

# Commercial Escalators

**OTIS**  
United Technologies



NCE line: 506, 508, 508-A



↗ European production

↗ Your individual choice, our goal

↗ Flexible design

↗ Own test centrum

**Otis is one of the world's biggest manufacturer** and maintainer of people-moving products, including lifts, escalators and moving walkways. Founded more than 160 years ago by the inventor of the safety elevator, Otis is equally committed to environmental responsibility by developing and improving energy efficient products to meet your building requirements. We view our relationship with our customers as a long-term partnership and it's our commitment to supply them the best service every day, every hour.

**Production to the highest quality** for department stores, shopping centers, metros, railway stations, airports, sports complexes, exhibition halls and a host of other building uses ensures continuous and smooth operation for all building users. The key to their smooth and successful operation is the care and enthusiasm of our employees to provide our customers with the best products.

**OTIS produces its escalators and trav-o-lators for the European market** in a state of the art factory based in the Czech Republic. Our escalator delivers engineering quality that is the result of our long experience and equally of a sustained research and development program. Components are carefully tested directly in World wide Quality test centrum in the production plant.

So while the escalator benefits from all the economies of volume production, it can be assembled to your individual specification – both as regards its engineering characteristics and its aesthetics. Be that for retail, leisure, office or other applications. Břeclav is your escalator factory.





# Benefits

## ↗ The passenger

**is free to enjoy** secure, comfortable yet adventurous travelling experience thanks to the harmony between practical and aesthetic design.

**is guaranteed** unwavering stability thanks to the rigidity of the balustrade which is comprised of the synergy between the use of 10 mm safety glass and continuous glass support profile.

**is able to enjoy** exceptionally smooth and quiet ride thanks to a closed-loop, polymer guidance systems in conjunction with the handrail drive system which minimize friction and wear.

**is ensured** the maximum safety and comfort thanks to the handrail and step speeds being rigorously synchronized.

**and especially the children** are provided with unrivalled safety thanks to the state-of-the-art handrail entry box which incorporates deflectors to minimize the risk of contact at the end point.

## ↗ The customer

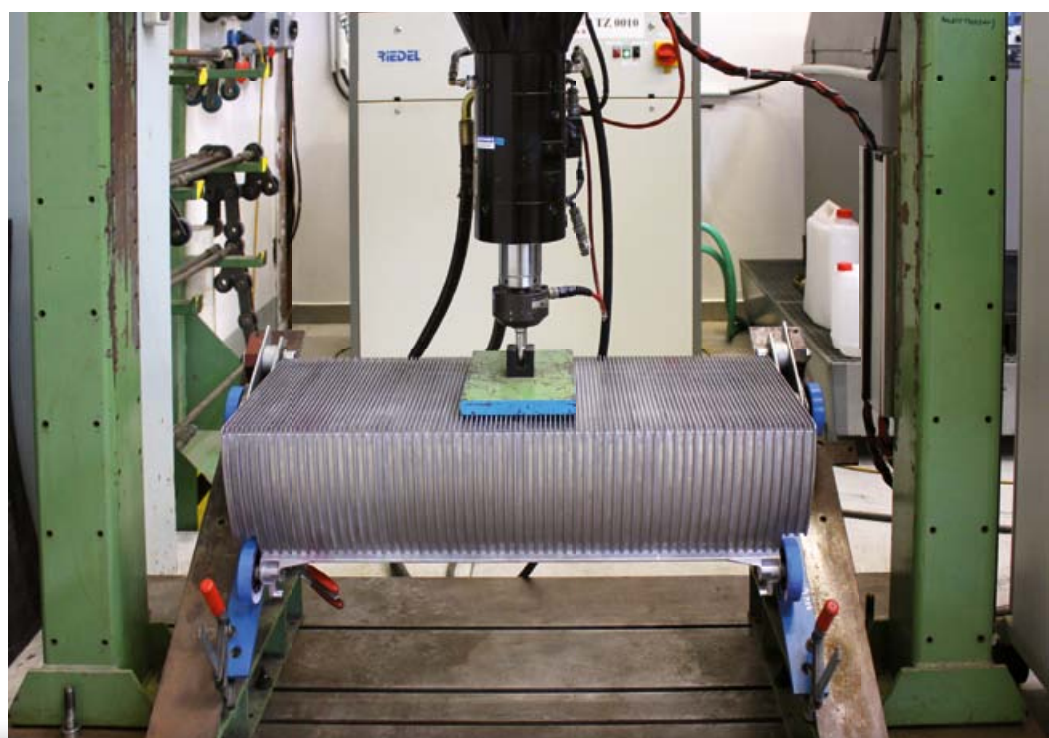
**is free to modify** any of the NCE' engineering specifics to meet their individual desires.

**is guaranteed** that the NCE will be extensively tested during and after its assembly

**is able to avoid** long downtimes for Inspection for every NCE comes with an easy access to the machine on the upper landing.

