



High-rise elevators  
Comfort



**Schindler**

# Comfort. Our passion.

Comfort is the perceived effect of the elevator system on the passenger and the building. Comfort results from ride quality (product design and installation) as well as the interaction between the elevator system and the building.

Ride quality is affected by the vibration, noise, acceleration, and deceleration of the elevator system. This comfort criterion depends on the design of the elevator system as well as the quality of its installation and maintenance.

Optimization of the following parameters is vital for the passenger to experience unparalleled comfort in every elevator ride:

### Inside car vibration

The Schindler 7000 car is designed to fully compensate vertical and horizontal effects of the elevator ride on the human body.

### Outside car vibration

Vibration caused by the elevator system (e.g. vibration of the counterweight roller-guides) is reduced to a minimum and does not affect rooms surrounding the elevator hoistway.

### Airborne noise inside the car

Our elevator cars are designed to meet all international standards and exceed the highest customer requirements.

### Airborne noise outside the car

The elevator system is designed to reduce noise outside the car to a negligible level.

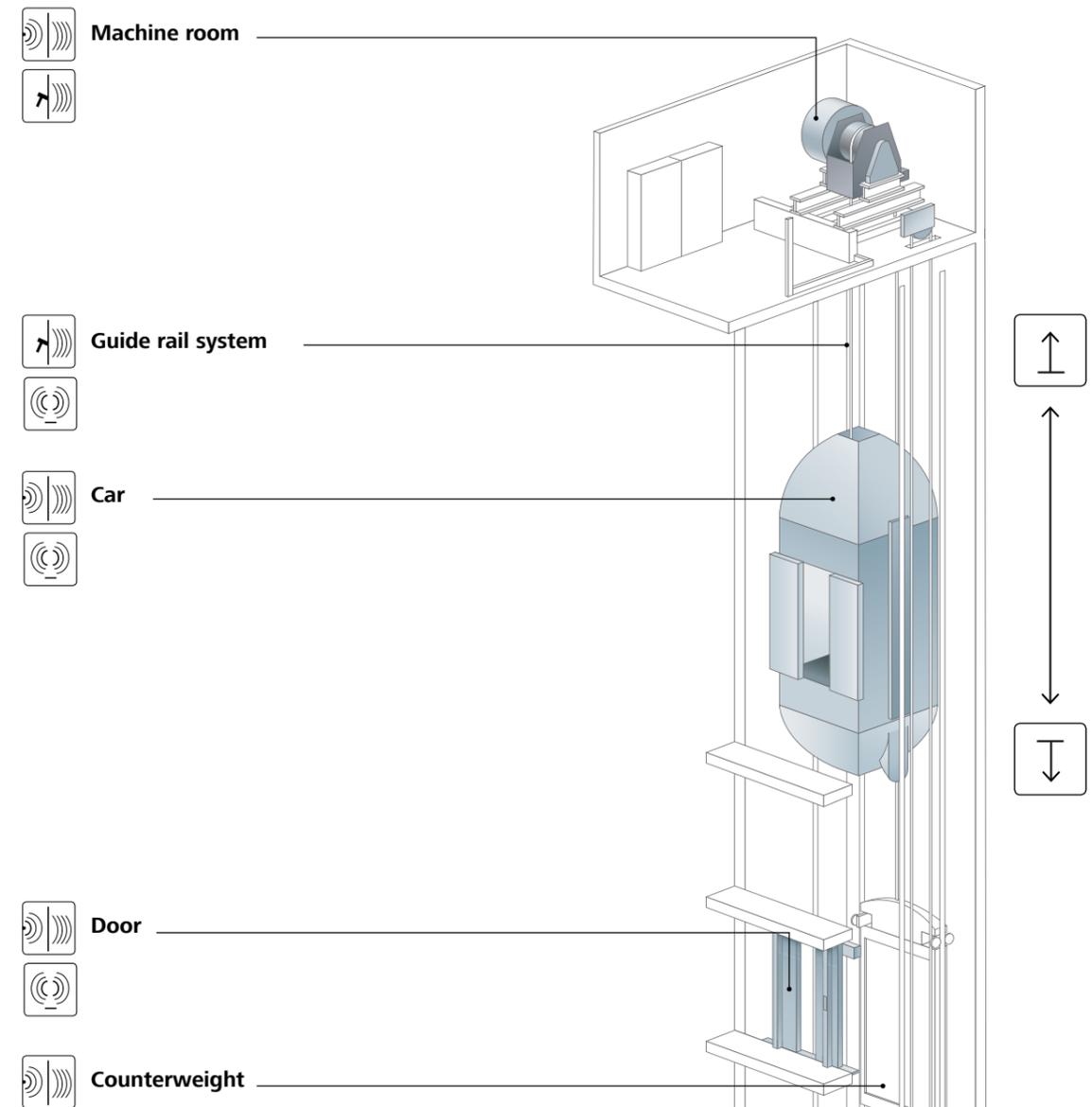
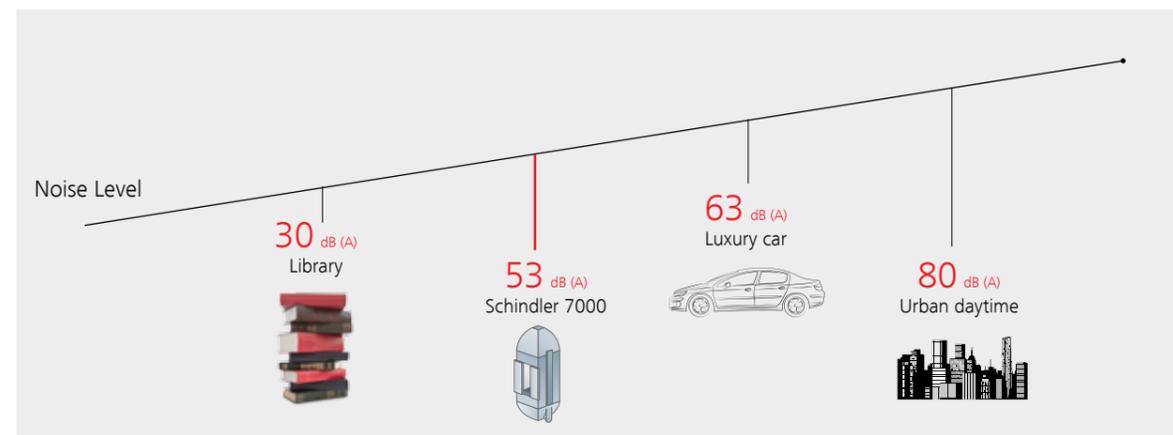
### Car acceleration/deceleration

