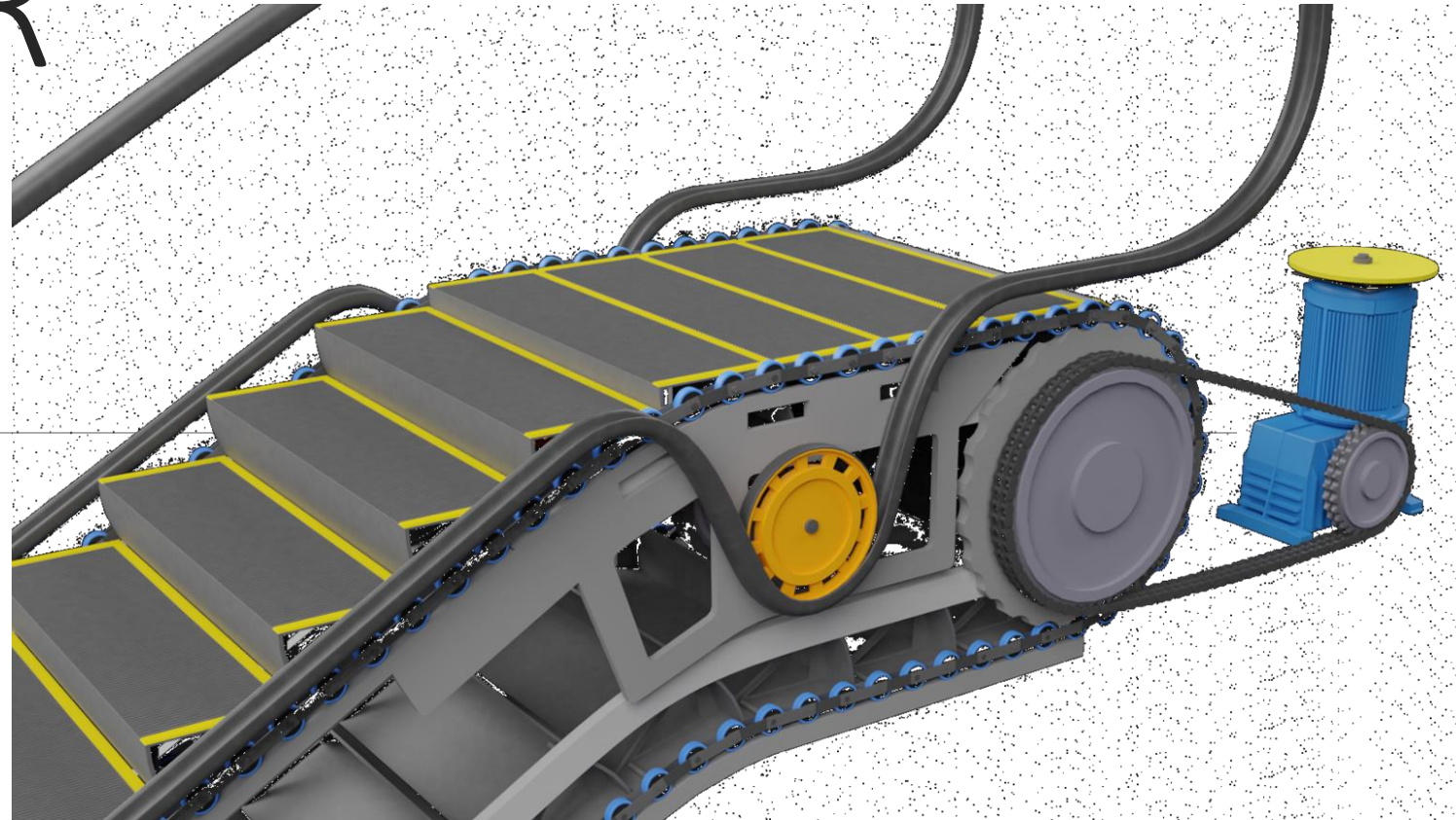
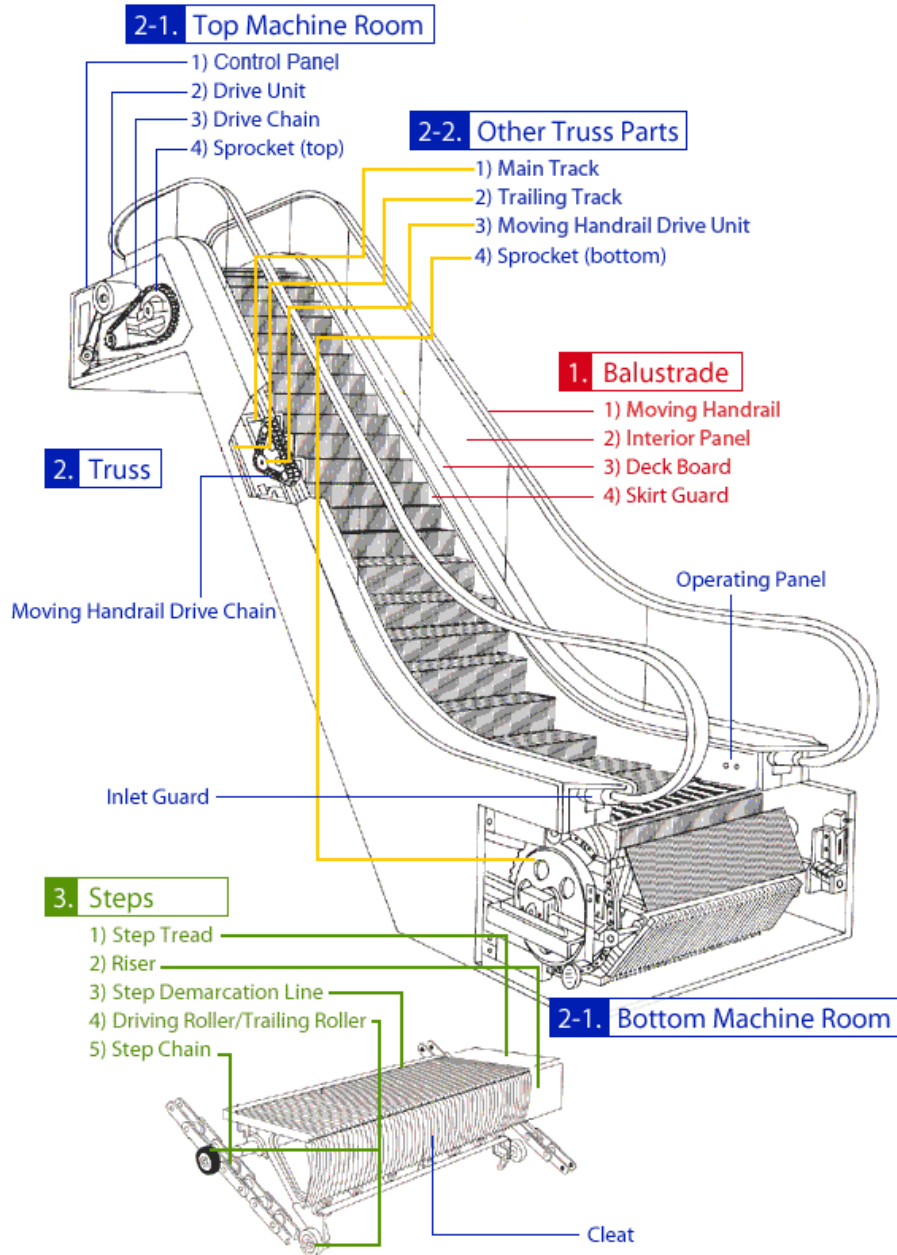


OPERASI SISTEM ESKALATOR

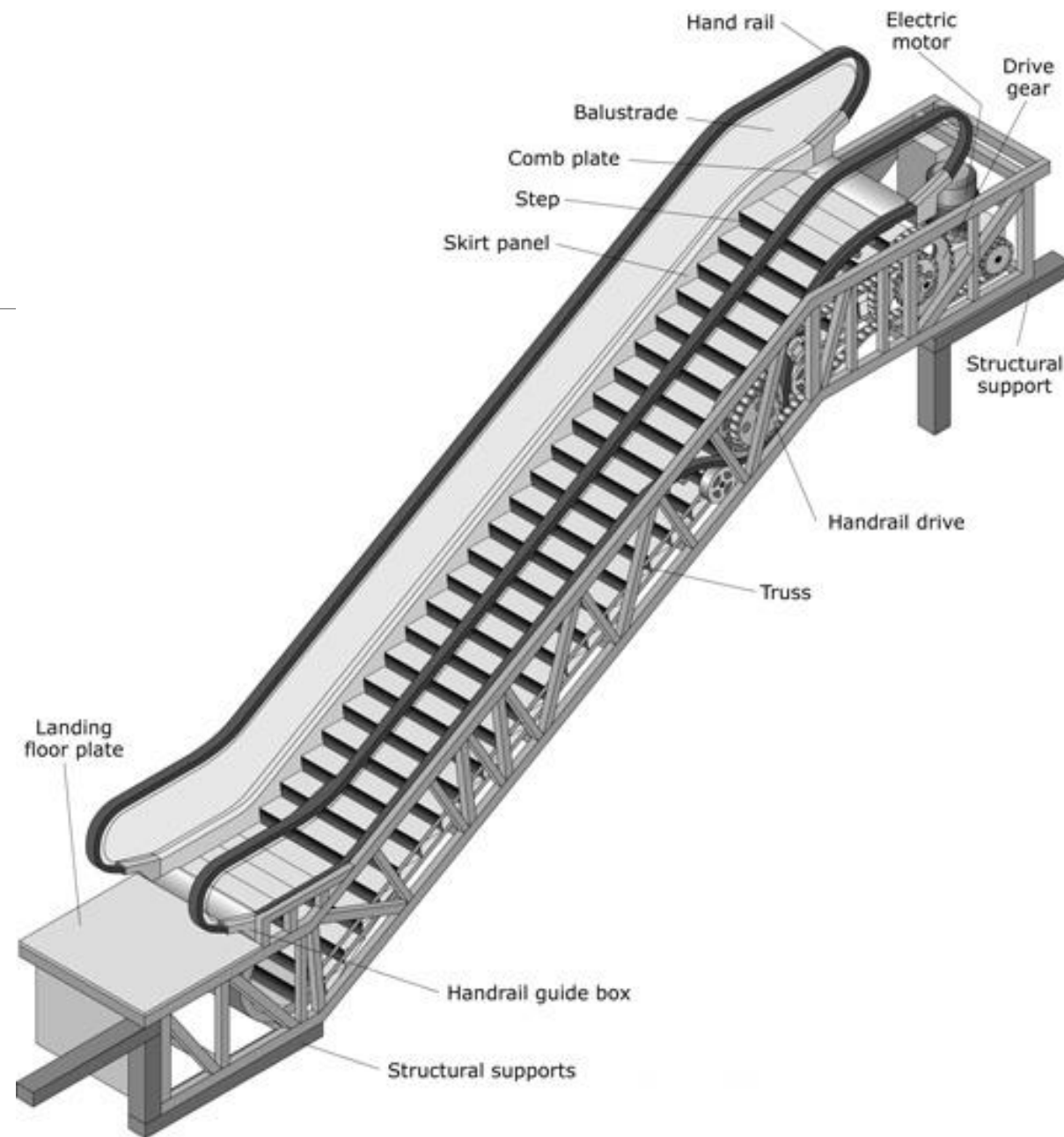
OSMAN BIN HJ. ABDUL WAHID





Component Of Escalator

1. Drive system
2. Braking system
3. Control System
4. Truss
5. Track
6. Balustrade
7. Handrail
8. Steps
9. Landing platform
10. Safety device



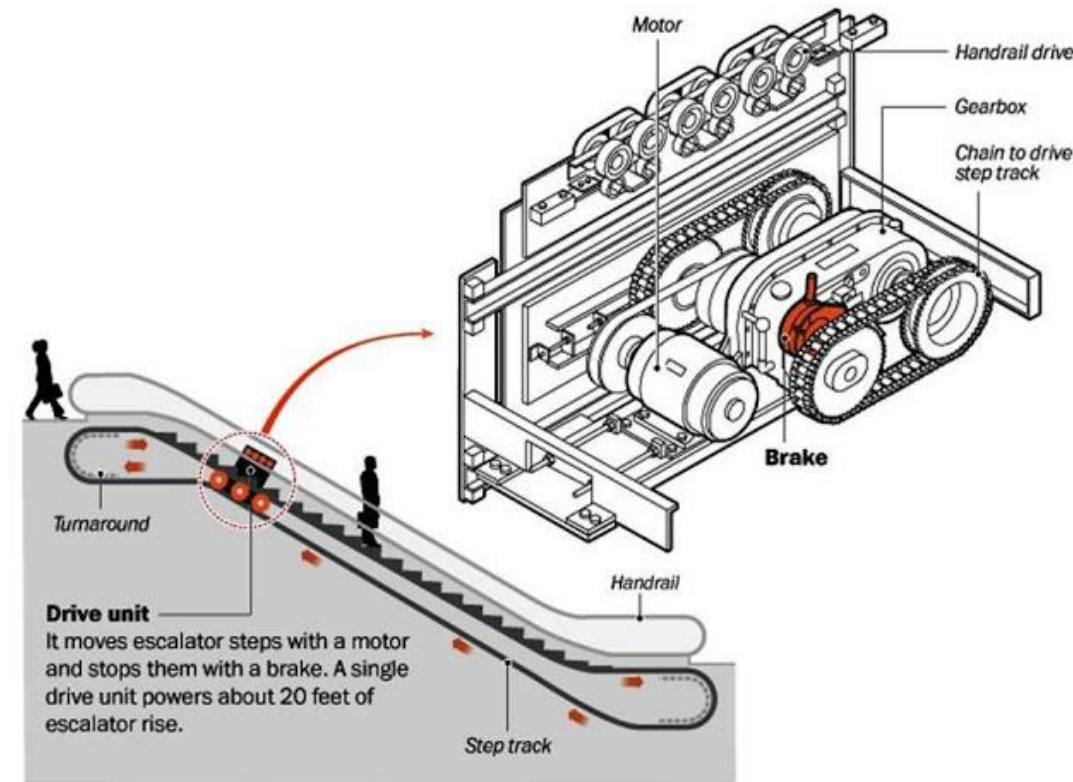
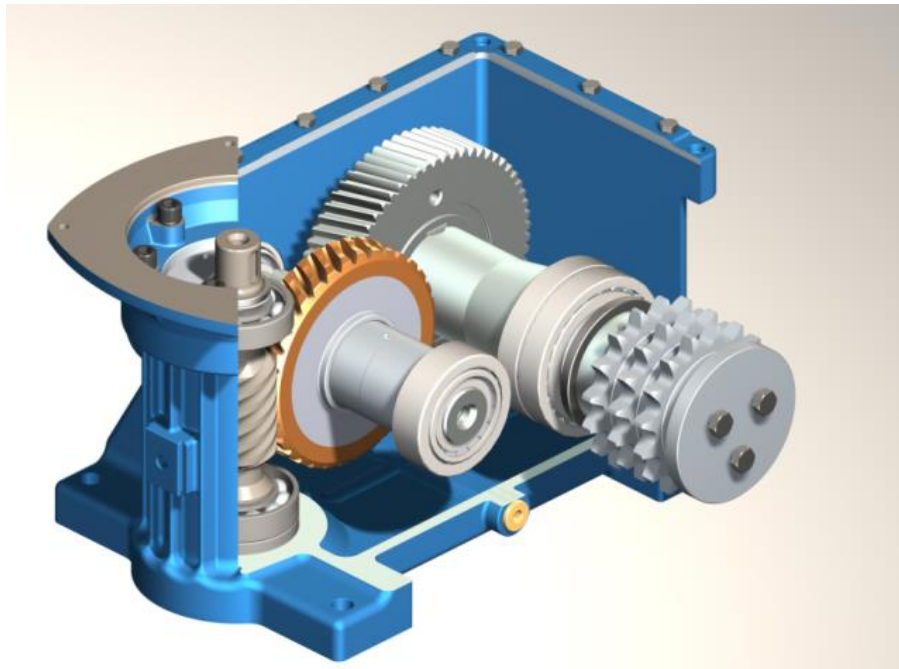
Escalator Video

