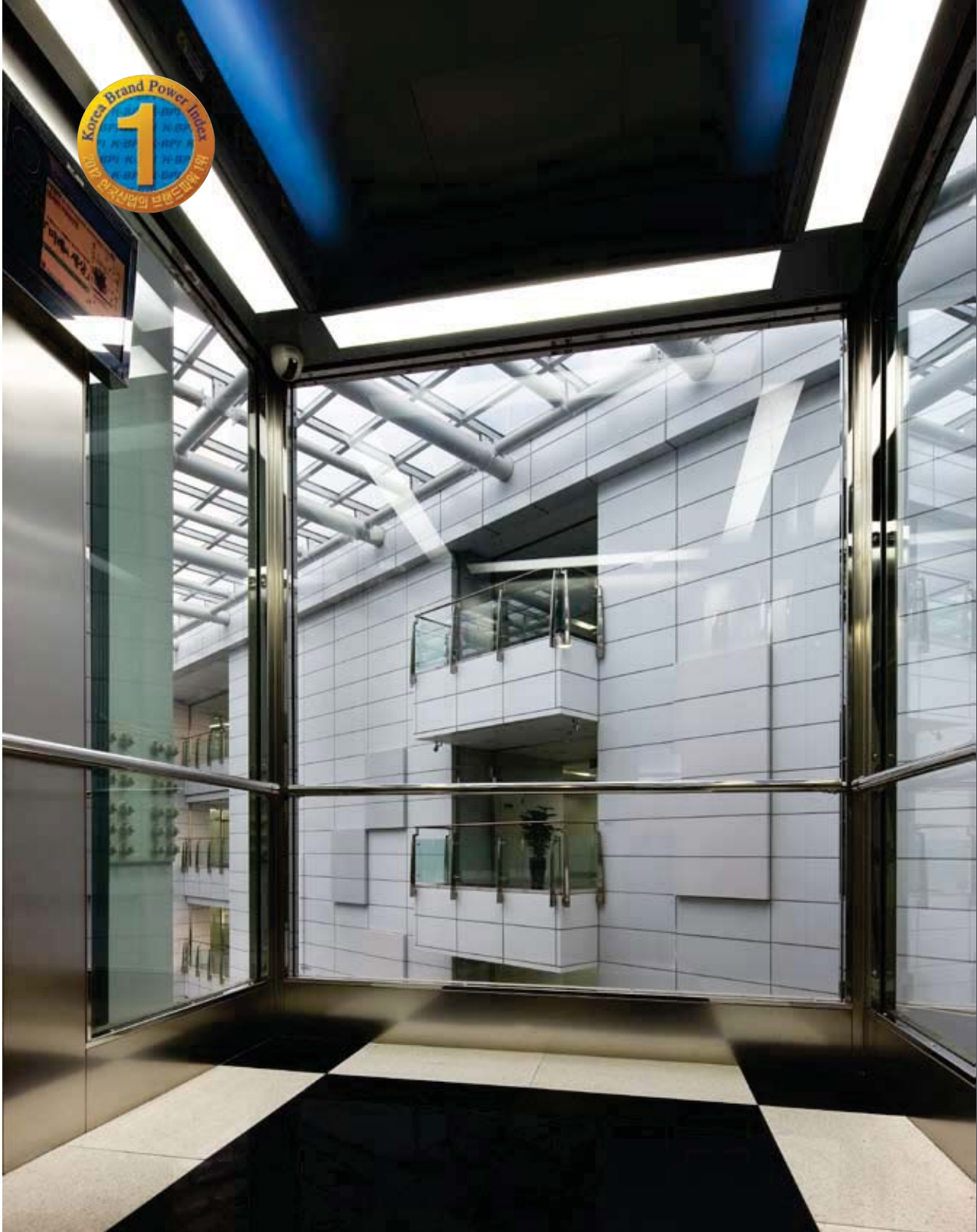




OBSERVATION ELEVATORS

Moving solutions with safety, reliability and efficiency

 **HYUNDAI ELEVATOR CO., LTD.**

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C-OBE-E1815/2013. 8 / Revision 18

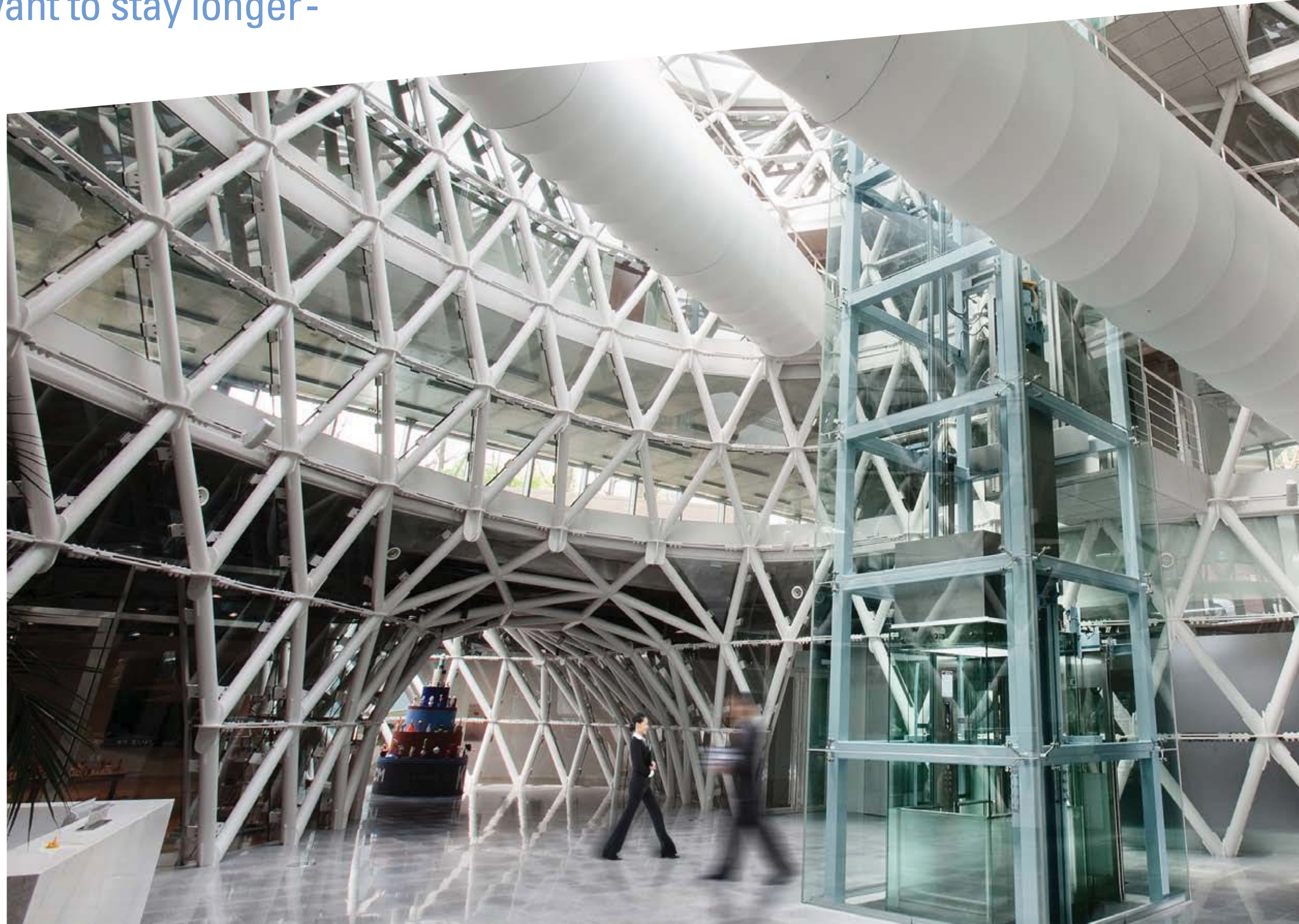
 **HYUNDAI ELEVATOR**

Space where you want to stay longer-

The harmony of advanced technology, unique design and sophisticated atmosphere...

Hyundai observation elevator enriches the moving experience with spectacular views and a comfortable atmosphere. The value of a building will be increased with the inclusion of a space that bids people to linger around.

- With diverse options for an observation window with one, two, three sides or semicircular or a key hole type window, Hyundai Elevator brings higher satisfaction to its clients.
- A hoistway can be installed outside of a building, thus bypassing the need to occupy space within the building.
- Thanks to Hyundai's propriety core technology, its elevators give a more comfortable and smooth ride to passengers.



Hyundai's high-fashion design will add value and beauty to any building



Observation elevators will match to all types of buildings, hotels, shopping centers, office buildings, banks, hospitals and observation towers. The contemporary design of our elevators reflects the latest design trends and client preference and will add aesthetic value and prestige to your buildings.

