DESIGNING DOORS
FOR YOUR BUILDING

A handbook for architects
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Every minute of every day, in different kinds of buildings all around the world, millions of people use KONE door solutions. In offices, hospitals, hotels, retail centers, transit hubs, and residential buildings, our pedestrian doors are quietly and efficiently helping large numbers of people move around easily and safely, and our industrial doors are keeping goods flowing smoothly. Just as with any other type of building equipment, the key to their smooth operation is careful planning.

Dear reader,

We aim to provide our customers with a performance edge by offering the best user experience in the rapidly developing urban environment. Our innovative people flow solutions help people and goods move within and between buildings smoothly, safely, comfortably, and without waiting.

Doors provide the first and last impression of any building, and our solutions make sure that these impressions are always positive. They also serve many purposes beyond just providing access for people and goods and acting as a design feature – including insulation, fire protection, access control, and contamination prevention. Furthermore, they can incorporate features that support goals such as energy efficiency. Our doors work in harmony with the wider KONE offering – including elevators, escalators, and turnstiles, as well as intelligent solutions for access and destination control, communication, and equipment monitoring. This means KONE can provide everything you need for your people flow needs. Together, our solutions ensure that, whatever your building type, the people and goods flow will be safe, secure, and smooth.

This handbook is intended to be a clear, easy-to-understand introduction to the main process stages, from initial planning to choosing the right door solutions for your project. It will help you to select the correct solution for each specific application, recommend ways to optimise people flow, and introduce essential door-related requirements for specific building types. It also briefly introduces our door offering and points you to the wealth of useful information and handy tools available on our website, kone.com.au and kone.co.nz. Should you have any further questions, your local KONE representative will be happy to help.
This handbook is intended provide guidance on what to consider when planning people and goods flow solutions for your projects.

The initial sections deal with the issues you need to consider during planning, solution selection, and specification in order to optimise people flow within your building. This is broken down by building type to make it easier for you to find what you’re looking for.

The later sections cover our different types of door solutions and their main features, as well as the relevant safety standards to consider in relation to building doors. For product-specific information, check the product segment matrix on page 11, where you can quickly check which KONE products we recommend for different building types.

Finally, there is a brief overview of the support we can provide for every stage of the equipment life cycle, from planning and installation to maintenance and modernisation.

The latest information about KONE door solutions and the rest of our offering – including elevators, escalators and autowalks, People Flow Intelligence solutions, and our tailored maintenance and modernisation services – can be found on our website, kone.com.au and kone.co.nz. If you are using a printed copy of this handbook, it’s also where you can download the latest version. The digital version includes the most up-to-date information on our products and services.
HOW WE MEET YOUR NEEDS AT EACH KEY STEP

1. The first step when planning building doors involves looking at the whole building people flow holistically, including:
   - Analysing the floor plan and sections of the building
   - Analysing the people flow needs according to the type and specific characteristics of the building
   - Where possible, checking traffic capacities (the volume of people each door is expected to handle) together with the traffic capacities of any other equipment in the building, such as elevators, escalators, and turnstiles
   - Planning integration of doors and other equipment (for example using KONE People Flow Intelligence solutions) to help people move around the building smoothly while maintaining security
   - Developing a complete understanding of your building’s requirements
   - Giving you an overview of the typical door solutions according to building type
   - Defining preliminary dimensions

2. The next step is to define the right door solutions for your project (see page 11). This is determined by:
   - The different characteristics of pedestrian and industrial doors
   - Product recommendations according to the standards and building (segment) requirements, such as security, environment etc.

3. The final step is to specify the required dimensions for the door solutions, in order to complete the building’s specification book. This involves:
   - Clarification of interfaces with other equipment in the building and with the building itself
   - Checking the requirements of local standards and regulations for issues like safety and fire protection
   - Technical drawings (AutoCAD/BIM models)
   - Deﬁning ﬁnal installation dimensions

OPTIMISING PEOPLE FLOW IN YOUR BUILDING

UNDERSTANDING PEOPLE FLOW NEEDS

People flow is all about how people move within and between buildings, and in an increasingly urbanised world where city populations are rising rapidly, it’s more important than ever. KONE door solutions are an integral part of our vision to offer the best people flow experience by helping people move around smoothly, safely, comfortably, and without waiting while ensuring high-quality accessibility for all.

People flow is analysed and planned based on several parameters, the most important of which is the total journey time, defined as the time taken to travel from the building’s main entrance to the destination. The total journey time can be divided into horizontal and vertical dimensions.

For horizontal traffic, there are parameters such as usage of space, dwell time, and crossing flows or paths. Elevators are the core element of the vertical dimension in any high-rise building.

Table 1 gives some examples of factors that you should consider when choosing pedestrian doors.

SELECTING PEDESTRIAN DOORS

Doors can be used to separate the various user and goods flows within a building. Location of doors and correctly selected door solution help minimise cross flows and ensure smooth, safe movement for all.

