



Building Planning.
For a perfect people stream.



Schindler



From the outline to the skyline. Your vision comes true.

In the high-rise elevator business, passenger comfort and safety always come first. The design of a building significantly influences the elevator system and its performance. Correct planning is essential to ensure the building's functionality, efficiency and longevity. With Schindler, through early engagement with our customers, this critical process is made easier all the way from the physical plot on which the building sits in the urban environment till the inside of the elevator hoistways.

Some of the key considerations during the building planning stage and topics that we aim to cover here are:

Seismic / Earthquake

Building Sway

Chimney Effect

Piston Effect

Planning considerations

Single- and double-deck elevators

Planning parameters

Single- and double-deck elevators

When we view the world's most impressive skylines, high-rise buildings appear to stand still, however this is rarely the case. Buildings often sway and move due to strong winds, temperature changes and even seismic activity. Schindler's advanced safety features aim to minimize the disturbance on the building and its occupants while ensuring safe transportation.

Intelligent building planning reduces and even eliminates the piston and chimney effects which can occur in inadequately designed hoistways and dramatically affect the elevator ride quality and passenger comfort.

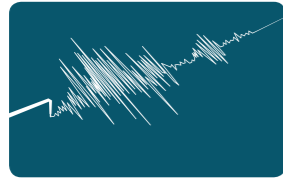
Schindler's pioneering traffic management simulation software allows the customer during the planning phase to understand our approach and to select the most efficient transportation solution, which guarantees a continuous stream of people and goods throughout the whole building.

Intelligent all-round planning.

For perfect traffic performances.

Major buildings in world cities rely on Schindler's proven technology for reliable performance. By combining the Schindler 7000 with our high-rise building expertise we already formulate in the planning phase the ideal solution for your needs.

Seismic / Earthquake



An earthquake is the shaking of the surface of the earth, resulting from the sudden release of energy in the earth's lithosphere

that creates seismic waves. Earthquakes can range in size from those that are so weak that they cannot be felt to those violent enough to toss people around and destroy whole cities.

Earthquakes produces different types of seismic waves, which travel through rock with different velocities:

- Longitudinal P-waves (shock- or pressure waves)
- Transverse S-waves (both body waves)
- Surface waves (Rayleigh and Love waves)

In the earth's interior, the shock- or P-waves travel much faster than the S-waves. S-waves and later arriving surface waves do main damage compared to P-waves. P-wave squeezes and expands material in the same direction it is traveling. S-wave shakes the ground up and down and back and forth.

Supported by the ongoing urbanization, more and more buildings and even entire cities are being built on regions at risk from earthquakes. Therefore, not only the building itself, but also the elevator system running within building needs to cope and to be designed to withstand with this natural caused hazard.

Schindler 7000 fulfills all international codes (such as EN81-77 and A17.1 enforcing seismic risk zones or IBC/NBCC approach) specifying seismic requirement towards the elevator system. The applied seismic detection system does detect the earlier arriving P-waves and activates the seismic control feature. The control sends the cars to the next landing floor and opens the door to release passengers. Passengers and elevator installations are protected as best as possible from the effects of an earthquake.

The countermeasures

Machine room:

- Elevator components, e.g. control cabinets, hoisting motor etc., is secured in their position so that they cannot be shifted or tilted by acceleration forces
- Rope retaining guards are avoid rope crossing or other rope damage

Hoistway:

- Elevator components, e.g. compensation rope tension devise, buffers, etc. are secured in their position so that they cannot be shifted or tilted by acceleration forces
- Rope retaining guards are provided
- Protection against entanglement of ropes

Car and counterweight:

- Various construction measures
- Counterweight displacement switch

Building sway



The high-visibility buildings of today's world cities appear to stand still. But tall buildings can move. Building sway has to be considered for structures higher than 250 m and for slim towers of more than 150 m. Depending on the shape and construction

type, most high-rises move laterally. Turbulence created in skyscraper canyons may even be strong enough to generate twist along the entire height. When they sway, observation towers mostly move in circles.

Building sway is caused by:

Wind loads

Wind loads, forces that act horizontally on structures causing buildings to sway, are the most typical reason for building sway. Imbalances in the pressure distribution on a building's surface may even result in twisting motion, and wind passing around a building may generate swirling whirlpools resulting in sway and twist. Tall buildings are designed for a certain amount of lateral loading and sway.

Ambient conditions

Temperature differences because of partial sun exposure may cause buildings to deform. Sun exposed sides of buildings get warmer than shady sides and elongation of building material may cause structures to bend.

Temperature differences between hot summers and cold winters may have an influence on the height of the building. In winter, the building may be shorter than in summer. In comparison to wind loads, structural deformation caused by ambient conditions is almost static.

The building experiences no measurable frequency and usually the deformation is smaller compared to heavy wind load deflections.

Earthquakes

Earthquakes may have the biggest impact on building sway. High potential seismic risk zones are governed by special building codes and elevator codes considering the risks of earthquakes.

Impact on elevators

Building sway has to be considered for structures higher than 250 m and for slim towers of more than 150 m.

The swinging frequency of the building may coincide with the inherent amplitude of suspension ropes, compensation ropes, governor ropes and traveling cables and result in resonance. Frequency analysis show whether further measures have to be taken.

Bending and deformation of hoistways may have an impact on the mechanical components of the elevator.

In addition to that, the following statements can be considered:

- When the building starts to sway, Schindler 7000 controls, connected to a sway detector, activates special features
- The travel speed will be reduced accordingly
- High sway will send the elevator to the evacuation floor. There, it will be emptied and placed in its parking position
- For medium and low sway, the elevator does not park at floors if the rope length or traveling cables correspond to their wavelength
- Schindler 7000 cars, counterweights and brackets are designed for all seismic applications

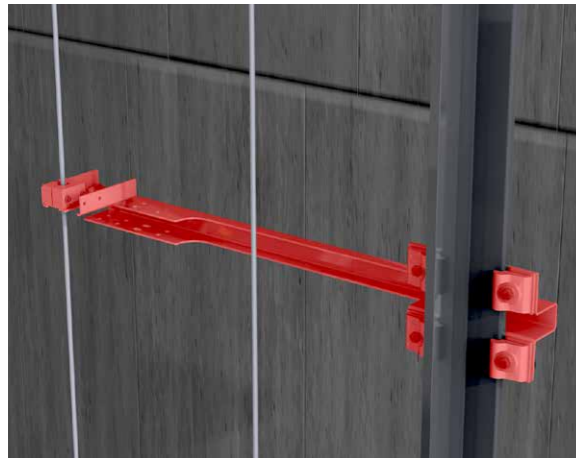
The oscillation of a high-rise building affects the performance and safety of its elevators. For this reason, Schindler pays serious attention to this potential hazard and proposes measures to reduce the impact of building sway on the elevator system, thereby increasing its safety and operational availability.

