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 **HYUNDAI ELEVATOR**

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Moving solutions with safety, reliability and efficiency

Auto Parking Systems

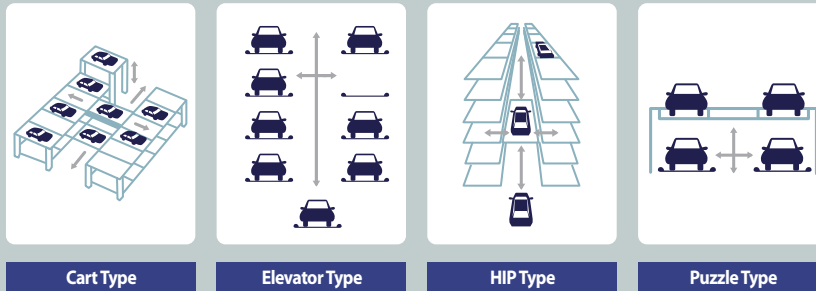
Auto Parking Systems

For an ideal solution to today's city parking problems, Hyundai provides the advanced Auto Parking System.

At Hyundai Elevator Co., Ltd., we create the most efficient parking systems in the world. Our Auto Parking Systems offer a high-tech, convenient, reliable and safe solutions suitable for different building sizes and functions, maximizing time and spatial efficiency.



Product Type



Product Division

Type	Model & Specification		Application
Cart Type	On-ground /Underground	Side Type : ACTS Front Type : ACTF	Buildings and lands for middle & large scale
Elevator Type	Independent Type	Lower Entry Type : AETL Turn table built-in : AETLT09 (90° Type) AETLT18 (180° Type) Middle Entry Type : AETM Turn table built-in : AETMT09 (90° Type) AETMT18 (180° Type)	Buildings for small & medium scale types: -Hospitals -Office Buildings -Hotels (It is well-suited to the needs of parking businesses)
	Built-In Type	Lower Entry Type : AEBL Turn table built-in : AEBLT09 (90° Type) AEBLT18 (180° Type) Middle Entry Type : AEBM Turn table built-in : AEBMT09 (90° Type) AEBMT18 (180° Type)	
HIP Type		Driving Cart Type: HIPL Lifting Cart Type: HIPE	Buildings for large scale types: - Department Stores - Shopping Centers - Hotels - Entertainment complexes - Office Buildings
Puzzle Type		2 Levels APZ2 2 Levels-2 Rows APZD2 3 Levels APZ3 3 Levels PIT APP3 4 Levels APZ4 2 Levels PIT APP2	Buildings for small scale

The Advantage of Auto-Parking System

Section	Auto-Parking System	Conventional (Standard) Parking System
01 Speed & Safety	Average leading time for car-output - 1 minute and 20 seconds (depends on product type)	It depends on the distance from entry and exit
	- The vehicle is stored in a fully enclosed structure - 100% damage-free from other vehicles - 100% dent-free from other drivers opening doors - Protects the vehicle from weather (sun, rain, snow, hail, etc.)	Minor fender bender are common
02 Convenience	- Eliminates need to waste time searching for an empty space - No more unnecessary walking around parking area	The driver might be waste time looking for an empty space
03 Space & Cost Saving	Allows superior use of land: Takes 40%-50% less surface area than conventional garages to fit the same number of parking spaces.	- It requires at least 1,150m² (=12,378 ft²) including the driveway - The construction may need high payment for large parking spaces
04 Security & Noise	- No risk of injury or any other physical harm - No risk of theft - Minimized noise (prevents honking and tire screeching)	- Thefts and accidents are not uncommon - Car noise is a nuisance
05 Environment	- Auto-Parking System eliminates harmful vehicle emissions and toxic substances - Lowers (CO₂) smog emissions - Saves drivers fuel - Reduces exhaust in the surrounding environment - Helping the environment around the parking by eliminating vehicle emissions	Unnecessary driving produces extra smog emissions

Cart Type



The Cart type Auto Parking System allows parking more cars in limited medium- and large-sized parking spaces. It also allows cars to enter and exit quickly. One or two lifts can cover multiple-levels of parking lots. Carts, which are for conveying cars, are installed on each level. Lifts and carts can operate simultaneously, resulting in short wait times. And should demand increase, it is also easy to expand on existing parking lots and rows.

Standard Specification

Category	Specification	
Capacity	More than 50 cars	
Available Vehicle to Park	Length : 5160 mm	Width : 2100 mm (2040 mm)
	Height : 1550 mm	Weight : 2100 kg
Lift	Lifting Speed	Max. 90 m/min.
	Motor Capacity	22 kW
Capacity Per Level	Driving Speed	Max. 150 m/min.
	Motor Capacity	1.5 kW × 2
	Shifting Speed	45 m/min.
	Motor Capacity	1.5 kW
Operation Method	Touch Screen Type	
Option	Computer Monitoring System (CMS)	
Electricity	AC 380V, 3Ø, 4W, 60Hz (Not including ground wires)	

Note. [] is the dimension between side mirror edges.



