



Automatic parking. Parking system auto- LP

Data sheet

Parking system auto- LP

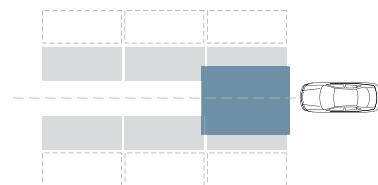
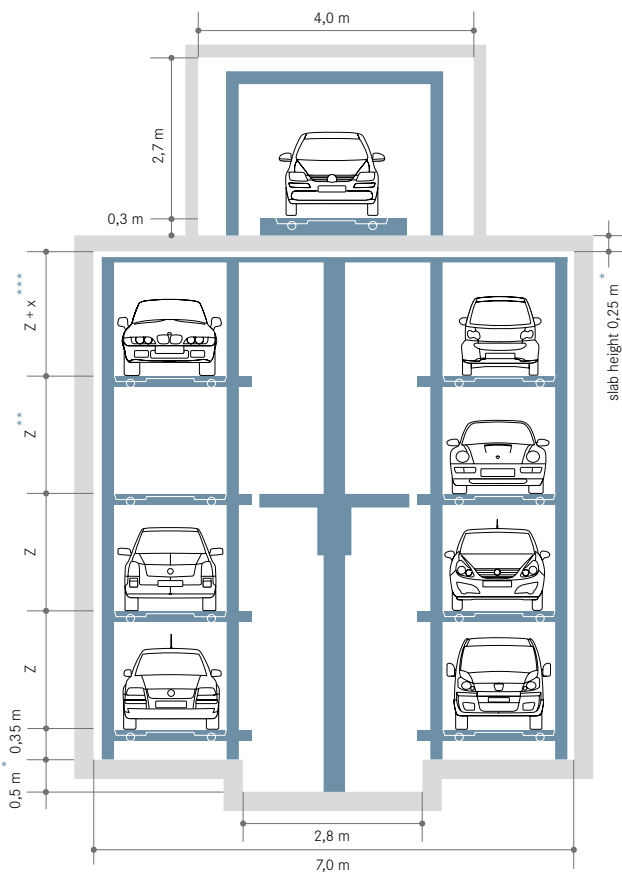
This one-of-a-kind automatic parking system for narrow spaces provides parking for up to 60 vehicles with one storage and retrieval unit. The mechanism can be structured to a height of 16 m in underground, above ground or mixed structures.

The parking system auto- LP can be configured to fit rehabilitated buildings as well as new construction, even within limited garage space. Up to 8 parking levels can be built within the system's maximum height, with different height levels to accommodate SUVs and out to a maximum length of 100 m.

Depending on its configuration, the parking system offers a pair of modular solutions: auto- LPM with the transfer room located above the storage and retrieval unit centered between the racks; and auto- LPS, with the transfer room located above the rack position. With either of these configurations, architects and designers have wide flexibility in situating the parking system for the most efficient traffic flow.

The auto- LPM configuration

(Transfer room centered above the SRU lane between the racks, required width without turntable)

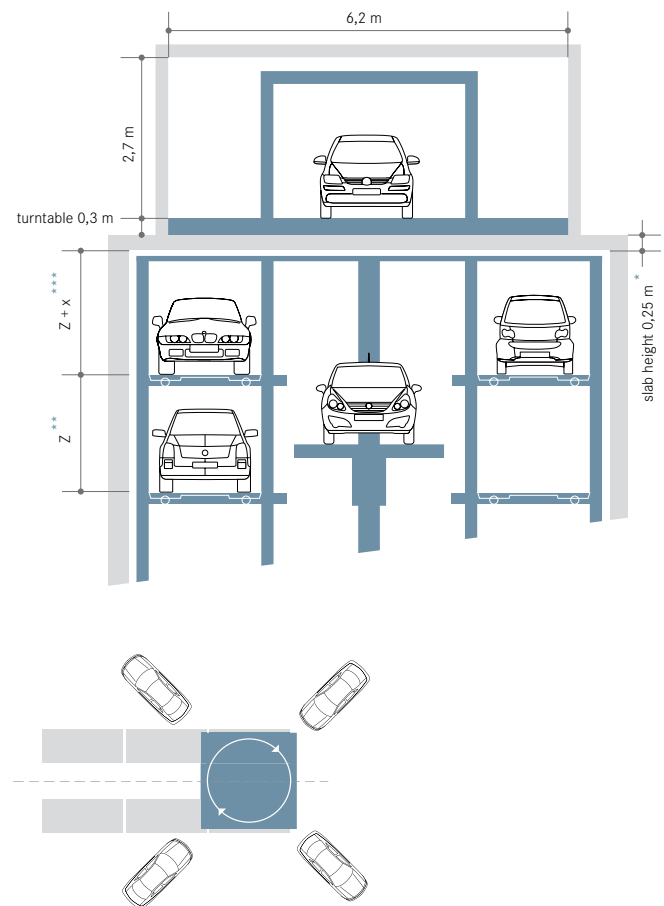


In structures without a turntable, vehicles enter and exit parallel to the rack structure.