Building sway. Countermeasures.



1 Traveling Cable Protection

The travelling cable is fixed at mid-height and guided in the bottom half of the hoistway.



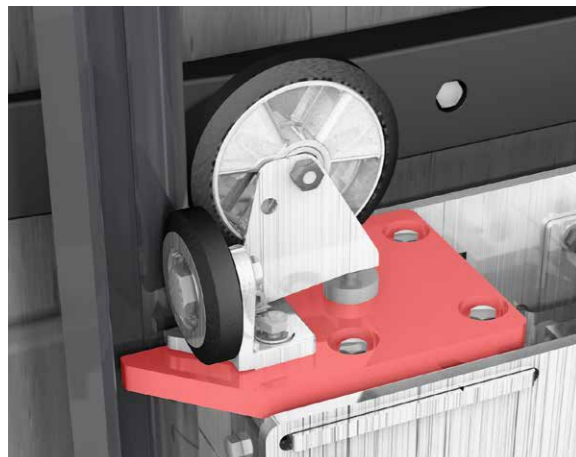
2 Governor Rope Guide

The passive side of the governor rope for the car and counterweight is specially guided along the hoistway.



3 Rope Protection with Intermediate Tie-Brakes

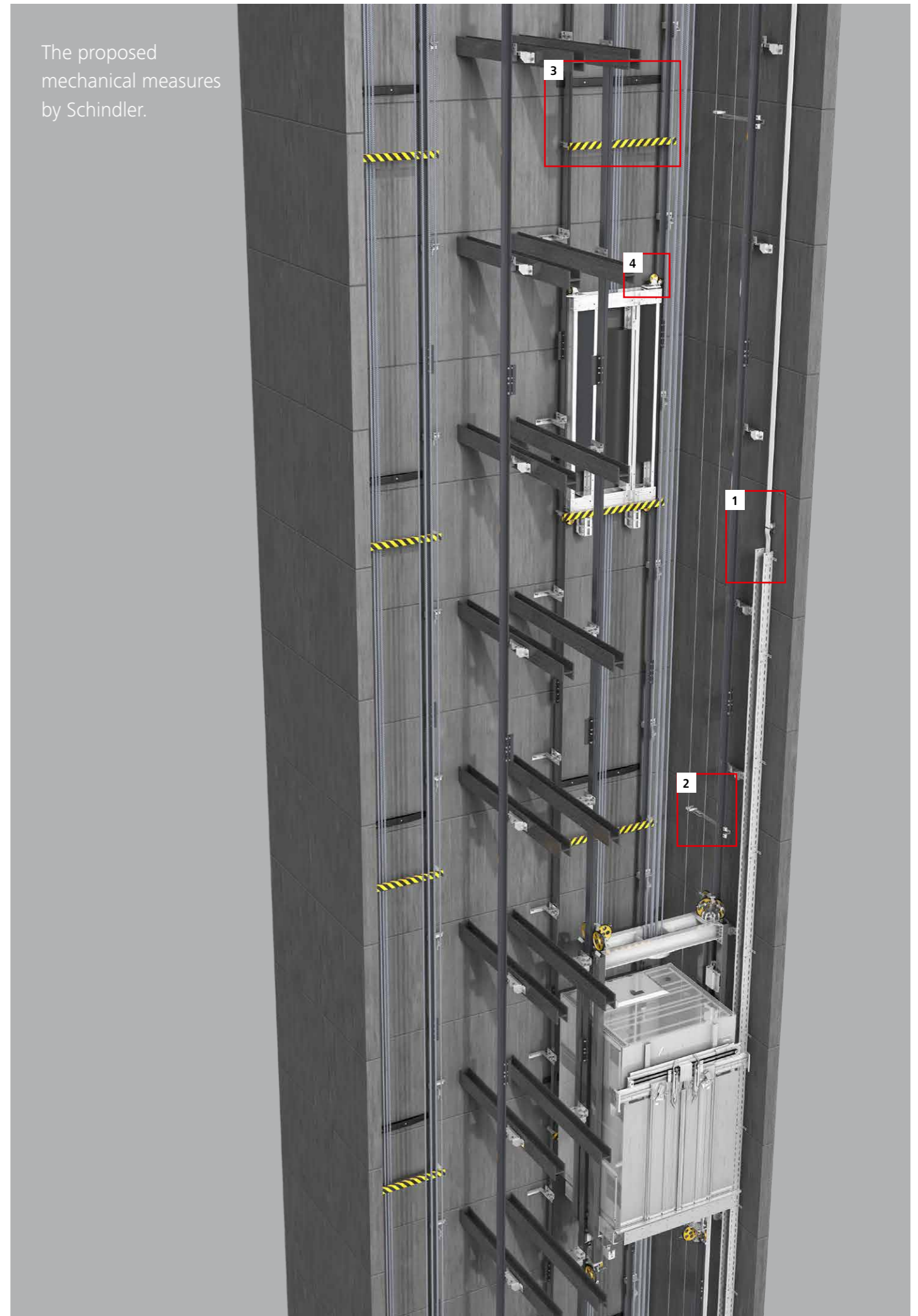
A special rope protection prevents the ropes from striking the rough surface of the hoistway rear wall. Intermediate tie brackets located between the car and the counterweight shall be provided to prevent counterweight suspension- and compensation-ropes from hitting the car.



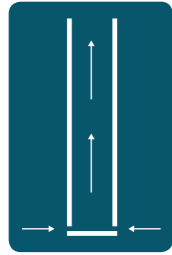
4 Counterweight Retainer Plates

Retainer plates prevent the counterweight from derailment if excessive force is applied to the guide.

The proposed mechanical measures by Schindler.



Chimney effect



The chimney effect means the vertical movement of air in the hoistway caused by atmospheric conditions. It is a natural phenomenon, driven by different factors:

- Air flow from the parking garage and from the lobby entrance through the elevators

hoistway up to the top of the building. There it escapes via the air ducts and the door of the machine room.