- 01 Lotte Department Store_Korea
- 02 The Asan Institute for Policy Studies_Korea
- 03 Court House_Turkey
- 04 Hyundai Department Store_Korea
- 05 Hyundai Asan Tower_Korea
- 06 Park Hyatt Busan_Korea

01	02		03
	04	05	06

1SIDE OBSERVATION ELEVATORS



SQ-121A



Exterior Design	• EXTERIOR PANELS : Painted Steel (P021)
Cage Design	• CEILING : CD219A / Painted Steel (P022) / Skylite 10T • WALL : STS Hairline / STS Hairline Etching (SE2302) / Transparent laminated glass (12.76T) • HANDRAIL : STS 1 Pipe • FLOORING : Polyvinyl Tile

Notes

1. Finished product may vary slightly from these prints.

2. Number and / or size of ceiling panels and number of lighting fixtures will vary per selected car size.

3. Applicable prices will vary per selected optional designs / materials.

1SIDE OBSERVATION ELEVATORS



SQ-129A



Exterior Design	• EXTERIOR PANELS : Painted Steel (P016) • DECORATIVE ILLUMINATIONS : Acrylic / LED Lighting
Cage Design	• CEILING : CD251A / Convective Air Sterilization System / Acrylic / Painted Steel (P022) • WALL : STS Hairline Etching (SE927) / Transparent laminated glass (12.76T) • HANDRAIL : STS 1 Pipe • FLOORING : Polyvinyl Tile

Notes

1. Finished product may vary slightly from these prints.

2. Number and / or size of ceiling panels and number of lighting fixtures will vary per selected car size.

3. Applicable prices will vary per selected optional designs / materials.

1SIDE OBSERVATION ELEVATORS



SQ-129B



Exterior Design	• EXTERIOR PANELS : Painted Steel (P021, G804500) • DECORATIVE ILLUMINATIONS : Acrylic / LED Lighting
Cage Design	• CEILING : CD429B / Aluminium / Painted Steel / Acrylic / Sheet / LED Lighting (Warm White) / Convective Air Sterilization System • WALL : STS Hairline Etching (SE1029) / STS Mirror Trim / Transparent laminated glass (12.76T) • HANDRAIL : STS 1 Pipe • FLOORING : Polyvinyl Tile

Notes
1. Finished product may vary slightly from these prints.
2. Number and / or size of ceiling panels and number of lighting fixtures will vary per selected car size.
3. Applicable prices will vary per selected optional designs / materials.

2SIDE OBSERVATION ELEVATORS



RC-219A



Exterior Design	• EXTERIOR PANELS : Painted Steel (P022) • DECORATIVE ILLUMINATIONS : Acrylic / LED Lighting
Cage Design	• CEILING : CD519D / Aluminum / Convective Air Sterilization System / Indirect Lighting • WALL : STS Hairline / STS Hairline Etching (SE439) / Transparent laminated glass (12.76T) • HANDRAIL : STS 1 Pipe • FLOORING : Polyvinyl Tile

Notes
1. Finished product may vary slightly from these prints.
2. Number and / or size of ceiling panels and number of lighting fixtures will vary per selected car size.
3. Applicable prices will vary per selected optional designs / materials.

2SIDE OBSERVATION ELEVATORS



SQ-119C



Exterior Design

- EXTERIOR PANELS : Painted Steel (P011)
- DECORATIVE ILLUMINATIONS : LED Signal Panel Decorative Lighting / Down Lighting (LED)

Cage Design

- CEILING : CD219A / Painted Steel (P022) / Skylite 10T
- WALL : STS Dull / STS Dull Etching / Transparent laminated glass (12.76T)
- HANDRAIL : STS 1 Pipe
- FLOORING : Polyvinyl Tile

Notes
1. Finished product may vary slightly from these prints.
2. Number and / or size of ceiling panels and number of lighting fixtures will vary per selected car size.
3. Applicable prices will vary per selected optional designs / materials.

3SIDE OBSERVATION ELEVATORS



HG-132A



Exterior Design

- EXTERIOR PANELS : Painted Steel (P021)
- DECORATIVE ILLUMINATIONS : Acrylic Lens / Fluorescent illuminations through milky-white acrylic covers

Cage Design

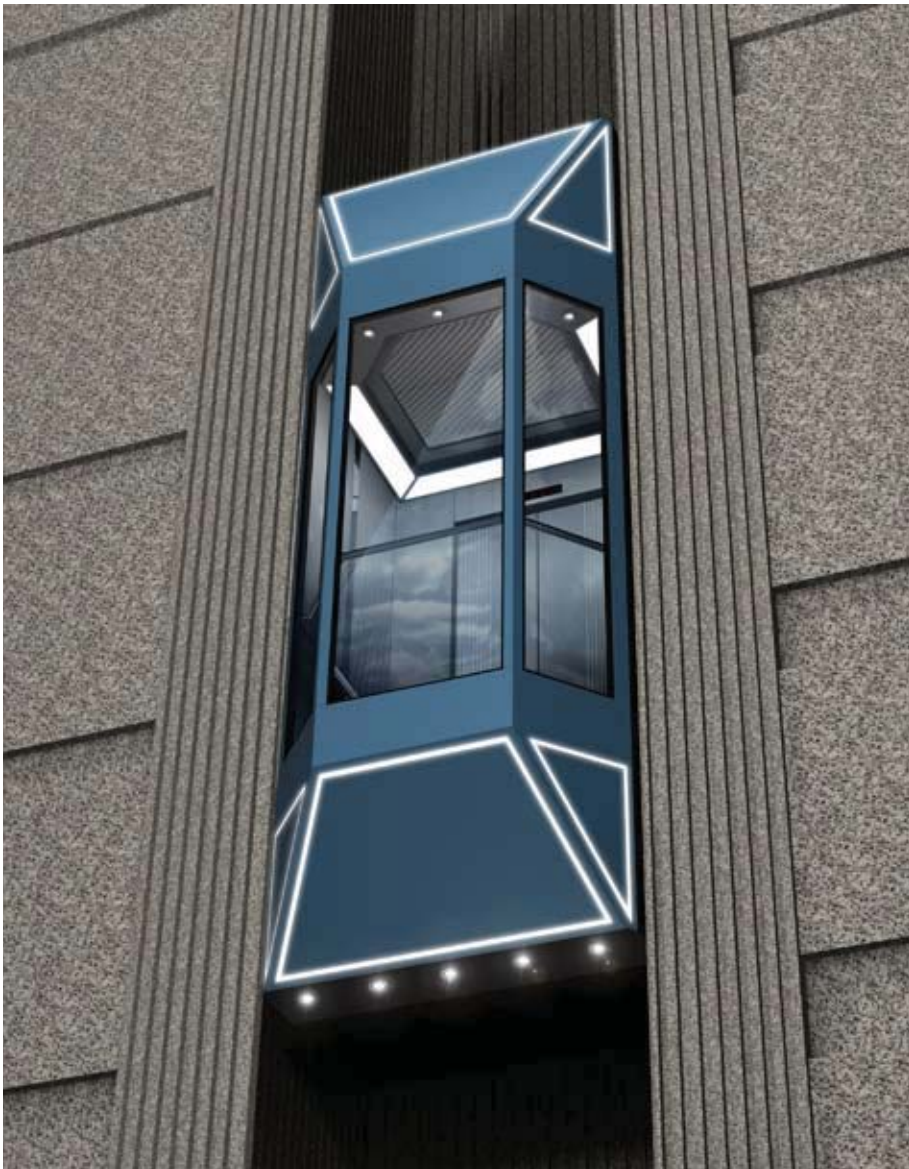
- CEILING : CD524A / Painted Steel (P021) / Indirect Lighting / Down Lighting (LED)
- WALL : STS Hairline / STS Hairline Etching (SE1591) / STS Mirror Trim / Transparent laminated glass (12.76T)
- HANDRAIL : STS 1 Pipe
- FLOORING : Polyvinyl Tile

Notes
1. Finished product may vary slightly from these prints.
2. Number and / or size of ceiling panels and number of lighting fixtures will vary per selected car size.
3. Applicable prices will vary per selected optional designs / materials.

3SIDE OBSERVATION ELEVATORS



HG-339A



Exterior Design

- EXTERIOR PANELS : Painted Steel (E56305)
- DECORATIVE ILLUMINATIONS : Acrylic / LED Lighting / Down Lighting (LED)

Cage Design

- CEILING : CD419E / Painted Steel (Dark Gray) / Sheet (CS172) / Acrylic / Down Lighting (LED)
- WALL : STS Hairline / STS Hairline Etching (SE1591) / STS Mirror Trim / Transparent laminated glass (12.76T)
- HANDRAIL : STS 1 Pipe
- FLOORING : Polyvinyl Tile

Notes
1. Finished product may vary slightly from these prints.
2. Number and / or size of ceiling panels and number of lighting fixtures will vary per selected car size.
3. Applicable prices will vary per selected optional designs / materials.