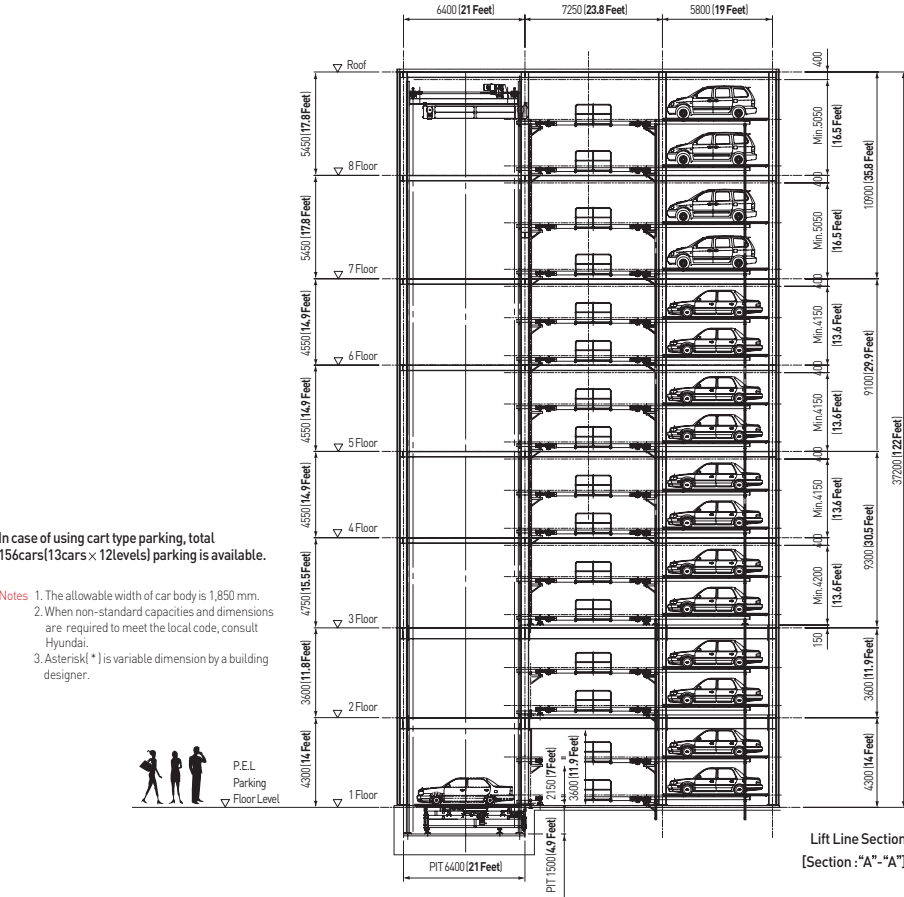
Advantages & Special Features

- 1 Operation is simple and accurate. It is an efficient system with minimum electricity cost as it's utilized an inverter power system.
- 2 Lifts and carts are operated simultaneously to shorten the lead time.
- 3 A computerized system (using a touch screen and computer monitoring system) shortens time for operation and maintenance.
- 4 This system reduces the cost per unit as it maximizes the usage of allowable parking lot space.

Cart Type | On-Ground

Sectioned Drawing

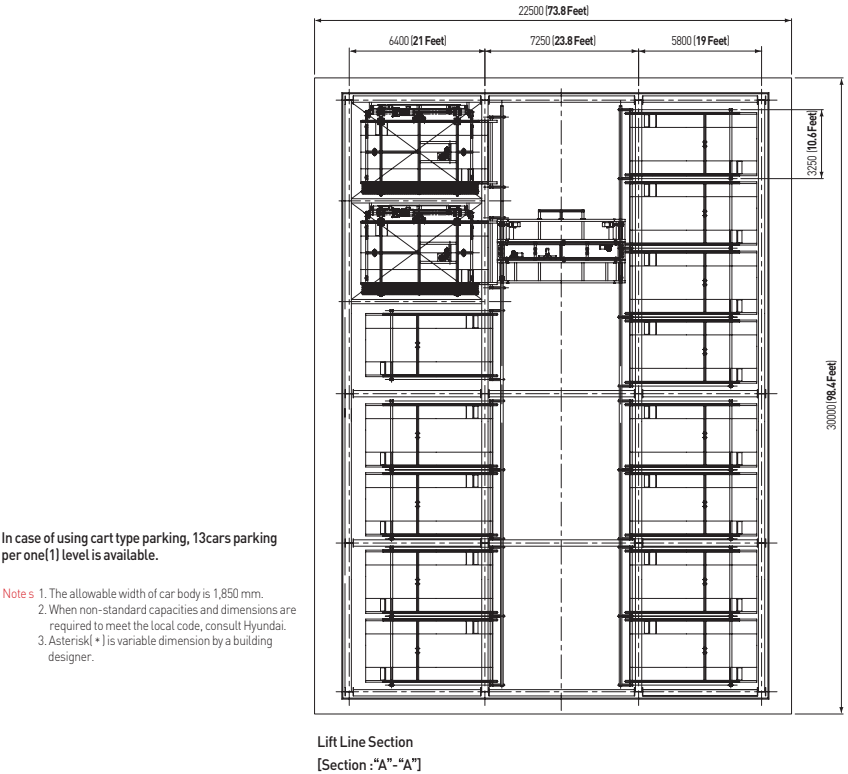
(unit : mm)



	(Conventional) Self Parking	(Mechanical) Auto Parking	Remark
1st Floor	18 Cars	-	-
4th Floor	48 Cars	104 Cars	217% / 578%
8th Floor	96 Cars	208 Cars	217% / 1,156%

