

Auto Parking Systems

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 **HYUNDAI ELEVATOR**

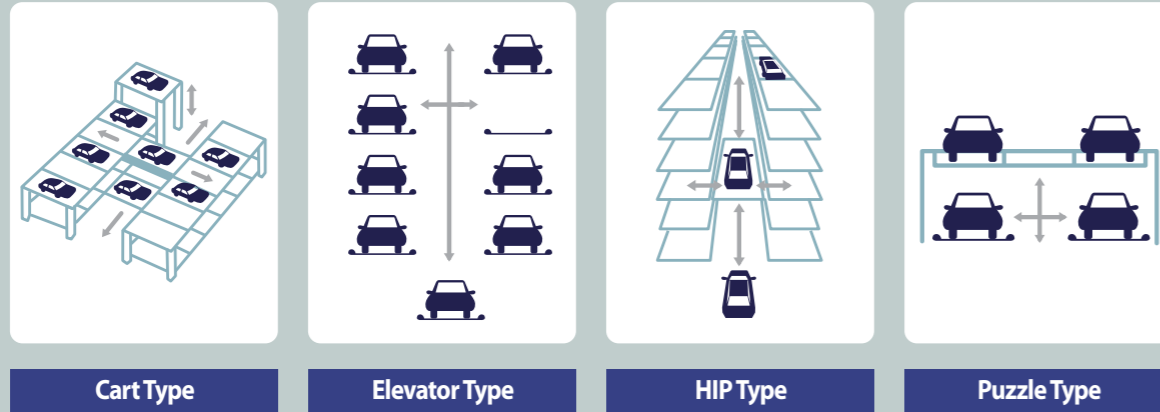
Auto Parking Systems

For an ideal solution of today's city parking problems, Hyundai Elevator Co., Ltd. provides the cutting edge Auto Parking System.

We, Hyundai Elevator Co., Ltd., create the utmost efficient parking spaces as providing Suitable Types of Parking System, High Technology, Safety, Convenience, Reliability, and Excellent After Services and you will meet high valued parking system through Hyundai Auto Parking System.



Product Type



Cart Type

Elevator Type

HIP Type

Puzzle 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 & middle scale -Hospital -Office -Hotel (It is proper for operators of parking business)
	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 - Department Store - Shopping Center - Hotel & Theater - Office Building
Puzzle Type		2 Levels APZ2 3 Levels PIT APP3 2 Levels-2 Rows APZD2 4 Levels APZ4 3 Levels APZ3 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	<ul style="list-style-type: none"> Average leading time for car-output - 1 minute and 20 seconds (depends on type) 	<ul style="list-style-type: none"> It depends on the distance from entry and exit
	<ul style="list-style-type: none"> The vehicle will be stored in fully enclosed structure - 100% Damage free from other vehicles - 100% Dent free from other drivers opening doors - Help to protect the vehicle from the weather (sun, rain, snow, etc.) 	<ul style="list-style-type: none"> High possibility of minor collisions
02 Convenience	<ul style="list-style-type: none"> No more searching for empty space No more unnecessary walking around parking area 	<ul style="list-style-type: none"> Drive need to find the empty space to park vehicle
03 Space & Cost Saving	<ul style="list-style-type: none"> No insufficient of land use : Efficient space utilization provides greater development size Hyundai auto-parking system only take 40%~50% less surface area compared to a conventional garage to fit the same number of parking spaces Lower the overall construction costs through minimum using parking spaces 	<ul style="list-style-type: none"> It requires at least 1,150m² (=12,378 ft²) include drive way The construction may need high payment for large parking spaces
04 Security & Noise	<ul style="list-style-type: none"> No risk of injury and any other physical harm No risk of robbery Minimized noise (prevent horns honking and tire screening) 	<ul style="list-style-type: none"> There are high possibility of the accident and car theft in parking area Car noise may constantly be heard (honk)
05 Environment	<ul style="list-style-type: none"> Auto-parking system eliminates harmful vehicle emissions and toxic substances - Lowering (CO₂) smog emissions due to reduce the parking hour - Lowering fuel usage because of no need to search for space - Helping the environment around the parking by eliminating vehicle emissions 	<ul style="list-style-type: none"> Unnecessary driving produce extra smog emissions

Cart Type



As the cutting-edge Auto parking system, Cart type is available to park more cars in limited middle and large space promptly and safely. 1 or 2 lifts shall cover multi-levels of parking lots. Carts, which are for conveying cars, shall be installed on each level. As these lifts and carts shall be simultaneously operated, the leading time shall be short. Furthermore, it is possible to extend parking lots and rows easily and so it is suitable for large scale's parking places.

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.



