



PUZZLELIFT

Multi-storey above ground
Semi Automatic Parking System

DATASHEET



WE
EXPAND
YOUR PARKING
CAPACITY

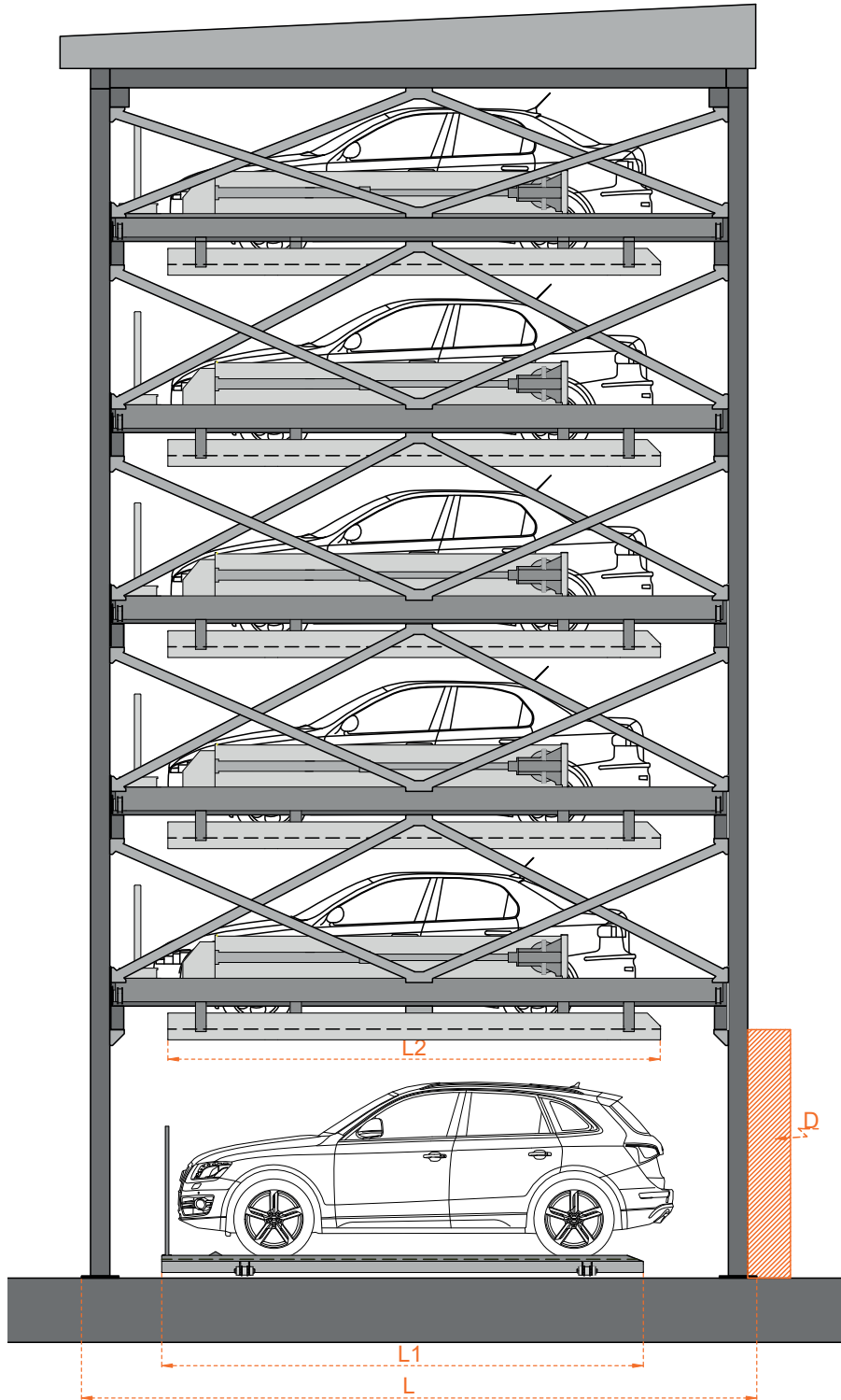
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GENERAL DESCRIPTION

- Puzzlelift is a new generation semi-automatic parking system for an indoor and outdoor application. It almost increases more than 3 times parking capacity in a parking space while using the same amount of conventional space.
 ■ Sanpark provides clear instructions at every operating point.
- The operating screen is installed in front of the columns or anywhere desired.
- Puzzlelift is a moduler system which allows us to add modules one to another without changing it's fundamental design.
- Hot-dip galvanization is applied to the main construction.
- It is safe and secured with an automatic electromagnetic mechanic position lock.
- Each levels have one transfer space except the top level so that no one needs to leave their car keys to a vale or an operator.
- All dimensions in the datasheet are minimum and tolerance for dimensions is +3/-0 cm.
- Except the ground level platforms and the top level platforms, other platforms move both vertically and horizontally. In addition, the ground level platforms move horizontally and the top level platforms move vertically.

LENGTH DETAILS



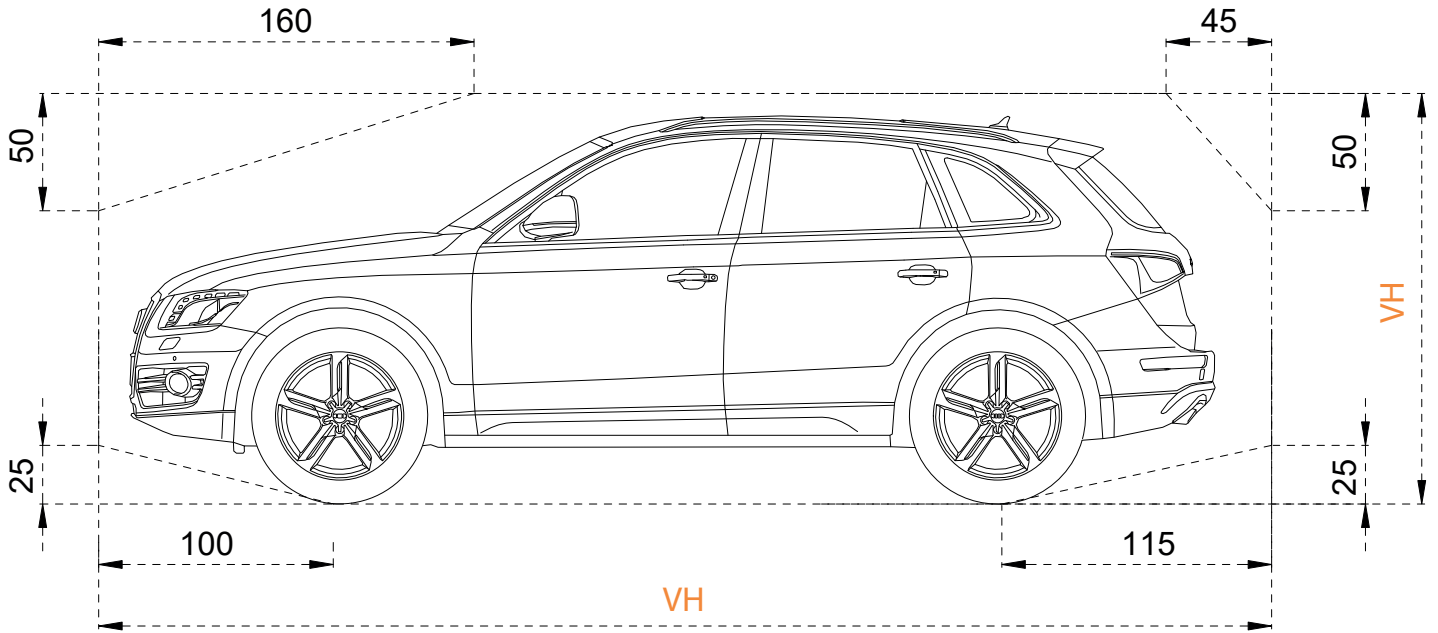
All dimensions are given in cm.

