

- **UNIT 2**

- **CONSTRUCTIONAL WORKING FEATURES AND INSTRUMENTATION**

- **Types of Transport equipments**

- Powered equipment
- Tractors and Trollies
- Trailers
- Platform lift trucks
- Fork lift trucks
- containers and
- Supports

- **Powered equipment**

- Conveyors
- Cranes
- Industrial trucks

- <https://people.engr.ncsu.edu/kay/mhetax/TransEq/Conv/index.htm>

- **Tractors**

- The word Tractor was derived from 2 words i.e. Traction and Motors. The word Trac was derived from Traction and the remaining word tor was derived from motor.
- Types of Tractors as per their application
- The Tractor Types can be classified into 3 major divisions namely:
 - **Type of Construction**
 - **Type of Drive**
 - **The Purpose for which the usage is done**

- The First type is Construction type and it is further divided into 2 types.
- i) First type is the Tractor in which the driver can easily sit and drive the machine.
- ii) The Second type is the Tractor in which the operator walks along side and it is also called as Walking Type Tractor.
- The Second type depends upon the type of drives i.e.
 - Track Type
 - Wheel Type
- Tracked Type has Half Track and Full track types of tractors.
- Wheel type is sub divided into
 - i) 2 Wheeler or Two Wheeled ii) Three Wheeler or 3 Wheeled and iii) Four Wheeler types of tractors.

- Track Type Tractors

- In these types of Tractors, instead of wheels one track is fitted on either side. This track gets drive from the sprocket run by real axle shaft. To steer the Tractor, there is no steering gear fitted. Here, the machine is steered by applying brakes to one side of the track while the other track is in motion.



- Half Track Type

- In these types of Tractors, a small track chain is fitted at the rear end only while tyres are fitted at the front axle. Track Type Tractors are generally used for reclaiming barren lands and are not much used for Agricultural tasks.
- These machines are fitted with tracks in such a way that the contact area with ground is larger and facilitates in increased traction power. These machines are very useful in dams and in areas where earth moving tasks are required.



- Wheel Type Tractors

- Their primary usage is in Agricultural tasks. They have fast running speed and the fitted tyres are able to absorb certain amount of field shock too.

- The domain of use for these machines can be classified into small farms, hilly regions and for general gardening purpose.\

- Three Wheel or Tricycle Type

- Three Wheeled Tractors were very popular 20 years back but now they have been replaced by Four Wheelers. They had single or dual wheel fitted at front end and were considered apt for moving around shorter turns.



- The Types of Tractors in third classification depend upon the purpose for which they are used
 - Utility Tractors
 - Row Crop Tractor
 - Orchard Type
 - Industrial Tractor
 - Garden Tractor
 - Rotary Tillers
 - Implement Carrier
 - Earth Moving Tractors

- **Utility Tractor**

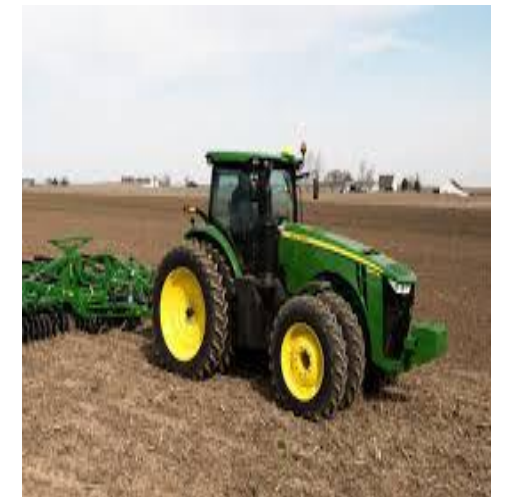
- Utility Tractor is general purpose machine and is designed for ploughing and driving any other equipment through its drive and is considered good for such farms where farmer cannot afford more machines to perform specific jobs.



- **Row Crop Tractor**

- This is an all round machine and is designed in such a way that it meets all the Agricultural demands like Ploughing, Harrowing, Levelling, Pulling Seed Drills, Weed Control, running different machines like Water Pumps, Threshers using belt pulley.

- They have the below listed attributes:
- They have greater ground clearance.
- They have good row spacing provision.
- They are easy to steer and can nicely take shorter turns.
- These machines are user friendly and are easy to drive.