https://www.youtube.com/watch?v=1jfNIBtfWDY&list=PLYdTpmER-CZMD7I_0CmMYGOlnLaGDjeSc&index=6

https://www.youtube.com/watch?v=1jfNIBtfWDY&list=PLYdTpmER-CZMD7I_0CmMYGOlnLaGDjeSc&index=6&t=23s

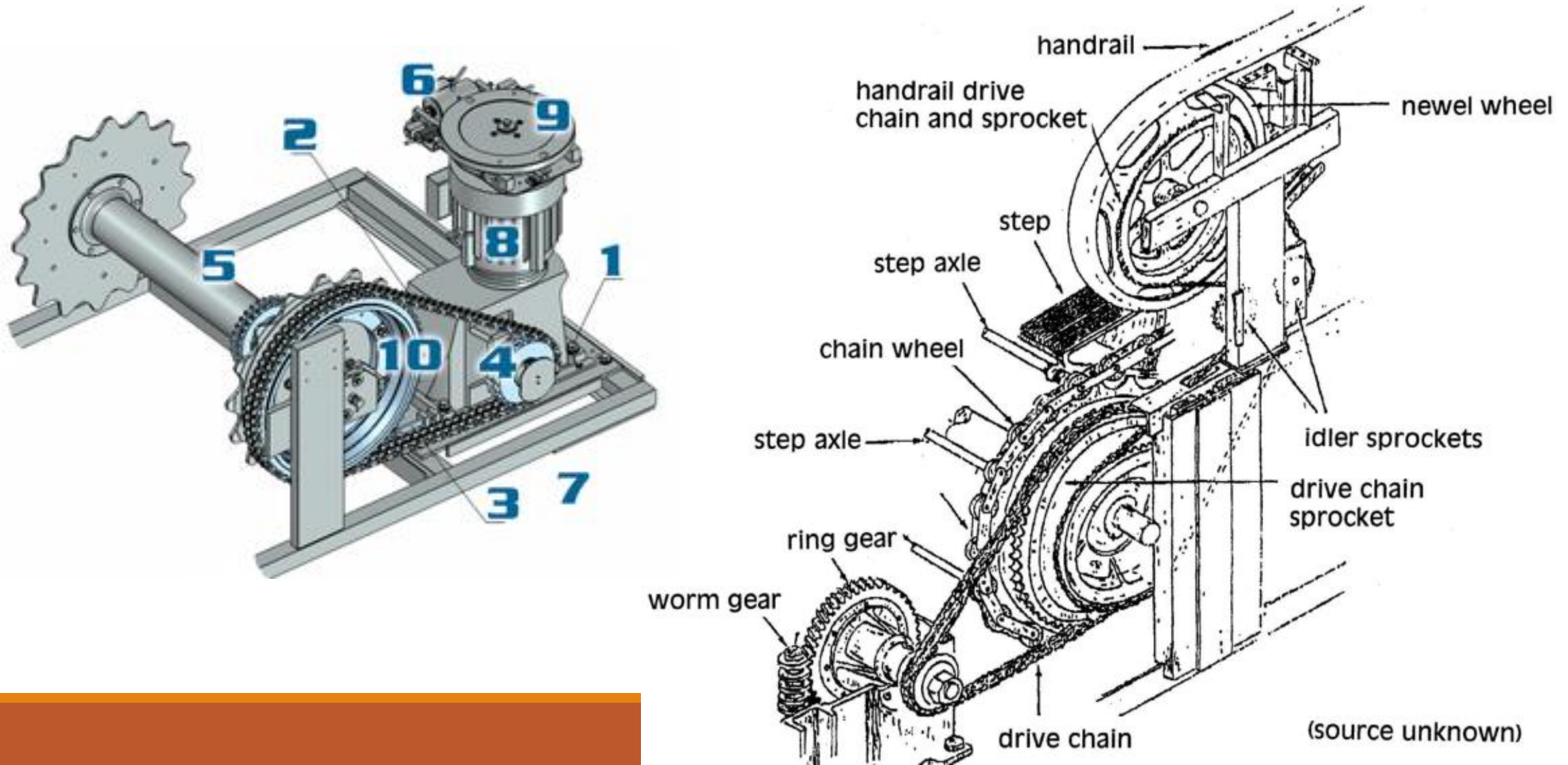
1) Driving Machinery

- The motorized power unit for driving the escalator where chains are used to connect a driving machine to the main drive shaft.

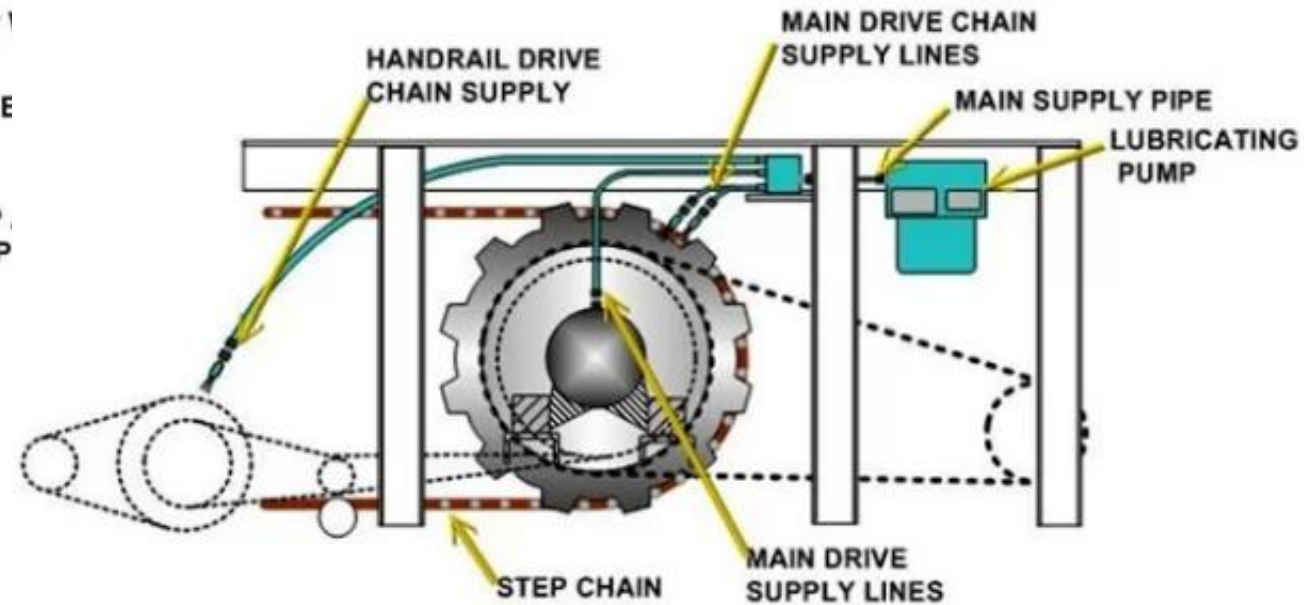
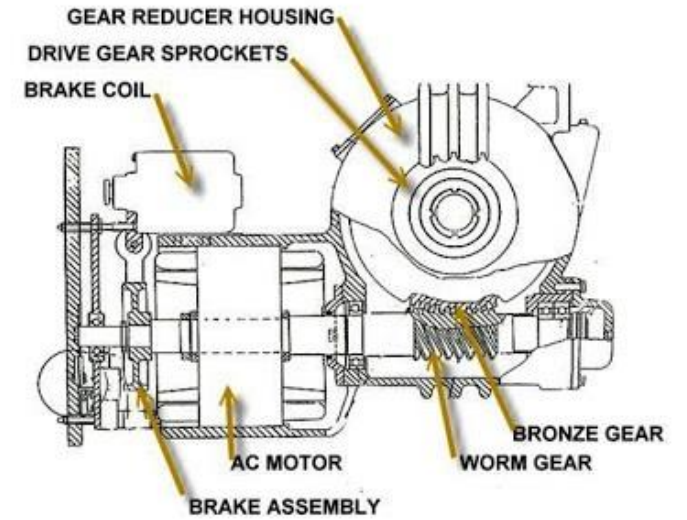
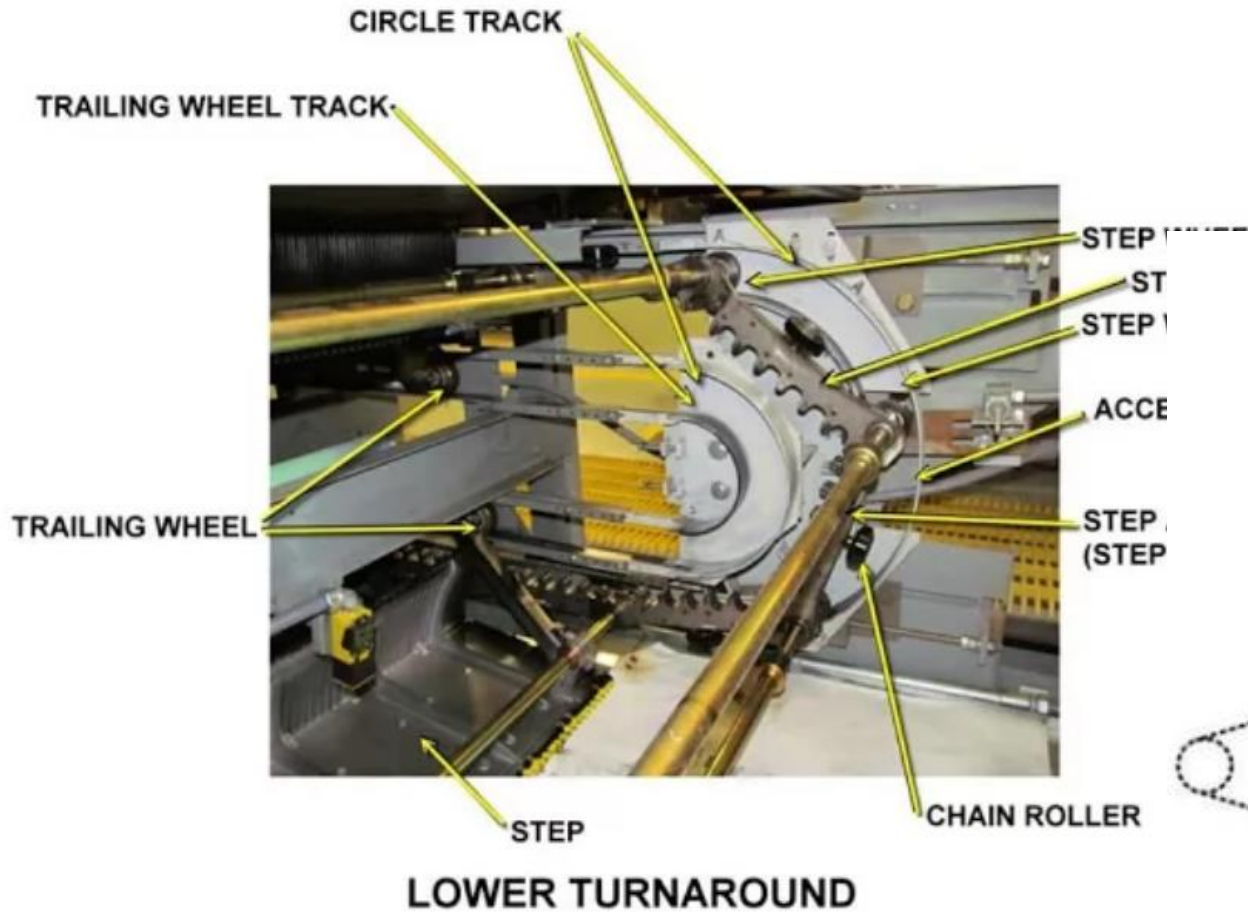


