

Product Data

Dimensions, Technical Information and Performance
Specification



trendvario 6100+



PARK & SMILE

multiparkingusa.com

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Symbols



Platforms accessible horizontally.



Maximum load per parking space in lbs.
Upweights above 4400 lbs possible with surcharge (see "Vehicle data", page 3).



Parking space load can be subsequently upweighted (see "Vehicle data", page 3).



Driven-through arrangement and can be combined with other TrendVario systems as a KombiSystem.

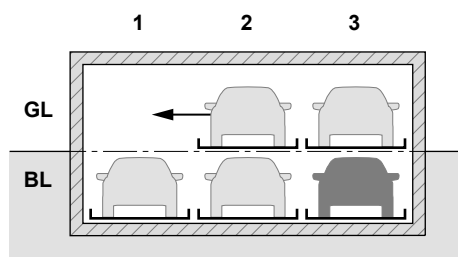


The quoted systems correspond to DIN EN 14010 and EU Machinery Directive 2006/42/EC.
In addition, this system has undergone a voluntary conformity test by TÜV SÜD.

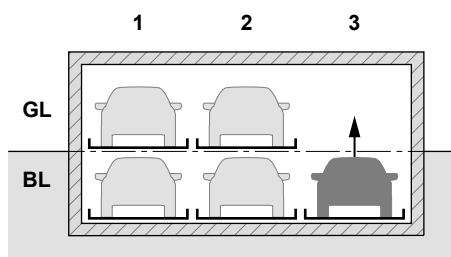
Function diagram with standard designation



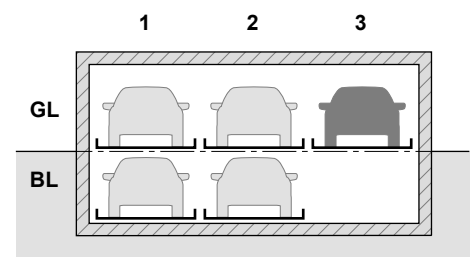
Example for vehicle on basement level (BL) of grid 3:
Selection via the control panel; all doors must be closed.
Representation of parking spaces in a row.



To remove the vehicle from the space in **grid 3/BL**, the GL platforms are moved to the left.



The empty space is now located above the vehicle being removed. The parking space in **grid 3/BL** is raised.



The vehicle in the space in **grid 3/BL** can now be removed.

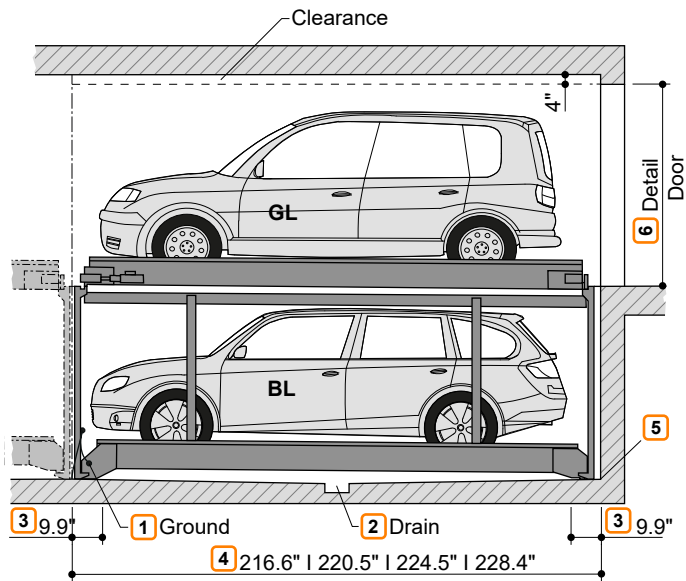
Dimensional specifications & tolerances



All structural dimensions are minimum finished dimensions.
Tolerance for structural dimensions: +1.2/-0". Dimensions in inches (in).
The tolerances specified in the German Construction Contract Procedures (VOB), Part C (DIN 18330 and 18331) as well as DIN 18202 must also be taken into account in order to adhere to the minimum finish dimensions.

