BDP-2

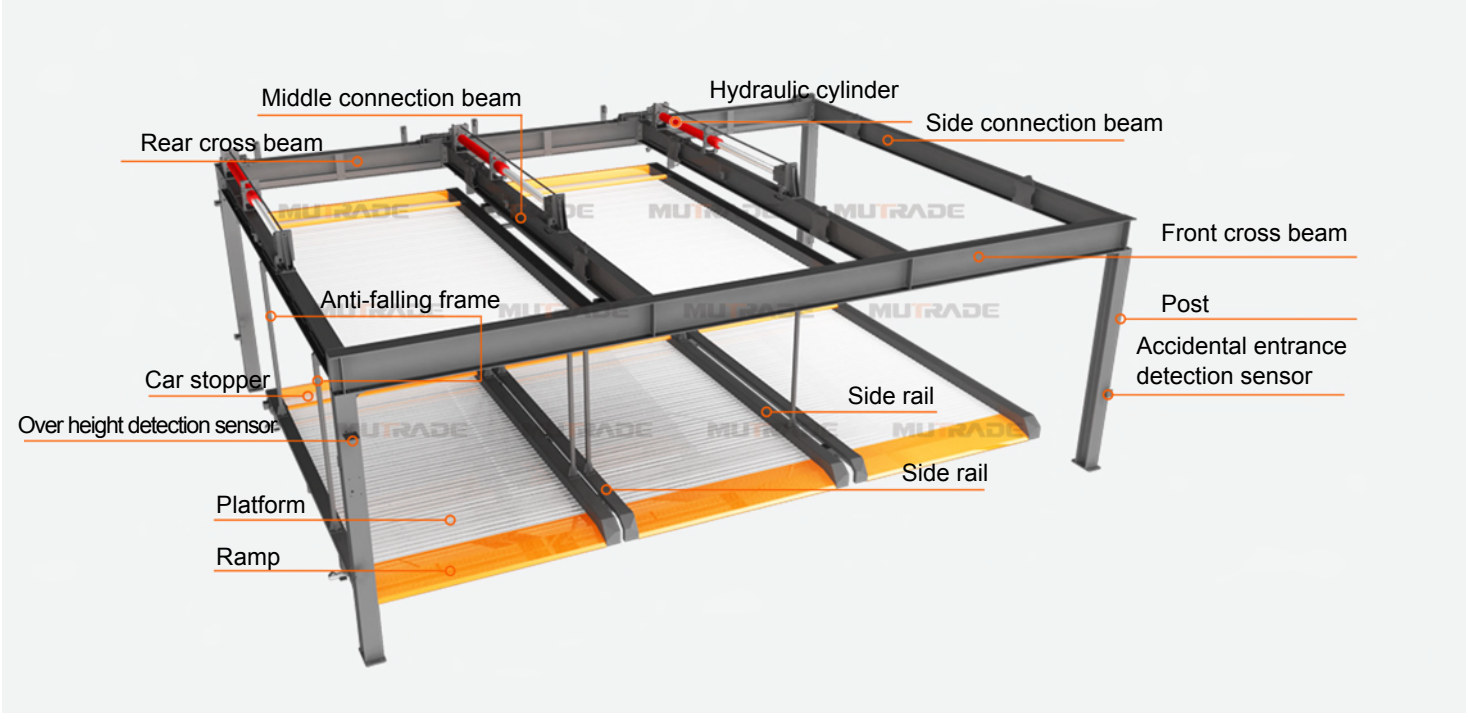
Bi-Directional Parking System 2 Levels

BDP-2 is a semi-automatic parking system, developed by Mutrade. The parking space selected is moved to the desired position by means of an automatic control system, and the parking spaces can be shifted vertically or horizontally. Entrance level platforms move horizontally and upper level platforms move vertically, with always one platform less at the entrance level. By swiping the card or input the code, the system automatically moves the platforms in the desired position. To collect a car parked on the upper level, the platforms at the entrance level will first move to one side to provide an empty space into which the required platform is lowered.

