ARP SERIES

5TH GEN

Automatic Rotary Parking system

Please notice that all the specification and technical details quoted within this catalog/datasheet/installation manual maybe out of date or have minor differences with our standard equipment from time to time.
Our company reserve the right to change technical details in the description, information and illustrations in this documentation.
All the specification and technical details will be subjected to the drawing confirmed by the sales contract.

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CE This parking system is compliant to:
- EC Council Directive 2006/42/EC Machinery
- DIN EN 14010

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ARP Series, 5th Generation

Introduction

We are thrilled to unveil the new ARP series of 5th Generation, featured by Double-Rotation Mechanism Technology (DRMT). It tackles critical technical shortcomings and challenges related to transmission, safety, functionality, and lifespan found in existing models, a giant technological leap in the field of Vertical Rotary Parking Systems.

It's one of a kind in the global market, surpassing the traditional Dial-Wheel and Dial-Shaft methods. Also notably, the 5th Gen. system is equipped with 23 core technologies, particularly the Automatic Chain-Break Emergency Braking System and Intelligent Weight Limit System. With 147 patented technologies, it stands out for its exceptional quality, exemplifying the new heights of innovation technology led by Mutrade.

Features:

- Max. 20 sedans or 18 SUVs
- Allowing vehicle weight up to 2500kg
- Covering area as small as 35.75m^2
- Less maintenance and longer service life with DRMT technology
- Short waiting time driving by German motor
- Shorter installation period with modular design
- Lower operational noise
- 20+ core safety technologies
- Possible relocation & reinstallation
- Wide range of applications including public areas, office buildings, hotels, hospitals, shopping malls, and car showrooms, etc.

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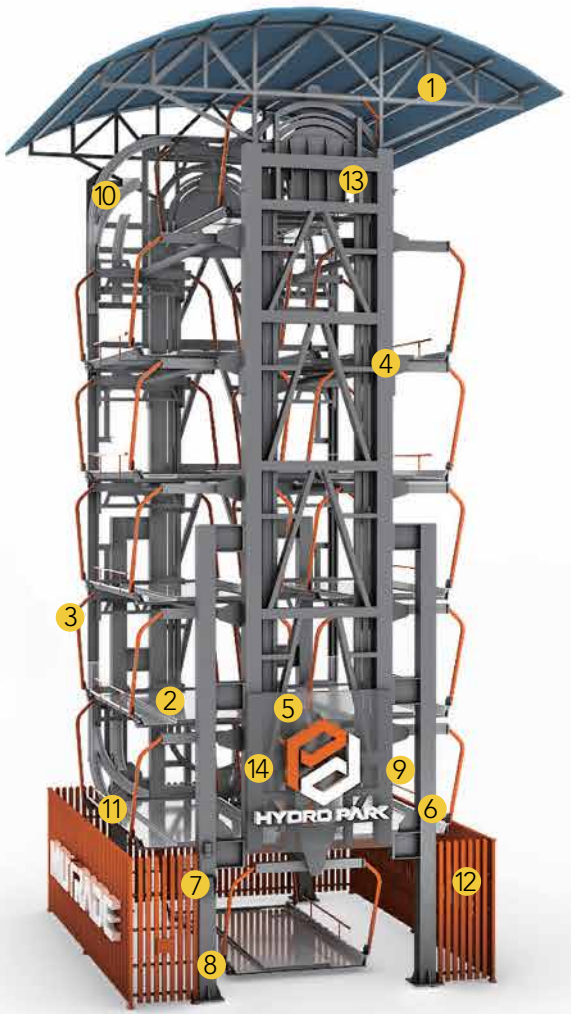
General parts



1. Rain shelter
2. Platform
3. Platform suspension arm
4. Rack
5. Gear motor
6. Post
7. Control panel
8. Photocell sensor
9. Electric box
10. Guide rail
11. Car door stopper
12. Fence
13. Upper Rotation Mechanism
14. Lower Rotation Mechanism

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What is DRMT?

The Double-Rotation Mechanism Technology (DRMT) is an innovative transmission technology that adopts prefabricated chain-tooth plates. It's composed of Upper Rotation Mechanism, Lower Rotation Mechanism and Toothed Circular chains.

Compared to traditional Dial-Wheel technology using large sprocket, DRMT has significant advantages in terms of load capacity, stability, transmission efficiency, energy consumption, noise reduction, lifespan, and maintenance costs.