- Air flow from the main lobby with its large entrance door
- Existence and height of vertical pathways for air transfer within buildings
- Internal and external temperature differences

The countermeasures

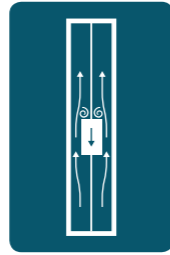
In principle, hoistways shall be separated from the rest of the building by following measures:

- Hoistways shall be completely within the core and constructed of reinforced concrete
- Loading / unloading areas shall be airtight by means of interlockable access doors
- Lobby entrance shall be equipped with revolving doors
- Upper elevator lobbies shall be separated from the rest of the floor, e.g. gates or air locks
- Machine rooms shall be separated from the rest of the building

The chimney effect can severely impair the operation of a building. To avoid such issues, our engineers provide skilled support in the building design phase.

Basically, the key to success is correct architecture and layout.

Piston effect



An elevator car traveling in a single hoistway can be compared to a piston moving in a cylinder. When an elevator travels at high speed in a narrow hoistway, the air ahead of the car is compressed and flows around the car. The main issue is, that there

is no 'piston sealing' between car and hoistway. Either up or down ride, the pressure difference between front and rear therefore accelerates the air to the back of the car. This may result in additional noise and ear pressure.

Schindler takes account of the piston effect and proposes countermeasures to ensure the required comfort levels.

The countermeasures

- Sealing the elevator car doors reduces the noise, so turbulence is radically reduced
- Specially applied sealing on the door-frame eliminates the vibrations from the landing door-panels and unpleasant noise
- Air vents in hoistway walls help balance uneven pressure between parallel elevator hoistways
- When two elevators in a dual hoistway descend simultaneously – especially in parallel – the piston effect is emphasized by even more air pressure ahead of the car. Schindler's highly-developed elevator control system avoids this situation: The cars are not allowed to travel at the same time in the same direction



Schindler 7000 planning considerations.

Single-deck elevators.

EN81-20/50:2014 / EN81-1:1998+A3:2009

Overall

- Hoistway width and depth dimensions are based on clear dimensions with horizontal building tolerances:
 - travel height ≤ 180 m: ± 25 mm
 - travel height > 180 m and ≤ 250 m: ± 45 mm
 - travel height > 250 m and ≤ 500 m: ± 65 mm
- Structural car height: 2200 mm - 3600 mm
- Indicated hoistway and machine room sizes are standard sizes without safety gear on counterweight
- Indicated car sizes are based on ISO. For different sizes, please contact our local sales office
- Roping: for speeds from 2.5 m/s - 4.0 m/s = 2:1, for speeds 2.5 m/s - 10.0 m/s = 1:1
- All given information is for general reference and planning. For special construction and code regulation details, please contact our local sales office
- Calculation contain energy recuperating converters only and permanent magnet technology machines where possible

Overhead clearance and pit depth

- The overhead clearance is based on the structural car height
- For smaller overhead clearance and pit depth, please contact our local sales office

Power supply

- Power supply wiring for lighting: single phase, neutral, earth (to be in accordance with national code requirements)
- Power supply wiring for ACVWF drive: 3-phase, neutral, earth or 3-phase, earth (to be in accordance with national code requirements)
- Main frequency 50Hz or 60Hz

Heat dissipation in hoistway and machine room

- Our equipment is designed to withstand a temperature range of 5 to 40 degrees Celsius
- For the service personal, the machine room and hoistway temperature should be kept within the range of 5 and 35 degrees Celsius
- The humidity in the machine room should not exceed 95% and not condensing



Schindler 7000 planning parameters.