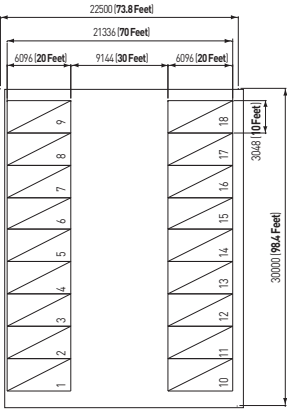
Ground Plan

(unit : mm)



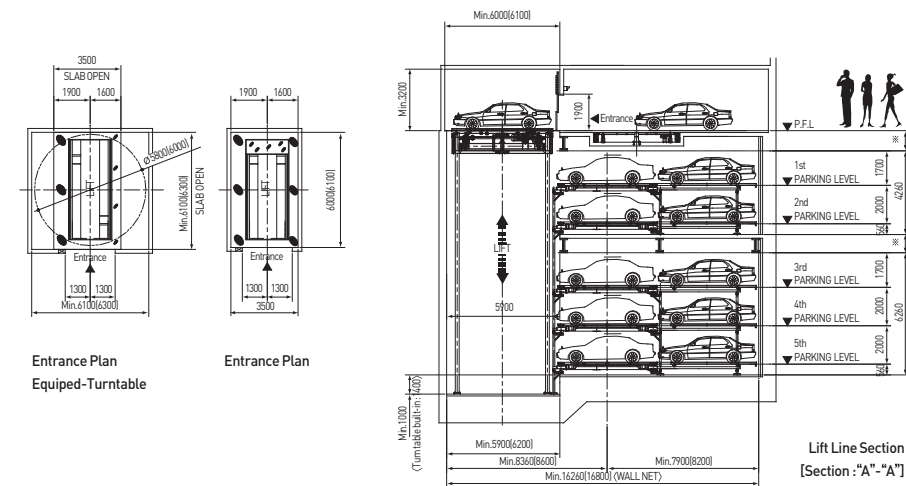
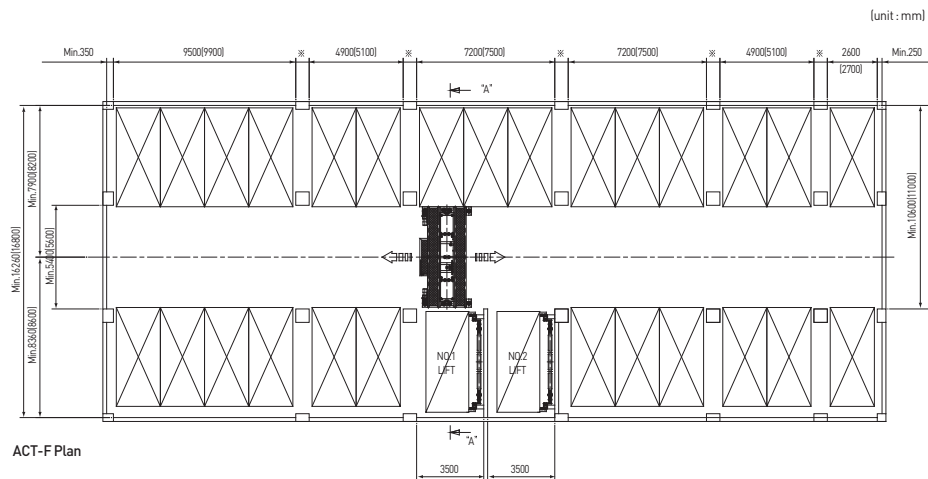
Concept Drawing for Capacity Estimation

(unit : mm)



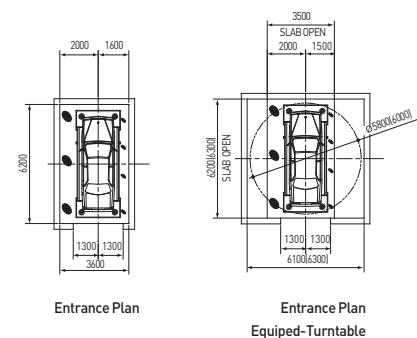
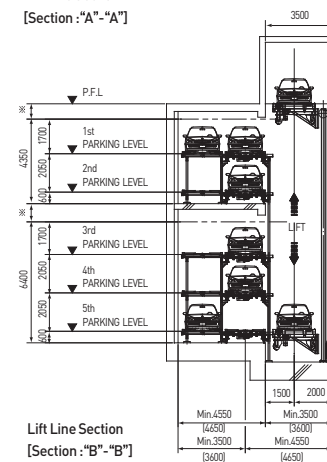
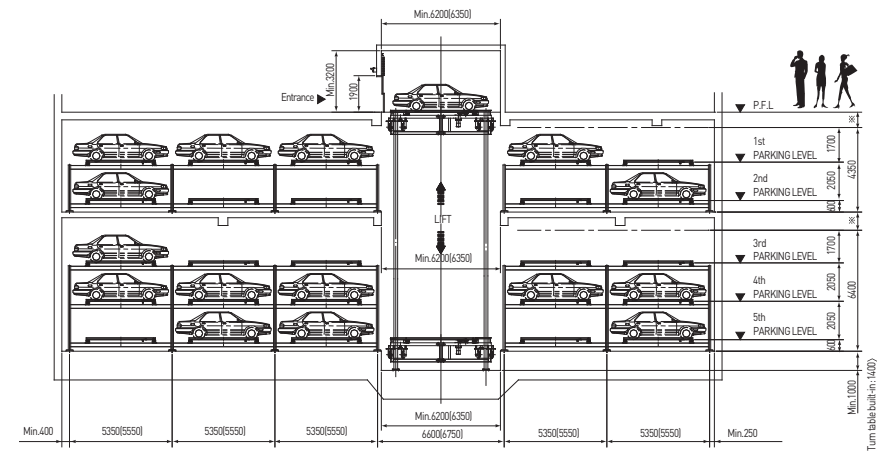
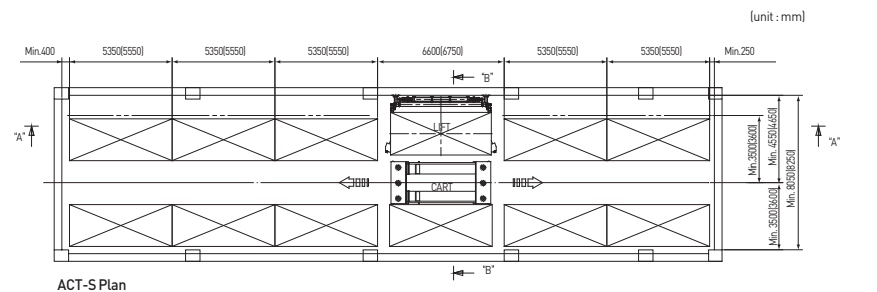
Cart Type | Underground

