HITACHI

LGE

Machine Room-less Elevator
Planning Guide

Content

Elevator Specification

No. of Passengers ①	Rated Load (kg)	Rated Speed (m/min)	Maximum Number of Stops	Maximum Travel (m)	Maximum Travel with Fireman Operation (m)	Minimum Floor Height (mm)
5	400	60	12	30	—	2800
6	450					
8	630	60/90/105	60m/min:22 90m/min:36 105m/min:36	60m/min:60 90m/min:90 105m/min:90	60m/min:58 90m/min:86 105m/min:90	
11	825					
13	1000					
14	1050 (Deep Car)					
15	1150					
18	1350					
21	1600					

Note:
① Passenger numbers calculated at 75kg per person.
② The above information is based on GB7588-2003 standards.

Standard Function

Control System			
SA1	Selective Collective Control	SA2	Floor Height Self Measurement
SA3	On-Cage (Car Top) Maintenance Operation	SA4	In-Cage Slow Speed Operation
System Protection			
SB1	Overspeed Electrical Protection	SB2	Overspeed Mechanical Protection
SB3	Rope Slipping Running Protection	SB4	Motor Overload (Thermal) Protection
SB5	Automatic Fault Detection	SB6	Automatic Fault Recording
SB7	Standby Regular Auto-Check	SB8	Double Brake-Safety Check Operation
SB9	Synchronous Motor Magnetic Pole Test	SB10	Lift-Position Abnormity Auto-Correction Function
SB11	Nearest Landing Operation	SB12	Anti-Electromagnetic Interference
SB13	Unintended Car Movement Protection, UCMP Function ①	SB14	Intelligent Auxiliary Brake Function
SB15	Ascending Car Overspeed Protection, ACOP Function		
Safe Communication			
SC1	Car Intercom Communication	SC2	Car Top Intercom Communication
SC3	Pit Intercom Communication		
Safe Riding			
SD1	Alarm System	SD2	Door Safety Return System
SD3	Full Load Bypass Operation	SD4	Overload Detection System
SD5	Overload Alarm	SD6	Next Drive (Door Open Abnormity)
SD7	Door Opening/Closing Time Abnormity Protection	SD8	Automatic Door Dwell Time Control
SD9	Automatic Door Dwell Time Adjustment	SD10	Number of Runs Indicator
SD11	Intelligent Multi-Beam Protection ①	SD12	Maintenance Indication at Hall Indicator ①
SD13	Overload Indicator (In Car)		
Emergency Solution			
SE1	Out of Door-Open Zone Alarm	SE2	Car Emergency Lighting
SE3	Fire Emergency Operation (Automatic)	SE4	Emergency Electric Operation
Design for Comfort			
SF1	Parking Operation	SF2	Automatic Return Function
SF3	Start Torque Auto-Adjustment	SF4	Door-Stop Function (Maintenance)
SF5	Micro Levelling (Travel ≥ 30m)	SF6	Mischievous Call Cancellation (Applicable for Simplex and Duplex only)
SF7	Opposite Direction Car Call Cancellation	SF8	Car Light Auto Turn-Off
SF9	Car Fan Auto Turn-Off	SF10	Abnormal Duration Hall Call Detection
SF11	Step-Less Speed Control	SF12	Door Bypass Detection
SF13	Car Floor Button Flashing		

Note:
① For details, please contact us.