Overview of building design

Building configuration without door detail ⁶



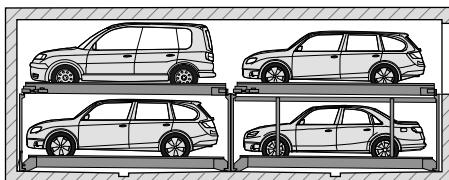
- ¹ Equipotential bonding from the foundation ground connection to the system (provided by customer).
- ² Slope with water collection channel (see "Drainage", page 12).
- ³ These areas must be horizontal and on the same level in the entire pit.
- ⁴
 - 216.6" for vehicles up to 196.9" in length
 - 220.5" for vehicles up to 200.8" in length
 - 224.5" for vehicles up to 204.8" in length
 - 228.4" for vehicles up to 208.7" in length
 Shorter designs possible upon request. Observe local regulations for parking space length!
 So that you can conveniently use your parking space and due to the ever increasing length of vehicles, we recommend a pit length of at least 224.5".
- ⁵ Grooves/concrete haunches are not possible at the transition from the pit floor and the walls. If grooves/concrete haunches are required, then the system must be narrower or the pits wider.
- ⁶ Detail of door and additional door variants (see "Configuration with sliding door", page 5 and see "Configuration with sliding door", page 6)



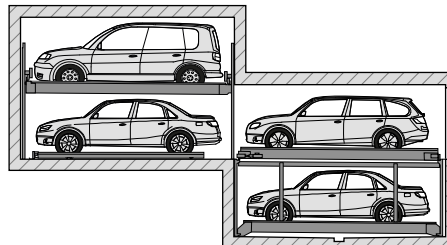
If sprinklers are required, the customer must leave sufficient clearance during the construction phase.

KombiSystem examples

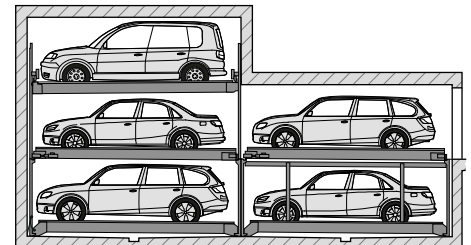
Combination 6100 with 6100+



Combination 6200+ with 6100+



Combination 6300 with 6100+



Vehicle data

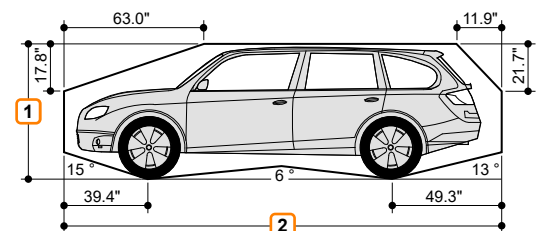
Parking options

Production vehicles:
Sedan, station wagon, SUV, and van as per clearance gauge and maximum parking space load.

	GL BL ³		
Weight ⁴	4400 lbs	5720 lbs	6600 lbs
Wheel load	1100 lbs	1430 lbs	1650 lbs

- ¹ Vehicle height (see "Overview of system types & ceiling heights", page 4)
- ² Vehicle length (see "Overview of building design", page 3)
- ³ GL = ground level | BL = basement level
- ⁴ Individual parking spaces can also be subsequently upweighted to 6,600 lbs.

Clearance gauge

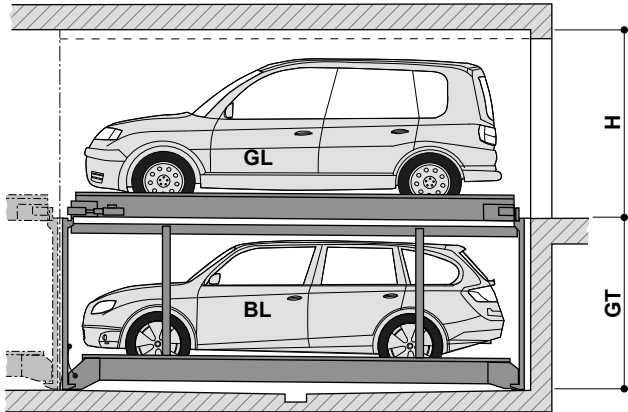


Vehicle width of 74.9" with a platform width of 90.6".
Wider platforms allow correspondingly wider vehicles to be parked.

Overview of system types & ceiling heights



The permissible GL vehicle height must be 4" larger than the BL vehicle height.



