

 **SIGMA Elevator**



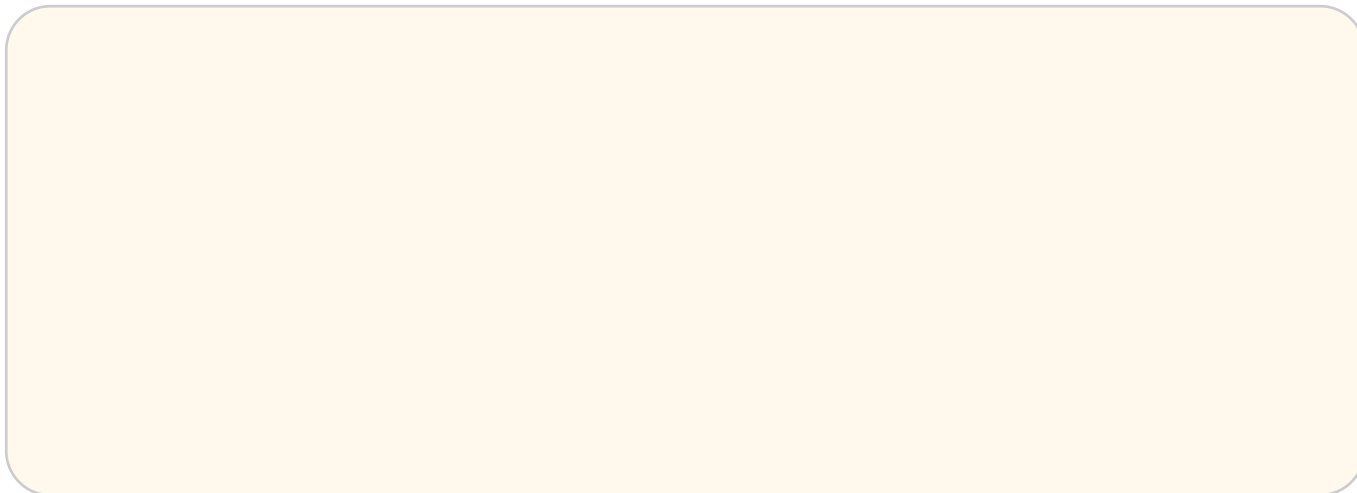
Distributed Inverter Elevator



**SIGMA Elevator**  
DI SERIES - HOSPITAL



Distributed by



SIGMA constantly endeavors to improve products so that information in this catalog is subject to change without notice.

 **SIGMA**



### **Birth of "SIGMA Elevator"**

After serving for over 30 years as the feet of global villagers, LG Elevators and Escalators is reborn as SIGMA Elevators on the basis of time-tested, valuable expertise and know-how.

Our everlasting ardor for customer satisfaction under the banner of "New Technology", "Best Quality" and "Best Services" will be sustained by SIGMA Elevators in the new millenium.



# Introduction

## “A Friendly and Reliable Partner” The SIGMA Hospital Elevator

In a hospital, the elevator is regarded as a medical appliance, and valued as a partner earning the confidence of the user.

It also needs to provide a perfect servicing facility, as well as a sense of security.

SIGMA Elevator, since its foundation, has put all its energy into the manufacture of products with a high degree of functionality, designed to be in harmony with the life-style surrounding the human being.

The SIGMA hospital elevator is fully equipped with all the basic functions required for a hospital elevator and, as a trustworthy partner, fully satisfies a wide variety of customer's needs.





Important part of a building.....  
Elevators are a part of the working space.

User-friendly engineering with an integration of classic and modern design, perfection in operation controls, safety first, Elevators of Sigma Elevator Company will enhance your building in functionality and aesthetics.

Di(Distributed Inverter) Control?

From central control system, Distributed Control drastically improves reliability and performance of elevators by implementing distributed serial communication network structure.

Control panel size reduced by 46% with distributed network structure.

Serial communication application reduces wiring and installation time but increases reliability.

Motor noise reduced with IGBT.

Inverter door provides smooth operation with low noise.

50% Energy Saving,  
with improved comfort and safety!

Low Noise!  
Comfortable Ride!  
Reliable!  
Safe!

And 50% power facility savings

Comfortable ride by applying VVVF control with vector control and PWM control.

Easy maintenance with LCD Annunciator applying sub-divided trouble codes.