**is ensured** that the shipment will be carried out in precise accordance to the requirements

**will be provided** with the help of the most professional team of experts currently on the market.





# Basic data



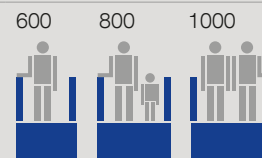


## Escalator components

- 1 Handrail
- 2 Skirting
- 3 Steps
- 4 Decking
- 5 Balustrade
- 6 Horizontal steps
- 7 Machine
- 8 Controller
- 9 Entry box
- 10 Handrail drive
- 11 Truss
- 12 Exterior cladding
- 13 Step chain
- 14 Tracks
- 15 Floor plate
- 16 Newel
- 17 Deflector device
- 18 Upper landing
- 19 Lower landing
- 20 Comb plate
- 21 Main drive
- 22 Junction box
- 23 Tension carriage

Base parameter	Value
Maximum rise	8000
Minimum rise	2150 mm
Intermediate support	rise > 6–7 m*
Inclination	27,3°; 30°; 35°
Horizontal step	2,3

### Step width type



Balustrade type	glass
Balustrade height	930, 1000, 1100 mm
Speed	0,5m/s
Duty cycle	70 000 hours
Truss extension	Optional: < 1200 mm
Cladding arrangement	Optional: Normal or to pit

\* depends on type, on request



# Safety – EN 115 STANDARD



## **INNOVATIVE TECHNOLOGY PROMOTES SAFETY FIRST**

The standards, with which Otis manufactures the NCE, are indeed uncompromising and the emphasis for compliance with all the necessary norms is strictly enforced.

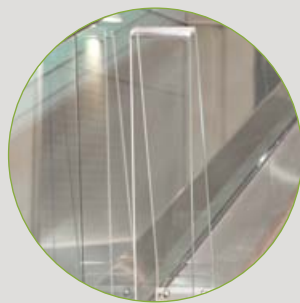


## Standard safety devices

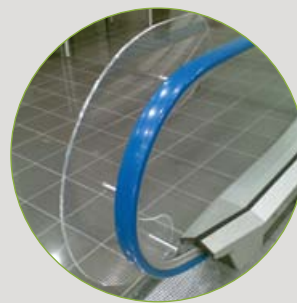
- **Auxiliary brake** – the upper landing. This is a standard for vertical rise over 6 m and is an option for rise below 6 m
- **Emergency stop buttons** – Located on the upper and lower horizontal sections and close to the skirt panel of the handrail entry point. The safety stop can be manually activated by pressing the red button in case of emergency
- **Handrail entry device** – device which keeps handrail tensioned, handrail will move after lead handrail tight and stay out to its rupture or on the contrary to its embossment
- **Broken step chain device** – the safety switch is located on the tension carriage in the lower landing. If the step chain breaks or stretches abnormally, the safety switch will initiate stopping the escalator
- **Broken step and chain wheel control contact** – This contact is located at both landings. It will be activated if either a step or chain wheel is broken or a step is lowered due to rupture
- **Non reversal device (NRD, electronic)** – in controller
- **Overspeed governor** – covered by MESD control system
- **Comb plate safety device** – vertical
- **Control device** – stop buttons and key switch can be activated when emergency issue or maintenance activity, this device can stop equipment immediately and protect passengers from any further accident or injury
- **Deflector device** – keeps a distance between movable steps and skirt panel, protects passengers (especially children) from putting legs or fingers between steps and skirt panel
- **Barrier panels** – acrylic glass panels, protect passengers from climbing on lower deck at both landings or between adjacent escalators
- **Wedge guards** – acrylic glass deflector, which protect passengers from putting their hands between two units in criss-cross arrangement
- **Floor plate safety device** – device which is connected to floor plate and upper and lower landing, if floor plate is not installed properly the escalator cannot start
- **Warning signs** – labor with pictograms, to prevent incorrect use of escalator
- **Missing step device** – sensor device which monitors continuity of steps, to prevent hazard for passengers thanks to missing step, possible serious accident
- **Handrail speed monitoring device** – device which monitors speed between step speed and handrail speed, this safety device monitors proper handrail running conditions. If the handrail loses its tension or the handrail speed deviates more than -15 % actual speed for more than 15 s, the escalator will be stopped
- **Control contact for brake lifting** – the device is used to detect the operation of break lever (lift or fasten), to detect the operation of break lever (lift or fasten); once it fails to operate normally, the escalator will stop immediately



Emergency stop buttons



Barrier panels



Deflector device



# Safety – OTIS DEVICES



## OTIS CARE ABOUT YOU MORE THAN THE NORMS

**Otis safety devices –**  
set of devices which fulfil Otis safety standard, to protect mechanics against serious hazard

**Additional safety devices –**  
set of devices which helps mechanics and owner of equipment, to prevent serious accidents and help to monitor equipment





## OTIS safety devices

- 1 Comb plate safety device – horizontal** – safety switch located between comb plate and truss, if an object is drawn between the step and the combs, it will lift the comb plate to activate the safety contact. After removing the object, the comb plates can be held down by adjustable springs.
- 2 Controller lifting device for controller** – device which helps to plug out controller from upper landing truss section, this device helps mechanics to easily lifted out controller from truss and reduce safety hazard and service time
- 3 Hand wheel** – supported device at machine, device which helps mechanic in case of by a hand wheel
- 4 Motor cover control** – switch which controls covering of all moveable parts on motor, in case covering is damaged switch is activated to stop operation of escalator and reduce safety hazard for mechanics and passengers
- 5 Escalator safety tool** – tool delivered with escalator, helps mechanics to set up escalator and to monitor further error messages
- 6 Entry steps for maintenance room** – metallic steps, to prevent mechanics to step outside of reinforced area
- 7 Manual inspection control device** – inspection box to facilitate service, adjustment and repair, consists of one portable button box and two sockets, control escalator by pressing up or down buttons as well as start buttons
- 8 Maintenance safety barrier** – plastic barriers, to prevent accessibility into escalator area through service activities
- 9 Floor plate lifting tool**