Modular Drive System

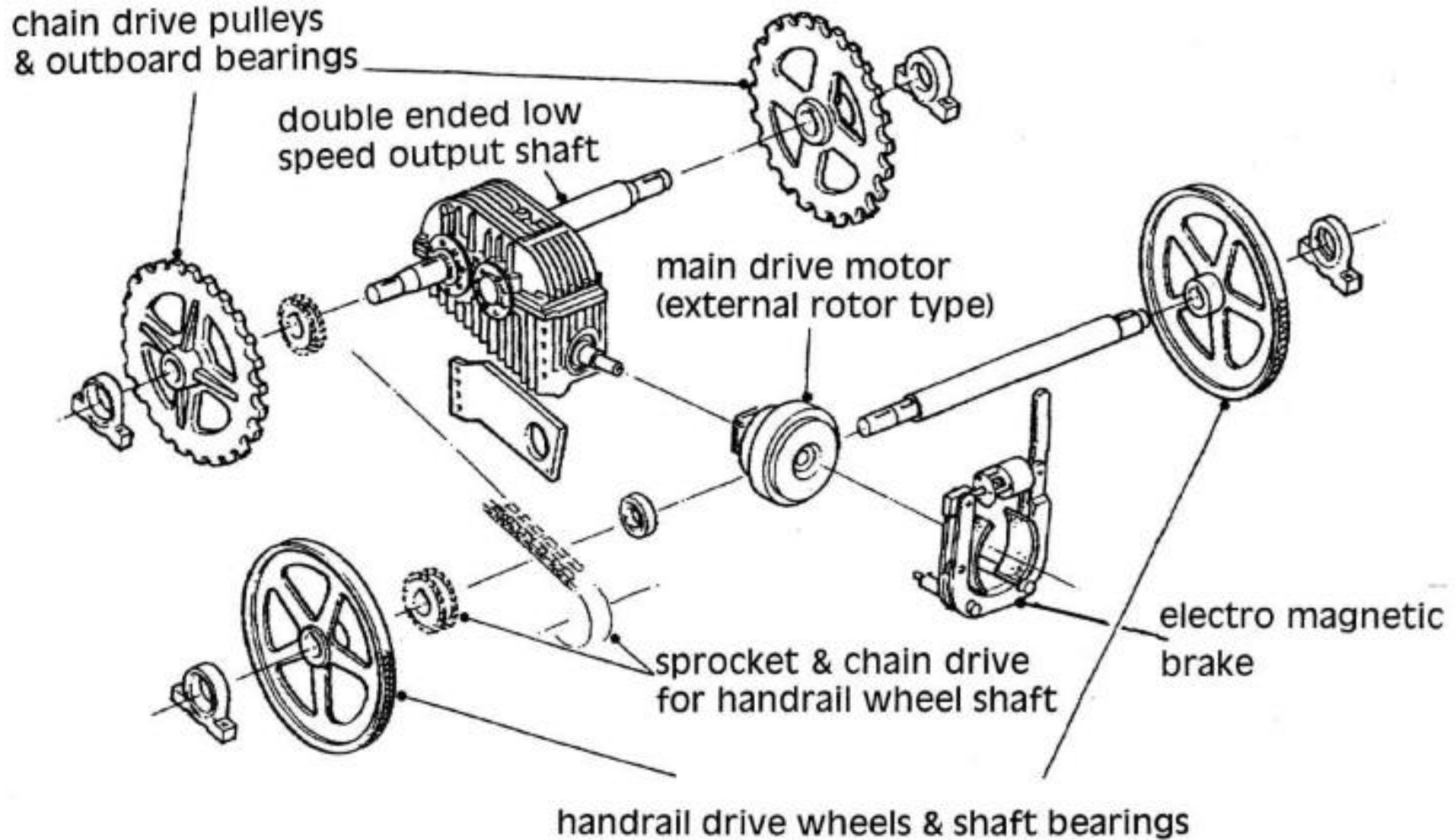
Escalator Drive Sprocket assembly



ESCALATOR DRIVE EXAMPLE



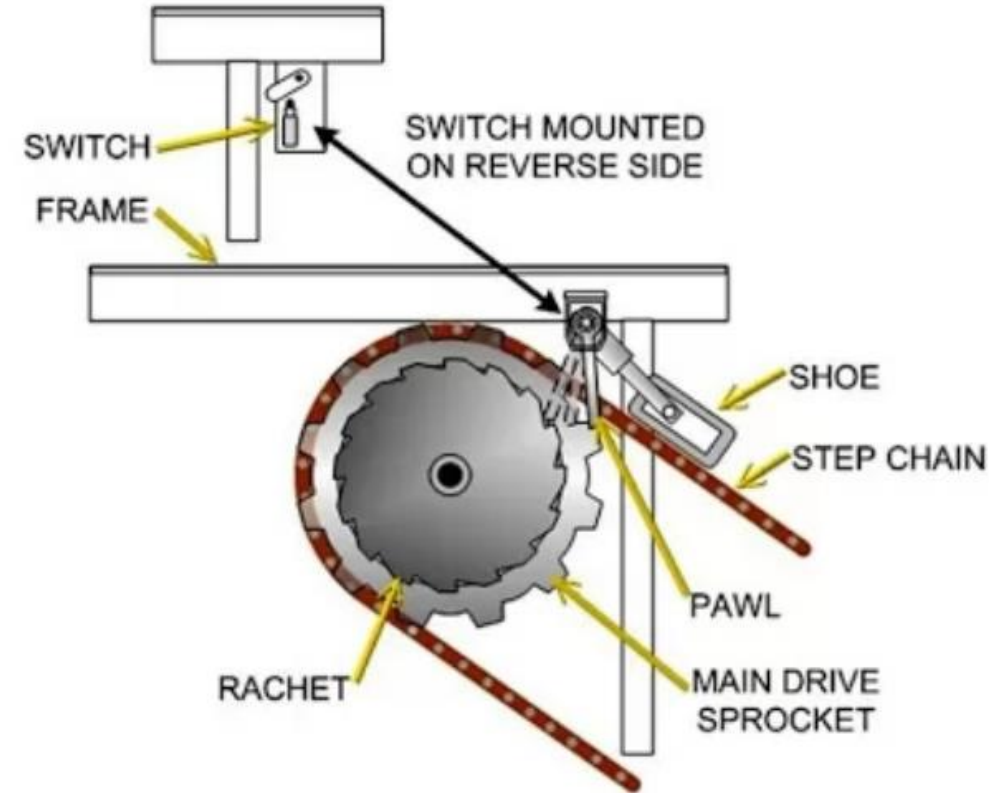
Escalator Gear Assembly



2)

2) Braking System

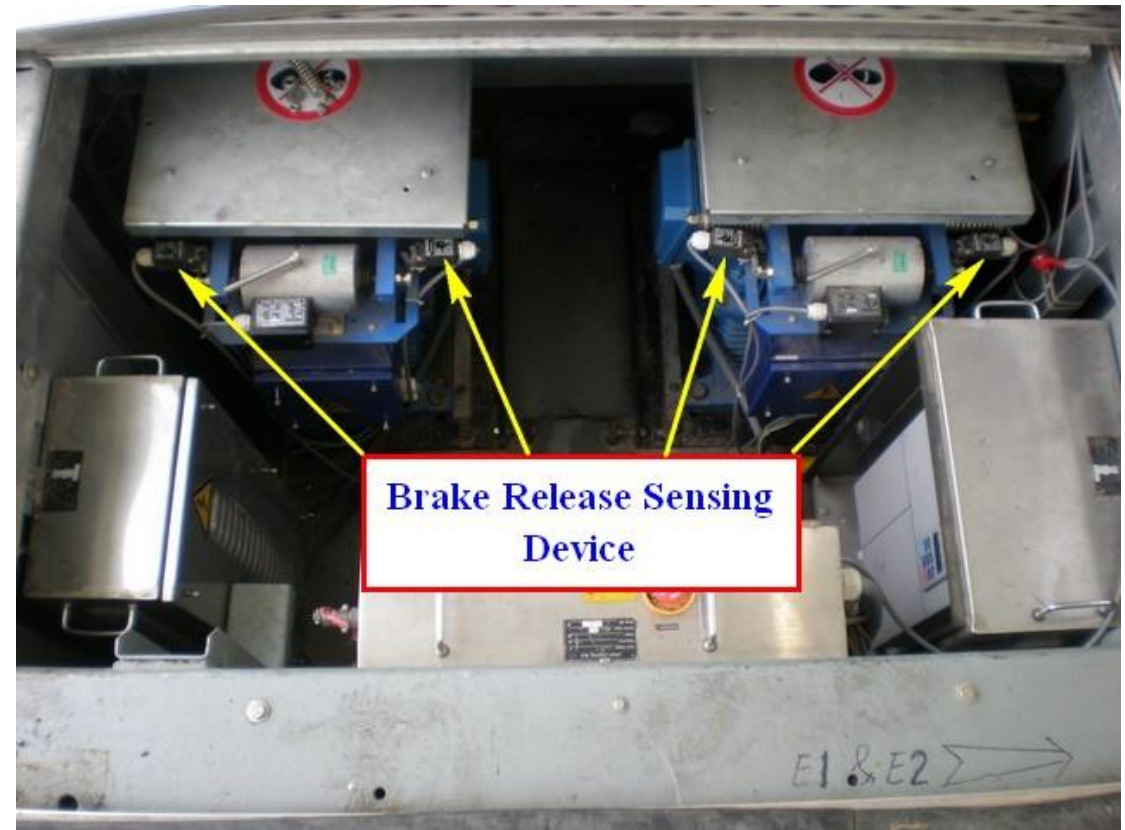
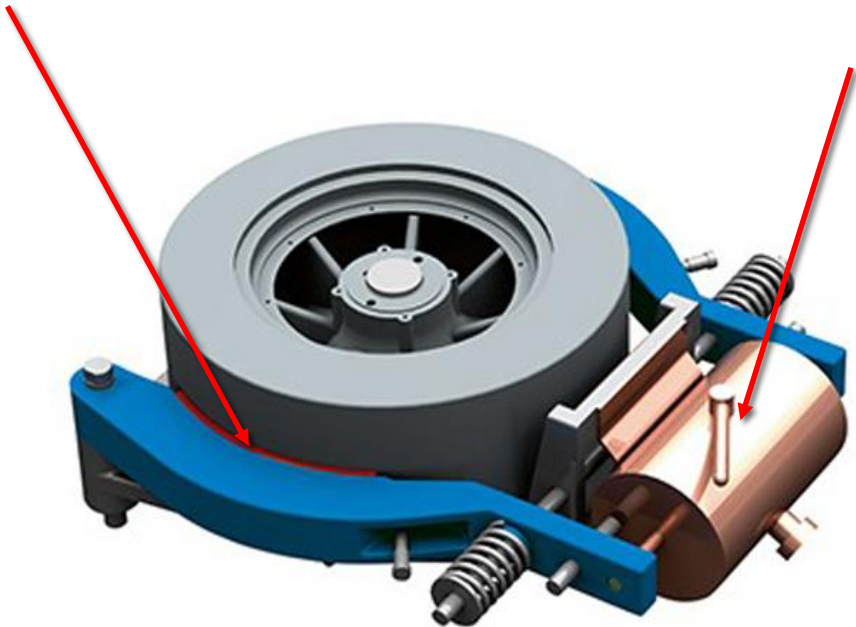
- The Machine Brake.
- The drive shaft brake system.
- The Main Drive Shaft Brake.
- Auxiliary brake (for rise $> 6\text{m}$)

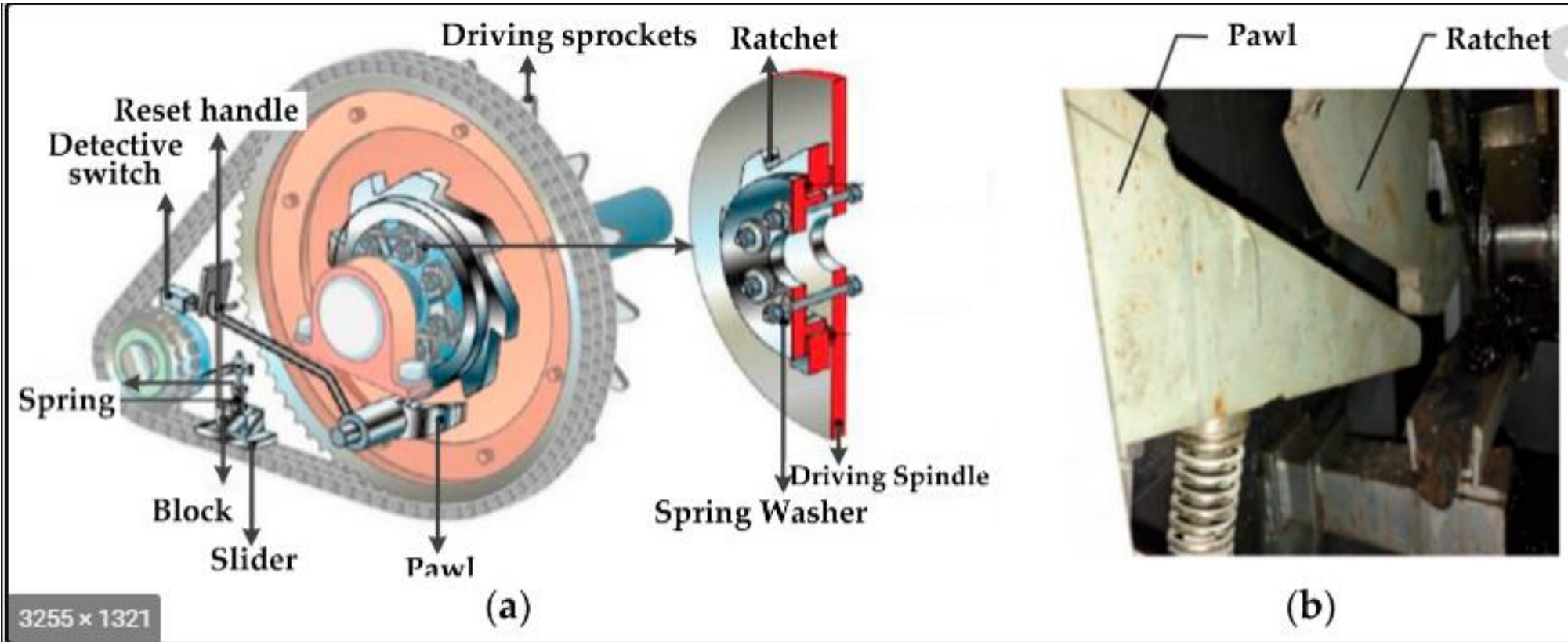


The braking systems on an escalator utilize three different braking methods as follows:

Electromechanical Brake

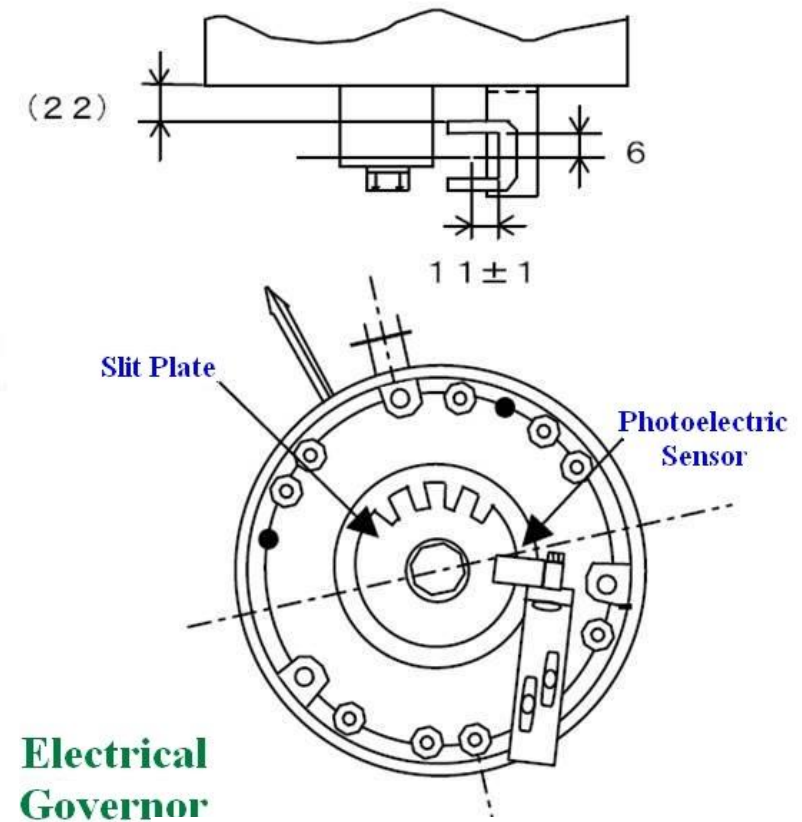
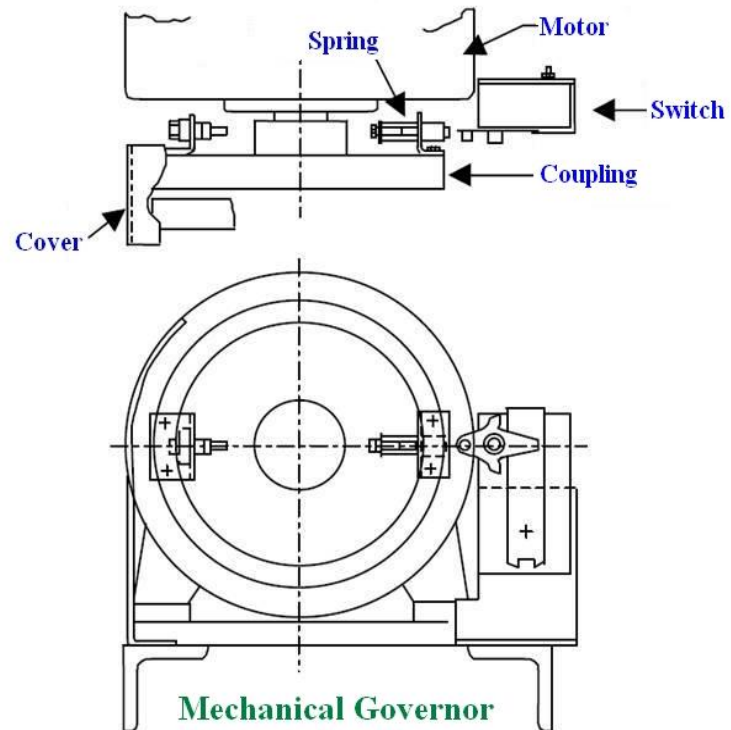
- A brake consisting of friction shoes applied to a brake drum by means of spring and electrical means.





3) Governor

- A device which automatically actuates safety devices in the event of



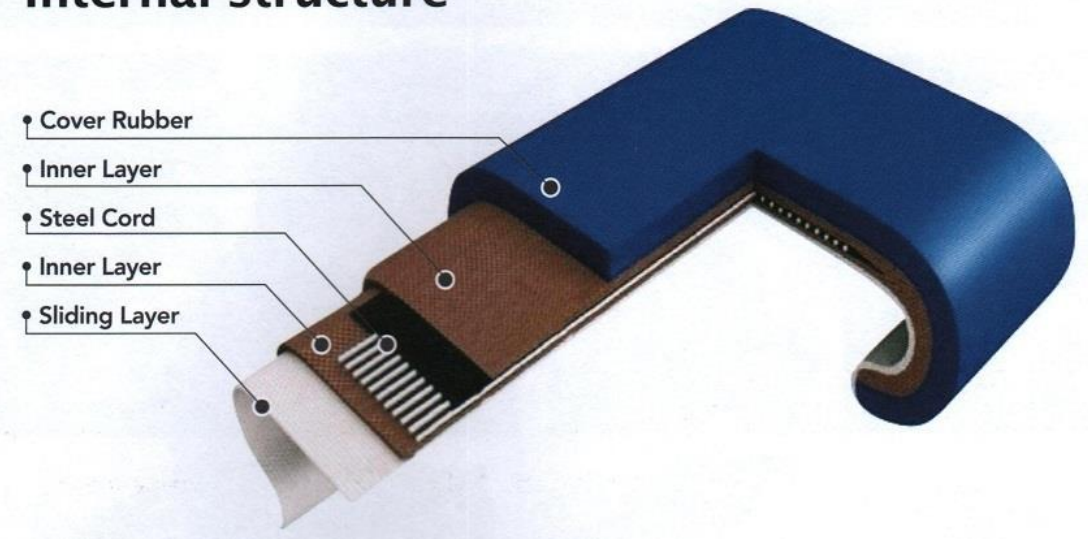
4) Handrail

- A power driven moving rail for passengers to grip whilst using the escalator.

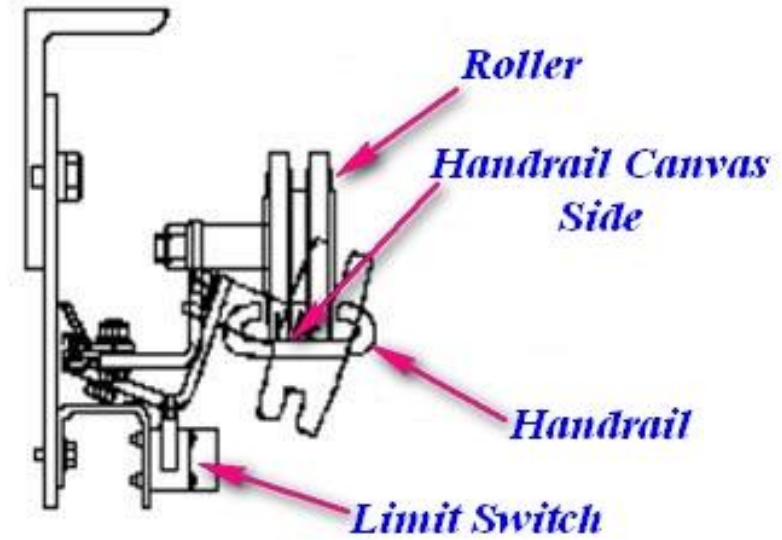


Structure of the Handrail

Internal structure



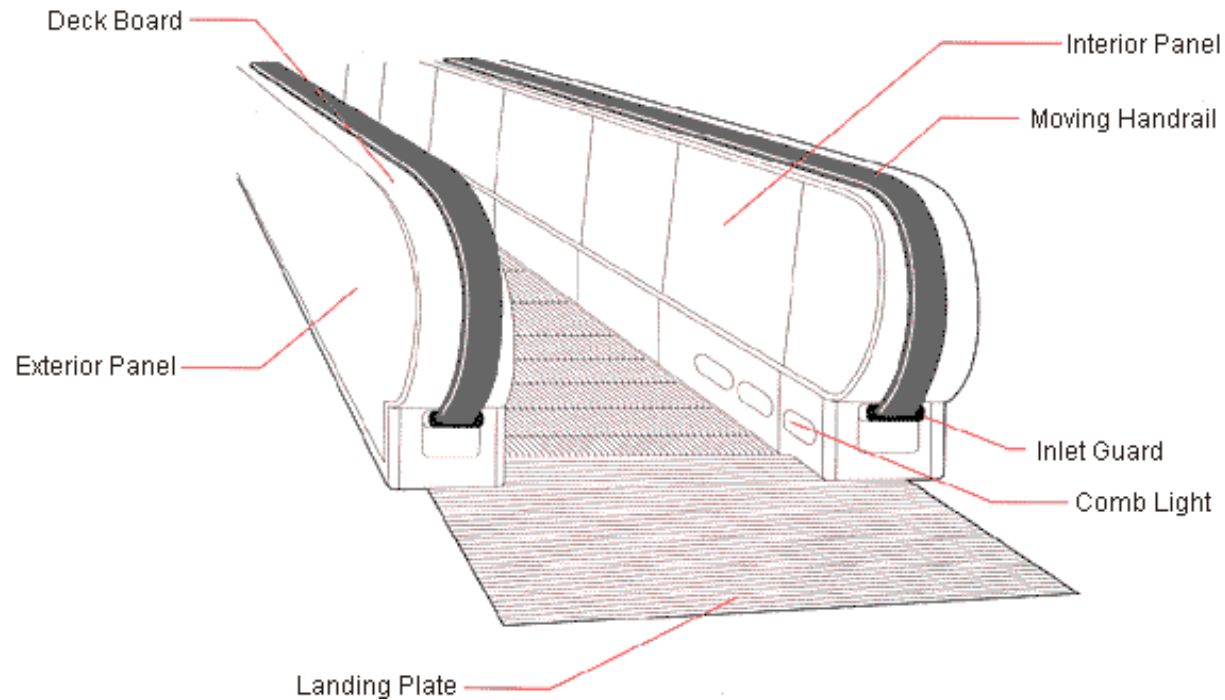
Broken Handrail Safety Device



Broken Handrail Safety Device

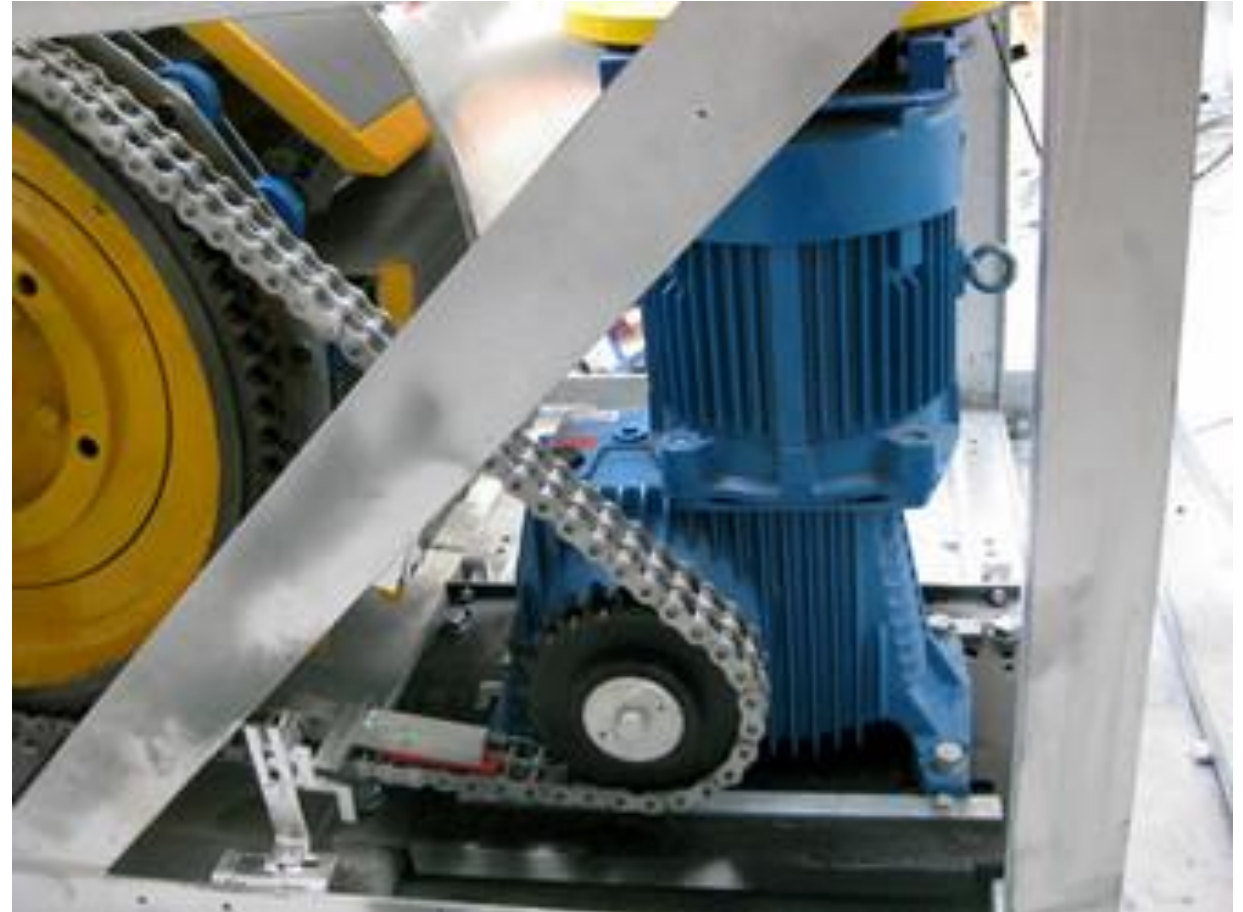
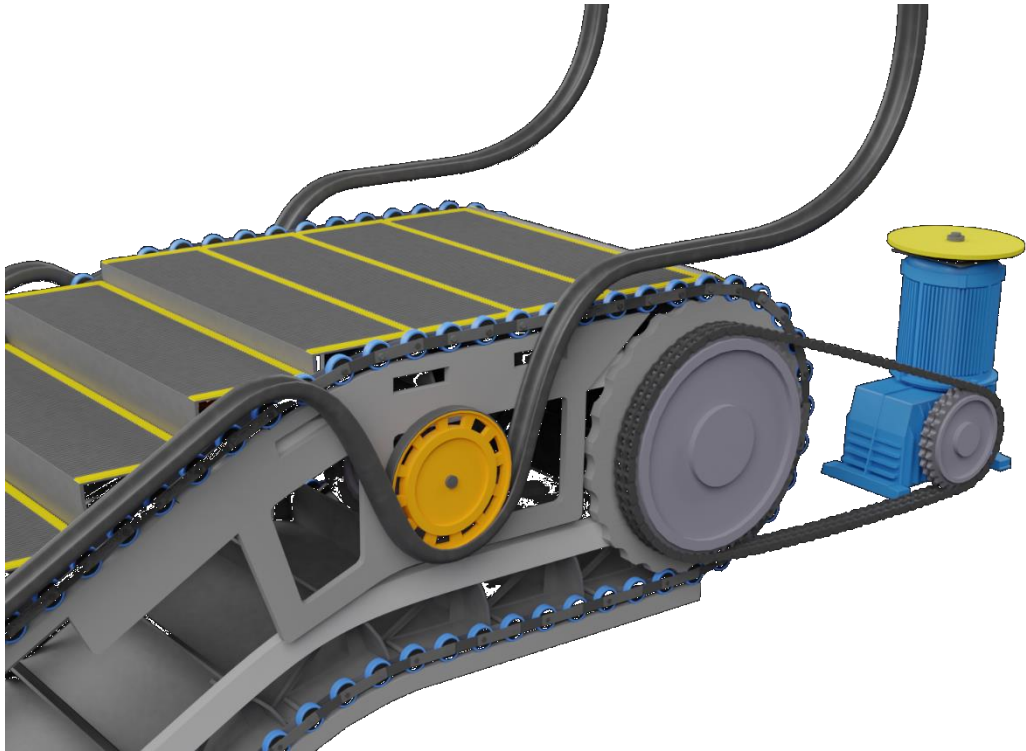
5) Handrail Guard