* In case of slab height > 0,55 m, the standard SRU trench depth of 0,5 m must be extended accordingly.

The auto- LPM configuration

(Transfer room centered above the SRU lane between the racks, required width including turntable)



In structures outfitted with a turntable, vehicles may enter and exit at any angle position.

* For slab heights > 0,25 m, the standard SRU trench depth of 0,5 m standard must be extended accordingly.

** Dimension Z is a function of the vehicle height:
if vehicle height = 1,60 m, then Z = 1,72 m
if vehicle height = 2,00 m, then Z = 2,12 m

*** For systems from 3 to 8 levels one time the dimension x = 0,2 m must be added

The auto- LPM solution allows for vehicles of various heights within the structure.



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 to the driver head-out. At no time is the driver ever allowed to interact with the automated mechanism.

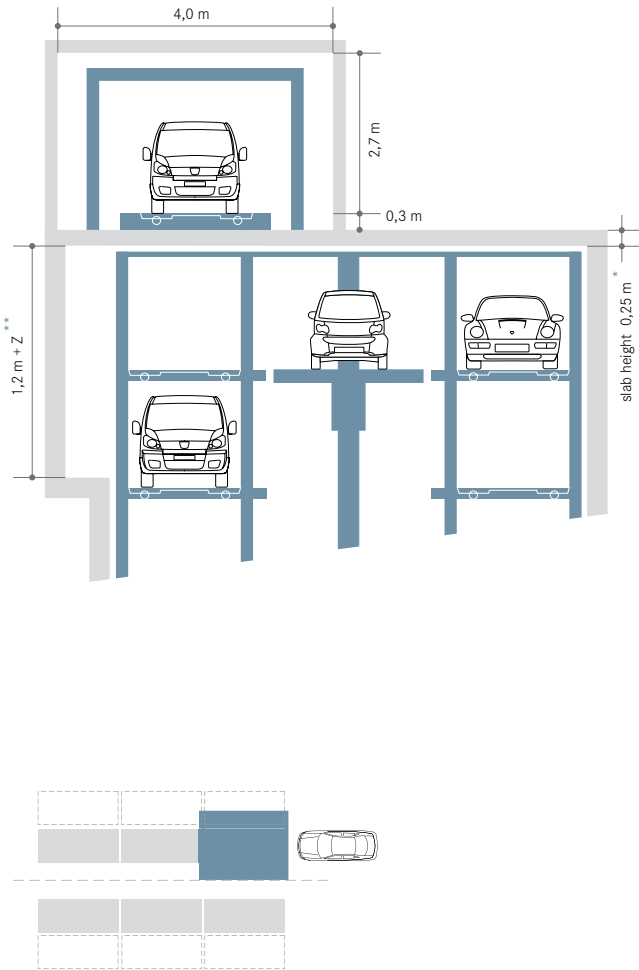


Turntable

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 position for entry and exit.

The auto- LPS configuration

(Transfer room located above the rack structure, required width without turntable)