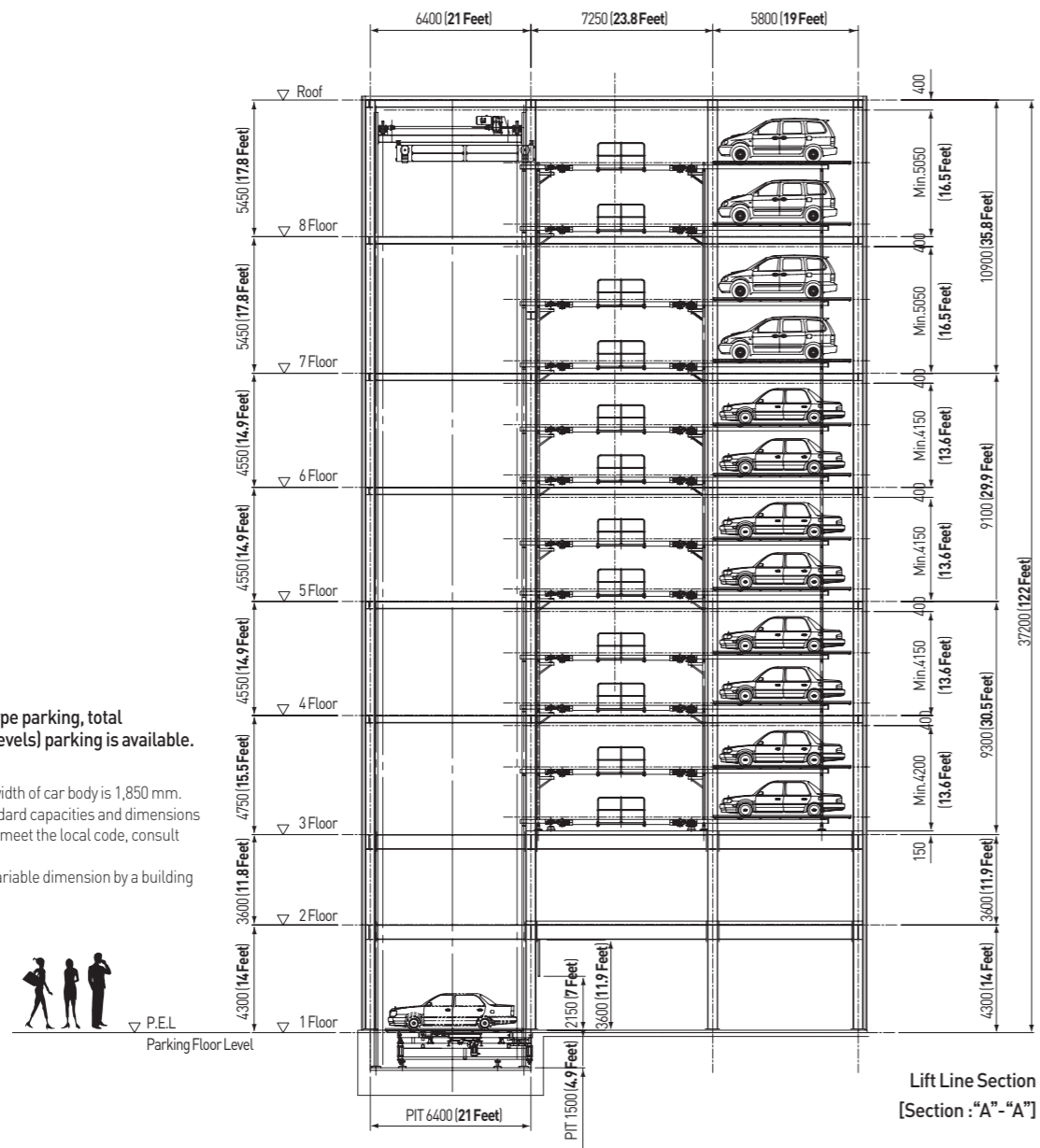
Advantages & Special Feature

- 1 As adoption of inverter type, the motion of lift is accurate and also the efficiency of electricity is excellent and the cost of electricity shall be reduced.
 - Lifts and carts are operated simultaneously to shorten the leading time.
 - As a computerized system (using touch screen and computer monitoring system), the handling and maintenance period for errors shall be shortened.
- 2 The interference factors are less than other types and the extension of parking lots and rows is easy.
- 3 As the application of sectional driving method, the cost of electricity and operation shall be reduced.
- 4 As the more capacity is increased and the less cost per parking lot is reduced, It is suitable for large scale.

Cart Type | On-Ground

Sectioned Drawing

(unit : mm)



In case of using cart type parking, total 156 cars (13 cars × 12 levels) parking is available.

- 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.

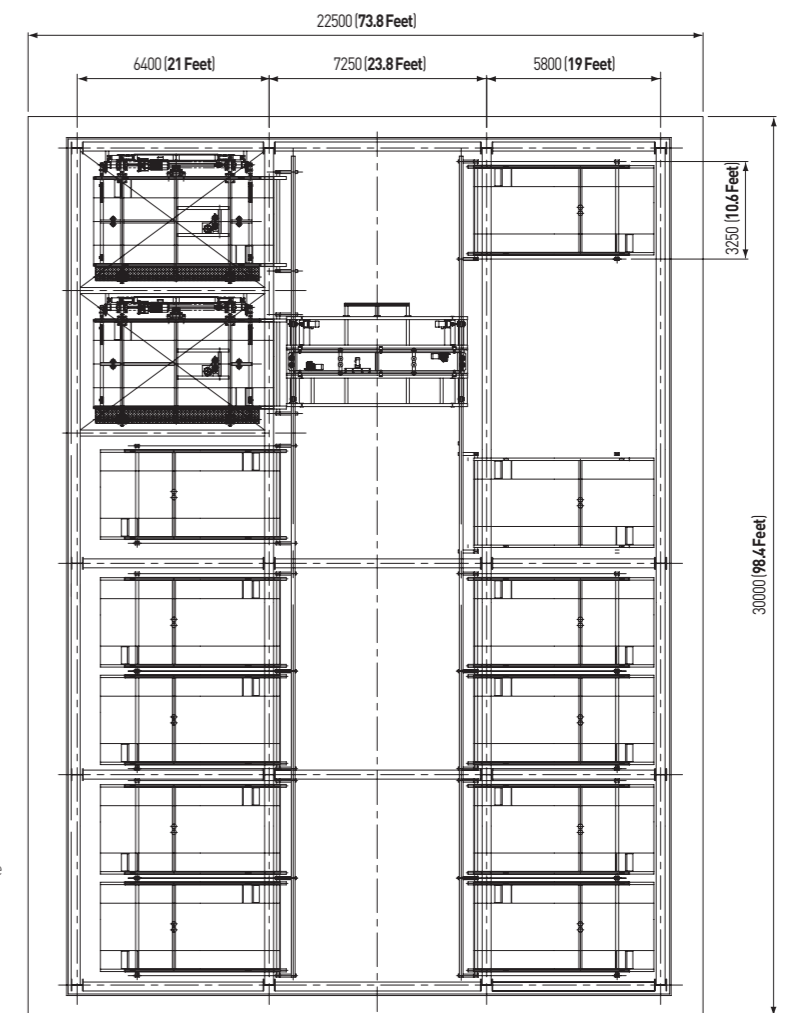


P.E.L
Parking Floor Level

General Parking	Auto Parking		Remark
	5 Floor	8 Floor	
18 cars	78 cars	156 cars	1, 2 Floor Business Shop

Ground Plan

(unit : mm)



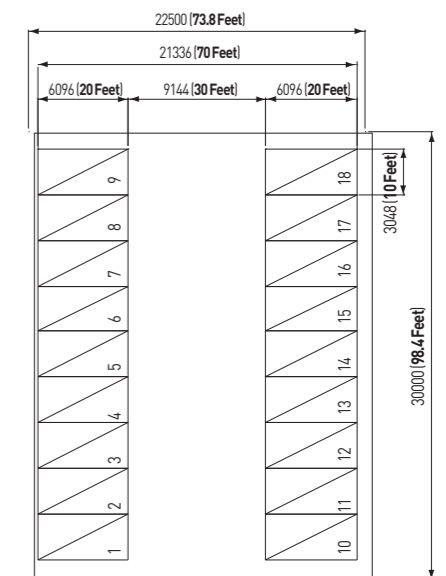
Lift Line Section [Section : "A" - "A"]

In case of using cart type parking, 13 cars parking per one(1) level is available.