Front Type (ACT-F)



- Notes
1. The allowable width of car body is 1,850 mm.
 2. When non-standard capacities and dimensions are required to meet the local code, consult Hyundai.
 3. Asterisk (*) is variable dimension by a building designer.

Side Type (ACT-S)



- Notes
1. The allowable width of car body is 1,850 mm.
 2. When non-standard capacities and dimensions are required to meet the local code, consult Hyundai.
 3. Asterisk (*) is variable dimension by a building designer.

Elevator Type



The Elevator type Auto Parking System is designed to park up to 50 cars, at 45-square meters per space. It works best in high rise buildings such as hotels, and office buildings.

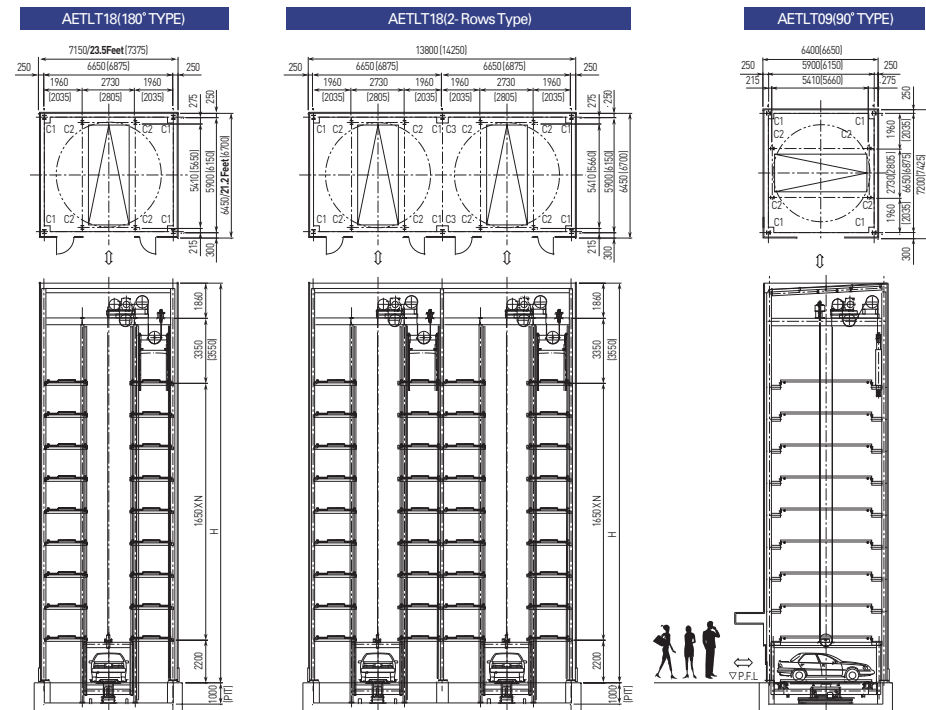
The key advantages;

1. Human-oriented design - built-in turntable
(Enabling a forward drive exit)
2. High quality - computerized system
- An accurate landing (Max. speed: 120 m/min)
3. Easy maintenance
4. Minimized vibration and noise (Elevator rail system is applied)
5. Reliable and quiet operation
6. Space-efficient installation

Standard Specification

Category	Specification			
Capacity	10-50 cars			
Available Vehicle to Park	Category	NEW GRANDEUR	EQUUS	SUV Cars
	Length (mm)	5050	5200	5200
	Width (mm)	2040	2150	2250
	Height (mm)	1550	1550	2000
	Weight (kg)	1850	2100	2200
Driving Speed	Lifting Facility : 45-120 m/min. Lift for Turntable : 4 m/min. Shifting Facility : 35 m/min. Rotation for Turntable : 3.8 rpm			
Motor	Lifting Facility : 18.5/30 kW Lift for Turntable : 2.2 kW Shifting Facility : 1.5 kW Rotation for Turntable : 1.5 kW			
Operation and Control	Touch Screen Type PLC Control			
Hoistway	Rail for Elevator			
Electricity	For Driving : 380V, 60Hz, 26/40kVA(Not including ground wires) For Lighting : 220V, 60Hz, 2kVA For Fire Extinguishing Facilities : 220V, 60Hz, 0.6kVA			
Safety Devices	Guide Lamp for Entry, Emergency Stop Switch Impact Absorber, Photo Sensors for Safety			
Entrance Door	Up Sliding Door			