BDP-2 mobilizes the existing space by using it the best possible way. It can be used to park two cars on top of each other, and offers space from 5 to 29 cars. A driving lane in front of the full width of the system is required to access all parking spaces, and one vacant space on the entry level allows for horizontal or vertical shifting of all platforms.

The access level can be secured by doors which can only be opened once the shifting process is completed. Therefore, cars are protected against theft and vandalism.

-Independent parking in 2 levels above each other
-Multi size options corresponding to car heights, car widths and platform loadings
-2000kg capacity for sedan system, and 2500kg capacity for SUV system
-Easy operation and parking comfort
-High level of operating and functional safety
-Low-wear, low-noise proven hydraulic systems
-Galvanized platform with wave plates for better parking
-High elevating speed to reduce waiting time
-Central hydraulic power pack and control panel, with PLC control system inside
-Code, IC Card and manual operation available
-Reliable mechanical anti-falling protection
-Hydraulic overloading protection
-Optional safety gates at access level protect cars against theft and vandalism.



Features

1.Less land space occupied:

Hydraulic cylinder and wire ropes transmission system makes full use of the inside space of structure. No wasted space for wire reel.

2.High elevating speed:

8-12 meters/minute elevating speed makes platforms move to desired position within half minute, and dramatically reduces users' waiting time.

3.Low operation noise:

Noise reduction is available on the centralized power unit, so no harm for body health and environment.

4.Low electricity consumption:

It's driven by gravity and hydraulic pump is not working when platform descends, so the electricity consumption can be reduced.

5.Modularized structure:

Modularized structure makes structural parts and transmission parts standard and suitable for various projects, it could simplify the fabrication and installation.

6.SUV parking available:

The reinforced structure allows 2500kg capacity for all platforms with higher available height to accommodate SUVs.

7.Easy operation:

Centralized control panel in front of the system allows users to operate conveniently by code, IC/ID card.

8.SIEMENS motor in power unit:

Siemens full-time working motor makes sure the hydraulic pump working continuously at any time.

9.Excellent hydraulic pipeline system:

The oil tubes, joints and fixtures are all updated to make our hydraulic system more sufficient and stable.

10.Seamless cold drawn oil tubes:

Instead of welded steel tube, the new seamless cold drawn oil tubes are adopted to avoid any block inside of tube due to welding.

11.Wire ropes loosen detection system:

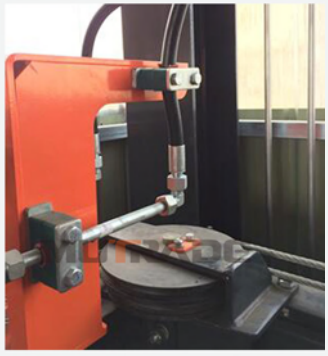
any loosen of wire rope can be detected to avoid platform falling down.

12.Strong and reliable wire ropes adopted:

10mm diameter wire ropes are strong enough for long term SUV parking.

13.Larger platform usable width:

Wider platform allows users to drive cars onto platforms more easily.



14.Platform buffering, anti-slip, anti-sway and positioning devices:
each platform is well protected during movement by multiple nylon-cushions and positioning plates for buffering, anti-slip, anti-sway and positioning.

15.Leakproof platforms:
specially bent side rails and galvanized waving plates prevent oil or water from dripping.

16.Optimized platform side rail:
the front end of platform side rail is polygon without sharp edge to avoid body hurt or tire damage.

17.Adjustable car stopper:
the position of car stopper can be adjusted to fit for different wheel bases.

18.Mechanical anti-falling frame:
the anti-falling frame is reliable mechanical protection in case any platform falling down.

19.Overlength, over height, over loading detection protection:
a lot of photocell sensors are placed in different positions, the system will be stopped once any car is over length or height. A car over loading will be detected by the hydraulic system and not be elevated.

20.Self-locking protection device:
the self-locking protection will safely stop the platform if electricity fails.