- The attachment and detachment of Agricultural Implements is a quick and easy process with these machines.
- There is a provision for power take off drive too.
- A power lift is provided for heavy lifting or for lowering agricultural implements.

- **Orchard Type**
 - These special type Farm machines are only used in Orchards. These Tractors have big height so that while sitting on the Tractor the Driver can easily pluck the fruits or the trees can easily be trimmed. There is no part of this machine outside the surface and this allows easy passage in between the trees.

- **Industrial Type**
 - The Industrial Type machines are also called as Tuggers. They are useful in pulling loads and are fitted with crane boom for easy lifting of loads.

- Garden Type

- These machines fall in the power range of 1 to 10 HP (Horse Power) and have very small construction size. They are mostly used for Grass Cutting or for making Flower Beds in the garden. The wheels fitted to such machines are having the size of a Scooter and have a thicker depth.

- Rotary Tillers

- They fall under the category of Walking Type Tractors and are used in small fields or on hills where fields are smaller in size and are at different height levels. Here, Ordinary equipment cannot work efficiently. Blades are fitted to the tillers for the purpose of preparing seed beds efficiently by pulverizing the content of soil.

- **Implement Carrier**

- In these types of Tractors, there is an extended chassis frame between the front and rear tyres where all the implements like Seed Drills, Fertilizer, Drill, Duster, Sprayer, Rotary Sweeper, Loader, and platforms can be easily mounted.

- **Earth Moving Tractors**

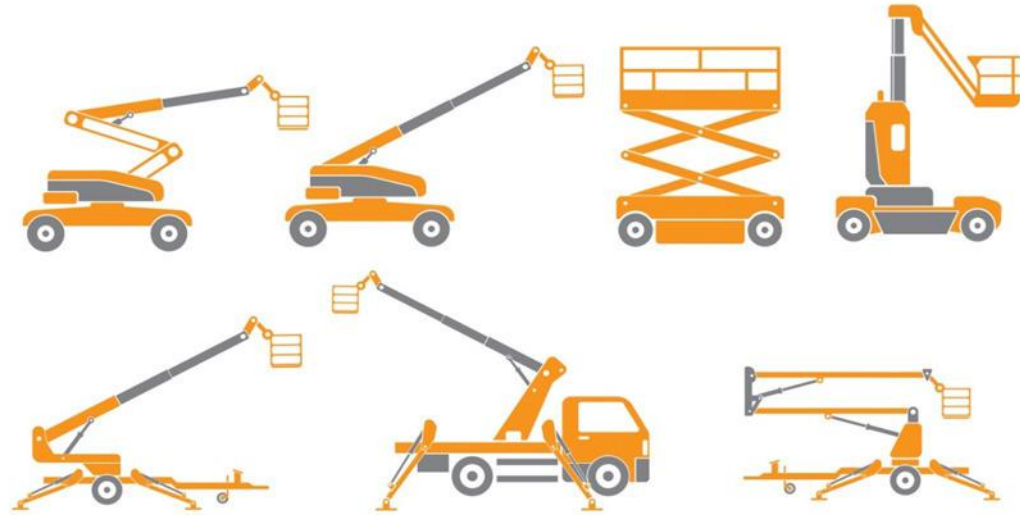
- These Farm Machines are heavy in weight and quite strong. They are available in both track and tyre type varieties. Their primary usage is for doing earth moving work on dams, quarries and different types of constructional works.

- Trailers (see pdf)
- Containers
- <https://www.marineinsight.com/know-more/16-types-of-container-units-and-designs-for-shipping-cargo/>

- Platform lift trucks

Electric walkie platform lift trucks are designed to lift and transport skidded loads.

Because of its compact design, it can transport heavy loads in areas not suited for large counterbalance trucks.



- Fork lift trucks

A forklift (also called lift truck, jitney, fork truck, fork hoist, and forklift truck) is a powered industrial truck used to lift and move materials over short distances.

Types of Fork lift

<https://www.bigrentz.com/blog/forlift-types>



- **Hauling Equipment:**

- Hauling units used for transport the earth, aggregate, rock, ore, coal and other materials.
- Hauling units may be road vehicles or rail-road locomotives.
- Haulage mainly consist of trailers pulled by tractors or trucks.

- (see pdf)

- **Hoisting equipment**

- (see pdf)

• **Thank You**

• **Unit 2**

• **Completed**