- Puzzlelift's required length for installation (**L**) is 630 cm. In case of shorter and longer versions, please consult Sanpark.
- Length of the ground level platforms (**L1**) is 450 cm while length of the upper level platforms (**L2**) is 460 cm.
- Doors (**D**) are required according to DIN EN 14010. Please see "Sliding Door Details", page 10 for more detail.

Operation

With the help of "Electronic Operation System", users securely operate the system with their cards, remote controls, chips, or apps.

VEHICLE DETAILS, CLEARANCE & DIMENSIONS



Vehicle Length (VL)	see "Length Details", page 3
Vehicle Height (VH)	see "Height Details", page 5
Vehicle Width	see "Width Details", page 6
Vehicle Weight (UP)	2000 KG
Wheel Load (UP)	500 KG
Vehicle Weight (GP)	3000 KG
Wheel Load (GP)	750 KG
Vehicle Types	Saloon, Estate, SUV, Van

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

UP: Upper-Level Platform | GP: Ground-Level Platform

■ The following car heights shared as a guide to help you to select the platform distance and construction dimensions;

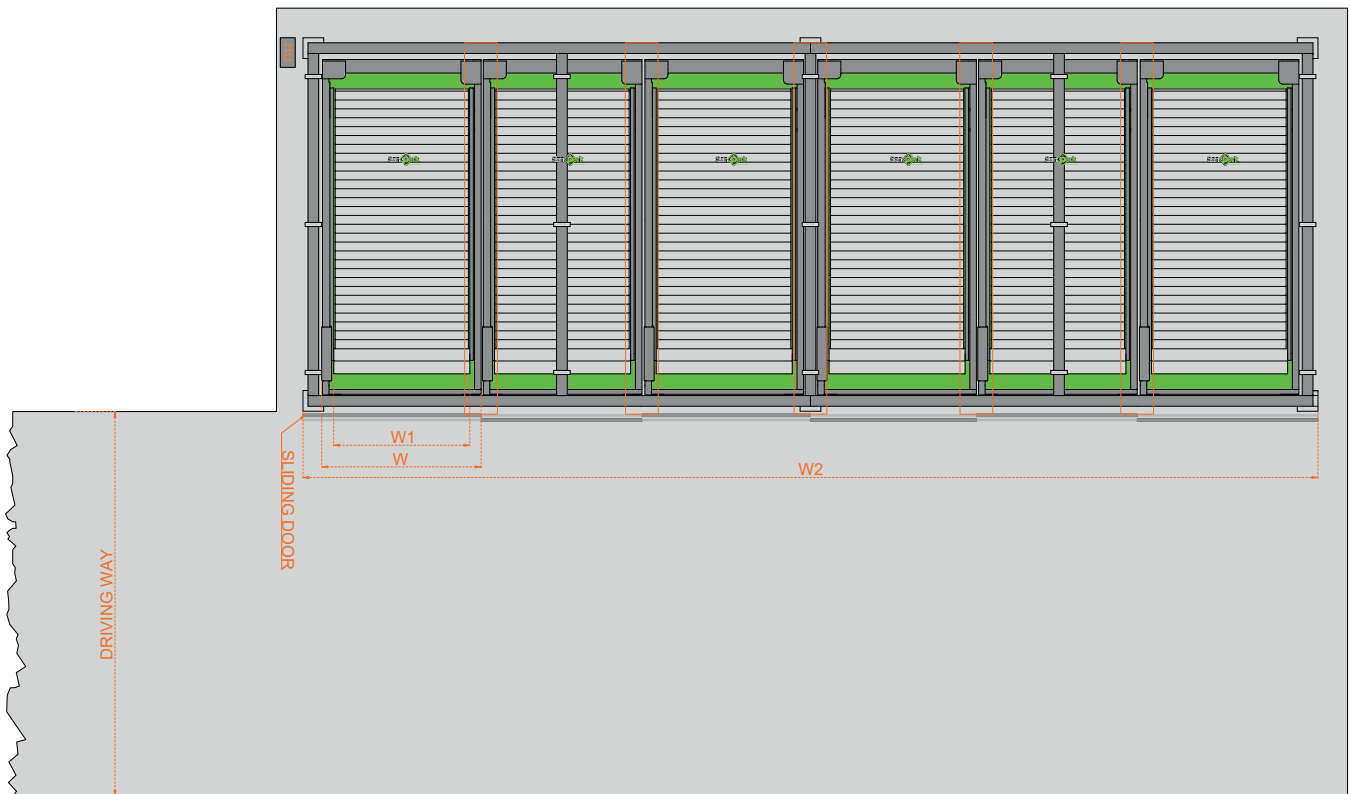
Volkswagen Golf	149 cm
Volkswagen Tiguan	167 cm
Volkswagen T-Roc	160 cm
Volkswagen T-Cross	159 cm
Volkswagen Passat	152 cm
Dacia Sandero	150 cm
Dacia Duster	170 cm
Renault Clio	145 cm
Renault Captur	158 cm
Fiat/Abarth 500	150 cm
Fiat Panda	156 cm

Tesla Model 3	145 cm
Tesla Model X	169 cm
Ford Kuga	169 cm
Ford Puma	156 cm
Mercedes A-Class	146 cm
Mercedes G-Class	198 cm
Mini Hatch	145 cm
Hyundai Kona	156 cm
Opel/Vauxhall Corsa	149 cm
Volvo XC40	166 cm
Skoda Octavia	147 cm
Hyundai Tucson	167 cm

Peugeot 208	146 cm
Peugeot 2008	155 cm
Peugeot 3008	163 cm
Toyota Corolla	144 cm
Toyota Yaris	151 cm
Toyota RAV4	169 cm
Citroen C3	161 cm
Porsche Macan	163 cm
Porsche Cayenne	168 cm
BMW 3-Series	143 cm
BMW iX	170 cm
BMW X5	175 cm

All vehicle heights may vary due to the wide range of models and manufacturing year.