## Additional safety devices

- 2 Main drive chain speed sensor**
- 3 Control contact for brake lining wear in machine**
- 4 Auxiliary main drive brake** (wedge type)  $\leq 6$  m rise
- 5 LED Under step lighting**
- 6 LED Comb lighting** – alerts passengers to the change from the moving step to fixed comb plate – and vice versa. The area where the step meshes into the comb plate can also be highlighted by a yellow strip.
- 7 LED Skirt panel lighting** – can be incorporated to offer a further safety alert for passengers and an impact-resistant diffuser fully protects the light source
- 8 Buzzer** – acoustic device, voice signalization of emergency status at escalator
- 9 Handrail broken device** – device to monitor tension of handrail, to prevent possible breaking of handrail and further hazard for passengers
- 10 Skirt panel safety device** – switch installed between skirt panel and step side, if an object is trapped between the side of a step and the skirt panel, the safety switch will be activated
- 11 Upthrust track device** – sensor device which monitors step upthrust, to prevent possible breaking of step and further hazard for passengers
- 12 Step chain roller monitoring device** – safety devices at each side of the tension carriage, if the step chain breaks or stretches, tension carriage will recoil and activate the safety contacts and stop operation of escalator
- 13 Fire shutter operation** – fire alarm signal provided by customer
- 14 Sprinkler system** – pipes and outlets on escalator connected into building fire system, to reduce or eliminate fire in building area





## **ENERGY-EFFICIENT, ECO-FRIENDLY**

As a result of Otis' environmental concern, initiatives have been taken to reduce the impact of the NCE escalator on the environment. The optional, highly ecological as well as economical, lubrication system is a fine example.



## **HIGH EFFICIENCY LUBRICATION SYSTEM**

Special brush design provides full contact with the chain surface and minimizes the oil dissipation which in turn ensures cleaner truss interior, essential when considering transparent escalator cladding. Independent, programmable controlling unit capable of interfacing with external devices and a single case of oil reservoir warrant operating foreknowledge and surprisingly short maintenance time. This extremely effective system contributes to lowering oil consumption, saving up to 70 % more oil in comparison to the traditional lubrication system. Sealed-for-life bearings combined with high efficiency lubrication systems minimize environmental impact.



## Energy-saving modes

During operation, escalator has to handle the continuous changing load. Usually, short periods of full load are followed by long periods of low load. So, constant standard motor power will result in unnecessary energy consumption.

As it becomes more important to reduce energy consumption nowadays, Otis has developed three energy saving modes, including intermittent operation and Stand-By variable frequency (VF) operation.

The VF drive runs at a reduced speed until a passenger approaches the escalator. It then accelerates to a normal speed of 0,5 m/sec.

### 1 INTERMITTENT OPERATION

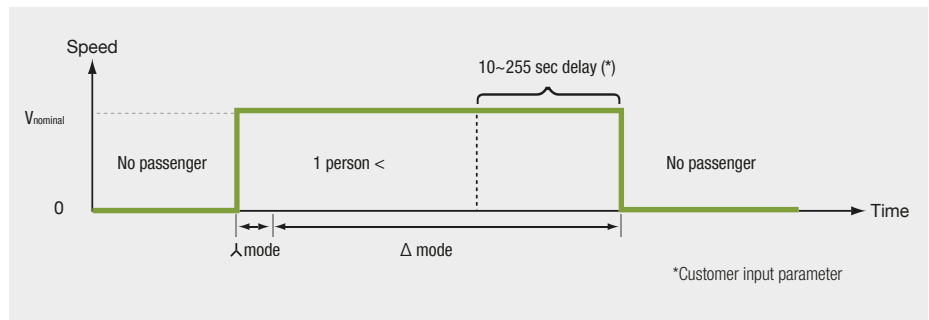
Suitable for an office building, people go to office in the morning and back home in the evening.

#### Save up to 50 % energy

Escalator is resting with no passenger load.

Machine restarts by passenger detector (Piezo contact mat, photo cell barrier or radar)

Follow up movement when the last passenger left can be adjusted (10~255 sec)



### 2 ETA-PLUS

Suitable for a low traffic subway station located in suburb, people keep coming and going in every minute during all day but without rush hour.

#### Save up to 30 % energy

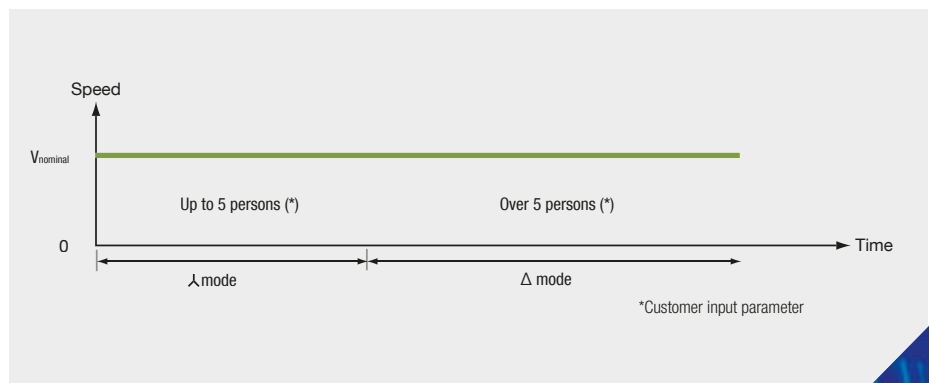
Escalator runs continuously without no impact on the traffic flow. Improves efficiency of the electric motor by switching to STAR mode when there are < 5 passengers on the escalator.

Machine is controlled either in STAR or DELTA mode by means of passenger counter device (contact mat or photo cell barrier).