- A guard for the moving handrail at the point where the handrail enters or leaves the balustrading.



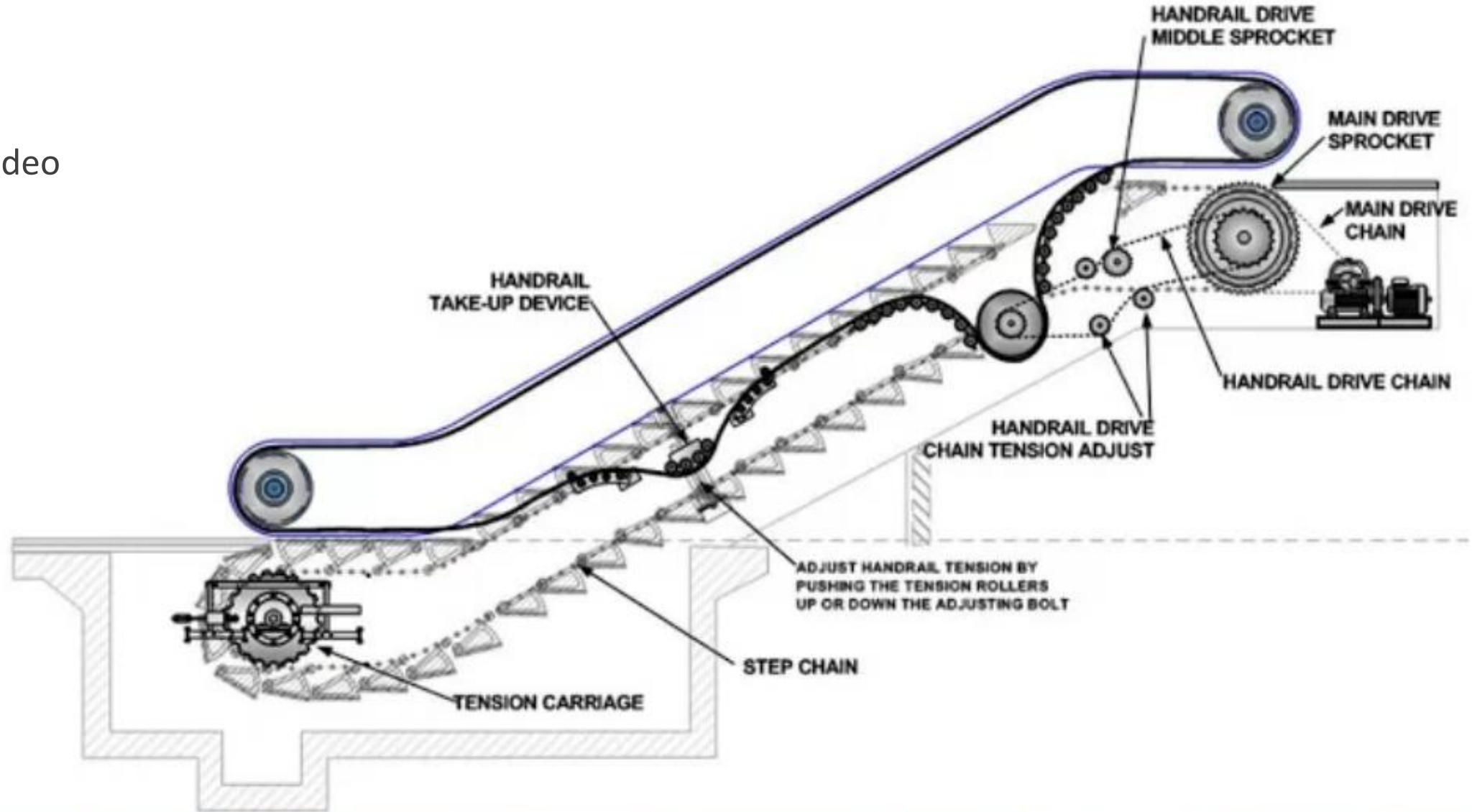
6) Handrail Drive Chain

- A device for moving the handrail.



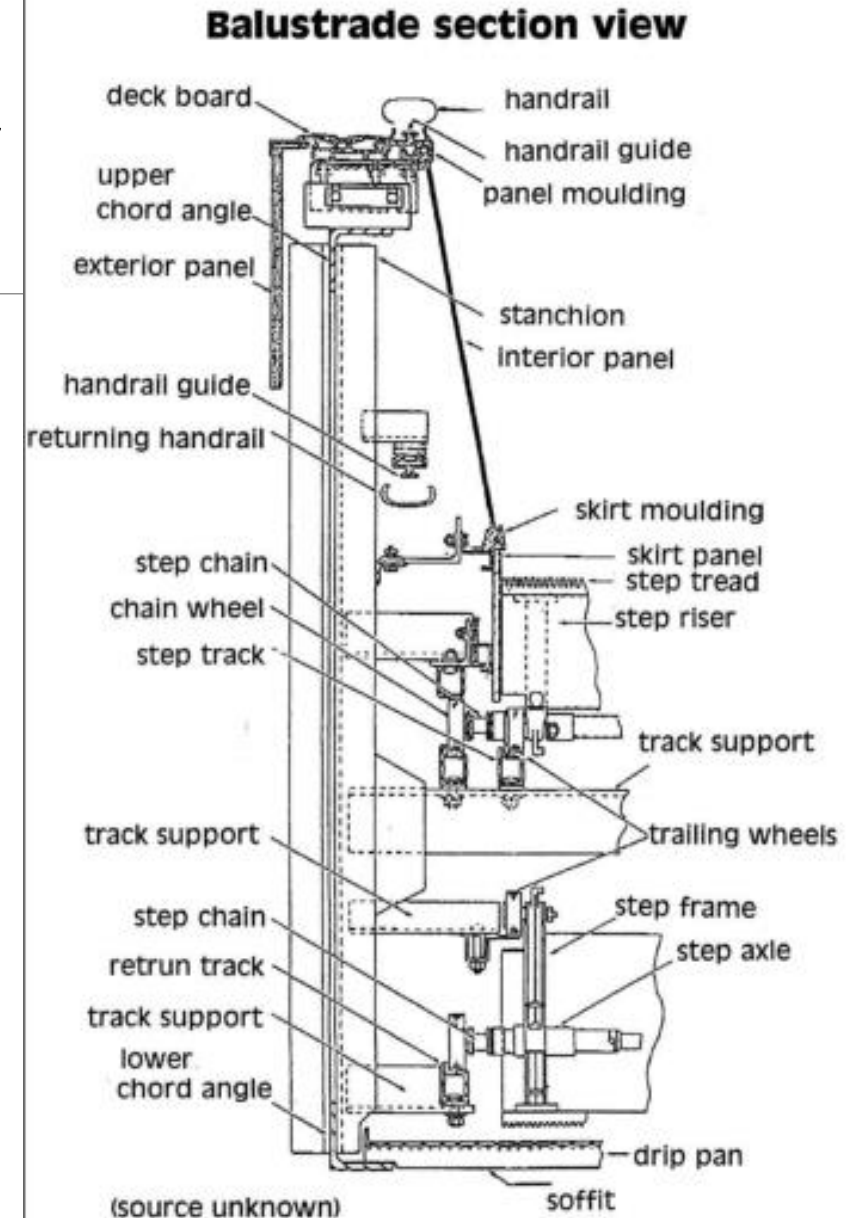
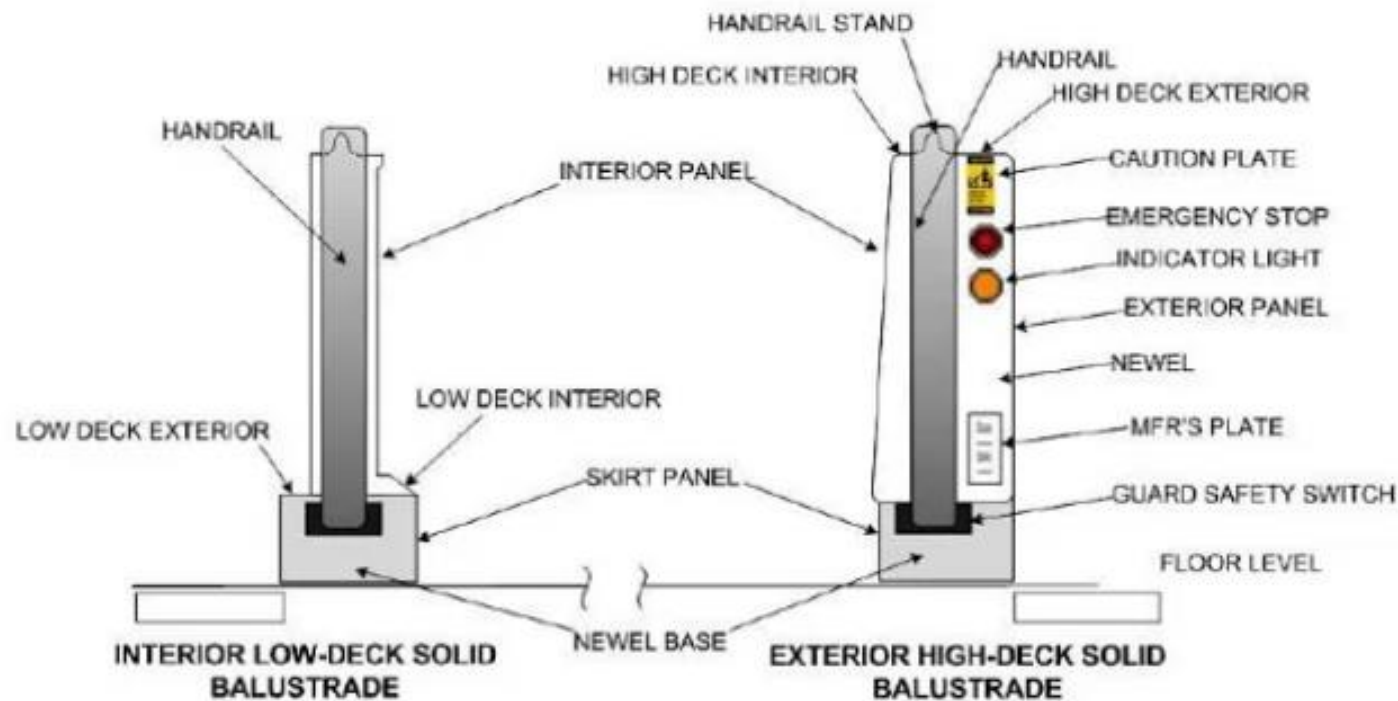
Hand Rail Drive System

