A8	
152,5	Citroen C4	50,29 %  up to 155 cm*
152,8	Jeep Avenger	
154,0	Mazda CX-30	
161,5	VW ID.5	91,25 %  up to 170 cm*
166,8	BMW iX3	
168,1	Skoda Kodiaq	
171,2	Audi Q7	92,81 %  up to 175 cm*
171,8	Mercedes Benz EQS SUV	
172,7	Volvo XC90	

* Due to different equipment, vehicles of the same design may have different heights. The maximum heights have been taken into account.
Source: German Federal Motor Transport Authority, 2022 (evaluation for motor vehicles registered in Germany for passenger transport with up to 9 seats).

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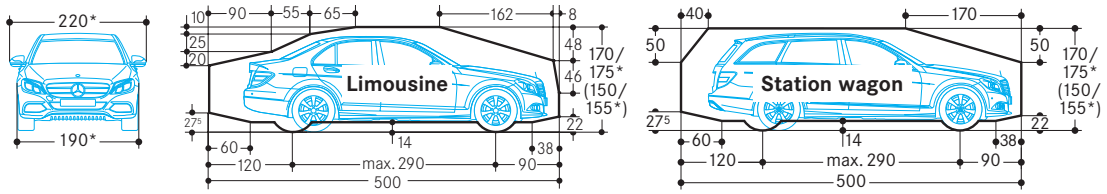
Clearance profile (for standard vehicles)



* for a 250 cm platform width

** The overall vehicle height including roof luggage rails an antenna mounts must not exceed the max. vehicle height dimensions specified

Width dimensions

Platform widths:

250 cm (single units), 500 cm (double units):
– for 190 cm vehicle width (without outside mirror)

260–270 cm (single units), 520–540 cm (double units):
– for vehicles wider than 190 cm (without outside mirror)
– for units with intermediate walls
– for units at the end of the driving aisle

For comfortable parking, entry and exit conditions platform widths upon 270 cm are recommended.

Reduced platform width means reduced parking comfort depending on the vehicle width, vehicle type, individual driving style, access situation of the garage.

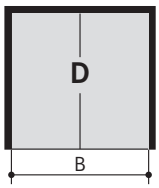
Width dimensions (underground car park)

Intermediate walls

Single unit (3 cars)

Space requirements B	Clear platform width
270	230
280	240
290	**250**
300	**260**
310	**270**

Double unit (6 cars)



Space requirements B	Clear platform width
500	460
520	480
540	**500**

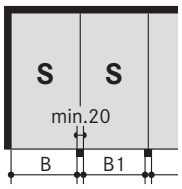
Combined unit (9 cars)

Space requirements B	Clear platform width
765	460+230
795	480+240
825	**500+250**
835	**500+260**
845	**500+270**

It is possible to combine different widths

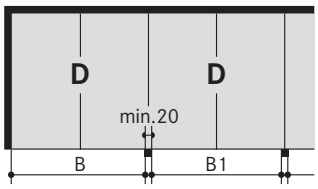
Columns external to the pit

Single unit (3 cars)



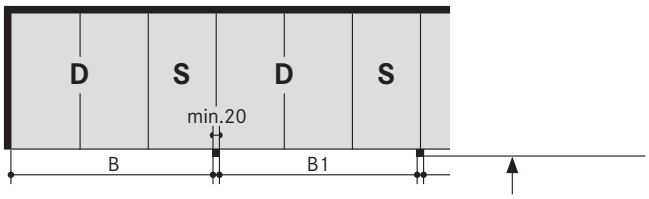
Space requirements wall-column B	Space requirements column-column B1	Clear platform width
260	245	230
270	255	240
280	**265**	**250**
290	**275**	**260**
300	**285**	**270**

Double unit (6 cars)



Space requirements wall-column B	Space requirements column-column B1	Clear platform width
490	475	460
510	495	480
530	**515**	**500**

Combined unit (9 cars)

