

UNIT-3

TRACTORS

Tractor:

A tractor is an engineering vehicle specifically designed to deliver a high tractive effort (or torque) at slow speeds, for the purposes of hauling a trailer or machinery such as that used in agriculture or construction.

Tractor Unit:

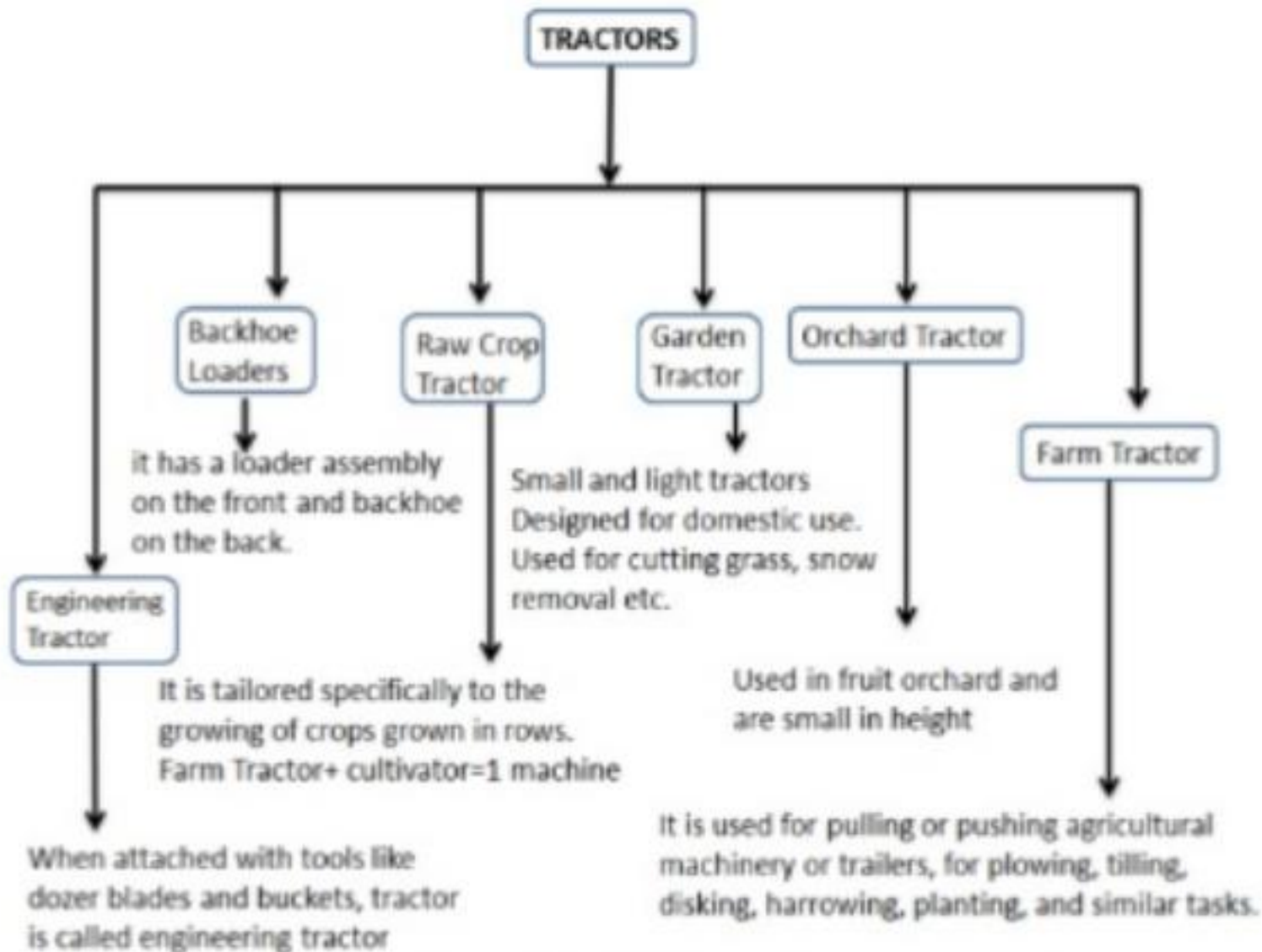
A tractor unit (prime mover, traction unit or rig) is a characteristically heavy-duty towing engine that provides motive power for hauling a towed or trailered load.