Video



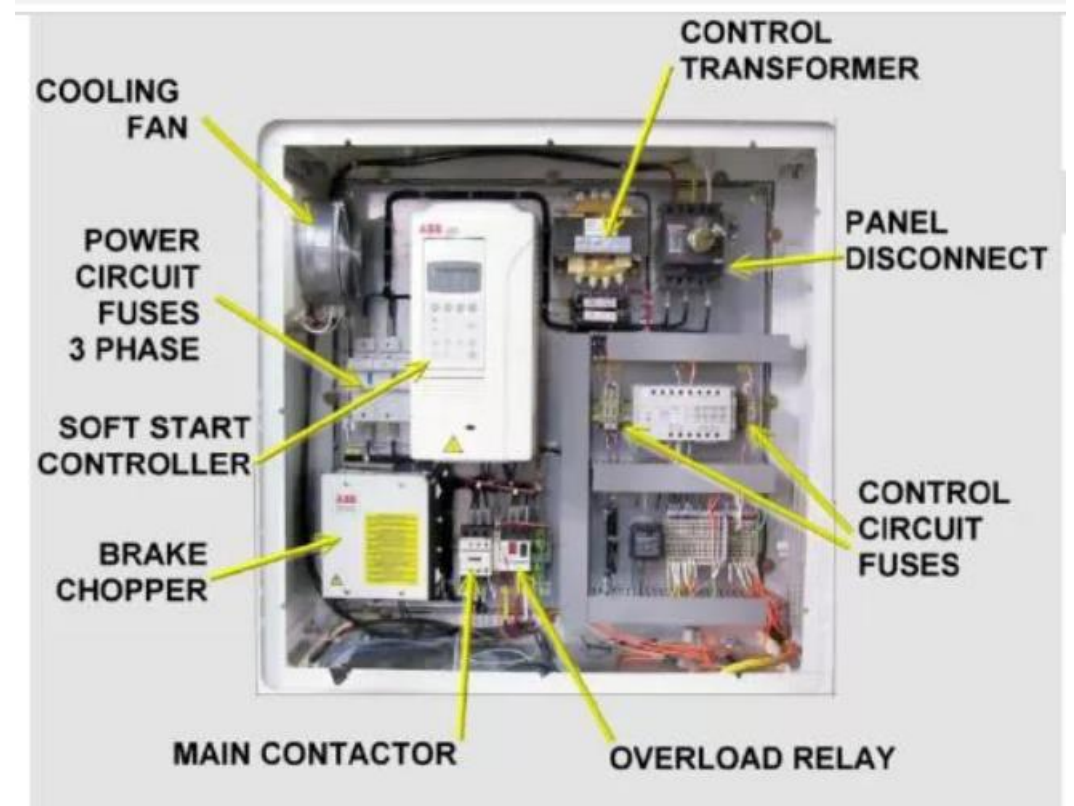
7) Balustrading

- The enclosure at either side of the moving steps, the decking or deckboard outside the moving handrails.



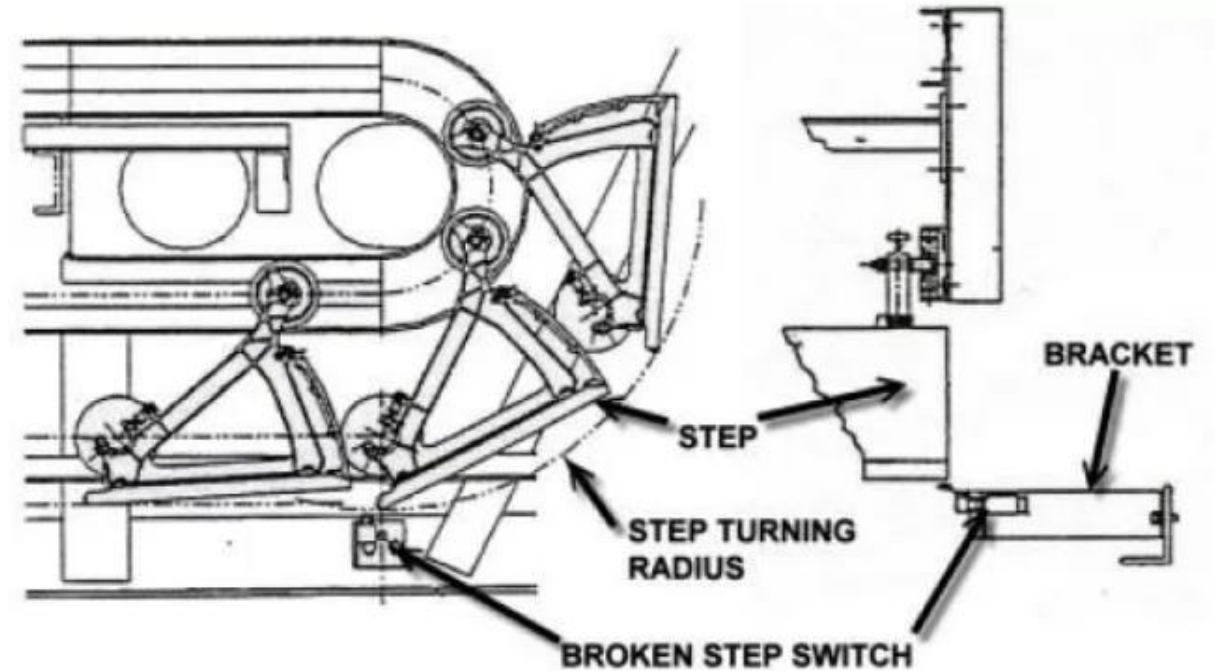
8) Controller & Drive

- .



8) Broken Main Drive Chain Device

- A device to stop the machine in the event of a broken drive chain.

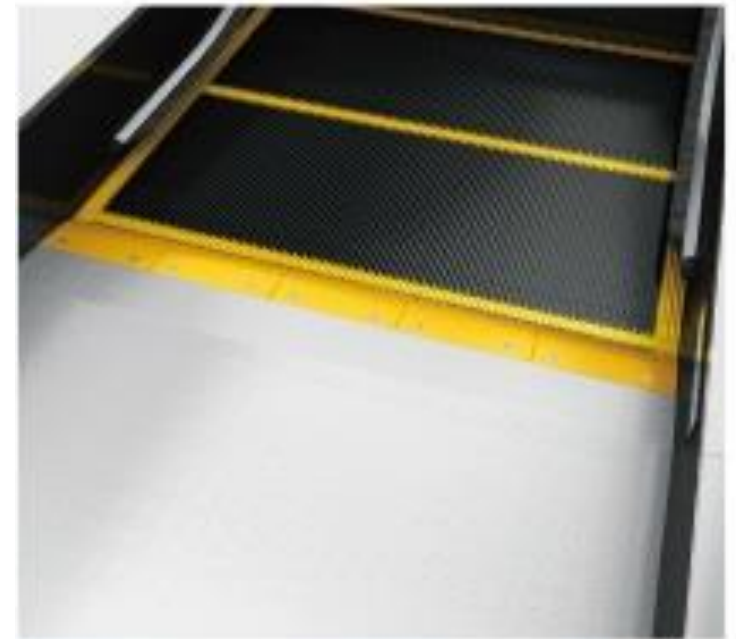
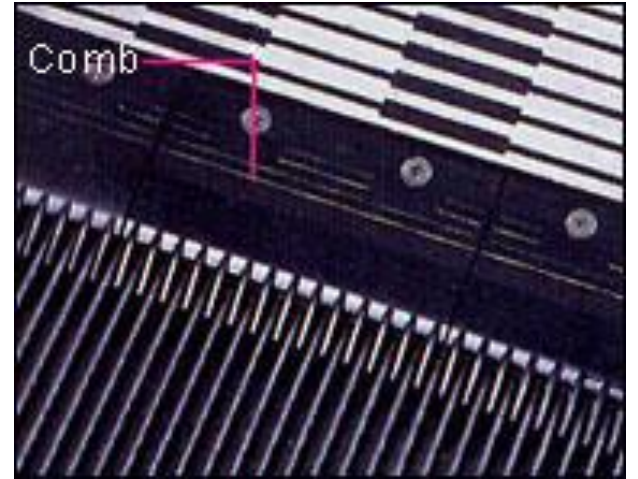


9) Broken Step Chain Device

- A device to stop the machine in the event of a broken step chain.

10) Comb/ Comb plate

- The pronged portion of the comb-plates at the landing which mesh with the step tread grooves.



Synthetic resin molding (yellow)

11) Control Equipment

- Those components by means of which motion, direction of travel, speed and stopping are controlled.

Side view

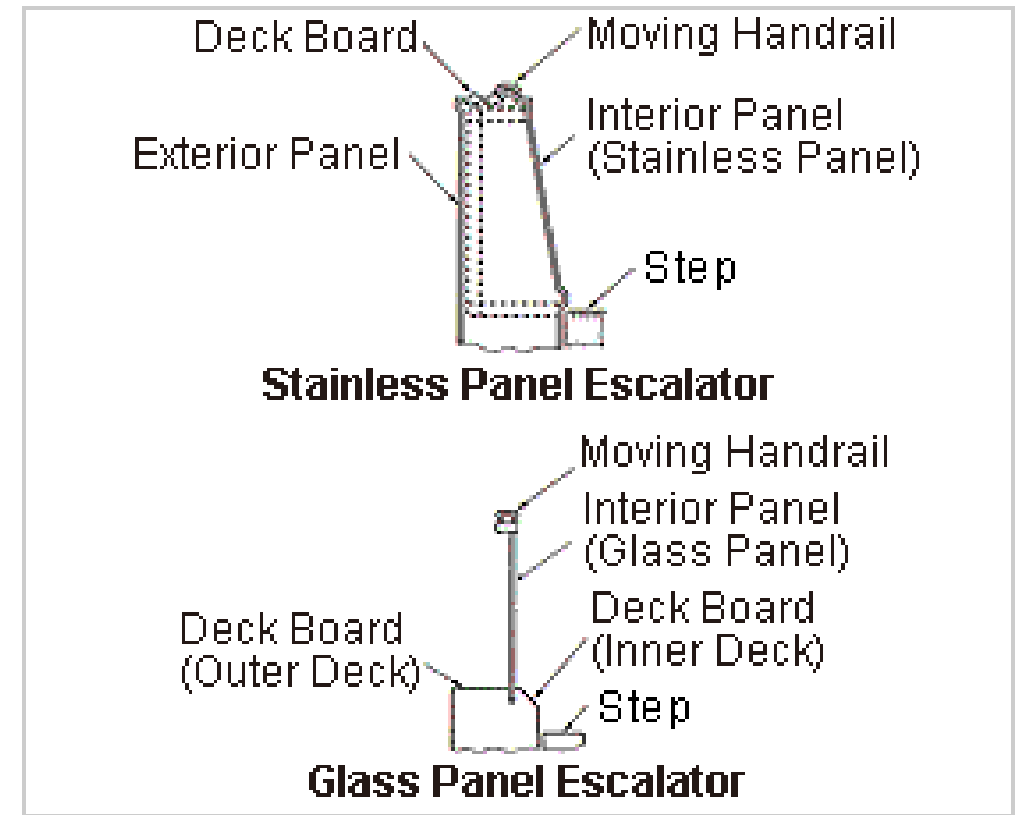
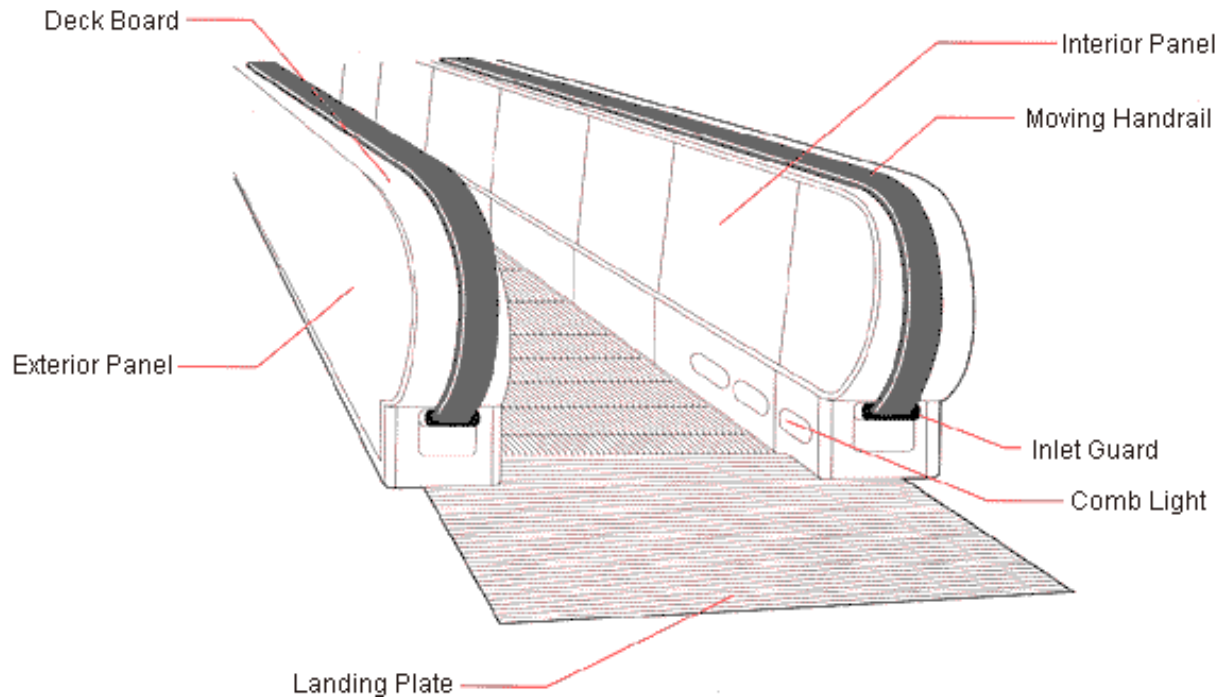