Chain-Tooth Slave Mechanism (Upper Rotation)

Chain-Tooth Drive Mechanism (Lower Rotation)

Core Parts

Prefabricated Tooth Plates + Toothed Circular Chains

Prefabricated Tooth Plates Drive Assembly

Toothed Triangle Plate

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Technical Advantages

ARP Series 5th Generation

Modular structure design

Instead of a single massive frame, we break it down into standardized modules. The benefits are manifold: controlled welding deformation, enhanced standardization, versatility, and higher installation precision.

Higher parking capability

Thanks to the modular structure design, our ARP system can go higher while remain the same strength and safety, receiving up to 20 sedans or 18 SUVs in one single system, the highest in the market.

High-precision manufacture

High-precision equipments such as Panasonic Double Gantry Robotic Welding System and large CNC Universal Gantry Mill enable tolerance <2mm in main structure manufacturing.

German motor

German motor with power up to 24kw has always been a guarantee of strength, power, stability and long durability. SEW motor is optionally available.

Quick installation

The installation period of one system on average is only 5-7 days, great saving in construction cost comparing to other types of automated parking systems.

Car retrieval at power failure (optional)

A special add-on enables the possibility of take off your vehicle down to the ground manually in case of power failure or blackout.

Stable and quiet transmission system

In the DRMT technology, a 3-stage chain-tooth transmission system is adopted, resulting in smoother torque release between stages, better flexibility in power transmission, and minimal impact on the main frame of the system structure.

Bigger loading capacity

Thanks to the high-precision equipment and the new transmission system, our ARP series are able to receive heavier vehicles than any other products in the market, 2500kg for SUV system and 2000kg for sedan system.

Stable performance at extreme conditions

The unique and robust structure design can achieve stable performance against 10th grade wind and magnitude 8.0 earthquake.

Longer service life

Compared to the traditional design of half-round disc, we adopt full disc for Upper Rotation, which greatly minimize the wear and abrasion and thus much longer service life and much less maintenance cost.

Premium safety design

More than 2 dozen of safety measure are adopted to protect the safety of personal, vehicles and the ARP systems.

Integrated Charging for EVs (optional)

Picture a seamless fusion of parking and charging infrastructure for electrical vehicles. Whether the garage is in motion or at rest, our technology ensures safe uninterrupted vehicle charging.

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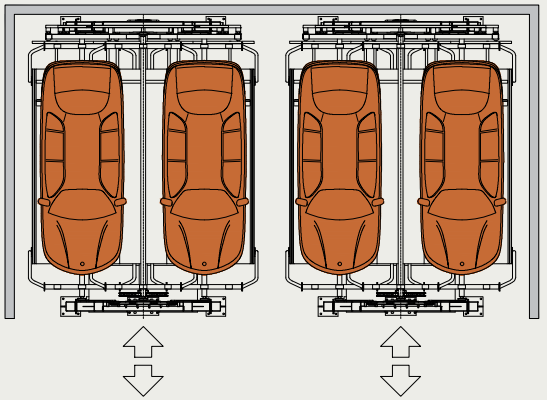
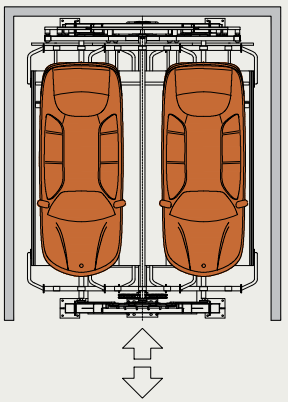
Multi applications

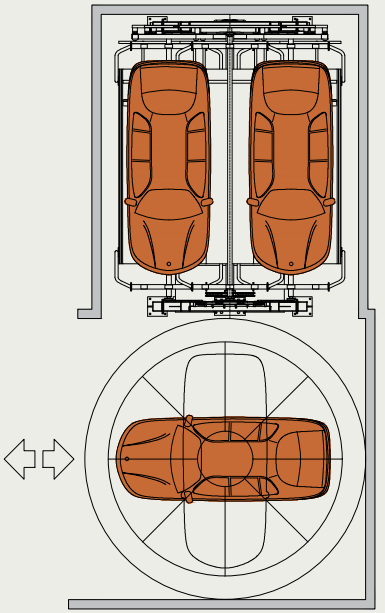
A Standard layout of multiple systems installed in a row



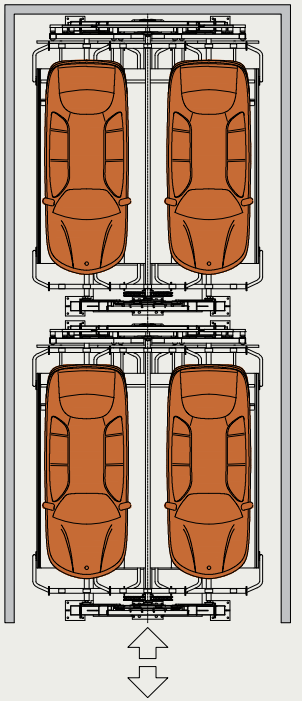
B Layout of a single system in tight area