21.Accidental entrance detection protection:
the photocell sensors in front of the system will detect any accidental entrance of person or car, stop system operation and give the alarm.

22.PLC control system:
Omron PLC centralized control system is used for long term stable controlling and multiple functions working.

23.Multiple electrical safety protections:
phase order, over currency, over loading, over or under voltage protections are adopted.

24.Top brand electrical parts:
Siemens, Schneider, Omron electrical parts are widely used in the electrical system.

25.Professional packages and delivery:
long term development and updates, as well as a great deal of global project experience helps our product packages and loading work be suitable for ocean transportation from damage.

26.Optional safety gates:
Two types of safety gates are optional to secure the parking system, cars and valued items inside, as well as avoiding any accidental entrance.

27.Optional roof and façade cover:
roof and façade cover made of color steel sheet is optional to protect the structure and parts from rain and snow.

Specifications

General

Model	BDP-2
Levels	2
Available car length	5070mm
Available car width	1850mm
Available car height	1550mm / 2050mm
Available car weight	2000kg / 2500kg
Drive mode	Hydraulic cylinder + wire ropes
Operation	Code, Card, or manual
Control	PLC centralized control system
Elevating speed	8-12 meters/minute
Sliding speed	7.5 meters/minute
Power supply	380V, 3P, 50/60Hz
Finishing	Powder coating

Mechanical & Hydraulic

Post	H Steel 150x150
Cross beam	H Steel 300x150
Connection beam	H Steel 248x124
Platform decking	Galvanized waving plate δ=2
Platform ramp	Diamond plate δ=3.5
Wire rope	Φ10
Pump motor power	4Kw
Pump flow	20L/min
Pump working pressure	16MPa
Hydraulic cylinder	Φ80/Φ70
Pulley	MC Oily reinforced nylon
Oil tube	Seamless cold drawn tube Φ15×2.5
Hydraulic oil	L-HV 46#
Sliding motor power	0.2Kw, 1:60
Transmission chain	08A

Electrical

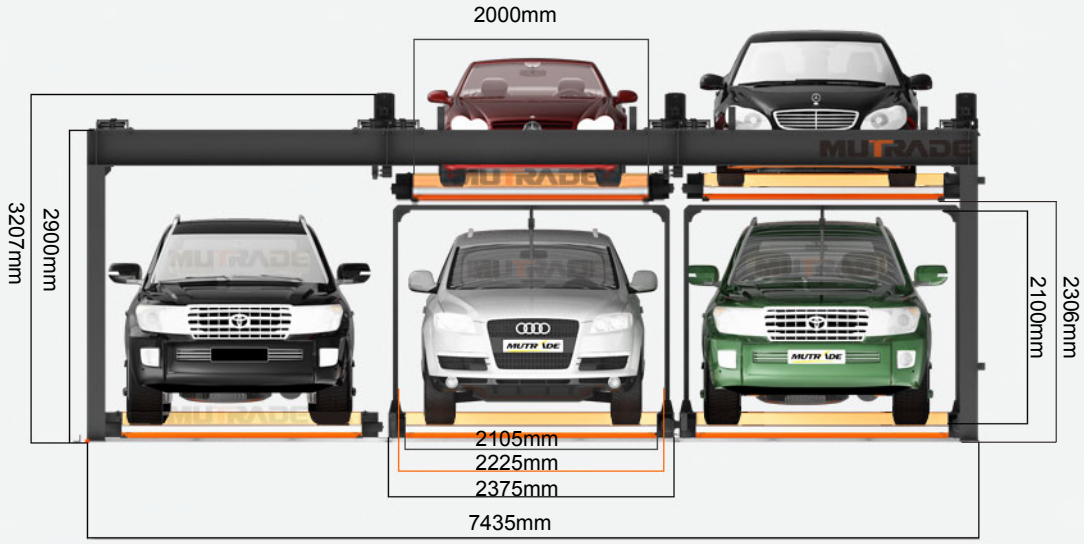
Pump motor	Siemens
PLC	Omron
Power switch	CHNT
Emergency stop button	Schneider
Air switch	CHNT
AC contactor	CHNT
Contactor	CHNT
Thermal relay	CHNT
Photocell sensor	G-tek