- 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.

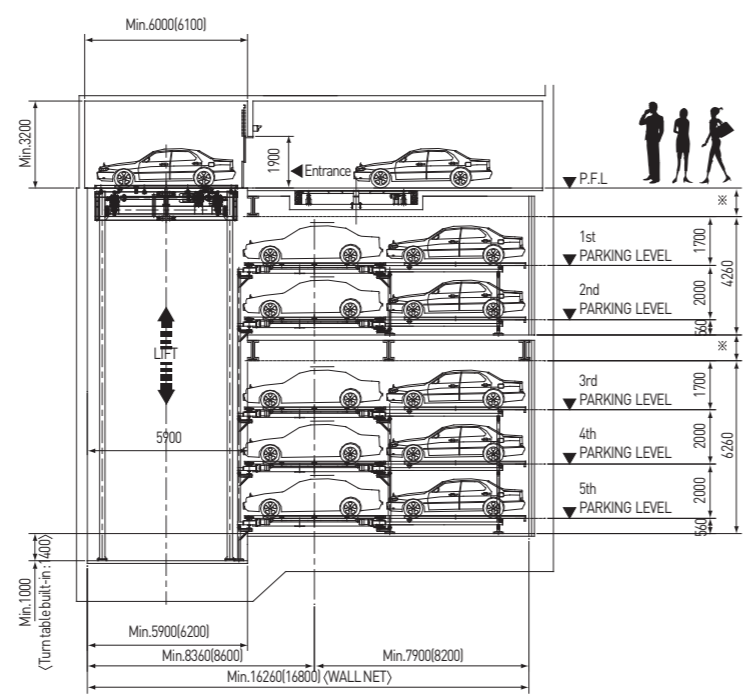
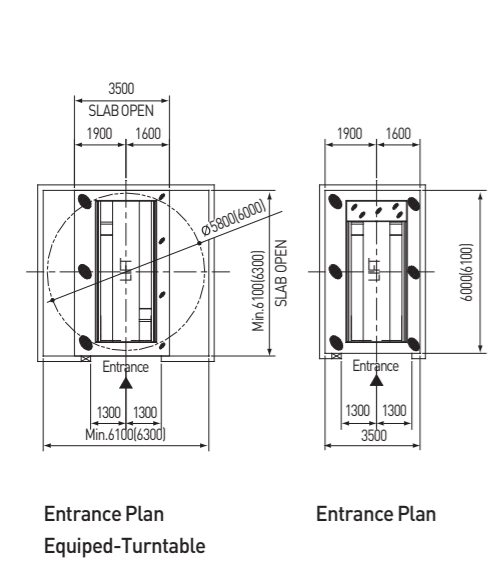
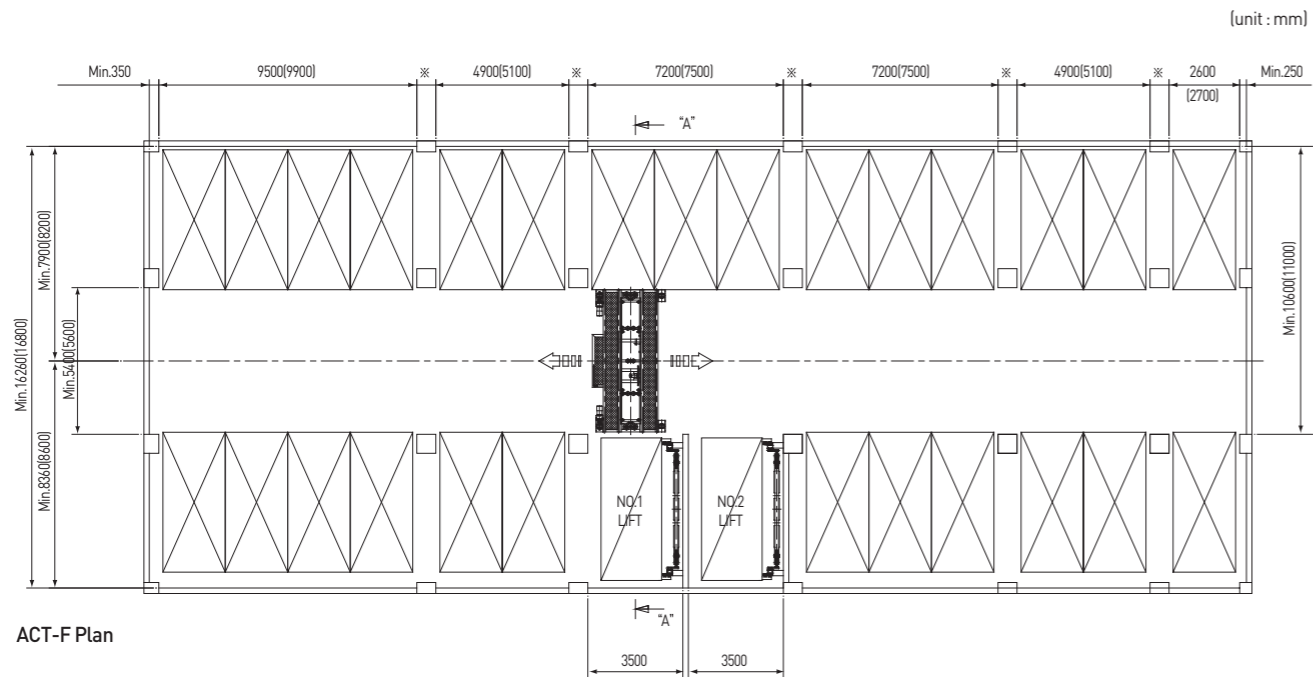
Concept Drawing for Capacity Estimation

(unit : mm)