H: Building height:
GT: Pit depth

Type	GT	BL vehicle height	GL vehicle height									
			78.8"	80.8"	82.7"	84.7"	86.7"	88.6"	90.6"	92.6"	94.5"	96.5"
6100+ / 190	74.9"	59.1"	86.7	88.6	90.6	92.6	94.5	96.5	98.5	100.4	102.4	104.4
6100+ / 195	76.8"	61.1"	86.7	88.6	90.6	92.6	94.5	96.5	98.5	100.4	102.4	104.4
6100+ / 200	78.8"	63.0"	86.7	88.6	90.6	92.6	94.5	96.5	98.5	100.4	102.4	104.4
6100+ / 205	80.8"	65.0"	86.7	88.6	90.6	92.6	94.5	96.5	98.5	100.4	102.4	104.4
6100+ / 210	82.7"	67.0"	86.7	88.6	90.6	92.6	94.5	96.5	98.5	100.4	102.4	104.4
6100+ / 215	84.7"	68.9"	86.7	88.6	90.6	92.6	94.5	96.5	98.5	100.4	102.4	104.4
6100+ / 220	86.7"	70.9"	86.7	88.6	90.6	92.6	94.5	96.5	98.5	100.4	102.4	104.4
6100+ / 225	88.6"	72.9"	86.7	88.6	90.6	92.6	94.5	96.5	98.5	100.4	102.4	104.4
6100+ / 230	90.6"	74.9"	86.7	88.6	90.6	92.6	94.5	96.5	98.5	100.4	102.4	104.4
6100+ / 235	92.6"	76.8"		88.6	90.6	92.6	94.5	96.5	98.5	100.4	102.4	104.4
6100+ / 240	94.5"	78.8"			90.6	92.6	94.5	96.5	98.5	100.4	102.4	104.4

H - Building height

Configuration example



Example: BL vehicle height 65.0" & GL vehicle height 86.7".

Type: 6100+ / 205

Building height: 94.5"

Type	GT	BL vehicle height	GL vehicle height									
			78.8"	80.8"	82.7"	84.7"	86.7"	88.6"	90.6"	92.6"	94.5"	96.5"
6100+ / 190	74.9"	59.1"	86.7	88.6	90.6	92.6	94.5	96.5	98.5	100.4	102.4	104.4
6100+ / 195	76.8"	61.1"	86.7	88.6	90.6	92.6	94.5	96.5	98.5	100.4	102.4	104.4
6100+ / 200	78.8"	63.0"	86.7	88.6	90.6	92.6	94.5	96.5	98.5	100.4	102.4	104.4
6100+ / 205	80.8"	65.0"	86.7	88.6	90.6	92.6	94.5	96.5	98.5	100.4	102.4	104.4
6100+ / 210	82.7"	67.0"	86.7	88.6	90.6	92.6	94.5	96.5	98.5	100.4	102.4	104.4

H

Width and door height

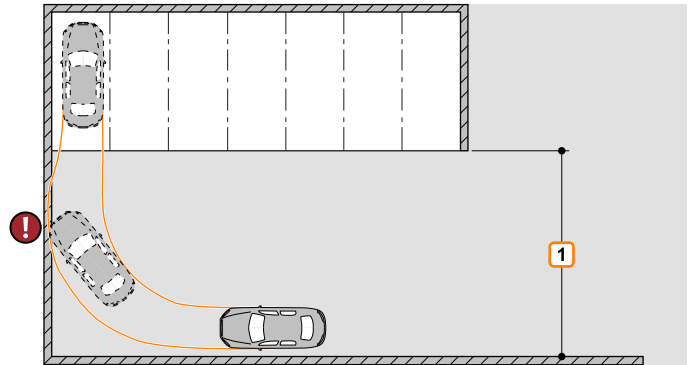


We recommend a platform width of at least 98.5" and driving lane widths of 256" to ensure convenient vehicle access to the multiparking system and easy entry into and exit from the vehicle.

Narrower platforms can make parking more difficult, depending on the following criteria.

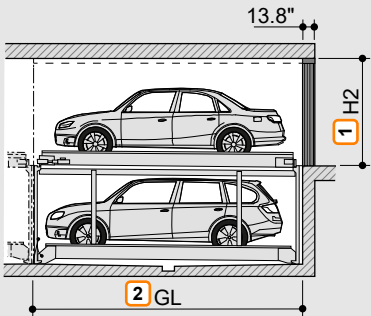
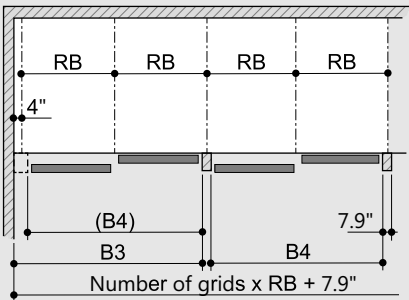
- Driving lane width
- Entry conditions
- Vehicle dimensions

- 1 Observe the minimum driving lane width specified by local regulations!



For commercial use of doors with electrical drive systems, an inspection log is required in accordance with ASR A1.7 "Technical Rules for Workplaces" in Germany. The door must be inspected by an expert before commissioning and annually thereafter and the result entered in the inspection log. The inspection must be carried out independently of maintenance. Observe local regulations regarding the operation of electrical doors.