The location, type, dimensions (width or diameter and height), and operating speed of a door solution influence user behavior and have a direct impact on door capacity. Table 1 gives some examples of factors that you should consider when choosing pedestrian doors.

Figure 1. A typical user journey in an office building

Figure 2. Example: different paths in hospital environment
Who are the building’s main user groups? Pay particular attention to people with restricted mobility and elderly.

Is the building population stable, or will it change often over time?

How do end-users perceive personal space and queuing behavior?

Is the door external one or for internal application?

Does building design channel people to or away from the doors?

What space is required for particular door type installation?

How critical is it to save space in each concrete case (see Figure 3)?

Are there any areas that cause distractions or cross flows (restaurants, security measures, lounges, and multiple entry or exit points)?

Does building design channel people to or away from the doors?

Location of doors on escape routes; fire resistant and burglar-proof features

Is there risk of traffic bottlenecks? Size and number of doors impact energy flow (hot and cold air) into and out of the building or floor and control draft in the building

Is integration of doors, elevators, and an access control system needed?

One-way traffic capacity is higher than two-way; for example, sliding vs. swing doors

In-wall installation can be more space-efficient than on-wall installation

Does building design channel people to or away from the doors?

In what areas of the building will doors be located?

Are there any areas that cause distractions or cross flows (restaurants, security measures, lounges, and multiple entry or exit points)?

Can doors be opened from walls or ceilings?

Is there risk of traffic bottlenecks? Size and number of doors impact energy flow (hot and cold air) into and out of the building or floor and control draft in the building

Are there any areas that cause distractions or cross flows (restaurants, security measures, lounges, and multiple entry or exit points)?

Doors can contribute to smarter usage of the space in the building in several ways:

- Certain door types can save more space than others. For example, sliding doors are up to 15% more space efficient than standard swing doors, which require 1.3–2 m² of floor space for opening (see Figure 3).
- Particular door types can reduce the risk of collision with moving objects and people (see Figure 4).

Industrial doors vary in terms of space needed for installation, their construction materials, insulation and sound properties, opening and closing speed and required accessories. The most common types of industrial doors are sectional overhead doors, roller shutters, grilles, and high-speed doors.

When planning a building that will include industrial doors, it is essential that you take into account the following parameters as early as possible in the design process:

- What is the door external one or for internal application?
- Maximum size of the opening (width, height)
- Heat transmission (U-value: W/m²K)
- Air leakage or air permeability
- Air infiltration, which is dependent on the opening and closing speed (m/s)
- Power consumption (stand-by power, W)
- Draft-prevention needs
- Headroom
- Door installation depth
- Environment (doors equal and over 2500 mm require equipment for working at height)

Although building types can be loosely categorised into medical, office, infrastructure, residential, retail, educational/leisure and hotel segments each and every building has its own unique people flow transportation requirements. The following sections of this handbook will take you through the key requirements to consider when selecting door solutions for different types of buildings.
Medical buildings have a diverse range of requirements when it comes to door solutions, with hygiene and operational efficiency being critically important. From the main entrance and other public spaces like cafeterias, to specialist areas like loading bays, patient wards, and operating theatres, medical buildings typically feature a wide range of different door solutions.

From the end-users’ perspective, medical buildings have defined flows of people that need to be separated by building design; doors play an important role in this separation:

- Polyclinic patients
- Hospital patients staying for more than 24 hours
- Staff
- Patients’ visitors
- Housekeeping personnel (e.g. canteen staff, cleaners)

The primary goal is to maintain high hygiene level by preventing contamination and the transfer of bacteria and viruses (for example, through compartmentalisation and securing the building areas).

**Figure 7.** Doors help to maintain different pressure and temperature levels in hospitals.

**MAIN ENTRANCE**

Smooth people flow and accessibility for all are the key requirements here. The entrance doors must allow people to move into and out of the building smoothly and safely while simultaneously ensuring a comfortable environment by preventing heating and cooling losses.  

**Typical solutions:** Sliding and revolving doors

**AMBULANCE AND EMERGENCY ENTRANCE**

At this entrance, fast-opening doors fitted with code-compliant safety solutions can save precious seconds when transporting patients in need of urgent medical attention and dispatching ambulances.  

**Typical solutions:** Sliding, high-speed, sectional overhead and high-speed sectional doors

**STAFF ENTRANCES**

It is important to create a good balance between smooth access and high security at staff entrances. This can be achieved by integrating doors with building access control systems.  

**Typical solutions:** Sliding and swing doors, access control integration

**LOADING BAY**

Medical buildings take delivery of large quantities of medicines, food, and other goods every day. The door solutions for these areas need to be durable, reliable, and energy efficient.  

**Typical solutions:** Sectional overhead doors, high-speed doors, roller shutters

**WAITING ROOM**

(Outside temperature or +20°C)

**CAFETERIA**

Here, doors must provide access for large volumes of people simultaneously, while at the same time being unobtrusive and space-efficient.  

