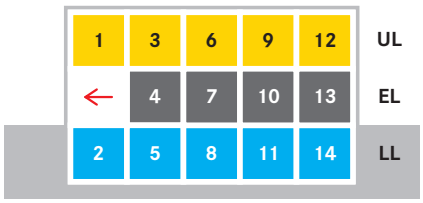
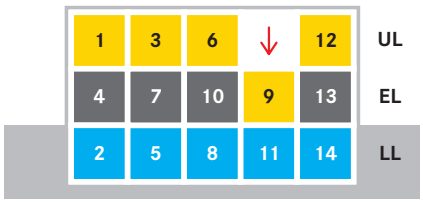
Data Sheet
WÖHR COMBILIFT 543

- **Platform load options:**
  - max. 2000 kg, load per wheel 500 kg
  - max. 2600 kg, load per wheel 650 kg 7
  - max. 3000 kg, load per wheel 750 kg 7
- **Platform load can be increased later (also individual parking places)**
- **Platforms are in horizontal position to drive on**
- **Grid arrangement:**
  - minimum 2 grids for 5 vehicles
  - maximum 10 grids

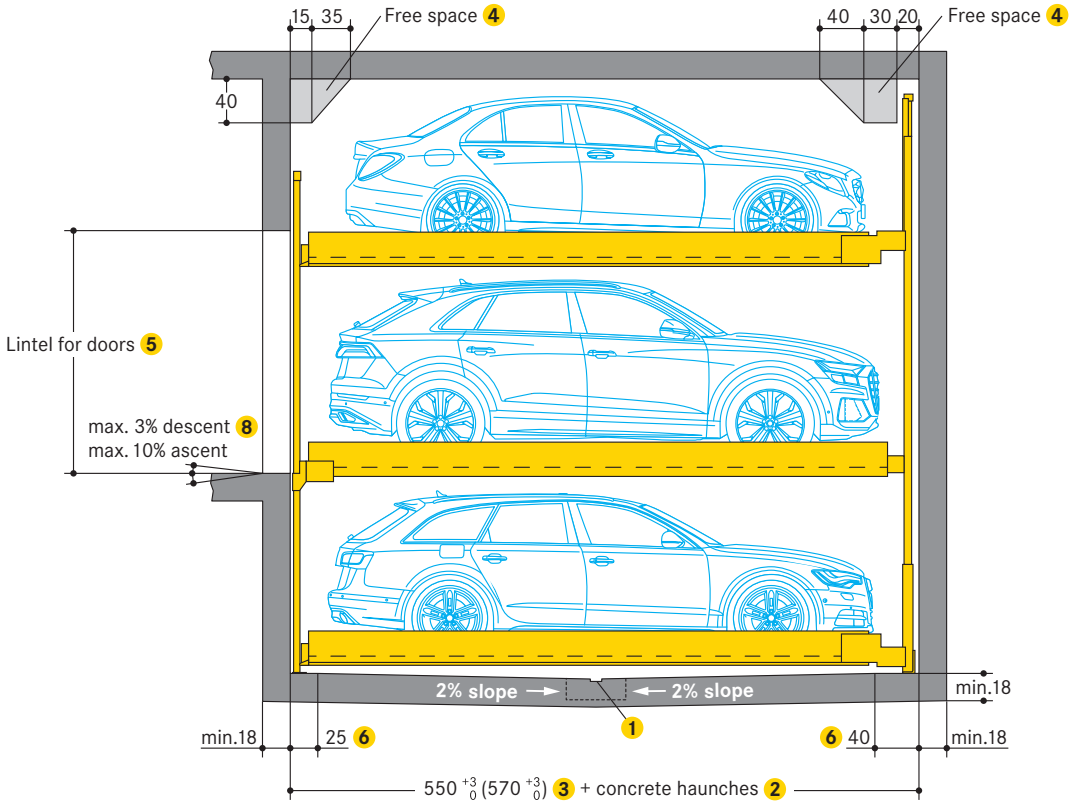


The vehicle on parking place 9 is requested. The parking places 4, 7 and 10 are shifted to the left.



Parking place 9 is lowered down to the entrance level (EL), the vehicle is now ready for exit.