WIDTH DETAILS



- The following figures demonstrate the required width for parking areas and their correspondence to clear platform width.

	Installation Width (W)	Upper Level Clear Platform Width (W1)
PUZZLELIFT	255 cm	215 cm
	270 cm	230 cm

PUZZLELIFT MODULES AND OVERALL WIDTHS (W2)

Installation Width (W)	3 MODULES	4 MODULES	5 MODULES	6 MODULES	7 MODULES
255 cm	830 cm	1095 cm	1360 cm	1625 cm	1890 cm
270 cm	875 cm	1155 cm	1435 cm	1715 cm	1995 cm

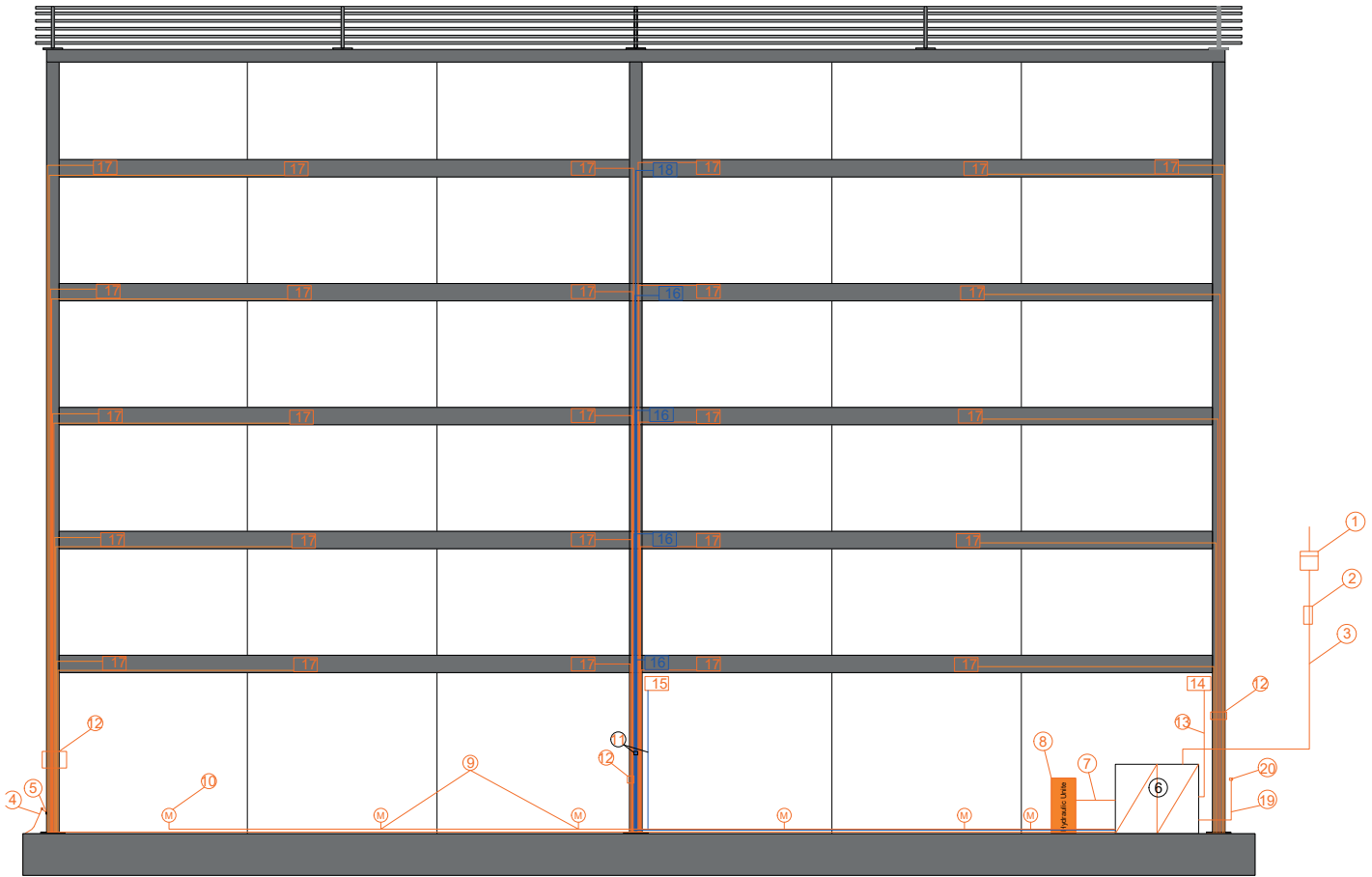
PUZZLELIFT MODULES AND THEIR CORRESPONDING VEHICLE CAPACITIES

TYPE OF SYSTEM	3 MODULES	4 MODULES	5 MODULES	6 MODULES	7 MODULES	CAR CAPACITY
PUZZLELIFT 3K	7 VEHICLES	10 VEHICLES	13 VEHICLES	16 VEHICLES	19 VEHICLES	
PUZZLELIFT 4K	9 VEHICLES	13 VEHICLES	17 VEHICLES	21 VEHICLES	25 VEHICLES	
PUZZLELIFT 5K	11 VEHICLES	16 VEHICLES	21 VEHICLES	26 VEHICLES	31 VEHICLES	
PUZZLELIFT 6K	13 VEHICLES	19 VEHICLES	25 VEHICLES	31 VEHICLES	37 VEHICLES	

Reducing parking width lowers parking comfort according to the vehicle width, vehicle type, and individual driving style.

- **HU** indicates a hydraulic power pack and its length is 50 cm and its width is 35 cm. Its overall height is 80 cm.
- The clear platform width can vary according to the customer's needs. But the minimum clear platform width is 215 cm. We recommend 230 cm clear platform width for convenient parking.
- No construction column is supposed to be planned between platforms in each modular system! The reason is ground floor platforms moves vertically to sides and any columns will block the way of the platform's movement.
- While planning Puzzlelift next to a wall, it is significant to take into consideration that turning the vehicle in one maneuver may cause a crash so please take advice from Sanpark in a such situation, shown in the illustration above.
- While setting driving lane width, please check local regulations. We advise 650 cm driving lane width so that drivers can park their vehicles conveniently without additional maneuvering. The deriving lane width can be reduced according to the project needs but this reduction may lead additional maneuvering. Please request a consultation for planning the project.