At site modifications to meet customer specific needs possible.

Reliable with self-expert diagnosis system, remote monitoring, group network, and universal communication channels.

Ride Comfort,  
Pleasant to users,  
Modern Design.  
Comfortable Ride by applying VVVF control with vector control and PWM control.  
Reliable with self-expert diagnosis system.

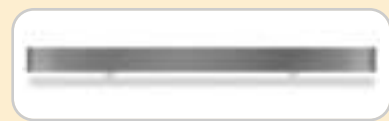
# Car Interior



## CAR OPERATING PANEL & BUTTONS



### HANDRAIL



| HR-05 |



| HR-08 |

### FLOOR



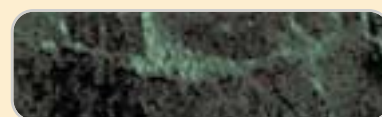
| 71032 |



| DE2201 |



| 86120 |



| DE2205 |

### CEILING



| GL-B1 |  
(Painted Steel Sheet No.LGP-928)



## BC-03

CEILING : GL-B1 (Painted steel sheet No.LGP-928)  
 VENTILATION : Line Flow Fan  
 DOOR & WALL : Painted steel sheet (LGP-928)  
 CAR OPERATING PANEL : CBM-10C  
 HANDRAIL : HR-05 (STS-HL)  
 FLOOR : Luckstrong ( \*Luckstrong No.86115)

## BE-03

JAMB : Narrow Jamb in Painted Steel Sheet (No.LGP-928)  
 DOOR : Painted steel sheet (LGP-928)  
 SILL : Extruded Hard Aluminum  
 INDICATOR & BUTTON : VID-M432



## BC-04

CEILING : GL-B1 (Painted steel sheet No.LGP-928)  
 VENTILATION : Line Flow Fan  
 DOOR : Stainless steel Etching (EH1-068)  
 WALL : Stainless steel Etching (EW2-068)  
 CAR OPERATING PANEL : CBM-12C+CBM-42SH  
 HANDRAIL : HR-08 (STS-HL)  
 FLOOR : Decotile ( \*Decotile No.5809)

## BE-04

JAMB : Wide Straight Jamb with Transom Panel in Stainless Hairline Finish  
 TRANSOM PANEL : Stainless Steel Hairline  
 DOOR : Stainless steel Etching(EH1-064)  
 SILL : Extruded Hard Aluminum  
 INDICATOR : HID-A122  
 BUTTON : HBM-S43



## ELEVATOR SAFETY DEVICES

### Molded Circuit Breaker(MCCB)

Protects the elevator control equipment from unusual voltage surges in the building power supply.

### Overspeed Governor

Located in the machine room, engages the governor rope, causing activation of the elevator safety device, should the elevator car accelerate beyond the predetermined maximum speed in the "down" direction.

### Terminal Limit Switches

Prevent the elevator from travelling beyond a terminal landing, independently of the functioning of the operating device.

### Final Limit Switches

Cause power to be removed from the drive motor, independent of the terminal limit switch function, should the elevator pass either terminal landing.

### Emergency Exit

To be opened only from outside the elevator car, allows removal of passenger in extreme emergency situations. Further movement of the elevator is prevented until the exit panel is closed.

### Emergency Cab Lighting

Provides interior cab lighting, should there be a failure in the building's normal power supply.

### Safety Device

Located beneath the elevator car, brings the car to a safe stop, should the elevator overspeed in the down direction.

### Hoistway Door Unlocking Device

Located in a hoistway door panel, provides hoistway access to assist passengers within the cab in the event of an emergency or power failure.

### Door Deterrent Device

Prevents the elevator car door from opening unless the elevator is located within the specified zone at a landing.

### Interphone System

Provides emergency communication between passengers in the elevator car, the elevator machine room or building personnel in a security or maintenance room.

### Door Reversal Device

Mounted on the leading edge of the car door, causes the car and hoistway doors to reopen, should an obstruction be encountered when the doors are closing.

### Load Weighing Device

Detects unusual load conditions and prevents elevator from further movement until the overload condition is corrected.

### Toe Guard

Extends below the leading edge of the car sill to minimize the hoistway opening between the landing floor level and the car platform should the hoistway door be opened with the elevator above the landing.