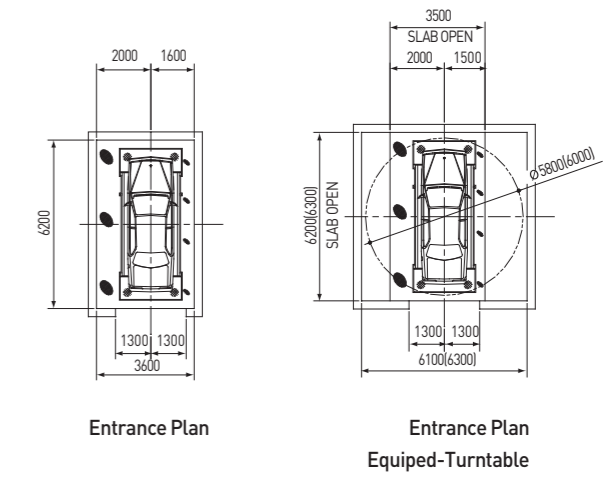
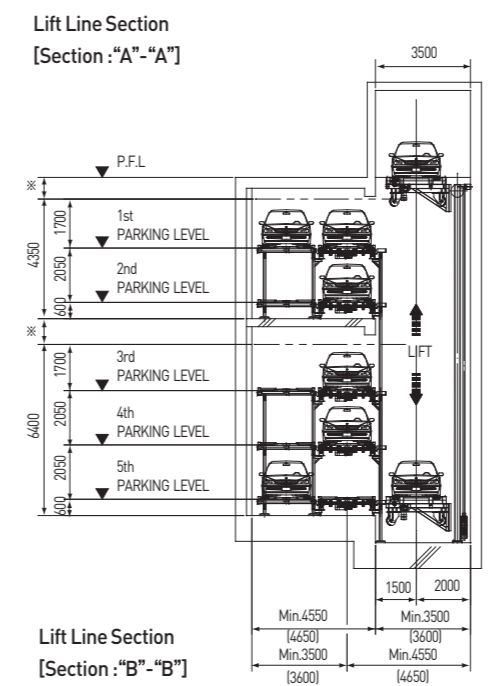
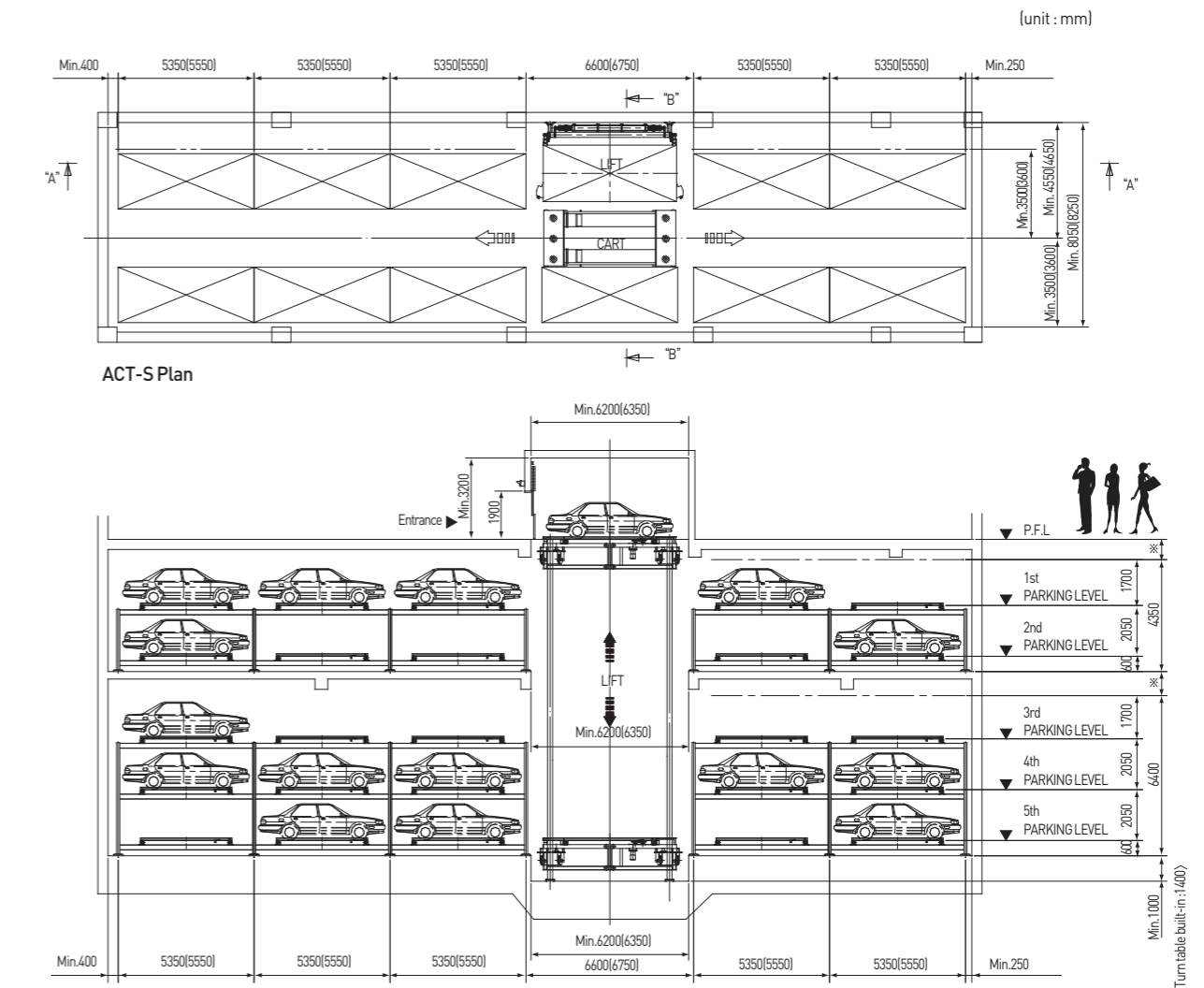
Cart Type | Underground

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



As the cutting-edge Auto parking system, elevator type is available to park Max. 50 cars in 45 square meter space per 1 unit.