**Typical solutions:** Sliding doors

**HALLWAYS AND CORRIDORS**

Well-designed doors in hallways and corridors improve patient comfort by reducing noise, help reduce energy costs by retaining heat, and provide fire protection through compartmentalisation.  

**Typical solutions:** Sliding, gliding and swing doors

**OPERATING THEATRES AND X-RAY ROOMS**

For doors, these are the most demanding environments in hospitals. They must provide fire protection, sound reduction, and radiation protection where required, and cannot interfere with magnetic fields as this could disrupt sensitive equipment.  

**Typical solutions:** Hermetic doors, access control integration

**PATIENT WARDS**

It is recommended to have a wide opening in patient wards to allow easy access for patients in wheelchairs and hospital beds. Quiet, space efficient and hygienic doors improve accessibility for patients in wheelchairs.  

**Typical solutions:** Sliding doors

**INTENSIVE CARE UNIT**

**OPERATING THEATRE (+17°C)**

**POLYCLINICS**

**RECOVERY (temperature +19°C)**

**MEDIUM CARE (+20°C)**

**X-RAY / PATIENTS**

**LOADING BAYS, PARKING FOR AMBULANCES**

**WAITING ROOM (outside temperature or +20°C)**

**TYPICAL SOLUTIONS:**

- Sliding and revolving doors
- Sliding, high-speed, sectional overhead and high-speed sectional doors
- Sliding doors
- Sliding, gliding and swing doors
- Sectional overhead doors, high-speed doors, roller shutters
- Sliding and swing doors, access control integration
- Hermetic doors, access control integration
- Gliding doors

**COMMON INTERNAL FACILITIES**

**SPECIAL ROOMS**
OFFICE BUILDINGS

Office buildings are generally open environments, so it is vital that the flow of people into, through, and out of them is efficiently controlled. Doors play a key role in all areas of these busy environments, from the main entrance and lobby to individual floors and restaurant areas. They are also important in terms of compartmentalising the building for the purposes of fire protection and access control.

A typical office building features a wide range of different door types, including revolving, sliding, swing, and gliding doors. Lobbies may also include turnstile solutions to improve people flow, enable secure access control, and provide clear guidance for building users.

With the right types of doors in the right locations, the building will be a pleasure to use for tenants and visitors, and also more attractive to potential tenants. There is a wide range of issues to take into consideration when specifying door solutions for office buildings, including:

- Capacity and accessibility requirements
- Traffic peaks (morning, lunchtime, evening)
- Available space for door solutions
- Safety
- Fire safety and related regulations, and evacuation routes
- Security, including access control needs
- Environmental issues such as heating, cooling, insulation, and drafts
- Soundproofing
- Restroom access

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RETAIL BUILDINGS

Every store type and building is unique in terms of how shoppers move around, how many visit and when, and how they browse. Department stores, big-box stores, shopping centers, and independent retail buildings all have different requirements. Regardless of the business model, doors play a very important role in ensuring the smooth, safe, and secure flow of people and goods.

The issues to take into consideration when specifying door solutions for retail buildings include:

- Capacity and accessibility requirements
- Desired people flow routing, depending on the store type
- Relationship between doors and vertical transportation solutions (see Planning retail People Flow handbook and KONE Escalators and Autowalks planning guide)
- Available space for the door solutions
- Security, including burglary protection needs
- Accessibility requirements
- Environmental factors such as heating, cooling, and insulation
- Goods flow for loading-bay and warehouse areas

Pedestrian doors help create the optimal shopping experience and ensure the quickest possible return on investment, while industrial doors ensure a smooth flow of goods into, around, and out of the building. In the event of an emergency such as a fire, the doors should allow large numbers of people to safely escape the building in the shortest possible time, while also helping prevent the spread of fire and smoke.

The issues to take into consideration when specifying door solutions for retail buildings include:

- Ensuring smooth, convenient people flow for passengers with luggage
- Providing comfortable and convenient access to meeting, lounge, and spa facilities
- Preventing unauthorised access to security-controlled areas – a particularly important consideration in airports
- Planning for complex people flow routes and heavy traffic peaks
- Use of doors to provide guidance for passengers - the door design should invite you to pass through
- Requirements for staff access
- Industrial door requirements for specialist areas such as baggage storage facilities and parking garages
- Fire safety and related regulations, and evacuation routes
- Security requirements
- Environmental factors such as heating, cooling, and insulation

TYPICAL SOLUTIONS: Sliding, swing and revolving doors, roller shutters or grilles, high-speed doors, sectional overhead doors

INFRASTRUCTURE BUILDINGS

Infrastructure buildings include public transportation hubs like railroad, bus, and metro stations, as well as airports. These busy environments place heavy demands on equipment. Door solutions have to be durable and reliable, since unexpected breakdowns can have huge repercussions for travelers. If the doors are not well planned, they can create bottlenecks that present a significant security and safety risk.

Typically, sliding or revolving doors are used at main entrances to provide access to the building. These doors handle huge traffic volumes, especially during peak travel times. Doors are also used to provide gate or platform access, to link different areas of the building, and to compartmentalise areas such as lounges, meeting rooms, or security-controlled spaces. Turnstiles and tripod turnstiles – as standalone units or integrated with access control systems – can be used to provide authorised access to gates, platforms, and restrooms.