Top view



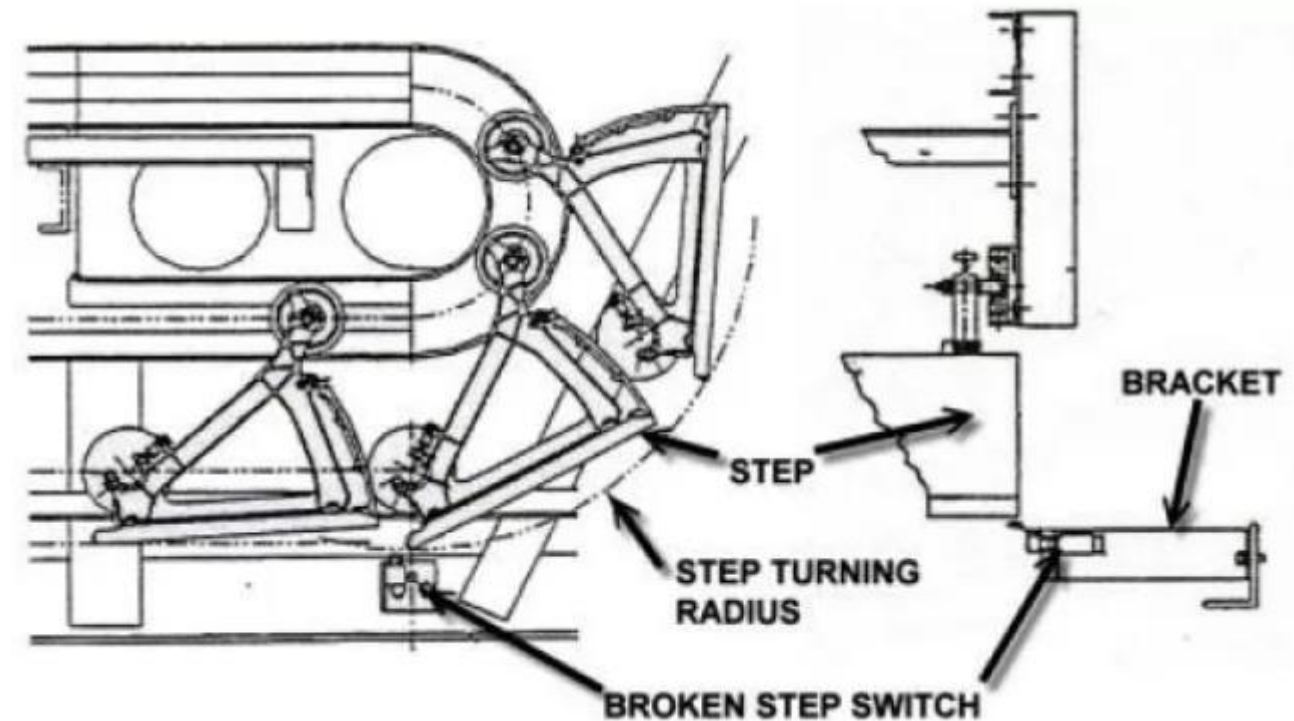
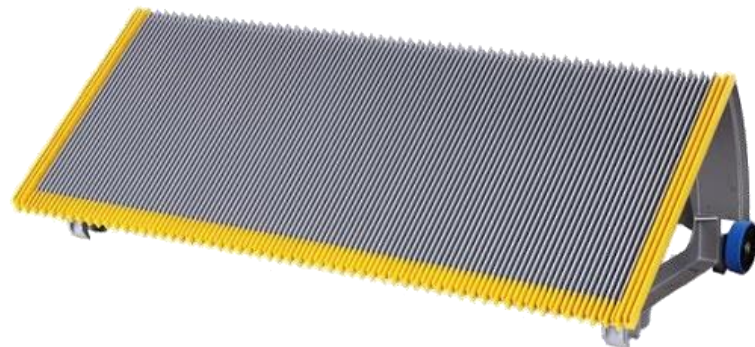
12) Decking or Deckboard

- The portion of the balustrade outside the moving handrails which is transversely horizontal (or approximately so).



13) Steps

- The units which form the moving staircase



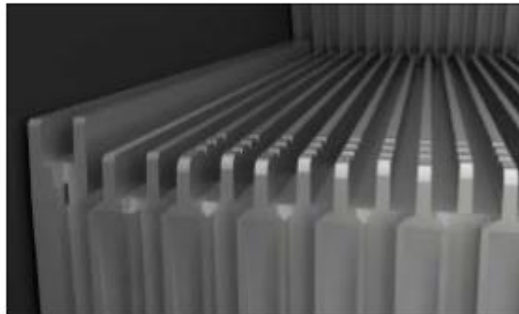
13) Step Treads

- The horizontal portion of the step grooved in the direction of travel and on which the passengers are carried.

Tiered Demarcation Line

Standard

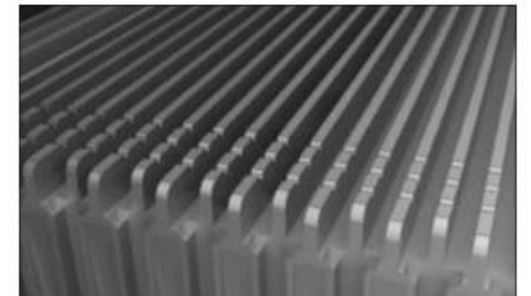
Demarcations along both sides of a step are raised from the step surface, thereby preventing passengers from getting too close to the skirt guards and preventing clothes from getting caught between a step and skirt guard.



Step with Anti-slip Grooves

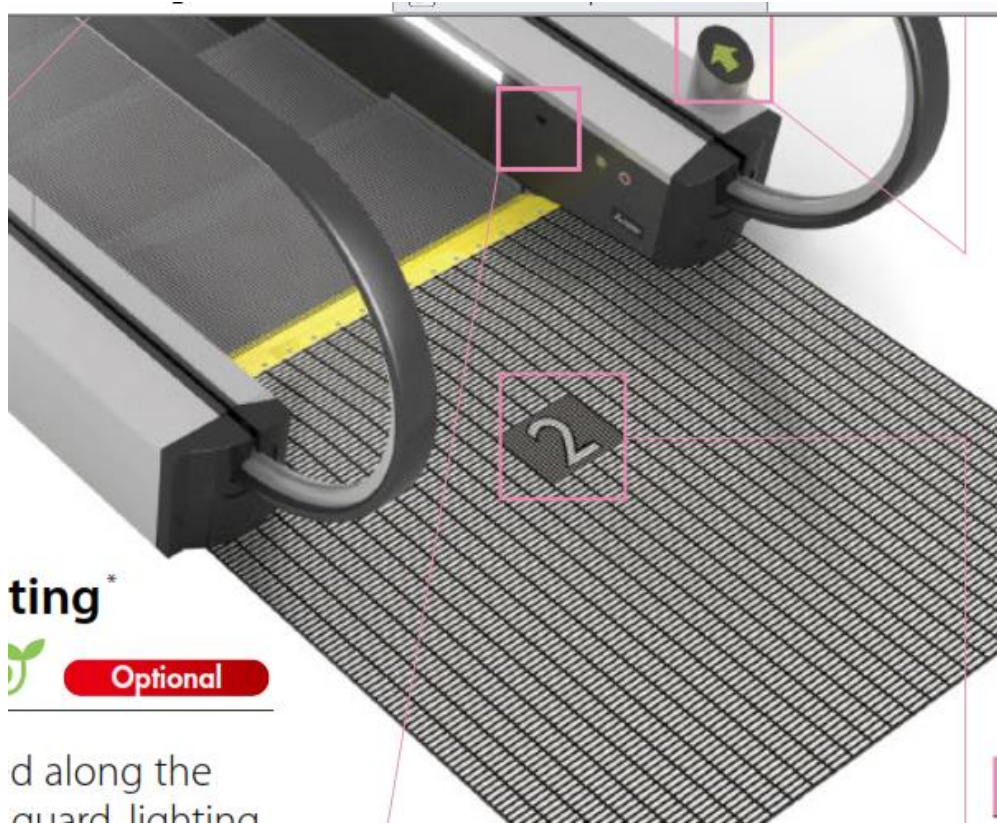
Standard

Grooves along the corner edge of each step improve anti-slip performance and the visibility of each step for further passenger safety.



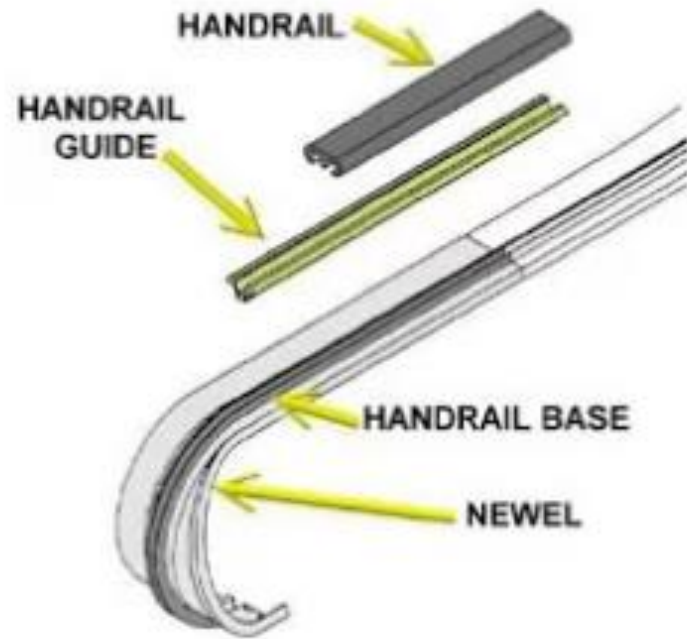
14) Landing Platform/ Floor Plate

- The stationary area at the entrance to or exit from the escalator.



15) Newel End

- The portion of the balustrading on the landings at the ends where the moving changes direction.



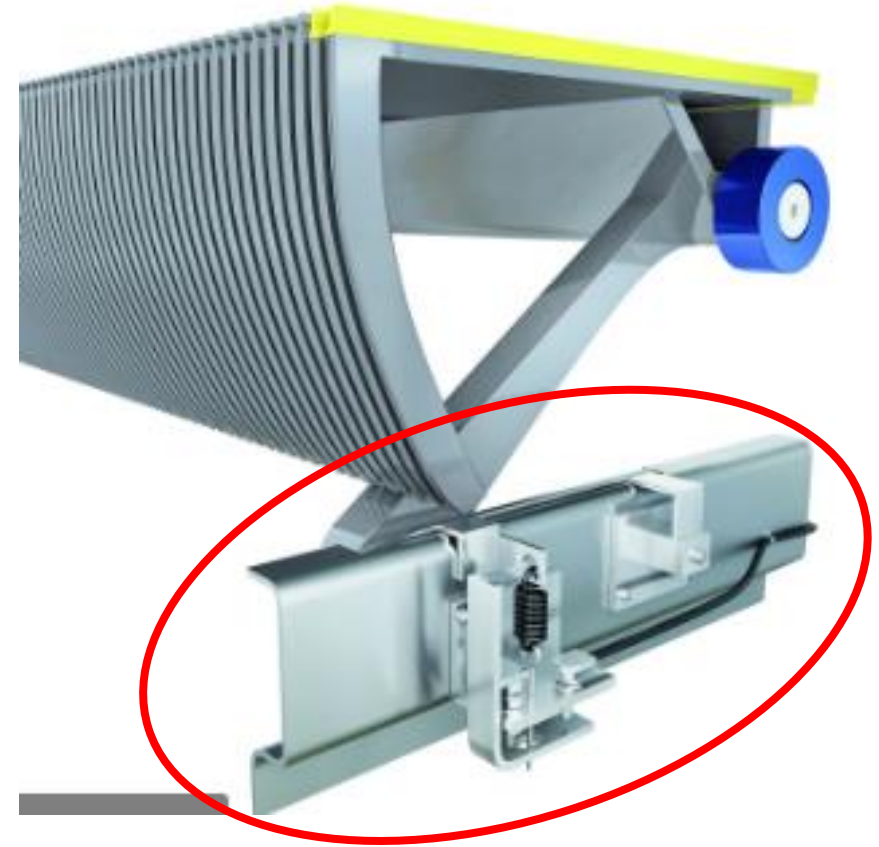
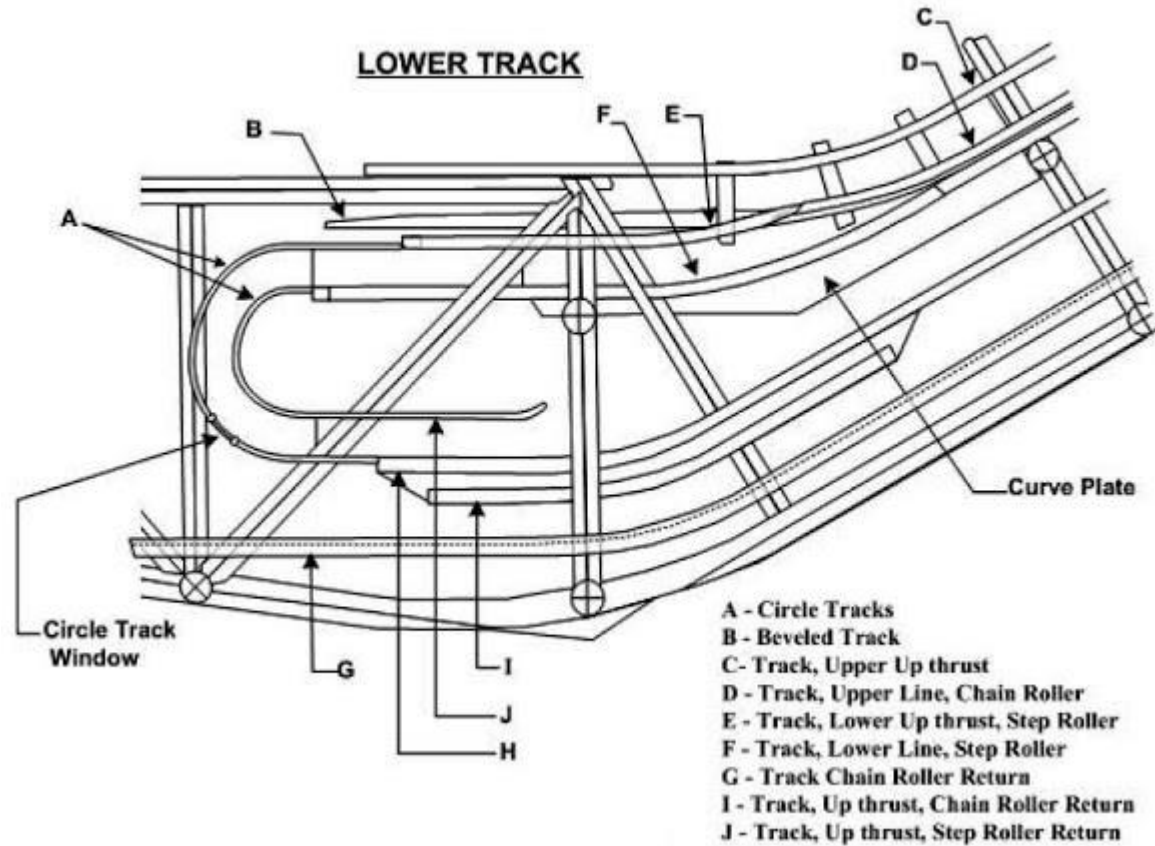
16) Step Chains

- The chains to which the steps are attached.