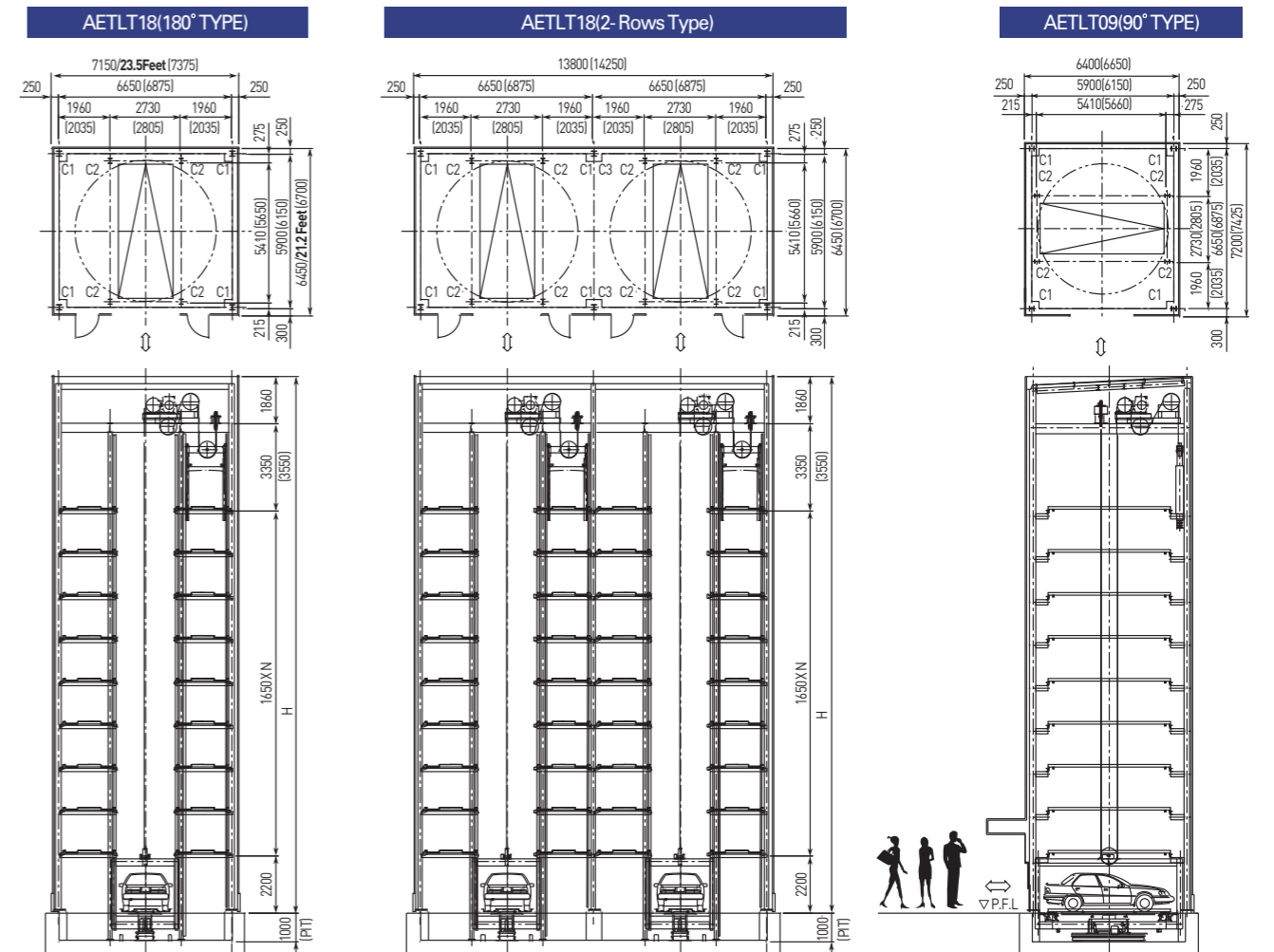
The key advantages are as follows;

1. Human-oriented design - built-in type turntable
(Enabling forward drive when exiting out) - Snug decoration
2. High quality - Computerized system
- An accurate landing (Max. speed: 120 m/min.)
3. Easy to maintenance
4. Minimized vibration and noise (Elevator rail system is applied)
5. Reliable and quiet operation
6. Space-effective 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



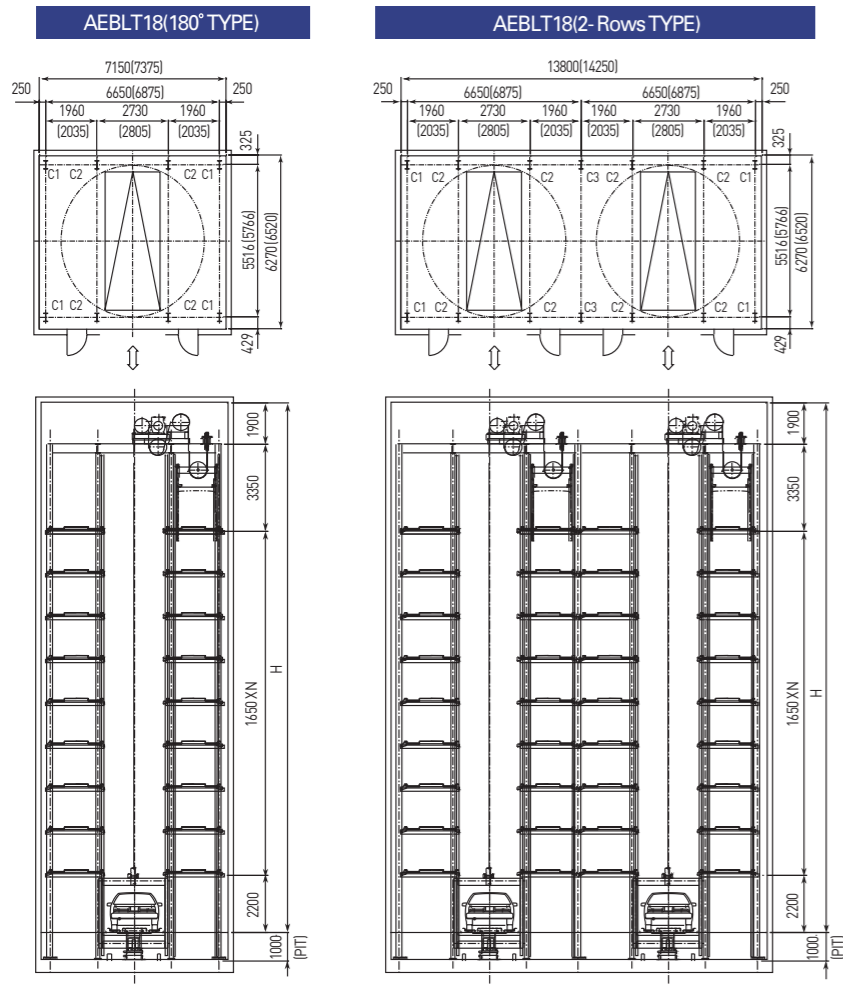
Lower Entry Type AETL/Turn table built-in Type AETLT 09, 18