Infrastructure buildings are typically integrated with other facilities to form multi-use buildings, which bring their own set of people-flow challenges. The issues to take into consideration when specifying door solutions for infrastructure buildings include:

- Ensuring smooth, convenient people flow for passengers with luggage
- Providing comfortable and convenient access to meeting, lounge, and spa facilities
- Preventing unauthorised access to security-controlled areas – a particularly important consideration in airports
- Planning for complex people flow routes and heavy traffic peaks
- Use of doors to provide guidance for passengers - the door design should invite you to pass through
- Requirements for staff access
- Industrial door requirements for specialist areas such as baggage storage facilities and parking garages
- Fire safety and related regulations, and evacuation routes
- Security requirements
- Environmental factors such as heating, cooling, and insulation

With huge volumes of people passing through every day, often around the clock, rock-solid people flow planning is critical. Safety is also of paramount importance, since in the event of an emergency such as a fire, the doors should allow large numbers of people to safely escape the building in the shortest possible time.

High-traffic, complex environments like bus, railroad, and metro stations can incorporate a huge range of door types, all designed to serve a specific purpose. In addition to pedestrian doors, airports also feature a wide range of specialised industrial doors for emergency and maintenance vehicle depots, aircraft hangers, and baggage handling operations.

TYPICAL SOLUTIONS: Sliding, gliding, and revolving doors, turnstiles, roller shutters, grilles, high-speed doors and sectional overhead doors.
In these environments it’s impossible to overstate the importance of the entrance and lobby area. Guests will base their first impressions of the hotel on their experience as they enter, and well-planned door solutions play a critical role in ensuring that this experience is welcoming and hassle-free – every time. Around the hotel, doors also provide comfortable access to areas like gyms and spa facilities, public bathrooms, and meeting spaces. Just like any other building, hotels also experience traffic peaks; during busy hours people are checking in or out in large numbers, so entrance door solutions need to be carefully planned to ensure smooth people flow.

The issues to take into consideration when specifying door solutions for hotel buildings include:

- Ensuring smooth, convenient people flow for all residents with any accessibility requirements
- Maximising usable floor space within apartments
- Emergency exits and evacuation routes
- Parking garage requirements
- Access to shared facilities like laundry rooms, garbage disposal facilities, and other communal spaces
- Goods and people flow for maintenance activities

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The issues to take into consideration when specifying door solutions for hotel buildings include:

- Ensuring spaciousness in entrance and lobby areas
- Optimising people flow with a variety of entrance solutions (e.g. revolving and sliding doors)
- Ensuring smooth, convenient people flow for guests with luggage and other accessibility requirements
- Heavy traffic peaks at busy times (check-out and check-in) and during the breakfast rush
- Fire-rating requirements for all doors in line with local regulations
- Safety, both from the point of view of emergency exits and evacuation routes, but also general end-user safety
- Parking garage requirements and ensuring smooth flow into and out of goods reception areas
- In-room solutions for areas like bathrooms; soundproofing solutions for meeting spaces
- Separate, secure routes for staff and maintaining smooth goods and people flow for housekeeping and maintenance activities

Guests appreciate a feeling of space, a welcoming entrance and lobby area that ties in seamlessly with the rest of the building’s design, and the ability to move around comfortably and with as little hassle as possible. As well as guests, hotels need to take care of the needs of their staff, too. This means providing secure access and easy movement between the different areas of the building to ensure that the working day runs as smoothly as possible, with staff able to provide the best possible service.

Residential buildings are increasingly evolving into mixed-use facilities that also incorporate retail and office spaces. This trend demands a clear separation of the different functions’ people flows while still maintaining accessibility. Some residential buildings may also incorporate features that are more typical of offices or hotels. For example, upscale residential buildings may have a lobby and reception, and some may even have personal elevators going directly to apartments. All these cases place unique demands on the building design in terms of the appropriate door solutions.

The issues to take into consideration when specifying door solutions for residential buildings include:

- Ensuring smooth, convenient people flow for all residents with any accessibility requirements and maximising usable floor space within apartments
- Emergency exits and evacuation routes
- Parking garage requirements
- Access to shared facilities like laundry rooms, garbage disposal facilities, and other communal spaces
- Goods and people flow for maintenance activities

Every resident should be able to move into, out of, and around the building safely and smoothly, regardless of mobility issues or other challenges. Residential buildings are home to a variety of different user groups, each with different needs to address. These include:

- End-users: families with young children, elderly people, young professionals, people with mobility challenges and visually impaired people, visitors
- Service providers: security personnel, facility management personnel, cleaners and maintenance staff

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The issues to take into consideration when specifying door solutions for residential builds include:

- Ensuring smooth, convenient people flow for all residents with any accessibility requirements and maximising usable floor space within apartments
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- Parking garage requirements
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- Emergency exits and evacuation routes
- Parking garage requirements
- Access to shared facilities like laundry rooms, garbage disposal facilities, and other communal spaces
- Goods and people flow for maintenance activities
THE KONE BUILDING DOOR OFFERING

This section of the handbook gives you a brief overview of our door offering and the key benefits of choosing KONE solutions. It presents a short overview of each door type along with the different types of buildings they are typically used in.

