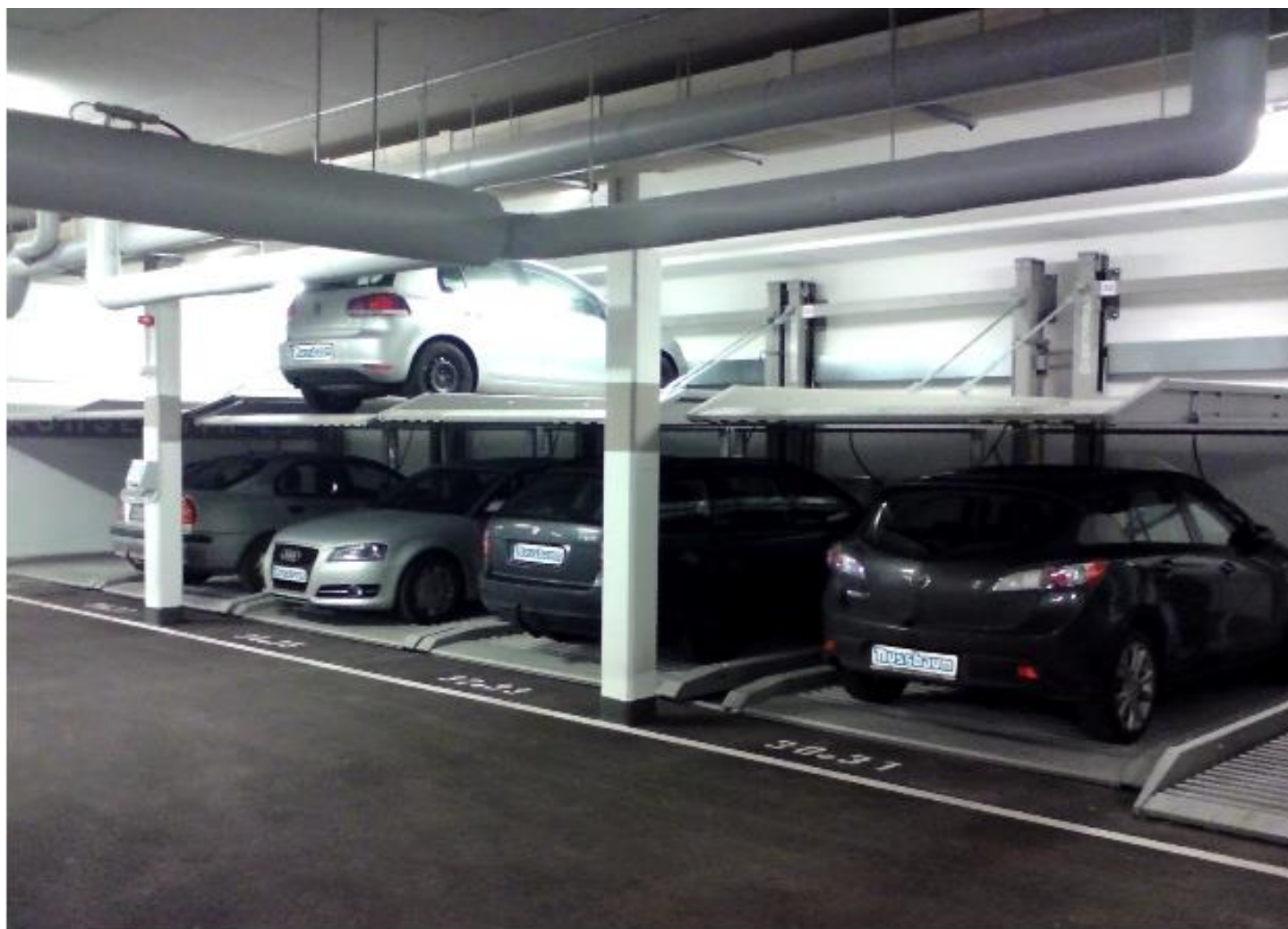




PARKLINE N5102

THE SEMI-AUTOMATIC PARKING SYSTEM WITHOUT PIT AND NO COLUMNS AT THE ENTRY



SHORT DESCRIPTION

- INDEPENDENT PARKING ON 2 LEVELS, WITHOUT PIT
- UPPER LEVEL PROVIDED WITH LIFTING PLATFORMS, ENTRANCE LEVEL WITH SLIDING PLATFORMS AND ONE EMPTY SPACE
- MODULAR CONSTRUCTION: DEPENDING ON THE CONDITIONS ON SITE, IT CAN BE POSSIBLE TO ADD SEGMENTS AT WILL
- LOAD PER PARKING SPACE: STANDARD 2.000 KG
OPTIONAL UP TO 2.300 KG OR 2.600 KG

APPLIC ATION

FOR INTERIORS AND EXTERIORS
ONE AND MULTI-FAMILY DWELLINGS
HOTELS AND OFFICE BUILDINGS
CONDOMINIUMS
COMMERCIALS
CAR DEALERS
FOR PERMANENT USERS ONLY