Single-deck elevators - EN81-1:1998+A3:2009

Load		Speed	Travel height	Car	Door	Shaft	Machine room	Car height	Overhead clearance	Pit depth	Reaction load					Motor	Power supply capacity (380V - 415V)								Starting power	Heat dissipation				
											R1	R2	R3	R4	R5		1 Unit	2 Unit	3 Unit	4 Unit	5 Unit	6 Unit	7 Unit	8 Unit						
kg	Persons	[m/s]	[m]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[kg]					[kW]	[kVA]								[kVA]	[kW]				
GQ = 800 kg																														
800	10	3	120	1350x1400	900x2100	2100x2150	2100x4350x2600	≤3100	fix 5600	2900	10000	5300	12900	11500	-	14.5	21.1	38.4	57.0	74.3	88.6	101.3	113.7	126.6	39.2	1.2				
						2100x2150	2100x4350x2600	>3100	HK+2500	2900	10000	5300	12900	11500	-	14.5	21.1	38.4	57.0	74.3	88.6	101.3	113.7	126.6	39.2	1.2				
		4	180			2100x2150	2100x4350x2600	≤3500	fix 6200	3450	12000	6400	14300	13000	10200	20.3	27.7	50.4	74.8	97.5	116.4	133.0	149.4	166.3	57.2	1.7				
						2100x2150	2100x4350x2600	>3500	HK+2700	3450	12000	6400	14300	13000	10200	20.3	27.7	50.4	74.8	97.5	116.4	133.0	149.4	166.3	57.2	1.7				
		5	240			2400x2265	2400x4465x3700	≤3100	fix 5900	3600	29000	15700	14800	13900	15000	26.5	36.7	66.7	99.0	129.1	154.0	176.0	197.6	220.0	78.7	2.2				
						2400x2265	2400x4465x3700	>3100	HK+2800	3600	29200	15900	14800	13900	15000	26.5	36.7	66.7	99.0	129.1	154.0	176.0	197.6	220.0	78.7	2.2				
		6	300			2400x2305	2400x4505x4200	≤3100	fix 6300	3950	35000	19400	15400	14600	20200	32.4	48.9	89.1	132.1	172.3	205.5	234.9	263.8	293.6	111.4	4.8				
						2400x2305	2400x4505x4200	>3100	HK+3200	3950	35200	19500	15400	14600	20200	32.4	48.9	89.1	132.1	172.3	205.5	234.9	263.8	293.6	111.4	4.8				
		GQ = 1000 kg																												
		1000	13			3	120	1600x1400	900x2100	2200x2150	2200x4350x2600	≤3100	fix 5600	2900	10800	5800	14300	12600	-	18.0	25.3	46.0	68.2	89.0	106.1	121.3	136.2	151.6	44.9	1.4
										2200x2150	2200x4350x2600	>3100	HK+2500	2900	10800	5800	14300	12600	-	18.0	25.3	46.0	68.2	89.0	106.1	121.3	136.2	151.6	44.9	1.4
						4	180			2200x2150	2200x4350x2600	≤3500	fix 6200	3450	12900	6800	15800	14100	10200	25.1	33.2	60.4	89.6	116.8	139.4	159.3	178.9	199.1	64.9	2.0
2200x2150	2200x4350x2600			>3500	HK+2700					3450	12900	6800	15800	14100	10200	25.1	33.2	60.4	89.6	116.8	139.4	159.3	178.9	199.1	64.9	2.0				
5	240			2400x2265	2400x4465x3700	≤3300	fix 6100			3600	30800	16700	16300	15000	15600	32.3	43.5	79.3	117.6	153.3	182.9	209.0	234.7	261.3	88.8	2.6				
				2400x2265	2400x4465x3700	>3300	HK+2800			3600	31000	16800	16300	15000	15600	32.3	43.5	79.3	117.6	153.3	182.9	209.0	234.7	261.3	88.8	2.6				
6	300			2500x2305	2500x4505x4200	≤3300	fix 6500		3950	36800	20300	16900	15800	20800	39.4	57.1	104.0	154.2	201.1	239.9	274.2	307.9	342.8	123.6	5.9					
				2500x2305	2500x4505x4200	>3300	HK+3200		3950	37000	20500	16900	15800	20800	39.4	57.1	104.0	154.2	201.1	239.9	274.2	307.9	342.8	123.6	5.9					
1100x2100	3			120	2500x2150	2500x4350x2600	≤3100		fix 5600	2900	10800	5800	14400	12600	-	18.0	25.3	46.0	68.2	89.0	106.1	121.3	136.2	151.6	45.0	1.4				
					2500x2150	2500x4350x2600	>3100		HK+2500	2900	10800	5800	14400	12600	-	18.0	25.3	46.0	68.2	89.0	106.1	121.3	136.2	151.6	45.0	1.4				
	4			180	2500x2150	2500x4350x2600	≤3500		fix 6200	3450	12900	6800	15800	14100	10200	25.1	33.2	60.4	89.6	116.8	139.4	159.3	178.9	199.1	64.9	2.0				
					2500x2150	2500x4350x2600	>3500		HK+2700	3450	12900	6800	15800	14100	10200	25.1	33.2	60.4	89.6	116.8	139.4	159.3	178.9	199.1	64.9	2.0				
	5			240	2500x2265	2500x4465x3700	≤3300	fix 6100	3600	30900	16700	16400	15100	15600	32.3	43.5	79.3	117.6	153.3	182.9	209.0	234.7	261.3	88.9	2.6					
					2500x2265	2500x4465x3700	>3300	HK+2800	3600	31000	16900	16400	15100	15600	32.3	43.5	79.3	117.6	153.3	182.9	209.0	234.7	261.3	88.9	2.6					
	6			300	2600x2305	2600x4505x4200	≤3300	fix 6500	3950	36900	20300	17000	15800	20800	39.4	57.1	104.0	154.2	201.1	239.9	274.2	307.9	342.8	123.7	5.9					
					2600x2305	2600x4505x4200	>3300	HK+3200	3950	37000	20500	17000	15800	20800	39.4	57.1	104.0	154.2	201.1	239.9	274.2	307.9	342.8	123.7	5.9					
	7			350	2600x2305	2600x4505x4200	n.a.	HK+3600	4950	46100	24900	18200	17200	27900	41.5	59.1	107.6	159.7	208.2	248.4	283.9	318.8	354.9	156.7	6.2					
					2600x2305	2600x4505x4200	n.a.	HK+4400	5700	49200	26500	18500	17600	31000	47.5	66.6	121.2	179.8	234.4	279.7	319.7	359.0	399.6	184.9	7.1					
8	400			2600x2305	2600x4505x4200	n.a.	HK+4950	6000	50700	29700	18800	18100	32800	59.2	82.0	149.2	221.3	288.5	344.3	393.5	441.8	491.8	225.0	8.9						
				2600x2420	2600x4620x3900	≤3000	fix 8600	7050	58700	34600	19400	18800	33000	142.1	179.9	327.3	485.6	633.1	755.4	863.3	969.4	1079.1	364.3	21.4						
9	450			2600x2420	2600x4620x3900	>3000	HK+5600	7050	58900	34900	19400	18800	33000	142.1	179.9	327.3	485.6	633.1	755.4	863.3	969.4	1079.1	364.3	21.4						
				2600x2420	2600x4620x3900	>3000	HK+5600	7050	58900	34900	19400	18800	33000	142.1	179.9	327.3	485.6	633.1	755.4	863.3	969.4	1079.1	364.3	21.4						
GQ = 1150 kg																														
1150	15			3	120	1800x1400	1100x2100	2500x2150	2500x4350x2600	≤3100	fix 5600	2900	11600	6100	15600	13500	-	20.6	28.4	51.8	76.8	100.1	119.4	136.5	153.3	170.6	49.5	1.7		
		2500x2150	2500x4350x2600					>3100	HK+2500	2900	11600	6100	15600	13500	-	20.6	28.4	51.8	76.8	100.1	119.4	136.5	153.3	170.6	49.5	1.7				
		4	180	2500x2150	2500x4350x2600			≤3500	fix 6200	3450	14200	7600	17000	15000	10300	28.3	37.9	69.1	102.5	133.6	159.4	182.1	204.5	227.7	73.5	2.3				
				2500x2150	2500x4350x2600			>3500	HK+2700	3450	14200	7600	17000	15000	10300	28.3	37.9	69.1	102.5	133.6	159.4	182.1	204.5	227.7	73.5	2.3				
		5	240	2600x2265	2600x4465x3700			≤3600	fix 6400	3600	32900	17700	18000	16400	16400	36.7	48.8	88.8	131.7	171.7	204.9	234.1	262.9	292.7	97.7	2.9				
				2700x2305	2700x4505x4200			≤3500	fix 6700	3950	38400	21100	18200	16800	21400	44.6	63.3	115.3	171.0	223.0	266.0	304.0	341.4	380.1	133.3	6.7				
		6	300	2700x2305	2700x4505x4200			>3500	HK+3200	3950	38500	21300	18200	16800	21400	44.6	63.3	115.3	171.0	223.0	266.0	304.0	341.4	380.1	133.3	6.7				
				2700x2305	2700x4505x4200		n.a.	HK+3600	4950	46100	24900	19200	17900	27200	74.1	98.8	179.7	266.6	347.6	414.8	474.0	532.3	592.6	201.4	11.2					
		7	350	2700x2305	2700x4505x4200		n.a.	HK+4400	5700	50700	27300	19800	18600	31300	54.5	74.8	136.2	202.1	263.4	314.3	359.2	403.4	449.0	198.2	8.2					
				2700x2305	2700x4505x4200		n.a.	HK+4950	6000	50700	28900	20200	19200	33100	67.0	91.3	166.1	246.5	321.3	383.4	438.2	492.1	547.7	240.2	10.1					
		8	400	2600x2420	2600x4620x3900		≤3100	fix 8700	7050	54500	32200	20700	19800	33300	150.9	190.7	347.0	514.8	671.2	800.8	915.2	1027.7	1144.0	380.9	22.7					
				2600x2420	2600x4620x3900		>3100	HK+5600	7050	60400	35700	20700	19800	33300	150.9	190.7	347.0	514.8	671.2	800.8	915.2	1027.7	1144.0	380.9	22.7					
		GQ = 1275 kg																												
		1275	17	3	120		2000x1400	1100x2100	2600x2150	2600x4350x2600	≤3100	fix 5600	2900	12500	6600	16700	14300	-	22.7	30.9	56.2	83.4	108.7	129.7	148.2	166.5	185.3	54.1	1.8	
2600x2150	2600x4350x2600					>3100			HK+2500	2900	12500	6600	16700	14300	-	22.7	30.9	56.2	83.4	108.7	129.7	148.2	166.5	185.3	54.1	1.8				
4	180			2600x2150	2600x4350x2600	≤3500			fix 6200	3450	14800	7900	18000	15800	10800	31.3	41.5	75.5	112.0	146.0	174.2	199.1								