SEMI-CIRCLE OBSERVATION ELEVATORS



SC-419A



Exterior Design

- EXTERIOR PANELS : Painted Steel (P021)
- DECORATIVE ILLUMINATIONS : LED Lighting / Fluorescent illuminations through milky-white acrylic covers fitted at bottom of the car

Cage Design

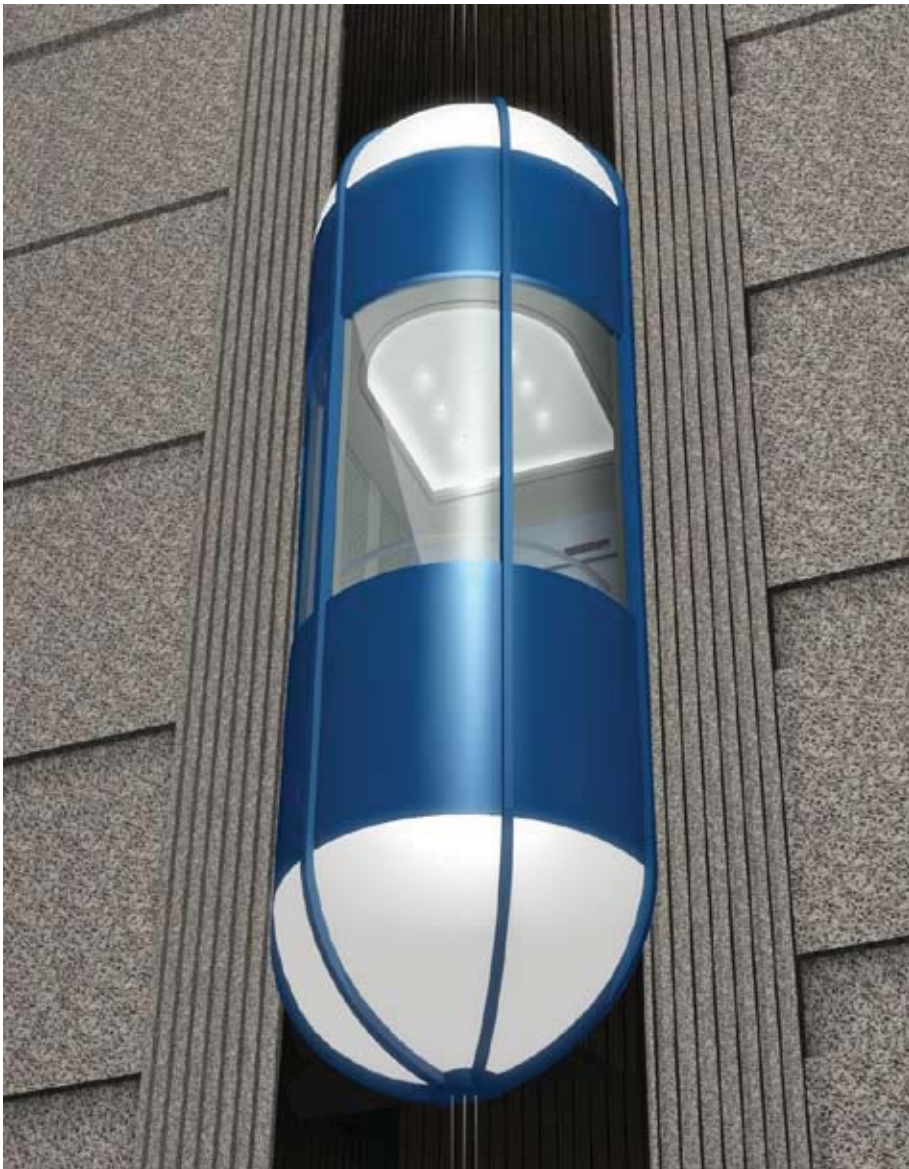
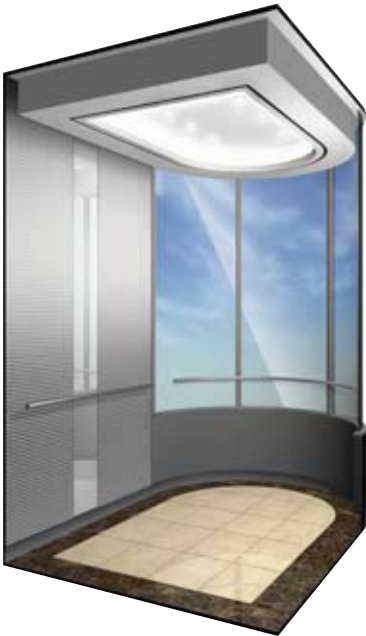
- CEILING : CD461F / Painted Steel (White) / Fluorescent illuminations through milky-white acrylic covers
- WALL : Ti-Black Linen / LED Lighting (Lantern) / Glass Etching / Transparent laminated glass (10.76T) or Tempered glass (8T)
- HANDRAIL : STS Bar Type
- FLOORING : Granite (Po-Cheon)

Notes
1. Finished product may vary slightly from these prints.
2. Number and / or size of ceiling panels and number of lighting fixtures will vary per selected car size.
3. Applicable prices will vary per selected optional designs / materials.

SEMI-CIRCLE OBSERVATION ELEVATORS



SC-846A



Exterior Design	• EXTERIOR PANELS : Painted Steel (G614008) • DECORATIVE ILLUMINATIONS : Fluorescent illuminations through milky-white acrylic covers fitted at top and bottom of the car
Cage Design	• CEILING : CD523C / Painted Steel (P021, White) / Down Lighting (LED) / Indirect Lighting (LED) • WALL : STS Mirror 3S Vibration / STS Mirror / Transparent laminated glass (10.76T) • HANDRAIL : STS 1 Pipe • FLOORING : Visenova (Crema Marfil / Marron Emperador Dark)

Notes

1. Finished product may vary slightly from these prints.

2. Number and / or size of ceiling panels and number of lighting fixtures will vary per selected car size.

3. Applicable prices will vary per selected optional designs / materials.

KEY-HOLE OBSERVATION ELEVATORS



KC-629A



Exterior Design	• EXTERIOR PANELS : Painted Steel (P006, P022) • DECORATIVE ILLUMINATIONS : Decorative Lighting / Fluorescent illuminations through milky-white acrylic covers fitted at bottom of the car
Cage Design	• CEILING : CD599A / Glass / Painted Steel (P021) / Down Lighting (LED) / Indirect Lighting (LED) • WALL : STS 3S Vibration / STS 3S Vibration Etching / Transparent laminated glass (10.76T) • HANDRAIL : STS 1 Pipe • FLOORING : Visenova (Rojo Alicante / Crema Marfil / Marron Emperador Dark)

Notes

1. Finished product may vary slightly from these prints.

2. Number and / or size of ceiling panels and number of lighting fixtures will vary per selected car size.

3. Applicable prices will vary per selected optional designs / materials.

FRAMELESS SEMI-CIRCLE OBSERVATION ELEVATORS



SC-419B



Exterior Design	• EXTERIOR PANELS : Painted Steel (P021) • DECORATIVE ILLUMINATIONS : LED Lighting (Blue) / LED Acrylic Lighting / Down Lighting (LED)
Cage Design	• CEILING : Painted Steel (P022) / Skylite 10T / LED Lighting / Down Lighting (LED) / Glass • WALL : STS Bead Blast, STS Mirror Trim / Glass • HANDRAIL : STS 1 Pipe • FLOORING : Marble (Star Galaxy)

Notes
1. Finished product may vary slightly from these prints.
2. Number and / or size of ceiling panels and number of lighting fixtures will vary per selected car size.
3. Applicable prices will vary per selected optional designs / materials.

STANDARD / OPTIONAL DESIGNS



Glass Size

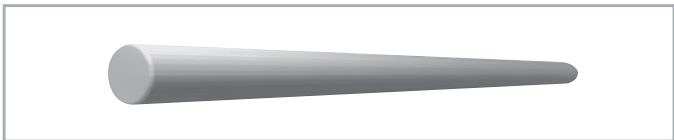


Standard



Optional

Handrail



1R (1 Pipe Stainless Polished)

Paint Color



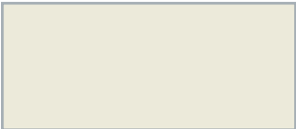
P006 (2.5GY 7 / 12)



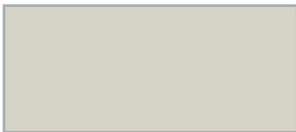
P011 (4.1R 4.3 / 12.8)



P016 (9.9YR 5.0 / 3.1)



P017 (6.7Y 8.7 / 2.0)



P019 (5.1Y 7.6 / 1.1)



P020 (Metallic Gold)



P021 (Metallic Silver)