Efficiency  $\eta$  of motor in optimum mode

empty escalator in STAR  $\rightarrow \eta_{\text{motor}} \sim 0,85$

empty escalator in DELTA  $\rightarrow \eta_{\text{motor}} \sim 0,73$





# Environment

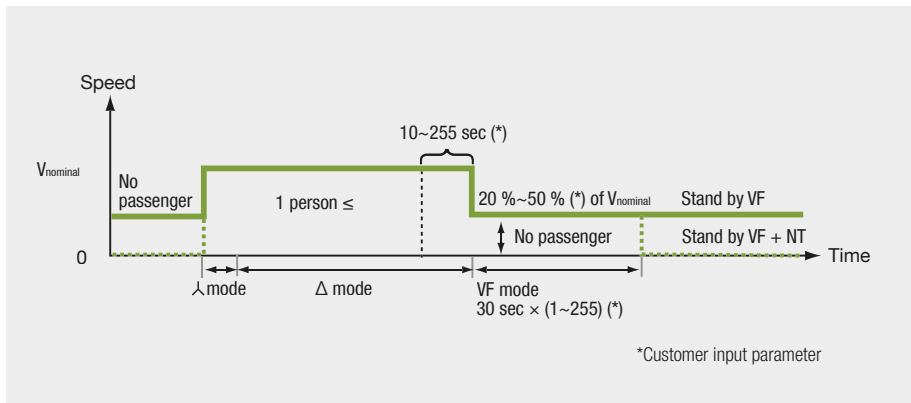
## 3 VARIABLE FREQUENCY OPERATION

Suitable for continuous traffic flow with zero passenger intervals  
 + escalator in the absence of passengers travels at slow speed.  
 Oncoming passenger sees “functional” escalator.

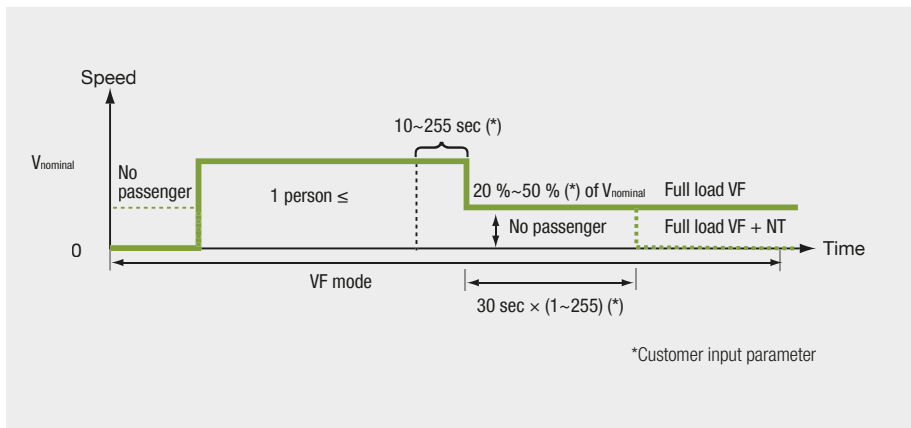
### Save up to 20 % energy

Escalator runs low speed in VF mode with no passenger load  
 Motor efficiency is improved in case of no passenger.  
 Machine is started by VF inverter and switched to DELTA mode by passenger detector device (contact mat or photo cell barrier). Motor is driven directly from the building power supply in DELTA mode and VF is not active in DELTA mode.  
 VF is by-passed in case of power generation in down running.  
 Follow up movement when the last passenger left at nominal.

Stand-by VF



Full load VF



## Outdoor packages

For installation of escalators under various weather conditions, Otis has defined different packages, which includes:

### OUTDOOR PACKAGE A1

- sheltered, not directly exposed to weather
- Temperature range +4 °C up to +40 °C;  
Humidity Range < 80 %

### OUTDOOR PACKAGE B

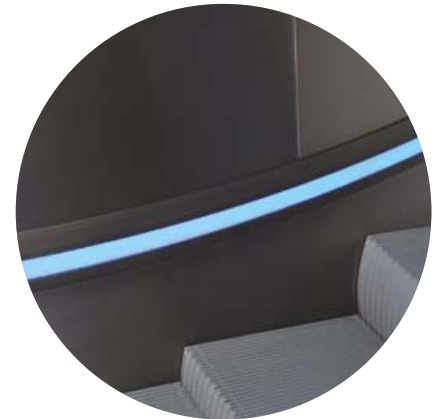
- not sheltered, directly exposed to weather
- Temperature range +4 °C up to +40 °C;  
Humidity range < 80 %

### OUTDOOR PACKAGE A2

- sheltered, not directly exposed to weather
- Temperature range -10 °C up to +40 °C;  
Humidity range < 80 %

## Lighting economies

Skirt panel lighting has proved an increasingly attractive option to customers and again achieves energy savings since we have replaced conventional spots with an LED source.





# Planning & Shipment



Expertise gained from the shared experience of installing escalators around the world enables us to work fast, efficiently and with the minimal disruption.

## Planning

### **First we dedicate a team of specialists to the project.**

The team analyzes your expectations and helps to define a specification, taking into account every conceivable merit from traffic to your aesthetic aspirations. Traffic flow in a store, for instance, might be required to route passengers through a certain area. The team will also provide advice to help you determine the most efficient arrangement for installation – be that standard parallel, crisscross or scissor – and will also consider vertical and horizontal distances to determine the escalator pitch and length.

Critical, too, is the physical installation itself. At Otis, we can either deliver the unit as a single piece or in a number of sections – depending on the cost and site considerations and unit dimensions.