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



1. 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
2. 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
3. 500 cm vehicle length = 550 cm pit length
   520 cm vehicle length = 570 cm pit length
4. Free spaces:
   - please ask WÖHR for the dimension sheets
5. Doors (see page 4/5)
6. In this area, 0% of downward/upward slope in longitudinal and cross direction
7. Increasing of platform load at extra cost
8. For above ground garages with a slope, a drainage channel in the driveway is recommended

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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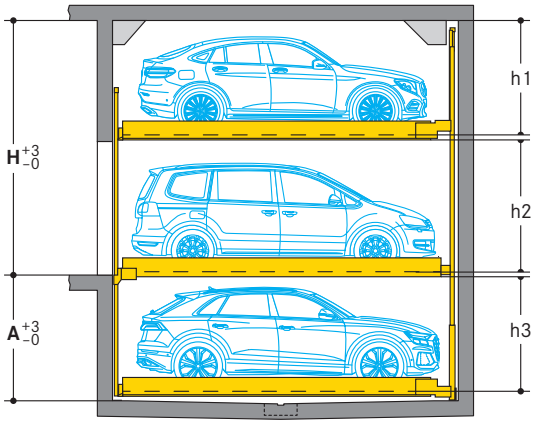
Height dimensions Comfort type

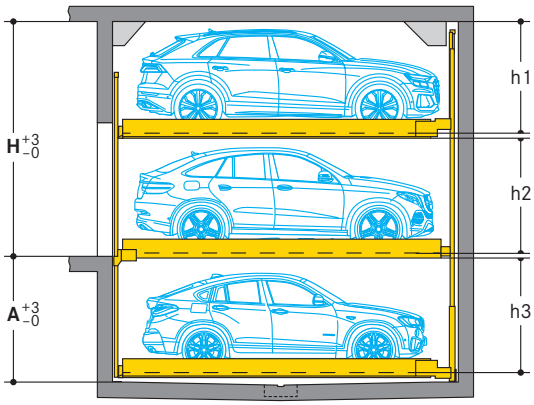


Type	Height H (2)	Pit depth A	Vehicle height (1) UL	EL	LL	Platform distance h1	h2	h3
543-200	405	200	175	205	175	180	210	180
543-200	410	200	180	205	175	185	210	180

(1) UL = upper level / EL = entrance level / LL = lower level

(2) With an increase in headroom available, correspondingly taller cars will be able to park on the upper level. Vehicle heights cannot be greater than 205 cm.

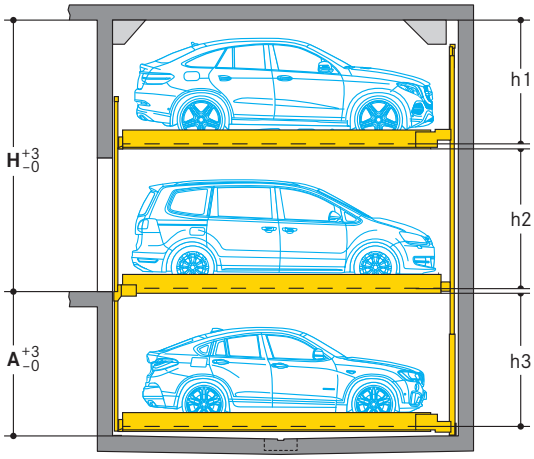
Height dimensions Standard type



Type	Height H	Pit depth A	Vehicle height (1) UL	EL	LL	Platform distance h1	h2	h3
543-200	350	200	150	175	175	180	180	180
543-200	375	200	175	175	175	180	180	180
543-200	380	200	180	175	175	185	180	180

(1) UL = upper level / EL = entrance level / LL = lower level

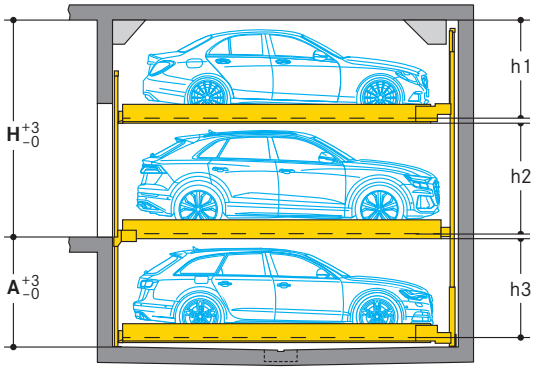
Height dimensions Premium type



Type	Height H	Pit depth A	Vehicle height (1) UL	EL	LL	Platform distance h1	h2	h3
543-230	435	230	205	205	205	210	210	210

