



OPERATION AND MAINTENANCE MANUAL
VERTICAL TRANSPORTATION SYSTEM
FOR

POLLEN COLLECTION
71NA2638

OWNER	: SINGAPORE UNITED ESTATES (PRIVATE) LTD
ARCHITECT	: W ARCHITECTS PTE LTD
M&E CONSULTANT	: ALPHA CONSULTING ENGINEERS PTE LTD
MAIN CONTRACTOR	: SEAH CONSTRUCTION PTE LTD
SUB-CONTRACTOR	: OTIS ELEVATOR CO. (S) PTE LTD

SECTION 1



GIVING PEOPLE FREEDOM TO CONNECT AND THRIVE IN A TALLER, FASTER, SMARTER WORLD

Otis is the global leader in the manufacture, installation and servicing of elevators and escalators. We move 2.3 billion people every day and maintain about 2.3 million customer units worldwide – the industry's largest service portfolio. You'll find us in the world's most iconic structures, residential and commercial buildings, transportation hubs, and everywhere people are on the move.

\$14.2B

2023 net sales

71K

colleagues

~2.3M

customer units maintained

42K

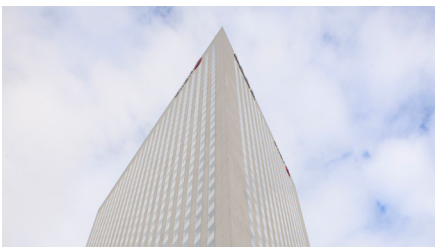
field professionals

>200

countries and territories served

>1,400

branches and offices



ÉGÉE TOWER, PARIS

The Égée Tower, built in 1999, needed to modernize its elevators to improve reliability, performance and environmental results. In 2023, Otis installed 22 high-efficiency elevators, while maintaining seamless service for 3,800 occupants. This included 14 SkyRise® elevators with CompassPlus® dispatching technology, and other improvements.



SMRT TRAINS

Otis completed a major six-year project in Singapore in August 2022, refurbishing 231 escalators across 42 stations on the North-South and East-West lines, operated by SMRT Trains. Each escalator has been upgraded with new safety features, higher-efficiency technology and new energy-saving controllers.



NEW BUND CENTER

The 270-meter skyscraper is the tallest in the New Bund district in Shanghai, China. Otis provided more than 50 elevators and escalators, the Otis ONE™ IoT solution, Compass® 360 destination-management system, and integrated more than 10 robots for the center.

OTIS

Learn more at [otis.com](https://www.otis.com)

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WELCOME TO TOMORROW

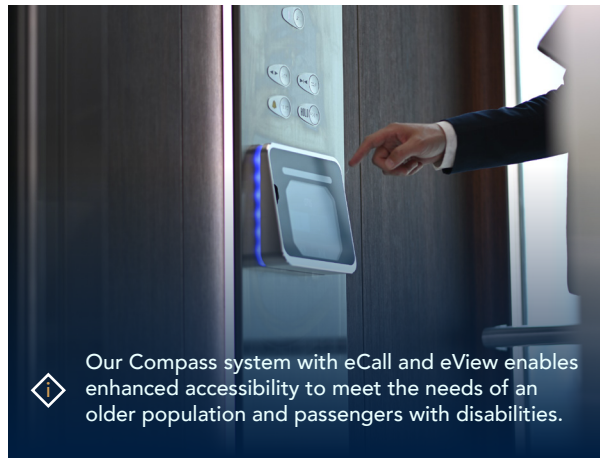
With our Gen3™ and Gen360™ family of elevators, we've reimagined what elevators can be for passengers and customers alike.

Smart sensors, Bluetooth technology, cloud-based APIs (application programming interfaces) and other Internet of Things technologies all contribute to the hyper-intelligence that defines this new generation of elevators.

Both systems build on the proven design and flat-belt technology of Otis' best-selling Gen2® elevators and the Otis ONE™ IoT solution monitors equipment health in real time, 24/7. And Gen360™ is the first flat roof product in the New Equipment market

And with the eCall™ Plus smartphone app, passengers with or without mobility disabilities can summon their elevator remotely for a touchless experience. The new Otis eView™ in-car display streams infotainment for passengers and can connect them with the OTISLINE® customer support center via voice, chat, and video in the event of an emergency, enabling accessibility for all.

Our service mechanics now carry iPhone devices loaded with an expanding suite of Otis-built proprietary apps designed specifically to improve our responsiveness and quickly get units back into service.



Our Compass system with eCall and eView enables enhanced accessibility to meet the needs of an older population and passengers with disabilities.

GEN2® FAMILY OF ELEVATORS	SKYRISE® ELEVATOR	Otis ONE™	LINK™ ESCALATORS
Our bestselling elevator, the Gen2 is prized for its energy efficiency, reliability, and smooth, quiet ride – benefits made possible by its flat-belt technology and compact design. Configurations are available for residential, commercial, medical and infrastructure settings.	Our most advanced high-rise system yet, the SkyRise elevator integrates industry-leading technologies with space-saving design. The controller employs adaptive motion profiling to reduce energy consumption, while a patented control algorithm ensures a smooth ride.	The Otis ONE IoT platform is engineered to realize the full potential of smart technology in vertical transportation. Elevators equipped with Otis ONE have achieved measurable improvements in uptime and performance, which translate to improved savings and value for building owners and managers.	Reliable, safe and stylish, our Link commercial escalators are designed for easy maintenance and ultimate uptime. Our public escalators are engineered to handle the high traffic demands of busy metros and airports, year after year.

OTIS ENVIRONMENTAL, SAFETY & GOVERNANCE (ESG)

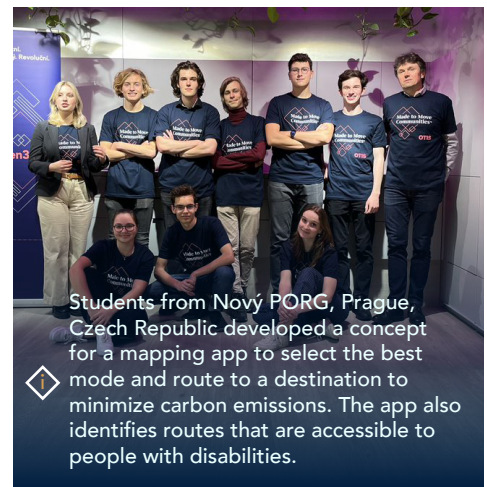
Our business strategy and ESG focus areas support our efforts toward a stronger, more sustainable and more inclusive tomorrow

In 2021, we established 13 ESG goals under our four pillars – Health & Safety, Environment & Impact, People & Communities and Governance & Accountability – and aligned them with the U.N. Sustainable Development Goals (SDGs). In 2023, we continued to build on our ESG strategies to deliver long-term sustainability value to our stakeholders.

Details about ESG initiatives and progress at Otis [can be found in our 2022 ESG Report](#), released in April 2023. Our 2023 ESG Report will be released later this year.

Made to Move Communities™

We aim to inspire student innovators globally to apply creative, technology-based solutions to address mobility challenges in underrepresented communities. A solid grounding in STEM subjects helps prepare students for a rapidly evolving workforce.



Students from Novy PORC, Prague, Czech Republic developed a concept for a mapping app to select the best mode and route to a destination to minimize carbon emissions. The app also identifies routes that are accessible to people with disabilities.

OTIS

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SECTION 2



SUMMARY OF CONTRACT DATA

CONTRACT NUMBER	: 71N1A447
CAR LIFT NUMBER	: PL14
DUTY LOAD	: 410 KG
SPEED	: 1.0 m/s
NUMBER OF PASSENGER	: 6
TYPE OF DOOR AND OPENINGS/SIZE	: 2 Panels Side Opening, 800(W) X 2200(H)
NUMBER OF OPENINGS/STOPS	: 5/5
FLOOR SERVED	: 1,1M,2,3,A
POWER SUPPLY	: 400V 3 PHASE 50 Hz
OPERATION	: SIMPLEX FULL COLLECTIVE
FIREMAN OPERATION	: NO
FIRE ALARM HOMING OPERATION	: NO
EMERGENCY POWER HOMING OPERATION	: NO
SUPERVISORY PANEL	: NO
REPEATER PANEL	: NO
INTERPHONE COMMUNICATION	: YES (CONNECT TO TELEPHONE LINE)
EMS	: NO
BAS MONITORING	: NO

SECTION 3



*** OPERATING INSTRUCTION ***

A. Passenger Lift

1. Door Close & Door Open Button

< **Door Close** > and < **Door Open** > button are provided on the car operating panel for the intentional control of the doors opening and closing operation.

2. Door Detector

Doors will re-open on closing when the infra red light beams are interrupted .

3. Inter-Phone Communication System

Communication between lift car and E&I Panel located at the top landing.

- Press the < **Inter-Phone** > button on the lift car.
- Buzzer on the inter-phone in the **E&I Panel** will sound.
- Pick up the inter-phone in the E&I Panel to communicate with the passenger in the lift.

4. Without Attendant Operation (Automatic Operation)

Under automatic operation, lift will respond to hall and car calls in sequence corresponding to the direction of travel. Closing and Opening of doors is automatic.

5. With Attendant Operation

With the < **Auto-Attendant** > toggle switch in the service cabinet of the car operating panel is activated to < **Attendant** > position, lift is put into Attendant mode.