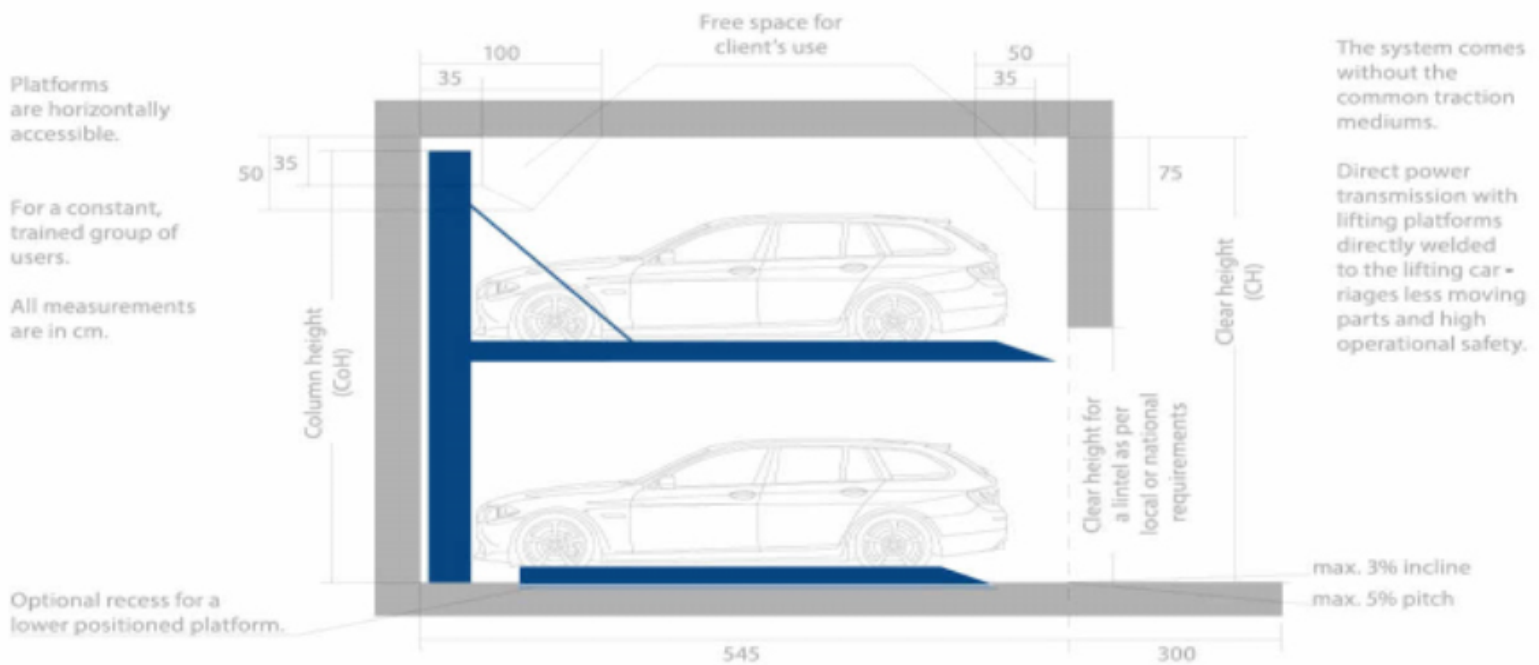
HEIGHT MEASUREMENTS



Modular construction
extensible at will

NOTE

The total height of the car including roof rail and antenna fixture must not exceed the maximum car height mentioned in the table below. Standard cars do not feature sport equipment (e.g. spoiler, etc.)



System length 545 cm, for cars 500 cm long. Further dimensions available upon request.

Concrete: min. 18, C25, four evenness acc. to DIN 18202 tab. 3, line 3.

Load per parking space: max. 2.000 kg, wheel load: max. 500kg. Optional up to 2.300 kg or max. 2.600kg, wheel load max. 650kg.

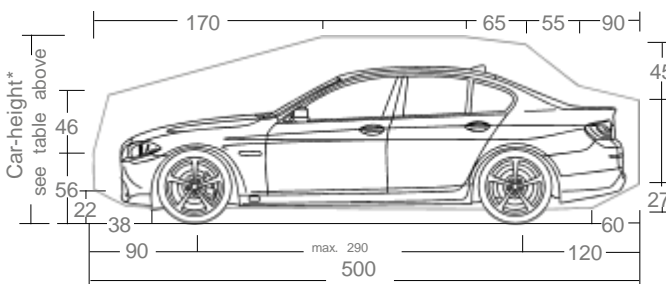
| CLEAR HEIGHT (CH)** | COLUMN HEIGHT (CoH) | CAR-HEIGHT BELOW* | CAR-HEIGHT ABOVE** | COMMENT TO THE STRUCTURE HEIGHT |