(1) UL = upper level / EL = entrance level / LL = lower level

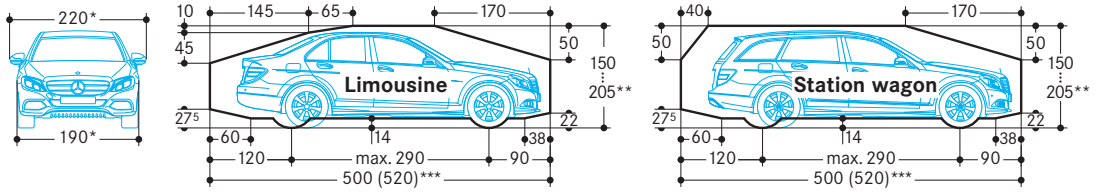
Height dimensions Compact type



Type	Height H	Pit depth A	Vehicle height (1) UL	EL	LL	Platform distance h1	h2	h3
543-175	345	175	150	170	150	155	175	155

(1) Please attend to restricted vehicle height on the lower level!
UL = upper level / EL = entrance level / LL = lower level

Lichtraumprofil (Standardfahrzeuge)



* 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
*** see page 1

Width dimensions

Platform widths:

250 cm:
– for 190 cm vehicle width (without outside mirror)

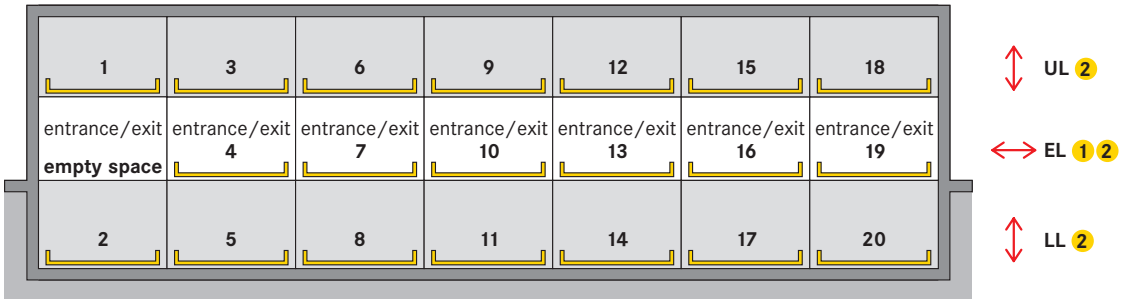
260–270 cm:
– for vehicles wider than 190 cm (without outside mirror)

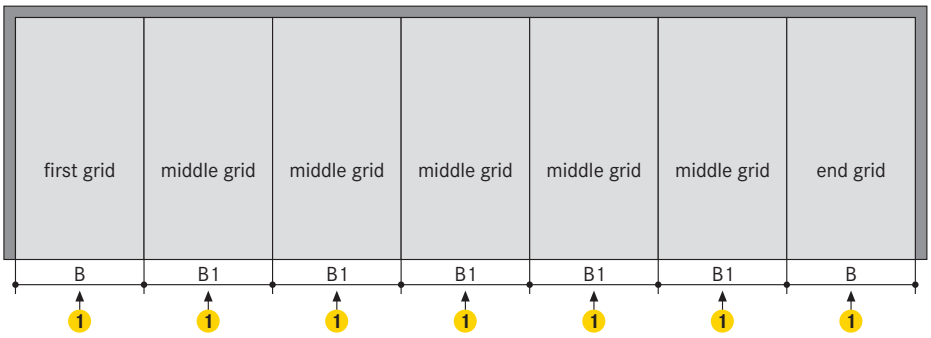
270 cm:
– for units at the end of the driving aisle

For comfortable parking, entry and exit conditions platform widths of 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.