WHY CHOOSE KONE DOOR SOLUTIONS?

1 CUTTING-EDGE SAFETY FOR PEACE OF MIND
- All our door solutions feature the intelligent technologies and fulfill all relevant safety standards to ensure the safe, secure flow of people and goods.
- Our accessibility expertise ensures that everybody can enter and exit your building safely and smoothly for its entire lifetime.

2 EXCELLENT ENERGY EFFICIENCY
- Our automatic doors can reduce the loss of warm or cool air from your building, thereby helping to cut heating or cooling costs.
- For personnel who work close to doorways, automatic doors can significantly increase comfort by minimizing sudden changes in internal temperature or noise.

3 INNOVATIVE AND FLEXIBLE DESIGN
- We offer a wide range of flexible design options that help you blend doors with your building’s style.
- Our products feature excellent attention to detail and high-quality finishes.

4 SEAMLESS INTEGRATION FOR SMOOTH, SAFE PEOPLE FLOW
- Our door solutions are designed to work in harmony with other equipment in the building to help people move around safely, comfortably, and without waiting.
- To help create a harmonious look and feel throughout the building, the visual design of our door solutions is consistent with the rest of our offering.

KONE REVOLVING DOORS

Our revolving doors combine high-quality materials, flexible operation, and excellent durability with outstanding energy efficiency. The KONE Revolving Door 100 is the perfect complement to buildings where visual appearance is as important as performance. The KONE Revolving Door 50 is ideal for busy environments where efficient, smooth people flow is critical. The KONE Revolving Door 30 is an economical way to provide a modern and efficient entrance solution.

SPECIFICATIONS
- External diameter:
  - KONE Revolving Door 30: 2100–3700 mm
  - KONE Revolving Door 50: 4120 or 4720 mm
  - KONE Revolving Door 100: 2100–3300 mm
- Standard passage height: 2100 or 2200 mm
- Optional passage height: up to 2700 mm

FEATURES AND OPTIONS
- Customisable to match your building design
- Attractive, energy-efficient LED lighting
- Latest safety technology
- Durable and easy-to-clean materials
- Optional burglar-resistant features
- Optional three or four collapsible or foldable wings
- Connection profile to the facade is having a thermal break
- Code and standards compliance
  (see Appendix 1 for more information)

PEDESTRIAN DOORS

<table>
<thead>
<tr>
<th>Revolving doors</th>
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<tbody>
<tr>
<td>Sliding doors</td>
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<tr>
<td>Swing door operators</td>
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<td>Gliding doors</td>
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<td>Hermetic doors</td>
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TURNSTILES

<table>
<thead>
<tr>
<th>Half-height turnstiles</th>
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<tr>
<td>Tripod turnstiles</td>
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<td>Swing gates</td>
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<td>Guiding barries</td>
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INDUSTRIAL DOORS

<table>
<thead>
<tr>
<th>Sectional and high-speed sectional doors</th>
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<tr>
<td>High-speed doors</td>
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<td>Roller shutters and grilles</td>
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</tbody>
</table>

MEDICAL
- Main entrance and lobby area

OFFICE
- Main entrance and lobby area

INFRASTRUCTURE
- Main entrance

RESIDENTIAL
- Main entrance and lobby area

RETAIL
- Main entrance and lobby area

EDUCATIONAL/LEISURE
- Main entrance and lobby area

HOTEL
- Main entrance and lobby area
KONE SLIDING DOORS

Our automatic sliding doors are suitable for a wide variety of building types, from offices and residential buildings to retail environments and transit hubs. They are compact, durable, and energy efficient, and can be enhanced with a variety of security and safety options.

**SPECIFICATIONS**

- Max. height: 2600 mm
- Max. width: 3400 mm door leafs
- 7000 mm door leafs and two fixed side panels
- Operation: automatic
- Operator: KONE UniDrive® or KONE UniDrive® Compact

**FEATURES AND OPTIONS**

- Multiple profile systems: standard (35 mm) or slim (20 mm) aluminum, robust (50 mm), insulated aluminum (65 mm), full-glass
- Single and double sliding, telescopic, prismatic, and curved
- Available with three or six leaves (applicable for single or double telescopic doors)
- Customisable design
- Wide variety of safety options, including manual switches, motion sensors, safety screen, and access control integration
- Fire safe, burglar resistant, energy saving, break out, and escape route options
- Code and standards compliance (see Appendix 1 for more information)

KONE SWING DOOR OPERATORS

We offer four different fully automatic swing door solutions suitable for a wide variety of building types:

**KONE UniSwing™ Compact**: a space-saving operator compatible with all standard swing doors; ideal for a wide range of applications.