Configuration with sliding door

	Door variant			Supports per grid				Supports per second grid		
Sliding door inside the supports				Not possible!						
	Clear plat- form width	RB 3	Support per grid				Support per second grid			
							B3	B4		
Width dimensions	90.6"	98.5"	Not possible!				196.9"	189.0"		
	94.5"	102.4"					204.8"	196.9"		
	98.5"	106.3"					212.6"	204.8"		
	102.4"	110.3"					220.5"	212.6"		
	106.3"	114.2"					228.4"	220.5"		
	GL vehicle height									
	78.8"	80.8"	82.7"	84.7"	86.7"	88.6"	90.6"	92.6"	94.5"	96.5"
H2	86.7"	88.6"	90.6"	92.6"	94.5	96.5"	98.5"	100.4"	102.4"	104.4"

1 Observe the minimum clear height H2 specified by local regulations.

2 GL: building length (see "Overview of building design", page 3).

3 RB: grid width. This dimension **must** be adhered to!

Configuration with sliding door

	Door variant			Supports per grid			Supports per second grid			
Sliding door behind the supports										
Sliding door in front of the supports										
	Clear plat- form width		RB 3	Support per grid		Support per second grid				
				B1	B2		B3		B4	
Width dimensions	90.6"		98.5"	98.5"	90.6"		196.9"		189.0"	
	94.5"		102.4"	102.4"	94.5"		204.8"		196.9"	
	98.5"		106.3"	106.3"	98.5"		212.6"		204.8"	
	102.4"		110.3"	110.3"	102.4"		220.5"		212.6"	
	106.3"		114.2"	114.2"	106.3"		228.4"		220.5"	
	GL vehicle height									
H2	78.8"	80.8"	82.7"	84.7"	86.7"	88.6"	90.6"	92.6"	94.5"	96.5"
	82.7"	84.7"	86.7"	88.6"	90.6"	92.6"	94.5"	96.5"	98.5"	100.4"

¹ Observe the minimum clear height H2 specified by local regulations.

² GL: building length (see "Overview of building design", page 3).

³ RB: grid width. This dimension **must** be adhered to!

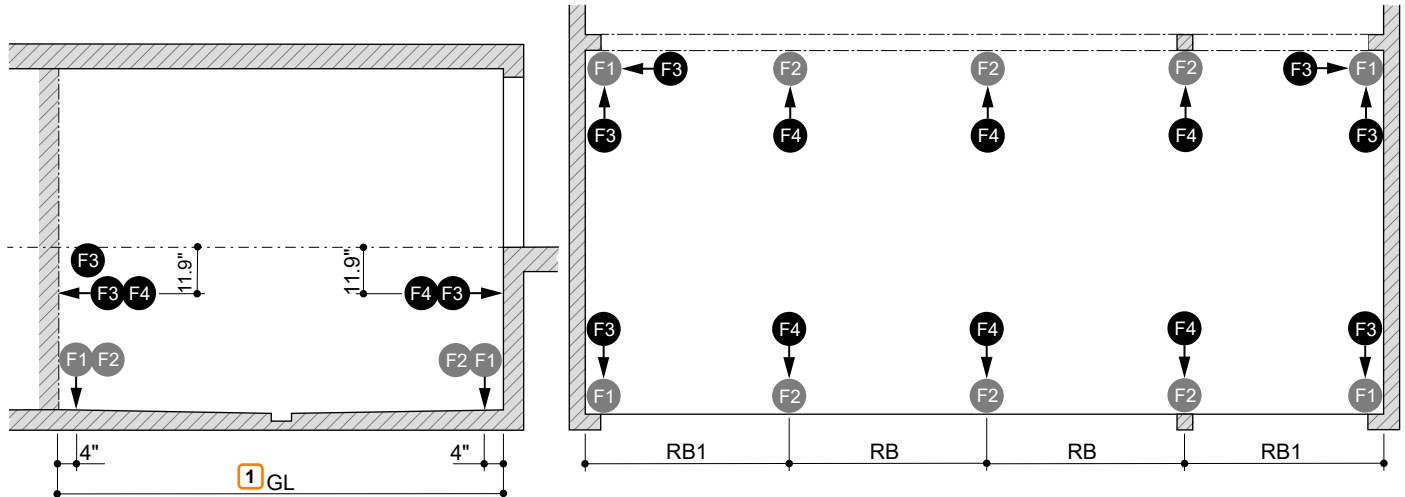
Loading schedule



The systems are doweled to the floor. The drill hole depth in the floor plate is approx. 6", in the walls approx. 4.8".