Elevator Function

Optional Function

Control System			
OA1	Down Collective Control	OA2	Duplex Collective Control
OA3	FI-10 Group Control System (Maximum 4 Cars Group)	OA4	Independent Automatic Operation (For Duplex and Group Control) ①
OA5	Rush Hour Schedule Operation (Applicable for FI-10 only)		
Safe Communication			
OB1	Interphone System (5 Ways) (5 Ways: Monitoring Center, Inspection Panel, In Car, Car Top and Pit)		
Safe Riding			
OC1	IC Card System (In Car) (Not Applicable with OC2, OC4, OC5 or OE5)	OC2	IC Card System (Hall) (Not Applicable with OC1, OC4, OC5 or OE5)
OC3	Multi-Beam + Safety Edge Protection	OC4	Hitachi Smart Security [ITM] Interface (Not Applicable with OC1, OC2, OC5 or OE5)
OC5	Building Intercom Linkage Interface (RS485 / Dry Contact) (Not Applicable with OC1, OC2, OC4 or OE5)	OC6	Contact at Control Panel (RS485)
OC7	Contact at Control Panel (Dry Contacts) (Not Applicable with OC8)	OC8	Supervisory Panel (Dry Contact Type) (Not Applicable with OC7)
OC9	Elevator Monitoring System (Computer Type)	OC10	Twisted Pair Cable (1 Pair) for CCTV Interface
OC11	Twisted Pair Cable (1 Pair) for BGM Interface		
Emergency Solution			
OD1	Fireman Operation (Rated Load ≥ 825kg)	OD2	Automatic Rescue Device (ARD) (Maximum Travel Distance Between Landings ≤ 30m)
OD3	Emergency Operation for Power Failure (Manual)	OD4	Emergency Operation for Power Failure (Auto)
OD5	Earthquake Emergency Operation	OD6	Pit Flood Operation
Design for Comfort			
OE1	Attendant Operation	OE2	Independent Operation
OE3	Voice Synthesiser	OE4	Arrival Chime (Car Top)
OE5	Floor Lockout Operation (Not Applicable with OC1, OC2, OC4 or OC5)	OE6	Door Opening Prolong Button
OE7	Overloading Hall Call Recovery Function	OE8	Sub Car Operating Panel
OE9	Double Opening Function	OE10	Horizontal Car Operating Panel
OE11	Braille Button	OE12	Door Nudging Operation (Only Applicable with OC3)
OE13	Operation Status Indication at Hall Indicator ①	OE14	Regenerative System Function ①
OE15	Car Call Deselect Function	OE16	Hall Call Deselect Function
OE17	Quick Door Closing Function (In Car)	OE18	Hall Lantern with Arrival Chime
OE19	Micro Levelling (Travel < 30m)	OE20	Advance Door Opening
OE21	Elevator Specific Floor Door Opening Inspection Interface	OE22	Current Floor Push-Button Reopening Function

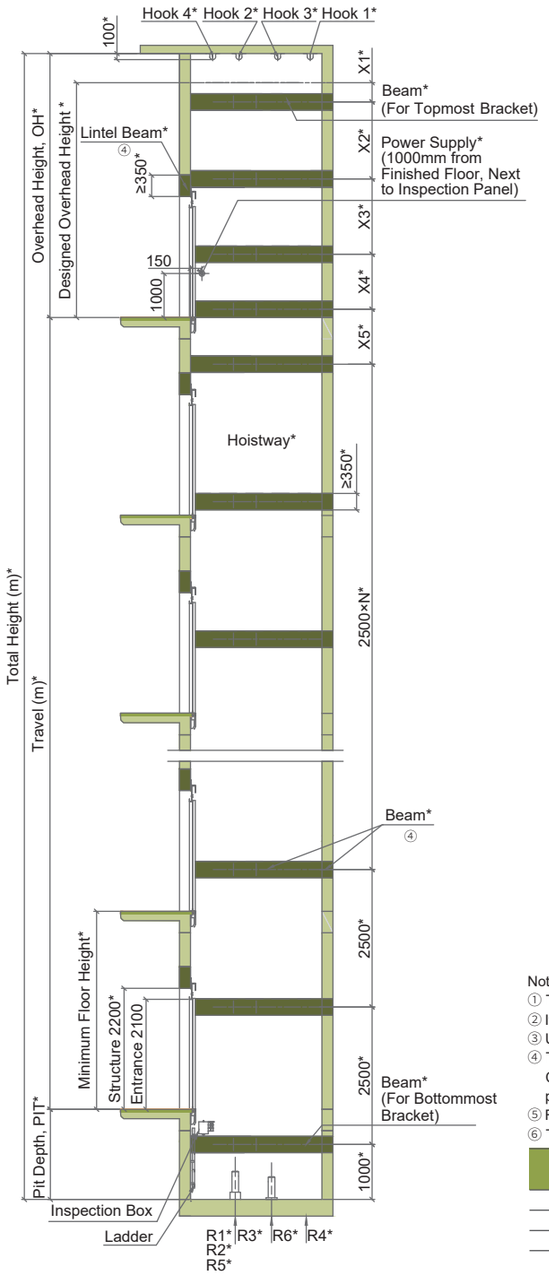
Note:
① For details, please contact us.