**KONE UniSwing™ Solid**: a flexible operator for environments where smooth door closing is essential; it includes spring return for closure during power failures.

**KONE UniSwing™ FireSafe**: a durable operator for powering heavy fire-rated doors; it fulfills EN 1154 and EN 1155 requirements.

**KONE UniSwing™ Robust**: a flexible solution for a wide range of demanding swing-door applications in most external and internal spaces; includes a spring mechanism that automatically closes the door in the event of a power failure.

**SPECIFICATIONS**

- Max. door height: 2500 mm
- Max. door width: 1250 mm
- Operation: automatic

**FEATURES AND OPTIONS**

- Variety of impulse devices, including switches, push-buttons, finger protection, and sensors
- Can be integrated with access control and central locking systems
- Code and standards compliance (see Appendix 1 for more information)
**KONE GLIDING DOORS**

Our gliding door solutions are designed for environments where space efficiency, wheelchair access, and noise reduction are important factors. The door panels are held in place by magnetic fields rather than traditional rollers or tracks, so they generate virtually no noise and are easy to open and close.

**SPECIFICATIONS**

- Max. height: 2300 mm
- Max. width: single 1800 mm, double 2250 mm

**FEATURES AND OPTIONS**

- Single or double
- Manual or automatic operation with low energy movement
- On-wall or in-wall installation
- Fire protection
- Customisable with a wide variety of design options and accessories
- Soft-close option enables the door slow down inclosing movement
- Can be integrated with patient lift systems in hospitals
- Code and standards compliance (see Appendix 1 for more information)

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**KONE HERMETIC DOORS**

Our hermetically sealed doors offer all the benefits of KONE's standard door products and can be customised to meet the needs of operating theaters, laboratory cleanrooms, areas that require X-ray and other radiation protection, and spaces that require soundproofing.

**FEATURES AND OPTIONS**

- Powered by the efficient, reliable KONE UniDrive™ operator
- Full glass, stainless steel, laminate, vision or flush panels and lead inlay
- Manual or automatic operation
- Fireproofing option
- Lead-shielding option for environments requiring X-ray and radiation protection
- Optional integrated windows
- Noise isolation up to 37 dB
- On-wall or in-wall installation
- Code and standards compliance (see Appendix 1 for more information)

---

**Operating theaters and X-ray rooms**

- Laboratories
- Meeting and conference rooms
- Gym and wellness facilities
- Hotel rooms (bathrooms and interior doors)

**Boardrooms and other closed meeting spaces**

- Recording studios
- Inspection rooms (e.g. in airports)

**Researce centers (medical, electronics, pharmaceuticals)**

- Boardrooms and other closed meeting spaces
KONE TURNSTILES

The KONE Turnstile 100 and KONE Turnstile 50 are stylish half-height sensor barrier solutions designed for both commercial and public buildings such as offices, airports, railroad stations, and metro stations. The KONE Turnstile 100 features durable, high-quality materials, full access and destination control integration, and stylish lighting and visual guidance options. The KONE Turnstile 30 is an efficient, durable tripod solution for buildings with high-volume throughput, such as sports centers, educational facilities, and transit hubs.

SPECIFICATIONS

KONE Turnstile 100
- Height: 945 mm
- Length: 2100 mm
- Passage width: 650 mm
- Total width: 1060 mm

KONE Turnstile 50
- Height: 1020 mm
- Length: 2050 mm
- Passage width: 650 mm
- Total width: 1060 mm

KONE Turnstile 30
- Height: 1020 mm
- Length: 1170 mm
- Passage width: 510 mm
- Total width: 770 mm

FEATURES AND OPTIONS

KONE Turnstile 100:
- Visual design matches our elevator signalisation and access control reader solutions for a harmonised look and feel throughout your building
- Illuminating arrows and traffic-light visual guidance
- Energy-efficient LED strips provide lighting and enhance appearance
- Available as a standalone system or add-on to other access systems
- Adjustable gate direction, possibility to integrate any brand of access card reader, choice of finishes
- Glass and steel materials are durable, vandal-proof, and easy to clean
- Quiet drive with smooth operation makes turnstiles ideal for internal entrances where noise needs to be kept to a minimum
- For KONE Turnstile 50 and KONE Turnstile 100 the option for users with restricted mobility passage width: 900 mm
- Code and standards compliance (for more information see Appendix 1)

To complement our turnstiles, we also offer:
- Glass and stainless steel swing gates for goods transportation applications and to provide access for users with restricted mobility who may not be able to use turnstiles
- Easy-to-install floor-mounted guiding barriers for controlling access

KONE SECTIONAL OVERHEAD DOORS

Our durable and space-efficient sectional overhead doors ensure efficient goods flow into and out of commercial buildings, and can be customised with a variety of finishes, colours, and glazing options. Existing doors can be easily modernised with our universal KONE UniPower™ solution, and we also offer cost-effective full replacement solutions.