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

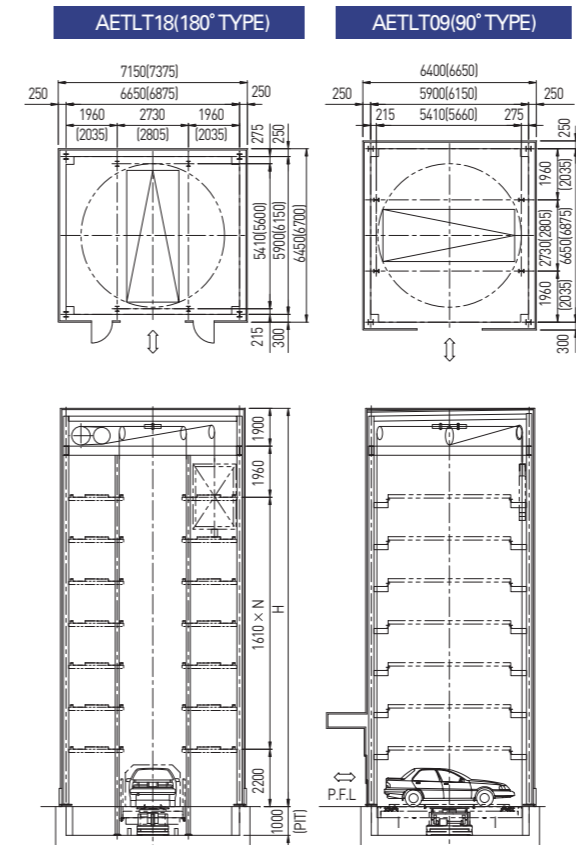
Notes 1. Load calculation shall be based on wind velocity (30m/sec) in inland area. 2. () shall be applied to 2-rows type. 3. In case of 90° type, Turn table must be built in. 4. Short term compressive load of Center Column shall be applied to 2-rows type.

Elevator Type

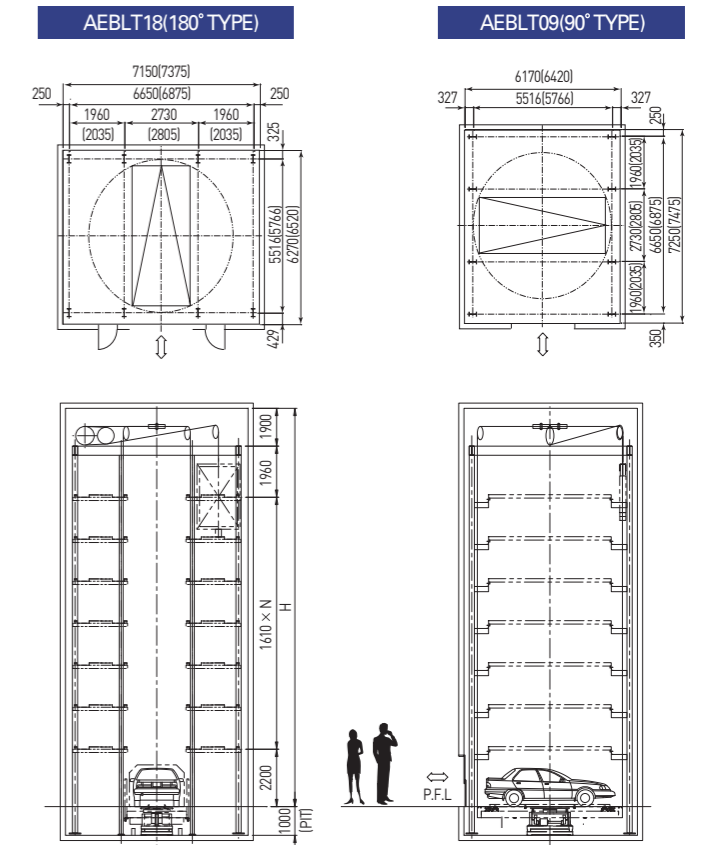
Built-In Type (E600 Type) Lower Entry Type



Independent Type (E650 Type) Lower Entry Type



Built-In Type (E650 Type) Lower Entry Type



(unit : mm)

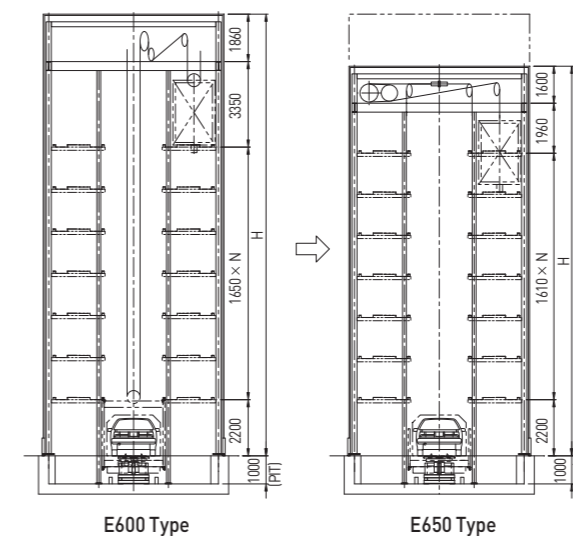
(unit : mm)

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(x2)	20650	14	12	29	18.5
20(x2)	22300	15	13	30	
22(x2)	23950	16	14	32	
24(x2)	25600	17	15	33	
26(x2)	27250	18	16	35	
28(x2)	28900	19	17	36	
30(x2)	30550	20	18	38	
32(x2)	32200	21	19	39	
34(x2)	33850	22	20	41	
36(x2)	35500	23	21	42	
38(x2)	37150	24	22	44	30
40(x2)	38800	25	23	45	
42(x2)	40450	26	24	47	
44(x2)	42100	27	25	48	
46(x2)	43750	28	26	50	
48(x2)	45400	29	27	51	
50(x2)	47050	30	28	53	

Advantages of E650 Type

The space efficiency becomes maximized by lowering the average height of parking tower. For example, in case of the E650 type is installed based on the same height limit, 2 more cars can be accommodated.



(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



As the latest, fastest, and large scale's Auto parking system, HIP type is available to output a car within 38 seconds. It adopts special installation method, so that it can be applied at the building and underground of road as well. Regarding capacity, 138 cars can be accommodated per 1 unit. As the application of multi-levels and rows, large scale's installation is possible.

Standard Specification

Category	Specification	
Capacity	More than 100 cars	
Available Vehicle to Park	Length : 5150 mm	Width : 2100 mm (2040mm)
	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