Single-deck elevators - EN81-1:1998+A3:2009

Load	Persons	Speed	Travel height	Car	Door	Shaft	Machine room	Car height	Overhead clearance	Pit depth	Reaction load					Motor	Power supply capacity (380V - 415V)								Starting power	Heat dissipation
											R1	R2	R3	R4	R5		1 Unit	2 Unit	3 Unit	4 Unit	5 Unit	6 Unit	7 Unit	8 Unit		
kg		[m/s]	[m]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[kg]					[kW]	[kVA]								[kVA]	[kW]
GQ = 1350 kg																										
1350	18	3	120	1900x1500	1100x2100	2500x2250	2500x4450x2600	<=3100	fix 5650	2900	12700	6600	16900	14400	-	24.0	32.5	59.1	87.7	114.4	136.5	156.0	175.1	195.0	55.9	1.9
						2500x2250	2500x4450x2600	>3100	HK+2550	2900	12700	6600	16900	14400	-	24.0	32.5	59.1	87.7	114.4	136.5	156.0	175.1	195.0	55.9	1.9
						2500x2250	2500x4450x2600	<=3500	fix 6200	3450	15100	8000	18300	15900	11200	33.1	44.3	80.6	119.5	155.8	185.9	212.5	238.6	265.6	82.5	2.6
		4	180			2500x2250	2500x4450x2600	>3500	HK+2700	3450	15100	8000	18300	15900	11200	33.1	44.3	80.6	119.5	155.8	185.9	212.5	238.6	265.6	82.5	2.6
						2700x2365	2700x4565x3700	<=3600	fix 6500	3600	34800	18500	19500	17500	17100	42.5	55.8	101.6	150.7	196.5	234.5	268.0	300.9	335.0	107.9	3.4
						2800x2405	2800x4605x4200	<=3700	fix 6900	3950	40300	21900	19600	17800	21900	51.6	71.7	130.5	193.6	252.4	301.2	344.2	386.5	430.3	145.5	7.8
						2800x2405	2800x4605x4200	n.a.	HK+3600	4900	47200	25200	20500	18800	27500	64.4	86.8	158.0	234.4	305.6	364.6	416.7	467.9	520.8	188.5	9.7
						2800x2405	2800x4605x4200	<=3000	fix 7450	5600	52600	28000	21200	19600	31700	63.9	85.9	156.4	232.1	302.5	361.0	412.6	463.3	515.7	214.9	9.6
						2800x2405	2800x4605x4200	>3000	HK+4450	5600	52800	28200	21200	19600	31700	63.9	85.9	156.4	232.1	302.5	361.0	412.6	463.3	515.7	214.9	9.6
2800x2405	2800x4605x4200	>3000	HK+4450	5600	52800	28200	21200	19600	31700	63.9	85.9	156.4	232.1	302.5	361.0	412.6	463.3	515.7	214.9	9.6						
2800x2520	2800x4720x4200	n.a.	HK+4950	6000	54400	31400	21700	20300	33600	77.5	103.9	189.0	280.4	365.6	436.2	498.5	559.8	623.1	259.5	11.6						
GQ = 1600 kg																										
1600	21	3	120	2000x1700	1100x2100	2600x2450	2600x4650x2600	<=3100	fix 5650	2900	14700	7600	18700	15700	-	28.4	38.2	69.5	103.0	134.3	160.3	183.2	205.7	229.0	65.3	2.3
						2600x2450	2600x4650x2600	>3100	HK+2550	2900	14700	7600	18700	15700	-	28.4	38.2	69.5	103.0	134.3	160.3	183.2	205.7	229.0	65.3	2.3
		4	180			2600x2450	2600x4650x2600	<=3600	fix 6300	3350	16400	8400	20200	17300	12300	39.0	51.6	93.8	139.2	181.5	216.6	247.5	277.9	309.4	92.9	3.1
						2800x2565	2800x4765x3700	<=4000	fix 6900	3500	37500	19400	21500	19000	18300	49.8	64.8	117.9	174.9	228.1	272.1	311.0	349.2	388.7	121.4	4.0
						2900x2605	2900x4805x4200	<=4000	fix 7200	3850	42900	22800	21500	19200	22500	60.3	82.3	149.8	222.3	289.8	345.7	395.1	443.7	493.9	161.4	9.0
						2900x2605	2900x4805x4200	<=3600	fix 7250	4900	52800	27700	25000	22800	29300	70.3	94.3	171.6	254.6	331.9	396.0	452.6	508.2	565.7	209.0	10.6
						2900x2605	2900x4805x4200	<=3400	fix 7850	5450	55600	28900	23300	21200	32400	75.5	100.0	182.1	270.1	352.1	420.2	480.2	539.2	600.2	237.3	11.3
						2900x2605	2900x4805x4200	>3400	HK+4450	5450	55800	29100	23300	21200	32400	75.5	100.0	182.1	270.1	352.1	420.2	480.2	539.2	600.2	237.3	11.3
						2700x2720	2700x4920x3900	<=3700	fix 8750	5950	66900	37800	27900	26000	37600	101.8	131.4	239.2	354.8	462.5	551.9	630.7	708.3	788.4	322.8	15.2
						2700x2720	2700x4920x3900	<=3800	fix 9450	7100	76600	43100	29200	27400	39100	104.5	135.5	246.5	365.7	476.8	568.9	650.2	730.1	812.7	377.7	15.7
GQ = 1800 kg																										
1800	24	3	120	2000x1800	1100x2100	2600x2550	2600x4750x2600	<=3100	fix 5650	2900	15500	7900	19900	16500	-	31.9	42.6	77.4	114.9	149.8	178.7	204.2	229.4	255.3	71.2	2.5
						2600x2550	2600x4750x2600	>3100	HK+2550	2900	15500	7900	19900	16500	-	31.9	42.6	77.4	114.9	149.8	178.7	204.2	229.4	255.3	71.2	2.5
		4	180			2600x2550	2600x4750x2600	<=3600	fix 6300	3350	17700	9000	21400	18100	12900	43.1	56.6	103.0	152.8	199.2	237.7	271.7	305.1	339.6	102.2	3.5
						2800x2665	2800x4865x3700	<=4100	fix 7000	3500	39200	20100	22800	19900	18900	55.6	72.1	131.2	194.6	253.7	302.7	345.9	388.4	432.4	131.7	4.4
						2900x2705	2900x4905x4200	<=4200	fix 7400	3850	44700	23400	22900	20100	22900	67.3	90.9	165.5	245.5	320.0	381.9	436.4	490.1	545.5	173.7	10.1
						2900x2705	2900x4905x4200	<=3700	fix 7350	4900	54500	28300	26200	23600	29800	78.4	104.2	189.6	281.3	366.7	437.6	500.1	561.5	625.1	223.1	11.8
						2900x2705	2900x4905x4200	<=3600	fix 8050	5450	57400	29500	24500	22100	32800	84.8	111.9	203.6	302.1	393.8	469.9	537.1	603.1	671.3	254.9	12.7
						2700x2820	2700x5020x3900	<=3800	fix 8850	5950	68700	38400	29200	26900	38200	112.3	143.9	261.9	388.5	506.5	604.3	690.6	775.5	863.3	340.5	16.8
						2700x2820	2700x5020x3900	<=3900	fix 9550	7100	78400	43600	30400	28300	39700	116.1	149.2	271.5	402.8	525.1	626.6	716.1	804.1	895.1	397.4	17.4
						GQ = 2000 kg																				
2000	26	3	120	2300x1650	1200x2100	2900x2405	2900x4605x2600	<=3100	fix 5650	2900	16500	8600	21800	18000	-	35.4	47.0	85.6	126.9	165.5	197.4	225.6	253.4	282.0	78.2	2.9
						2900x2405	2900x4605x2600	>3100	HK+2550	2900	16500	8600	21800	18000	-	35.4	47.0	85.6	126.9	165.5	197.4	225.6	253.4	282.0	78.2	2.9
		4	180			2900x2405	2900x4605x3700	<=3700	fix 6400	3350	35900	18300	22600	18900	12900	50.5	66.8	121.7	180.5	235.3	280.7	320.8	360.3	401.0	110.3	4.1
						3100x2520	3100x4720x3700	<=4000	fix 6900	3500	40800	21300	24300	21000	19000	61.4	79.4	144.6	214.5	279.6	333.6	381.3	428.2	476.6	142.9	4.9
						3200x2560	3200x4760x4200	<=4000	fix 7200	3850	46200	24700	24400	21300	23500	74.3	99.6	181.3	269.0	350.7	418.5	478.2	537.0	597.8	186.8	11.2
						3200x2560	3200x4760x4200	<=3500	fix 7150	4900	56100	29700	27900	24900	30700	86.6	114.2	207.8	308.3	401.9	479.6	548.1	615.5	685.1	238.6	13.0
						3200x2560	3200x4760x4200	>3500	HK+3650	4900	56300	29900	27900	24900	30700	86.6	114.2	207.8	308.3	401.9	479.6	548.1	615.5	685.1	238.6	13.0
						3200x2560	3200x4760x3900	<=4000	fix 8400	5500	66000	34800	30100	27300	36000	94.1	122.2	222.5	330.0	430.3	513.4	586.7	658.9	733.4	286.0	14.2
						3000x2665	3000x4865x3900	<=3600	fix 8650	5950	70500	39800	31000	28300	39200	122.7	156.5	284.7	422.4	550.7	657.1	751.0	843.3	938.7	360.5	18.4
						3000x2665	3000x4865x3900	<=4100	fix 9750	7100	80100	45100	32200	29600	40600	127.8	163.0	296.7	440.1	573.8	684.6	782.4	878.6	978.1	419.6	19.2