SPECIFICATIONS

- Height: min. 2250 mm, max. 6000 mm
- Width: min. 2000 mm, max. 8000 mm

FEATURES AND OPTIONS

- KONE Sectional or KONE Full Vision door
- Wide range of finishes, colours, and glazing options
- Micro-profiled panel structure fits to modern buildings visual appearance
- Optional choice of panel height and thickness impacts the insulation properties and can improve energy efficiency
- Automatic or manual operation
- Energy-saving option
- Pass-door option for easy personnel access
- Complies with EN 13241-1, EN 12453-1, and EN 12604
- We also offer the KONE sectional high-speed door, which opens up to six times faster than sectional overhead door, making it ideal for industrial environments where time-saving is critical
- It combines the best of sectional and high-speed doors.
KONE HIGH-SPEED DOORS

Our energy efficient high-speed doors for external and internal applications are designed to improve goods flow and minimise energy costs in environments such as logistics centers, food processing and distribution facilities, warehouses and loading bays, and vehicle storage areas.

SPECIFICATIONS
- Max. height: 8000 mm
- Max. width: 10 000 mm
- Operation: automatic, semi-automatic, fully manual

Our highly flexible solutions also help improve safety and convenience. They can be customised with a wide range of colours and materials to match your building, and enhanced with your choice of optional features and accessories. Door panel can have your company logo or any other tailor-made picture.

KONE ROLLER SHUTTERS AND GRILLES

Roller shutters are ideal for high and wide door openings due to their space-saving roller technology and hard-wearing curtain. They meet the product and safety requirements (EN 13241-1) with respect to mechanical characteristics, heat and noise insulation, wind resistance, and watertightness. The flexible shutter is stable and can be installed in a variety of door openings. KONE grilles are the perfect solution when you need good ventilation and theft protection.

SPECIFICATIONS
Roller shutters
- Width: 1000 - 18 000* mm
- Height: 1000 - 12 000 mm

Grilles
- Width: 1000 - 18 000* mm
- Height: 1000 - 8000 mm

FEATURES AND OPTIONS
Roller shutter solutions:
- Roller Shutter Easy has a simple, robust, and compact design, and is quick to install.
- Roller Shutter ThermoTeck has a high-grade galvanised steel finish with a transparent protective topcoat, this makes the shutter robust and provides excellent heat insulation.
- Roller Shutter Fire Proof consists of double-skinned 1 mm galvanised steel sections filled with mineral wool. It has been tested in accordance with STN EN 13501-2:2005 and certified for EW30, EW45, EW60, E30, and E60 fire resistance classes.

Grille solutions:
- Straight honeycomb, plain aluminum profiles with galvanized bottom bracket and consoles, and primer-coated winding shaft.

* Upon request

Roller shutter
Grilles

INDUSTRIAL DOORS
A DEDICATED PARTNER
SUPPORTING YOU EVERY STEP OF THE WAY

1 EXPERT DESIGN AND PLANNING SERVICES
- Comprehensive planning advice
- Easy-to-use online design tools

2 SAFE AND EFFICIENT INSTALLATION
- Strict quality criteria
- Maximum site safety
- Professional project management

3 SMOOTH HANDBOVER
- Full quality assurance with handover
- Excellent spare part availability
- Preventive KONE Care™ maintenance solutions for superb reliability

4 PROFESSIONAL MAINTENANCE
- Equipment-specific maintenance plan based on technical properties and use, for all equipment brands and types
- Trained customer service staff at your service 24/7/365
- Extensive service network and continuous customer communication

5 MODERNISATION
- Assessment and planning
- Installation
- Completion

Visit kone.com.au or kone.co.nz to check out our handy online planning tools, find out more about our installation, maintenance, and modernisation solutions, and get in touch with a KONE expert.

AWARD-WINNING DESIGN

- Automatic building door solutions can be customised to meet the needs of any property, with a wide range of available materials, finishes, components, and colours
- Components harmoniously match as they have been designed to work together
- Use of hygienic materials and automation, such as elbow push buttons, to decrease contamination risk in special applications
- Glass and high-end material options, for example, in offices and hotels, enable a consistent, stylish look and feel throughout the building
- Expert design tools and services: BIM models, Doors Toolbox, CAD drawings
- Capability to do special projects demanding matching high-level design requirements and respecting the historical heritage
- Solutions to meet accessibility requirements
- KONE Turnstile 100 has won multiple design awards, including iF and Red Dot awards.
SAFETY AND MAINTENANCE

To KONE, safety means much more than just conforming with local laws and norms – it’s our number-one priority. KONE door maintenance detects issues before problems arise, reducing hazards and helping to prevent accidents. By making sure that automatic doors are used and maintained properly, you can maximise operational efficiencies in your building while ensuring safe and secure access for all.