C Layout when working together with a turntable



D Drive-through design for projects that's long and narrow



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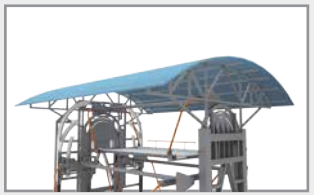
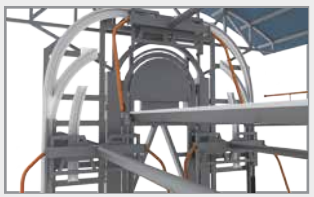
Standard Safety Devices





Rain shed

The perfectly curved rain shed has now been a standard configuration on top to protect the system and vehicles from harsh weathers, while not effecting the system stability in cases of strong winds or snows.

Wind resistance & Anti-seismic technology

This technology achieves system stability when platform rotates to the top position even in case of 10th grade strong wind load or magnitude 8.0 earthquake.

Electronic Damping System

This technology achieves rapid, precise, and reliable positioning of the parking platforms. It completely eliminates the safety risks of swaying platform during vehicle entry and exit, providing users with a smooth parking experience.

Anti-door open and anti-scratch device

Automatically activated to unfold to prevent car door opening during system operation, which could result in severe personal injury or vehicle/system damage.

Safety wheel stopper

The innovative wheel stoppers revolve against the driving force of car wheels and stop the vehicle from moving forward and causing danger.

Auto roller door

The safety feature of pressure-based auto reverse will cause a closing door to open again if it encounters even just a small amount of pressure on its descent.

High-strength Guide Wheels

Made of REON high strength polymer materials, the guide wheels offer high impact toughness and corrosion resistance to avoid direct rigid metal-to-metal friction between circulating chains and guide rail. It achieves lubrication-free, low-noise, and flexible operation.

Smart elevating footboard

The recessed foundation pit in between ground surface and platform could be unfriendly and sometimes cause danger.The smart elevating footboard can ascend up automatically and perfectly solve the problem.

Double closed guide rail

A closed guide rail guarantees smoother and safer rotation, particularly when the system rotates to the top and bottom position.

Drive chain break protection

We adopt double pins, self-locking nuts and high-strength split pins to prevent the drive chain break at jointing links.

Touch-screen panel

Intelligent panel with multiple functions including touch-screen control, face recognition, car plate recognition, etc.

Stainless steel sensor pillars

Made of stainless steel, this sensor pillar is not only showing a sense of elegance, but also an effective protection from sun exposure, water and impact.

Safety door for driver pass

The door driven is equipped additionally aside the main roller door, specially designed drivers/passengers. Driven by electromagnet, it opens automatically after parking to offer a safe path to exit the system.

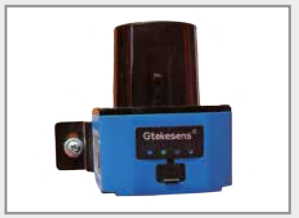
Aluminum safety fence

The aluminum fence is made to be 1.8m high and 4cm from the ground, with 4cm of gaps. It's a safety enclosure quite necessary to prevent entrance of unauthorized people and animals.

Electrical protection

A dozen of standard electrical protection measures are available to ensure a smooth and safe operation, for instance, Emergency Stop, Circuit Breakers, and other components work with current and voltage. All are integrated and interlocked with PLC system.

Premium Safety Device Options



Smart motion detection (optional)

Multi-functional sensor that's capable of detecting human being, animals and vehicles. Once detected, alarming signal is synced to the monitor to avoid any miss operations or dangers.

Laser over height vehicle detection (optional)

This laser radar adopts the Time-of-Flight principle (ToF) to measure the entering car's existence and dimensions in precision and prevent over height.

Manual vehicle retrieval (optional)

This unique device eliminates the concern of taking your vehicle down in case of power failure.

Turning table (optional)

360 degrees of rotation allowing driver to head out at ease.

Maintenance Lift Table (optional)

Specially developed and installed in the back main frame to elevate one technician up for maintenance purposes.

Emergency Braking System at chain break (optional)

This technology uses hydraulic direct-acting disc brake principle. In emergency conditions when the drive chain is broken, the device is instantly activated to prevent the circular chain from free fall (max. torque 100,000N.m). A truly pioneer in the industry.