Under Attendant Mode:-

- Press the floor button of which you want to go.
- Press either the < **Up** > or < **Down** > button in the service cabinet of the car operation panel corresponding to the direction you want to travel until the door are fully closed.

- Momentary release of the pressure on the < **UP** > or < **Down** > button will cause the doors to re-open on closing.
- Lift will start and travel in the desired direction when doors are fully closed.

Note: Lift will still respond to hall call.

6. Fan / Light Switch Operation

Fan / Light switches are provided in the service cabinet of the car operating panel for the on-off control of car lighting and ventilation fan.

7. Non-Stop Operation

Non-Stop operation is similar to Attendant Operation except the following:

- Under non-stop operation mode, lift will bypass all hall calls.
- Operation procedure is same as Attendant Operation except that the <NS> button in the service cabinet of the car operating panel should be pressed simultaneously with the <Up> or <Down> button and continuously until the lift reaches the desired floor.

8. False Call Cancelling (Anti-Nuisance)

When there is only one or two passenger in the lift but more than four car calls are activated, all registered car calls will be cancelled when the fourth call is pressed.

9. Overload Buzzer and indication

When the lift is overloaded, lift will stop and doors remain open. Overload indicator and buzzer on the car operation panel are activated.

10. Full Load by Pass Operation

When the loads in the lift car exceed 80% of the rated load, lift will bypass all hall calls and only respond to the car calls in sequence.

**** OTIS Service Hotline ****



TEL : 1800 2971010 (24 Hours)

A) In case of Lift “Breakdown”/ “Abnormal”

➤ Call up **OTIS SERVICE CENTRE** and report/furnish the following :-

- Name of Building or Address
- Lift number that wish to report.
- Problem that you face: Lift stuck which floor / lift running with abnormal sound at which floor/ button not responding / etc.
- Leave caller name & contact number.

B) In case of Lift “MAN -- TRAP ”

- Identify which lift is having mantrapped when interphone "Ring" from interphone.
- Pick up the headset of interphone, pressed the button that with "red" indicator. Comfort the trapped passenger by communicate via interphone.

➤ Call up **OTIS SERVICE CENTRE** report/furnish the following :-

- Name of Building or Address
- Lift number that wish to report.
- Inform number of Mantrapped and highlight if there "Passengers with special needs or mobility challenges." such as elderly persons, pregnant women, young children, adults carrying infants.
- Leave caller name & contact number.

C) In case of Lift “Breakdown”/ “Abnormal” with other trade.

- Call up **OTIS SERVICE CENTER** and schedule to attend together with other services.

Otis GeN3

System Description

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1 Statutory Requirement

This lift complies with Singapore Code of Practice SS550: 2009 and EU Lift Directive 95/16/EC.

2 Specification

2.1 General Characteristics

Lift Usage	Transportation of passengers in landed house
No. of Cars/Load	HL1 / 410KG
Load Speed (m/s)	1.0m/s
Rise	12,775mm
Control	Simplex Collective
Drive	Variable Frequency
Max. Starts Per Hour	180
Type of Car/Hoistway	Home Lift / 2 Speeds, 2 Panels Side Opening
Dimensions of Doors	Clear Opening in 800mm(W) x 2200mm(H)

2.2 Drive Unit

2.2.1 Machine

The machine used is gearless traction type and includes a motor. The machine is compact, efficient and has low rotating inertia to reduce the machine current. It has radial air gap design. The power factor at full load is higher than 90%. The drive sheave and motor shaft is one piece and the brake is maintenance free. The diameter of the sheave is 100mm and the bearing used is sealed type without the need for further lubrication.

In the event of undetected brake wear the brake shall not lift and thereby automatically prevent further lift operation.

2.2.2 Motor

The motor is AC synchronous permanent-magnet type for high starting torque and low starting current.

2.3 Motion Control

2.3.1 VF Drive

An AC Closed Loop, Variable Frequency, motion control and velocity profile is provided. The micro-computer based speed control system incorporates a digital closed loop feedback system ensuring the actual elevator speed is in line with a dictated pattern during all phases of travel, namely acceleration, full running speed and deceleration. All phases of travel is controlled regardless of load or direction of travel.

The drive is the digital VF type with vector control and has advanced features. In conjunction with the permanent magnet machine it provides a consistent and accurate motion profile.

The acceleration and deceleration values is easily adjustable on site by qualified personnel and shall be initially set at 1.2m/s squared.

2.3.2 Controller

The controller is of modular type which incorporates the latest printed circuit boards and software. The digital closed-loop vector control VF drive shall ensure that a consistent smooth motion profile is maintained. The load weighing system shall measure the car load before run. The motor torque is adjusted prior to brake lift to prevent roll back or roll forward to provide a jerk free motion. The equipment complies with the Electromagnetic Compatibility Directive (89/336/EEC).

The operational control shall be one of the following:

2.3.2.1 Simplex Full Collective Microprocessor Control

2.3.2.2 FCL Control

The operation shall be Full Collective automatic type with one button in the car for each landing level served; and UP and DOWN buttons at the intermediate landings and a single button at each terminal landing. All stops registered by the momentary pressure of the car buttons shall

be made in the order in which the landings are reached after the buttons have been pressed but irrespective of the sequence in which calls are registered. Calls registered by the momentary pressure of the buttons at the landing shall be made in the order in which the landings are reached in each direction of travel after buttons have been pressed.

All UP landing calls shall be answered when the car is travelling in the UP direction and all DOWN landing calls shall be answered when the car is travelling in the DOWN direction, except in the case of the terminal floor calls which shall be answered as soon as it is reached.

2.3.3 Encoder

The encoder shall be digital type. It shall be accurate, reliable and immune to noise making the system perform more precisely, consistently and reliably.

3 Drive Performance

3.1 Flight Time

The elevator manufacturer guarantees the floor to floor time for a 3 metre floor run.

3.2 Stopping Accuracy

The stopping accuracy shall be no more than +/- 3-mm before loading or unloading the car. The mechanical brake shall not be operative before the car has been electrically stopped and at speed zero.

3.3 Relevelling

To compensate for rope stretch under various load conditions, an automatic re-levelling system is to be furnished to ensure the car stays within the floor levelling zone at all times.

4 Car

4.1 Car frame

A car frame fabricated from formed steel members is provided with adequate bracing to support the platform and car enclosure.

The car safety gear is mounted on the members of the frame and shall be operated by an overspeed governor. Guide shoes is mounted to top and bottom of the car frame to engage the guide rails and ensure smooth car operation.

4.2 Platform

The car platform is of steel construction

4.3 Car Enclosure

The car enclosure is made of steel.

4.4 Car Façade

A car facade can be provided as factory standard in stainless steel. Factory supplied stainless steel finish can be in brushed, hairline, or non-directional finishes.

4.5 Car Operating Panel

The COP, in stainless steel faceplate, is located within the car wall and contains the car buttons, position indicators, car overload indicator, loudspeaker grille with intercommunication unit. Service cabinet housing the light, fan, attendant or independent toggle switch.

The car buttons is circular micro-movement LED type with halo ring that illuminates to indicate that your call has been registered.

The car position indicators (alpha numeric) display is of LED type

4.6 Car Fan

Blower is used to ventilate the car with a high flow rate of 230cmh.

4.7 Car Door

The car entrance is a (centre-opening) (two-speed) type horizontal sliding door. The door is hung on rollers operating on a steel track and guided at the bottom by non-metallic shoes sliding in a threshold groove.

The car door finish can be factory supplied stainless steel type.

5 Door Operator

5.1 DO 2000

The doors on the car and the landings are powered by a quality door operator mounted on the top of the car. Door operation shall be automatic at each landing with door opening being initiated as the car arrives at the landing and door closing taking place after a time interval expires.

The door system shall be of variable-speed digital control type that delivers consistency and reliability over the numerous door openings and closings.

A closed loop variable frequency controlled door operator is provided to drive the car and landing doors automatically. The open and close speed profile is software based and programmable via a test tool.

In the event of the door meeting an obstruction during closing, re-opening will occur by way of a motor slip detection device.

The time interval for which the elevator doors remain open when a car stops at a landing, is independently adjustable for response to car calls and response to hall calls.

The door timing is adjustable, the maximum time to completely open and completely close the doors is between 2.6 and 2.8 seconds respectively.

5.2 Passenger Door Protection

An electric infra-red screen curtain type detector is provided. This provide protection across the full width and height of the entrance. Interruption of the curtain beams shall cause the doors to reopen.

The door protection device, in the form of a light ray curtain, is mounted on the leading edge of the car door panels. It has at least 56 emitters and detectors that create an invisible safety net of beams across the lift entrance. A secondary protection system shall project into the hallway, to detect the passengers before they enter and as they leave the lift car. If the beam is interrupted the device shall reopen the door instantly without touching the passenger.

5.3 Landing Entrances

5.3.1 Automatic Sliding Doors

Complete (centre-opening) (two-speed) type, in sheet steel with stainless steel, is supplied and installed for each landing.

The door panels are prime coated. The door panels can be finished in stainless steel. A small decorative frame, finished in prime coat or stainless steel can also be provided.