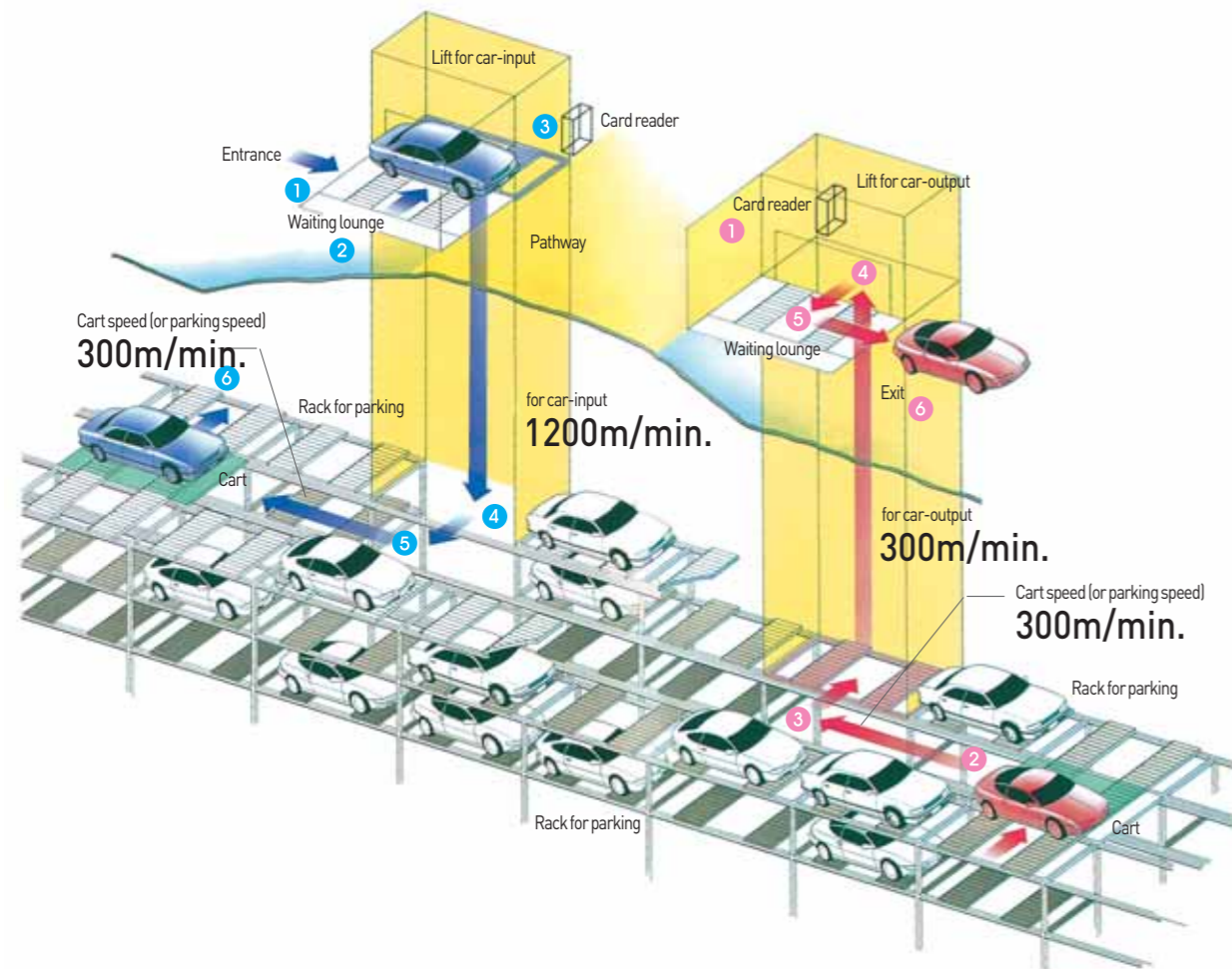
- 01 | Driving a car on designated position.
- 02 | After driver and all fellow passengers get off, insert a parking ticket to card reader for car-input, then the door of lift is opened.
- 03 | Slat conveyor is operated. The car goes into lift.
- 04 | Lift with car moves to appropriate parking floor.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

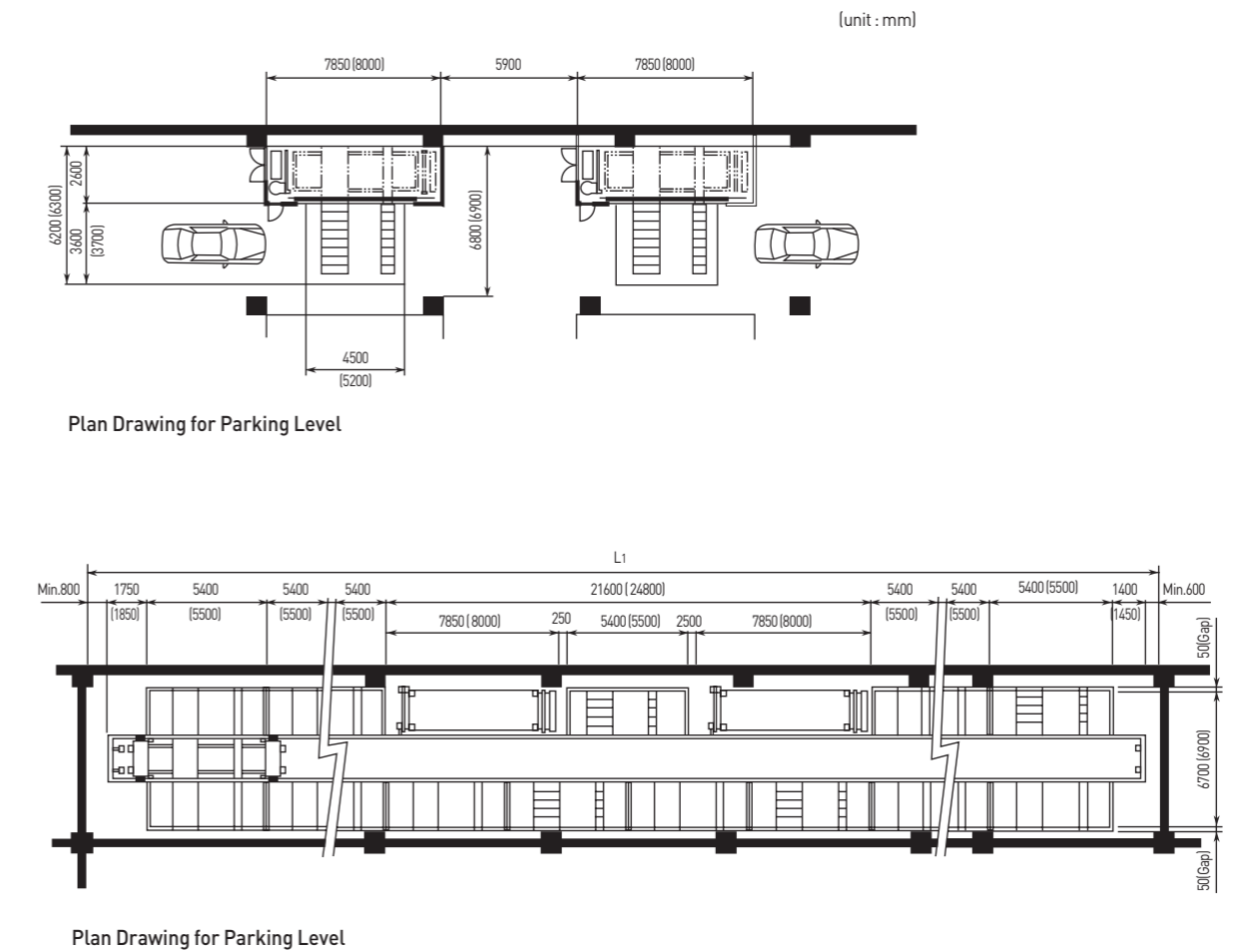
- 01 | Insert parking ticket to card reader.
- 02 | The cart moves to parking-rack, and the car is shifted from parking-rack to cart.
- 03 | The cart with car moves to lift.
- 04 | The car is shifted from cart to lift, and the lift moves to waiting room for car-output.
- 05 | The door of waiting room 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 - Input & Output