### Buffers

Located in the elevator pit area below the car and counterweight to retard downward travel of either the car or counterweight, if buffers are engaged.

## TECHNICAL FEATURES

### Operation system

#### Selective collective operation

The momentary pressing on one or more car buttons shall send the car to the designated landings in the order in which the landings are reached by the car, irrespective of the sequence in which the buttons are pressed. During this operation, the car shall answer calls from the landings which are in the prevailing direction of travel, and each call shall be canceled when answered.

#### Attendant operation

The operating mode of an elevator can be changed from the normal full - automatic operation to the attendant service by an attendant switch, when required. The switch is located on the car operating panel with a sliding cover.

### Service functions

#### Safety drive operation

When a car stops between floors due to mechanical malfunction, the car descends to the nearest floor below.

#### Anti - nuisance operation

In case of substantial difference between the number of calls registered on the car operating panel and actual load in the elevator, the elevator prevents unnecessary operation by cancelling all registered calls when it arrives at the nearest floor.

#### Automatic door open & close time adjustment

Door open and close times are automatically adjusted depending on whether the call is a hall call or a car call to increase the operating efficiency.

#### Car door safety edge

Extending the full height of the car door, this device causes the doors to return to the fully open position, should the door encounter a person or obstacle while closing.

#### Micro levelling

An automatic two - way levelling device is provided to maintain the elevator car level with the landing, regardless of elevator load or direction travel.

#### Automatic car light & fan turn - off

Car illumination and fan are turned off automatically in case there is no hall call or car call, saving energy.

#### Detection of jammed hall button and exclusion from operation service

If a hall button is jammed mechanically, the hall call will be automatically bypassed after being served once, until the problem is resolved.

**Over load(110% of rated load)holding stop**

When the number of passengers exceeds the normal capacity, a buzzer sounds and the elevator remains stopped at that floor.

When the excessive number of passengers disembark, the buzzer stops, the elevator doors close, and operation continues.

**Car call cancellation**

Allows cancellation of an incorrectly registered car call. If you push a wrong floor button in the car, you can cancel it by pressing that floor button twice consecutively.

**Forced floor stop(option)**

To prevent crime, elevator moves to the designated floor by stopping at every floor.

**Automatic landing process operation(option)**

In case of power failure, when the building has no emergency power supply, the elevator is sent to the nearest floor by DC power

of battery to prevent passengers from being trapped in the car.

**Parking operation(option)**

Elevators can be automatically parked at a preset time, thus avoid manual stopping and restarting.

**Emergency power operation(option)**

If normal building power supply fails and if the building provides emergency power to the elevator controller(s), one elevator at a time will proceed to the lowest landing where it will stop with doors open and with all of its power and operating circuit in an inoperable standby condition. Predesignated elevator(s) however, comes into normal operation by the emergency power supply.

**Emergency fire service operation(option)**

The elevator(s) will automatically return to the lobby or primary designated floor when fire detection devices(supplied by others) are activated, allowing passengers to exit. The elevator(s) will remain parked at that landing until the detection devices are deactivated or until the elevator is used by a fireman using the special fireman's service switch or key.

**Door photo sensor(option)**

The doors reverse to fully open position if the light ray unit detects an obstacle when the doors are closing.

**Voice synthesizer(option)**

This system provides riding passengers with audio information about car operation such as direction of travel, landing floor, etc.

**Door nudging(option)**

When the doors remain open for more than the fixed door open time(approx. 20 seconds), this feature closes the doors at reduced closing speed with the buzzer sounding.

**Service floor changing(option)**

This function enables you to change the operating service floors using simple switches.

**Visual message display(option)**

Displays elevator operating status, building information, or general information for passengers in the lobby or in the elevator.

**Supervisory panel(option)**

This panel monitors elevator operations and controls emergency operations from the building's control room.

**Earthquake operation(option)**

When the seismic sensor detects an earthquake, and the car stops at the nearest landing with the doors open.