6 Hoistway Equipment

6.1 Guide Rails

Steel guide rail of T-section is furnished to guide the car and counterweight. The guide rails are erected perpendicularly and securely fastened to the building structure with through bolts. Hollow or formed guide rail can be used for counterweight side, which are not fitted with safety gears. Guide rail shall be strong to withstand the loads due to the operation of the safety gear when stopping a full loaded car or counterweight.

6.2 Counterweight

A structural frame with filler weights shall be furnished to provide proper counter-balance for economical operation. Sliding guides is mounted on the top and bottom of the counterweight frame to engage the guide rails.

6.3 Safety Gear

A counterweight safety gear may or may not be required, depending on the structural design of the building.

6.4 Car Guides

The car guides shoes is spring-loaded self-aligning swivel type to safely engage the car rails and ensure smooth car operation.

6.5 Car Suspension

The car is suspended by flat polyurethane coated belts of a suitable number, usually 5, to provide a minimum safety factor of 12.

6.6 Compensation

Compensation shall be provided if required by the traction.

6.7 Buffers

Buffers shall be installed in the pit as a means of stopping the lift car and counterweight at the bottom limits of travel. The buffer shall be polyurethane or spring type for speed of less than or equal to 1mps and oil buffer for speed exceeding 1mps.

6.8 Electric Wiring

All necessary insulated wiring and trunking together with necessary fittings, will be provided, except as specified as work by others.

6.9 Brake

The brake is spring applied and electrically released and designed to provide smooth stops under variable load.

6.10 Governor

An automatic device, which brings the lift to rest by operating the safety gear in the event of the speed in a descending direction exceeding a pre-determined limit, is provided. The car safety will be operated by a centrifugal speed governor located at the top of the hoistway and connected to the car safety through a continuous steel rope. It also has the means of cutting off the power from the motor and apply the brake before the safety is actuated.

6.11 Terminal Devices

Normal terminal stopping devices is provided to slow down and stop the car automatically at the terminal landing if the car speed is not reduced to allowable speed at the tripping point. An emergency terminal stopping device is provided to slow down and stop the car automatically at the terminal landings if the car speed is not reduced to predetermine speed at the tripping point.

6.12 Hoist Ropes / Belts

All cars are suspended by coated steel belts attached to the car frame. The belts are flexible, extremely strong and do not require lubrication (green chain). Each belt contains 7 strands of seven wires each. The wires shall be zinc-plated to prevent corrosion. The steel wires are coated with polyurethane jacket. It can last 3 times longer and are 20 times lighter than conventional ropes. The belts has undergone endurance tests of temperature extremes between -20 degC and 60 degC.

7 Emergency rescue

7.1 Emergency Power Supply

Emergency supply from a separate rechargeable source shall be provided for all passenger lifts. This supply complies with SS500:2009 and is equipped with automatic changeover of sufficient capacity to operate at least one of the existing car lights, one blower, the intercom system and the alarm bell for each lift for 4 hours in the event of power failure.

7.2 Emergency and Inspection Panel

The Emergency and Inspection Panel provides all controls necessary to perform rescue and inspection operations. It is located adjacent to the top floor entrance, opposite side from the machine. It is vandal resistant and access shall be secured to authorised personnel only.

The Emergency and Inspection Panel shall contain the main supply and lighting terminals, protection devices for main supply breaker, earth leakage breaker for car lighting circuits and sockets circuit, fuse protection for car light, hoistway light, pit and emergency and inspection panel sockets for REM, switch for hoistway lighting, electric brake release, intercom unit and mechanical resetting device for governor switch.

8 FEATURES

8.1 Functional Features

8.1.1 Safe Operation

If someone opens the hoistway doors the lifts shall be automatically taken out of normal control. Only inspection or emergency rescue operation is allowed after detection.

8.1.2 Anti-Nuisance

If there is only one passenger in the car, and an excessive number of car call is registered, nuisance is detected and all car calls will be cancelled, requiring registration of a proper number of calls.

8.1.3 Attendant Operation

The attendant operation feature shall allow semi-automatic operation with manual control. The car is placed on and removed from the attendant operation by operation of a toggle switch in the service cabinet on the car-operating panel. All outstanding car calls are cancelled upon initiation of attendant operation. Once on attendant operation, a car operates automatically except that the car loading, door closing and hall call bypass are made by the attendant.

8.1.4 Full Load

When a car is loaded to a predetermined percentage of about 80% of its capacity, it shall be considered 'full'. If the weight sensing device detects a full car load, the car shall bypass further hall calls. The hall call shall remain registered and shall be served on the next trip or by another car.

8.1.5 Overload Device

When the load in the car exceeds rated capacity, the in-car buzzer shall sound. Overload indication will be heightened, the elevator shall remain at the landing with the doors open. The load is sensed while doors are open and the overload device is inoperable while the doors are closed.

8.2 Safety Features

8.2.1 Car Door Evacuation Deterrent

There shall be a car door evacuation deterrent device to prevent safety hazards to trapped passengers. The device shall prevent the car door from opening more than 100mm when the car is not in the safe door zone so as to prevent the risk of someone exiting the car and falling down the hoistway.

8.2.2 Pit Switch

There shall be two emergency stop switches, one at low level and one at high level, to be installed. The switch shall be of the “Push to Stop – Turn & Pull to Run” type.

8.2.3 Safety Signage and Guarding

For best safety practices the following must be comply with:

- a) Clear warning sign shall be installed in places where potential hazard exists – machine room, hoistway and pit areas.
- b) All distribution boards shall have a Lockout and Tagout facility.
- c) High hazard warning signs shall be placed at all controllers and distribution boards.
- d) A 3-sided barricade shall be installed at the cartop.
- e) Angle iron and screen governor sheaves guard painted in yellow shall be provided for the governor and tension sheaves.
- f) Angle iron and screen machine sheaves guard painted in yellow shall be provided for the machine.
- g) Angle iron and screen counterweight sheaves guard painted in yellow shall be provided for the counterweight in the pit.
- h) Screen fencing and lockable gated painted in yellow shall be installed in the pit where the hoistway are not partitioned.

8.3 Passenger Communication System

The lift car shall be provided with a 2-way communication system installed in the COP.

By pressing the intercom button, it automatically activates the communication system and communication can be established between the lift car, the E&I panel at the top floor and the guardhouse/FCC/management office, which ever is applicable.

8.4 Key Switch

A separate key switch, integral with the hall call panel fixture, is provided at certain landing for parking of the lift. Upon turning the key switch on, the lift will automatically park the lift after the last car call has been served. The lights and fans will then switch itself off automatically after the door closes.

8.5 Car chime

A car chime shall sound to announce the arrival of the car corresponding to the registration of the hall calls. The car chime has different tones to identify UP and DOWN direction.

9 FIXTURES

9.1 Car Fixtures

The COP, in stainless steel faceplate, is located within the car wall and contains the car buttons, position indicators, car overload indicator, loudspeaker grille with intercommunication unit, service cabinet housing the light, fan, attendant or independent toggle switch.

The car buttons is circular micro-movement LED type with halo ring that illuminates to indicate that your call has been registered.

The car position indicators (alpha numeric) display is of LED type

9.2 Hall Fixtures

9.2.1 Hall Button

The hall buttons shall be circular micro-movement LED type with halo ring that illuminates to indicate that it has been pressed.

9.2.2 Hall Position Indicator

The hall position indicators (alpha numeric) display is of LED type.

The hall indicator display the position of the lift.

10 Testing

The completed installation shall be inspected and tested to ensure it meets the requirements of the Lift Regulations SS550:2009 and customer specifications.

SECTION 4

COMPREHENSIVE MAINTENANCE

ROUTINE EXAMINATION FOR LIFTS

Every Visits

1. See the customers representative, get the key of the E&I panel/machine room and ask for information of the lift's running condition.
2. Post Elevator Under Service notices.
3. Check door protecting devices (e.g. safety shoes, light-ray detector and electronic detector)
4. Check car position indicators.
5. Check alarm bell for operation.
6. Check condition of car cab fixtures (e.g. fan, flooring for wear, etc.)
7. Check machine gear box, guide rails and governor, and ensure all the sufficiently lubricated.
8. Fill in the log card in the machine room, return outside machine room key to customers representative, and obtain signature of him.
9. Report in detail any work items which are outside normal routine examination scope to your supervisor.

Note : Remember "Downward" travel is safer than "Upward" when riding the car top.

PERIODIC EXAMINATION

Definition of Code Area

Code A : CONTROLLER

1. Clean and check all wiring connections and connection studs
2. Check alignment, contacts and air gaps of relays and switches.
3. Check oil, setting and operation of overload relay.
4. Check time-delay circuit function.

5. Check non-magnetic shield of relays.
6. Check ARC deflector.
7. Check fuse rating.
8. Check overheating resistors.
9. Check the operation sequence of all relays and switches.

Code B : LANDING AND CAR ENTRANCE EQUIPMENT

1. Clean and lubricate door tracks and hangers.
 2. Check opening and closing operation.
 3. Check door tracks, hangers, cams and eccentric rollers, etc.
 4. Check interlock contacts and locks latching mechanism/.
 5. Check door operator operation.
- ❖ A safe efficient door operation is essential.

Code C : HOSITWAY SIGNALS & FIXTURES

1. Check hall-call buttons, hall lanterns and tell-tale lights.
2. Check dial indicator readings.

Code D : GOVERNOR

1. Clean and lubricate all moving parts.
2. Check conditions and free movement of the gripping jaw.
3. Check rope tightener at the pit.
4. Ensure all fixings are secured.

