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# HYUNDAI ELEVATOR AUTO PARKING SYSTEMS

# Hyundai Elevator offers state-of-the-art parking systems that can be optimized for any building.

The cutting-edge technology and know-how of Korea's elevator industry leader is also available through its parking systems. Offering a high level of convenience and space efficiency, minimal maintenance costs and highquality services, Hyundai Elevator's parking systems not only awe users and building administrators, but also contribute to the appreciation of property values.

# Why Hyundai Elevator's Auto Parking Systems?



# Speed and safety

Customized systems optimized for building use ensure quick and safe parking and retrieval of cars with minimum noise and vibration.



# Ease of operation

Simple, user-friendly operation reduces time to locate empty parking spaces or parked vehicles.



# **Greater space efficiency**

Up to 50% higher space efficiency versus regular parking garages, minimizing space occupancy and reducing construction costs.



# **Environmental friendliness**

Diminished parking time reduces fuel consumption and CO2 emissions.



# **Product Type**



Elevator Type

Cart Type



HIP (Hyundai Integrated Parking System)

# **Product Division**

Туре	Model	Specification	Application	
Elevator	Independent Tower Type	Lower Entry Type AETL Turntable built-in: AETLT 09 (90° Type) AETLT 18 (180° Type) Middle Entry Type AETM Turntable built-in: AETMT 09 (90° Type) AETMT 18 (180° Type)	Buildings for small & medium scale types: - Hospitals - Office Buildings	
Туре	Inside of Building Type	Lower Entry Type AEBL Turntable built-in: AEBLT 09 (90° TYPE) AEBLT 18 (180° TYPE) Middle Entry Type AEBM Turntable built-in: AEBMT 09 (90° TYPE) AEBMT 18 (180° TYPE)	- Hotels - Apartment buildings - Commercial facilities (parking lot operators)	
Cart Type HIP (Hyundai Integrated Parking System)		Front Type ACT(T)-F, Side Type ACT(T)-S	Buildings and lands for middle & large scale (Underground Type)	
		Driving Cart Type HIPL	Buildings for large scale types: - Department Stores - Shopping Centers - Hotels - Entertainment complexes - Office Buildings	

# **Elevator Type**

HYUNDAI ELEVATOR AUTO PARKING SYSTEMS

# Ideal for small spaces due to high space utilization and convenient maintenance.

Up to 70 parking spaces can be built on a footprint large enough for 3 cars. Energy efficient system with low vibration and noise reduces energy costs and is easy to operate and maintain.

# STANDARD SPECIFICATION

Category	Specification					
Capacity	10~70 cars					
	Category	SEDAN		SUV Cars (Full size car model)		
Available	Length (mm)	51	60	5160		
Vehicle to	Width (mm) 2		00	2100		
Idik	Height (mm) 15		50	1850		
	Weight (kg)		00	2200		
Driving Speed	Lifting Facility: 70 ~ 1 Shifting Facility: 36 m	20 m/min. n/min.	Lift for Turntable: 1.85 m/min. Rotation for Turntable: 4.3 rpm			
Motor	Lifting Facility: 22 kW / 30 kW 37 kW / 45 kW Shifting Facility: 3.7 kW		Lift for Turntable: 2.2 kW Rotation for Turntable: 1.5 kW			
Operation and Control	Color Touch Screen System, Microcontroller or PLC Control (Full vector control)					
Hoistway	Trails					
Electricity	AC 380 V, 3 Ø, 4 W, 60 Hz, 28~63 kVA (Not including ground wires)					
Safety Devices	Guide Lamp for Entry, Emergency Stop Switch, Impact Absorber, Photo Sensors for Safety, Motion Detection Sensors					
Entrance Door	Up Sliding Door					

# **OPTIONAL**

• Turntable - Improves the convenience of parking and retrieving vehicles by eliminating the need to back out.

• Power Regeneration Function - Consumes about 30% less power moving cars vertically.

• Computer Monitoring - Instantaneous tracking of occupancy makes system convenient to operate.

• LED Parking Indicator - Easy communication of the operating status of the lift. Possibility to input character strings upon request.

\* Note: Vehicle width dimensions are inclusive of side mirrors.





**Independent Tower Type** (Lower Entry Type)

AETLT18 (180° TYPE)



1 Entrance

\* Note: 1. Dimensions in parentheses are for RV/SUV model units. 2. Dimensions for freestanding systems may vary according to vehicle capacity, wind speed, and terrain conditions.