With a 90° arrangement of the parking places, we recommend widening the driving aisle or a wall recess (see below).

Width dimensions (underground car park)



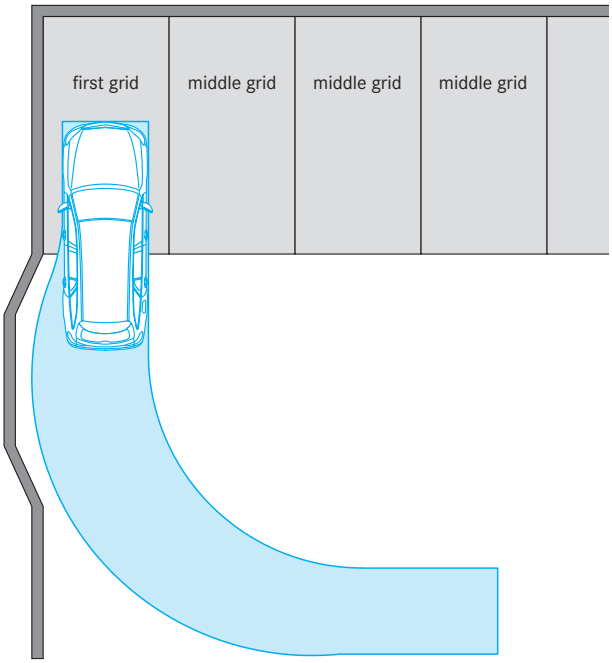


Space requirements B	Space requirements B1	clear platform width
260	250	230
270	260	240
280	**270**	**250**
290	**280**	**260**
300	**290**	**270**

1 One entry/exit is required on entrance level (EL) for each grid
UL= upper level / EL = entrance level / LL = lower level

2 For a comfortable parking process and comfortable conditions for getting in and out of the car, we recommend platform widths from 250 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.

Doors

According to DIN EN 14010 doors are required.

Sliding doors:
- controls are integrated in the overall system
- electro-mechanically interlocked
- can only be opened when the selected parking place has reached the entry/exit position
- any crash openings are closed in the entrance area

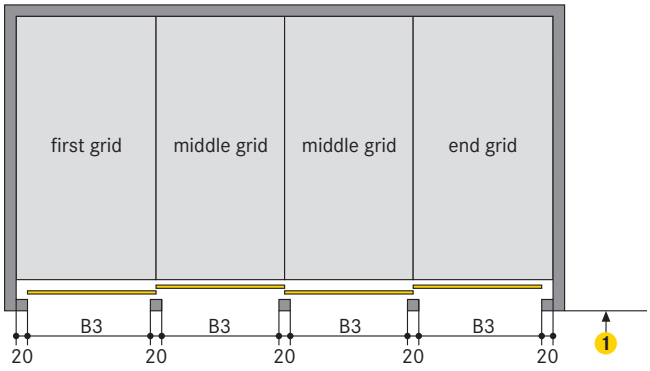
Local requirements for electrical doors regarding the technology, maintenance and revision are not subject of our delivery. These matters have to be observed and carried out by the customer, according to the local regulations.

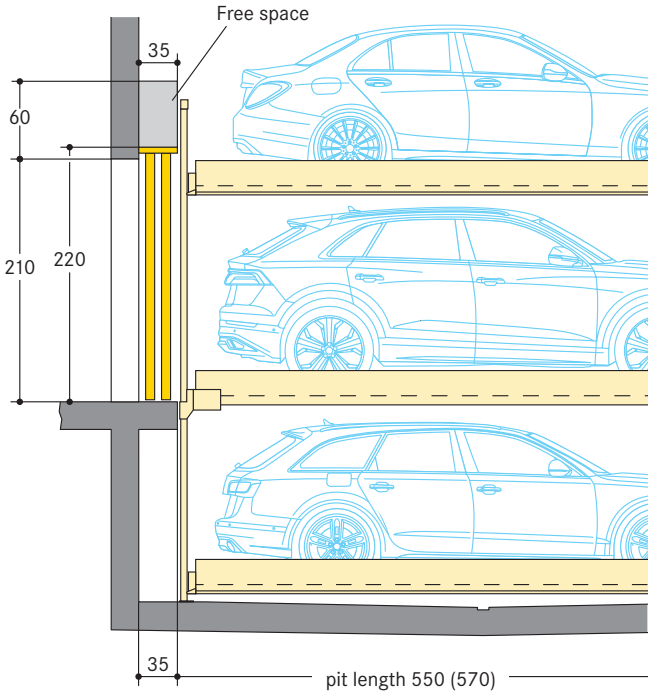
Door types:

Manually operated sliding doors:
- for underground garages with galvanized fence filling
- above ground with powder coated metal sheets (RAL 7016)
- other variants are possible at extra cost, please consider the product information “Sliding doors and Operating concepts” (link to the product information on page 8)

Alternatively, sliding doors can be supplied with electrical drive at extra cost, please consider the product information “Sliding doors and Operating concepts” (link to the product information on page 8).

Sliding doors behind the building pillars with door offset

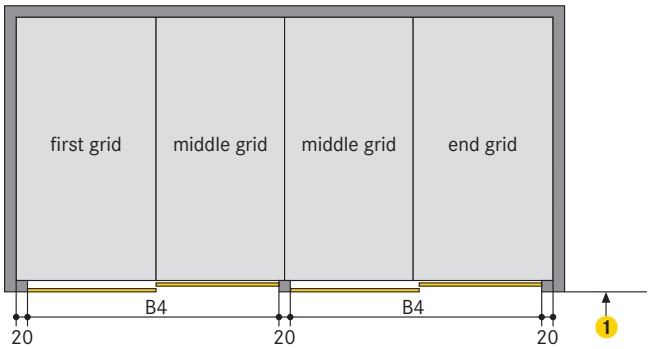


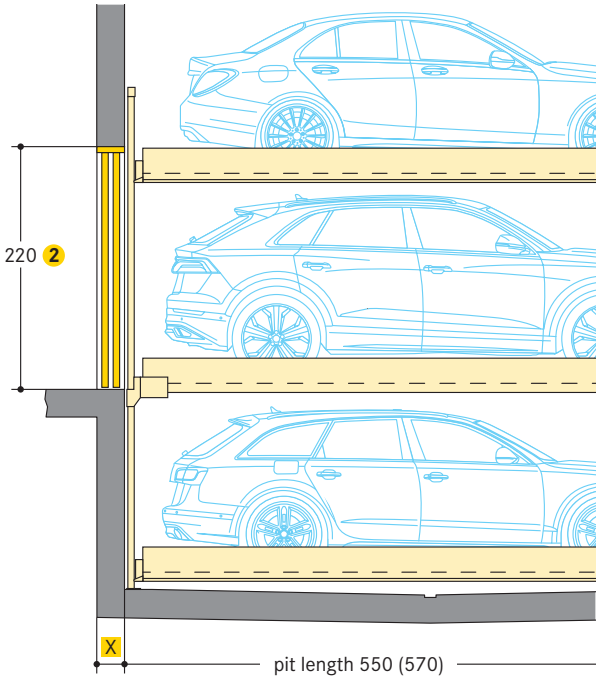


Space requirements B3	clear platform width
230	230
240	240
250	**250**
260	**260**
270	**270**

1 The driving aisle width must comply with local regulations

Sliding doors below the lintel between the building pillars





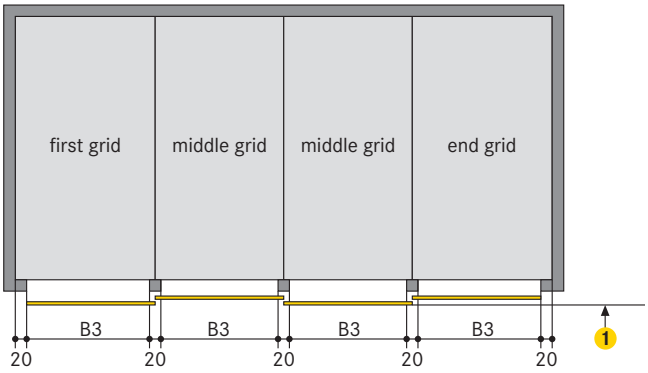
Space requirements B4	clear platform width
480	230
500	240
520	**250**
540	**260**
560	**270**