PROPER USE OF EQUIPMENT BOOSTS SAFETY

According to the European Working Equipment directive (89/654 and 655/EEC) and the harmonised safety in use standard for pedestrian door sets (EN 16005) as well as respective standard for industrial doors EN 13241 (see the whole list of standards in Appendix 1) the owner of the equipment is responsible for the safety for users. You can facilitate safe and trouble-free access for everyone and ensure a longer life for your equipment by taking care that doors are used and maintained correctly. Proper operation also saves money by eliminating service calls. Building staff should therefore be well informed about the correct use of automatic doors and also be able to instruct users if they spot unsafe behavior.

We can provide Environmental Product Declarations (EPDs) for our pedestrian products. We conduct life cycle analysis to provide information for our EPDs in order to increase the transparency of the manufacturing process and support continuous product improvement.

We follow Global Warming Potential (GWP) and other environmental performance indicators in our manufacturing process. Also we analyse structure of materials, including the amount of recycled materials. Below is an example of the material structure for KONE Hermetic Door 30.

<table>
<thead>
<tr>
<th>Material</th>
<th>Percentage</th>
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</thead>
<tbody>
<tr>
<td>Steel</td>
<td>65%</td>
</tr>
<tr>
<td>Aluminum</td>
<td>10%</td>
</tr>
<tr>
<td>Copper/Brass</td>
<td>5%</td>
</tr>
<tr>
<td>Plastics</td>
<td>5%</td>
</tr>
<tr>
<td>Sealants/Rubber</td>
<td>5%</td>
</tr>
<tr>
<td>Wood/Pulp</td>
<td>5%</td>
</tr>
<tr>
<td>Electronics</td>
<td>5%</td>
</tr>
</tbody>
</table>

Figure 8. Material structure example for KONE Hermetic Door 30

DID YOU KNOW?

- KONE provides maintenance for doors 365 days of the year. The KONE Care Center is available 24/7 to provide door maintenance and repair services.
- You can easily get a clear and accurate review of the condition of your automatic doors by ordering a KONE Care for Life assessment.

SYSTEMS TO ENSURE SAFETY

We work to ensure that every piece of equipment we maintain complies with the latest standards and meets the highest levels of safety in the industry. The safety of automatic doors depends largely on the standards and norms that were in effect at the time of installation. In recent years a number of harmonised standards have been introduced for pedestrian and industrial automated building doors. These focus on improving safety and performance through better design and on-going professional maintenance. Fortunately, older equipment can be modernised to meet these new standards. With regular maintenance you can increase safety while also maximising the lifetime of door equipment. The current regulations require professional, regular maintenance for automatic doors.

Service for 500,000 doors.
And for the millions of people who use them.
APPENDIX 1
STANDARDS COMPLIANCE

KONE doors are compliant with the latest European Standards, including:

   – Product standard – Part 1: Products without fire resistance or smoke control characteristics
   – Installation and use
3. EN 12453 and 12445: 2000: Industrial, commercial and garage doors and gates
   – Safety in use for power operated doors
4. EN 12604:2000: Industrial, commercial and garage doors and gates – Mechanical aspects
   – Safety devices for power operated doors and gates – Requirements and test methods
6. EN 13849-1:2006: Safety of machinery – Safety-related parts of control systems
7. EN 1398:2009: Dock levelers – Safety requirements
8. EN 10634:2014: Pedestrian doorsets, industrial, commercial, garage doors and windows
   – Product standard, performance characteristics – Fire resistance and/or smoke control characteristics
10. EN 16361:2013: Power operated pedestrian doors – Product standard, performance characteristics; Pedestrian doorsets, other than swing type, initially designed for installation with power operation without resistance to fire and smoke leakage characteristics
11. EN 60204-1: Safety of machinery – Electrical equipment of machines
    – Part 1: General requirements
12. EN 61000-6-2: Electromagnetic compatibility (EMC) - Part 6-2: Generic standards
    – Immunity for industrial environments
13. EN 61000-6-3: Electromagnetic compatibility (EMC) – Part 6-3: Generic standards
    – Emission standard for residential, commercial and light-industrial environments
14. EN 60335-1: Household and similar electrical appliances – Safety – Part 1: General requirements
15. EN 16304: 2014: Pedestrian doorsets, industrial, commercial, garage doors and openable windows – Product standard, performance characteristics – Fire resisting and/or smoke control characteristics
KONE provides innovative and energy efficient solutions for elevators, escalators, automatic building doors and the systems that integrate them with today's intelligent buildings. We support our customers every step of the way; from design, manufacturing and installation to maintenance and modernisation.

KONE is a global leader in helping our customers manage the smooth flow of people and goods throughout their buildings. Our commitment to customers is present in all KONE solutions. This makes us a reliable partner throughout the life cycle of the building. We challenge the conventional wisdom of the industry.

We are fast, flexible, and we have a well-deserved reputation as a technology leader, with such innovations as KONE MonoSpace® and KONE UltraRope®.

KONE employs close to 50,000 dedicated experts to serve you globally and locally. We have a team of over 1400 staff around Australia and New Zealand.

KONE OFFICES

**AUSTRALIA**

<table>
<thead>
<tr>
<th>ACT</th>
<th>Canberra and South West</th>
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<tbody>
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