**Overhead, Pit Depth & Machine Room Height**

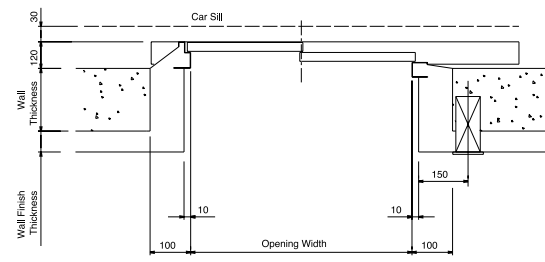
(Unit:mm)

Items	Speed (m/min)	Load (kg)	Code / Country				
			Standard	EN-81(BS 5655)	ANSI	Singapore	Malaysia
Overhead	60	L ≤ 1020	4550	4200	4500	4400	4200
		L > 1020	4600	4250	4550	4400	4250
	90	L ≤ 1020	4750	4400	4600	4450	4400
		L > 1020	4800	4450	4650	4600	4450
	105	L ≤ 1020	4950	4600	4600	4600	4600
		L > 1020	5000	4650	4650	4750	4650
Pit Depth	60	L ≤ 1020	1500	1450	1450	1450	1450
		L > 1020	1600	1550	1550	1550	1600
	90	L ≤ 1020	1800	1600	1600	1500	1550
		L > 1020	1800	1700	1700	1600	1700
	105	L ≤ 1020	2100	1700	1700	1700	1800
		L > 1020	2100	1850	1850	1950	1950
Machine room Height	60,90,105	L ≤ 1020	2200	2200	2200	2200	2500
		L > 1020	2400	2400	2400	2400	2850

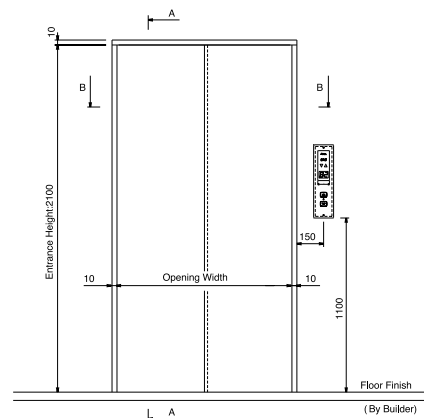
## Entrance Details

### Narrow Jamb without Transom Panel

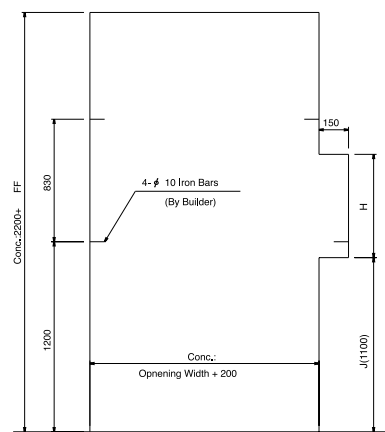
Entrance elevation and plan



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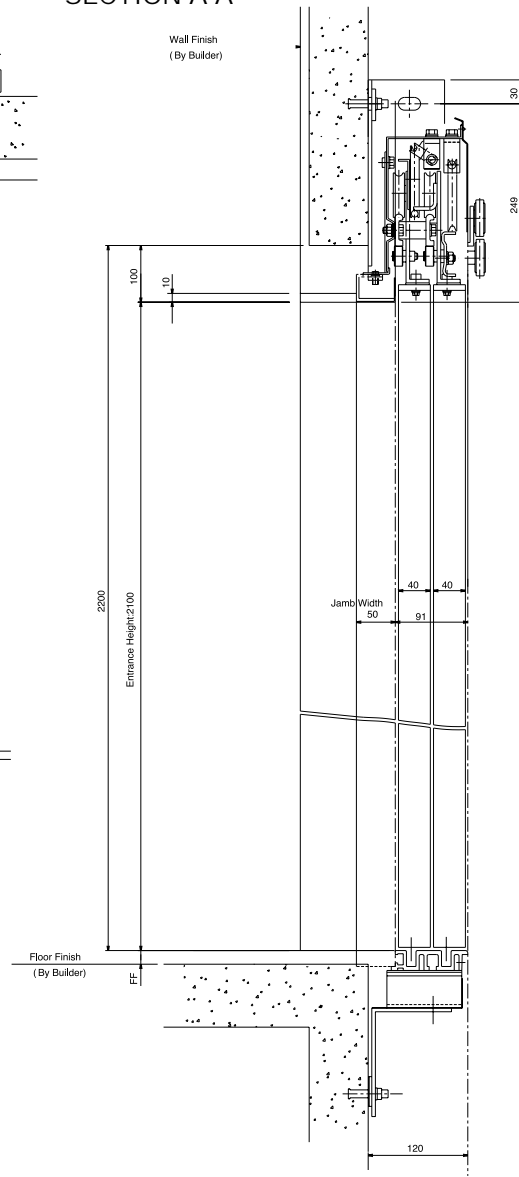