|---------------------|---------------------|-------------------|--------------------|---------------------------------|
| 330 | 320 | 150 | 150 | Drive cylinder |
| 345 | 330 | 165 | 150 | Drive cylinder |
| 360 | 345 | 180 | 150 | Drive cylinder |
| 385 | 370 | 200 | 150 | Drive cylinder |
| 395 | 380 | 210 | 150 | Drive cylinder |
| 410 | 400 | 170 | 210 | Fixed cylinder |
| 450 | 440 | 190 | 230 | Fixed cylinder |
| 490 | 480 | 210 | 250 | Fixed cylinder |

Optionally it is possible to deliver a lowered platform (below). You will then get 5 additional cm in the car-height below. The recess (10 cm), necessary to install the lowered platform, must be provided by client.

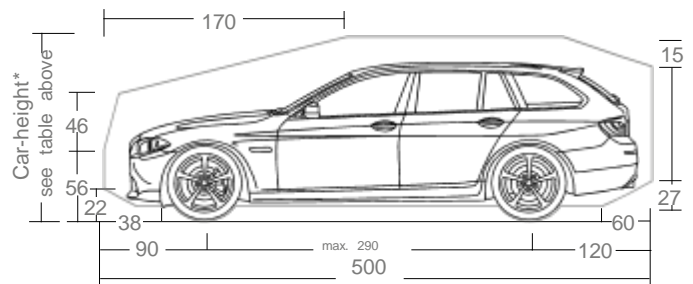
* Intermediate stages of each 5 cm car-height for the lower parking space are available upon request.