The floor plate and walls must be of concrete (concrete quality min. C20/25)!

The dimensions for the bearing points have been rounded. If you need to know the exact position, please contact KLAUS Multiparking.



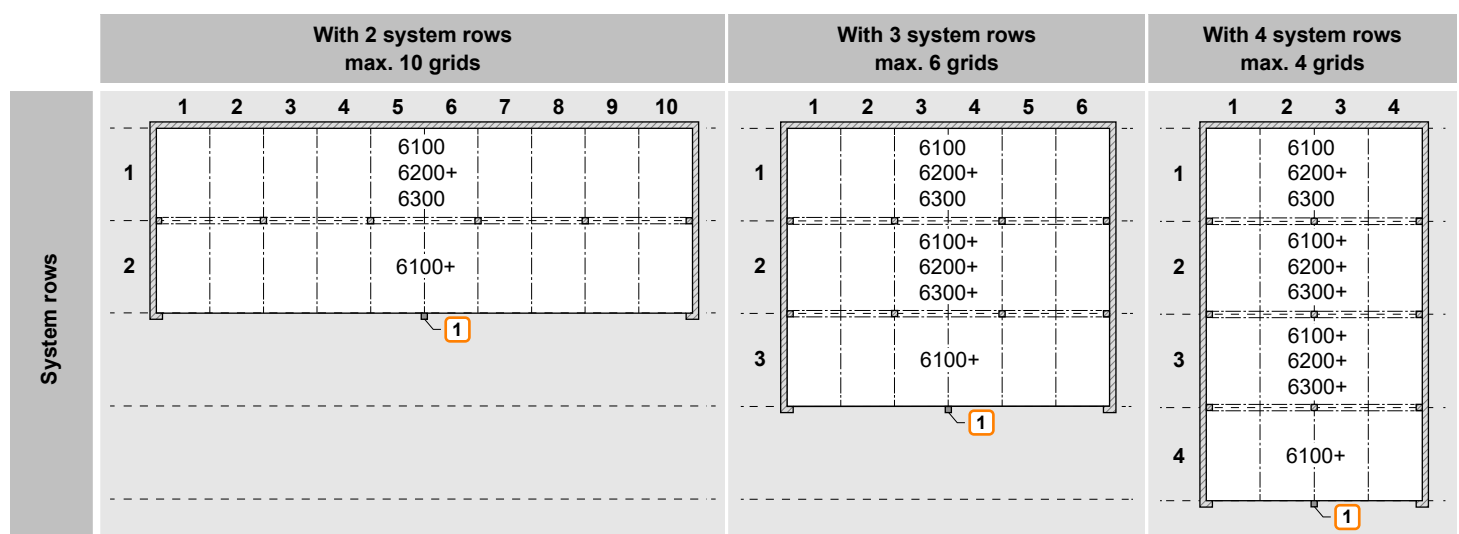
Parking space load	F1	F2	F3	F4
4400 lbs	+ 7644 lbf - 2653 lbf	+ 9442 lbf - 5306 lbf	± 652 lbf	± 1304 lbf
5720 lbs	+ 8318 lbf - 3193 lbf	+ 16636 lbf - 6340 lbf	± 675 lbf	± 1349 lbf
6600 lbs	+ 8993 lbf - 3552 lbf	+ 17985 lbf - 7104 lbf	± 697 lbf	± 1394 lbf

Clear platform width	RB ²	RB1
90.6"	98.5"	102.4"
94.5"	102.4"	106.3"
98.5"	106.3"	110.3"
102.4"	110.3"	114.2"
106.3"	114.2"	118.2"

¹ GL: building length

² RB = grid width. This dimension **must** be adhered to!