# Independent Tower Type (Lower Entry Type) AETL / Turntable Built-in Type AETLT 09,18

Compatibul(NI)	Ileight (mm)	Load of Column (kN)			Motor Capacity			
Capacity (N)	Height (mm)	C1Compressive load	C1Tensile Load	P1Compressive load	C2Compressive load	C2Tensile Load	(kW)	
18 (X2)	21,130	408	-98	153	468	-92		
20 (X2)	22,740	441	-124	168	517	-132		
22 (X2)	24,350	475	-149	183	566	-173		
24 (X2)	25,960	508	-175	199	615	-213		
26 (X2)	27,570	541	-201	214	664	-253		
28 (X2)	29,180	574	-226	229	713	-294	22	
30 (X2)	30,790	607	-252	244	762	-334	22	
32 (X2)	32,400	705	-324	360	872	-419		
34 (X2)	34,010	803	-396	377	982	-504		
36 (X2)	35,620	901	-467	393	1092	-589		
38 (X2)	37,230	999	-539	410	1202	-674		
40 (X2)	38,840	1097	-611	427	1313	-759	]	
42 (X2)	40,450	1196	-683	443	1423	-844		
44 (X2)	42,060	1294	-755	460	1533	-929		
46 (X2)	43,670	1392	-826	476	1643	-1014		
48 (X2)	45,280	1490	-898	493	1753	-1099		1. Floor height calculation
50 (X2)	46,890	1588	-970	510	1863	-1185	20	<ul> <li>Passenger car model: 2,300 (platform) +</li> </ul>
52 (X2)	48,500	1686	-1042	526	1973	-1270	30	[(capacity/2-1)×1,610]+2,600
54 (X2)	50,110	1784	-1114	543	2083	-1355		(overhead) + 1,600 (machine room)
56 (X2)	51,720	1883	-1185	560	2193	-1440		· RV model: 2,300 (platform) + [ (capacity /
58 (X2)	53,330	1981	-1257	576	2303	-1525		2-1) × 2,100] + 2,600 (overhead) + 1,600
60 (X2)	54,940	2079	-1329	593	2413	-1610		(machine room)
62 (X2)	56,550	2177	-1401	609	2524	-1695	27	2. For facilities with capacity that exceeds
64 (X2)	58,160	2275	-1473	626	2634	-1780	37	70 vehicles, please inquire.
66 (X2)	59,770	2373	-1544	643	2744	-1865	45	3. Load value assumptions
68 (X2)	61,380	2471	-1616	659	2854	-1950	55	· Wind speed 26 m/s







\* Note: Dimensions in parentheses are for RV/SUV model units.

# Inside of Building Type (Lower Entry Type) AEBL / Turntable Built-in Type AEBLT 09,18

Conneciby (NI)	Light (mm)	Load of Column (kN)			Motor Conscitu (kW)	
Capacity (N)	Height (IIIII)	C1Compressive load	P1Compressive load	C2Compressive load		
18 (X2)	20,880	131	133	198		
20 (X2)	22,490	145	147	219		
22 (X2)	24,100	158	161	239		
24 (X2)	25,710	172	175	260		
26 (X2)	27,320	186	189	281		
28 (X2)	28,930	199	203	302	22	
30 (X2)	30,540	213	217	323		
32 (X2)	32,150	227	231	343		
34 (X2)	33,760	240	244	364		
36 (X2)	35,370	254	258	385		
38 (X2)	36,980	268	272	406		
40 (X2)	38,590	281	286	426		
42 (X2)	40,200	295	300	447		
44 (X2)	41,810	309	314	468		
46 (X2)	43,420	322	328	489		
48 (X2)	45,030	336	342	509		
50 (X2)	46,640	350	356	530	20	
52 (X2)	48,250	363	369	551	30	
54 (X2)	49,860	377	383	572		1. Floor height calculation
56 (X2)	51,470	391	397	593		Passenger car model: 2,300 (platform)
58 (X2)	53,080	404	411	613		+ [ [capacity / 2-1] × 1,610] + 2,600
60 (X2)	54,690	418	425	634		· RV model· 2 300 [nlatform] + [ (capacity
62 (X2)	56,300	431	439	655	27	$(2-1) \times 2,100] + 2,600$ (overhead) + 1,900
64 (X2)	57,910	445	453	676	3/	(machine room)
66 (X2)	59,520	459	467	696	45	2. For facilities with capacity that exceeds
68 (X2)	61,130	472	481	717	55	70 vehicles, please inquire.

Independent Tower & Inside of Building Type (Middle Entry Type)

(Unit: mm)

AETMT18 (180° TYPE) - Independent Type



\* Note: 1. Dimensions in parentheses are for RV/SUV model units. 2. Dimensions for freestanding systems may vary according to vehicle capacity, wind speed, and terrain conditions.