** It is possible to park higher vehicles on the upper platform in case you have more clear height.

VEHICLE DATA: STANDARD CAR

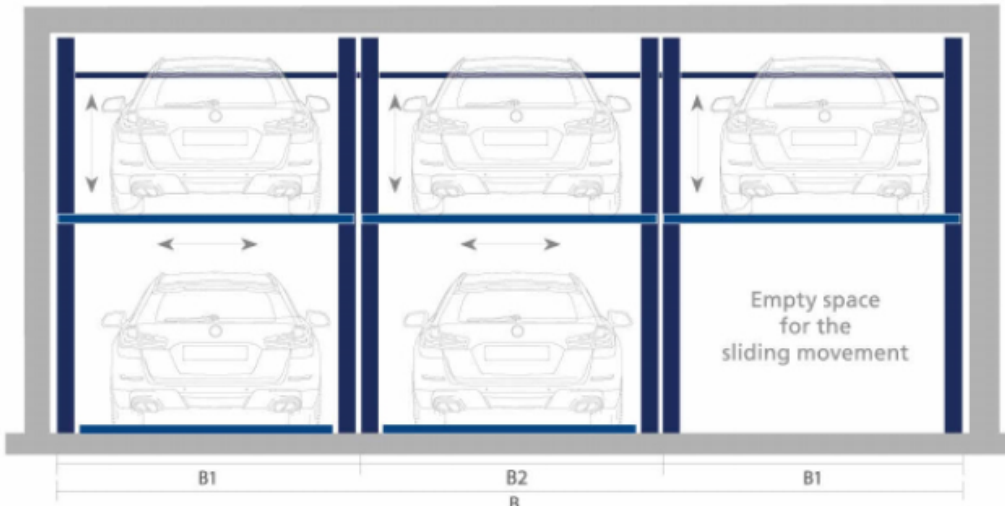


VEHICLE DATA: STANDARD ESTATE CAR



WIDTH MEASUREMENTS

EXAMPLE: 3 SEGMENTS FOR 5 PARKING SPACES



All dimensions in cm. All dimensions are minimum dimensions. Advice for planning and tendering: Generally masonry and concrete works are to be conducted according to the German norm VOB/C (DIN 18330 and DIN 18331).

In the mentioned norm are pointed the tolerances that are to be fulfilled according to DIN 18202. In this norm are defined the maximum permissible dimension variations as exceedance and shortfall of the nominal size. The nominal size should be planned in order to meet the minimum dimensions necessary for the parking system.

On the entrance level are sliding platforms with one empty space on the right (on the left: possible as an option). On the upper level the system is provided with lifting/lowering platforms.

The smallest sinful unit is composed by 2 segments for 3 cars. The system can be extended at will by adding segments. Anyway we suggest to combine no more than 10 segments for 19 cars with a common power unit, to keep a quick access time.

| PLATFORM WIDTH | OUTER FRAME (B1) | INNER FRAME (B2) | TOTAL MEASUREMENTS FOR x SEGMENTS | | | | | | | | | |
|----------------|------------------|------------------|-----------------------------------|-----|------|------|------|------|------|------|------|--|
| | | | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | |
| 230 | 250 | 250 | 500 | 750 | 1000 | 1250 | 1500 | 1750 | 2000 | 2250 | 2500 | |
| 240 | 260 | 260 | 520 | 780 | 1040 | 1300 | 1560 | 1820 | 2080 | 2340 | 2600 | |
| 250 | 270 | 270 | 540 | 810 | 1080 | 1350 | 1620 | 1890 | 2160 | 2430 | 2700 | |
| 260 | 280 | 280 | 560 | 840 | 1120 | 1400 | 1680 | 1960 | 2240 | 2520 | 2800 | |
| 270 | 290 | 290 | 580 | 870 | 1160 | 1450 | 1740 | 2030 | 2320 | 2610 | 2900 | |

Note: The power unit will be installed at the back wall between 2 system columns, alternatively outside the system. Power unit's measurements: (LxWxH) 45 x 22 x 60 cm.

Mind the measurements of the switch cabinet (positioned outside the system) during planning! Space needed: 80 x 100 x 80 cm, including cabinet doors' opening.

THE ADVANTAGES OF OUR N5102

On the entrance, the system has no columns and therefore it offers a wide parking entrance. Another important advantage of our N5102, in comparison with the other semi-automatic systems in commerce, is that there are no wear parts, as for example chains and ropes. And what is not present, it cannot break or wear out!