Intelligent Weight Limit System (optional)

The system collects the precise weight information and communicates with the PLC system at real time to stop this system running in case of overloading.

Hot-dipped galvanized finishing treatment (optional)

For areas with super harsh weather like coastal areas, hot-dipped galvanizing is optional to provide extra protection against corrosion.

Intelligent fire-fighting system (optional)

Independently installed on each pallet. Thanks to temperature-sensitive intelligent control, it timely releases nano-level dry powder agent in high pressure to put off fire at the early stage.

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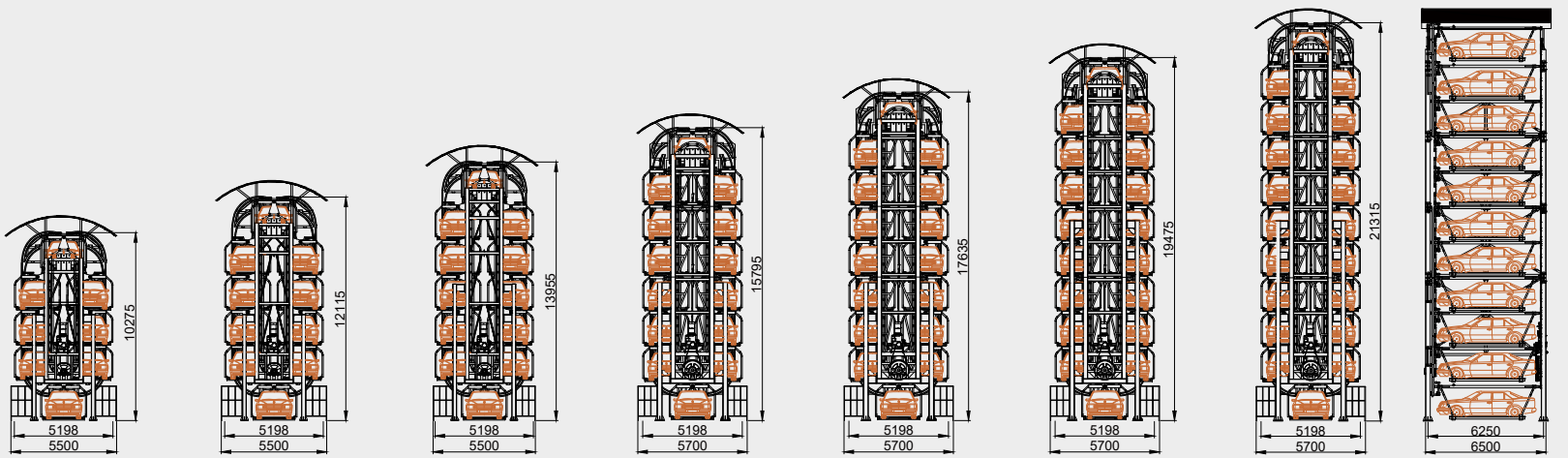
Allowing you to park up to

20 sedans



ARP-8	ARP-10	ARP-12	ARP-14	ARP-16	ARP-18	ARP-20
8 Sedans	10 Sedans	12 Sedans	14 Sedans	16 Sedans	18 Sedans	20 Sedans