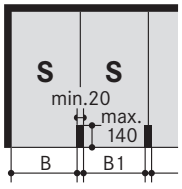


Space requirements wall-column B	Space requirements column-column B1	Clear platform width
750	740	460+230
780	770	480+240
810	**800**	**500+250**
820	**810**	**500+260**
830	**820**	**500+270**

It is possible to combine different widths

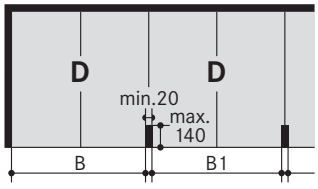
Columns in the pit

Single unit (3 cars)



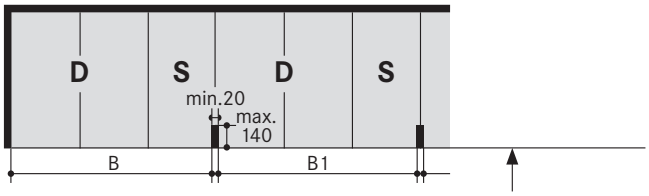
Space requirements wall-column B	Space requirements column-column B1	Clear platform width
260	245	230
270	255	240
280	**265**	**250**
290	**275**	**260**
300	**285**	**270**

Double unit (6 cars)



Space requirements wall-column B	Space requirements column-column B1	Clear platform width
490	475	460
510	495	480
530	**515**	**500**

Combined unit (9 cars)



Space requirements wall-column B	Space requirements column-column B1	Clear platform width
750	740	460+230
780	770	480+240
810	**800**	**500+250**
820	**810**	**500+260**
830	**820**	**500+270**

It is possible to combine different widths

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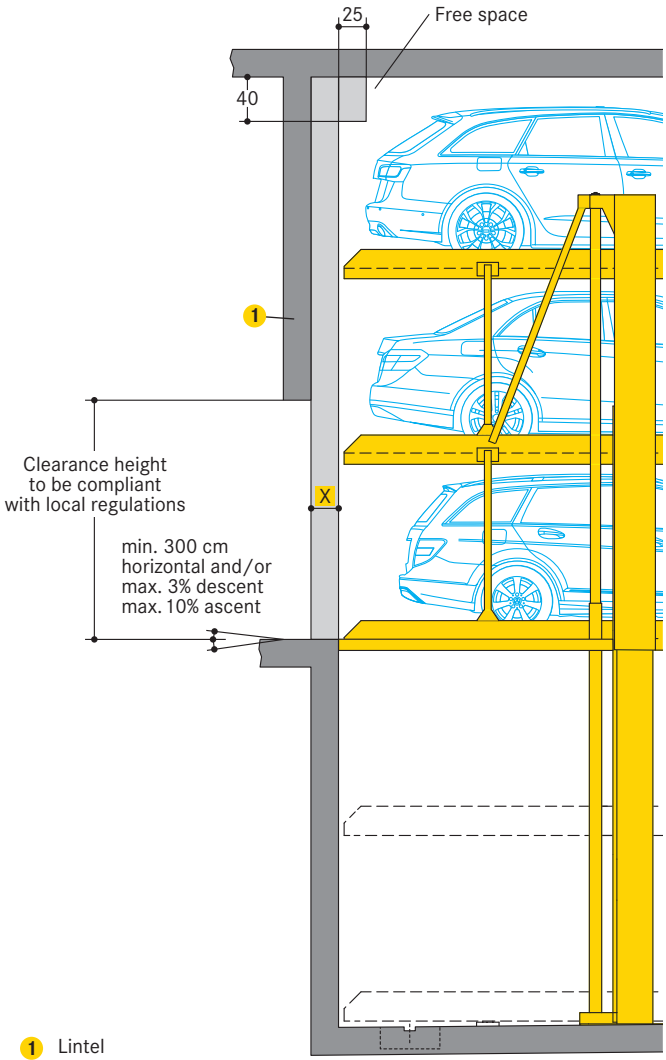
Garages with doors

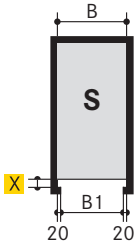


1 Lintel

X = 10/15 cm for roller shutters

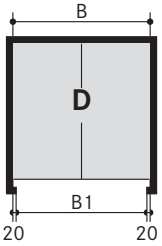
Dimension X to be defined by customer with the door supplier.