Summary of the positions subject to control of the N5102 in comparison with traditional systems:

| NECESSARY SAFETY DEVICES | | | MONITORING / CONTROL | |
|-------------------------------|---------------------|-----------------|------------------------|------------------------|
| PLATFORM SUSPENSION | TRADITIONAL SYSTEMS | NUSSBAUM N 5102 | IN TRADITIONAL SYSTEMS | IN THE NUSSBAUM N 5102 |
| Traction medium | chain /rope | not existing | necessary | not required |
| Chain or rope break | cause of failures | not existing | necessary | not required |
| Safety catch | necessary | not existing | necessary | not required |
| Jamming | cause of failures | not possible | necessary | not required |
| Chain or rope stretch | cause of failures | not existing | necessary | not required |
| Catch on upper/lower platform | necessary | not existing | necessary | not required |

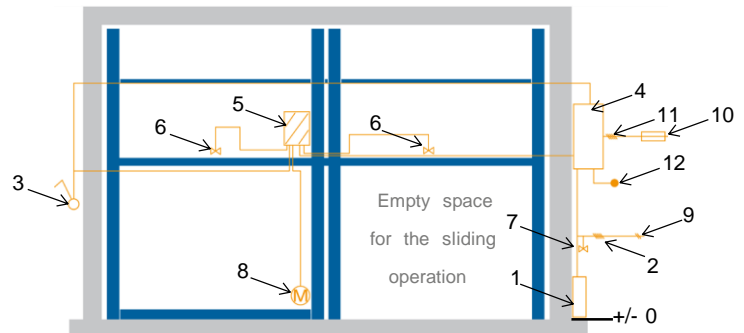
ELECTRICAL INSTALLATION AND FOUNDATION LOADS

Please observe during the planning phase

Services covered by the NUSSBAUM Company

| POS. | QUANTITY | DENOMINATION |
|------|----------|--|
| 1 | 1x | Hydraulic power unit with three-phase motor 400V, 50Hz, 3,0kW |
| 2 | 1x | Bus cable 1x2x0,2 |
| | 1x | Control line 1x12G1 |
| 3 | 1x | Control unit with Emergency-off |
| 4 | 1x | Switch cabinet |
| 5 | 1x | Segment box |
| 6 | 1x | Segment valve |
| 7 | 1x | Hydraulic valve |
| 8 | 1x | Electrical motor for the sliding movement |
| 9 | 1x | Supply line 5x 2,5mm ² (3 PH + N + PE) with marked leads + protective earth conductor |

Installation diagram



Positions 1 to 9 are covered by the Nussbaum company unless otherwise agreed in the offer or in the contract.

Services to be provided by the customer

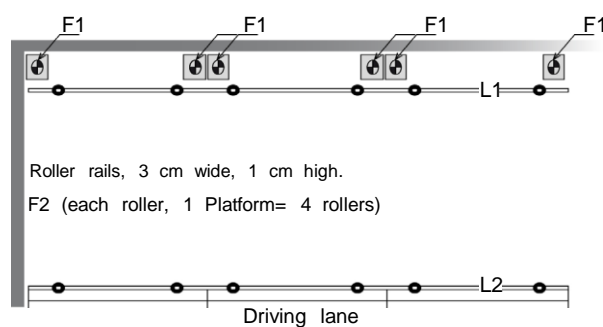
| POS. | QT | Y. | DENOMINATION | POSITION | FREQUENCY |
|------|----|----|---|---------------------|---------------|
| 10 | 1x | | Blade fuse or circuit breaker 3x 16A, slow acc. to DIN VDE 0100 part 430 | in the supply line | 1x power unit |
| 11 | 1x | | Supply line 5x 2,5mm ² (3 PH + N + PE) with marked leads + protective earth conductor | to the mains switch | 1x power unit |
| 12 | 1x | | Equipotential bonding according to DIN EN 60204 from the connector of the foundation earth electrodes to the system | | 1x system |