Hoistway

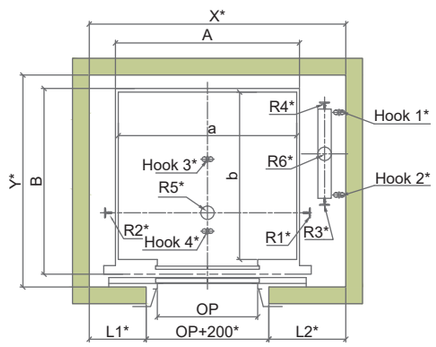
The followings shall be furnished by building contractors:

- Building Structure
- Wall and Floor Finishes
- Beam

Hoistway Section



Hoistway Plan



Note:
① The above information is based on GB7588-2003 standards.
② Items with "*" shall be furnished by building contractors.
③ Unit of dimension shall be in mm unless otherwise stated.
④ The hoistway construction shall be reinforced concrete ring beam with strength C25 or whole hoistway of reinforced concrete wall. If you have other situations, please contact us.
⑤ For hoistway details, please contact us.
⑥ The suspension hooks capacity shall be as follows:

Rated Load (kg)	Rated Speed (m/min)	Hook 1 (Tons)	Hook 2 (Tons)	Hook 3 (Tons)	Hook 4 (Tons)
400/450	60	1	1	3	3
630/825/1000/1150	60/90/105	1	1	3	3
1350/1600	60/90/105	2	2	4	4

Hoistway

Rated Load (kg)	Rated Speed (m/min)	Car Size(mm)		Door Opening(mm)		Front Wall Arrangement(mm)		Hoistway Size (mm)	Pit Reaction Force(KN)					
		Car Inside (axb)	Car Outside (AxB)	Type	Width OP	L1	L2	X×Y	R1	R2	R3	R4	R5	R6
400	60	1000×1100	1050×1260	2P-CO	700 (Door Offset)	385	415	1700×1550	40	30	30	25	100	90
450	60	1000×1300	1050×1460	2P-CO	700 (Door Offset)	385	415	1700×1700	40	30	30	25	100	90
630	60	1100×1400	1150×1560	2P-CO	800 (Door Offset)	385	415	1800×1800	65	50	50	45	110	100
	90/105					395	405	1800×1850						
825	60/90/105	1350×1400	1400×1560	2P-CO	800	420	580	2000×1850	75	55	55	45	120	105
		1250×1500	1300×1660			420	530	1950×1900						
		1300×1500	1350×1660			395	555	1950×1900						
		1200×1600	1250×1760			395	505	1900×2000						
1000	60/90/105	1600×1400	1650×1560	2P-CO	900	495	655	2250×1850	80	65	60	50	135	115
		1600×1500	1650×1660			495	655	2250×1900						
		1500×1500	1550×1660			445	605	2150×1900						
		1400×1600	1450×1760			445	555	2100×2000						
		1500×1600	1550×1760			445	605	2150×2000						
		1700×1300	1750×1460			545	705	2350×1700						
1150	60/90/105	1800×1450	1850×1610	2P-CO	1000	545	705	2450×1850	95	75	70	60	155	130
1350	60/90/105	2000×1500	2050×1660	2P-CO	1100	655	795	2750×2000	100	80	70	65	170	150
1600	60/90/105	2000×1700	2050×1860	2P-CO	1100	655	795	2750×2100	105	85	75	65	170	150