Single unit (3 cars)



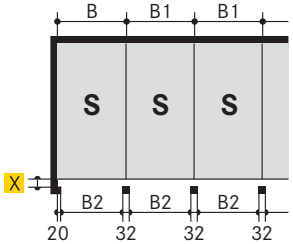
Space requirements B	B1 2	Clear platform width
270	230	230
280	240	240
290	**250**	**250**
300	**260**	**260**
310	**270**	**270**

Double unit (6 cars)



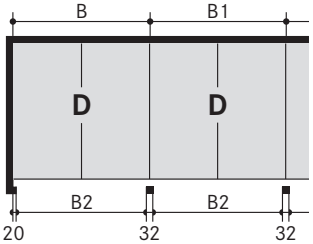
Space requirements B	B1 2	Clear platform width
500	460	460
520	480	480
540	**500**	**500**

Garage rows with single doors (3 cars each)



Space requirements B	B1	2 B2	Clear platform width
266	262	230	230
276	272	240	240
286	**282**	**250**	**250**
296	**292**	**260**	**260**
306	**302**	**270**	**270**

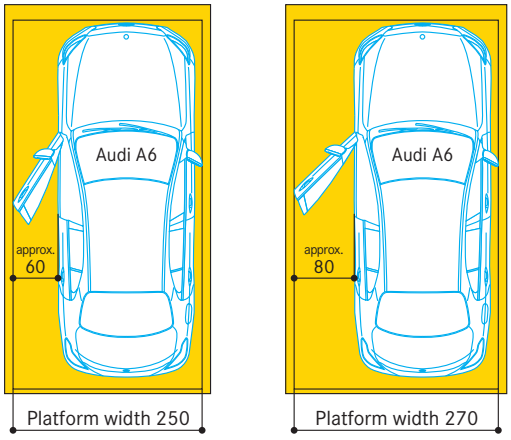
Garage rows with double doors (6 cars each)



Space requirements B	B1	2 B2	Clear platform width
496	492	460	460
516	512	480	480
536	**532**	**500**	**500**

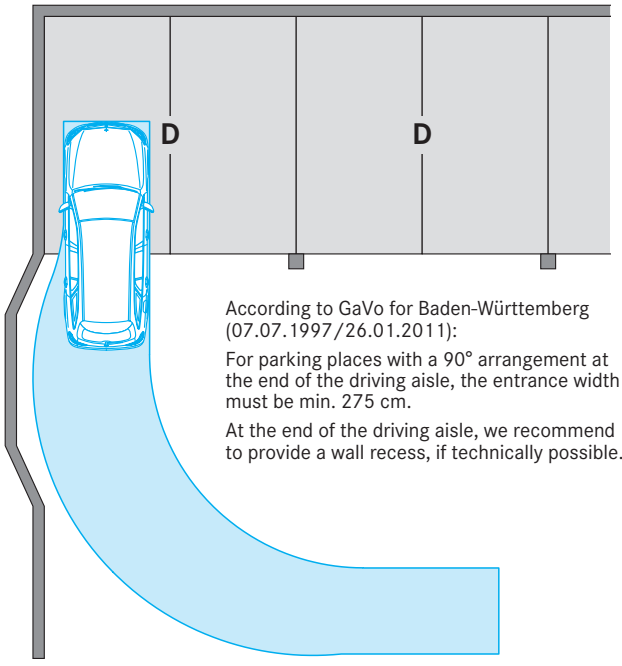
2 B1/B2 = drive-in passage width

Door opening dimensions



Depending on the vehicle model and the parking position of the vehicle on the platform, the space for opening the door varies. For comfortable conditions for getting in and out of the car, we recommend platform widths of 270 cm.