FOUNDATION LOADS AND CONSTRUCTION

Description

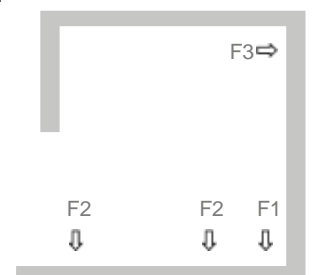
Foundation and pit walls must be planned so that they can absorb the loads of the parking system according to the schematic diagram shown on the right. If necessary, in case of heightened foundation requirements, the chemical anchors must be provided by the client (deliverable by Nussbaum as option as well). The borehole for the footplates of the parking system must be 18 cm deep.

Ground view



L1 and L2= Distance of the rails from the back wall (in cm). (L1= 105, L2= 477)

Side view



Load details

| LOAD PER PARKING SPACE | VERTICAL FORCES | | HORIZONTAL FORCE |
|------------------------|-----------------|-------|------------------|
| | F1 | F2 | F3 |
| 2000 Kg | 16 kN | 8 kN | 10 kN |
| 2300 Kg | 18 kN | 9 kN | 12 k N |
| 2600 Kg | 20 kN | 10 kN | 14 kN |

Foundation, walls and ceilings shall be realized by the customer and completed prior to assembly start and must be true to size, clean and dry. Floor and walls shall be made of armoured concrete. Concrete quality shall be at least: C25/30.

STANDARD FEATURES

Included in the scope of delivery

COMPONENT PARTS

System with electric sliding platforms as well as an empty space on the entrance level and hydraulic lifting platforms on the upper level. Hydraulic motion elements and electrical steering. Without gates, in dead man's control.

DRIVING SHEETS



Platforms with side carriers and driving sheets made of trapezoidal sheet.

MEASUREMENTS OF THE SYSTEM

Designed for:

Parking space length: 500 cm

Parking space width: 230 cm

Parking space height: ab 150 cm

Load per parking space up to 2.000 kg.

CONTROL UNIT



Touch screen with key switch, emergency-stop in dead man's control with brief operating instructions fastened on the wall and cabling to the power unit.

HYDRAULIC POWER UNIT

Power unit „Silencio“



with hydraulik piping and cabling to the system. (The under oil unit is not noisy thanks to the motor-pumps-combination that absorbs sound and insulates form noise).

To shorten access time, we suggest to use one power unit for max. 10 segments.

Measurements in cm (LxWxH):

Power unit: 45 x 22 x 60 cm.

Switch cabinet: (60-80) x 22 x 76 cm (plus place for the cabinet doors).

Positioning of the power unit:

Depending on the local conditions - preferably directly close to the back system columns or cylinders on the back.

CORROSION PROTECTION

C3-Line

For Regions with average snowfall and humidity levels (the standard in Germany).

C2-Line

Recommended only for regions with small or no snowfall and low humidity levels.

NOTE

We suggest periodical maintainance, care and cleaning. Take advantage of NUSSBAUM maintainance agreements.

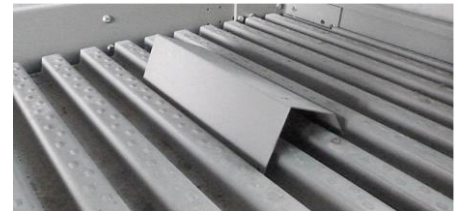
ELECTRICAL INSTALLATION

For a list of services and interfaces please see the respective table in this brochure.

DOCUMENTATION

Brief operating instructions (fastened to the control unit), documentation (test book and operating instructions).

SAFETY DEVICES



Wedge to help position the vehicle.

Hydraulic seated valve installed at the cylinders and hydraulic power unit as non-return device, in case of a loss of pressure.

Fastening of the parking system and hydraulic power unit with stud-bolts, electrical cabling fastened with impact dowels.

Light barriers at the entrance (with operator protection).