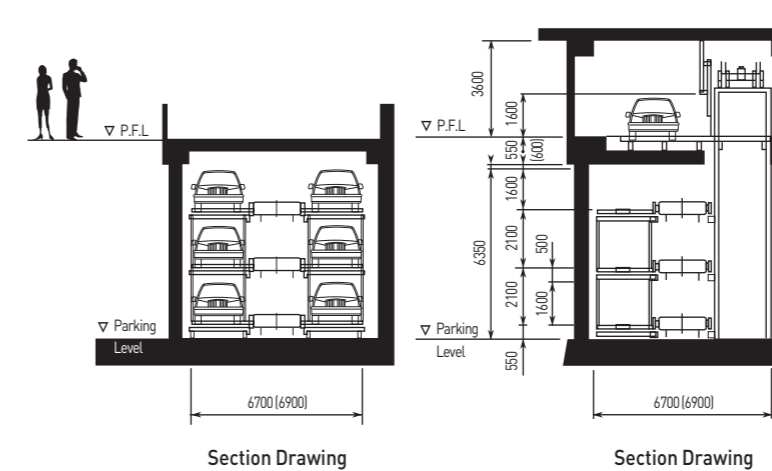


Standard Drawing of HIP (3-levels)



Advantages & Special Feature

- 1 Voice guidance shall be applied, so initial customer can use this system easily.
- 2 It is easy to get out from the vehicle due to wide space.
- 3 As the application of simple card reader system for car-input & output, customer can use a card for operation.
- 4 Conveyor can adjust a car on designed position automatically.
- 5 The speed of cart is 300 m/min.
- 6 Using conveyor, pallet-less system shall be applied. The loss time shall be reduced.
- 7 The time of car-output is average 38 seconds.



Notes

1. The dimension of drawing is mainly for medium-sized sedan. The dimension of 'L' 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



As a proper type for small scale, Puzzle type can be installed by a row or double rows.

The space efficiency is high and the construction cost is the cheapest. As a semi-automatic type, the leading time is short and the operation and maintenance are easy.

Standard Specification (2-APZ2 Levels)

Category	Specification
Capacity	5 cars
Available Vehicle to Park	Length : 5050 mm Width : 1850 mm (2040 mm) Height : 1550 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.

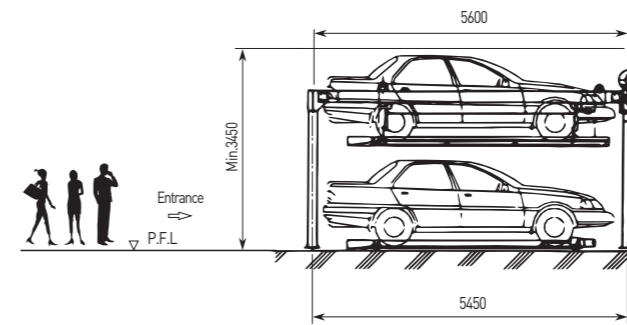
Standard Specification (3-APZ3 Levels)

Category	Specification
Capacity	7 cars
Available Vehicle to Park	Length : 5050 mm Width : 1850 mm (2040 mm) Height : 1550 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

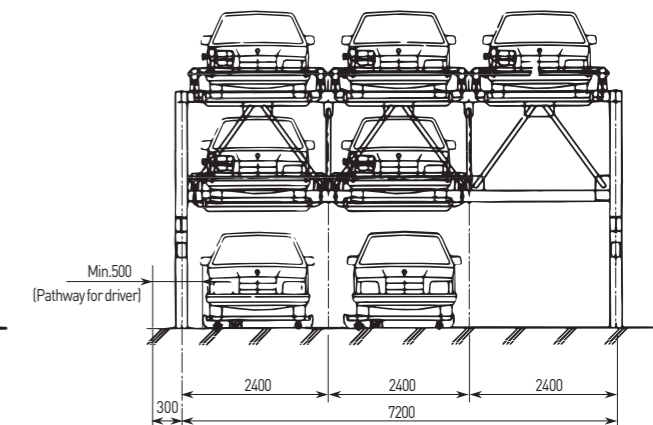
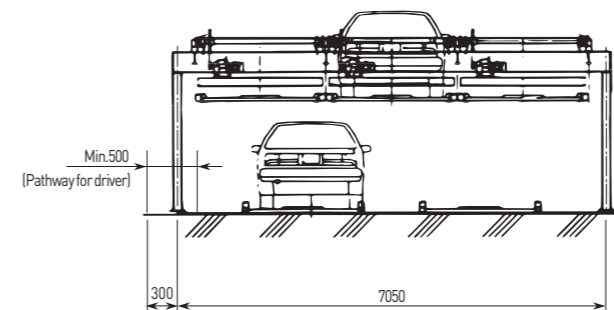
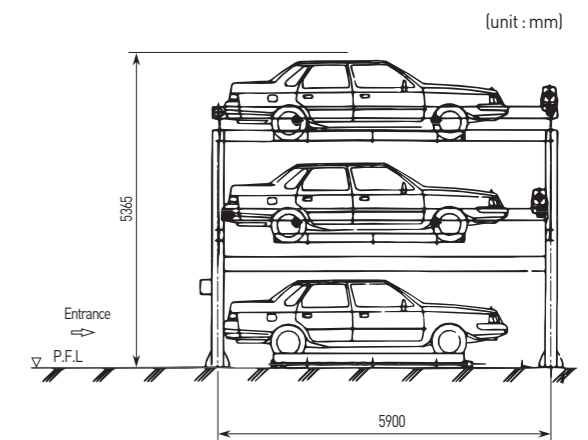
Note. [] is the dimension between side mirror edges.



2 APZ2 - Levels



3 APZ3 - Levels



Global Network



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