Wall recess



According to GaVo for Baden-Württemberg (07.07.1997/26.01.2011):

For parking places with a 90° arrangement at the end of the driving aisle, the entrance width must be min. 275 cm.

At the end of the driving aisle, we recommend to provide a wall recess, if technically possible.

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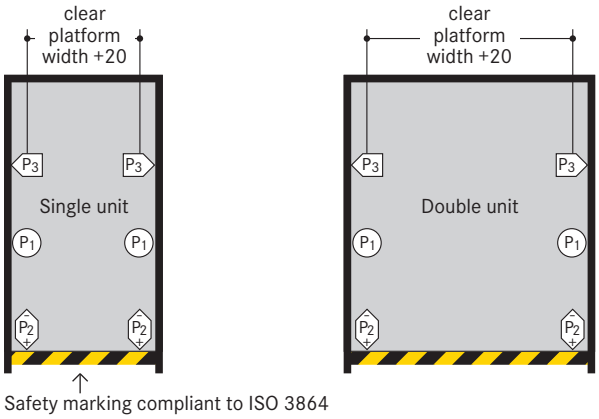
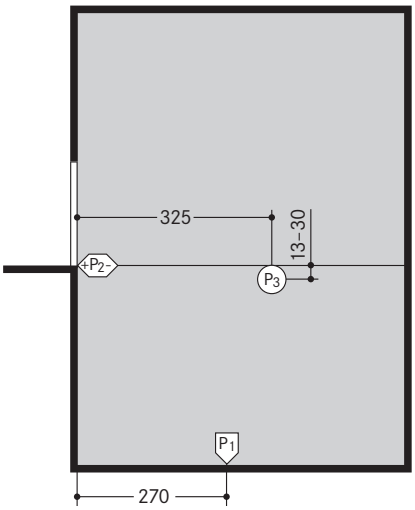
Static calculations and construction works requirement



Safety marking compliant to ISO 3864



P1	+ 60 kN*
P2	+ 9 kN* – 3 kN
P3	+ 3 kN*

*specified load bearing data includes the vehicle weight

P1	+100 kN*
P2	+ 12 kN* – 6 kN
P3	+ 3 kN

Fixing of the system frames to the floor slab:
- using base plates (approx. 700 cm²)
- using adhesive anchor bolts
- hole depth to 12–14 cm
- concrete thickness of at least 18 cm

Concrete quality grade:
- compliant to the static requirements of the construction
- min. C20/25 grade (for dowel fastening)

Walls:
- walls below the entrance level in concrete
- perfectly flat wall surfaces
- without protruding sections such as border edgings, pipes and tubes, etc.
- concrete thickness of at least 18 cm

Frame bearing points:
- the specified lengths are expressed as mean value
- for the exact data, specific TÜV-tested data sheets are available

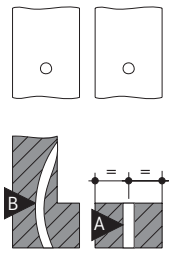
Extra space for hydraulic power packs

Dimensions in cm	1 single unit or 1 double unit	2–5 single units or 2–3 double units
Length:	100	200
Height:	140	140
Depth:	35	35

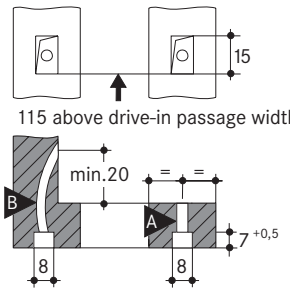
Hydraulic power pack placement options:
- located either on the top platform so that it moves with unit or on the wall
- where this is not possible, it is necessary to arrange for an extra space above drive-in level (i.e. for a wall recess or a niche)