# Independent Type AETM / Turntable Built-in Type AETMT 09,18 Inside Type AEBM / Turntable Built-in Type AEBMT 09,18

Capacity (N)	Height (mm)	Capacity (N)	Height (mm)
18		18	
20		20	
22		22	
24		24	
26		26	
28		28	
30		30	
32		32	
34		34	
36		36	
38	Depth (below ground level) = 1,610 x N2 + 3,600	38	Depth (below ground level) = 1,610 x N2 + 3,600
40	Height (above ground level) = 1,610 x N1 + 7,250	40	Height (above ground level) = 1,610 x N1 + 7,000
42	Total height = depth + height	42	Total height = depth + height
44		44	
46	N1: [vehicle capacity above ground/2] - 1	46	N1: [vehicle capacity above ground/2] - 1
48	N2: [vehicle capacity below ground/2] - 1	48	N2: [vehicle capacity below ground/2] - 1
50		50	
52		52	
54		54	
56		56	
58		58	
60		60	
62		62	
64		64	
66		66	
68		68	



(Unit: mm)

AEBMT18 (180° TYPE) - Built-in Type

AEBMT09 (90° TYPE) - Built-in Type





HYUNDAI ELEVATOR AUTO PARKING SYSTEMS

# Efficient use of limited space that significantly expands parking areas.

Multi-dimensional, auto parking system accelerates vehicle parking and retrieval by operating lifts and carts vertically and horizontally at the same time. It maximizes parking capacity of limited underground space by allowing linear or parallel expansion of parking rows.

OPTIONAL

request.

• Turntable - Improves the convenience of parking and retrieving

Computer Monitoring - Instantaneous tracking of occupancy

· LED Parking Indicator - Easy communication of the operating status of the lift. Possibility to input character strings upon

EL Tow

vehicles by eliminating the need to back out.

makes system convenient to operate.

# STANDARD SPECIFICATION

Category	Specification				
Capacity	50 cars				
	Category	SEDAN		SUV Cars (Full size car model)	
Available	Length (mm)	51	60	5160	
Vehicle to	Width (mm)	21	00	2100	
Idik	Height (mm)	15	50	1850	
	Weight (kg)	21	00	2200	
	Lifting Speed		40~90 m/min.		
LIFI	Motor Capacity		22 kW / 30 kW		
	Driving Speed		60~110 m/min.		
Capacity Per	Motor Capacity			1.5 kW × 2	
Level	Shifting Speed		38~45 m/min.		
	Motor Capacity		1.5 kW		
Operation and Control	Color Touch Screen System				
Electricity	AC 380 V, 3 Ø, 4 W, 60 Hz, 49~98 kVA (Not including ground wires)				
Safety Devices	Guide Lamp for Entry, Emergency Stop Switch, Photo Sensors for Safety, Motion Detection Sensors				
Entrance Door	Up Sliding Door				

## \* Note: Vehicle width dimensions are inclusive of side mirrors.

Motor specifications and speed of lifts and carts may vary depending on design requirements



# Features of Cart Type Parking Systems

- 1 Inverter-type lift operates silently and moves cars with high precision. Low power consumption reduces energy costs. · Simultaneous vertical and lateral movement of vehicles reduces the time required to store and retrieve cars relative to the size of the facility.
- the building's structural columns and beams.
- 3 Multiple installation of carts and turntables can maximize the utility of basement and entry floors.
- 4 Independent operation of driving parts reduces power consumption.
- 5 Ideal for medium and large scale installations because economies of scale are high.



2 Designed for underground use, systems can be installed more freely compared to other systems, regardless of the location of

# Front Type (ACT(T)-F)

# (Unit: mm)

# Side Type (ACT(T)-S)









1300 1300

3600

2000









Lift Line Section (SECTION:"A"-"A")



\* Note:1. Measurements with the  $\mbox{ * mark}$ are to be determined by the architect.



Entrance Plan



## Entrance Plan (Turntable built-in Type)

- \* Note:1. Measurements with the \* mark are to be determined by the architect.
  - 2. Please inquire for RV/SUV models.

Elevator Type Cart Type HIP 13

HYUNDAI ELEVATOR AUTO PARKING SYSTEMS

# Hyundai Elevator's fastest Auto Parking System can even make use of space underneath ordinary roads.

The Hyundai Integrated Parking System (HIP) is a large scale, multi-dimensional parking system that can park or retrieve cars consecutively in 38 seconds. It is Korea's fastest parking system that uses a palletless conveyor system that can be installed underneath buildings or roads. This state-of-the-art system can accommodate hundreds of cars and be scaled up through multi-layering and parallelization to create safe and convenient, large-scale facilities.