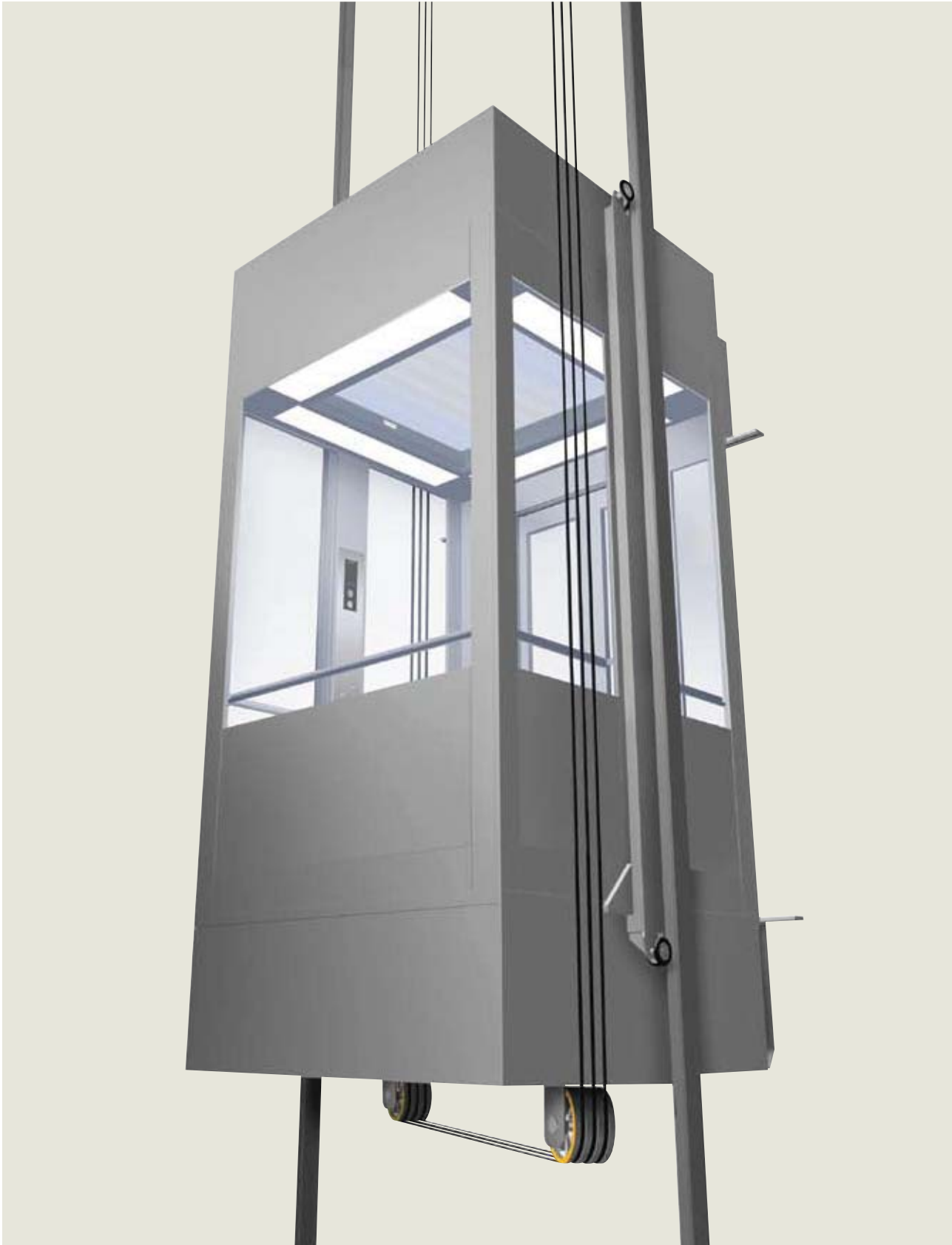


P022 (Matt Black)

Note
Finished product may vary slightly from these prints.



ND-01



Cage Design

- CEILING : CD251A / Convective Air Sterilization System / Painted Steel (P022) / Acrylic
- DOOR : STS Hairline / Transparent laminated glass (10.76T) / Semitransparent Sheet
- WALL : STS Hairline / Transparent laminated glass (12.76T)
- HANDRAIL : STS 1 Pipe
- FLOORING : Polyvinyl Tile
- OPB : OPP-D241B / OPP-N241B (For the disabled), STS Hairline Plate

Notes
1. Finished product may vary slightly from these prints.
2. Number and / or size of ceiling panels and number of lighting fixtures will vary per selected car size.
3. Applicable prices will vary per selected optional designs / materials.



ND-02



Cage Design

- CEILING : CD519D / Aluminum / Convective Air Sterilization System/ Indirect Lighting
- DOOR : STS Hairline / Transparent laminated glass (10.76T) / Semitransparent Sheet
- WALL : STS Hairline / Transparent laminated glass (12.76T)
- HANDRAIL : STS 1 Pipe
- FLOORING : Polyvinyl Tile
- INDICATOR : PI-D600
- OPB : OPP-N241B / STS Hairline Plate

Notes
1. Finished product may vary slightly from these prints.
2. Number and / or size of ceiling panels and number of lighting fixtures will vary per selected car size.
3. Applicable prices will vary per selected optional designs / materials.



NDFL-01



Cage Design

- CEILING : STS Hairline / Down Lighting (LED)
- DOOR : STS Hairline / Transparent laminated glass (over 16T) / Semitransparent Sheet
- WALL : STS Hairline / Transparent laminated glass (over 16T)
- HANDRAIL : STS 1 Pipe
- FLOORING : Marble
- INDICATOR : PI-D110
- OPB : Swing Type OPP-N260A / STS Hairline

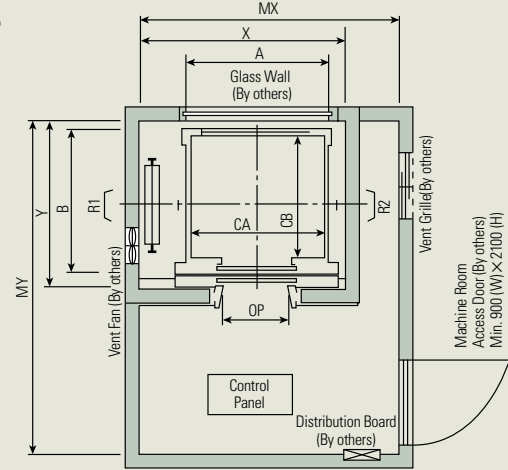
Notes
1. Finished product may vary slightly from these prints.
2. Number and / or size of ceiling panels and number of lighting fixtures will vary per selected car size.
3. Applicable prices will vary per selected optional designs / materials.

1SIDE TYPE, 2SIDE TYPE ELEVATORS Layout Plan

Gearless & Geared Elevators

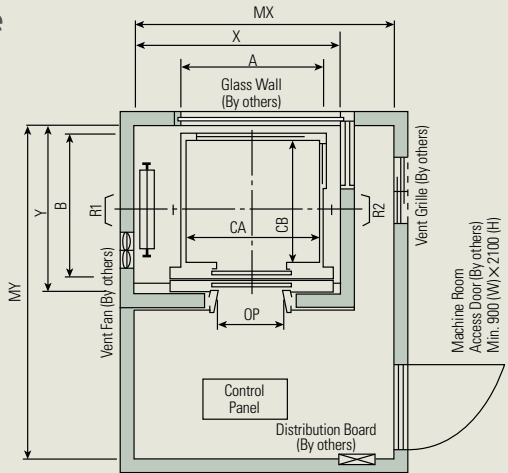
Plan of Hoistway & Machine Room

1Side Type

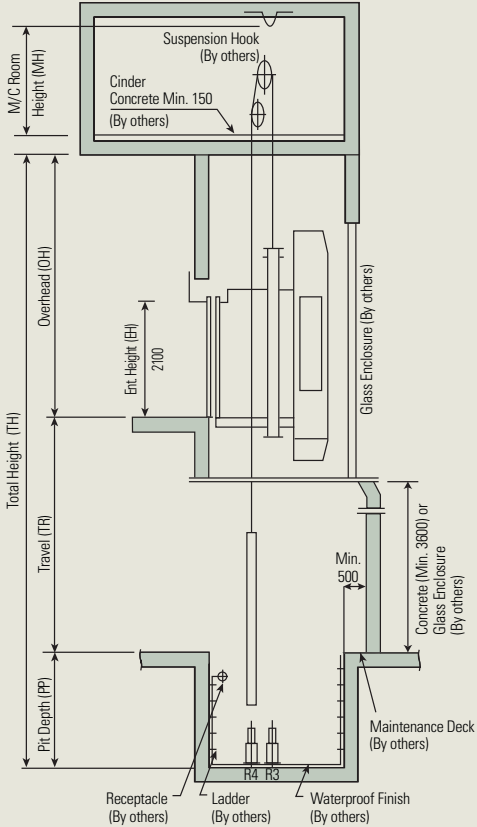


Note : Machine room temperature should be maintained below 40°C with ventilating fan and/or air conditioner (if necessary) and humidity below 90%.