Operating panel recesses and empty piping requirements

Flush mounted



Recess mounted



A M20 plastic or steel-armoured piping

B M20 flexible, plastic-insulated piping

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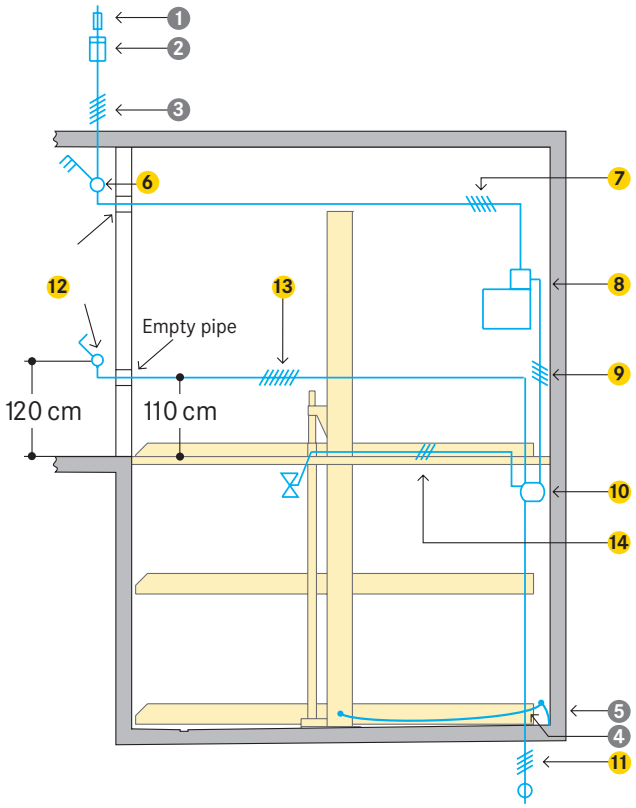
Electrical specifications

Installation diagram



Cabling preparation to be performed by the customer:

- up to the main switch to be in place prior to starting the installation operations
- connection to the main switch during installation
- clockwise rotating field must be applied
- system functional check testing can be performed by WÖHR together with the electrician provided by the customer
- if requested at a later date, functional check testing can be performed by WÖHR at extra-cost

Grounding and potential equalisation (to be performed by the customer):

- compliant to DIN EN 60204
- connections required every 10 metres

To be performed by the customer

Item	Quantity	Description	Position	Recurrence
1	1 piece	power meter	in the feed cable	
2	1 piece	fuse protection or automatic circuit breaker compliant to DIN VDE 0100 part 430: – 3 x 25 A slow blow for 5.5 kW power pack (starting current 57 A)	in the feed cable	1 x per power pack
3	based on site conditions	compliant to local power supply regulations 3 phases + N + PE* 230/400 V, 50 Hz	feed cables to main switch	1 x per power pack
4	every 10 m	grounding and potential equalisation lead-out connection	along pit floor edges/rear wall	
5	1 piece	grounding and potential equalisation compliant to DIN EN 60204	from lead-out connection to system	1 x per system

* to DIN VDE 0100 sections 410 and 430 (no permanent load) 3 phases + N+ PE (three phase current)

Note: for garages with doors the door manufacturer must be consulted before the electrical feed cabling is laid.

Scope of delivery by WÖHR (unless otherwise specified)

Item	Description
6	Lockable main switch
7	5 x 4.0 mm² control cable leading from the main switch to the 5.5 kW power pack
8	Hydraulic power pack with three-phase motor 5.5 kW. Ready-wired switching cabinet with motor safety contactor
9	5 x 1.5 mm² control cable
10	Branch connector
11	5 x 1.5 mm² control cable lead-out to the system alongside
12	UP/down operating unit with EMERGENCY STOP. Possibly located on the left, but always out of the platform's range of movement. Cable feed-in strictly from below leading upwards (2 keys for each parking space).
13	7 x 1.5 mm² control cable
14	3 x 1.5 mm² control cable for the cylinder valve lead

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Notes and directions

Scope of application

- suitable for residential buildings, office buildings and business premises, hotels
- only for long-term users that have been instructed on how to use the system
- for frequently changing users (e.g. for office, hotel and business premises or similar):
  - only parking on top platform
  - performance of technical system adjustments is necessary
  - consultation with WÖHR is mandatory

Noise protection

Basis is the German DIN 4109 “Noise protection in buildings”.