ELECTRICITY INSTALLATION DIAGRAM



- During installation, it is required to appropriately connect electrical components with the wiring diagram supplied by the manufacturer in accordance with local regulations.

ELECTRICAL DETAILS (In the customer responsibility)

NUMBER	QUANTITY	DEFINITION	POSITION	FREQUENCY
1	1	Electricity meter		
2	1	3x Safety fuse 40 A circuit breaker 3x 40 A	1x per unit	1x per unit
3	1	Supply line 5x6 mm ² with marked wire and protective conductor	1 x per unit	1 x per unit
4	1	Foundation Earth Connection (distance between grounding max. 10m)		
5	1	Equipotential bonding in accordance with DIN EN 60204 grounding of the steel structure is necessary, provided by the customer	1 x per system	1 x per system

ELECTRICAL DETAILS (In Sanpark responsibility)

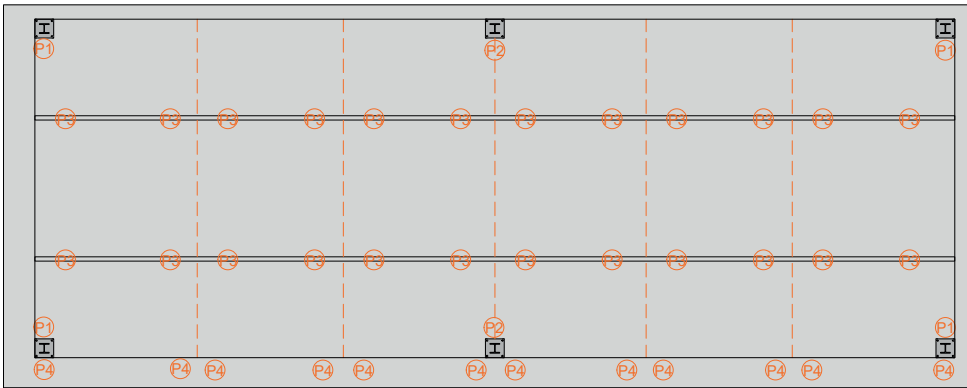
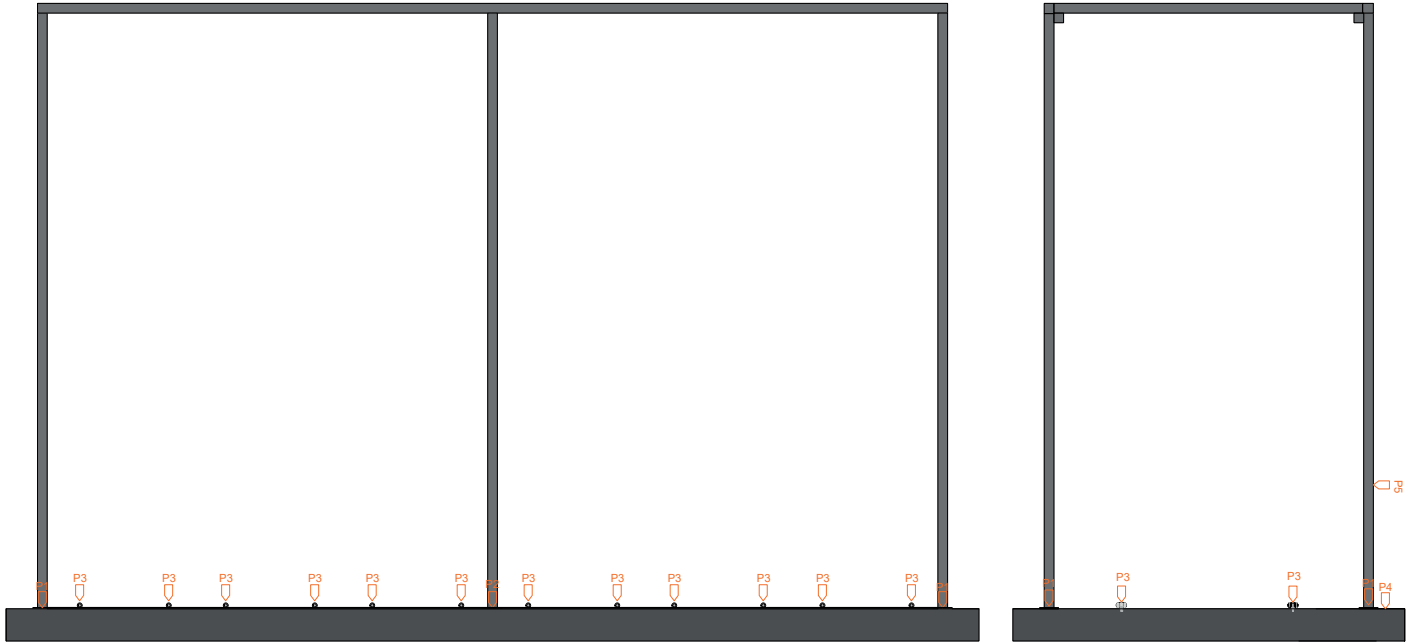
NUMBER	DEFINITION	FREQUENCY
6	Distributor Board with main switch	
7	Supply line 4x2,5 mm ² +2x0,75 mm ² with marked wire and protective conductor	
8	Hydraulic Unit 5.5 kW, 3 Phase current, 380 V 50 HZ	
9	Supply line 6x1,5 mm ² with marked wire and protective conductor	1 x per ground level platform
10	Motor 0.75 kW, 3 Phase current, 380 V 50 HZ	1 x per ground level platform
11	Supply line 20x1 mm ² with marked wire and protective conductor	1 x per level
12	Supply line 10x1,5 mm ² with marked wire and protective conductor	1 x per upper level platform
13	Supply line 20x1 mm ² +12x1,5 mm ² with marked wire and protective conductor for limit switch	

ELECTRICITY INSTALLATION DIAGRAM

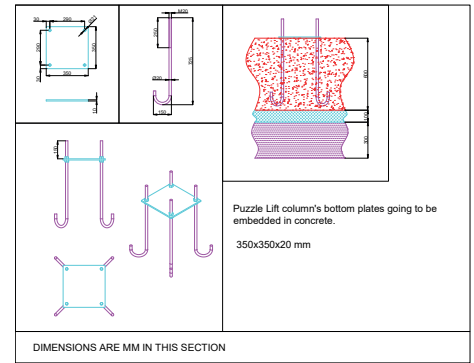
ELECTRICAL DETAILS (In Sanpark responsibility)