Independent Type(E600 Type) Lower Entry Type



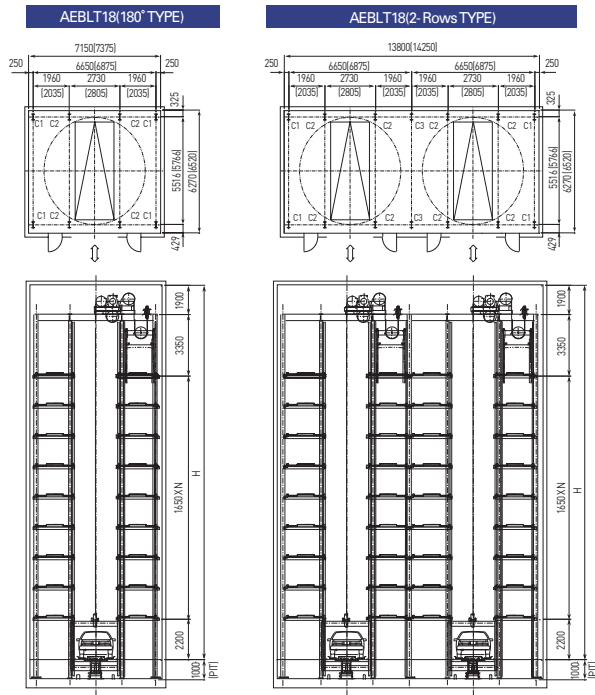
Lower Entry Type AETL/Turn table built-in Type AETLT 09, 18

Capacity (N)	Height (H)		Load of Column (Ton/Each Column)								Motor Capacity (kW)
			Long Term			Short Term					
	(mm)	(Feet)	C1 Compressive load	C2 Compressive load	C3 Compressive load	C1 Compressive load	C1 Tensile load	C3 Compressive load	C3 Tensile load		
18(×2)	20610	67.6	25	18	39	37	7	58	12	18.5(X2)	
20(×2)	22260	73.1	27	19	41	40	9	62	17		
22(×2)	23910	78.4	30	20	45	45	12	68	22		
24(×2)	25560	83.8	33	21	50	50	14	75	27		
26(×2)	27210	89.3	37	22	55	56	17	83	33		
28(×2)	28860	94.7	41	23	61	62	20	92	39	30(X2)	
30(×2)	30510	100.1	45	24	67	68	23	100	45		
32(×2)	32160	105.5	49	26	73	73	26	110	52		
34(×2)	33810	110.9	53	27	80	80	29	120	60		
36(×2)	35460	116.3	57	28	88	86	32	132	68		
38(×2)	37110	121.8	62	29	97	93	36	145	76		
40(×2)	38760	127.2	67	30	107	101	40	160	86		
42(×2)	40410	132.6	73	31	117	109	44	175	98		
44(×2)	42060	137.9	78	32	127	117	50	190	110		
46(×2)	43710	143.4	83	33	137	125	58	205	125		
48(×2)	45360	148.8	89	34	147	133	66	220	145		
50(×2)	47010	154.2	95	36	156	143	75	234	165		

Notes 1. Load calculation shall be based on wind velocity (30m/sec) in inland area. 2. () shall be applied to 2-rows type. 3. In case of 90° type, Turn table must be built in. 4. Short term compressive load of Center Column shall be applied to 2-rows type.

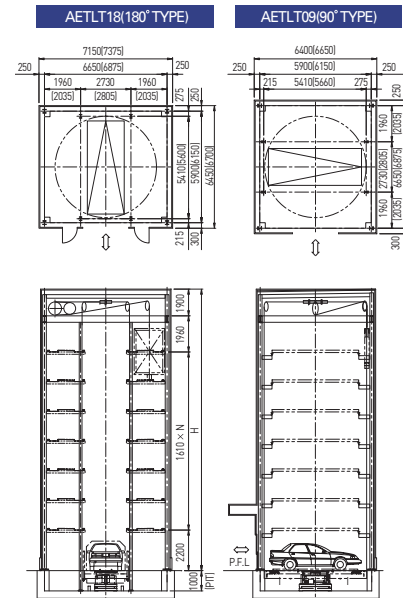
Elevator Type

Built-In Type (E600 Type) Lower Entry Type



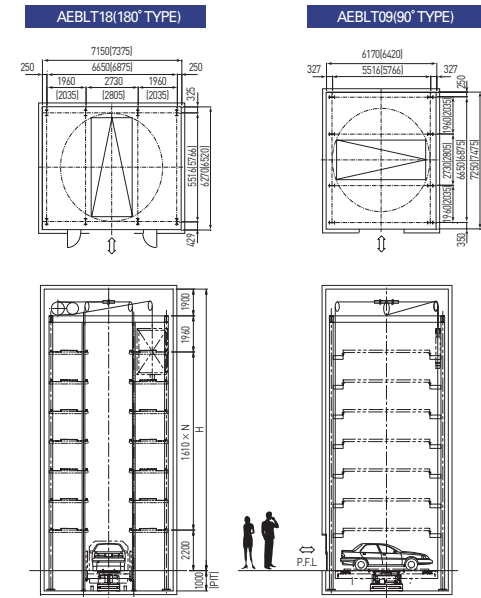
(unit : mm)