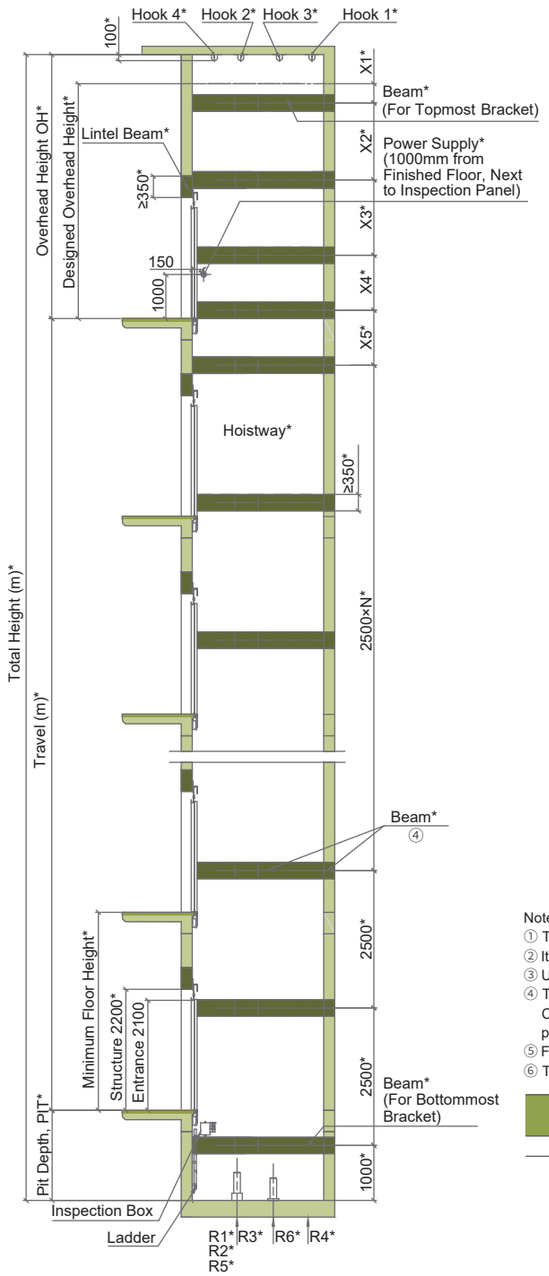
Rated Load(kg)	Rated Speed(m/min)	Overhead Height, OH(mm)	Pit Depth, PIT(mm)
400	60	3750	1350
450	60	3750	1350
630	60	3750	1350
	90	3900	1400
	105	3950	1450
825	60	3750	1350
	90	3900	1400
	105	3950	1450
1000	60	3750	1600
	90	3900	1650
	105	3950	1650
1150	60	3750	1600
	90	3950	1700
	105	3950	1700
1350	60	3750	1600
	90	3950	1700
	105	3950	1700
1600	60	3750	1700
	90	3950	1800
	105	3950	1800

Note:
① The above information is based on GB7588-2003 standards.
② The above information and configuration are based on right side counterweight layout.
③ The overhead height, OH is based on bare ceiling height of 2300mm.
④ The pit depth, PIT is based on vinyl tile finish without recess.
⑤ Configuration is without counterweight safety gear.
⑥ For rated load 400 ~ 630kg, it is based on 50mm door offset configuration.
⑦ Configuration is based on the following decoration weight provision:
For rated load 400 / 450kg, decoration weight provision is up to 200kg.
For rated load 630 ~ 1000kg, decoration weight provision is up to 350kg.
For rated load 1150 ~ 1600kg, decoration weight provision is up to 500kg.

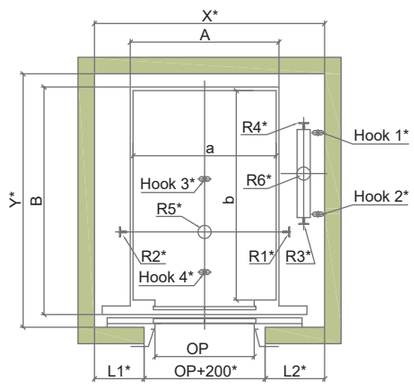
The followings shall be furnished by building contractors:

- Building Structure
- Wall and Floor Finishes
- Beam

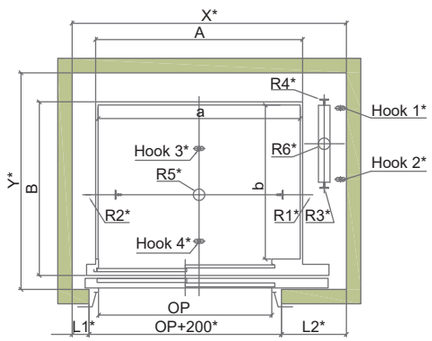
Hoistway Section



Hoistway Plan
(Deep Car)



Hoistway Plan
(Wide Car)