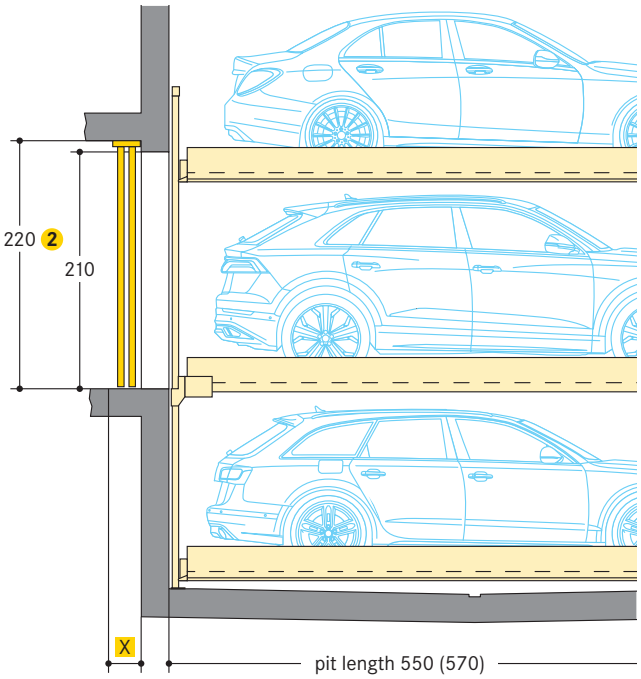
X = 25 cm (manually operated sliding doors and sliding doors with electrical drive)

1 The driving aisle width must comply with local regulations

2 The lintel of 220 cm is absolutely necessary:
- with differing heights, additional fixings are required at extra cost
- if no lintel is provided, the gates need to be fitted onto the steel frame of the unit (at extra cost)

Sliding doors in front of the building pillars





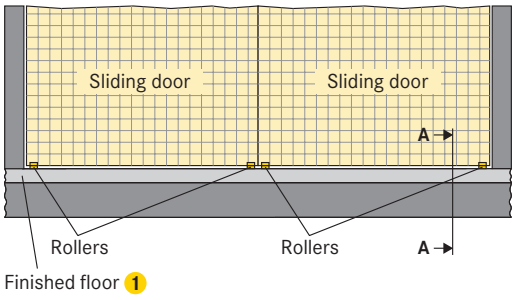
Space requirements B3	ergibt lichte Plattformbreite
230	230
240	240
250	**250**
260	**260**
270	**270**

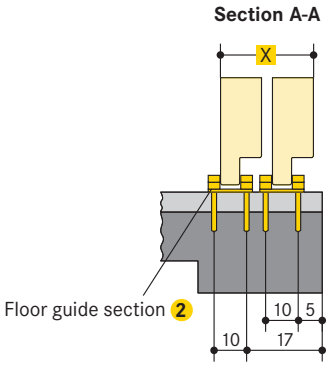
X = 25 cm (manually operated sliding doors and sliding doors with electrical drive)

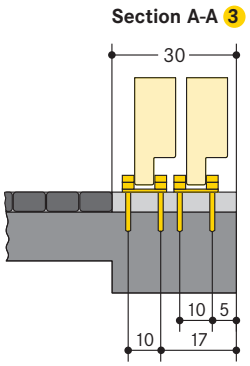
1 The driving aisle width must comply with local regulations

2 The lintel of 220 cm is absolutely necessary:
- with differing heights, additional fixings are required at extra cost

Sliding door floor guides







X = 25 cm (manually operated sliding doors and sliding doors with electrical drive)

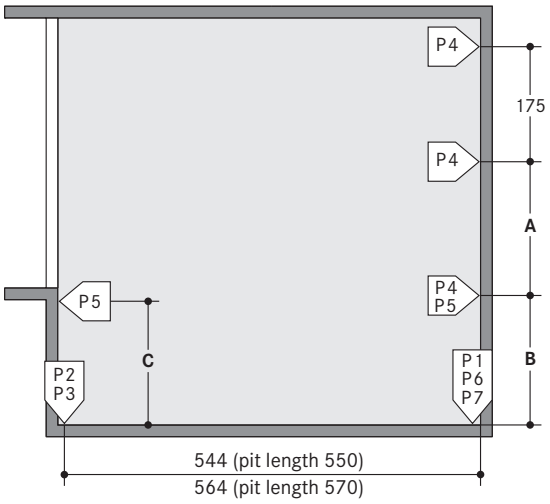
1 Finished floor:
- compliant to DIN 18353,
- floor evenness compliant to DIN 18202, table 3, line 3