The vertical acceleration/deceleration directly affects the sensation perceived by the passenger. Our design offers a variety of levels from very smooth (for maximum comfort) to firm (for maximum performance).

### Structure-borne noise

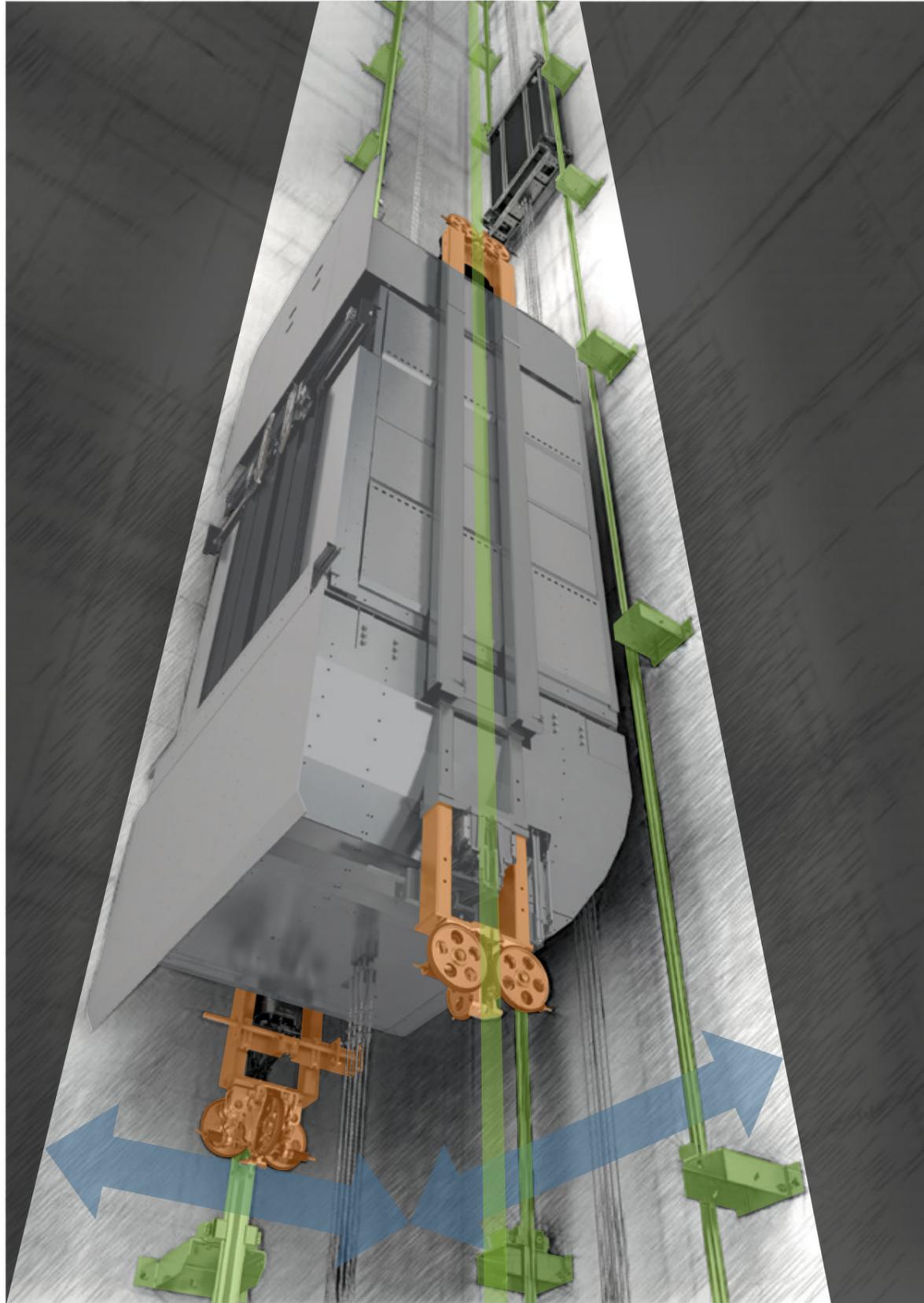
The elevator components are designed to reduce or completely eliminate structure-borne noise which could otherwise spread to the building.

## Typical noise levels:



Structure borne noise	Airborne noise	Vibration	Acceleration	Deceleration

# Comfort. The end-result of optimal design, installation and maintenance.



## By Design

### High-comfort car system

The car system integrates structural and aerodynamic measures for optimal ride comfort with features such as:

- High-performance car sling and roller guides
- Noise-absorbing car floor
- Optimized suspension and car damping elements

### Guide rail system

The guide rail system is designed to minimize transmission of structure-borne noise into the building and to compensate for building shrinkage.

### Roller-guide system

The advanced high-speed roller guides reduce vibration of the car system to a minimum by the following measures:

- High-precision roller tires
- Industry-leading roller bearings
- Balancing of the elevator car to avoid asymmetrical positioning at standstill

### Hoistway dimensions

Planning parameters (e.g. car dimensions) are chosen to counteract potential chimney and piston effects.