# STANDARD SPECIFICATION

Category	Specification					
Capacity	More than 100 cars					
	Category	SEDAN		SUV Cars (Full size car model)		
Available	Length (mm) 516		60	5160		
Vehicle to Park	Width (mm)	21	00	2100		
Idik	Height (mm)	1550		1850		
	Weight (kg)	2100		2200		
LIET	Lifting Speed		Max. 120 m/min.			
LIFI	Motor Capac	ity	30 kW			
	Driving Spee	ed	Ма	x. 300 m/min.		
Capacity Per	Motor Capac	ity		30 kW		
Level	Shifting Spe	ed	35 m/min.			
	Motor Capac	ity	7.5 kW			
Operation and Control	Color Touch Screen System, PLC Control					
Electricity	AC 380 V, 3 Ø, 4 W, 60 Hz (Not including ground wires)					
Safety Devices	Guide Lamp for Entry, Emergency Stop Switch, Photo Sensors for Safety, Motion Detection Sensors					

\* Note: Vehicle width dimensions are inclusive of side mirrors.

# OPTIONAL

• **Computer Monitoring** - Instantaneous tracking of occupancy makes system convenient to operate.

• Waiting Queue Display - Users can view the status of waiting queues.

• **RF** (Radio Frequency) **Parking Card** - Parking card facilitates storage and retrieval of vehicles.

# <image>

# FEATURES

- 1 Voice assistance makes the system easy to operate even for first-time users.
- 2 Spacious entryway makes it easy and convenient to step out of the car.
- 3 Automated controller recognizes parking cards tagged on a card reader and stows cars conveniently.
- 4 Conveyor automatically rearranges poorly stationed cars in the entryway for convenient and safe parking.
- **5** Carts move at a high speed of 300 m/min. to store cars quickly and safely.



- 6 Pallet-free, conveyor system dramatically reduces processing time.
- 7 Straightforward vehicle retrieval system is activated by tagging the parking card on a card reader.
- 8 Car retrieval within 38 seconds on average.

# Vehicle parking and retrieval

# Standard Drawing of HIP [3-levels]

# Input — Parking

- 1 Drive the vehicle into the parking compartment and stop at the designated area in front of the lift.
- 2 Step out of the vehicle and clear the compartment. Tag the parking card on the card reader to open the lift door and activate the lift.
- 3 Conveyors in the parking compartment and the lift move the vehicle onto the lift.
- 4 The vehicle is moved to a floor with an empty parking space.
- **5** The vehicle is transferred onto a cart.
- 6 The cart moves the vehicle to an empty rack and parks it inside.

# Parking — • Output

- 1 Tag the parking card on a card reader just outside the car retrieval compartment.
- 2 A cart on the level that the vehicle is parked moves to the front of the rack and retrieves the vehicle.
- **3** The cart with car moves to lift.
- If the car is shifted from cart to lift, and the lift moves to waiting room for car-output.
- **()** The door of waiting room is opened, and the car comes out .
- 6 A driver gets in the car and drives out.









Plan Drawing for Parking Level



Section Drawing

Section Drawing

[Unit-mm]



- \* Note: 1. Dimensions are for SEDAN size vehicle models.
  - 2. Dimensions are for machinery installation. Space for utility pipes and concrete structures need to be calculated separately.
  - 3. Please inquire for vehicle capacities greater than the illustrations.
  - 4. Installations higher than 4 levels are built using a combination of 2-floor and 3-floor modules.
  - 5. Racks can be mounted asymmetrically.
  - 6. "h\*" is usually 50 mm, but please inquire if there is a gradient or level change on the floor.
  - 7. Please inquire for dimensions for RV/SUV models or other size vehicle models.

# **Parking Assistance Lighting Systems**

# Efficient information delivery and design generates exceptional user satisfaction.

Premium LED parking assistance lights use intuitive color and graphics to easily convey operational information, such as vehicle parking, retrieval and waiting times. First in the industry to receive an iF Design Award in Germany in 2017, Hyundai Elevator is proving its excellence in product design.



# Recipient of an iF Design Award

Hyundai Elevator has demonstrated its global design competitiveness by earning iF Design Awards in the elevators category (destination selecting system in 2012 and ANYVATOR concept elevator in 2017) as well as for its parking system indicator lights in 2017.



of use with a simple display that allows users to identify and enter information easily.

\* The control panel depicted above is an optional model.

designed graphics or numbers instruct drivers to wait or enter the parking lift.

Highly communicative signal help drivers park and retrieve their cars safely from the parking lift. **Operating Panel** 



Standard (7 inch)

7 inch premium (indoor)

# **Parking Indicator**





Digital type (standard)

Analog type



Premium type

\* LED text signage can be modified according to customers' needs.

# Parking Assistance Light (standard)







7.5 inch premium (indoor)





OPTIONS 19