## Shipping

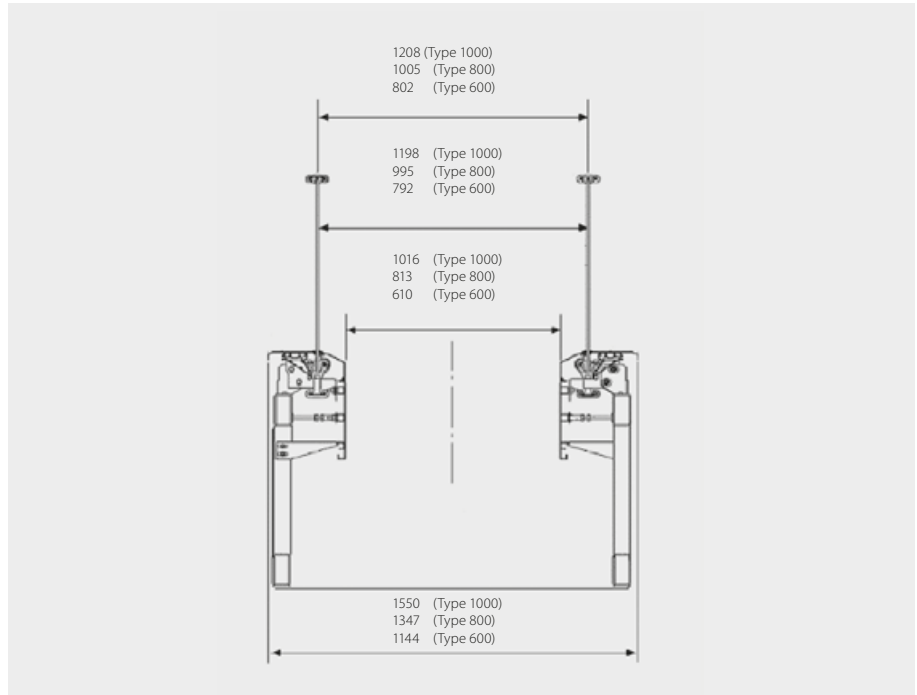
- One piece shipment (standard product)
- Two piece shipment
- Three piece shipment
- Four piece shipment

Once installed, a rigorous maintenance system is immediately put into place. Otis maintenance contracts are recognized as industry's benchmarks and form a part of comprehensive strategic approach designed to keep your escalator running efficiently. An approach, we believe, on which a long term partnership is ultimately based.