Independent Type (E650 Type) Lower Entry Type



Built-In Type (E650 Type) Lower Entry Type

(unit : mm)



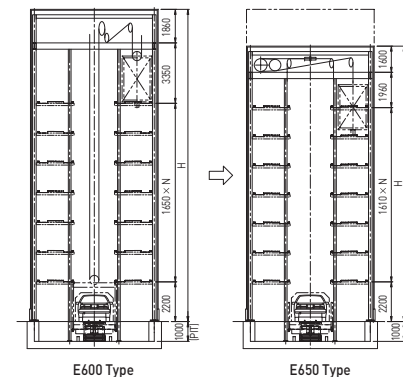
Lower Entry Type AEBL/Turn table built-in Type AEBLT 09, 18

Capacity (N)	Height (H)	Load of Column (Ton/Each Column) Long Term			Motor Capacity (kW)
		C1 Compressive load	C2 Compressive load	C3 Compressive load	
18(×2)	20650	14	12	29	18.5
20(×2)	22300	15	13	30	
22(×2)	23950	16	14	32	
24(×2)	25600	17	15	33	
26(×2)	27250	18	16	35	
28(×2)	28900	19	17	36	
30(×2)	30550	20	18	38	
32(×2)	32200	21	19	39	
34(×2)	33850	22	20	41	
36(×2)	35500	23	21	42	
38(×2)	37150	24	22	44	30
40(×2)	38800	25	23	45	
42(×2)	40450	26	24	47	
44(×2)	42100	27	25	48	
46(×2)	43750	28	26	50	
48(×2)	45400	29	27	51	
50(×2)	47050	30	28	53	

Advantages of the E650 Type

Limited space is optimized by lowering the average height of the parking tower.

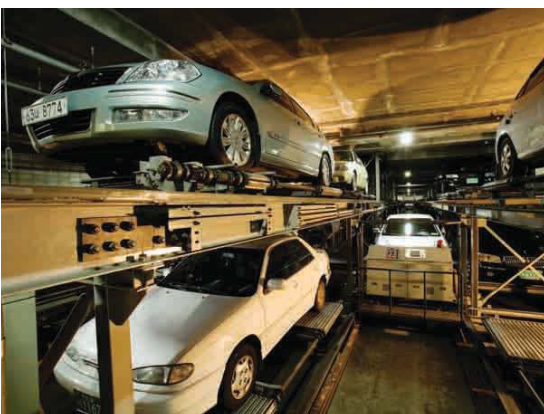
In fact, the E650 type can accommodate two more rows of cars than the E600 type of identical height.



(unit : mm)

Capacity (N)	Height (H)
18	18940
20	20550
22	22160
24	23770
26	25380
28	26990
30	28600
32	30210
34	31820
36	33430
38	35040
40	36650
42	38260
44	39870
46	41480
48	43090
50	44700

HIP | Hyundai Integrated Parking System

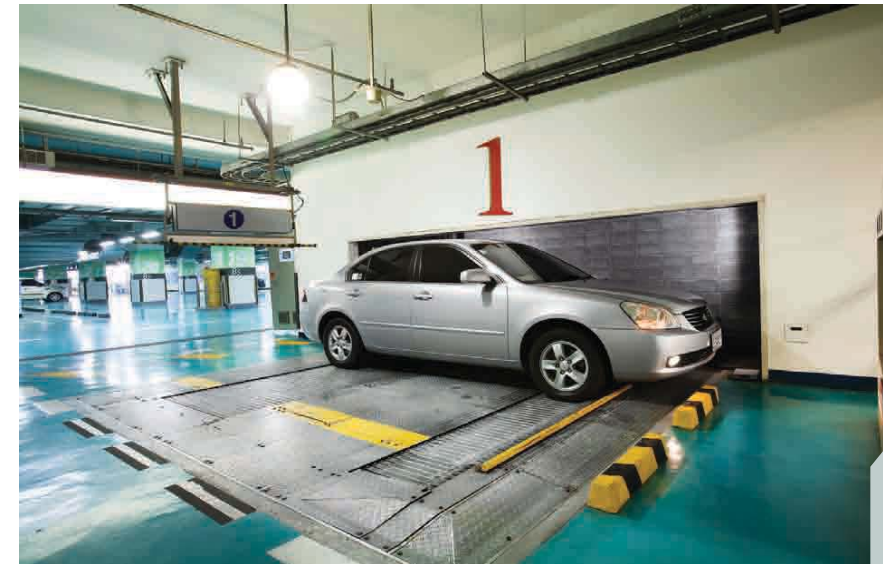


The HIP is a huge, high speed mechanical parking facility designed to park hundreds of thousands of cars. It can deliver a car in an average time of 38 seconds.

Standard Specification

Category	Specification	
Capacity	More than 100 cars	
Available Vehicle to Park	Length : 5150 mm	Width : 2100 mm (2040 mm)
	Height : 1550 mm	Weight : 2100 kg
Lift	Lifting Speed	Max. 120 m/min.
	Motor Capacity	30 kW
Capacity Per Level	Driving Speed	Max. 300 m/min.
	Motor Capacity	22 kW
	Shifting Speed	45 m/min.
	Motor Capacity	2.2 kW
Operation Method	Touch Screen Type	
Option	Computer Monitoring System (CMS)	
Electricity	AC 380V, 3Ø, 4W, 60Hz (Not including ground wires)	

Note. [] is the dimension between side mirror edges.