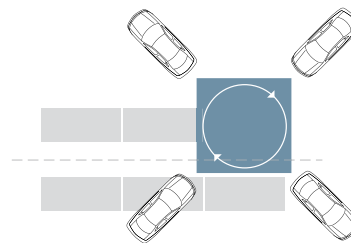
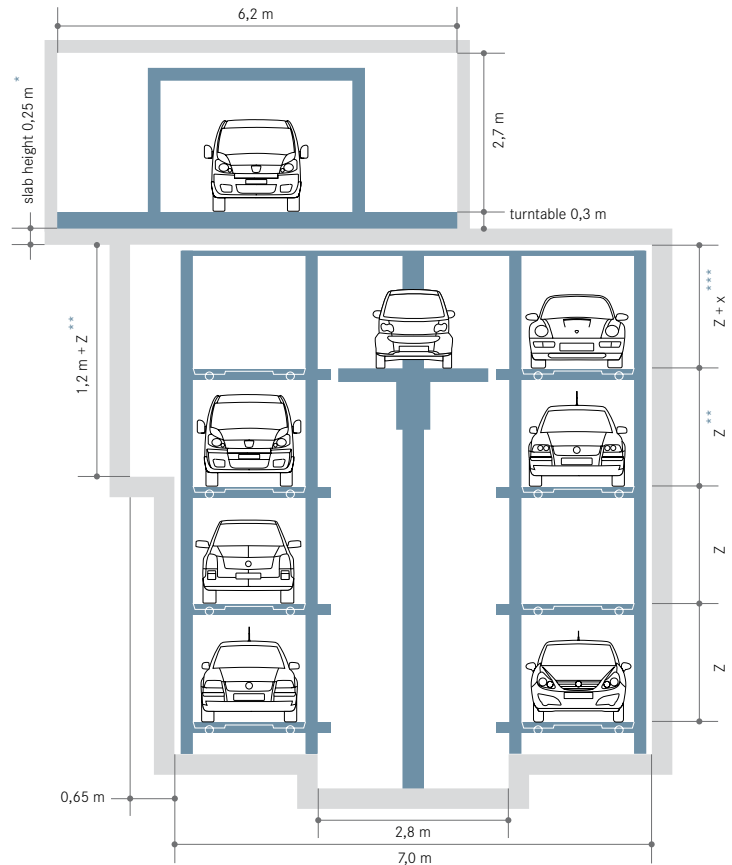
In structures without a turntable, vehicles enter and exit parallel to the rack structure.

** Dimension Z is a function of the vehicle height:
 if vehicle height = 1,60 m, then Z = 1,72 m
 if vehicle height = 2,00 m, then Z = 2,12 m

This configuration allows for vehicles of various heights. The lateral car lift used in the auto-LPS solution can be adapted to the slab height.

The auto- LPS configuration

(Transfer room centered above the rack structure, required width using a turntable)

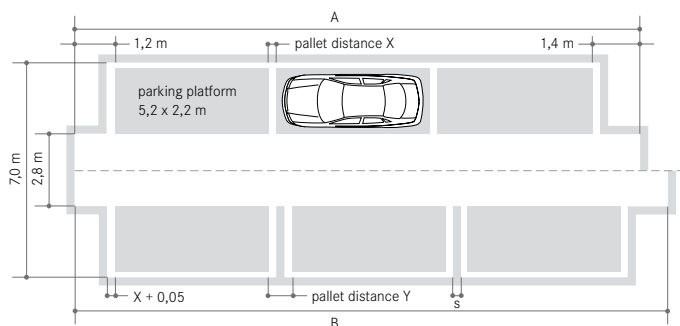


*** For systems from 3 to 8 levels one time the dimension x = 0,2 m must be added

Where a turntable is used with the auto- LPS configuration, vehicles may enter and exit in any angle position.

For both auto-LPM and auto-LPS configurations

- Both models allow for double row or mixed row arrangement of the parking places within the rack structure.
- The parking platform dimensions of 5,20 m x 2,20 m apply for both models and allow for vehicle dimensions of Length max = 5,10 m / width max. = 2,10 m. All dimensions given refer to these dimensions.



The distance between the parking platforms is depending on the height of the parking system: x without wallplates / y including wallplates of 30 cm

for 2 and 3 levels: X = 0,18 m / Y = 0,62 m

for 4 and 5 levels: X = 0,22 m / Y = 0,7 m

for 6 and 7 levels: X = 0,24 m / Y = 0,74 m

Dimension for free standing solutions with cladding on request. For the installation of the cabinets there must be room with a length of 2,6 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

Total length for 3 parking levels and 3 rows without wallplates:

$$A = 3 \times 5,2 + 1,4 + 1,2 + 2 \times 0,18 = 18,56 \text{ m}$$

Total length for 3 parking levels and 3 rows including 2 wallplates:

$$B = 3 \times 5,2 + 1,4 + 1,2 + 2 \times 0,62 = 19,44 \text{ m}$$

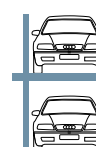
Clear overall height for 3 parking levels for vehicles up to 1,60 m and 1 parking level for vehicle height up to 2.00 m:

$$H = 0,35 + 0,5 + 2 \times 1,72 + 2,12 + 0,2 = 6,61 \text{ m}$$



Storage and retrieval unit (SRU)

The automatic storage and retrieval unit moves on vertical and horizontal lines to service the various units of the 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.



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