< Front View of Entrance >



< Building Structure Plan >

SECTION A-A



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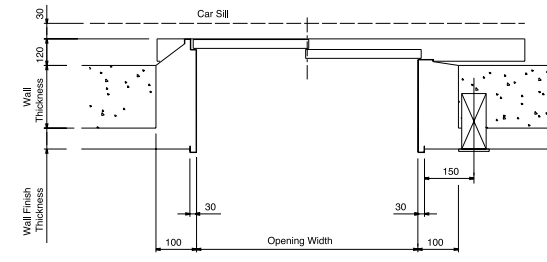
Note

1. The H size in building structure plan should be decided according to the approved drawings because it depends upon the hall indicator type or the hall button type.

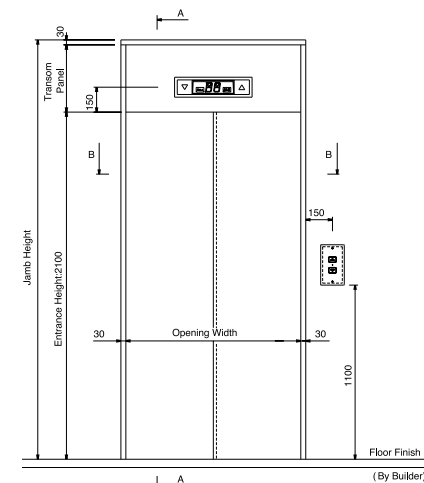
2. Unit : mm

### S-Type Wide Jamb with Transom Panel(with accentric line)

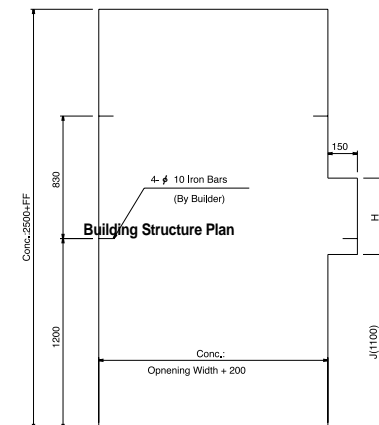
Entrance elevation and plan



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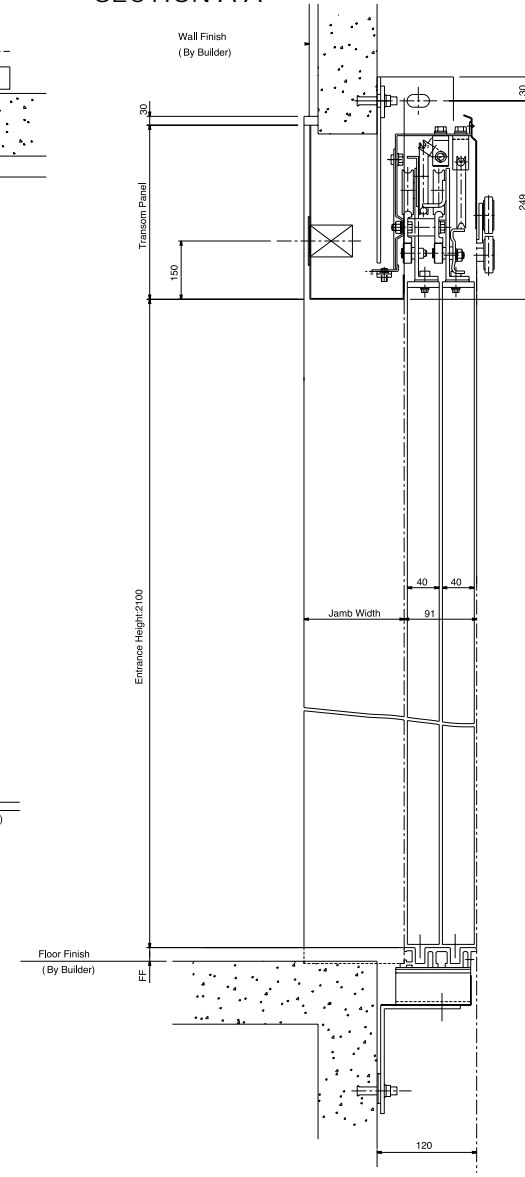