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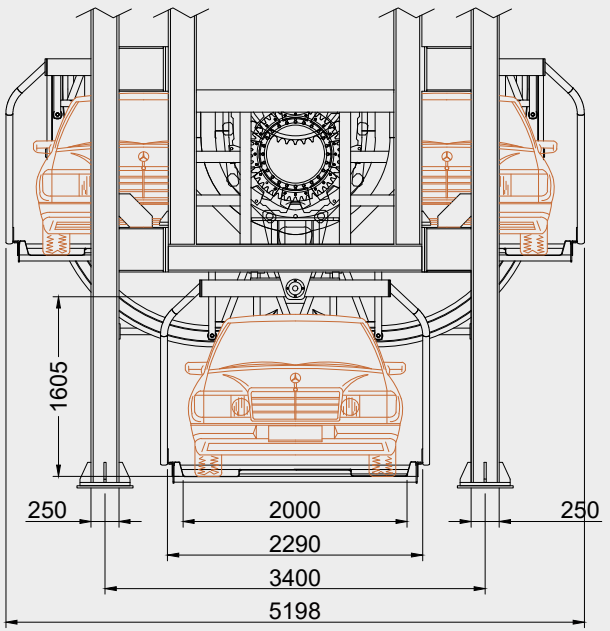
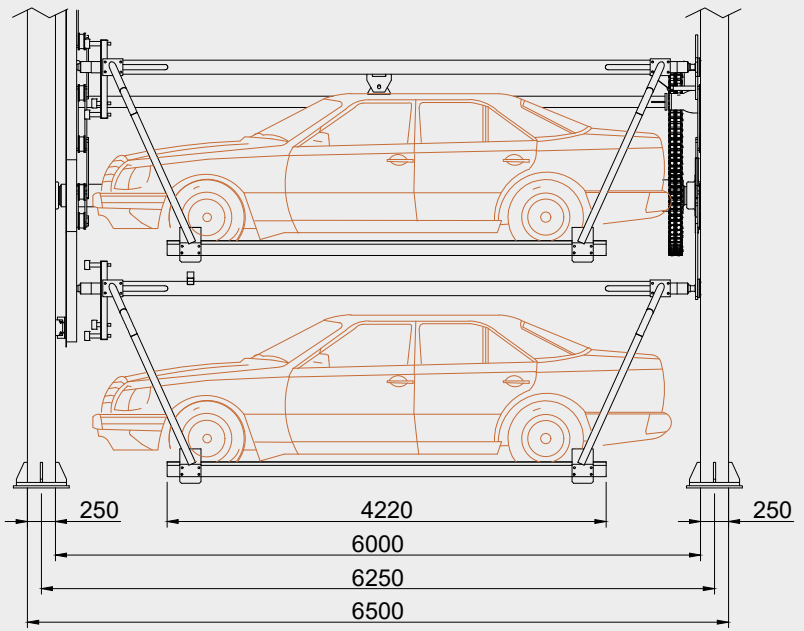
ARP Series Dimensions





Note:

1. The above dimensions are based on model ARP-20.
2. Mutrade reserves the rights to construction or model modifications and/or alterations.

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Specifications of ARP Series

Model Number		ARP-8	ARP-10	ARP-12	ARP-14	ARP-16	ARP-18	ARP-20
Parking Capacity		8 sedans	10 sedans	12 sedans	14 sedans	16 sedans	18 sedans	20 sedans
System Dimension	Length	6400 mm	6400 mm	6400 mm	6400 mm	6500 mm	6500 mm	6500 mm
	Width	5200 mm	5200 mm	5200 mm	5200 mm	5200 mm	5200 mm	5200 mm
	Height	10275 mm	12115 mm	13955 mm	15795 mm	17635 mm	19475 mm	21315 mm
New weight		19.5 ton	22.1 ton	24.96 ton	31.1 ton	33.6 ton	40.02 ton	44.91 ton
Available Car	Length	5300 mm	5300 mm	5300 mm	5300 mm	5300 mm	5300 mm	5300 mm
	Width	2100 mm	2100 mm	2100 mm	2100 mm	2100 mm	2100 mm	2100 mm
	Height	1600 mm	1600 mm	1600 mm	1600 mm	1600 mm	1600 mm	1600 mm
	Weight	2000 kg	2000 kg	2000 kg	2000 kg	2000 kg	2000 kg	2000 kg
Geared Motor		7.5 kw	7.5 kw	11 kw	15 kw	15 kw	24 kw	24 kw
Max. Speed		4.86 m/min	4.86 m/min	5.3 m/min	6 m/min	6 m/min	7.55 m/min	7.45 m/min
Max. Retrieval Time		92 s	115 s	126 s	130 s	148 s	135 s	150 s
Motor Control		Inverter control						
Operation		Touch Screen / IC Card / Button						
Temperature Range		-40℃ ~ +55℃						
Power Supply		AC 480V / 415V / 380V / 220V, 3PH, 50/60HZ						
Finishing		Powder coating / Hot-dipped galvanizing (optional)						