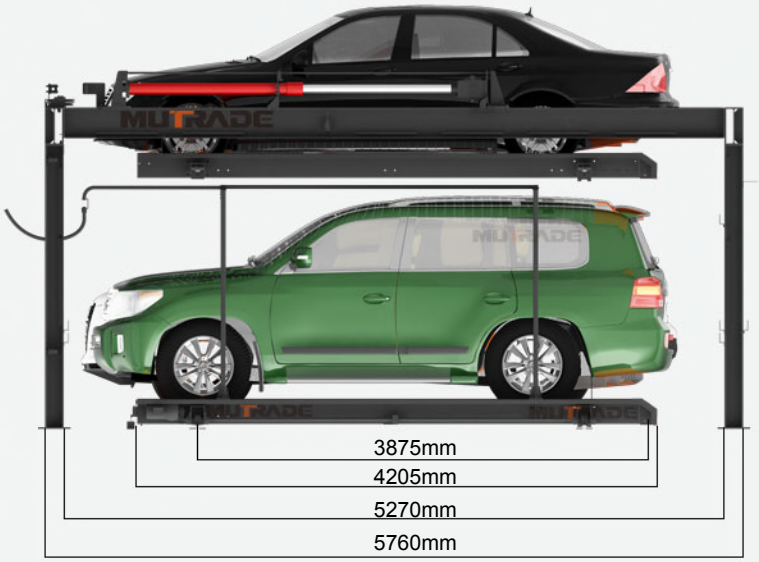
Safety devices

- 1.Design safety factory:
  the safety factor of transmission system is not less than 7, to make sure all structure and connections are strong and safe enough.
- 2.Emergency stop button:
  the emergency stop button can be activated to stop the system and cut off power supply at once in an emergency.
- 3.Operation protection:
  after emergency stop button is activated, the equipment cannot work until emergency ends.
- 4.Over length detection:
  if a car longer than rated length is parked on the platform, the sensor will stop the system and give the alarm.
- 5.Over height detection:
  if a car higher than rated height is entering, the sensor will stop the system and give the alarm.
- 6.Accidental entrance detection:
  when a person or car is trying to enter into the system in operation, the sensor will stop the system at once and give the alarm.
- 7.Adjustable car stopper:
  the position of car stopper on the platform can be adjusted forwards or backwards according to different car lengths.

- 8.Anti-falling frame:
  two mechanical frames under each upper platform are more stable and reliable to protect car from any platform falling down.
- 9.Alarm lamp:
  An alarm lamp is blinking to remind the system in operation.
- 10.Buzzer:
  The buzzer will be activated to give the alarm if there is an error of over length, over height, over loading or accidental entrance, etc., as well as error indicator displayed on operation panel.
- 11.Motor over loading protection:
  if the motor is over loading due to some reason, the protection will cut off the power supply at once to protect the motor and cars on the platforms.
- 12.Phase failure & anti-phase protection:
  the control loop will stop the motor working at once if there is phase failure or anti-phase happens.
- 13.Over voltage protection:
  the control loop will cut off power supply at PLC front-end to protect PLC, if over voltage happens.
- 14.Positioning & end point limit switches:
  Positioning limit switches are placed to stop platform moving when the platform reaches desired position; the end point limit switch is an extra protection in case any positioning limit switch fails and the platform keeps moving.
- 15.Self-locking protection:
  if there is an electrical failure or emergency situation, sliding motor can apply the brake, hydraulic pump and valves be locked, and all moving devices stop.
- 16.Elevating and sliding interlock protection:
  the interlock protection always works to prevent elevating movement and sliding movement from simultaneity.
- 17.Slide positioning protection:
  stop blocks are placed on the end of sliding rails to stop platform sliding at desired position.
- 18.Under time & overtime protection:
  in the movement of elevating or sliding, an operation time under or over the given safety time range will be detected by the control system, and the equipment will be stopped and not work until trouble removal by the administrator or authorized person.
- 19.Platform overtravel protection:
  each platform is elevated by a hydraulic cylinder, which travels in a certain stroke and will prevent platform from unnecessary moving in case limit switches fail.
- 20.Password safety protection:
  password is requested to make sure only authorized person can operate the equipment