With the following conditions required 30 dB (A) in rooms can be provided:

- noise protection package from our accessory
- insulation figure of the construction of min. $R'_w = 57$ dB
- walls which are bordering the parking systems must be done as single wall and deflection resistant with min. m’= 300 kg/m²
- solid ceiling above the parking systems with min. m’= 400 kg/m²

At differing constructional conditions additional sound absorbing measures are to be provided by the customer.

The best results are reached by separated sole plates from the construction.

Increased sound insulation (separate agreement):

It is based on VDI 4100 „Sound insulation in building construction“ Assessment and proposals for increased sound insulation.

Under the following conditions, 25 dB (A) can be complied with in living spaces and bedrooms:

- sound insulation package according to offer/order
- Sound insulation value of the building structure of min. $R'_w = 62$ dB (to be performed by the customer)

Note:
User noises are not subject to the requirements (see VDI 4100, Scope - Notes). User noises are basically noises that can be individually influenced by the user of the parking systems (e.g. driving on the platform, closing of vehicle doors, engine and brake noises).

Drainage

Water leaks into the pit:

- in the winter, up to 40 litres of snow water can possibly come with the wheel housings in just one parking process

Drainage channels:

- along the front end sections of the pit
- connecting to a floor drain or drainage pit (50 x 50 x 20 cm)
- with manual emptying out of the drainage pit
- alternatively installation of a pump or drainage channel into the sewerage system, to be performed by the customer

Sideways slope drainage:

- only into a gutter
- not possible in the remaining pit section

Lengthways slope drainage:

- provided according to specified construction dimensions

Environmental safety:

- coating of the pit flooring is recommended
- installation of an oil and/or petrol separator unit between the drainage connection and the main sewerage system is recommended

Temperature

- system operating range: –10° bis +40°C (with unloaded platforms lowering speed is reduced if less than +5° C)
- humidity: 50 % at +40° C
- in the event of changes to system conditions please consult with WÖHR

Conformity examination (TÜV)

- voluntary conformity assessment by the TÜV SÜD

The parking systems are compliant to:
- EC Machinery Directive 2006/42/EC
- DIN EN 14010
- ISO 9001:2015

Lighting

- sufficient lighting of the driving aisle and of the parking places must be performed by the customer

Fire safety

- all fire safety requirements and all mandatory equipment (fire extinguisher and fire alarm systems, etc.) must be performed by the customer

Railings

The units need to be provided acc. EN ISO 13857 with safety railings if the gap between unit and wall exceeds 20cm. If walkways are arranged directly to the side or behind the systems, railings have to be provided by client acc. to local requirements, height min. 200 cm – this is applicable during the construction phase too.

Maintenance

- WÖHR and all the WÖHR partners abroad provide an installation and customer service network
- regular, annual maintenance is provided subject to the stipulation of a maintenance agreement

Mounting

- crane for mounting to be performed by customer
- for mounting in underground garage or rooftop areas, mobile crane (radius minimum 5 metres) to be performed by customer
- minimum hook height of 700 cm over entry level, crane load approx. 700 kg

Prevention of corrosion damage

- all operations listed in the WÖHR Cleaning and Maintenance Instructions are to be performed regularly (independently of maintenance operations)
- zinc-plated parts, components and platforms are to be kept clean of dirt, road-salt and any other debris (due to corrosion hazards)
- always keep the garage well ventilated and deaerated

Surface protection

- please consider the information on surface protection!

Tender specification

- please consider the specifications!

Parking Place-Profile

- please consider the product information Parking Place-Profile!

Construction formalities

- the documentation necessary for construction permit applications is provided by WÖHR on demand

Construction alterations and/or modifications

- the right to construction or model modifications and/or variations is hereby reserved
- the right to any subsequent part modification and/or variation and amendments in procedures and standards due to technical and engineering progresses or due to environmental regulation changes is also hereby reserved

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