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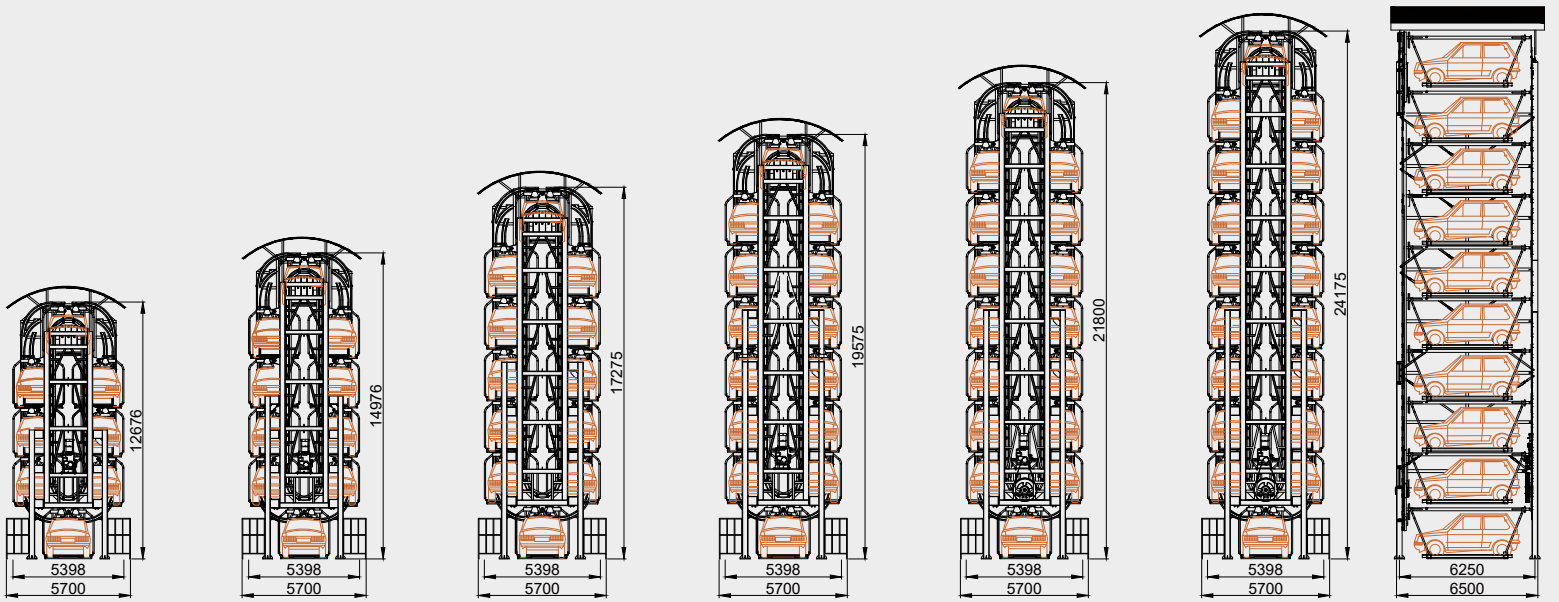
Allowing you to park up to

18 SUVs



ARP-8S	ARP-10S	ARP-12S	ARP-14S	ARP-16S	ARP-18
8 SUVs	8 SUVs	12 SUVs	14 SUVs	16 SUVs	18 SUVs

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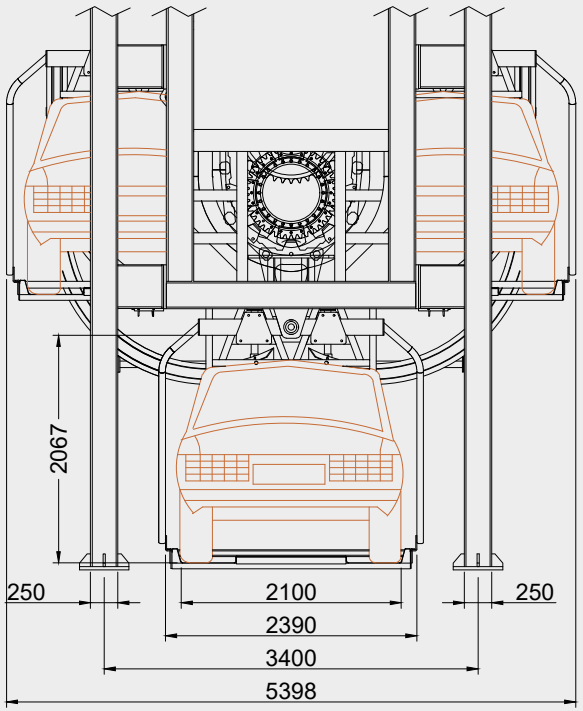
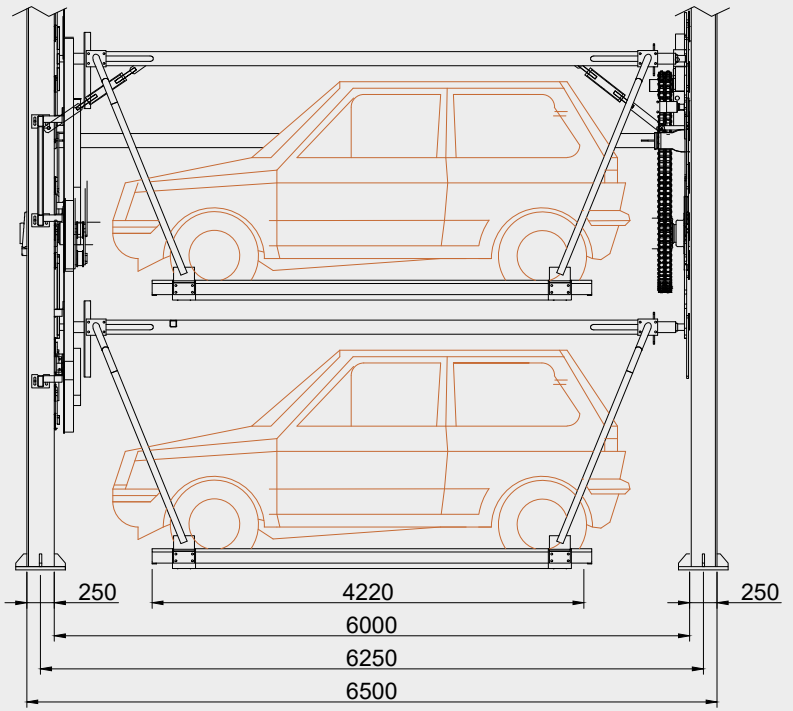
Dimensions