The process can run at the same time.

Input ➡ Parking

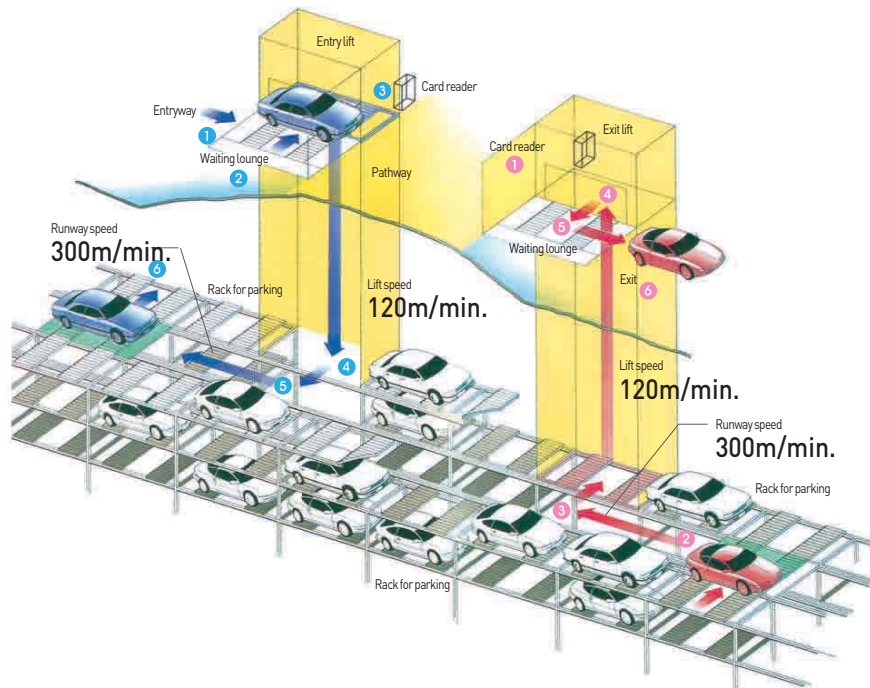
- 01 | Driving a car on designated position.
- 02 | After driver and all fellow passengers get off, insert a parking ticket to card reader for car-input, then the door of lift is opened.
- 03 | Slat conveyor is operated. The car goes into lift.
- 04 | Lift with car moves to appropriate parking floor.
- 05 | The car is shifted from lift to cart.
- 06 | The cart with car moves to parking-rack, and the car is shifted from cart to parking-rack.

Parking ➡ Output

- 01 | Insert parking ticket to card reader.
- 02 | The cart moves to parking-rack, and the car is shifted from parking-rack to cart.
- 03 | The cart with car moves to lift.
- 04 | The car is shifted from cart to lift, and the lift moves to waiting room for car-output.
- 05 | The door of waiting room is opened, and the car comes out.
- 06 | A driver gets in the car and drives out.

HIP | Hyundai Integrated Parking System

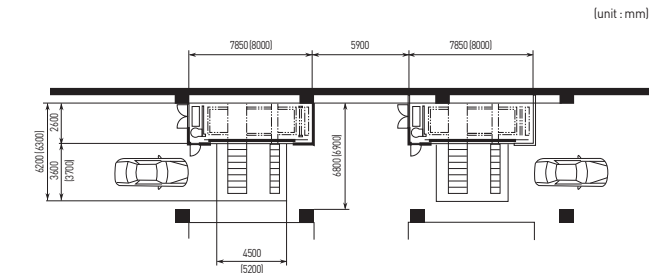
Process of Car - Entry and Exit



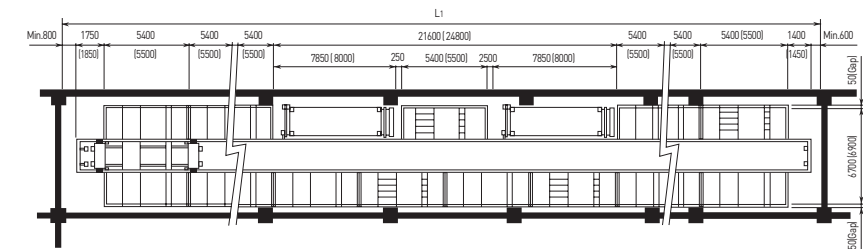
Advantages & Special Features

- 1 Fully integrated, computerized system
- 2 Voice guidance instructions assist user to use this system easily.
- 3 Wide parking space allows customer easily get out from the vehicle.
- 4 Since the customer is assigned a parking space by the customer ID card or the customer prepaid for the parking, using the Card Reader system will expedite parking and retrieving the car quickly and thus reduce waiting time.
- 5 Overall operating efficiency is also dramatically boosted through the adoption of automatic conveyor to replace conventional pallets. (Loss time is reduced thanks to the pallet-less system using by conveyor)
- 6 Runway speed is 300 m/min.
- 7 The time of retrieving a car is average 38 seconds.

