

What is a Front Axle

Today, Tractor Agriculture will focus on an important topic.

What is a Front Axle?

I was asked this question in my school days by one of my friends and could not answer at that time due to my ignorance on this subject. It is an important [Tractor Part](#) which facilitates the movement of agricultural machines on the field.

It is attached to the front side of the Tractor and is used in the process of steering the machine towards right or left.

Different Functions of Front Axle

- It is used to bear the full weight of front side of a tractor.
- It has king pin, steering arms using which machine can easily be steered.
- The machine is kept in a regular levelled position through its swinging action.
- The springs fitted inside the case absorbs the shocks.
- In a 4 wheel drive machine, the transmission of power to road wheels is also done using this tool.

Types of Front Axles

In Tractor, Front Axle assembly is integrated into the Chassis by different methods.

- Rigid Type
- Swinging Type

In the Tractors of old era, rigid front axles were largely used and the axle beam used to be rigidly tied up with Chassis.

With the passage of time, Tractors got compatible with different slopes. Now, the rigid system has been replaced by swinging type of axles.

In the Swinging Type, the centre of axle is rested on the front side of machine using a centre pin. Due to this alignment, the right or left wheel can easily move up or down or swing in different directions.

Front Axle Assembly

Axle Beam

Front Axle carries the front end load of the tractor fully. It withstands shocks while running on the field. Field is not a plain surface and is totally uneven. Due to this property, axle beams are very sturdy in nature.

The different types of cross sections are used in the main axle beam are showcased below.

Split Type Axle Beam

In the older days, single beam axle was mostly used and is even used nowadays in case of Earth Moving Tractors.

But Split Type Axle Beams are generally used for Agricultural works. These are made of 3 pieces where centre portion is attached to the front part of Tractor Chassis using a centre pin and right, left axle beams are tied to the centre beam using nuts and bolts.

Most of the Tractors have this system integrated but some machines also have a coil spring placed between the king pin and boss of axle beam.

Stub Axles

In Stub Axle, a wheel hub is attached using 2 taper roller bearing and maintained in position by a washer and nut.

Drag Linkball Joint

As we know, Steering Assembly is attached to the chassis frame and stub axle is fixed on axle beam which allows regular movement. To provide angular movement to Stub Axle, Ball Joints are used. In Ball Joints, balls moves according to the angle.

The 2 types of Ball Joints are:

- Fixed Type
- Adjustable Type

Fixed Types are used for small tractors and Adjustable types are applied in heavy machines.

In Adjustable Type, pressure applied on the balls can be adjusted using nuts.

Radius Rods

Many Chassis less Tractors have radius rods. The main purpose of Radius Rods is to release the engine from front side thrust and to maintain the straight posture of front axle.

Front Axle Repair

The front axle attached to Agricultural Tractors is rigid in nature and generally does not require much attention. But, regular servicing and greasing is always needed. If apt maintenance is not done, regular wear and tear happens at centre pivots and bushes of king pin.

In such a case, it is advisable to replace old ones with new brushes or rebuilt the existing ones with good welding and machining procedures. Remember, once the bushes are worn out, it is good practice to replace them.

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