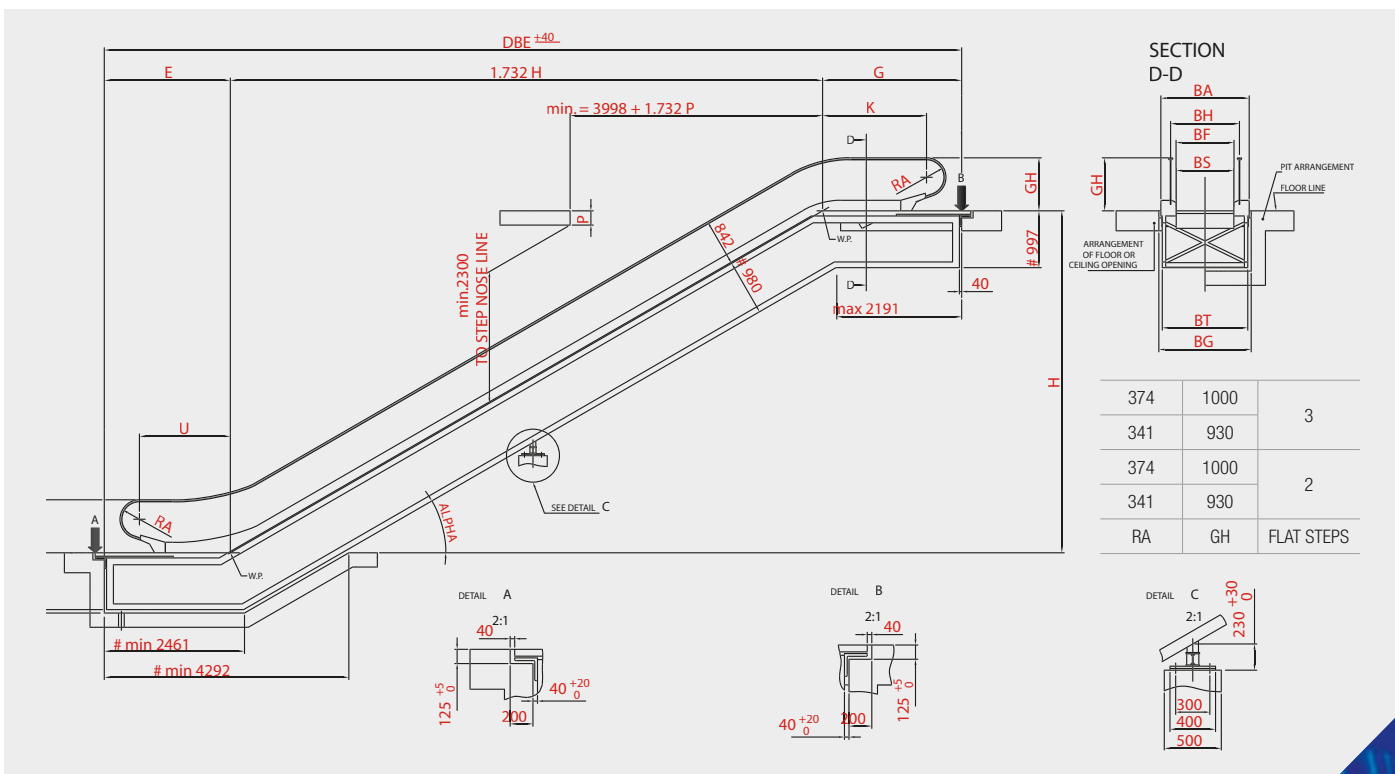




## Technical layout



35°	3 FL.ST. (1200 mm)	1.428 H+	5547	2682.4	2864.6	2247.8	2065.6
	2 FL.ST. (800 m)		4747	2282.4	2464.6	1847.8	1665.6
ALPHA	HORIZONTAL WAY OF STEPS AT BOTH LANDINGS	DBE	E	G*	K	U	
30°	3 FL.ST. (1200 mm)	1.732 H+	5452	2611.6	2840.4	2223.6	1994.8
	2 FL.ST. (800 m)		4652	2211.6	2440.4	1823.6	1594.8
ALPHA	HORIZONTAL WAY OF STEPS AT BOTH LANDINGS	DBE	E	G*	K	U	





# Design



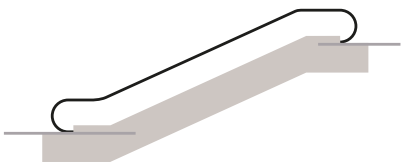
We offer a wide range of solutions to customize equipment which provide elegant and contemporary designs for shopping centers, office buildings, department stores, airports and exhibition center installations.



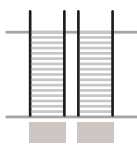
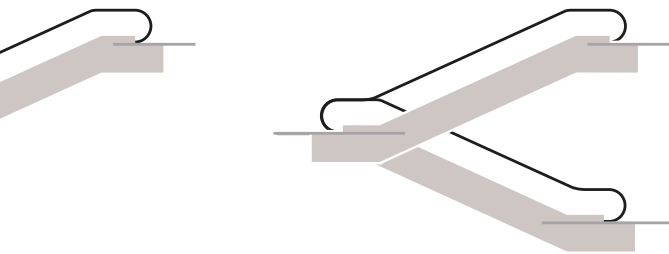
Our aesthetic options allow your escalator to harmonize with the building's interior design and provide full range of LED lighting and less energy consumption.



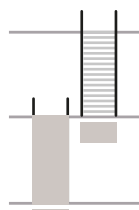
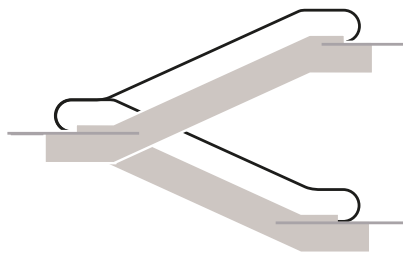
## Arrangements



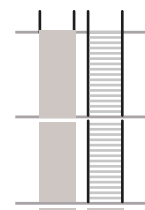
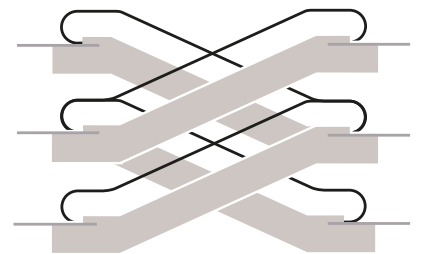
Single