Integrated mechanical safety loop at the sliding platforms, which prevent the lifting platforms from lowering.

Several software-driven sensors to control the horizontal and vertical movements.

OPTIONS AND EXTRA EQUIPMENT

Available upon request - here are illustrated only some examples...

NOTE

We suggest periodical maintenance, care and cleaning. Take advantage of NUSSBAUM maintenance agreements.

MEASUREMENTS OF THE SYSTEM

Designed for:

Parking space length: from 510 to 540cm

Parking space width: from 240 to 270cm

Parking space height: from 165 to 250 cm

Max. weight per parking space: 2.600 kg.

SEGMENT INTERRUPTION

Due to the presence of building pillars, sometimes it is necessary to provide an additional distance between 2 segments. To achieve this we only need longer rails.

ALUMINIUM: PREMIUM-COVERING



Upper platforms with Aluminium-bulb plate driving sheets.

MORE WALKING COMFORT: CATWALKS



Catwalk on trapez. sheet for more walking comfort

Positioning on the left side. 1,5 mm zincated sheets, embossed surface. The catwalk will be screwed to the driving sheet.

CORROSION PROTECTION

C3-Line or C4-Line

Depending on the region, for higher corrosion protection.

EXTRA SOUND INSULATION



Sound insulation hood for the power unit

Airborne noise package - hood

For the power unit to reduce the airborne noise at the installation site.

Structure/borne noise package

Measures to reduce the sound propagation from the parking system to the building.

Note

- In order to comply with the norm DIN 4109/4.1 Table 4 „requirements for the allowed noise level in areas in need of protection from noises coming from the technical equipment“, the perimetral parts of the garage building shall be built with a sound reduction index R_w' of at least 57 dB.

HYDRAULIC

- HVLP 32-330 oil for extreme temperature variations.
- Heated hydraulic power unit.

UPPER AND LOWER PLATFORMS WITH HORIZONTAL ACCESS

Optionally deliverable but this requires a recess by client to allow lowering of the position of the platforms.

FASTENING OF THE COLUMNS

- Fastening of the parking system with chemical anchors in case of heightened foundation requirements.
- Columns' fastening on the ground with adapters instead of at the back wall. The adapter must be already embedded in the ground plate and in the armouring.

MODEM FOR TELESERVICE

With our CAN-BUS control we can conduct remote service and maintenance via telephone. Delivery incl. modem. Within a few minutes our technicians can connect to the system and analyze the cause of the failure. most of the times it is possible to fix the problem immediately, often without the need of personnel on site.

By client: Modem DSL, DSL connection with fixed IP address and at least 1 MBit/s upstream.

PARKING SPACE MANAGEMENT

Parking space numbers

Additional parking space numeration at the operating panel, which does not begin with #1 (one).

Second control unit

Depending on the segments' number and the on site conditions, a second system's control unit can be optionally delivered.

Empty space outside of the system

Empty space placed outside the left or right segment.

OPTIONAL EXTRA EQUIPMENT - GATES

Metal gates for your system: safety and comfort



NOTE

The sliding gates need to be fastened to the available building structure otherwise additional expenses may occur.

Metal gates can be delivered as option for your semi-automatic system.

The sliding gates make the system safer and avoid trespassing the system area, especially when the system is freely accessible. With our gates your cars will be protected against theft.

For maximum comfort when driving in and out of the system you can even choose electrical gates, which can be opened and closed by remote control.

This way you can comfortably sit in your car while parking your car.

The right solution for every situation. Contact us for all the optional solutions.

PLACEMENT OF THE OPTIONAL SLIDING GATES

There are three possibilities to install the optional sliding gates:

Layout A:

Sliding gates between the building pillars. The pillars (by client) must be positioned at least each 2 system segments).