NUMBER	DEFINITION	FREQUENCY
14	Terminal box	3x the terminal box 3x the terminal box 1x per ground level modules 1x per ground level modules
	Incoming supply lines; <ul style="list-style-type: none"> Supply line 2x0,75 mm² with marked wire and protective conductor incoming from reflector of the front overflow sensor, the reflector of the rear overflow sensor and the reflector of the door sensor Supply line 4x0,75 mm² with marked wire and protective conductor incoming from the front overflow sensor, the rear overflow sensor and the door sensor Supply line 2x0,75 mm² with marked wire and protective conductor incoming from the door open switch Supply line 2x0,75 mm² with marked wire and protective conductor incoming from the door close switch Supply line 2x1,5 mm² with marked wire and protective conductor incoming from the motor of sliding door 	
15	Terminal box	1x per ground level modules
	Incoming supply lines; <ul style="list-style-type: none"> Field sensor supply line (depends on sensor brand) 	
16	Terminal box	1x per upper level 1x per platform 1x per modules
	Incoming supply lines; <ul style="list-style-type: none"> Supply line 2x0,75 mm² with marked wire and protective conductor incoming from the valve Supply line 2x0,75 mm² with marked wire and protective conductor incoming from the field switch 	
17	Terminal box	1x per upper level platform 1 x per upper level platform 1 x per upper level platform 1 x per upper level platform
	Incoming supply lines; <ul style="list-style-type: none"> Supply line 6x1,5 mm² with marked wire and protective conductor incoming from the motor and breaking system Supply line 2x0,75 mm² with marked wire and protective conductor incoming from the down switch Supply line 2x0,75 mm² with marked wire and protective conductor incoming from up switch 	
18	Terminal box	
	Incoming supply lines; <ul style="list-style-type: none"> Supply line 2x0,75 mm² with marked wire and protective conductor incoming from the valve 	
19	Supply line 16x1 mm ² with marked wire and protective conductor and CAT 6 Ethernet cable for the control panel	1 x per platform
20	Control Panel and emergency button	

LOADS AND CONSTRUCTION DETAILS



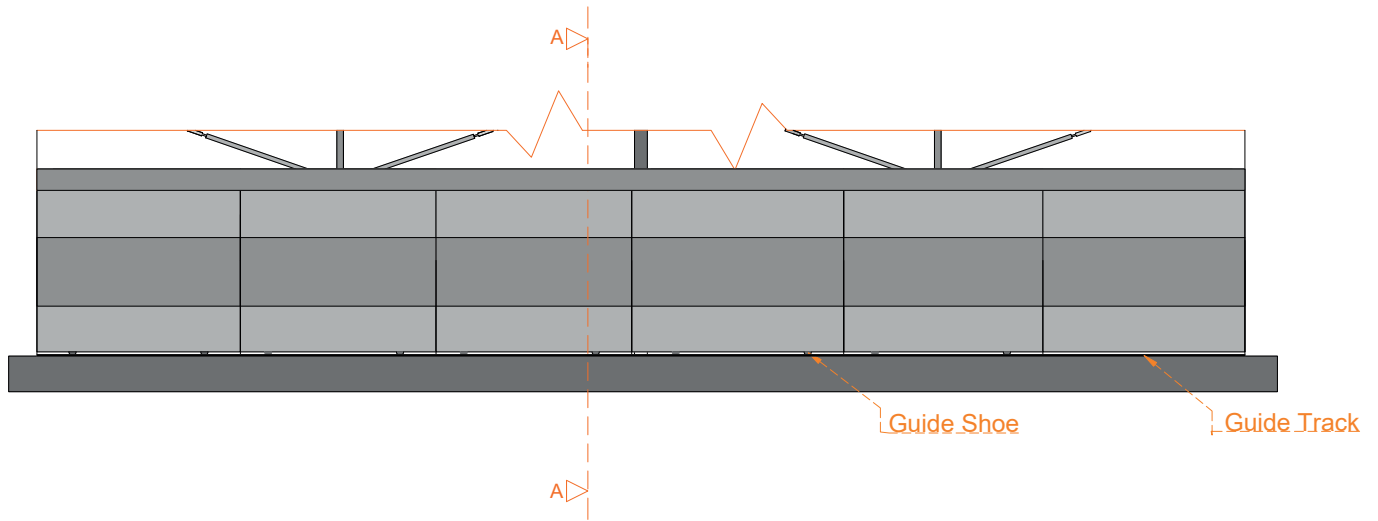
ANCHOR DETAILS



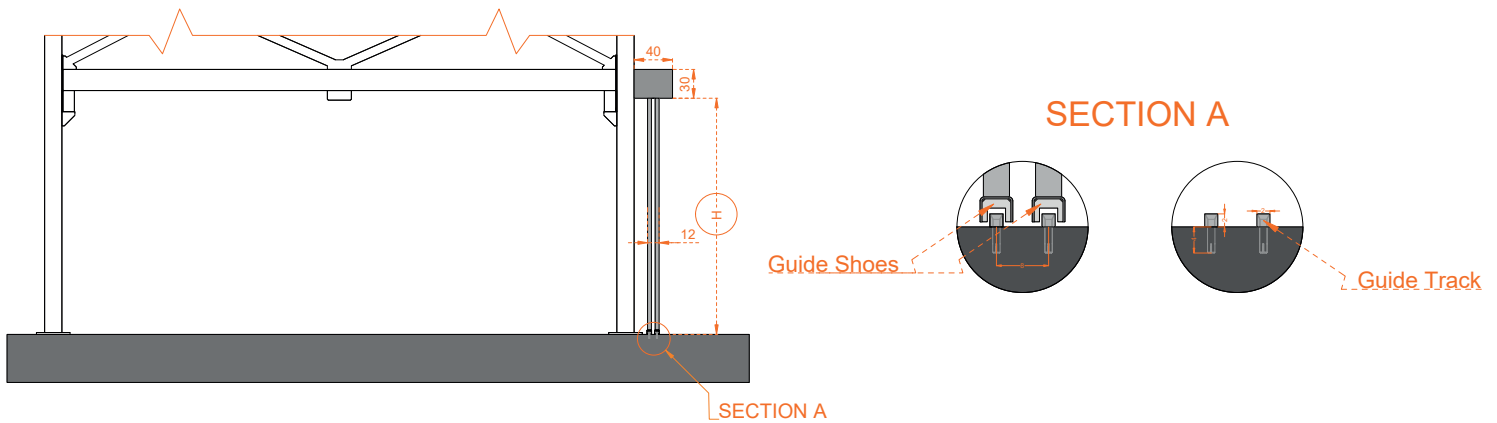
- The systems are anchored into the ground. The drill hole depth on the floor is approx. 47,5 cm.
- **P4** and **P5** are related to the door load, please see "Sliding Door Details", page 10.
- Concrete quality according to the static requirements of the building. For foundation requirements, please see "Ground Details", page 12.
- In order for the system to work efficiently, the ground slope must be 0%. It is the customer's responsibility. In the contrary case, Sanpark does not accept any responsibilities.