Code E : LEVELLING, RUNNING AND STOPPING SEQUENCE

1. Check levelling and adjust if necessary.
2. Check acceleration, running, slow-down and stopping processes, re-adjust if necessary.

Code F : HOISTWAY MISCELLANEOUS : Guide Rails, Guide Shoes, and Roller Guide

1. On top of car, check for any loosen rail bracket and listen to any unusual sound when car passes through rail-joints. Check the distance between the machine room slab and the top of the guide rail.
2. Check car guide shoes and safety blocks for correct clearance.
3. Check roller guide for wear and proper spring tension.
4. Check any unusual vibration or bumping when ride in the car

Code G : HOISTWAY MISCELLANEOUS : Buffer and Limit Switches, etc.

1. Check all mechanical switches for wear and distortion. Also check all moving parts of these switches.
2. Check compensating sheave switch and the distance from the triggering position.
3. Check any oil leakage from oil buffer.
4. If any doubt in regard to item (2) and (3), please consult with supervisor.

SECTION 5



EMERGENCY CONTACT LIST

We are pleased to append below a list of Otis personnel for your easy reference and contact should the need arise.

In the event of a breakdown, please contact our 24-hour OTISLINE at 1800 2971010. You may also contact these personnel directly for emergency matters.

OTISLINE

1800-297 1010

Lift & Escalator Maintenance Service

Field Operations Manager	Bhoovaraghavan	HP : 9066 7394
Field Operations Manager	Oliver Cai	HP : 9011 2329
Field Operations Manager	Yip Why Mun	HP : 8200 5927

For Equipment Upgrade Enquiries and Contract Renewal

Major Account Manager	Clare Lim	HP : 8200 5923
Service Account Manager	Shawn Lin Shao En	HP : 9726 0130
Service Senior Associate	Clarissa Seow	HP : 9723 3755
Service Senior Associate	William Wong	HP : 9721 3504
Service Sales Consultant, T Sales	Ng Sai Guan	HP : 9650 6753

We look forward to build a stronger working relationship with your organization and you.

SECTION 6

Gen2-Regen EXT

Designed
for your
needs

OTIS



Set your building apart

Whether helping busy commuters get to work or delighting people as they shop, your building should be a unique experience for anyone who steps inside. The Gen2® elevator system has the style, comfort and speed needed to ensure passengers experience your building to the fullest. With space-saving architectural features that maximize design freedom, Otis helps your building stand out.

PARAMETERS

Description	Machine room-less
Speed	1.0 m/s
Capacity	250, 320, 400, 550, 630
Maximum stops	16
Maximum rise	45m

*: 2000 kg@2.5m/s - 1600 kg@3.0 & 3.5m/s



Design without limits

Gen2 technology is sized to fit inside the wall of the top elevator landing – eliminating the need for a control room. So whether you want to impress visitors with an expansive, seamless lobby or offer tenants a larger space, Gen2 gives you the room to bring your vision to life.



COMPACT DESIGN

Gen2 technology eliminates machine room space and cost for greater architectural design freedom.



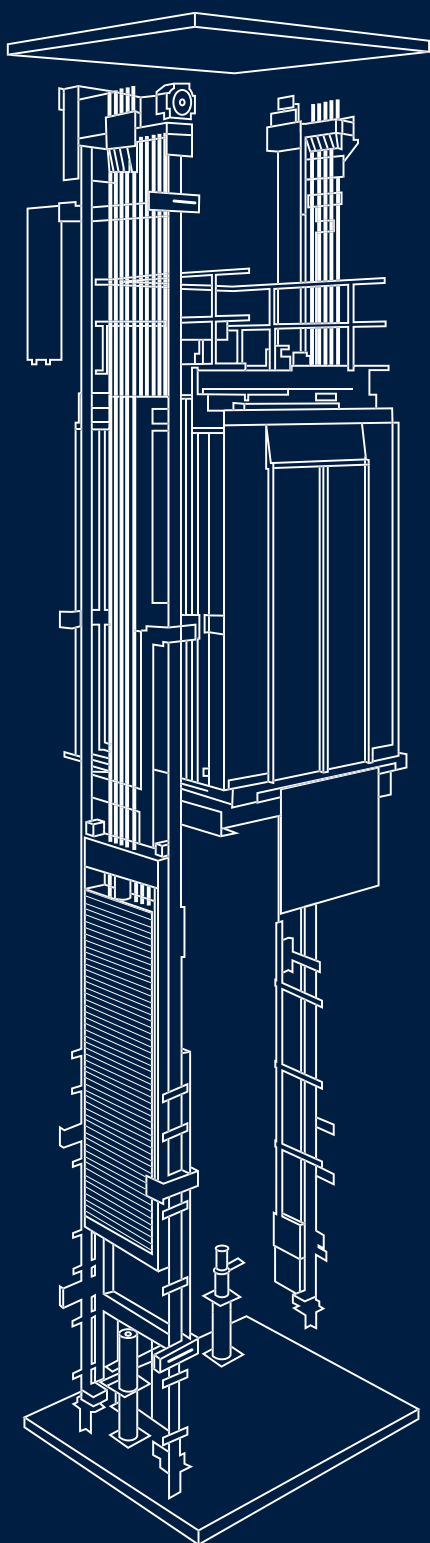
COMPACT CONTROLLER

Sized to fit inside the wall or in the door lintel of the top elevator landing, the controller can be accessed by an attractive, concealed test panel.



MAXIMIZED SPACE SAVINGS

Flexible coated steel belts allow a smaller machine sheave, reducing machine size.



MACHINE ROOM-LESS CONFIGURATION

With the machine room-less configuration of the Gen2 elevator, all you need is a hoistway. The machine and controller are so compact, they fit inside the hoistway. No need for an extra room on top of your building for elevator components. You save on construction costs and clear rooftop space.

Your comfort is our focus

We sharpened our focus on speed and performance without compromising comfort. We reduced metal-on-metal contact and dampened vibrations to ensure the Gen2 ride is smooth and quiet.



SWIFT MOVEMENT

High-performance door operators and superior car acceleration allow passengers to enter and exit elevators more quickly.



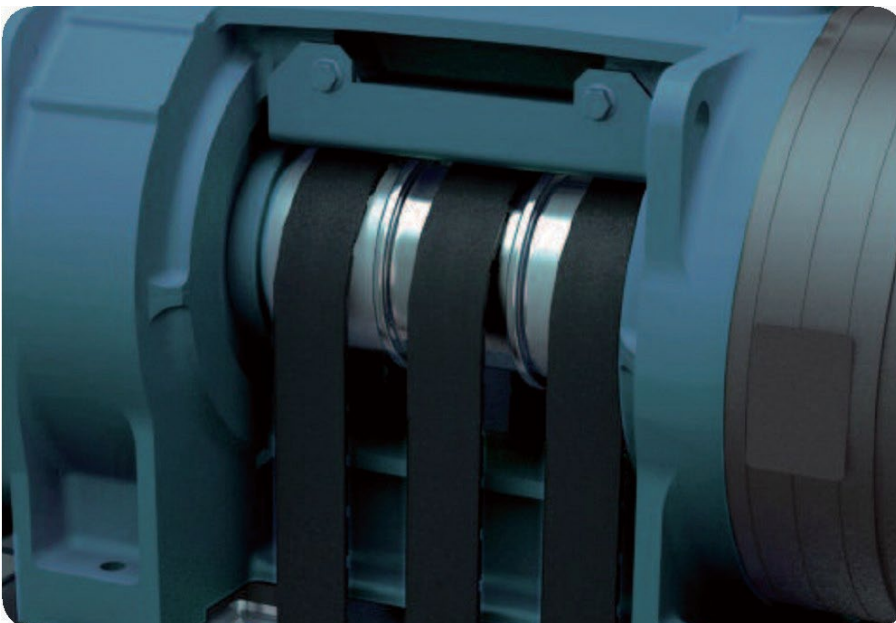
SMOOTH COATED STEEL BELTS

The steel belts eliminate the noise created by the metal-on-metal contact from conventional steel ropes.



LOW-NOISE GEARLESS MACHINE

Mounted on isolation rubber pads, the low-noise gearless machine reduces vibration and noise in adjacent rooms.





Reliable, as expected

Some of the world's most distinguished buildings trust in Gen2 technology. Manufactured at our ISO-certified factories, the Gen2 system is the result of our most advanced thinking, global experience and deep engineering expertise. All so you can be sure of getting exceptional Otis performance day after day.



PULSE™

The Pulse System continuously monitors the elevator's coated steel belts to safeguard their integrity, ensuring safe, efficient operation and reduced inspection downtime.



AUTOMATIC RESCUE OPERATION

Battery-powered systems deliver passengers safely to the nearest floor during a power failure.



ENHANCED SEISMIC PROTECTION

Coated steel belts and a uniquely designed machine sheave work together to provide greater stability during seismic activity.



'MADE IN OTIS'

Every country in which we operate must meet or exceed the Otis standard. The Passport System requires each product to move through a series of meticulous inspections during its development. Once approved by a team of experts, the product moves on to its next stage. Every factory, wherever its location, has an entire workforce committed to this high standard of manufacturing.