< Front View of Entrance >



< Building Structure Plan >

SECTION A-A



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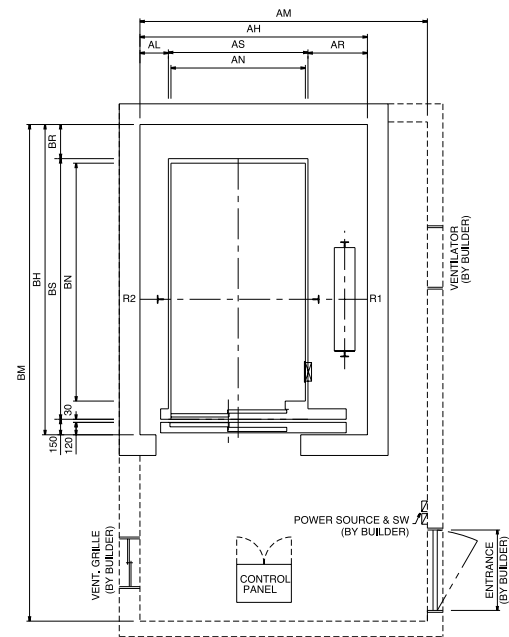
Note

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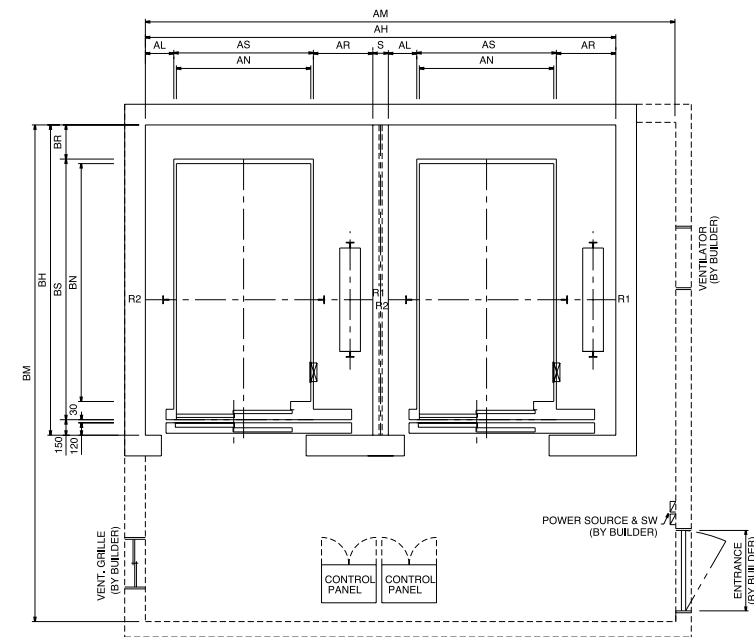
2. Unit : mm

# ELEVATOR LAYOUT

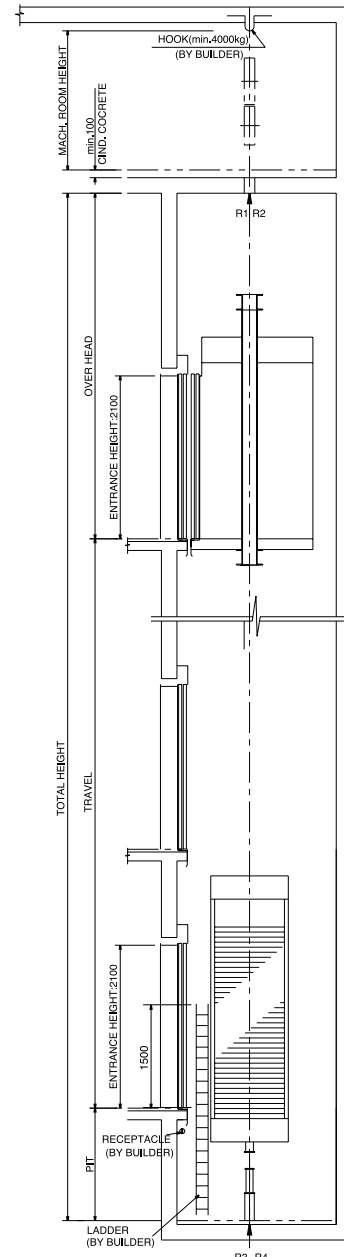
Hoistway and Machine Room Plan(Simplex)