The planning parameters are indicative only and subject to change without prior notification.

Schindler 7000 planning considerations.

Double-deck elevators.

EN81-20/50:2014 / EN81-1:1998+A3:2009

Overall

- Prerequisites
 - The lower deck does not serve the highest floor level
 - The upper deck does not serve the lowest floor level
- Hoistway width and depth dimensions are based on clear dimensions with horizontal building tolerances:
 - travel height ≤ 180 m: ± 25 mm
 - travel height > 180 m and ≤ 250 m: ± 45 mm
 - travel height > 250 m and ≤ 500 m: ± 65 mm
- Structural car height: 2200 mm - 3600 mm
- Vertical distance between the two decks [HEDD]:
 - HEDD min.: 2943 mm
 - HEDD max.: 6000 mm
 - HEDD min.: is depending on the car configuration
- Indicated hoistway and machine room sizes are standard sizes without safety gear on counterweight
- Indicated car sizes are based on ISO. For different sizes, please contact our local sales office
- Roping: for speeds from 2.5 m/s - 4.0 m/s = 2:1, for speeds 2.5 m/s - 10.0 m/s = 1:1
- All given information is for general reference and planning. For special construction and code regulation details, please contact our local sales office
- Calculation contain energy recuperating converters only and permanent magnet technology machines where possible