Create a lasting experience

Whatever your sustainability goals – from designing net-zero buildings to managing your energy efficiency – Gen2® is engineered to help you achieve your goals.



REGEN™ DRIVE

75%

more efficient than conventional geared systems with non-regenerative drives, while providing clean power to help run other building systems.



LED LIGHTING

10x

longer lifespan of Gen2 LED lighting compared to conventional fluorescent lamps.



LUBRICATION

ZERO

coated steel belt and machine lubrication needed, providing for a cleaner hoistway and elevator environment.



SLEEP MODE

75%

more efficient LED energy usage with sleep mode – lights and fans shut down when not in use and are automatically restarted with the touch of a button.

Basic Cab



Cab: Painted
Ceiling: B4091L
Floor: PVC (MA_0201)

2130



Cab: Stainless Steel
Ceiling: 4076L
Floor: 4901PVC

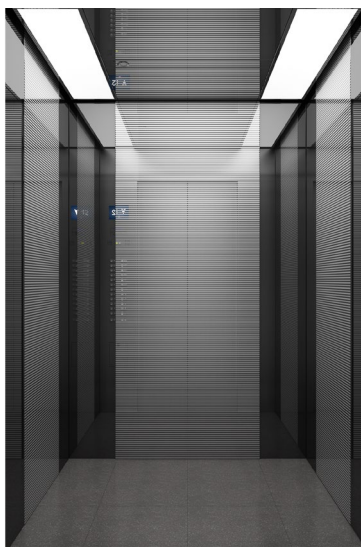
2120

Modular Cab



Cab: Painted RAL120_
MPL+Color Metal CG-
1+Mirror St.St
Ceiling: 4601L
Floor: 4901DB

2600



Cab: Titanium Black Mirror
St.St+Etched St.St SK-2
Ceiling: 4600L
Floor: 4901DB

2602

Blue text here shows non-standard options, please reach to CLC



2603

Cab: Painted RAL780_MPL+Color
Metal CG-2+Mirror St.St
Ceiling: 4600L
Floor: PVC (MA_0201)



2606

Cab: Painted RAL120_MPL+Color
Metal CG-1+Mirror St.St
Ceiling: 4601L
Floor: 4901DB



2607

Cab: Color Metal CG-4+Color Metal
CG-5+Mirror St.St
Ceiling: 4600L
Floor: 4901DA



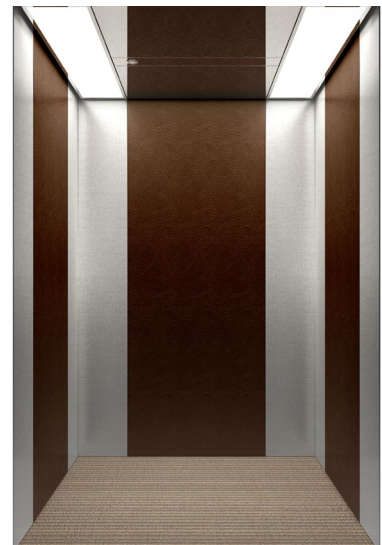
2612

Cab: Color Metal CG-10+Etched
Champagne Golden Mirror St.St SK-45
Ceiling: 4601L
Floor: 4901DD



2613

Cab: Color Metal CG-11+Color Metal
CG-12+Etched Champagne Golden
Mirror St.St SK-44
Ceiling: 4600L
Floor: Carp02



2618

Cab: Color Metal CG-5+Color Metal
CG-13
Ceiling: 4600L
Floor: 4901EG

Ceilings for Basic



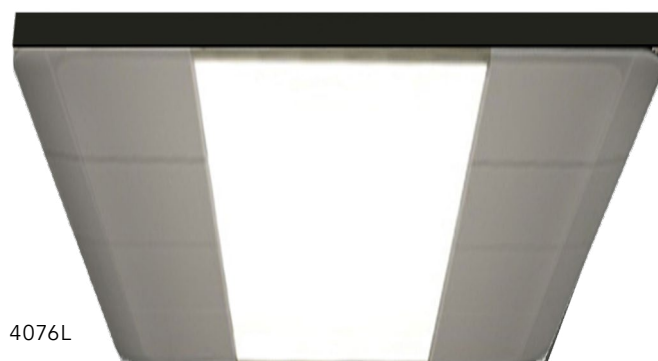
B4091L



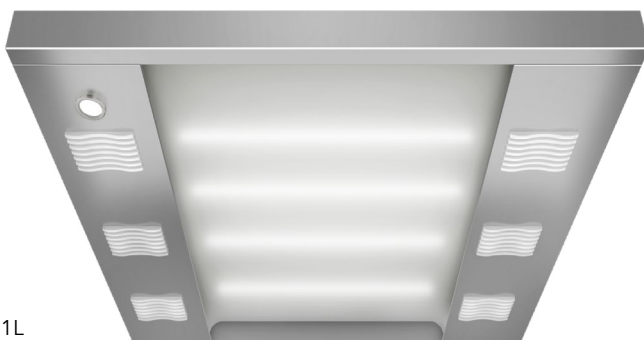
4020AL



4074L



4076L



4081L



4087L

Blue text here shows non-standard options, please reach to CLC



4095L



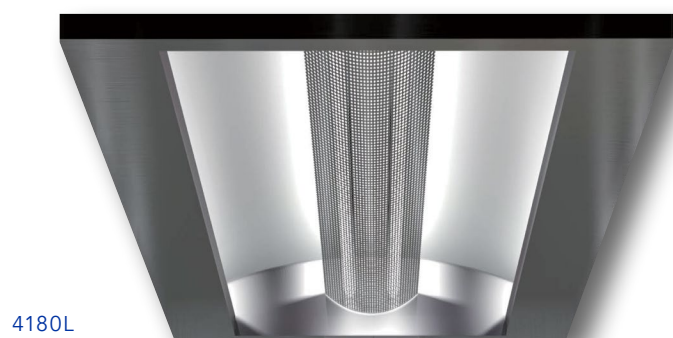
4082L



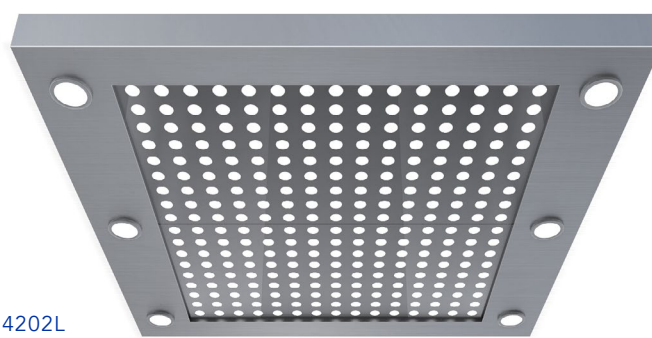
4094L



4120L



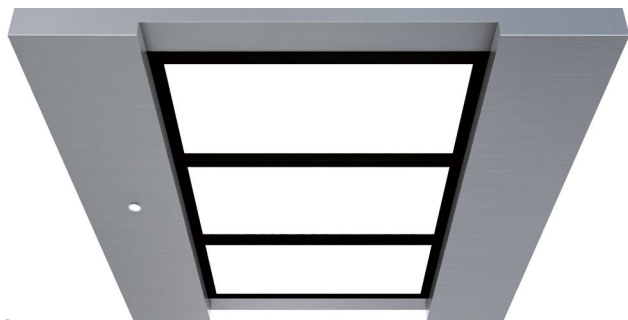
4180L



4202L

Ceilings for Basic

Blue text here shows non-standard options, please reach to CLC



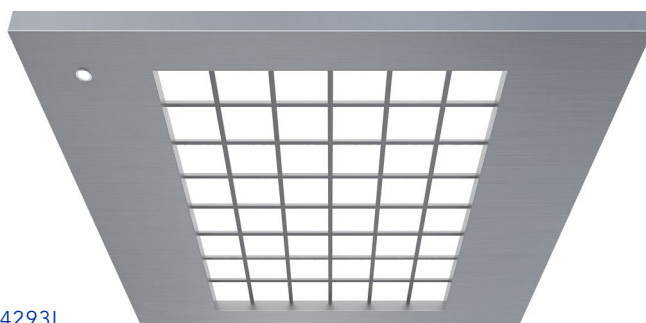
4203L



4204L



4291L



4293L



4600L



4601L

Ceilings for Modular

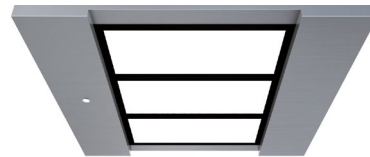
Blue text here shows non-standard options, please reach to CLC



4600L panel light



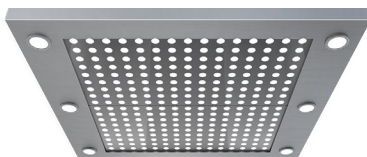
4201L



4203L



4601L downlight



4202L



4204L

Specs **EEC:** Available for both 4600L and 4601L **Painted steel optional colors:** RAL780_MPL/ RAL120_MPL/ RAL140_MPL