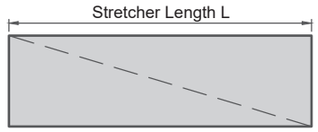
Note:
① The above information is based on GB7588-2003 standards.
② Items with "*" shall be furnished by building contractors.
③ Unit of dimension shall be in mm unless otherwise stated.
④ The hoistway construction shall be reinforced concrete ring beam with strength C25 or whole hoistway of reinforced concrete wall. If you have other situations, please contact us.
⑤ For hoistway details, please contact us.
⑥ The suspension hooks capacity shall be as follows:

Rated Load (kg)	Rated Speed (m/min)	Hook 1 (Tons)	Hook 2 (Tons)	Hook 3 (Tons)	Hook 4 (Tons)
1050	60/90/105	1	1	3	3

Deep / Wide Car

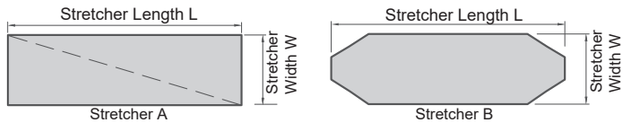
Rated Load (kg)	Rated Speed (m/min)	Car Size (mm)		Door Opening (mm)		Front Wall Arrangement (mm)		Hoistway Size (mm)	Pit Reaction Force (KN)					
		Car Inside (a ×b)	Car Outside (A ×B)	Type	Width OP	L1	L2	X×Y	R1	R2	R3	R4	R5	R6
1050 (Deep Car)	60/90/105	1100×2100	1150×2260	2P-CO	900	410	410	1920×2500	80	65	60	50	135	115
		1300×1900	1350×2060			440	510	2050×2300						
		1100×2100	1150×2298	2S-2P	900	145	505	1750×2550						
		1300×1900	1350×2098			145	705	1950×2350						
1050 (Wide Car)	60/90/105	2000×1200	2050×1360	2P-CO	1000 (Door Offset)	610	850	2660×1850	80	65	60	50	135	115
		2000×1200	2050×1398	2S-2P	1200	315	945	2660×1900						

Maximum Allowable Stretcher Size (Deep Car):



Car Inside Size (a ×b) (mm)	Maximum Stretcher Length L (mm)	Lift Landing Depth (mm)
1100×2100	2100	≥2300
1300×1900	1900	≥2100

Maximum Allowable Stretcher Size (Wide Car):



Car Inside Size (a ×b) (mm)	Opening Width, OP (mm)	Maximum Stretcher Size (L ×W) (mm)		Lift Landing Depth (mm)
2000×1200	1200	1900×550	Stretcher A	≥1500
2000×1200	1000	1900×550	Stretcher B	≥1500

Rated Load (kg)	Rated Speed (m/min)	Overhead Height, OH (mm)	Pit Depth, PIT (mm)
1050 (Deep / Wide Car)	60	3750	1600
	90	3900	1650
	105	3950	1650

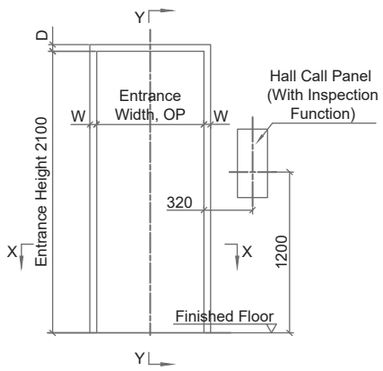
Note:
① The above information is based on GB7588-2003 standards.
② The above information and configuration are based on right side counterweight layout.
③ The overhead height, OH is based on bare ceiling height of 2300mm.
④ The pit depth, PIT is based on vinyl tile finish without recess.
⑤ Configuration is without counterweight safety gear.
⑥ For wide car with 2P-CO door opening type, it is based on 200mm door offset configuration.
⑦ Configuration is based on decoration weight provision up to 500kg.

Entrance Design

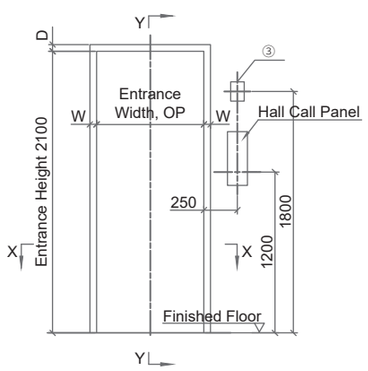
The followings shall be furnished by building contractors:

Wall and Floor Finishes

Elevation of Entrance

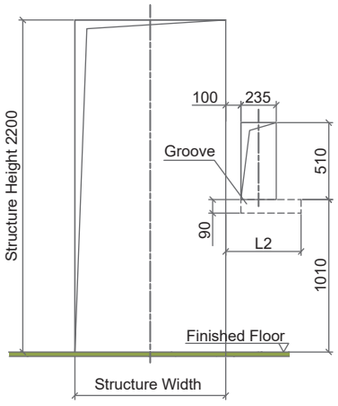


For Entrance At Top Floor

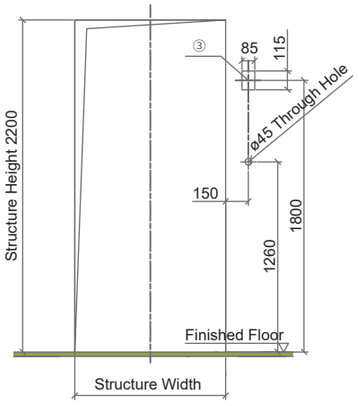


For Entrance At Other Floors
(With Fireman Switch)

Structure Opening of Entrance



For Entrance At Top Floor



For Entrance At Other Floors
(With Fireman Switch)

Type	AS-1X
W	10
D	10

Note:
① The above information is based on GB7588-2003 standards.
② Unit of dimension shall be in mm unless otherwise stated.
③ Applicable only when fireman operation with switch is located at lift landing.
④ Structure opening of entrance shall be furnished by building contractor.
⑤ For value of L2, please refer to page 07.

Entrance Design

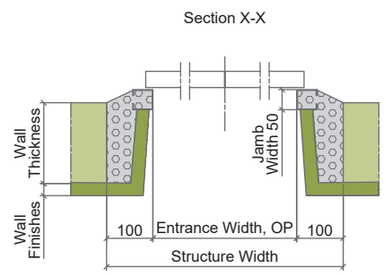
The followings shall be furnished by building contractors:

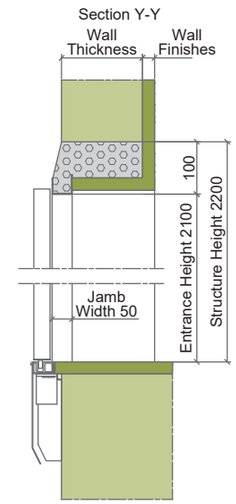
Building Structure

Wall and Floor Finishes

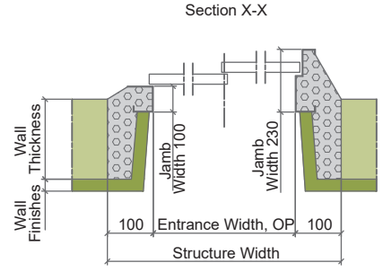
Grouting Work

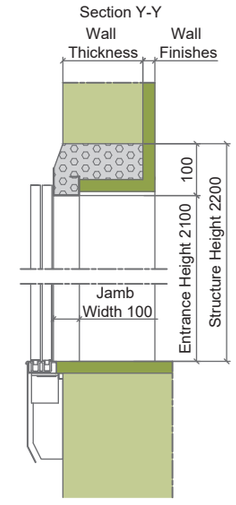
Narrow Jamb (AS-1X) For 2 Panels Center Opening (2P-CO)





Narrow Jamb (AS-1X) For Side Opening (2S-2P)