2Side Type



Section of Hoistway



Standard Dimensions & Reactions

Type	Speed (m/min)	Capacity		Clear Opening	Car		Hoistway	M/C Room	M/C Room Reaction (kg)		Pit Reaction (kg)	
					Internal	External						
		Persons	kg	OP	CA × CB	A × B	X × Y	MX × MY	R1	R2	R3(Car)	R4(CWT)
1-Side Observation	60 90 105	6	450	800	1400×850	1460×1060	2200×1400	2600×2900	5000	2700	6650	5750
		8	550	800	1400×1030	1460×1240	2200×1500	2600×3000	5350	3000	7300	6200
		9	600	800	1400×1130	1460×1340	2200×1600	2600×3100	5550	3100	7600	6400
		10	700	800	1400×1250	1460×1460	2200×1750	2600×3200	5900	3300	8200	6800
		11	750	800	1400×1350	1460×1560	2200×1850	2600×3350	6100	3400	8500	7000
		13	900	900	1600×1350	1660×1560	2400×1850	3000×3350	6800	3750	9550	7750
		15	1000	900	1600×1500	1660×1710	2400×2000	3000×3500	7100	3900	10100	8150
		17	1150	1000	1800×1500	1900×1710	2850×2000	3500×3500	8900	5300	12800	10500
2-Side Observation	60 90 105	8	550	800	1400×1030	1460×1240	2200×1500	2600×3000	5400	3050	7500	6400
		9	600	800	1400×1130	1460×1340	2200×1600	2600×3100	5600	3120	7800	6600
		10	700	800	1400×1250	1460×1460	2200×1750	2600×3200	5950	3350	8400	7000
		11	750	800	1400×1350	1460×1560	2200×1850	2600×3350	6100	3450	8700	7200
		13	900	900	1600×1350	1660×1560	2400×1850	3000×3350	6850	3750	9750	7950
		15	1000	900	1600×1500	1660×1710	2400×2000	3000×3500	7150	3930	10350	8350
		17	1150	1000	1800×1500	1900×1710	2850×2000	3500×3500	9000	5400	13000	10700
		20	1350	1000	1800×1700	1900×1910	2850×2200	3500×3700	9100	6700	14250	11600
		24	1600	1100	2000×1750	2100×1960	3050×2250	3700×3750	9950	7100	15700	12500

- Notes : 1. Above dimensions are based on center opening doors. For applicable dimensions with side opening doors. Consult Hyundai.
2. When non-standard capacities and dimensions are required to meet the local code, consult Hyundai.
3. The capacity in persons is calculated at 65kg / person. (EN81=75kg / person)
4. Above dimensions are applied in case the door is standard. In case fire protection door that the clear opening is over 1000mm is applied, hoistway size for 1 car should be applied above X1 dimension plus 100mm.

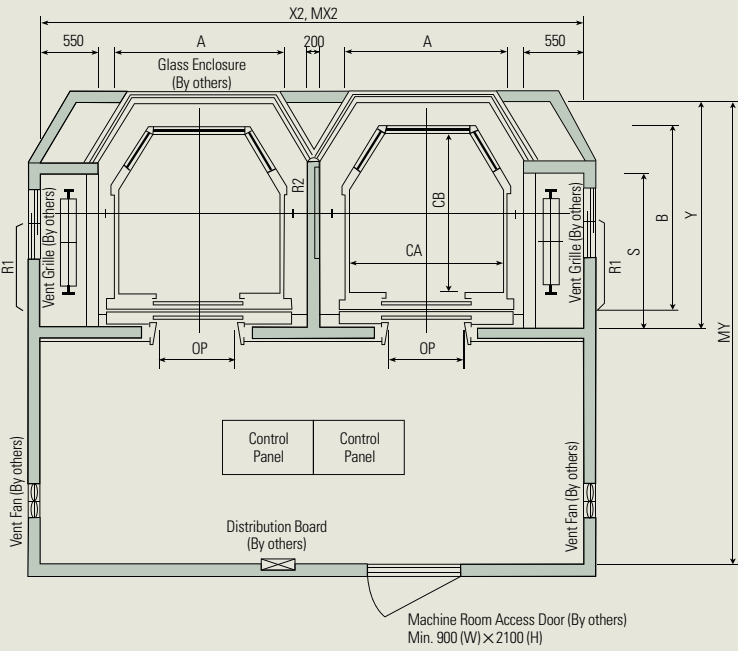
Speed (m/min)	Overhead (OH)	Pit (PP)	M/C Room Height (MH)
60	4700	1750	2200
90	4900	1800	2400
105	5000	2100	2400

- Notes : 1. The minimum hoistway dimensions are shown on the above table. Therefore, some allowances should be made considering the sloping of the hoistways.
2. The minimum machine room height should be 2800mm in case of the traction machine with double isolation pad.
3. For gearless (1:1 roping) elevators, the minimum machine room height should be 2400mm.

3SIDE TYPE ELEVATORS Layout Plan

Gearless & Geared Elevators

Plan of Hoistway & Machine Room

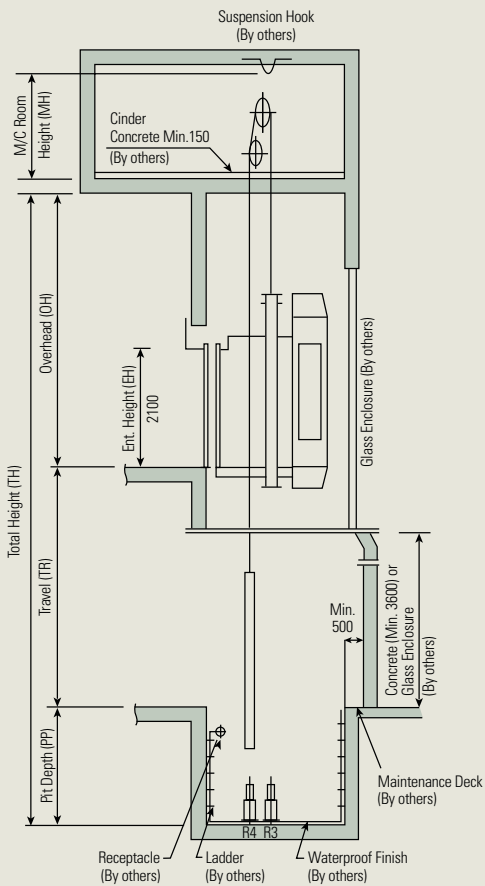


(Unit : mm)

Speed (m/min)	Overhead (OH)	Pit (PP)	M/C Room Height (MH)
60	4800	1800	2200
90	5000	2050	2400
105	5100	2050	2400

- Notes :
1. The minimum hoistway dimensions are shown on the above table. Therefore, some allowances should be made considering the sloping of the hoistways.
 2. The minimum machine room height should be 2800mm in case of the traction machine with double isolation pad.
 3. Above dimentions are changeable according to the car exterior design.

Section of Hoistway



Note : Machine room temperature should be maintained below 40°C with ventilating fan and / or air conditioner (if necessary) and humidity below 90%.

Standard Dimensions & Reactions

(Unit : mm)

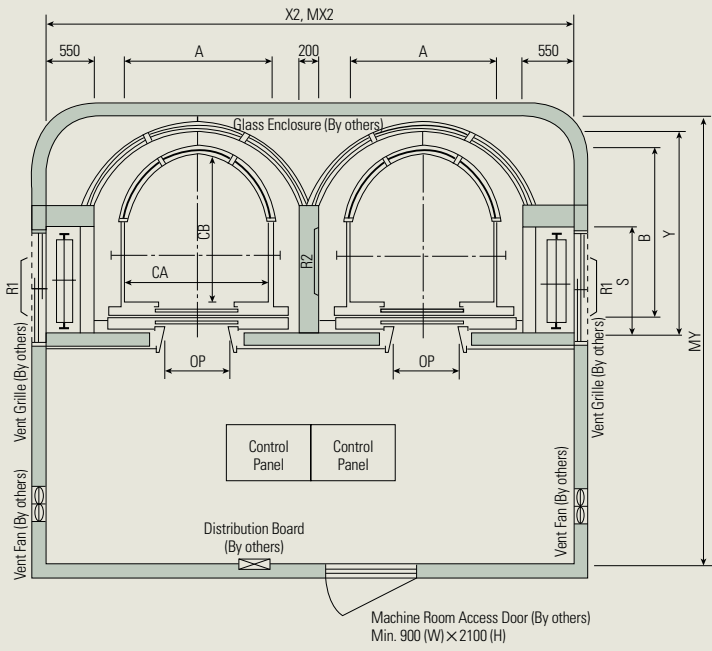
Speed (m/min)	Capacity		Clear Opening	Car		Hoistway				M/C Room			M/C Room Reaction (kg)			Pit Reaction (kg)	
				Internal	External	1Car	2Cars	Depth		1Car	2Cars	Depth	R1	R2 (1Car)	R2 (2Cars)	R3	R4
	Persons	kg	OP	CA × CB	A × B	X1	X2	Y	S	MX1	MX2	MY					
60 90 105	11	750	800	1400×1400	1460×1610	2450	5100	2000	1200	2900	5100	3500	6150	3450	6900	8700	7150
	13	900	900	1600×1450	1660×1660	2650	5500	2050	1350	3300	5500	3550	6900	3750	7500	9700	7900
	15	1000	900	1600×1570	1660×1780	2650	5500	2200	1350	3300	5500	3700	7200	3950	7900	10300	8300
	17	1150	1000	1800×1580	1900×1790	2850	6100	2200	1600	3500	6100	3700	9100	5450	10900	13150	10900
	20	1350	1000	1800×1800	1900×2010	2850	6100	2400	1600	3500	6100	3900	9150	6750	13500	14550	11850
	24	1600	1100	1800×2000	1900×2210	2850	6100	2600	1600	3500	6100	4100	10000	7150	14300	16100	12900

- Notes :
1. Above dimensions are based on center opening doors. For applicable dimensions with side opening doors, consult Hyundai.
 2. Above dimensions are applied in case the door is standard. In case fire protection door that the clear opening is over 1000mm is applied, hoistway size for 1 car should be applied above X1 dimension plus 100mm.
 3. Consult Hyundai if the capacity is 10 persons and less.