Handrails for Modular



4900AA_A

Base: Hairline stainless steel
Handrail: Hairline stainless steel



4900AA_B

Base: Mirror stainless steel
Handrail: Mirror stainless steel

Handrails



4900_A: Hairline stainless steel
4900_B: Mirror stainless steel



4900B_A: Hairline stainless steel
4900B_B: Mirror stainless steel



4900F: Hairline stainless steel



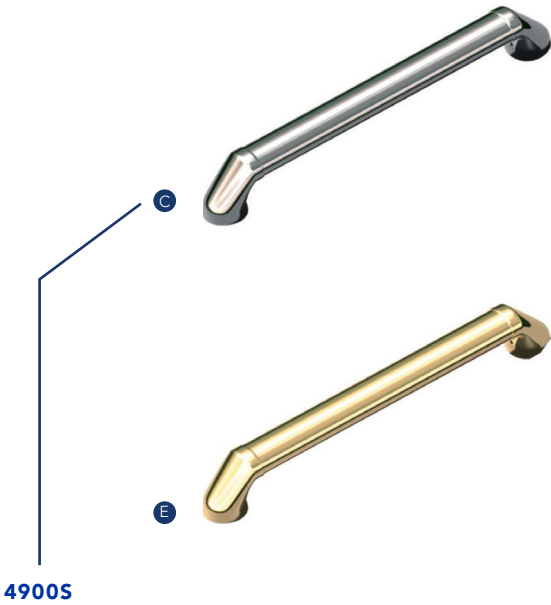
4900S

Base: Mirror finish
Connection Cap: Mirror finish

Base: Gold mirror finish
Connection Cap: Gold mirror finish

C

E



4900S

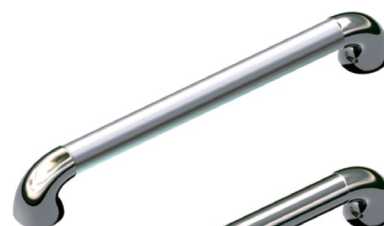
Blue text here shows non-standard options, please reach to CLC

4900R

Base: Semi-gloss finish
Connection Cap: Mirror finish

B

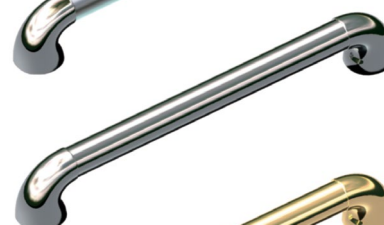
4900R-B



Base: Mirror finish
Connection Cap: Mirror finish

C

4900R-C



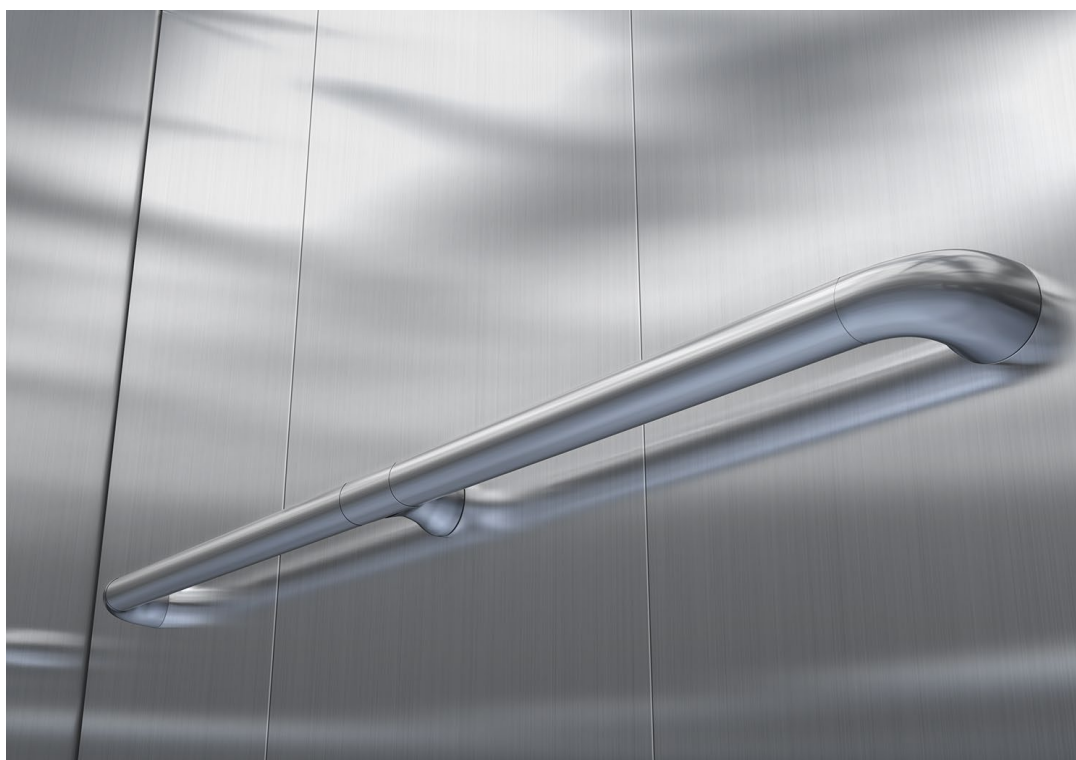
Base: Gold mirror finish
Connection Cap: Gold mirror finish

E

4900R-C



Exquisite handrails



Floors for Basic

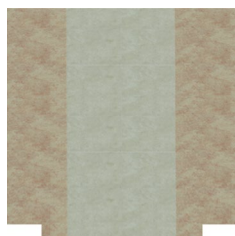
Blue text here shows non-standard options, please reach to CLC



MA_0201 (Standard)

Finish: PVC

Recess for decorate: 3mm

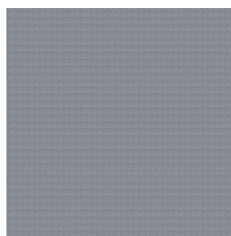


4901AH

Pattern: Picture on the left shows the entire effect

Finish: PVC

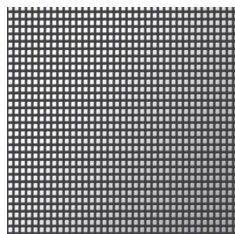
Recess for decorate: 3mm



4901AE(A_104)

Finish: Rubber

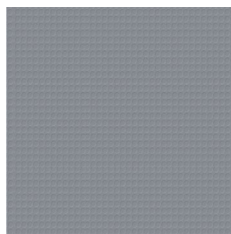
Recess for decorate: 3mm



4901AN

Finish: Chess Stainless Steel Floor

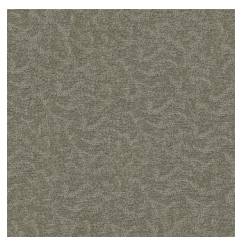
Recess for decorate: 3mm



4901AE(A_105)

Finish: Rubber

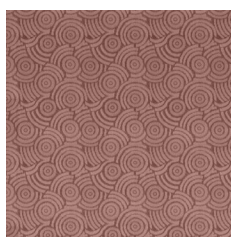
Recess for decorate: 3mm



CARP01

Finish: PVC

Recess for decorate: 3mm



CARP02

Finish: PVC

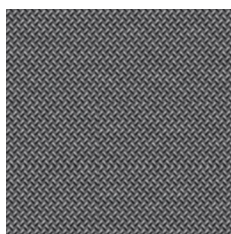
Recess for decorate: 3mm



MARB01

Finish: Rubber

Recess for decorate: 3mm



4901AM

Finish: Floral Steel

Recess for decorate: 3mm

Floors for Modular

Blue text here shows non-standard options, please reach to CLC



4901DA

Finish: PVC

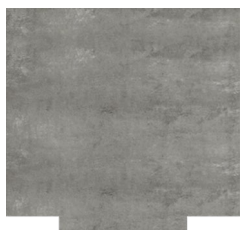
Recess for decorate: 3mm



4901DB

Finish: PVC

Recess for decorate: 3mm



4901DD

Finish: PVC

Recess for decorate: 3mm



4901DE

Finish: PVC

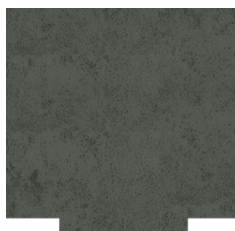
Recess for decorate: 3mm



4901DF

Finish: PVC

Recess for decorate: 3mm



4901DG

Finish: PVC

Recess for decorate: 3mm

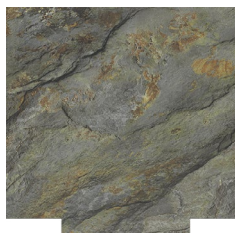
Floors for Both



4901EA

Finish: PVC

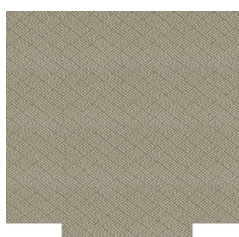
Recess for decorate: 3mm



4901EB

Finish: PVC

Recess for decorate: 3mm



4901EC

Finish: PVC

Recess for decorate: 3mm



4901ED

Finish: PVC

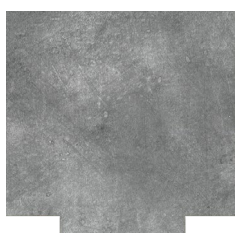
Recess for decorate: 3mm



4901EE

Finish: PVC

Recess for decorate: 3mm



4901EF

Finish: PVC

Recess for decorate: 3mm



4901EG

Finish: PVC

Recess for decorate: 3mm



4901EH

Finish: PVC

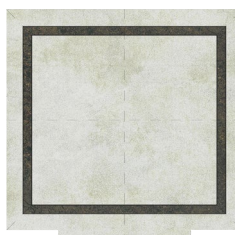
Recess for decorate: 3mm



4901EL

Finish: Block PVC

Recess for decorate: 3mm



4901EM

Finish: Block PVC

Recess for decorate: 3mm

Blue text here shows non-standard options, please reach to CLC

HBP11_STN

HPI: STN4.3

Standard Faceplate Finish: Hairline stainless steel/ Mirror stainless steel

Hall Button: BR27B/ BR27AB/ BR32AB/ BR34C/ BR34CB/ BS34D/ BS34DB/ BS34C



HBP11-STN
Simplex



HBP11-STN
Duplex

HBP11_TFT



HBP11-TFT
Simplex

HBP11-TFT
Duplex

TFT-LCD options



UI 15



UI 16



UI 18



UI 2

HPI: LCD4.3 (UI 15/ UI 16/ UI 18/ UI 2)