2 Floor guide section:
- base plate with plastic rollers
- fixed on the floor with adhesive anchor (M8 internal screw thread)
- borehole depth approx. 9 cm
- in the event that floor filling needs to be laid into the door section to the purpose of reaching the required floor evenness, the borehole depth needs to be increased by the thickness of the floor fill (max. 4 cm)

3 If the driving aisle is made of concrete blocks, asphalt etc., the concrete slab of the pit edge in the door area must be min. 30 cm wide

Static calculations and construction works requirement

Section



Compact type	A	B	C
Combilift 543-175	141	168	135

Standard type	A	B	C
Combilift 543-200	166	193	160

Comfort type	A	B	C
Combilift 543-200	196	193	160

Premium type	A	B	C
Combilift 543-230	196	223	190

543 (2000 kg)	
P1	+ 70,0 kN*
P2	+ 49,0 kN
P3	+ 25,0 kN
P4	± 5,0 kN
P5	± 2,5 kN
P6	± 30,0 kN
P7	± 15,0 kN

543 (2600 kg)	
P1	+ 80,0 kN*
P2	+ 70,0 kN
P3	+ 35,0 kN
P4	± 5,0 kN
P5	± 2,5 kN
P6	± 30,0 kN
P7	± 15,0 kN

543 (3000 kg)	
P1	+ 92,5 kN*
P2	+ 81,0 kN
P3	+ 40,5 kN
P4	± 6,0 kN
P5	± 3,0 kN
P6	± 35,0 kN
P7	± 17,5 kN

*specified load bearing data includes the vehicle weight

Fixing of the system frames to the floor slab:
- using base plates (approx. 350 cm²)
- using adhesive anchor bolts
- hole depth to 12–14 cm
- bottom plate in concrete
- thickness of bottom plate min. 18 cm

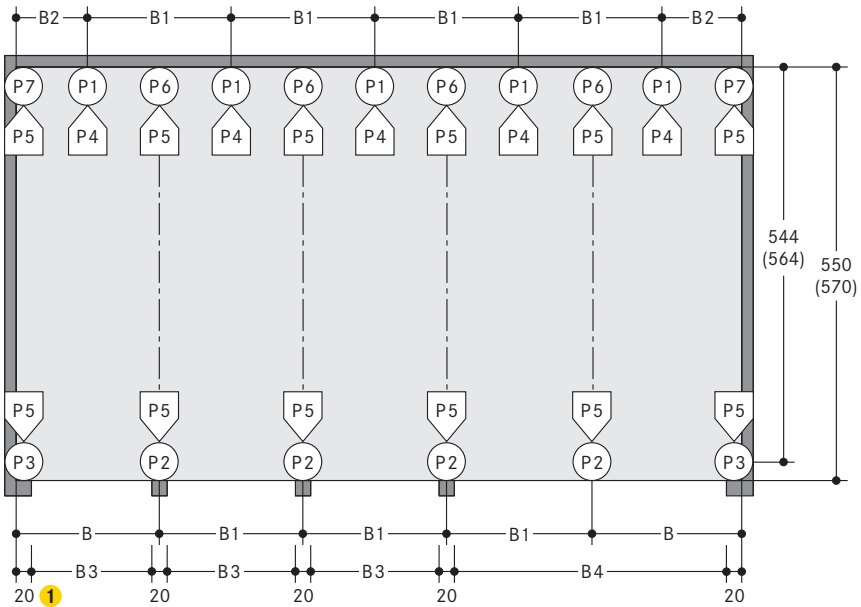
Fixing of the system frames to the walls:
- with walls plates (approx. 30 cm²)
- using adhesive anchor bolts
- hole depth to 12–14 cm
- front drive-in wall and rear wall in concrete
- perfectly flat wall surfaces
- without protruding sections such as border edgings, pipes and tubes, etc.
- thickness of walls min. 18 cm