Note:

1. The above dimensions are based on model ARP-16S;
2. Mutrade reserves the rights to construction or model modifications and/or alterations.

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Specifications of ARP-S Series

Model No.		ARP-8S	ARP-10S	ARP-12S	ARP-14S	ARP-16S	ARP-18S
Parking Capacity		8 SUVs	10 SUVs	12 SUVs	14 SUVs	16 SUVs	18 SUVs
System Dimension	Length	6500 mm	6500 mm	6500 mm	6500 mm	6500 mm	6500 mm
	Width	5400 mm	5400 mm	5400 mm	5400 mm	5400 mm	5400 mm
	Height	12676 mm	14976 mm	17275 mm	19575 mm	21800 mm	24175 mm
New weight		23.95 ton	29.5 ton	35.02 ton	39.95 ton	44.84 ton	48.28 ton
Available Car	Length	5300 mm	5300 mm	5300 mm	5300 mm	5300 mm	5300 mm
	Width	2100 mm	2100 mm	2100 mm	2100 mm	2100 mm	2100 mm
	Height	2000 mm	2000 mm	2000 mm	2000 mm	2000 mm	2000 mm
	Weight	2500 kg	2500 kg	2500 kg	2500 kg	2500 kg	2500 kg
Geared Motor		9.2 kw	11 kw	15 kw	24 kw	24 kw	30 kw
Max. Speed		5.1 m/min	5.3 m/min	6 m/min	7.45 m/min	7.35 m/min	7.35 m/min
Max. Retrieval Time		110 s	131 s	140 s	131 s	150 s	150 s
Motor Control		Inverter control					
Operation		Touch Screen / IC Card / Button					
Temperature Range		-40℃ ~ +55℃					
Power Supply		AC 480V / 415V / 380V / 220V, 3PH, 50/60HZ					
Finishing		Powder coating / Hot-dipped galvanizing (optional)					