Faceplate Finish: Hairline stainless steel/ Mirror stainless steel

Hall Button: BR27B/ BR27AB/ BR32AB/ BR34C/ BR34CB/ BS34D/ BS34DB/ BS34C

Separated HBP11

HPI (Hall Position Indicator)



STN7
Hairline st.st



LCD7 TFT (UI15)
Mirror st.st

HL (Hall Lantern)



HL11
Hairline st.steel



HL11
Mirror st.steel

HBP (Hall Button Panel)



HBP11
Hairline st.steel



HBP11
Mirror st.steel

Park Switch



Hairline st.steel



Mirror st.steel

Fire Switch



Aluminium Alloy

HBP12_TFT



Simplex



Duplex

Optional displays

Simplex TFT Display



UI 15



UI 16



UI 18



UI 2

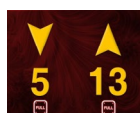
Duplex TFT Display



UI 15



UI 16



UI 18



UI 2

HPI: LCD4.3 (UI 15/ UI 16/ UI 18/ UI 2)

Faceplate Finish: Hairline stainless steel/
Mirror stst/ Titanium mirror stst

Hall Button: BS34E/ BS34F/ BR34E/
BS34FB/ BR34F/ BR34FB

Separated HBP12_TFT

HPI (Hall Position Indicator)



LCD7_B TFT
Hairline st.steel

HBP (Hall Button Panel)



HBP12_N Hairline st.steel

Hall Lantern



HL12 Hairline st.steel

Integrated HBP17

HPI: HBP17 display

Faceplate Finish: Hairline stainless steel

Hall Button: BS34H/ BR34H/ BS34HB/ BR34HB



HBP17 Simplex



HBP17 Duplex

Gesture Button

Gesture fixture provides a different method of call elevator by waving your hands. Adopted infrared induction technology, the hands waving will be detected accurately immediately.



Integrated HBP16_LED

HPI: LED_W/ LED_R

Faceplate Finish: Hairline stainless steel

Hall Button: BR34G/ BR34GB



HBP16 Simplex



HBP16 Duplex

Blue text here shows non-standard options, please reach to CLC

Glass HBP22

Blue text here shows non-standard options, please reach to CLC

Integrated

Hall Position Indicator: LED_W

Faceplate Finish: Dark green tempered glass/ Obsidian black tempered glass/ Gradient golden tempered glass/ Monet grey tempered glass

Hall Button: BR34J glass round button/ BR34J_L dim light glass round button/ BR34JB_L dim light braille glass round button/ BR34L_L dim light touch glass round button



Separated



BR34J_L
Dark green



BR34JB_L
Obsidian black



BR34L_L
Gradient golden



BR34J
Monet grey

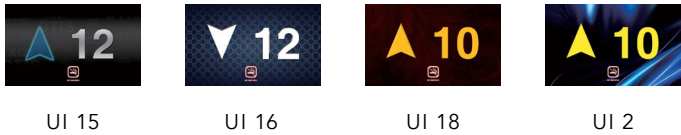
***Notice:** The finish of button should be aligned with faceplate of HBP22, here shows the optional effect only

COP2

Blue text here shows non-standard options, please reach to CLC

Optional Display

LCD7



LED7.2 STN6.4 BND6.4 LCD13.3/15.6



Faceplate Finish:

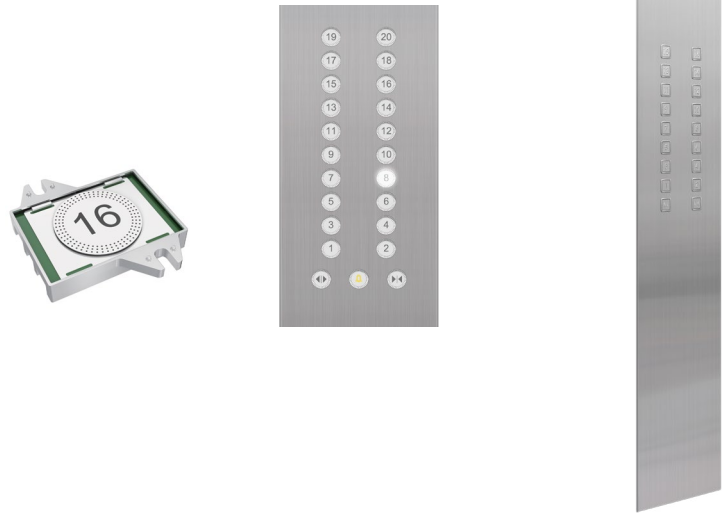
Hairline st.st/ Mirror st.st/ 304 Hairline st.st/
Titanium hairline st.st

Position Indicator: LCD7 (UI 15/ UI 16/ UI 18/ UI 2)/ LED7.2/ STN6.4/ BND6.4/
LCD13.3 multimedia (UI 26)/ LCD15.6 multimedia (UI 26)

COP Button: BR27A/ BR27AB/ BR27BK/ BR32AB/BR32A/ BR36A/ BR36AB/
BS34C/ BR34C/ BR34CB/ BS34D/ BS34DB

Touchless Button: BRTL001

Location: Side center



CBT2

Code=EN81.1_1998
Side Location

Code=EN81_20_2014
Side Location

***Notice:** COP is not the full length of the cab wall.

COP16

Faceplate: 304 Hairline stainless steel

Floor Button: BR34G/ BR34G(B)

Position Indicator: LED_W/ LED_R

Location: Side

LED_W



LED_R



HCOP

Blue text here shows non-standard options, please reach to CLC

Faceplate: Hairline stainless steel/ Mirror stainless steel/Titanium mirror stainless steel

Floor Button: BR27A(B)/ BR32A(B)/ BR34C(B)/ BS34D(B)/ BR34GB

Position Indicator: None/ LCD 4.3

Optional Display

4.3" TFT-LCD



UI 15



UI 16



UI 2



UI 18

4.3" STN-LCD



4.3" BND-LCD



Code=EN81.1_1998



***Notice:** COP is not the full length of the cab wall.

COP19

Blue text here shows non-standard options, please reach to CLC

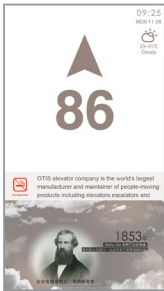
Optional Display



Code=EN81.1
_1998
Side Location

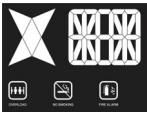


Code=EN81
_20_2014
Side Location



LCD13.3
LCD15.6

BND8.0



UI 26

Faceplate Finish: Hairline stainless steel/
304 Hairline stainless steel/ Mirror stainless
steel/ Titanium hairline stainless steel

COP Button: BR34H/ BR27A/ BR27AB/
BR27BK/ BR32A/ BR32AB/ BS34C/ BR34C/
BR34CB/ BS34D/ BS34DB/ BR34H/ BR34HB/
BS34H/ BS34HB

Position Indicator: LED7.6/ LCD13.3/
LCD15.6 (UI 26)/ BND8.0

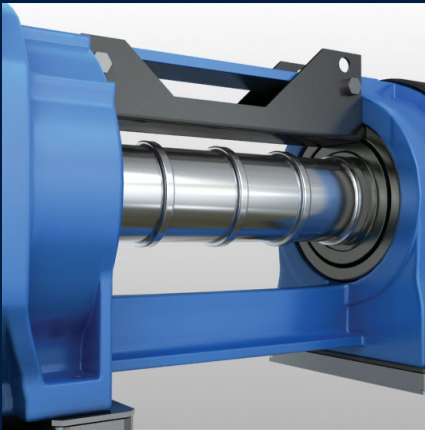
Location: Side center



CBT19

Standard equipment

TRACTION



- Gearless machine with synchronous permanent magnet motor
- Radial low inertia design
- 240 starts/hour in peak abilities

MONITORING



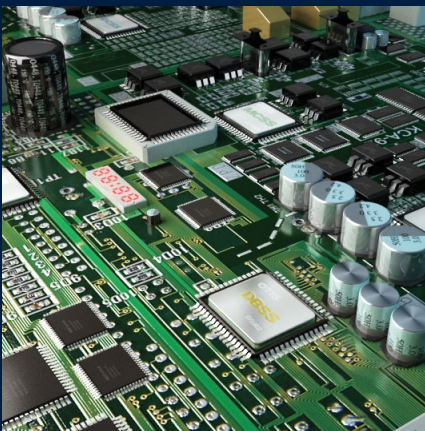
- Automated rescue operation
- Pulse 24/7 belt integrity monitoring system
- Two-way communication and remote intervention system with cellular 3G option