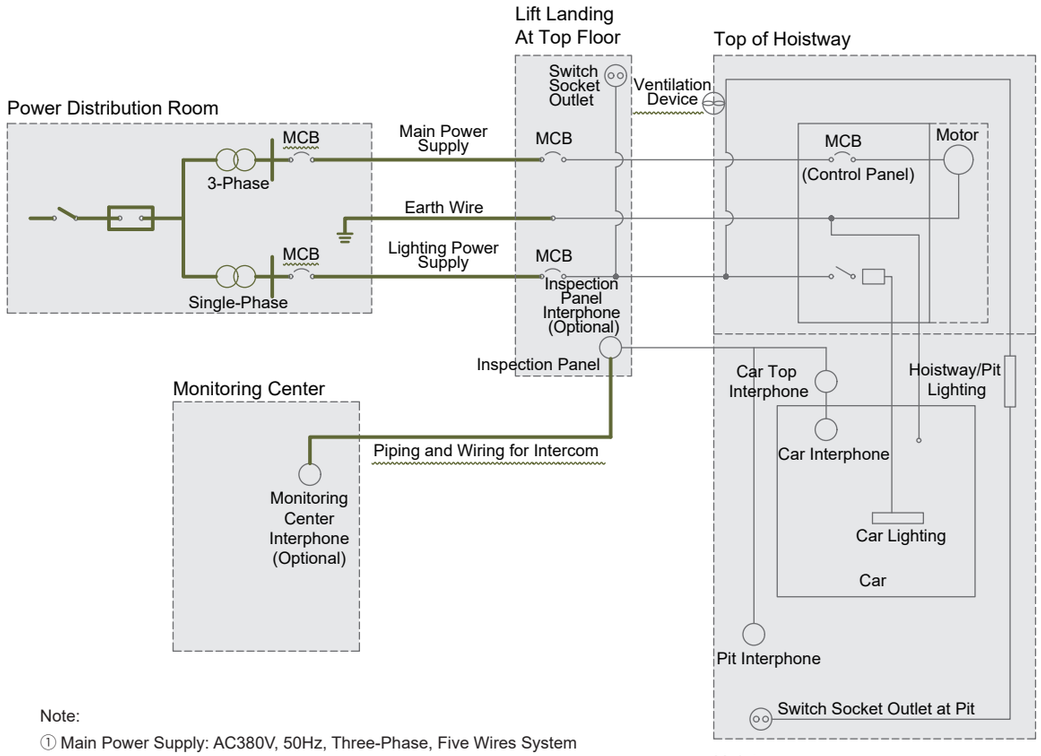
Note:
① Unit of dimension shall be in mm unless otherwise stated.

Electrical Information

The following shall be furnished by building contractors:

Electrical Equipment

Cable



Note:

① Main Power Supply: AC380V, 50Hz, Three-Phase, Five Wires System

② Lighting Power Supply: AC220V, 50Hz, Single-Phase, Three Wires System

Item	Works to be provided by building contractor
Main Power Supply	To provide power supply switch around the entrance of top floor. To install facilities to ensure the power supply voltage fluctuation shall be within ±7%.
Lighting Power Supply	To provide lighting power supply for car lighting, fan and indicator.
Ventilation Device	To provide mechanical ventilation to the hoistway to ensure that the temperature in the hoistway is maintained at below 40°C.

Electrical Data

No.	Rated Load (kg)	Rated Speed (m/min)	Supply Voltage	Circuit Breaker Capacity (A)		Transformer Capacity (KVA)		Main Power Wire Size (mm2)		Earth Wire Size (mm2)	
				1 unit	2 units	1 unit	2 units	1 unit	2 units	1 unit	2 units
1	400	60	3Φ380V 1Φ220V 50Hz	40	40	6	10	6	8	6	8
2	450	60		40	40	6	11	6	8	6	8
3	630	60		40	40	7	12	6	8	6	8
		90		40	50	9	15	6	10	6	10
		105		40	50	10	16	6	10	6	10
4	825	60		40	40	8	14	6	8	6	8
		90		40	50	11	18	8	10	8	10
		105		40	63	12	20	8	16	8	16
5	1000	60		40	50	9	16	6	8	6	8
		90		40	63	12	20	8	16	8	16
		105		40	80	13	22	8	16	8	16
6	1050	60		40	50	10	16	6	10	6	10
		90		40	63	12	21	8	16	8	16
		105		40	80	14	23	8	16	8	16
7	1150	60		63	63	10	17	6	10	6	10
		90		63	63	13	22	8	16	8	16
		105		63	80	15	25	10	25	10	16
8	1350	60		63	63	11	19	8	10	8	10
		90		63	80	15	25	10	25	10	16
		105		63	100	17	28	10	25	10	16
9	1600	60		63	63	13	21	8	16	8	16
		90		63	100	17	28	10	25	10	16
		105		63	100	19	32	16	25	16	16

Note:

① The above information is based on GB7588-2003 standards.

② The above information on the Supply Voltage, Circuit Breaker Capacity (A), Transformer Capacity (KVA), Main Power Wire Size (mm^2) and Earth Wire Size (mm^2) are the requirements at building side.