These fall into two categories:

- heavy and medium duty military and commercial rear-wheel drive "semi-tractors" used for hauling semi-trailers, and

- very heavy-duty typically off-road-capable, often 6×6, military and commercial tractor units, including ballast tractors.

APPLICATIONS OF TRACTORS



CLASSIFICATION OF TRACTORS

Tractors can be classified into three classes on the basis of structural-design:

(i) Wheel tractor: Tractors, having three or four pneumatic wheels are called wheel tractors. Fourwheel tractors are most popular everywhere.

(ii) Crawler tractor: This is also called track type tractor or chain type tractor. In such tractors, there is endless chain or track in place of pneumatic wheels.

(iii) Walking tractor (Power tiller): Power tiller is a walking type tractor. This tractor is usually fitted with two wheels only. The direction of travel and its controls for field operation is performed by the operator, walking behind the tractor.

On the basis of purpose, wheeled tractor is classified into three groups:

- (a) General purpose tractor: It is used for major farm operations; such as ploughing, harrowing, sowing, harvesting and transporting work. Such tractors have (i) low ground clearance (ii) increased engine power (iii) good adhesion and (iv) wide tyres.
- (b) (b) Row crop tractor: It is used for crop cultivation. Such tractor is provided with replaceable driving wheels of different tread widths. It has high ground clearance to save damage of crops. Wide wheel track can be adjusted to suit inter row distance.
- (c) (c) Special purpose tractor: It is used for definite jobs like cotton fields, marshy land, hillsides, garden etc. Special designs are there for special purpose tractor.

POWER SHIFT TRANSMISSION IN CATERPILLAR TRACTOR

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

FINAL DRIVE IN CATERPILLAR TRACTOR

<https://www.youtube.com/watch?v=4GpwXcrrjxs>

MOTOR GRADER

A **grader**, also commonly referred to as a **road grader** or a **motor grader**, is a construction machine with a long blade used to create a flat surface during the grading process.

Typical models have three axles, with the engine and cab situated above the rear axles at one end of the vehicle and a third axle at the front end of the vehicle, with the blade in between.

Most motor graders drive the rear axles in tandem, but some also add front wheel drive to improve grading capability.

Many graders also have optional attachments for the rear of the machine which can be ripper, scarifier, blade, or compactor.



Graders are commonly used in the construction and maintenance of dirt roads and gravel roads.

In the construction of paved roads, they are used to prepare the base course to create a wide flat surface upon which to place the road surface.

Graders are also used to set native soil or gravel foundation pads to finish grade prior to the construction of large buildings.

Graders can produce inclined surfaces, to give cant (camber or sideslope) to roads.

<https://www.youtube.com/watch?v=Uy5UpSx3wAo>

Depending on frame arrangement motor grader is classified as;

- Rigid frame motor grader
 - Articulated frame motor grader
- Rigid frame motor grader has only one axle. Axle is unable to turn left or right about a point.
- Articulated frame motor grader has a hinge in between the front and the rear axle. That type of grader is most commonly used where small space is available during turning.
- Motor grader is one of the pieces of construction machinery that is used to create a well smooth, wide-ranging, and level surface. Most commonly motor graders are used for the maintenance of road. It spread the soil and then flattens that soil. Before the pavement of asphalt layer motor graders are used for uniformly flat surface so that asphalt distribute uniformly throughout the surface.



CONTROL MECHANISM OF A CATERPILLAR MOTOR GRADER.

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

Thank You