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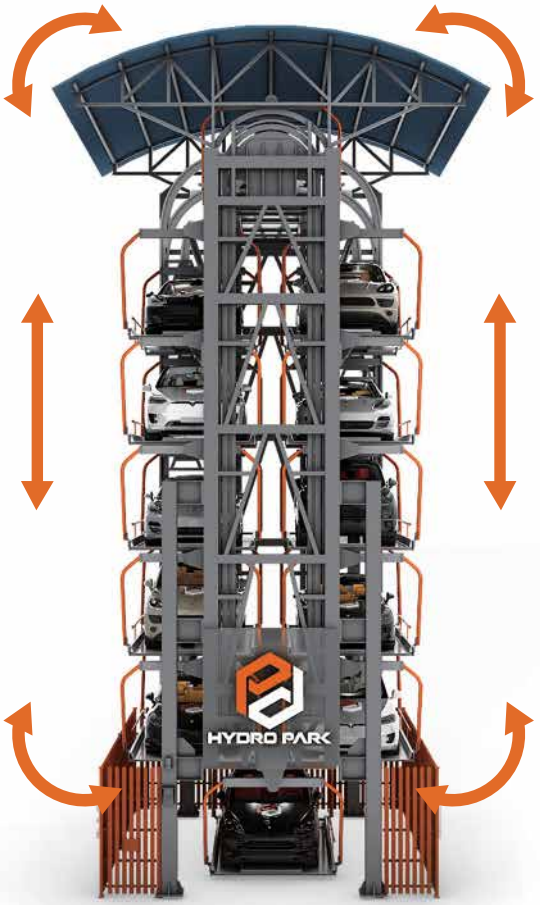
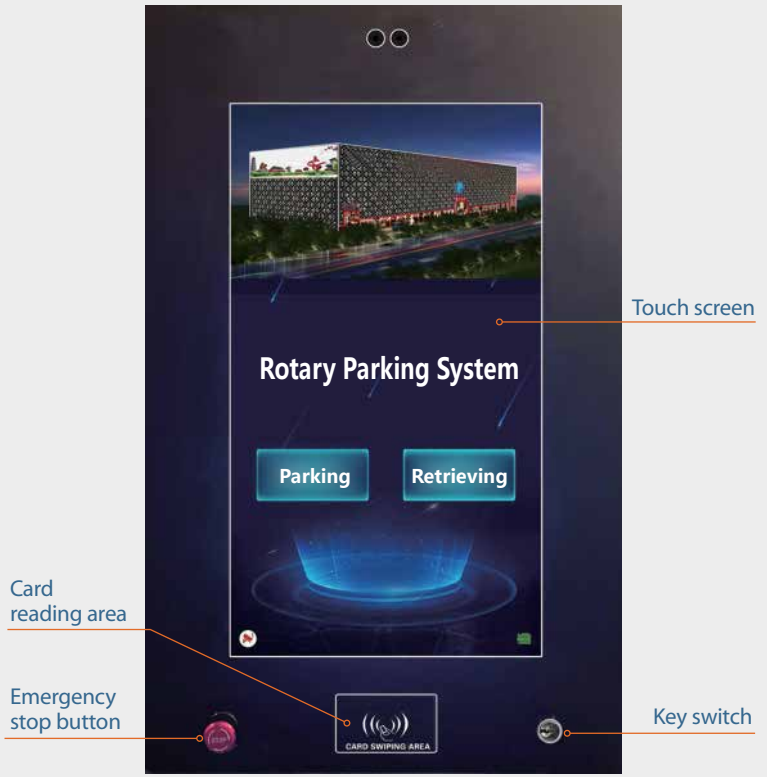


System rotates in both directions to deliver your car to ground

Smarter way to operate the system

The control panel has been upgraded from traditional panel with buttons to premium touch screen as a standard configuration with a few whole new using experience, including facial recognition.



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Maintenance

To ensure proper and stable function of entire ARP system in the long run, regular and periodic inspection & maintenance are also of vital importance:

Weekly

1) All connecting parts and transmission parts shall be working properly free from any bad abrasion and big clearance;

2) All bolts shall be tight and fastened

3) Lubricate the chains and add lithium grease every 2 weeks.

Monthly

1) Conduct comprehensive inspection to lubrication status of whole system

2) All steel surface or welding joints shall be free from any cracks

3) Check the function of limit switches, photoelectric sensors, etc.

4) Lubricate the oil type bearings

Quarterly

1) Check the status of all safety devices and electrical system

2) Check the whole set of transmission system, including chain wheel, gearing mesh, bearing, etc.

Annually

1) Perform overall inspection for ARP system, including mechanical & electrical parts, lubrication status, running status, wearing conditions, etc.

2) Lubricate reducer as per reducer manufacturer instruction;

3) Lubricate other sliding parts as per actual situations

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Notes

Scope of application

Suitable for residential buildings, office buildings, hotels, hospitals, and any other commercial areas where vehicles enter & exit frequently.

Temperature

Theoretically the system is designed to operate between -40 ℃ and +55 ℃. Atmosphere humidity 50% at +55 ℃. If the local circumstances differ from the above, please contact Mutrade.

Electrical installation preparation

1. Cabling preparation to be performed by the customer
   - To the main switch. Cables shall be in place prior to commence of installation
   - Connect to the main switch during installation
   - System functional check testing can be performed by the electrician provided by the customer
2. Grounding and equalization (if applicable): to be done by customer as per local regulations.

Parking

- Input car number or swipe IC card to lower your platform down to ground
- Drive the car forward onto the platform
- Put the brake on after vehicle parked on the platform
- Open the car door and leave the system carefully

Protection against corrosion

Proper maintenance work has to be carried out according to Mutrade Cleaning and Maintenance Instruction regularly. Clean up structural parts and platforms of dirt and road salt as well as other debris.

Fire safety

Each and every fire safety requirement and all possible mandatory item(s) and equipment (fire extinguishing systems and fire alarm systems) are to be provided by the customer as per local laws and regulations

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References

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PARKING

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- DIN EN 14010