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

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

Door widths/widths of columns:
- please contact WÖHR
- grid width (250/260/270/280/290) must be observed

Ground plan

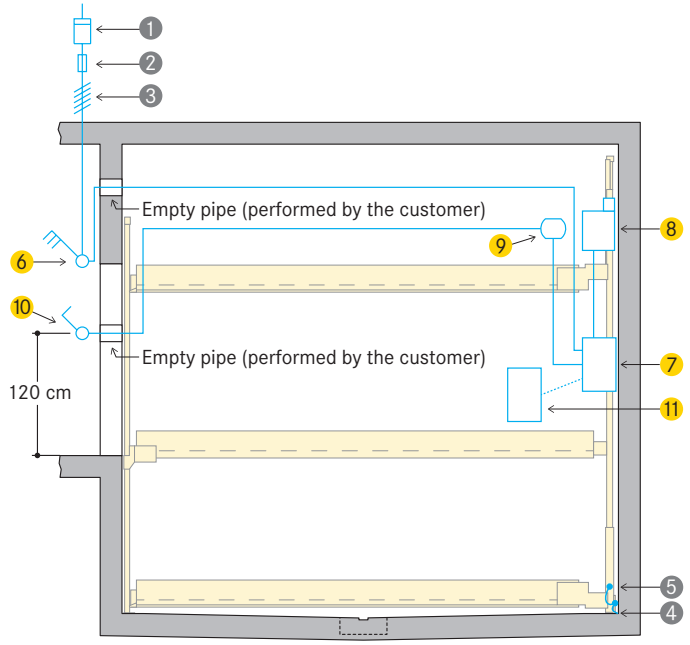


Space requirements B	B1	B2	B3	B4	clear platform width
260	250	135	230	480	230
270	260	140	240	500	240
280	**270**	**145**	**250**	**520**	**250**
290	**280**	**150**	**260**	**540**	**260**
300	**290**	**155**	**270**	**560**	**270**

1 If the width of the pillars is more than 20 cm, than the width of the drive through will be reduced accordingly to the above mentioned width dimensions (B1 and B2). In order to avoid this, we recommend to extend the measures between the pillars (B3 and B4) accordingly. Please contact WÖHR.

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
- 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 16 A (11 KW) slow blow (starting current 24 A) with only one power pack per system	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)

Scope of delivery by WÖHR (unless otherwise specified)

Item	Description
6	Lockable main switch
7	Main switch cabinet for grid 1–5
8	Hydraulic power pack with three-phase motor. Ready-wired switching cabinet with motor safety contactor
9	Branch connector
10	Operating device
11	Extra switch cabinet for grid 6–10

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):
  - performance of technical system adjustments is necessary
  - consultation with WÖHR is mandatory

Function

- one empty space per unit on entrance level
- platforms on entrance level are moved sideways
- platforms on the upper and lower levels are lifted or lowered to the empty space on the entrance level

Numbering of the parking places

- empty space on the entrance level on the left
- numbering:

UL	1	3	6	9	12
EL		4	7	10	13
LL	2	5	8	11	14

- the numbering for each unit starts with 1
- different numbering of parking places is possible at extra cost (software changes are necessary)

Hydraulic power pack

Arrangement of the hydraulic power pack:
- within the unit

Switch cabinet

Arrangement of the switch cabinet:
- within the unit

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 noise protection:

If increased noise protection must be provided planning has to be confirmed on a project basis by WÖHR.

Temperature

- system operating range: +5° 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

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 middle section 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

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

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

If walkways are arranged directly to the side or behind the systems, railings have to be provided by the customer 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
- local requirements for electrical doors regarding the technology, maintenance and revision are not subject of our delivery. These matters have to be observed and carried out by the customer, according to the local regulations.

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!

Electromobility

- please consider the product information E-charging!
- depending on the position of the charging point on the electric vehicle, collision points with protruding plugs and charging cables can occur

Sliding doors and Operating concepts

- please consider the product information Sliding doors and Operating concepts!

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