## By Installation and maintenance

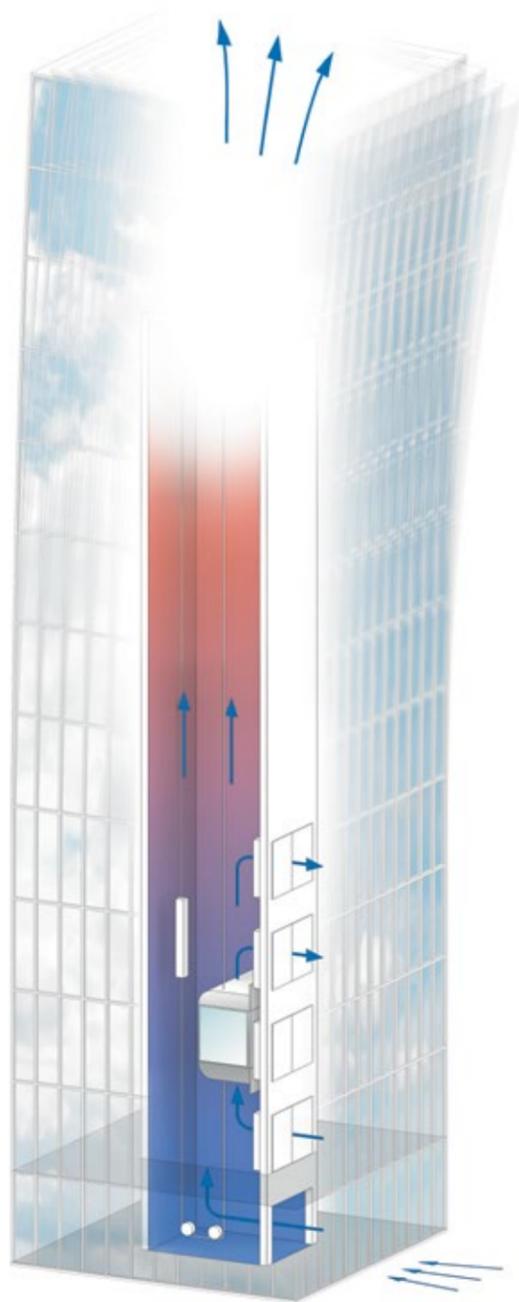
### Advanced processes

Supportive tools ensure precise installation of the elevator components in a well-defined process. A pioneering maintenance process assures the achieved comfort level throughout the entire elevator life cycle.

# ...but comfort goes beyond the elevator system.

The planning phase of a building is highly important for the elevator ride quality. The design of a building significantly influences the elevator system and its performance.

By combining the Schindler 7000 with our high-rise building expertise we formulate the ideal solution for your needs.



The following factors could affect your ride quality:

### Building sway

Building sway is caused by:

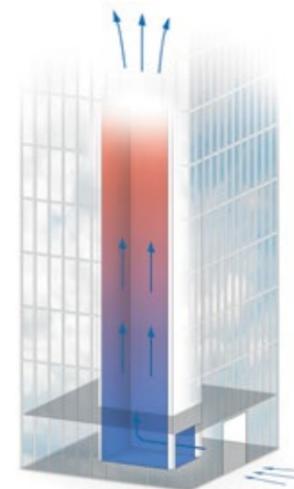
- Lateral wind loads
- Strong sunlight and temperature changes
- Earthquakes

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.



### 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. 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.



### Chimney effect

The chimney effect means the vertical movement of air in the hoistway caused by atmospheric conditions. It is a natural phenomenon, mainly driven by internal/external temperature differences.

The chimney effect can severely impair the operation of a building and only be avoided by design measures in the building. To avoid such issues in the elevator hoistway, our engineers provide skilled support in the building design phase.

# Schindler 7000.

Taking comfort to new heights.

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