SEMICIRCLE TYPE ELEVATORS Layout Plan

Gearless & Geared Elevators

Plan of Hoistway & Machine Room

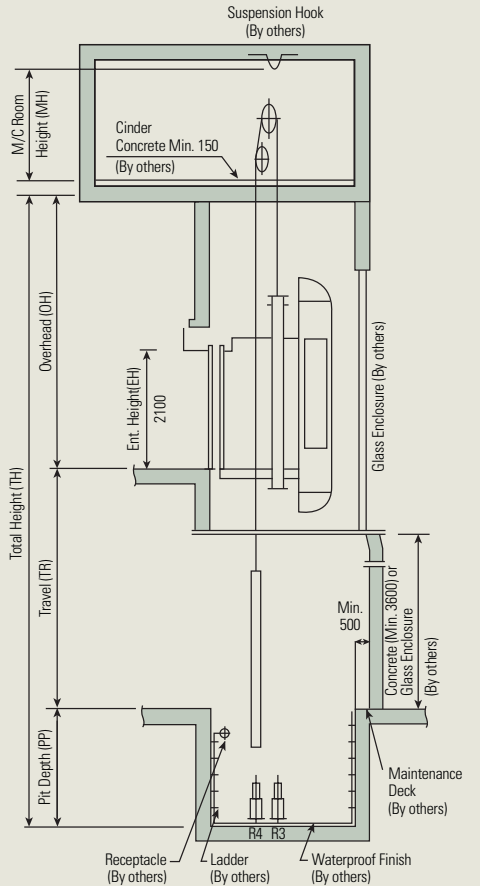


(Unit : mm)

Speed (m/min)	Overhead (OH)	Pit (PP)	M/C Room Height (MH)
60	4800	1800	2200
90	5000	2050	2400
105	5100	2050	2400

- Notes :
1. The minimum hoistway dimensions are shown on the above table. Therefore, some allowances should be made considering the sloping of the hoistways.
 2. The minimum machine room height should be 2800mm in case of the traction machine with double isolation pad.
 3. Above dimentions are changeable according to the car exterior design.

Section of Hoistway



Note : Machine room temperature should be maintained below 40°C with ventilating fan and/or air conditioner (if necessary) and humidity below 90%.

Standard Dimensions & Reactions

(Unit : mm)

Speed (m/min)	Capacity		Clear Opening	Car		Hoistway				M/C Room			M/C Room Reaction (kg)			Pit Reaction (kg)	
				Internal	External	1Car	2Cars	Depth		1Car	2Cars	Depth	R1	R2 (1Car)	R2 (2Cars)	R3	R4
	Persons	kg	OP	CA × CB	A × B	X1	X2	Y	S	MX1	MX2	MY					
60 90 105	11	750	800	1400×1480	1460×1690	2450	5100	2000	1200	2900	5100	3500	6180	3450	6900	8700	7150
	13	900	900	1600×1500	1660×1710	2650	5500	2050	1350	3300	5500	3550	6930	3750	7500	9700	7900
	15	1000	900	1600×1650	1660×1860	2650	5500	2200	1350	3300	5500	3700	7220	3950	7900	10300	8300
	17	1150	1000	1800×1650	1900×1860	2850	6100	2200	1600	3500	6100	3700	9100	5450	10900	13150	10900
	20	1350	1000	1800×1900	1900×2110	2850	6100	2400	1600	3500	6100	3900	9150	6750	13500	14550	11850
	24	1600	1100	1800×2130	1900×2340	2850	6100	2600	1600	3500	6100	4100	10050	7190	14380	16100	12900

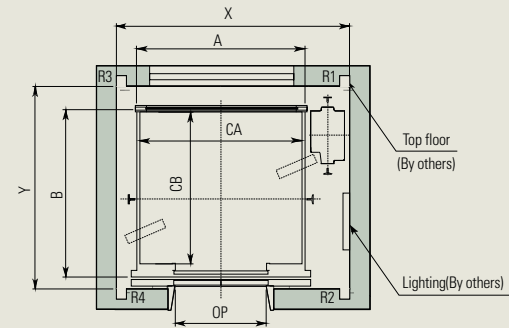
- Notes :
1. Above dimensions are based on center opening doors. For applicable dimensions with side opening doors, consult Hyundai.
 2. Above dimensions are applied in case the door is standard. In case fire protection door that the clear opening is over 1000mm is applied, hoistway size for 1 car should be applied above X1 dimension plus 100mm.
 3. Consult Hyundai if the capacity is 10 persons and less.

MRL ELEVATORS Layout Plan

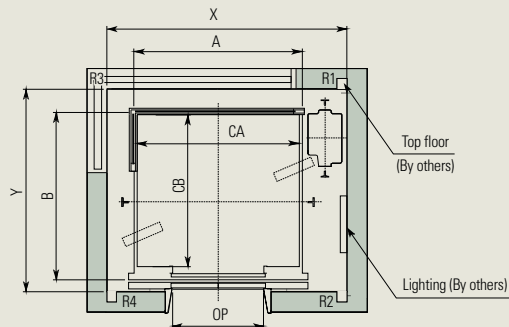
Machine-Room-Less Elevators

Plan of Hoistway & Machine Room

1Side Type

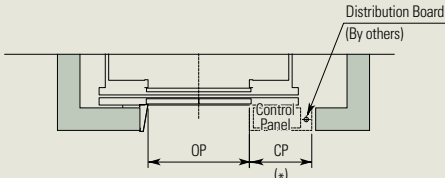
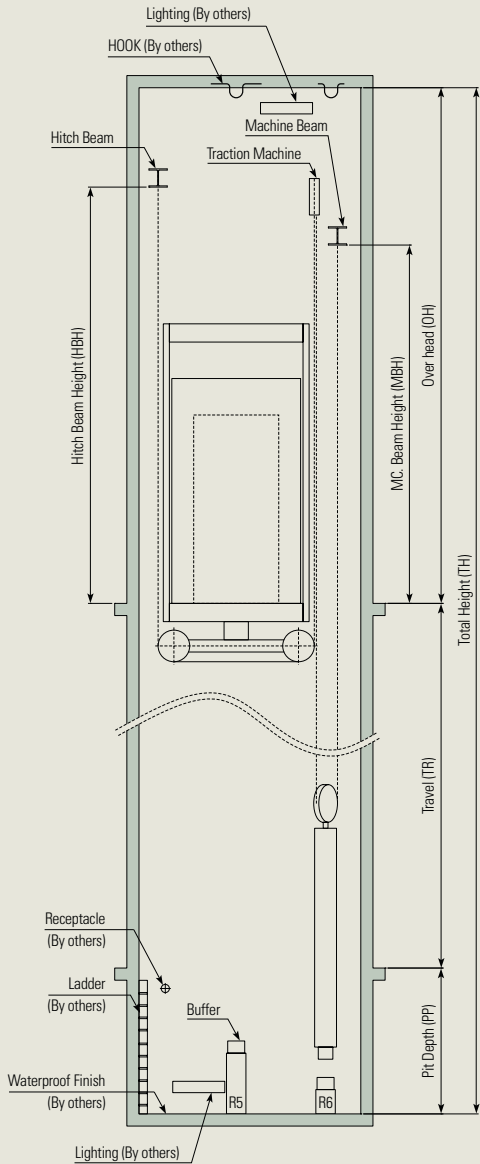


2Side Type



Floor without control panel

Section of Hoistway



Floor with control panel

Note : The lighting of hoistway should be installed less than 500mm from above the ceiling of hoistway and within 500mm above the bottom of the pit. (By others)

Standard Dimensions & Reactions

(Unit : mm)

Type	Speed (m/min)	Capacity		Clear Opening	Car		Hoistway	M/C Room Reaction (kg)				Pit Reaction (kg)	
		Persons	kg		Internal	External		R1	R2	R3	R4	R5	R6
1-Side Observation	60 90 105	8	550	800	1300×1090	1360×1300	2000×1700	4100	1950	700	1800	7500	6400
		9	600	800	1300×1160	1360×1370	2000×1800	4250	1980	750	1830	7800	6600
		10	700	800	1300×1300	1360×1510	2000×1850	4500	2050	800	1900	8400	7000
		11	750	800	1300×1400	1360×1610	2000×1900	4650	2080	900	1950	8700	7200
		13	900	900	1500×1400	1560×1610	2200×1900	5050	2250	1000	2100	9750	7950
		15	1000		1600×1350	1660×1560	2300×1850						
		17	1150	900	1800×1400	1900×1610	2600×2150	5750	3450	1100	2800	13000	10700
		20	1350	1000	1800×1600	1900×1810	2650×2400	6800	4800	1350	3150	14300	11600
2-Side Observation	60 90 105	24	1600	1100	2000×1600	2100×1810	2850×2400	7350	4950	1450	3300	15700	12500
		8	550	800	1300×1090	1460×1300	2100×1700	4250	2000	750	1940	7700	6600
		9	600	800	1300×1160	1460×1370	2100×1800	4450	2030	800	1980	8000	6800
		10	700	800	1300×1300	1460×1510	2100×1850	4750	2100	850	2080	8600	7200
		11	750	800	1300×1400	1460×1610	2100×1900	4900	2150	950	2100	8900	7400
		13	900	900	1500×1400	1560×1610	2300×1900	5400	2300	1050	2300	9950	8150
		15	1000		1600×1350	1660×1560	2400×1850						
		17	1150	900	1800×1400	1760×1610	2400×1900	5750	2400	1100	2500	10550	8550
		20	1350	1000	1800×1600	1960×1810	2710×2400	7730	4850	1400	3500	14450	11800
		24	1600	1100	2000×1600	2160×1810	2910×2400	8250	5000	1500	3650	15900	12700

- Notes :
- When non-standard capacities and dimensions (including fire protection doors) are required to meet the local code, please consult Hyundai.
 - The minimum hoistway dimensions are shown on the above table. Therefore, some allowances should be made considering the sloping of the hoistways.
 - The capacity in persons is calculated at 65kg / person. (EN81=75kg / person)
 - If the height of floor is over 11m, please consult Hyundai as to the needs for emergency exit.
 - Above dimensions are applied in case the door is standard. In case fire protection door that the clear opening is over 1000mm is applied, hoistway size for 1 car should be applied above X1 dimension plus 100mm.
 - In case the emergency stop switch is applied to the counter weight, consult Hyundai.
 - If the car is heavier than 1000kg because of interior decoration in case of elevator for 15 persons (1000kg), consult Hyundai.
 - For one side observation elevator, with the glass wall on the side of the cage, minimum hoistway dimension needs to be (X + 100) × Y.

