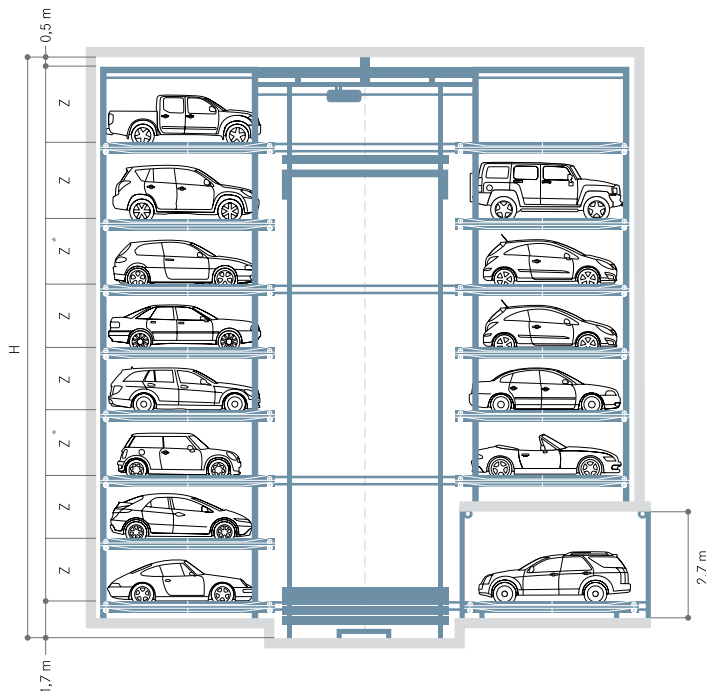# Automatic parking.
# Parking system auto- TP

# Data sheet
# Parking system auto-TP

For small surface areas, for parking up to 100 vehicles with one storage and retrieval unit in a headroom of up to 50 m above ground underground or in a mixed solution.

Due to its modular design, the parking system auto-TP can be adapted to many requirements up to a height of 50 m. Transfer rooms can be located on every parking level and by using a lateral car lift they also can be located above the parking system.

The rack structure can be built above ground, underground or in a mixed solution. The parking places can be located in a **free standing** rack structure (above ground) as well as in **concrete building** (underground). To increase throughput capacity, multiple transfer rooms may be used.

**Free standing steel structure, above ground**



**Parking places in a concrete structure, under ground**



Using the option of a lateral car lift allows for transfer room location above the parking system.
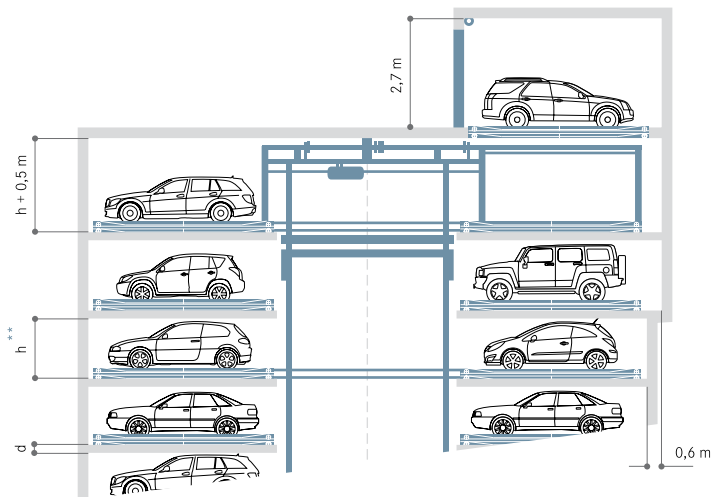
** Clear level height h = vehicle height + 0,34 m

The transfer rooms can be located on any level within the parking system.

* Z = vehicle height + 0,28 m. For structural reasons every third parking level must be increased by 0,1 m.

Dimension Z is depending on the vehicle height:
for vehicle height = 1,60 m, Z = 1,88 m
for vehicle height = 2,00 m, Z = 2,28 m

The auto-TP parking system allows for various vehicle heights.
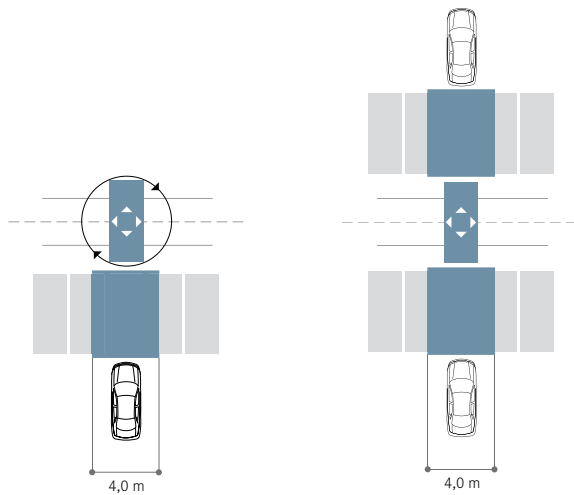
**Transfer room**
Vehicles will be parked head-in inside the transfer room and checked for correct position. The vehicle will then be parked via the turntable or directly via the storage and retrieval unit onto an empty shelf. To exit, the vehicle will be returned tot he driver head-out. At no time is the driver ever allowed to interact with the automated mechanism.
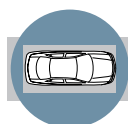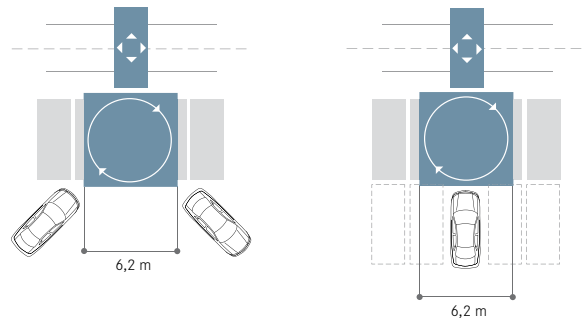
**Turntable**
Once the vehicle is parked inside the transfer room, the position checked and passengers having exited, the vehicle will be rotated to a head-out position and parked automatically.The turntable allows for any angle positon for entry and exit.