Arrangement of grids – KombiSystem

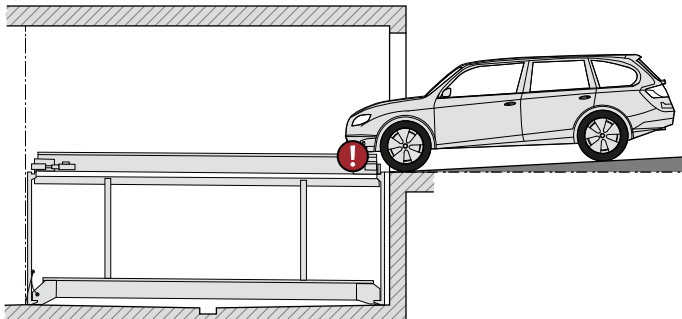


¹ Control panel

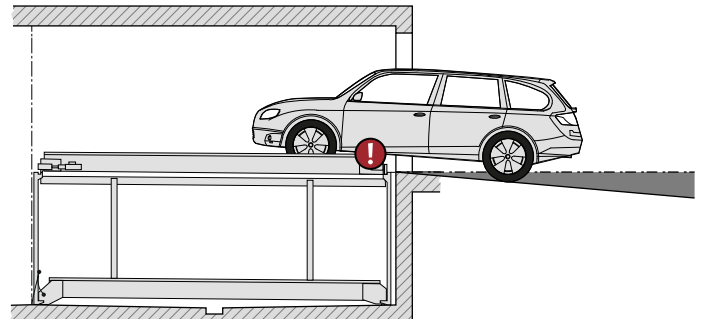
Entrance inclination



The maximum entry inclinations specified in the sketch must not be exceeded.
An incorrect design can make driving into the system considerably more difficult, for which KLAUS Multiparking is not responsible.

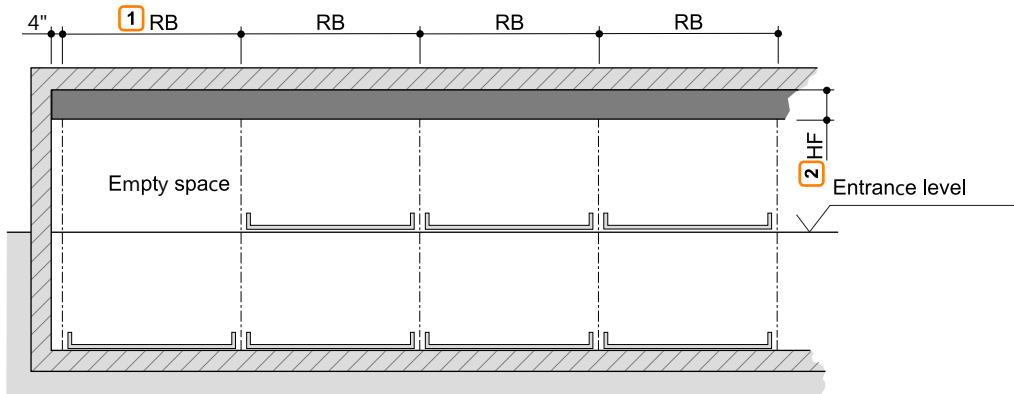


Max. slope: 3%



Max. gradient: 5%

Clearances for installations



- 1 RB: grid width. This dimension **must** be adhered to!
- 2 HF: Clearance height. Depending on building height and door variant.
- Clearance for routing lines above the door

Electrical installation

Switch cabinet and master switch

Access to the switch cabinet (approx. 60 x 60 x 25 cm) must be possible without danger. The lockable main switch must be positioned in such a way that the entire entrance area of the facility can be overlooked.

With wall opening from switch cabinet to system (consultation with KLAUS Multiparking required).

Hydraulic unit

- 4.0 kW, three-phase current, 120/208 V / 60 Hz

Supply cable to master switch

Supply cable min. 4 x AWG 10 (3 PH+PE) to switch cabinet with pre-fuse 3 x 25 A (time-lag) or circuit breaker 3 x 25 A (trip characteristic J) to be provided by the customer.

DIN/VDE regulations and the local regulations of the power supply company must be adhered to (see "Supply cable to the master switch – foundation ground", page 12).

Control panel with emergency-stop

- Attachment at a clear point (e.g. pillar).
- Secured against third-party operation.

Technical information

Area of use

In general, the system is best suited for a fixed group of users. Where users change (e.g. short-term parking in office buildings or hotels), structural modifications to the Multiparking system are required. If needed, please contact us.

Units

Low-noise power units mounted to rubber-bonded-to metal mountings are installed. Nevertheless, we recommend separating the garage body from the residential building.

Parking space designation

Please consult the function diagram for the standard designation of the parking spaces (see *"Function diagram with standard designation"*, page 2). Alternative designations are only possible with a surcharge.

Please note the following specifications:

- The empty space is situated on the left as standard.
- Notification of alternative designations must be received 8 to 10 weeks before delivery.

Environmental conditions

Environmental conditions for the area of multiparking systems. Temperature range +14 to +104 °F. Relative humidity 50% and a maximum outside temperature of +104 °F. If raising and lowering times are specified, they refer to an ambient temperature of +50° F and a system arranged directly next to the hydraulic unit. These times increase at lower temperatures or with longer hydraulic lines.

Building permit documents

Multiparking systems are usually subject to approval. Please observe local regulations and ordinances in this regard.