	STRUCTURAL FORCES (kN)				
	P1	P2	P3	P4	P5
PUZZLELIFT 6K	± 165,5	± 322,8	± 8,58	± 0,2	± 1

SLIDING DOOR DETAILS



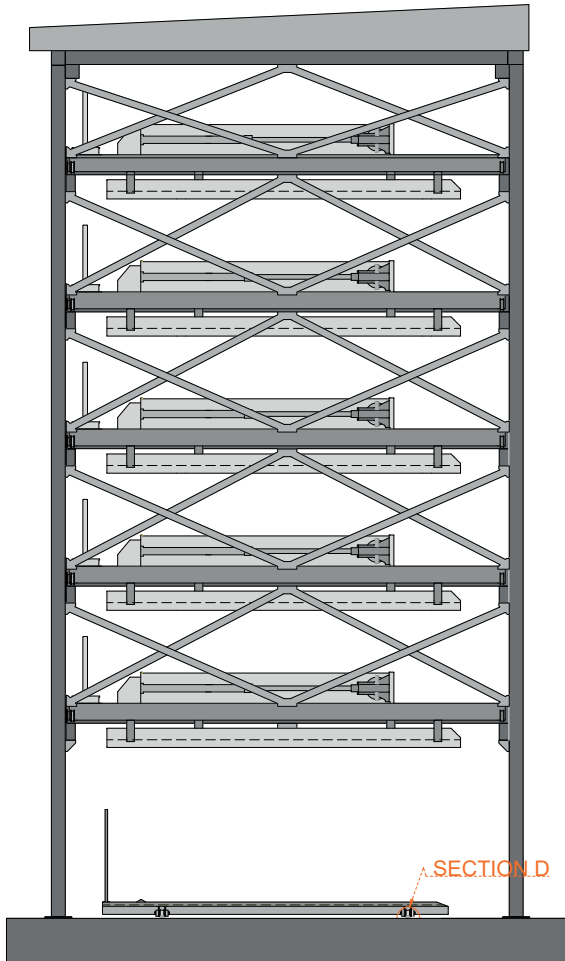
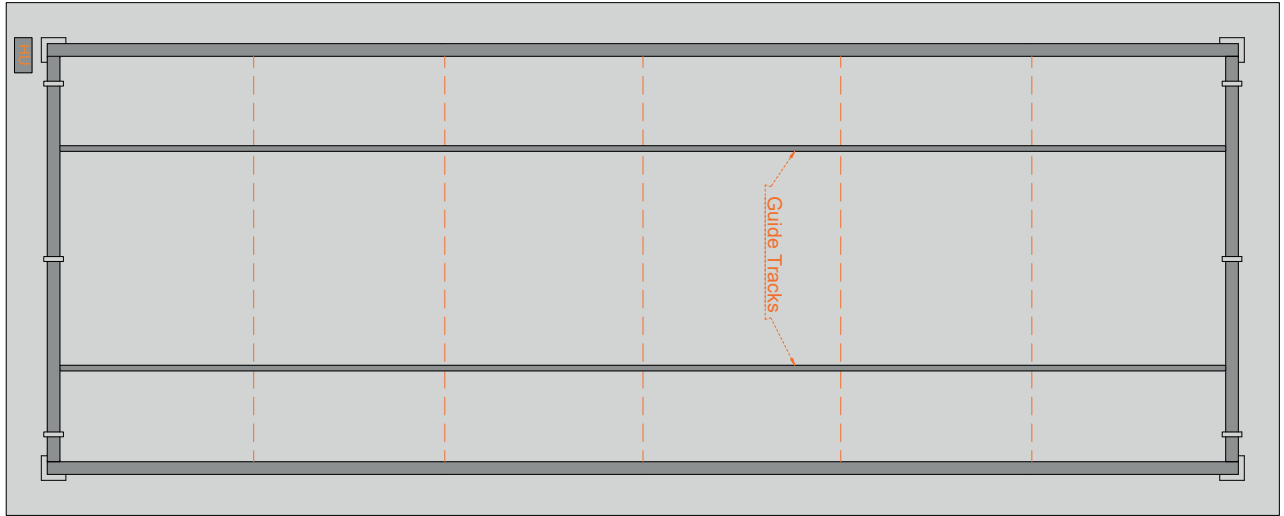
A-A DETAILS



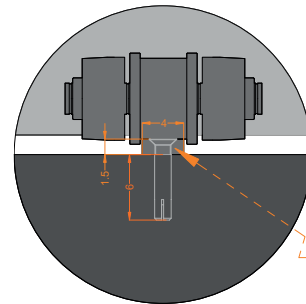
- According to DIN 18202-Table 3-Line 3, the evenness of the floor must not exceed 2 cm. In case of not meeting the condition, the customer needs to level the floor.
- The guide track is anchored into the ground. The drill hole depth on the floor is approx. 4 cm.
- The following figures provides the required entrance height for each vehicle height.

Entrance Height (H)	Vehicle Heights											
	150	155	160	165	170	175	180	185	190	195	200	205
185	185	190	195	200	205	210	215	220	225	230	235	240