Side by side



Scissors

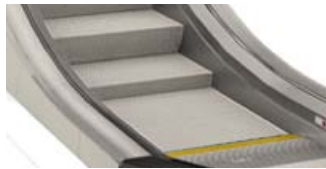


Criss-cross





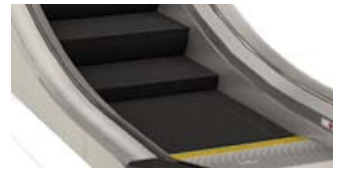
## Steps



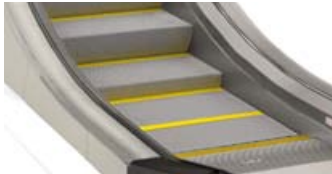
Aluminium – natural



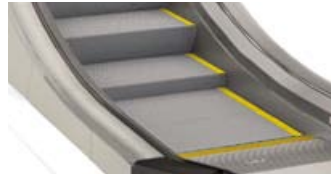
Aluminium – powdered



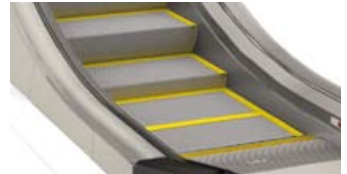
Steel – black



Demarcation lines on one side



Demarcation lines on two sides

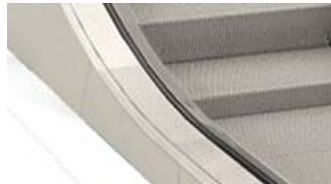


Demarcation lines on three sides

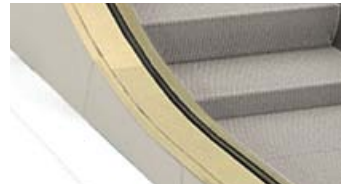
## Decking



Aluminium powder coated silver gray



Aluminium anodized silver grey FO10



Aluminium anodized gold FO7



Aluminium anodized steel finish STAL25



Stainless steel hairline finish G2

## Handrail entry box



Sheet steel powder coated black



Sheet steel powder coated silver grey



Aluminium anodized silver grey FO10



Aluminium anodized gold FO7



Aluminium anodized steel finish STAL25



Stainless steel hairline finish G2

# Design

## Handrail



Black



Red



Beige



Blue



Gray



Green

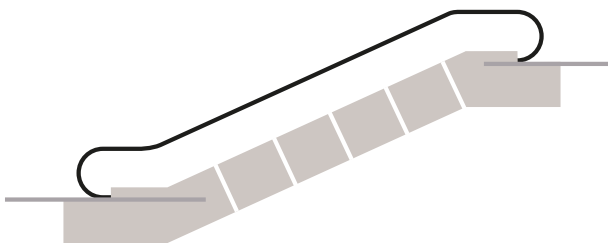


Brown

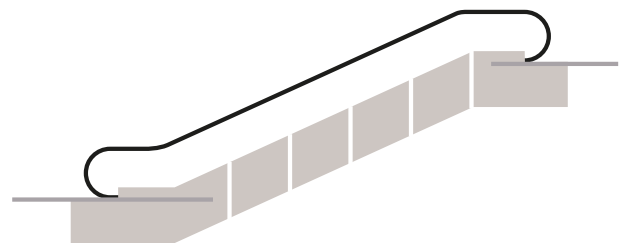


Charcoal

## Cladding arrangement



Joints vertical to step nose line



Joints vertical to floor

## Cladding (side, bottom, underside)



Stainless steel G9



Stainless steel G2 Hairline finish



Glass – clear



Glass – RAL 9010 painted  
extra clear glass



Glass – RAL 9010 painted  
clear glass



Sheet steel – any RAL on request



## Balustrade glass panel colour



Clear



Extra clear



Smoked

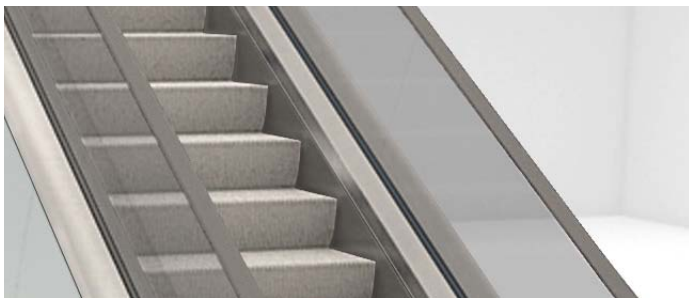


Bronze



Green

## Skirt panel



Stainless steel hairline finish G2



Sheet steel low friction powder coated black RAL 9005

## LED lighting

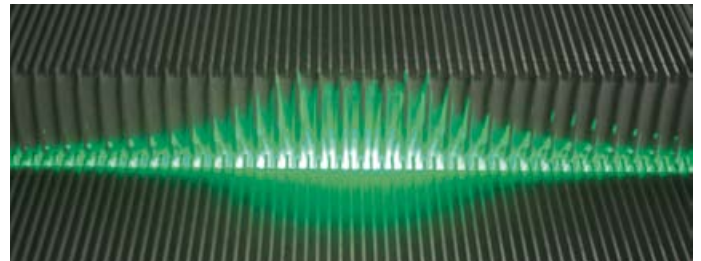
### TRAFFIC FLOW LIGHTS



### UNDER STEP LIGHTING



Blue

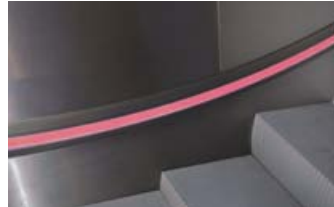


Green

## SKIRT PANEL LIGHTING CONTINUOUS



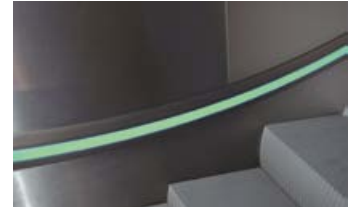
White (cold, warm)



Red



Blue



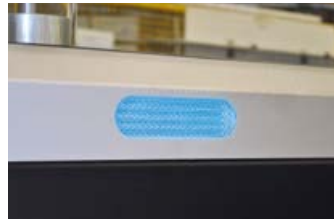
Green

\* RGB also possible

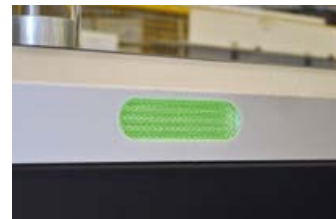
## COMB LIGHTING



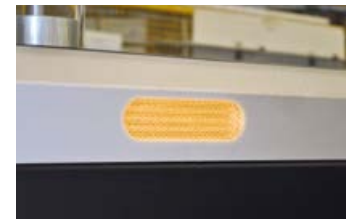
White



Blue



Green



Orange

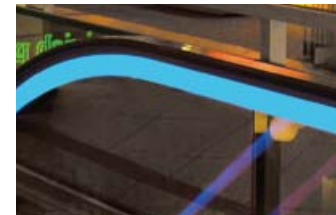
## BALUSTRADE ILLUMINATION



White (cold, warm)



Red



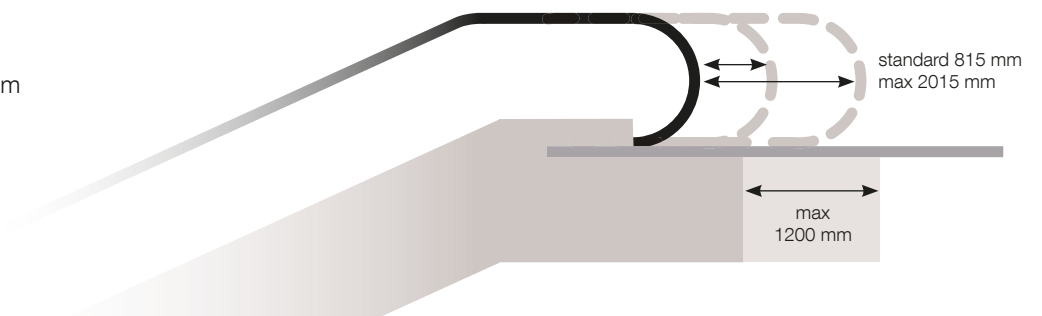
Blue



Green

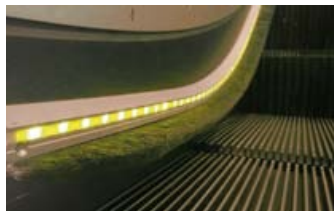
## EXTENDED BALUSTRADE

- Standard extension max. 815 mm
- Truss extension max 1200 mm, balustrade extension max. 2015 mm