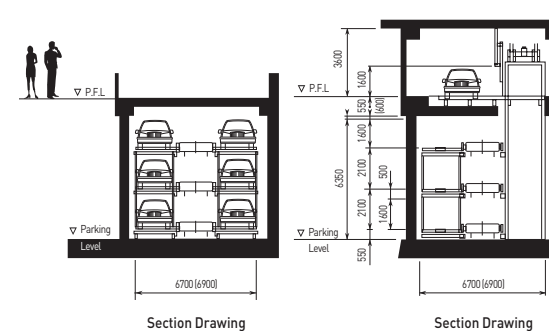
Standard Drawing of HIP (3-levels)



Plan Drawing for Parking Level



Plan Drawing for Parking Level



Notes

1. The dimension of drawing is mainly for medium-sized sedan. The dimension of '1' is for full-sized sedan.
2. Please consider the space for other utility and piping work etc separately.
3. In case of over 4 levels, it is composed with a mixture of 2 levels and 3 levels.
The maximum capacity is as follows,
- 2 levels : 100 cars
- 3 levels : 138 cars
- 4 levels : 136 cars
- 5 levels : 130 cars
- 6 levels : 120 cars
4. In case that the car-capacity is different to above table, please consult hyundai.
5. In case of application of RV/SUV cars, please consult the available dimension.

Puzzle Type



The puzzle type Auto Parking System can be installed by using a single row or double rows. The space efficiency is high and the construction cost is the cheapest. It is the easy-to-operate system and the time for entry/exit is short.

Standard Specification (2-APZ2 Levels)

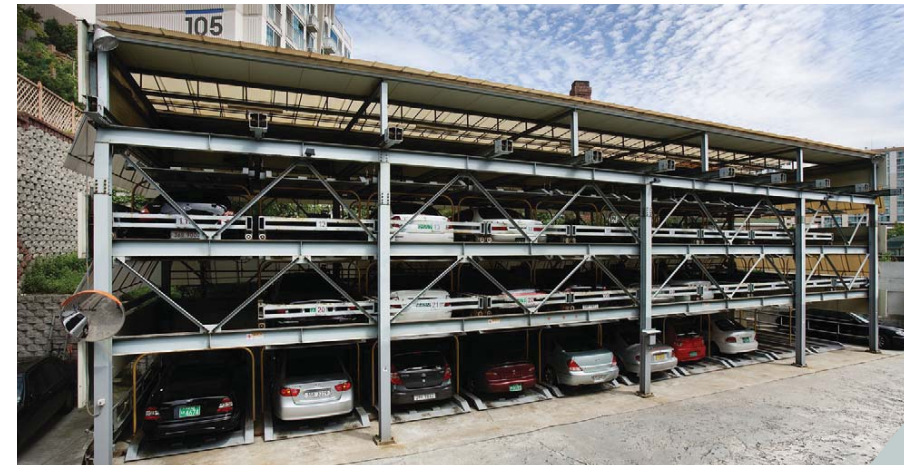
Category	Specification	
Capacity	5 cars	
Available Vehicle to Park	Length : 5050 mm Height : 1550 mm	Width : 1850 mm (2040 mm) Weight : 1850 kg
Lifting Speed	4 m/min.	
Shifting Speed	9 m/min.	
Lifting Motor	2.2kW × 4P Geared Motor	
Shifting Motor	0.2kW × 4P Geared Motor	
Electricity	AC 380V, 3Ø, 60Hz	

Note. () is the dimension between side mirror edges.

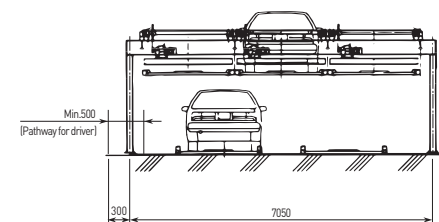
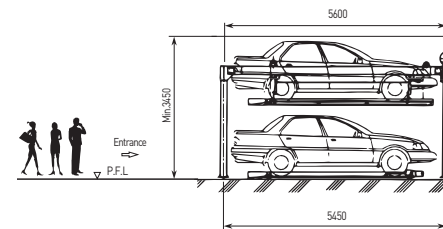
Standard Specification (3-APZ3 Levels)

Category	Specification	
Capacity	7 cars	
Available Vehicle to Park	Length : 5050 mm Height : 1550 mm	Width : 1850 mm (2040 mm) Weight : 1850 kg
Lifting Speed	4 m/min.	
Shifting Speed	9 m/min.	
Lifting Motor	2.2kW × 4P Geared Motor	
Shifting Motor	0.2/0.4kW × 4P Geared Motor	
Electricity	AC 380V, 3Ø, 60Hz	

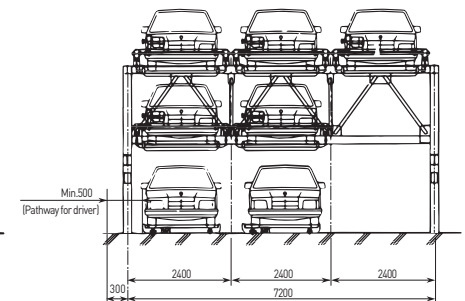
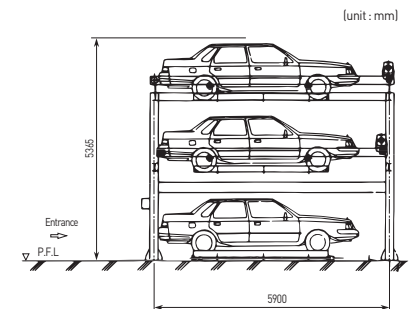
Note. () is the dimension between side mirror edges.



2 APZ2 - Levels



3 APZ3 - Levels



Global Network



GLOBAL NETWORK

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