GROUND FLOOR PLATFORM GUIDE TRACK DETAILS

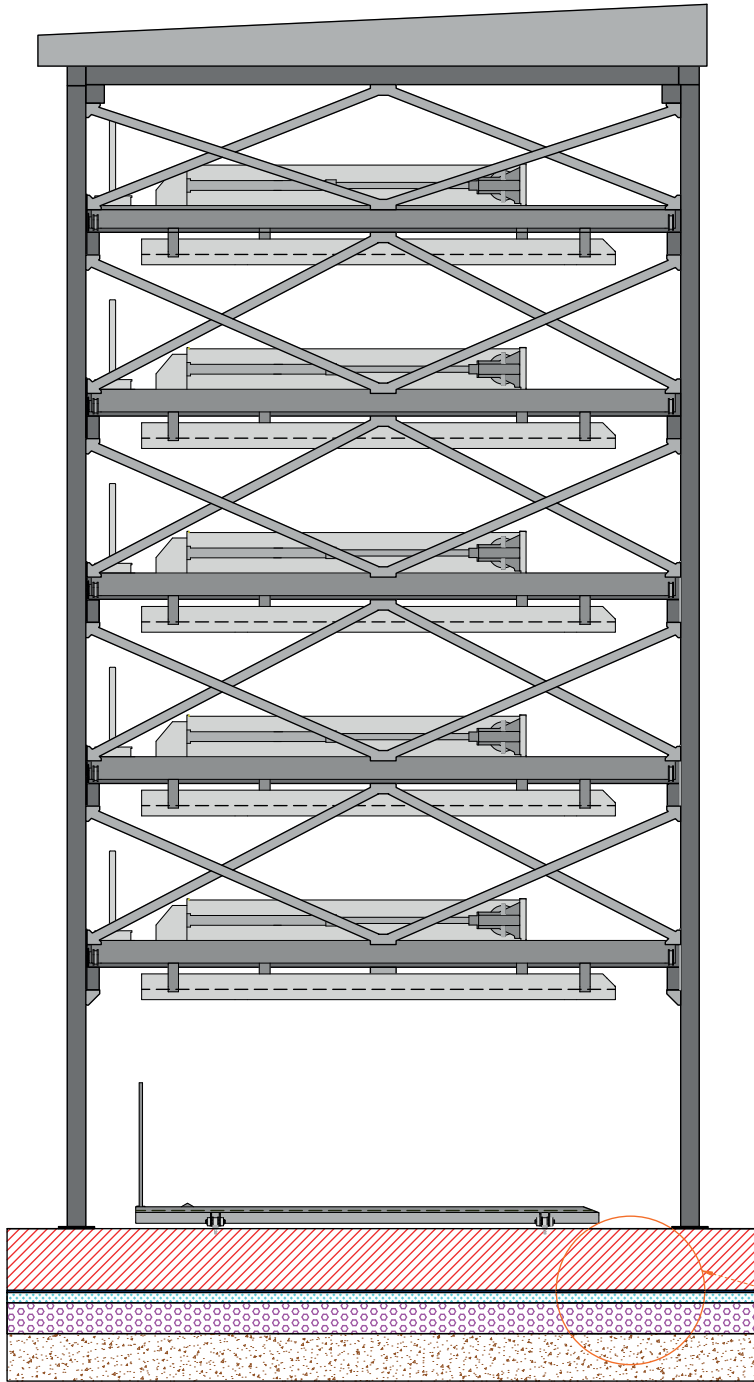


SECTION D

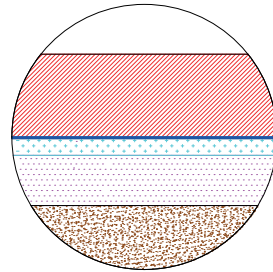


- According to DIN 18202-Table 3-Line 3, the evenness of the floor must not exceed 2 cm. In case of not meeting the condition, the customer needs to level the floor.
- The guide tracks for platforms are anchored into the ground. The drill hole depth on the floor is approx. 6 cm.
- In order for the system to work efficiently, the ground slope must be 0%. It is the customer's responsibility. In the contrary case, Sanpark does not accept any responsibilities

GROUND DETAILS



SECTION C



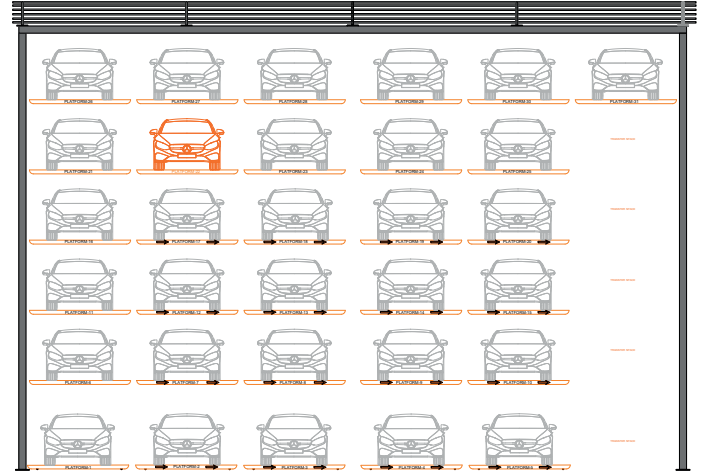
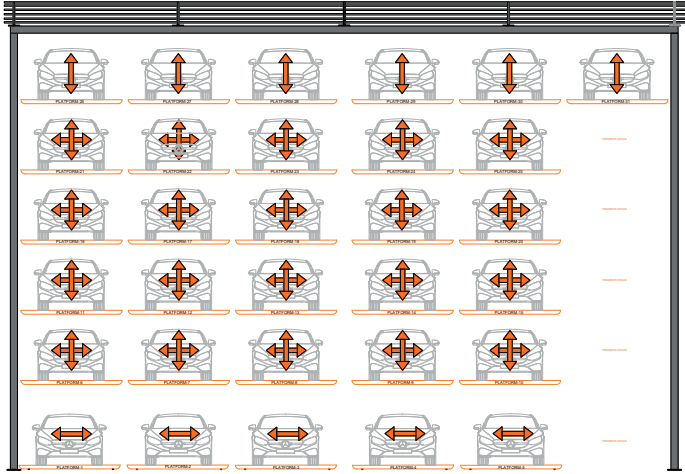
- 60 cm Raft Foundation
- Insulation
- 10 cm C16 Lean Concrete
- 30 cm Stabilized Filling

SECTION C

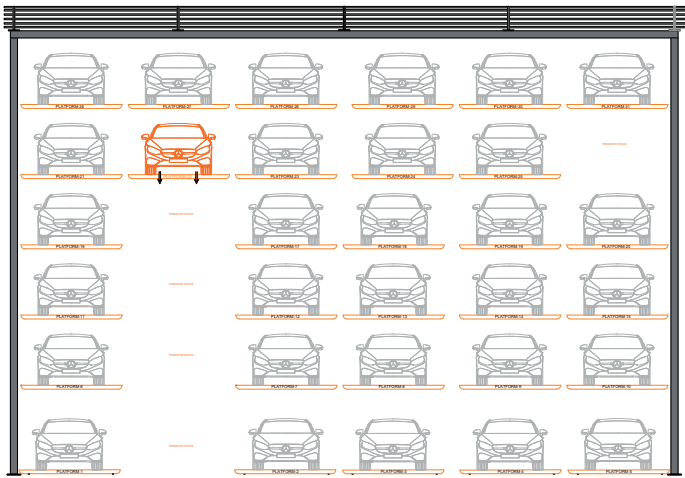
- The raft foundation thickness must be 60 cm according to the static calculation of the building.
- After the foundation excavation, stabilized filling that height is 30 cm must be done.
- 10 cm lean concrete that strength is C16 must be pour concrete on stabilized filling. Then, insulation must be done.
- After insulation, raft foundation is built.