## Transfer room: feasible solutions for transfer room arrangement



4,0 m

The vehicle drives into the transfer room, then will be turned on the SRU and parked in an empty shelf. It will be retrieved for exit in driving direction.

4,0 m

This solution shows a separated entrance and exit room without turntables.

6,2 m

The entrance and exit angle can be adapted to the local requirements.

6,2 m

In this solution shows a turntable inside the transfer room.

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## General informations

- Both solutions allow for double row or mixed row arrangement of the pallets.
- The dimensions 5,20 m x 2,20 m of the parking platform allow for vehicle dimensions of Length max = 5,10 m / width max. = 2,10 m. All measures given refer to these dimensions.



A

X + 0,05     X

parking platform
5,2 x 2,2 m

s

1,0 m     Y     0,7 m

B

7,2 m (7,6 m)
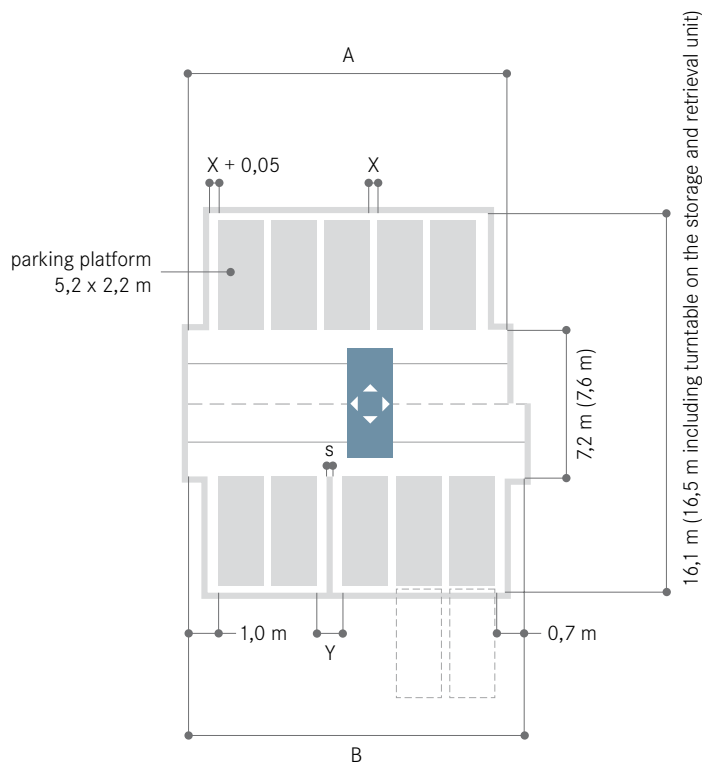
16,1 m (16,5 m including turntable on the storage and retrieval unit)

In a free standing rack structure the pallet distance X or Y are depending on the system height:

X without wallplates / Y with wallplates s = 0,3 m
for 7 and 8 parking levels: X = 0,2 m / Y = 0,78 m
for 9 and 10 parking levels: X = 0,22 m / Y = 0,82 m
for 11 and 12 parking levels: X = 0,24 m / Y = 0,86 m

Dimension for free standing solutions with cladding and more parking levels on request.

In a concrete structure with intermediate slabs the pallet distance X = 0,12 m without wallplates. The distance Y including wallplates = wallplate dimension + 0,3 m.

For the installation of the cabinets there must be room with a length of 3,5 m and a width of 1,80 m and a clear height of 2,5 m. This room shall be located close to the transfer room.

### Exemplary calculation of system length and height

Parking places in a steel rack structure
total length for 8 parking levels and 5 rows of pallets:
A = 5 x 2,2 + 4 x 0,2 + 1,0 + 0,7 = 13,5 m

Parking places on intermediate concrete slabs
Total length for 5 rows of pallets including 1 wallplate of s = 0,3 m (independent from number of parking levels):
B = 5 x 2,2 + 3 x 0,12 + 0,6 + 1,0 + 0,7 = 13,66 m

Clear overall height for 6 parking levels for vehicles up to 1,60 m and 2 parking levels for vehicle height up to 2.00 m:

Steel rack structure:
H = 1,7 + 6 x 1,88 + 2 x 0,1 + 2 x 2,28 + 0,5 = 18,24 m
Intermediate concrete slabs d = 0,2 m:
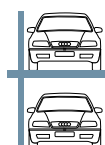H = 1,7 + 7 x 0,2 + 6 x 1,94 + 2 x 2,34 + 0,5 = 19,92 m

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**Storage and retrieval unit (SRU)**
The automatic storage and retrieval unit moves on vertical and horizontal lines to service the various units oft he racks. This system allows for the doubling of available parking compared to conventional garage operations.



**Rack structure**
The system can be constructed around a free standing or in-house steel rack framework. The vehicles are delivered onto parking pallets situated on a rack. As an alternative a concrete rack structure can be used with pallet`s rails bolted to the intermediate slabs.

# stolzer
**Automatic Parking. Quite simple.**

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