

## **Lift Installation & Maintenance Lab**

Lift installation & maintenance lab trains students on installation methods of elevators(Lift). This lab also involves in training of elevator maintenance including safety precautions.

### **Lift**

A Lift is a type of vertical transportation that moves people or goods between floors (levels, decks) of a building, vessel, or other structure. Lifts are typically powered by electric motors that either drive traction cables and counterweight systems like a hoist, or pump hydraulic fluid to raise a cylindrical piston like a jack.

In agriculture and manufacturing, a Lift is any type of conveyor device used to lift materials in a continuous stream into bins or silos. Several types exist, such as the chain and bucket Lift, grain auger screw conveyor using the principle of Archimedes' screw, or the chain and paddles or forks of hay Lifts. Languages other than English may have loanwords based on lift. Because of wheelchair access laws, Lifts are often a legal requirement in new multistory buildings, especially where wheelchair ramps would be impractical.

### **Types of Elevators(Lifts)**

Elevators(Lifts) have residential and commercial classifications by the governing code: ASME A17.1. Elevators(Lifts) are vertical transports that move people or materials between the floors or levels of a structure. All Elevators(Lifts) include a cab or platform that moves along rails located within a shaft and are powered by one or more motors. The differences between elevator systems are related to how the cab or platform is transported between levels. The two primary types of Elevators(Lifts)used for residential and commercial buildings are hydraulic Elevators(Lifts) and traction Elevators(Lifts).

One key difference between hydraulic Elevators(Lifts) and traction Elevators(Lifts) is that hydraulic Elevators(Lifts) push the elevator cab up using a piston and traction Elevators(Lifts) hoist the elevator cab up with a traction motor.

### **Hydraulic Elevators(Lifts)**

A hydraulic elevator consists of a cab attached directly or indirectly to a hydraulic jack. Hydraulic Elevators(Lifts) can be classified as direct acting or holeless. In direct acting hydraulic Elevators(Lifts), the

hydraulic jack assembly extends below the lowest floor into the pit area in contrast, for holeless hydraulic Elevators(Lifts), the cylinder is placed in the shaft above the pit level Both types of hydraulic Elevators(Lifts) are operated by a hydraulic pump and reservoir, both of which are usually located in a room adjacent to the elevator shaft. Hydraulic Elevators(Lifts) are generally used in low-rise construction for residential and commercial buildings. However, in recent years, traction Elevators(Lifts) have become more common in low-rise residential construction.

### **Traction Elevators(Lifts)**

Traction elevator systems are most commonly installed in high-rise construction for residential and commercial buildings. Traditional geared traction elevator systems consist of cables connected to the top of the cab operated by an electric motor located in a penthouse above the elevator shaft. Traction Elevators(Lifts) may be geared or gearless based on building height, speed requirements, and cost considerations.

The traction elevators are further divided into three types, such as;

**Geared Traction:** These have a gearbox attached to the powered electric motor. This increases the speed, making the elevator move up to, almost 500 ft/min.

**Non-Geared Traction:** These do not have a gearbox, but the wheel is directly attached to the motor, increasing the speed of the elevator to about 200 ft/min.

**Non-Machine Room Elevators:** Usually a machine room is needed to accommodate the motor and the wheel, but these do not possess it. They have the motor and the wheel placed directly over the elevator shaft as it is more convenient to access in case of repairs, and you don't have to dedicate an entire room to it.

### **Courses in this lab:**

S.No	Domain	Course Name	Hours	Mandatory Prerequisite
1	<b>Lift</b>	Jr. Assistant Elevator	20	Mechanical, Automobile, Production Engineering (2 <sup>nd</sup> Year)
2	<b>Lift</b>	Assistant Elevator Installer (Expert)	50	Mechanical, Automobile, Production Engineering (2 <sup>nd</sup> Year)
3	<b>Lift</b>	Escalator Mechanic (Expert)	20	Mechanical, Automobile, Production Engineering (2 <sup>nd</sup> Year)
4	<b>Lift</b>	Elevator Installer	100	Mechanical, Automobile, Production Engineering

		(Master)		(2 <sup>nd</sup> Year)
5	Lift	Escalator Mechanic (Master)	80	Mechanical, Automobile, Production Engineering (2 <sup>nd</sup> Year)