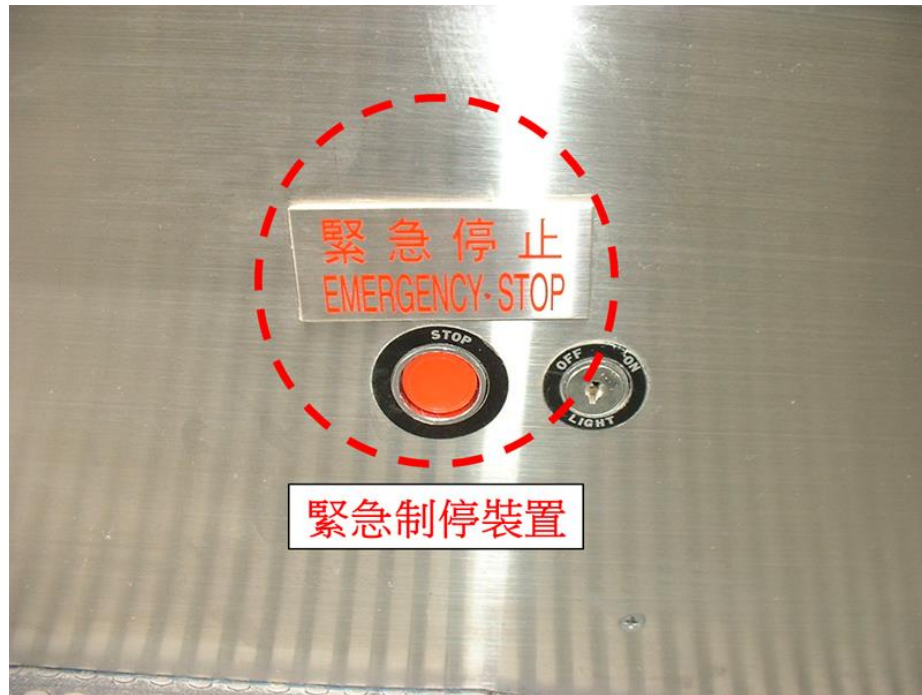
17) Step Roller Track

- The track on which the step rollers run.



18) Stop Button or Switch

- A push button or switch designed to switch open the control circuit and so cause the equipment to stop.



19) Truss or Girder

- The supporting structure on which the varic components are mounted.

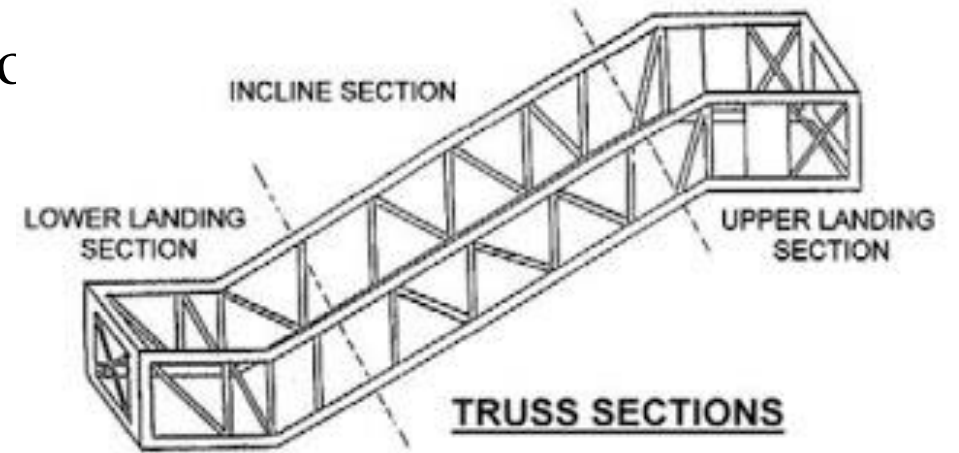
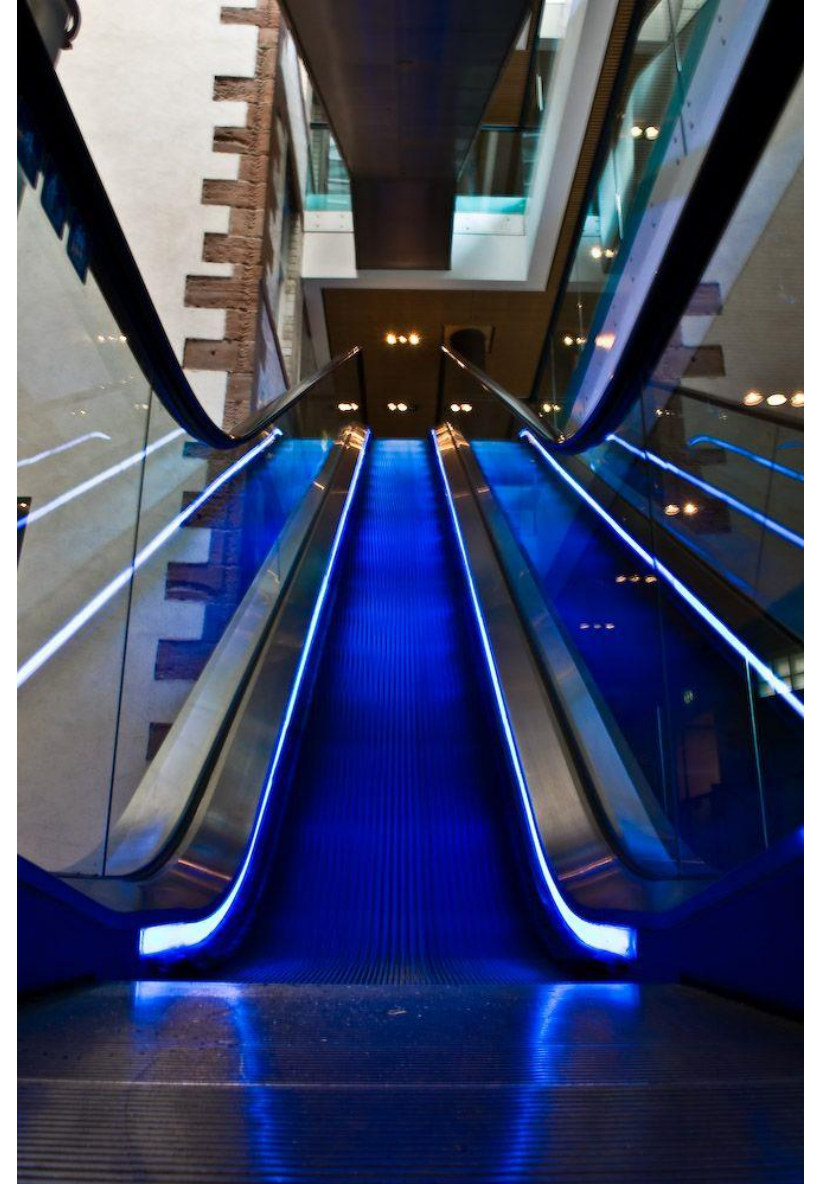


Figure 18 Truss Sections

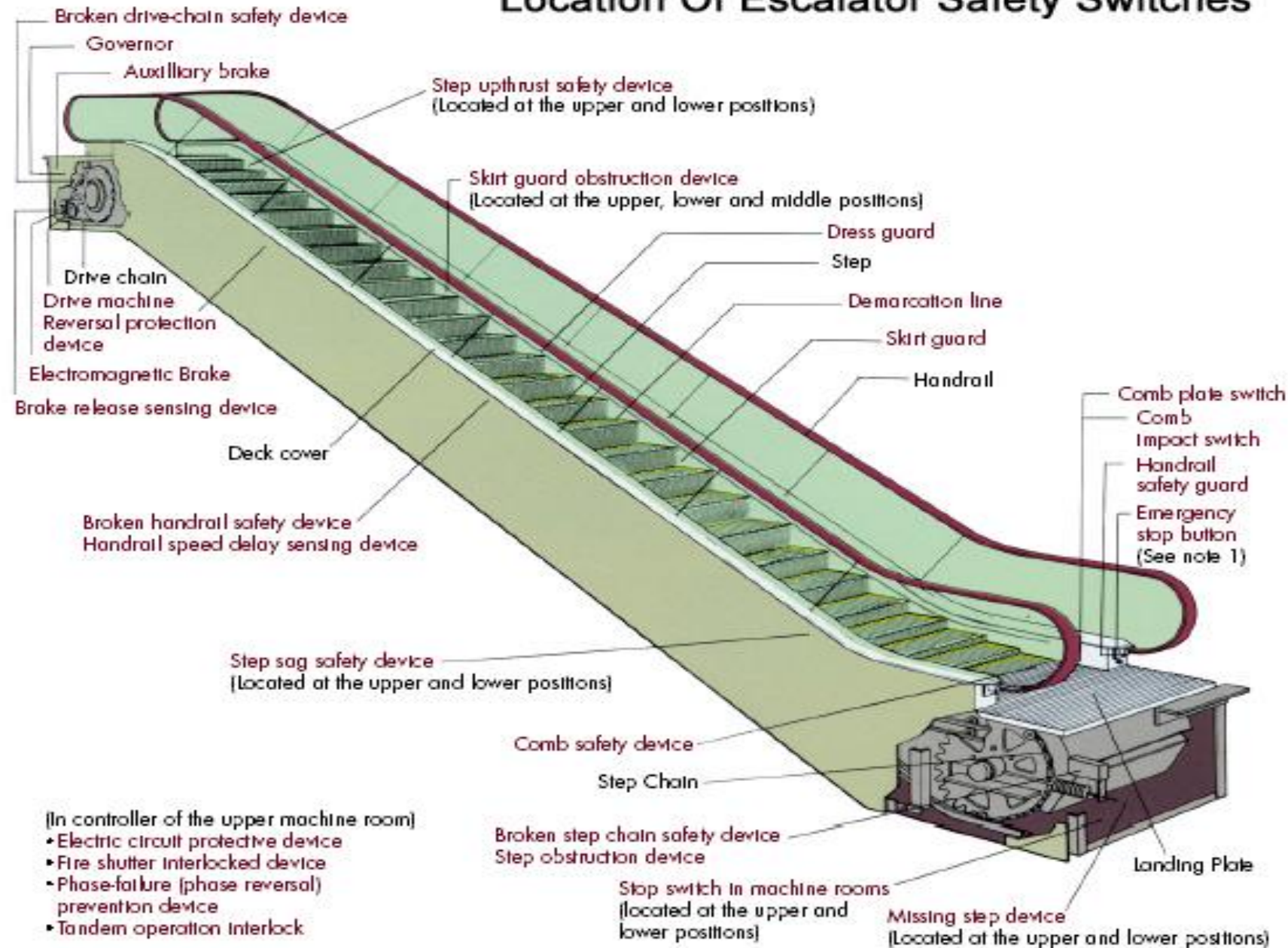


20) Lighting

- ❖ Comb lighting
- ❖ Step lighting
- ❖ Skirt lighting
- ❖ Handrail lighting
- ❖ Pit Lighting
- ❖ Truss lighting



Location Of Escalator Safety Switches



Bil	Safety Device	Function
1	Overspeed governor	If the operating speed of the escalator exceeds a certain limit, the overspeed governor will cut off the power supply, thus stopping the escalator.
2	Broken step chain safety device	If any breakage or undue elongation of the chains of the steps, pallets or belts is detected, the device will stop the escalator
3	Comb plate	If the space where the steps, pallets or belts enter the comb plates becomes jammed with foreign objects, the device will stop the escalator.
4	Step-sagging safety device	If any part of the steps, pallets or belts is sagging and cannot be maintained in mesh with the inlet and outlet of the comb plates, the device will stop the escalator.
5	Broken drive chain safety device	If any breakage or undue elongation of the drive chain is detected, the device will stop the escalator.
6	Main Brake	In case of incidents such as trapping of foreign objects at the space where the steps, pallets or belts enter the comb plates, or in the gaps between the skirtings and the steps, the main brake will be actuated to stop the escalator.
7	Auxiliary brake	In addition to the main brake, the auxiliary brake will assist in stopping the escalator under specific circumstances.

Bil	Safety Device	Function
8	Missing step safety device	It is installed at each driving and return station of the escalator. If there are any steps or pallets missing, the device will stop the escalator.
9	Emergency stopping device	Usually installed at the entrance and exit of the escalator, or in other conspicuous and easily accessible positions at or near to the landings of the escalator. The escalator can be stopped by pressing the device button in case of emergency.
10	Skirt	If foreign objects are trapped between the skirtings and the steps, the device will stop the escalator.
11	Handrail speed monitoring device	If the operating speed of the handrail exceeds a certain threshold, the device will stop the escalator.
12	Handrail inlet/	If the handrail inlet becomes jammed with foreign objects, the device will stop the escalator.
13	Deflector device	Brush bristles are placed on the skirtings to reduce the danger of foreign objects being trapped between the skirtings and the steps, and to protect passengers' feet.
14	Broken handrail	If a broken handrail is detected, the device will stop the escalator.

<https://www.youtube.com/watch?v=QUFsZsuNAOI>

Escalator Safety Device