Care

To prevent corrosion damage, please observe our separate cleaning and care instructions, and make sure that your garage is well ventilated.

Corrosion protection

As per "Corrosion Protection" supplement.

Electrically driven doors

For commercial use of doors with electrical drive systems, an annual inspection is required in accordance with ASR A1.7 "Technical Rules for Workplaces" in Germany. We urgently recommend concluding a maintenance contact as these services are included for the complete system.

CE conformity

The quoted systems correspond to DIN EN 14010 and EU Machinery Directive 2006/42/EC. In addition, this system has undergone a voluntary conformity test by TÜV SÜD.

Noise protection

Normal noise protection:

As per DIN 4109-1 "Sound Insulation in Buildings – Part 1: Minimum Requirements," section 9:

The maximum sound pressure level in living and sleeping spaces is 30 dB (A).

User noises are not subject to the requirements.

The following actions are required to comply with this value:

- Noise protection package as per quotation/order (KLAUS Multiparking)
- Sound reduction index of the structure at least $R'w = 57$ dB (customer-provided performance)

Increased noise protection (separate agreement):

As per DIN 4109-5 "Sound Insulation in Buildings – Part 5: Increased Requirements," section 8:

Maximum sound pressure level in living and sleeping spaces 25 dB (A).

User noises are not subject to the requirements.

The following actions are required to comply with this value:

- Noise protection package as per quotation/order (KLAUS Multiparking)
- Sound reduction index of the structure at least $R'w = 62$ dB (customer-provided performance)

Note:

User noises are noises that can be influenced individually by the user of our multiparking systems. This includes, e.g., driving onto the platform, slamming vehicle doors, engine noises and breaking noises.

Performance specification

Description

Multiparking system for independent parking of vehicles one on top of the other and next to one another.

The system is traversable and is combined with the TrendVario 6100, 6100+, 6200+, 6300 and 6300+ (details on these systems can be found in the corresponding product sheets).

Dimensions as per the underlying pit, width and height dimensions.

Access to the parking spaces horizontally (installation tolerance $\pm 1\%$).

Access must be provided over the entire width of the system (minimum driving lane width in accordance with local regulations).

The parking spaces are arranged on 2 levels one on top of the other. Vehicles park on stable steel platforms.

The platforms on the basement level (BL) move vertically, while the platforms on the ground level (GL) move horizontally. At entrance level (GL), there is always 1 parking space less. This empty space is used for the sideways movement of the GL parking spaces to allow a parking space on the BL below to rise to entrance level. Consequently, 3 parking spaces (1 on GL, 2 on BL) is the smallest unit for this parking system.

A vehicle positioning aid is mounted on one side of each parking space (must be adjusted as per operating instructions).

For safety reasons, the movement operation of the platforms always takes place behind locked doors.

All requisite safety equipment is integrated into the system. This essentially comprises a chain monitoring system, locking levers for the lower platforms and locked doors. The doors can only be opened when the selected parking space has reached its parking position and all fall openings are secure.

Steel frame (secured in the pit) comprising:

- Supports (arranged in rows)
- Crossbeams and lengthways beams
- Sliding rails for the sideways moving GL platforms

Platforms consisting of:

- Platform profiles
- Adjustable positioning aid
- Chamfered access plates
- Side beams
- Crossbeams
- Feeder platform (only BL)
- Bolts, nuts, washers, spacer tubes, etc.

Lifting equipment for platforms on the BL comprising:

- Hydraulic cylinders with solenoid valves
- Chain wheels
- Chains
- Limit switches
- The platforms are each suspended at 4 points and are guided at the supports by means of plastic plain bearings.

Drive unit for sideways moving platforms on GL:

- Gear motor with chain wheel
- Chains
- Sliding and guide rollers (low-noise)
- Power supply via energy chain

Hydraulic unit consisting of:

- Hydraulic unit (low-noise, mounted on a console with rubber-bonded-to metal mountings)
- Hydraulic oil tank
- Oil fill
- Internal gear pump
- Pump carrier
- Coupling
- Three-phase motor
- Contactor, motor protection switch and control fuse
- Test pressure gage
- Pressure relief valve
- Hydraulic hoses (damping of noise transmission to the hydraulic pipes)

Control:

- Central control point (control panel with emergency-stop) for selecting the desired parking space
- The electrical wiring from the system cabinet is provided by the supplier.

Sliding doors:

Size

- Sliding doors, size approx. 98.5" x 78.8" (width x height).