ROPING



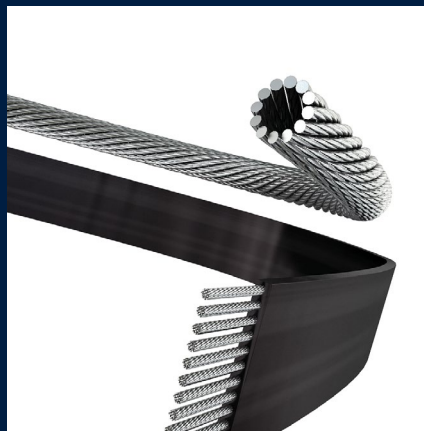
- 2:1 overslung configuration
- All moving elements integrated in the top of the high-resistance steel frame in charge of absorbing mechanical constraints

CONTROL & POWER



- Modular microprocessor system
- Closed loop, variable frequency and voltage
- Regenerative drive with +/- 3 mm stopping accuracy
- Standby mode
- LED lightning in car and for hall fixtures

SUSPENSION



- Stainless steel polyurethane-coated belts instead of conventional ropes
- Lubrication free
- Life duration twice as long as conventional ropes

DOORS



- Variable speed high-traffic door operator 240 stats/hours in peak
- EN81-58 fire resistant
- Reinforced self-cleaning slotted sill and aluminum door track with protected roller system
- Car door lock compatible

Main options

ARED



- Automatic rescue when power off
- Care about passengers' safety when riding

DOORS



- Landing or hoistway installation
- Full frame, small frame or no frame options
- Glass or full glass

HALL FIXTURES



- Flat or flush mounting
- In-car lintel or wall mounting
- Brushed, mirror or gold stainless steel finishes

PREMIUM RIDE QUALITY



- High-speed friction rollers with compensating bumpers
- A class rails
- Reinforced rails attachments
- Down to 50 dB(A) noise and 10 milli-g vibrations in car

CAB AESTHETICS



- Modular aesthetics – a large range of preset styles to suit your building
- Basic aesthetics - Classical design to meet your requirement

FULL CUSTOMIZATION



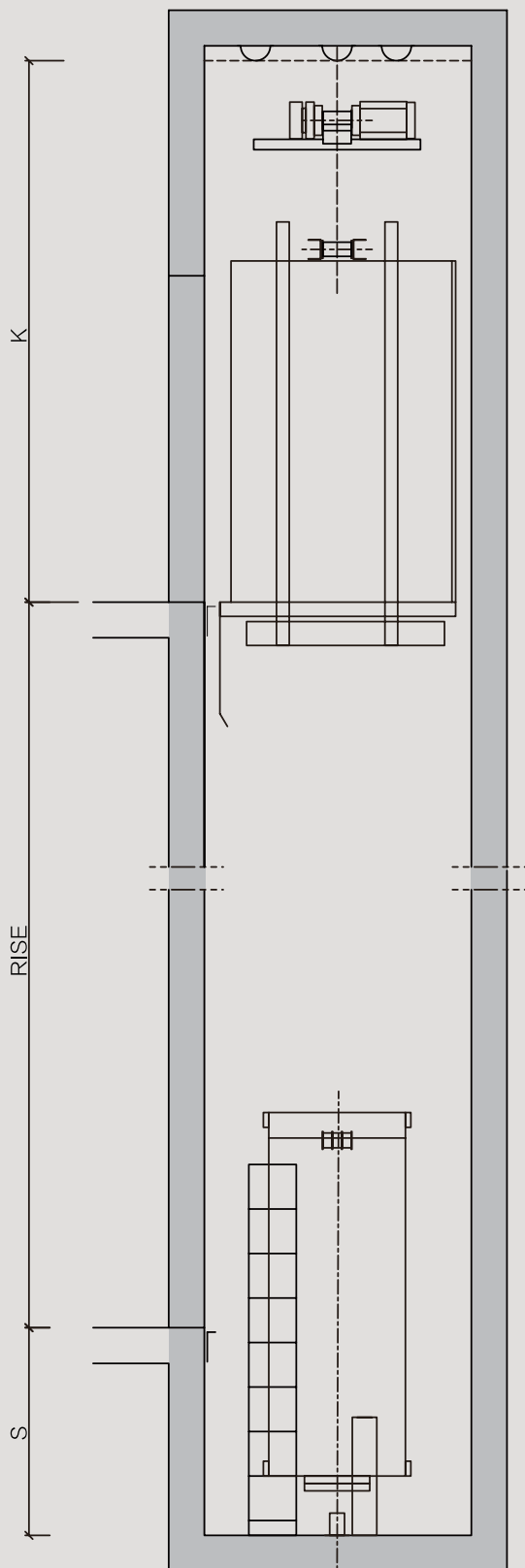
- Variable dimensions
- Special car lining and doors
- High-constraint environment
- Our team stays at your disposal to make your project possible

Gen2 machine room-less specifications (250~630kg)

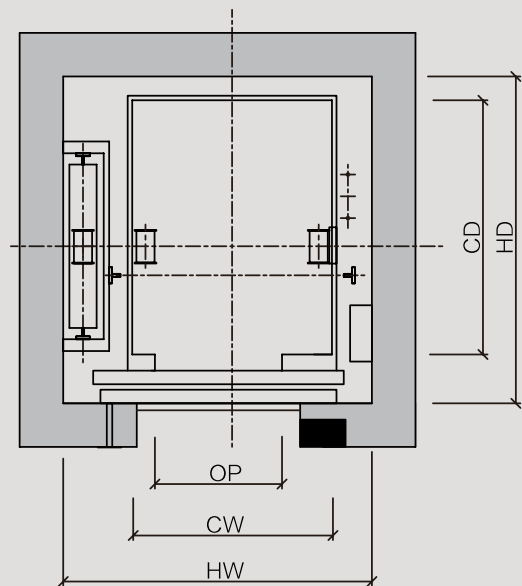
Code	Max. Rise (m)	S min (mm)	K min (mm)	Max. Floors
EN81-1	20	1200	3650	8
EN81-1	45	1350	3800	16
EN81-20	20	1200	4050	8
EN81-20	45	1350	4200	16

Load (kg)	Speed (m/s)	Code	CWxCD (mm)	OPxOPH (mm)	HWxHD (mm)	STD CRH (mm)
250	1.0	EN81-1/EN81-20	850X800	700x2000	1450X1350	2195
320	1.0	EN81-1/EN81-20	850X950	700x2000	1450X1450	2195
400	1.0	EN81-1	950X1150	700x2000	1550X1550	2195
400	1.0	EN81-20	950X1150	700x2000	1625X1550	2195
450	1.0	EN81-1	1000X1200	700x2000	1600X1650	2195
450	1.0	EN81-20	1000X1200	700x2000	1650X1650	2195
550	1.0	EN81-1	1000X1400	700x2000	1600X1750	2195
550	1.0	EN81-20	1000X1400	700x2000	1650X1750	2195
630	1.0	EN81-1/EN81-20	1100X1400	800x2000	1750X1800	2195

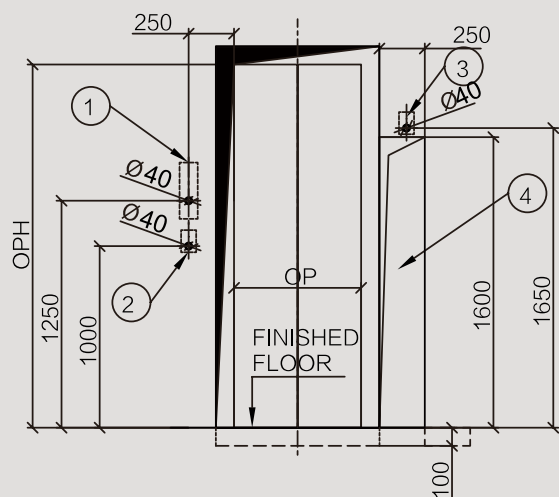
***Notice:** This is for reference only, please reach to Otis for more detailed data.



Elevation



HOISTWAY



1. HB & HPI
2. PARK SW. ONLY FOR MAIN LANDING
3. ONLY FOR FIRE SW. SELECTED AT MAIN LANDING
4. E&I PANEL, AT TOP LEVEL
FREE HOLE FOR HALL FIXTURE,
INTERIOR DIA. ϕ 40MM PVC PIPE
RECOMMENDED

FRONT DOOR

— Otis gives people freedom to connect and thrive in a taller, faster, smarter world. The global leader in the manufacture, installation and servicing of elevators and escalators, we move 2 billion people a day and maintain more than 2 million customer units worldwide – the industry's largest Service portfolio. You'll find us in the world's most iconic structures, as well as residential and commercial buildings, transportation hubs and everywhere people are on the move. Headquartered in Connecticut, USA, Otis is 69,000 people strong, including 40,000 field professionals, all committed to meeting the diverse needs of our customers and passengers in more than 200 countries and territories.

To learn more, visit www.otis.com and follow us on LinkedIn, Instagram, Facebook and Twitter @OtisElevatorCo.

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SECTION 7