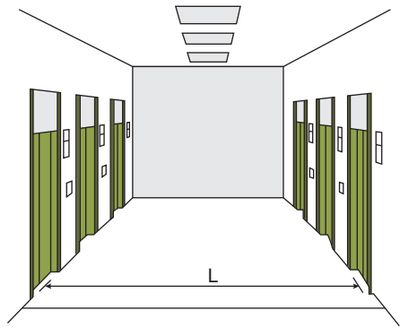
③ The main power wire size specified above is applicable for wire length less than150m.
For main power wire length more than 150m, please calculate using the following formula:
Main power wire size (mm^2) = [Actual wire length / 150] x [Wire size in above table].

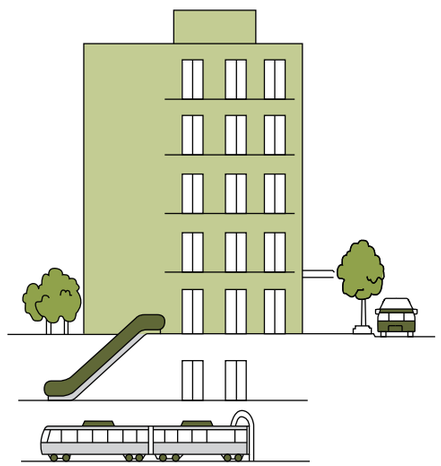
④ The calorific value (kcal/hr) for one elevator is calculated using the following formula:
Calorific Value (kcal/hr) = Rated Load (kg) x Rated Speed (m/min) x [1/45].

Layout

- Maximum in-line arrangement is 4 elevators.
- Elevators not in the same group should not be set in the same line.
- Avoid placing the elevators entrance near pillars.

- Elevators in the same group with face-to-face arrangement, the distance of facing elevators (L) should be 3.5~4.5m.
- Elevators not in the same group with face-to-face arrangement, the distance of facing elevators (L) should be more than 6m.





- Elevators in the same group is recommended to have the same service floors.
- Elevators in the same group is recommended to have one base floor instead of having multiple access floors.

Civil Works Matters

Working environment of the elevator shall be as follow:

1. Hoistway ambient temperature shall be between 5°C to 40°C.
2. Maximum relative humidity is 90%, and the monthly mean minimum temperature should be below 25°C.
3. Supply voltage fluctuation shall be within ±7%.
4. Surrounding environment shall be free from explosive and corrosive hazard, anti-insulation and conductive particles atmosphere.

About hoistway:

1. Hoistway shall not be used for purposes other than those connected with the elevators.
2. Hoistway walls (including reinforced concrete ring beams) should be vertical, and the allowable deviation for the hoistway verticality is 0 ~ +30mm.
3. Hoistway walls, floors and roofs should be able to absorb a large amount of elevator operation noise.
4. Hoistway should not be located directly adjacent to bedrooms, classrooms, wards, library or any other places where low noise is required. Where such arrangements need to be imposed, the building contractors must be responsible for taking measures of sound insulation and cushioning.
5. Hoistway walls shall be 200mm concrete walls.
6. If elevator hoistway is steel structure construction, please contact us.
7. Elevator hoistway is preferably not located in the space above accessible area. If the actual situation cannot meet the regulations, please contact us.

Work to be done by Building Contractors:

The preparatory work for elevator installation outlined below should be undertaken by building contractors in accordance with Hitachi drawing and applicable national or local codes and regulation.

1. Prepare hoistway with proper framing and enclosure, suitable pit of proper depth with drains and waterproofing if required, properly lighted with concrete floor, access door, ladder and guards as required.
2. Provide and/or cut all necessary holes, chases, and openings and finish after equipment installation.
3. Supply and secure all supports, reinforced concrete slabs, etc., necessary for installation of the machinery, doors, buffers, etc.
4. Furnish all necessary cement and/or concrete for grouting-in of brackets, bolts, machine beams etc.
5. Suspension hooks at top of hoistway with required loading as shown in this catalogue.
6. Furnish main for three-phase electric power and single-phase lighting supply to hoistway, following the instructions of the elevator contractors on outlet position and wire size.
7. Supply electric power for lighting of work area, installation work, elevator testing and spray painting.
8. Provide, free of charge, a suitable theft-proof storage area for materials and tools during erection work.
9. Prepare and erect suitable scaffolding and protective measures for the works in progress.