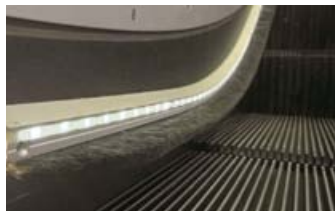




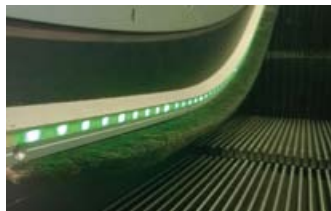
## BRUSH GUARDS LIGHTING



Yellow



White



Green



Blue

\* RGB also possible

## IN BOTTOM CLADDING



Spot lighting – one line



Spot lighting – two lines



Spot lighting – criss cross



Two lines strip

\* RGB also possible

## INSIDE TRUSS



White, red, blue, green

\* RGB also possible

## CLADDING ILLUMINATION



White, red, blue, green

\* RGB also possible



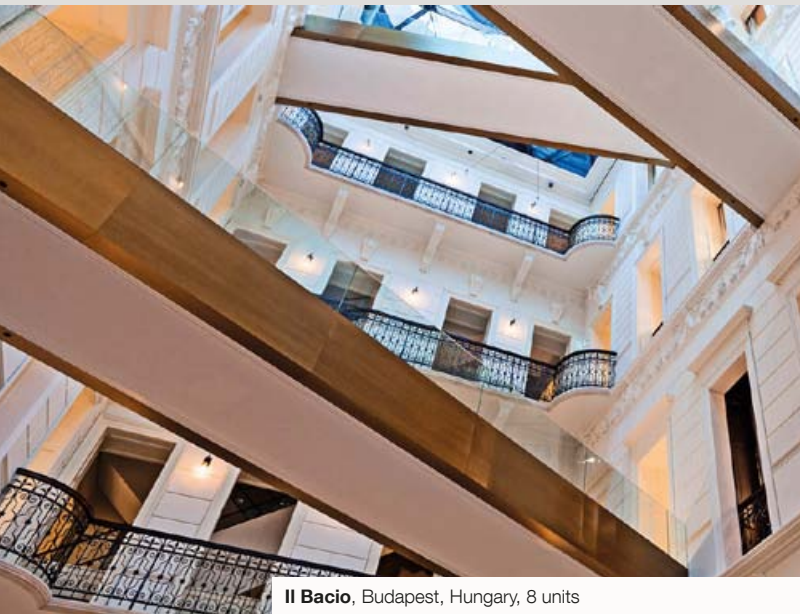
# References



**The Cube**, Birmingham, United Kingdom, 12 units



**Jamsil Lotte**, Seoul, South Korea, 19 units



**Il Bacio**, Budapest, Hungary, 8 units



**Quadrio**, Prague, Czech Republic, 6 units



**Nákupní centrum Chodov**, Prague, Czech Republic, 61 units



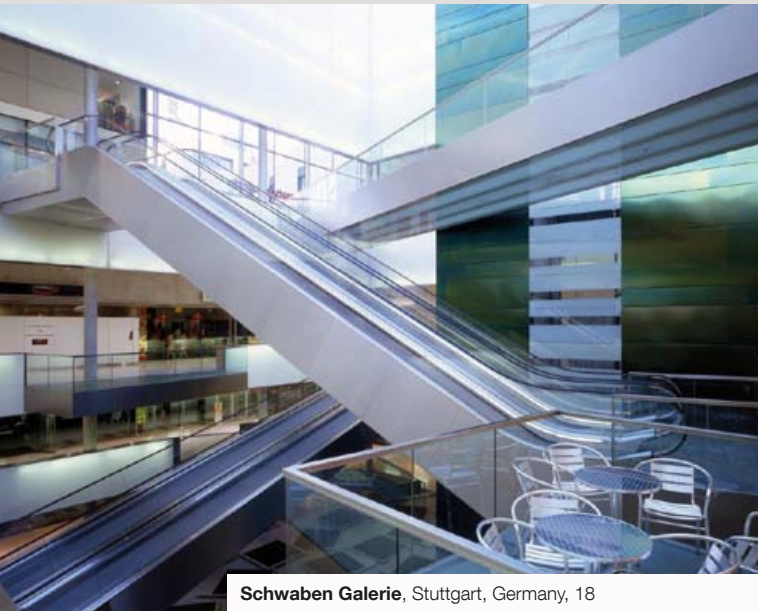
# Otis moves world



**Marks & Spencer**, United Kingdom, 10 units



**Grand Rex**, Paris, France, 2 units



**Schwaben Galerie**, Stuttgart, Germany, 18



**Vaňkovka Gallery**, Brno, Czech Republic, 18 units



**Sazka arena**, Prague, Czech Republic, 12 units

[www.otis.com](http://www.otis.com)



Otis reserves the right to change any part of this specification without prior notice.  
The product colors in this brochure are representative not exact.  
All rights reserved.