(Unit : mm)

Person	Speed (m/min)	Overhead (OH)	Pit (PP)	MC. Beam Minimum Height (MBH)	Hitch Beam Minimum Height (HBT)	Control Panel (CP)
8 ~ 15	60	4300	1750	2400	3700	530
	90	4450	1800	2750	3700	
	105	4500	2000	2750	3700	
17	60	4300	1800	2400	3800	530
	90	4450	1900	2750	3800	
	105	4500	2000	2750	3800	
20 ~ 24	60	4600	1800	2950	3800	530
	90	5000	1900	3350	3800	630
	105	5000	2100	3350	3800	630

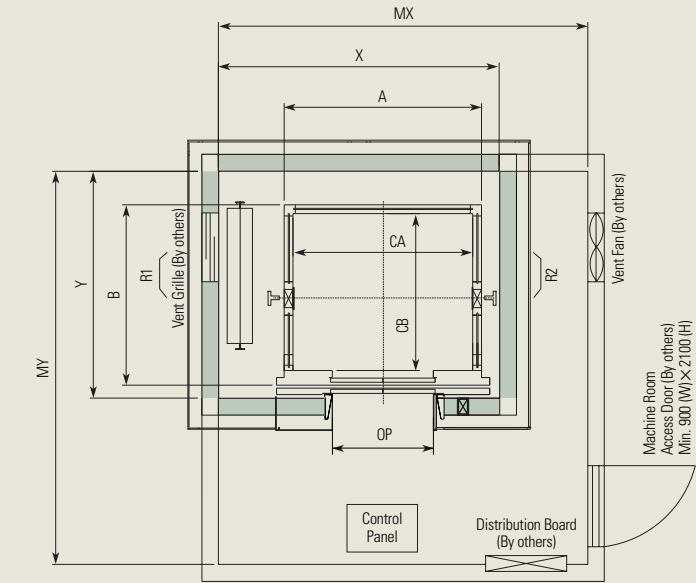
- Notes :
- Above dimensions are applied for car height of 2500mm (car internal height is 2300mm). For other applicable dimensions, consult Hyundai.
 - The minimum hoistway dimensions are shown on the above table. Therefore, some allowances should be made considering the sloping of the hoistways.
 - When face to face arrangement is required, partitioning work for hoistway is required. (EN81)
 - If the hoistway is glass, consult Hyundai as it needs to finish joining glass. (EN81)
 - The lighting should be installed at the top and bottom of hoistway.
 - When non-standard capacities and dimensions are required to meet the local code, please consult Hyundai Elevator.
 - For semi-observation elevator (60m/min) with capacity over 17 persons, the minimum pit depth is to be 1600mm.

GLASS WALLED ELEVATORS Layout Plan

Gearless & Geared / MRL Elevators

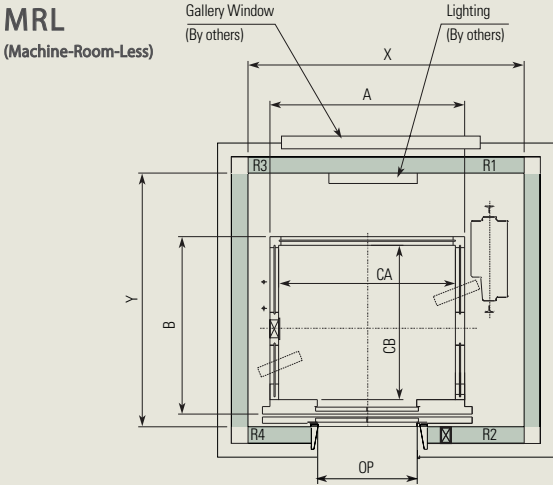
Plan of Hoistway & Machine Room

Gearless & Geared



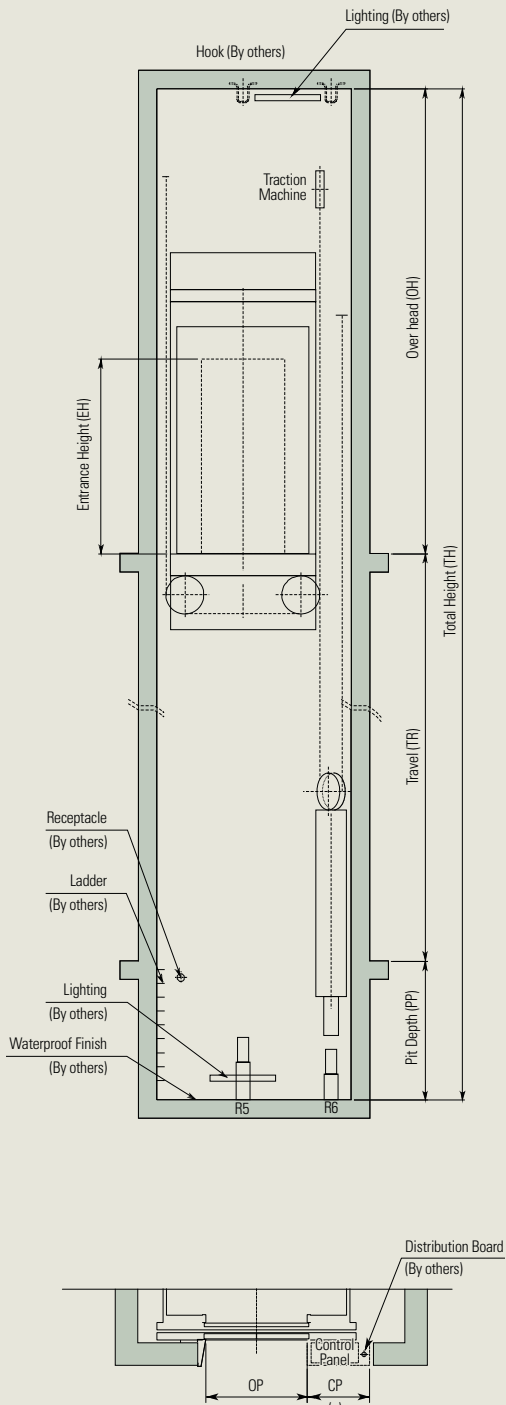
Floor without control panel

MRL
(Machine-Room-Less)



Floor without control panel

Section of Hoistway



Floor with control panel

Note : The lighting of hoistway should be installed less than 500mm from above the ceiling of hoistway and within 500mm above the bottom of the pit. (By others)

Standard Dimensions & Reactions | Gearless & Geared Elevators

(Unit : mm)

Type	Speed (m/min)	Capacity		Clear Opening	Car		Hoistway	M/C Room	M/C Room Reaction (kg)		Pit Reaction (kg)	
		Persons	kg		Internal	External			R1	R2	R5	R6
Glass walled Elevators	45 60 90 105	8	550	800	1400×1030	1560×1240	2300×1500	2700×3000	5450	3035	7800	6700
		9	600	800	1400×1130	1560×1340	2300×1600	2700×3100	5640	3150	8200	7000
		10	700	800	1400×1250	1560×1460	2300×1750	2700×3200	6010	3370	8750	7350
		11	750	800	1400×1350	1560×1560	2300×1850	2700×3350	6180	3480	9300	7800
		13	900	900	1600×1350	1760×1560	2500×1850	3100×3350	6930	3795	10350	8550
		15	1000	900	1600×1500	1760×1710	2500×2000	3100×3500	7220	3970	11050	9050
		17	1150	1000	1800×1500	1960×1710	2750×2000	3600×3500	9100	5440	13650	11350
		20	1350	1000	1800×1700	1960×1910	2890×2200	3600×3700	9144	6760	15300	12600
		24	1600	1100	2000×1750	2160×1960	3090×2250	3800×3750	10020	7190	16800	13600

Speed (m/min)	Overhead (OH)	Pit (PP)	M/C Room Height (MH)
45	4500	1500	2200
60	4700	1500	2200
90	4900	1800	2400
105	5000	2100	2400

Notes : 1. The machine room reactions are changeable according to the size of hoistway and center of car weight.
2. The same dimension of passenger elevators apply to the others except the above.
3. For NDFL-01 (Glass walled) type, consult Hyundai Elevator since hoistway dimension and machine room reactions for NDFL-01 (Glass walled) type are changeable under different conditions.