Hoistway and Machine Room Plan(Duplex)



Hoistway Section



Planning guide for Dimensions

(unit:mm)

Persons	Load (kg)	Speed (m/min)	Opening (EW)	Car Size				Dimensions in Hoistway				Hoistway Size				Machine Rom				Reactions			
				Inside		Outside		AL	AR	S	BR	Simplex		Duplex		Simplex		Duplex		R1 (kg)	R2 (kg)	R3 (kg)	R4 (kg)
				AN	BN	AS	BS					AH	BH	AH	BH	AM	BM	AM	BM				
11	750	30	1100	1300	2300	1350	2520	225	575	150	230	2150	2900	4450	2900	2600	4200	4950	4200	5700	3450	5300	4000
		45																		5850	3500	5350	4050
		60																		5900	3750	6500	5000
		90																		6500	4100	9500	7000
		105																		6500	4100	8500	6500
15	1000	30	1100	1500	2300	1550	2520	225	575	150	230	2350	2900	4850	2900	2800	4200	5350	4200	6500	3700	5500	4500
		45																		6650	3900	5500	4500
		60																		6800	4100	6500	5000
		90																		6800	5100	11000	8000
		105																		6800	5100	10000	7000

Electrical Design Guide

(220V/400V)

Persons	Load (kg)	Speed (m/min)	FFB Capacity of Building (A)		Transformer of Building (KVA)		Lead-in Wire Size (mm <sup>2</sup> )		Earth Wire (mm <sup>2</sup> )	Starting (KVA)
			Simplex	Duplex	Simplex	Duplex	Simplex	Duplex		
11	750	30	50/30	100/60	6	12	8/5.5	14/5.5	5.5/3.5	21
		45	75/50	150/100	7	14	14/5.5	22/8	5.5	28
		60	75/50	150/100	10	20	22/5.5	38/14	8/5.5	35
		90	75/50	150/100	10	20	22/5.5	38/14	5.5	29
		105	75/50	150/100	11	22	22/5.5	38/14	5.5	34
15	1000	30	50/30	100/60	6	12	8/5.5	14/5.5	5.5/3.5	21
		45	75/50	150/100	7	14	14/5.5	22/8	5.5	28
		60	75/50	150/100	10	20	22/5.5	38/14	8/5.5	35
		90	75/50	150/100	12	24	22/5.5	38/14	14/5.5	36
		105	100/50	150/100	13	26	22/8	60/22	14/5.5	43

Overhead, Pit Depth & Machine Room Height

Item	Speed (m/min)	Dimension (mm)
Overhead (mm)	30	4400
	45	4400
	60	4600
	90	4800
	105	5000
Pit depth (mm)	30	1200
	45	1200
	60	1500
	90	1800
	105	2100
Machine Room Height (mm)		2300

## WORK BY OTHERS

The works below are not included in the elevator installation work and should be carried out by building contractors in accordance with our drawings, relevant international or local codes and regulations.

### Hoistways

Provision of steel bars to fix jamb around the hoistway entrance of each floor.

Waterproof work inside pit,(including drainage, if necessary) and finishing work after the buffers installed.

Provision of entrance or ladder(gangway) for pit access(where necessary for deep pit).

Supply and installation of fall - prevention plate at the hoistway entrances.

Installation of emergency exits and electric wiring in blind sections of hoistway(where required).

A properly framed and enclosed legal hoistway, including venting as required by the governing code or authority, ready for uninterrupted use by the Elevator Contractor at an agreed upon date.

Adequate guide rail bracket supports and spacing as required by governing code, from pit floor to underside of an overhead slab, separator beams where required.

Dry pit of proper depth shall be provided and reinforced to sustain normal and impact vertical forces from rails and impact loads from buffer.

Plumb-line tolerance over the whole hoistway height must not exceed ; 30mm.