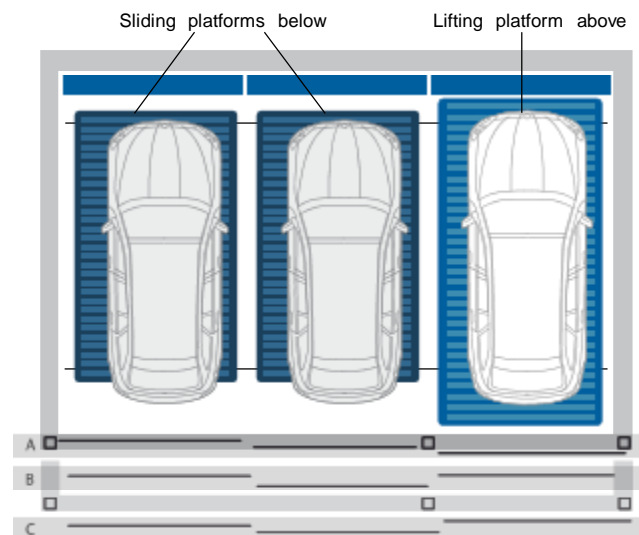
Layout B:

Sliding gates behind the building pillars.

(However, behind the gates the necessary system length of 545 cm must still be available).

Layout C:

Sliding gates in front of the building pillars.



REMOTE CONTROL FOR THE OPTIONAL ELECTRICAL SLIDING GATES



The remote control can be delivered as option in combination with the optional electrical gates. The remote control is available in three configurations, with 1, 2 or 3 buttons. Each button is for a specific function, depending on the Parking space length:

1. (above): request a parking space (radio).
2. (right): close parking system gate (infrared).
3. (below): open/close external barrier or garage gate (radio).

SERVICES TO BE PROVIDED BY THE CUSTOMER AND PLANNING INDICATIONS

During the planning phase please observe and comply with the following notes!

SERVICES TO BE PROVIDED BY THE CUSTOMER

Safety fences

Safety fences acc. to DIN EN ISO 13857 must be provided by the customer.

Parking spaces' numeration

For the allocation of the parking spaces we suggest our customers to numerate the parking spaces.

Noise abatement measures

The compliance with these measures must be carried out by the customer acc. to norm DIN 4109: „Sound insulation in building construction“.

Lighting

To be carried out by the customer acc. to DIN 67528: „Lighting for parking areas and indoor car parks“.

Foundation

To be carried out by the customer acc. to the specifications in this brochure.

Electrical installation

Prior to starting the assembly the customer must provide a lockable main control switch out of the system/pit close to the power unit. Electrical services to be provided by the customer acc. to this brochure's specification.

Installation requirements

The compliance with installation requirements acc. to quotation.

Drainage

Drainage channel 10 cm x 10 cm with collecting pit 50 cm x 50 cm x 20 cm acc. to this brochure's spec to be carried out by the customer.

Fire protection

The customer must agree upon the fire protection requirements and the required measures with the local fire department and realise them.

Wall openings

In case of partition walls the customer must realise a 10 cm x 10 cm wall opening for hosting hydraulic and electrical cables.

Building permit

The customer must apply for and get the required permits in order to allow the installation of the parking system.

Control unit

The customer must make sure that a plain surface of (L x W) 50 cm x 20 cm for the installation of the control unit is directly close to the power unit and out of the platforms' moving area.

PLANNING INDICATIONS

Parking space width and driving lanes

While planning the parking space and driving lane dimensions please observe and comply with the local/national prescriptions for the Garages' construction. For more parking comfort we suggest you to plan parking spaces of at least 250 cm width.

Group of users

Our parking systems are conceived for a permanent and instructed group of users.

Maintenance and care

We suggest a timely conclusion of a maintenance agreement.

We suggest also to perform maintenance, care and cleaning at regular time intervals.

EG-Machinery directive

Our parking systems comply with the EG-Machinery directive and are CE certified according to the norm DIN EN 14010.

Ramps' inclination

Ramps leading to garages shall not have more than 15% inclination.

Modifications

The company Nussbaum Parking GmbH reserves the right to make dimensional, design and technical modifications.