Standard Dimensions & Reactions | MRL Elevators (Machine-Room-Less)

(Unit : mm)

Type	Speed (m/min)	Capacity		Clear Opening	Car		Hoistway	M/C Room Reaction (kg)				Pit Reaction (kg)	
		Persons	kg		Internal	External		R1	R2	R3	R4	R5	R6
Glass walled Elevators	45 60 90 105	8	550	800	1300×1100	1460×1310	2130×1750	4295	1870	660	1960	8150	7050
		9	600	800	1300×1190	1460×1400	2130×1800	4515	1910	740	2010	8500	7300
		10	700	800	1300×1300	1460×1510	2130×1850	4820	2030	840	2100	9050	7650
		11	750	800	1300×1400	1460×1610	2130×1900	4975	2030	910	2110	9450	7950
		13	900	900	1500×1400	1660×1610	2330×1900	5480	2240	1010	2350	10500	8700
		15	1000	900	1600×1400	1760×1610	2430×1900	5840	2385	1077	2521	11150	9150
		17	1150	1000	1800×1400	1960×1610	2700×2150	6745	3220	1154	3185	13750	11450
		20	1350	1000	1800×1600	1960×1810	2750×2350	7810	4515	1310	3530	15650	12950
		24	1600	1100	2000×1700	2160×1910	2950×2400	8345	4650	1480	3720	16850	13650

Speed (m/min)	Persons	Overhead (OH)	Pit (PP)	Speed (m/min)	Persons	Overhead (OH)	Pit (PP)
45, 60	Max.15	4200	1500	45	20, 24	4850	1600
	17	4200	1600	60		4850	
90	Max.17	4300	1800	90		5000	1800
105		4400	2000	105		5000	2100

Notes : 1. The machine room reactions are changeable according to the size of hoistway and center of car weight.
2. The same dimension of passenger elevators apply to the others except the above.
3. For NDFL-01 (Glass walled) type, consult Hyundai Elevator since hoistway dimension and machine room reactions for NDFL-01 type are changeable under different conditions.

WORKS TO BE DONE BY OTHER CONTRACTORS



The following works are not included in the elevator contract, and shall be done by other contractors in accordance with the Hyundai Elevator’s drawings and the applicable codes and regulations. The reference rules shown are from Code ANSI.

Building Work

Hoistway

- 1. Clear, plumb hoistway with fire resistant hatch walls as required by the applicable code. (Rule 100.1a)
- 2. 75° bevel guards on all projections, recesses, or setbacks over 50mm except on side used for loading or unloading. (Rule 100.6)
- 3. Venting of the hoistway as required by the applicable code or responsible authority. (Rule 100.4)
- 4. Supports for rail brackets at each floor, roof, and machine room. (Rule 200.9) Maximum allowable vertical spacing of rail supports without backing. (Rule 200.4 and 301.1) Divider beams 100mm between hoistway at each floor and roof, for guide rail bracket supports. (Rule 200.4, 200.9 and 301.1)
- 5. Recesses supports and patching as required to accommodate hall button boxes, signal fixtures, etc.
- 6. All barricades either outside elevator hoistways or between inside hoistways as required.
- 7. Dry pit reinforced to sustain normal vertical forces from rails and buffers. (Rule 106.1b and 109) Consult Hyundai Elevator Company for rail forces and buffer impacts. Where there is space below the pit floor that can be occupied, consult Hyundai Elevator Company for special requirements. (Rule 300.4) Cylinder hole, casings under the pit as required, and backfilling around the cylinder casings when direct plunger type is to be installed.
- 8. Where access to the pit is by means of the lowest hoistway entrance, vertical iron ladder extending 1060mm minimum above sill of access door. (Rule 106.1d)
- 9. Entrance walls and finished floor are not to be constructed until after door frames and sills are in place. Door frames are to be anchored to walls and properly grouted in place to maintain legal fire rating.
- 10. For application as indoor or outdoor observation elevator, a glass enclosure of at least 3.6m in height at the bottom landing is recommended for safety. For use as an outdoor observation elevator, a full-height glass enclosure is required.

Machine Room

- 11. Enclosed and protected machine room. (Rule 101.1)
- 12. Access to the machine room and machinery space as required by the applicable code or responsible authority. (Rule 101.3)
- 13. Reinforced concrete machine room floor slab or grating, as specified, which must not be placed over the hoistway until elevator machinery is set in position. (Rule 100.3 for Traction Elevator) Clear access above ceiling or trench in floor, for oil line and wiring duct from machine room, if machine room is remote from elevator hoistway. (For Hydraulic Elevator) Cutout through machine room wall, for oil line and wiring duct as required by Hyundai Elevator’s shop drawings. (For Hydraulic Elevator)

- 14. Hoisting beams, trap doors, and other means of access to machine room for maintenance and equipment removal purposes. (Rule 101.3d)
- 15. Cable guards in the machine room or secondary level. (Rule 104.1)
- 16. Supports for machine and sheave beams and reactions including wall pockets and patching after beams are set in place. (Rule 105.1 to 105.5)

Electrical Work

Hoistway

- 1. Light outlet for each elevator, in center of hoistway (or in machine room) as indicated by Hyundai Elevator Company.
- 2. Convenience outlet and light fixture in pit with switch located adjacent to the access door. (Rule 106.1e)
- 3. Wiring and piping work of emergency bell, interphone, etc. outside the hoistway and the machine room.

Machine Room

- 4. Lighting, convenience outlets, ventilation, heating of machine room, and machinery space. (Rule 101.5)
- 5. Temperature should be maintained below 40°C by a ventilating fan and / or air conditioner, if necessary, and humidity below 90%.
- 6. A fused disconnect switch or circuit breaker for each elevator and light switch located per the applicable code and where practicable located adjacent to the door of the machine room. (Rule 210.5 and 306.7)
- 7. Feeder and branch wiring to the controller, including main-line switch and convenience outlets.
- 8. Suitable power feeder and branch wiring circuits as required for elevators with power-operated doors, including disconnect switch or circuit breaker.

Emergency Provisions

- 9. Elevator fireman’s and other emergency services wiring and interconnections to automatic sprinkler systems or heat and smoke sensing devices furnished by others and installed to terminal points on the elevator controllers.
- 10. When emergency power operation of elevators is required, the electrical contractor should coordinate with Hyundai Elevator Company or local distributor for operation requirements.
- 11. Elevator fireman’s and other emergency service requirements may differ from each country. Consult Hyundai Elevator Company or local distributor for other local requirements.
- 12. When provisions for earthquake protection are required, consult Hyundai Elevator Company for special requirements.

SPECIAL NOTES ON PLANNING THE INSTALLATION



In planning the installation of observation elevators, the architect as well as the product designer should consider the unique design features and special requirements of observation elevators. These special notes should be carefully considered for both building construction and product engineering.

Observation Elevator Hoistway Requirement

- Observation and glass-walled elevator’s hoistway glass needs to be laminated glass. Please consult Hyundai when using other type of glass.
- Hoistway’s glass joint needs to be water-proof.

Exterior Lighting

- The lamps used for the exterior illumination shall be designed for long life and easy replacement.
- The electric power requirements may vary per elevator models and illumination designs, however the proper power source required is AC 1Ø, 220V, 20-30A range.

Air-Conditioning & Ventilation

- The in-car temperature of the observation elevator can be highly increased because of the solar radiation heat, this factor should be considered in planning the hoistway layout.
- When required by the building, the air-conditioner can be installed on the observation elevator. When the air-conditioner is installed, a water drain is required in the pit.
- The hoistway and the machine room should be properly ventilated to prevent excessive temperature rise.

Data Required for Elevator Estimation

- | | |
|--|---|
| – Project Name and Location | – Machine Location (Overhead or Basement) |
| – Applicable Code (ANSI, BS, JIS, CEN, etc.) | – Travel, Overhead & Pit Depth |
| – Required Delivery | – Hoistway width, Depth and Elevation |
| – Type & Units in System | – Door Width & Height |
| – Capacity | – Car & Entrance Design |
| – Speed | – Signal Fixtures |
| – Control / Operation System | – Special Features Required |
| – Landings & Openings (Front & Rear) | – Power Supply |

Hoistway Structures & Others (Proposal)

- To facilitate the inspection, maintenance and cleaning of the car exteriors, an access hole and min. 500mm wide maintenance deck with a glass or concrete enclosure should be provided at the bottom of the hoistway (usually at the basement level).
- To prevent the breakage of the hoistway glass from the outside, 1.8 meters high concrete enclosure shall be provided at ground level.
- When the hoistway glass is directly exposed to the public, a fence should be installed at min. 1.5 meters distance from the hoistway to prevent access.
- When any especially-designed car top & bottom is required, the pit depth and overhead requirement may change.
- When an outdoor type observation elevator is required for application in an outside openhoistway, special engineering is required for protection from water, corrosion, ice, wind, dusts, etc.

Heat Emission of Machine Room

$$Q : (\text{kcal/H}) = W \times V \times F \times N$$

W : Capacity (kg) F : Factor (1/40 - VVVF)
V : Speed (m/min) N : Number of cars

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