Frame

- Frame structure with one vertical center rung made of extruded aluminum profile (anodized, coating thickness approx. 0.8 mil)
- A handle shell is provided in a vertical aluminum profile for opening the doors.
- There is a rubber lip on the closing edge for a clean seal with the building.

Standard door filling

Aluminum perforated plate

- Thickness 0.1", RV 5-8 E6/EV1, anodized, coating thickness approx. 0.8 mil
- Ventilation cross-section of the filling approx. 40%

Alternative door filling

Plain aluminum sheet

- Thickness 0.1" E6/EV1, anodized, coating thickness approx. 0.8 mil

Corrugated steel sheet

- Thickness 0.05", galvanized, coating thickness approx. 0.8 mil
- Additional powder coating, coating thickness approx. 1 mil on the outside and approx. 0.5 mil on the inside
- Color options on the outside (building view):

RAL 1015 (light ivory)	RAL 3003 (ruby red)
RAL 5014 (pigeon blue)	RAL 6005 (moss green)
RAL 7016 (anthracite grey)	RAL 7035 (light grey)
RAL 7040 (window grey)	RAL 8014 (sepia brown)
RAL 9006 (white aluminum)	RAL 9016 (traffic white)
- Door inside in a light grey tone

Wood filling

- Nordic spruce, grade A
- Vertical tongue and groove boards
- Colorless, pre-impregnated

Composite safety glass

- Composite safety glass made of tempered glass 0.32"/0.16"

Wire mesh

- Mesh size
- Wire diameter 0.1", galvanized, coating thickness approx. 20 µm
- Ventilation cross-section of the filling approx. 70%

Sliding rails

- The running gear comprises 2 double-pair roll systems per door, height-adjustable.
- The sliding rails of the doors are attached to brackets with cover bushings or directly to the concrete lintel or a building-specific door suspension.
- The lower guide comprises 2 plastic rollers on a base plate which is dowelled to the floor.
- Sliding rails, cover bushings, and guide roller base plate are galvanized.

Door actuation

- Electrical drive system by means of electric motor attached to the rail system at the turning point of the sliding doors. The drive pinion engages a chain attached to the door.

For safety reasons, the movement operation of the platforms always takes place behind locked doors. An electrical signal generator is used to query the positions "door open" and "door closed."

Separation (if required)

- On request

Please note:

Door trim (at the side, cover over the sliding rails, etc.) and door suspensions are not included with the standard configuration but can be supplied as special equipment for a surcharge.

Performances provided by customer

Barriers

Any barriers required to secure the parking system pit due to traffic routes located immediately in front of, next to or behind the systems as per DIN EN ISO 13857. This applies during the construction phase as well.

Parking space numbering

Any parking space numbering required.

Technical building systems

Any required lighting, ventilation, fire extinguishing systems and fire alarm systems, as well as clarification and fulfillment of the associated legal requirements.

Lighting

The customer must observe local regulations regarding the lighting of parking spaces and roadways. As per DIN EN 12464-1 "Light and Lighting – Lighting of Work Places – Part 1: Indoor Work Places" an illuminance of at least 200 lx is recommended for parking spaces and the operating area of the system. A dry contact can be provided for actuation of parking space lighting provided by the customer.

Drainage

Functional drainage of the pit must be provided by means of, for example, a water collection channel towards the center that is connected to the sewer system or a pump sump. A lateral slope is possible within the channel but not in the rest of the pit area (a lengthways slope is provided by the structural dimension). As an environmental protection measure, we recommend that the pit floor be painted. Oil or gasoline separators must be appropriately taken into account as per local regulations when the drain is attached to the sewer system.

Strip foundations

If strip foundations are used for structural reasons, the customer must construct a walkable platform at the height of the upper edge of the strip foundations so that the assembly work can be performed.

Wall openings

Wall openings, if required.

Supply cable to the master switch – foundation ground

The customer must provide the supply cable to the master switch during assembly. Our fitter can check functionality on site together with the electronics technician. If this is not possible during assembly due to reasons for which the customer is responsible, then the customer must contract an electronics technician.

The customer must ground the steel structure using the foundation ground connection (max. ground distance 393.8") and equipotential bonding as per DIN EN 60204.

Door suspensions

Please note that if the specified clear heights (see "Width and door height", page 5) are not adhered to, additional measures for door attachment (door suspensions) will be required for a surcharge.

Door trim

Door trim, if required. This may be requested from KLAUS Multiparking for a surcharge.

Right to technical changes reserved.

In carrying out its performances in the course of technical progress, KLAUS Multiparking is free to use new or different technologies, systems, processes or standards than those initially quoted, provided this does not result in any disadvantages for the customer.

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