Overhead clearance and pit depth

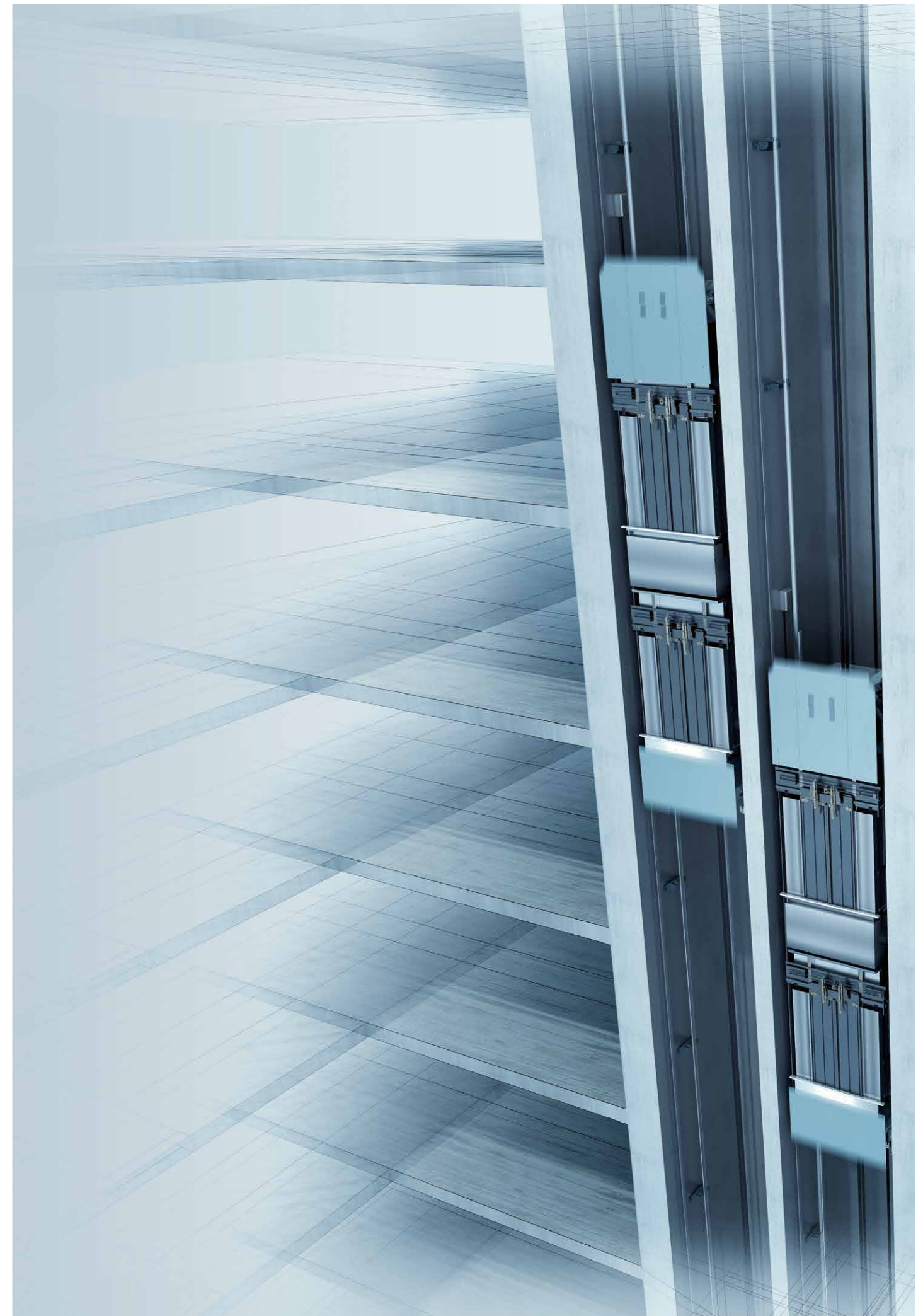
- The overhead clearance is based on a structural car height of 3000 mm
- For smaller overhead clearance and pit depth, please contact our local sales office

Power supply

- Power supply wiring for lighting: single phase, neutral, earth (to be in accordance with national code requirements)
- Power supply wiring for ACVWF drive: 3-phase, neutral, earth or 3-phase, earth (to be in accordance with national code requirements)
- Main frequency 50 Hz or 60 Hz

Heat dissipation in hoistway and machine room

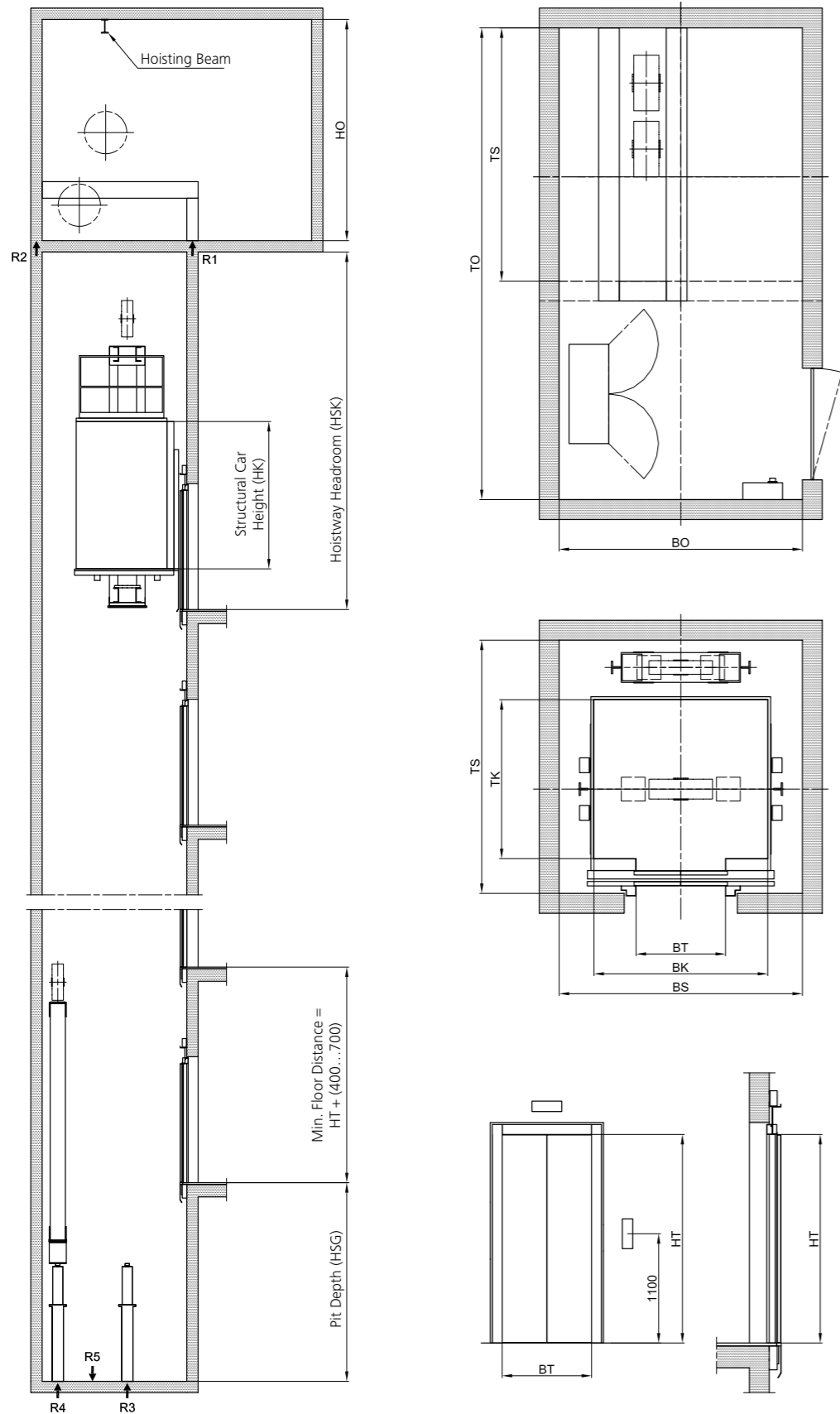
- Our equipment is designed to withstand a temperature range of 5 to 40 degrees Celsius
- For the service personal, the machine room and hoistway temperature should be kept within the range of 5 and 35 degrees Celsius
- The humidity in the machine room should not exceed 95% and not condensing