FUNCTION

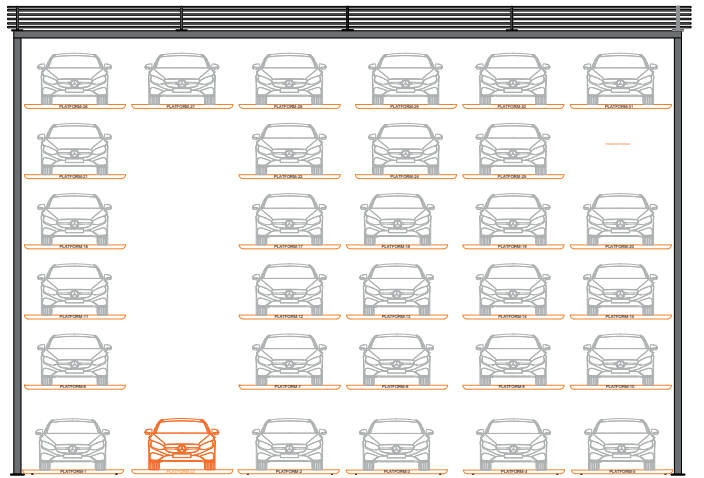
- The figure below shows movement capabilities of each platform.
- Top level platforms can only move up and down. Ground level platforms can only move sides. Other platforms that are except top level and ground level platforms can move both direction



- If you retrieve the car on the Platform-22, the system moves the platforms that are under platform-22 to the left.



- Since there is transfer spaces under the Platform-22, the system lowers the Platform-22.



- The car on the Platform-22 is ready to be park out.

TECHNICAL INFORMATION



Hydraulic Unit

Each Puzzlelift has one hydraulic unit. Please request a consultation for planning the project.



Temperature

Puzzlelift is designed to operate between -15° and +40°C at atmospheric humidity of 50 percent. If the local temperature is different from the above, please consult Sanpark.



Conformity Test

All our systems comply with EC machinery directive 2006/42/EC and TS/EN 14010:2009 +A1:2009.



Building application documents

All our systems generally require local approval. Please observe local regulations.



Maintenance

Regular maintenance by qualified personnel can be provided by an Annual Service Contract.



Care and Corrosion Protection

Due to the corrosion danger, apart from regular maintenance, all our galvanized equipment and platforms must be regularly cleaned up salt water, dirt, leak, any chemical substance, and sand. The garage and pits must be always ventilated well.



Railings

If passageways are directly next to the systems, railings have to be provided according to TS EN ISO 13857 by the client according to local requirements, height min. 200 cm.



Fire Safety

All fire safety requirement(s) and all possible mandatory item(s) and equipment(s) must comply with local regulations and must be provided by the customer.



Noise Protection

In compliance with DIN 4109-1 Noise protection: Maximum sound pressure level in living and sleeping areas 30 dB (A).

User noise like accessing the platform, the slamming of vehicle doors, the vehicle's engine, and brake noise are not subject to the requirements.

In order to provide 30 dB (A) in rooms the following conditions are required;

Additional Sanpark noise protection package according to quote.

Insulation figure of the construction of min R'w= 62 dB (in the customer's responsibility)

Walls that are close to the parking systems must be done as a single wall and deflection resistant with min. m'= 300 kg/m2 (in the customer's responsibility)

The solid ceiling above the parking systems with min. m'= 400 kg/m2 (in the customer's responsibility)

At differing constructional conditions, additional sound-absorbing methods are in the customer's responsibility



Alterations and/ or Modifications

Sanpark's engineering department is constantly challenging itself to improve its systems. In the event of technological advancement, Sanpark can adopt newer or different technologies, systems, or standards to improve overall quality.

SERVICES TO BE PROVIDED BY THE CUSTOMER



Barriers

In accordance with DIN EN 13857, barriers may be required in case of passageways in front of, behind, or next to the systems.



Parking Space Numbering

Numbering the parking spaces.



Lighting

It is in the customer's responsibility to check local regulations regarding the illumination of parking spaces.



Conduits and Wall Openings

Any conduit and wall opening work belongs to the customer, yet Sanpark can assist during the planning phase in such cases. Please consult Sanpark if necessary.



Supply Cable to Master Switch

The customer must run the supply cable to the master switch during assembly.



Earth Foundation

The customer must earth the steel structure with a foundation earth connection and lay equipotential bonding according to local regulations.

CERTIFICATES

avacert
International

UYGUNLUK ONAYI
ATTESTATION OF CONFORMITY

Sertifika Numarası / Certificate Number : AVA-CE/011106.08.2020

Üretici / Manufacturer : ŞANMAK MAKİNA SANAYİ VE TİCARET ANONİM ŞİRKETİ

Üretici Adresi / Manufacturer Address : ÇALI SANAYİ BÖLGESİ 6. SOK. NO:8 NİLÜFER / BURSA / TÜRKİYE

Ürün Tanımı / Product Description : ÇOK KATLI, SIKALI, DİKEY VE YATAY YÖNDE HAREKETLİ, ELEKTROMEKANİK TAHRİKLİ, YARI OTOMATİK BAĞIMSIZ OTOPARK SİSTEMİ
MULTISTOREY, SEQUENT, MOVING HORIZONTALLY AND VERTICALLY, ELECTROMECHANICAL DRIVE, SEMIAUTOMATIC INDEPENDENT PARKING LIFT

Tip/Model / Type/Model : PUZZLE LIFT

İlgili Yönetmelikler / Related Directives : MAKİNE EMNİYETİ YÖNETMELİĞİ 2006/42/AT Ek VIII
MACHINE SAFETY DIRECTIVE 2006/42/EC Annex VIII

İlgili Standartlar / Related Standards : EN ISO 12100, EN ISO 14120, EN ISO 13849-1, EN 60204-1, EN 14010-A1


Test Raporu / Test Report : ST.1039.04

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Yayın Tarihi / Issue Date : 29.08.2020

Geçerlilik Tarihi / Validity Date : 28.08.2023

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IQR

CERTIFICATE

Sanmak
Makina Sanayi ve Ticaret A.Ş.

ŞANMAK MAKİNA
SAN. VE TİC. A.Ş.

ÇALI SANAYİ BÖLGESİ 6. SOK. NO:8
NİLÜFER / BURSA / TÜRKİYE

Has been assessed and found to Comply with the Requirements of:
Denetlenmiş ve aşağıdaki standartın gerekliliklerine uygunluğu görülmüştür:

ISO 9001:2015

The Quality Management System is applicable to:
Kalite Yönetim Sistemi:

DESIGN, PRODUCTION AND SERVICE SERVICES OF MACHINES
FOR VEHICLE, LOAD LIFTING AND TRANSPORT

TAŞIT, YÜK KALDIRMA VE TAŞIMA AMAÇLI MAKİNALARIN
TASARIMI, ÜRETİMİ VE SERVİS HİZMETLERİ

Certificate Number: QMS-05807
Belge Numarası: QMS-05807

Certification Period: 3 Years
Belgeleendirme Periyodu: 3 Yıl

Initial Certification Date: 15.12.2021
İlk Belgeleendirme Tarihi: 15.12.2021

Certificate Validity Date: 14.12.2022
Belge Geçerlilik Tarihi: 14.12.2022

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Management Systems
Certification Body
MSCB-135

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