Hoistway walls are to be designed and constructed according to the required fire rating including where penetrated by elevator fixture boxes and to include adequate fastening to hoistway entrance assemblies. One front entrance wall, at the main landing, is not to be constructed until after all elevator materials are located in the hoistway. Remaining front entrance walls shall not be constructed until after door frames and sills are in place. If front walls are poured concrete bearing wall, rough openings are to be provided to accept entrance frames and filled in after frames are set. Rough openings shall be sized to suit the Elevator Contractor.

All cutting, including cutouts to accommodate hall signal fixtures, patching, painting of walls, floors, or partitions, together with finish painting of entrance doors and frames, if required.

Suitable light fixture and convenience outlet in the pit with a light switch adjacent to the access door or ladder. The receptacles shall have ground fault circuit interrupter protection.

The surface of the pit floor beneath the rails and buffers stand to be flat and level within 1/8 ;(3.2mm) of the full width of the pit.

Where access to the pit is by means of the lowest hoistway entrance, a vertical iron ladder extending 42 ;(1067mm) minimum above the sill of the access door.

## Machine Rooms

Provision of phone wiring from phone service and / or remote locations to elevator controllers.

Lifting beam must be installed on the ceiling for hoisting and transfer of heavy equipment.

Noise insulation should be installed between the machine room and adjacent residential areas.

Patching and plastering of all cutouts made necessary by elevator work.

A suitable machine room with legal access, ventilation and concrete floor.  
The temperature in the machine room should be maintained between 5°C and 40°C.  
Relative humidity should not exceed 90%(monthly) and 95%(daily) non - condensing.  
Ventilation shall suit the Elevator Contractor's heat release requirements.

Machine room entrance size shall be 900mm(W) x 2000mm(H) and cannot be used as passageway leading to any other place.  
Forced locking system(automatic - closing) shall be furnished.

Main line power supply shall not exceed ± 5% variance.

A three (3) phase, four(4) wire electrical feeder system with an equipment grounding conductor terminating in the machine room.  
Size of the feeders and grounding conductor to suit elevator power characteristics.

Installation of lead - in wire and earth wire between building main power board and machine room incoming distribution board.  
However, machine room lighting source supply shall be separately installed.

Should operation of the elevators be required on emergency standby power, others are to provide an emergency power unit and means for starting it, and deliver to the elevator main switch(MCCB) at the controller in the machine room, sufficient power to operate one or more elevators at a time at full rated speed.

Provide necessary transfer switch(es) to switch from normal power supply to emergency power supply, in the event of normal power supply failure. Provide normally closed contact(s) and wiring from transfer switch(es) to one(1) elevator controller within each group.

Suitable light fixture and convenience outlets in machine room with light switches.  
The receptacles shall have ground fault circuit interrupter protection.

Provision of fire extinguishers(per governing codes).

## Miscellaneous

For the fire emergency operation, the smoke detectors located where required are to be wiring connected to the elevator controllers.

Wiring and piping works between monitoring systems (if monitoring systems are used), elevator machine room, alarm panels and inter - communication systems, etc, outside of hoistway.

The elevator machine rooms and hoistways shall be free of dust or harmful gas.

A secured area for storage of elevator equipment and materials during elevator installation shall be provided.

Hoistway and machine room shall contain no piping or wiring not related directly to elevator operation.

All electric power for light, tools, hoists, welding, etc, during erection.

All single phase receptacles installed in machine rooms, pits and machinery spaces shall have ground fault circuit interrupter protection.

Guarding and protecting the hoistway during construction; the protection of the hoistway shall include removable solid panels surrounding each hoistway opening at each floor, a minimum of 120cm high.  
Hoistway guards to be erected, maintained and removed by others.

TEMPORARY USE OF ELEVATORS : Should any elevator be required for use before final completion, others shall provide without expense to the Elevator Contractor, if required, temporary car enclosures, requisite guards or other protection for elevator hoistway openings, main line switch with wiring, necessary power, signaling devices, lights in car and elevator operators together with any other special labor or equipment needed to permit this temporary usage.

The Elevator Contractor shall be reimbursed for any labor and material which is not part of the permanent elevator installation and which is required to provide temporary elevator service. In addition, the Elevator Contractors temporary acceptance(permission) form shall be executed before any elevator is placed in temporary service, and the cost power and operation, maintenance of the equipment and rehabilitation of equipment shall be paid for by others.