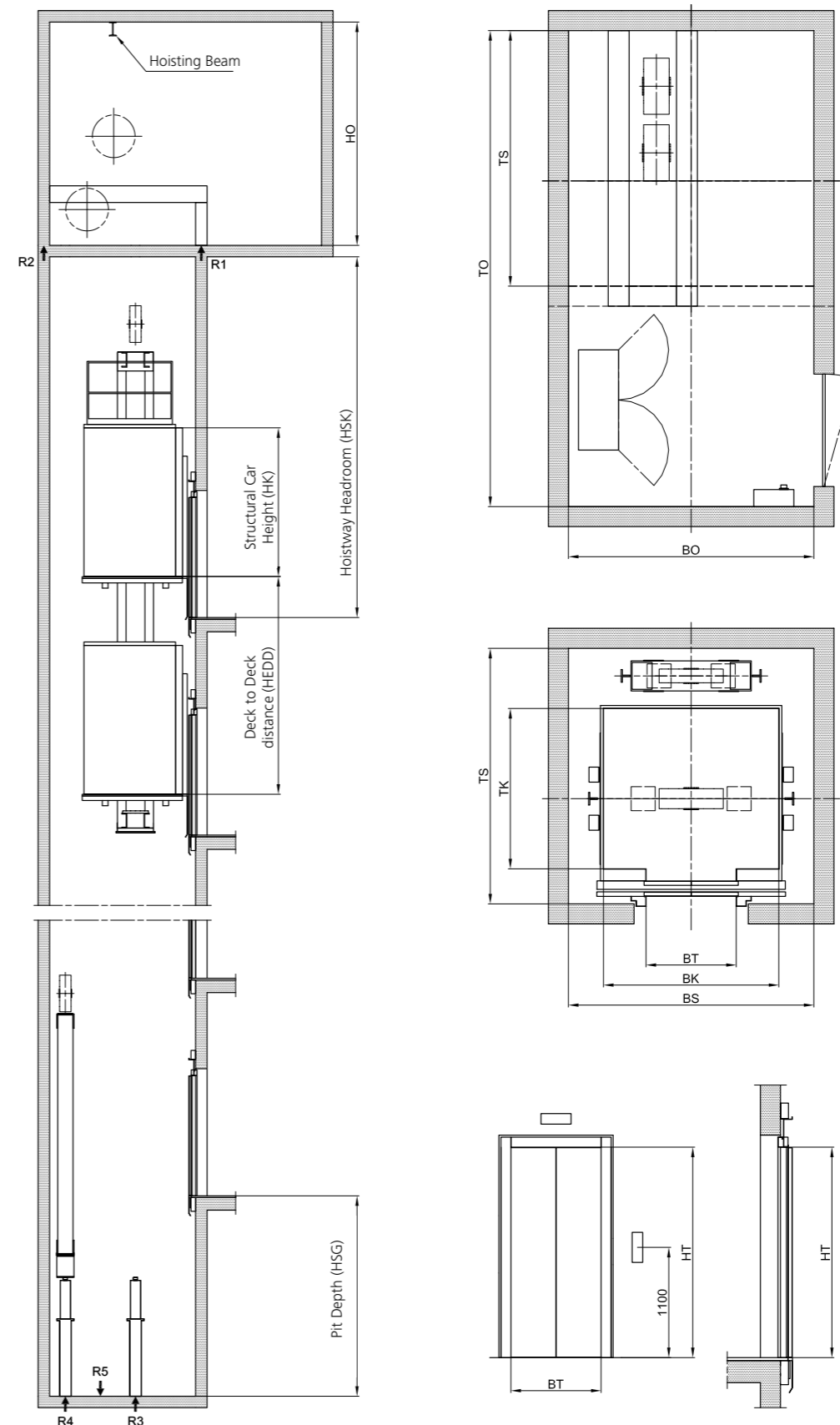
Schindler Planning Parameters.

Hoistway and machine room layout.

Single-deck elevators



Double-deck elevators



- BK** Clear car width
- BO** Width of machine room
- BS** Hoistway width
- BT** Clear width of landing door
- GQ** Rated load
- HEDD** Distance entrance to entrance on double-deck cars
- HK** Car height
- HO** Height of machine room
- HSG** Depth of hoistway pit
- HSK** Hoistway headroom (top floor to ceiling)
- HT** Clear height of landing door
- TK** Clear car depth
- TO** Depth of machine room
- TS** Depth of hoistway

Disclaimer
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Schindler 7000.

We pulse the skyline.

Schindler Elevator Ltd.
Large Project Division

Zugerstrasse 13
6030 Ebikon
Switzerland
Phone + 41 41 445 31 31

lpd@schindler.com
www.schindler.com

Schindler Elevator Co., Ltd.
Large Project Division

No. 555 Xingshun Road
Jiading District
201815 Shanghai, China
Phone + 86 21 6709 6666

lpd@schindler.com
www.schindler.com