Dimensions


2000mm
3207mm
2900mm
2306mm
2100mm
2105mm
2225mm
2375mm
7435mm


3875mm
4205mm
5270mm
5760mm

Operation

Operation panel

Two ways to operate the system:

- 1. Code: input the space number of desired platform, then press RUN to start.
- 2. Card: users can swipe a specific card to get a certain platform down to the entrance level. Each card matches a specific platform.

Surface treatment

Powder coating is applied as a free-flowing, dry powder. It is typically applied electrostatically and is then cured under heat to allow it to flow and form a "skin". It is usually used to create a hard finish that is tougher than conventional paint.

Working principle

1 To get the car on the middle platform in upper level

The platform in the left of entrance level goes up first 2

3 The platform in the middle of entrance level slide leftwards

The desired car can go down to entrance level 4

Maintenance

According to the operation principle of our parking system, the periodical maintenance should be fulfilled as per the following four types:

- A.Monthly inspection and maintenance

It should be done every two weeks after project starts to operate within the first three months.
The equipment and safety devices should be clean, lubricated adjusted inspected. Especially, please pay more attention on the working status of main safety devices, careful inspection is necessary and please fix any problem found out in the earliest time. Do inspection on every lubrication parts, and lubricate it if needed.

- B.Quarterly inspection and maintenance

It should be done every three months after first moths end.
All the transmission parts (steel cables, limit switches, motor in power pack, pulleys, guiding rails, etc.), safety devices and electrical control system should be inspected completely, and do necessary adjusting or fixing work if needed.

- C.Yearly inspection and maintenance

A technical inspection of whole equipment (including earth connection and withstand voltage of electrical parts, etc.) should be done every year, and customer need make estimation on working status of equipment and annual maintenance plan, fix and replace the worn parts.

- D.Adjusting test

The adjusting test with loading should be done every two years. The equipment could start to operate only after careful inspection on whole system if there is long time stop or any earthquake, fire happening.

Warranty policy

MUTRADE's BDP series have a FIVE years warranty on structure, and ONE year warranty for the whole machine.

Within the warranty period, power units, hydraulic cylinders, and all other assembly components such as slip plates, cables, chains, valves, switches etc., are warranted for one year against defects in material or workmanship under normal use. MUTRADE shall repair or replace at their option for the warranty period those parts returned to the factory freight prepaid which prove upon inspection to be defective. MUTRADE will not be responsible on any labor costs unless pre-agreed. Mutrade will not be responsible for the modification or upgrade of the product from the client unless pre-agreed.

These warranties do not extend to...

•defects caused by ordinary wear, abuse, misuse, shipping damage, un-proper installation, voltage or lack of required maintenance;
•damages resulting from purchaser's neglect or failure to operate products in accordance with instructions provided in the owner's manual(s) and/or other accompanying instructions supplied;
•normal wear items or service normally required to maintain the product in a safe operating condition;
•any component damaged in shipment;
•other items not listed but may be considered general wear parts;
•damage caused by rain, excessive humidity, corrosive environments or other contaminants.
•any change or modification made to the equipment without pre-agreed.

These warranties do not extend to any cosmetic defect not interfering with equipment functionality or any incidental, indirect, or consequential loss, damage, or expense that may result from any defect, failure, or malfunction of a MUTRADE product or the breach or delay in performance of the warranty.

This warranty is exclusive and in lieu of all other warranties expressed or implied.

MUTRADE reserves the right to make design changes or add improvements to its product line without incurring any obligation to make such changes on product sold previously.

Warranty adjustments within the above stated policies are based on the model and serial number of the equipment. This data must be furnished with all warranty claims.