

Automobile Engineering Question & Answers

Explain the reason that why big tyres are used in rear of vehicles.

Large tyres provide larger surface area touching the ground, thus providing the more pulling power. Basically tractors have larger rear tyres because tractors don't have to operate at higher speeds, thus getting the same ground speed with larger tyres. Moreover gear ratios don't have to be as high as b/c of the tyres.

What is kingpin offset? State some of its application.

The kingpin offset is the part, basically called as pivot used in the steering of the vehicles. This offset helps in rotating of the steering and thus it's very useful in steering mechanism of the cars.

Applications: This is also used to measure scrub radius with the help of geometric parameters of wheel plane above and below ground level.

It provides directional stability to the vehicles when it is combined with the caster.

Explain the basic difference between BS2 and BS3 engine.

The basic difference of BS2 and BS3 engines is the presence of catalytic convertor. Catalytic convertor is present in BS3 engine which helps in reducing the formation of HC and CO. While in BS2 engine, no catalytic convertor is present which forms HC and CO. Thus in BS3 engine there is no emission of harmful CO and HC. The full form of BS is Bharat Stage, which is a standard of emission in India.

What is an injector pressure in heavy vehicles? Why it is used?

Injector pressure is the pressure at which the fuel can be injected into the vehicle. In heavy vehicles, injector pressure is 220 kg/cm square. It is used to set up the standard fuel injection in the vehicles. With the help of injector pressure we can calculate the amount of fuel needed, through the following formula:

Est. Horsepower x B.S.F.C / No. of injectors x duty cycle = lb/hr per injector

cc = lb/hr x 10.5

During the drive torque, what will be the weight shift?

In case of cars the torque is applied to the rear wheels, thus limiting accelerator due to front wheel drive due to weight transfer. This drive is bolted to the chassis of the car. Modern manufacturers therefore design rear wheel drive to have similar handling to front wheel drive wherever possible via suspension tuning.

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In a tractor, how the hydrostatic propulsion systems work?

This system is based on Pascal's law. In a tractor the pressure is same, so the force given by the liquid to the surrounding is equal to the pressure X area. Thus, obeying the Pascal's law hydrostatic propulsion system is designed, similarly small piston feels small force and the large piston feels larger area.

Explain the reason that why the tyres are always black in colour. Is this phenomena related to the heat conduction?

Tyres colour is black due to the proportion of carbon mixed in it during the vulcanization of the rubber, to make the tyre shear resistant. Without vulcanization tyres won't be able to bear the friction heat and stress of the road. Thus carbon is responsible for giving tyres the prominent black colour. Adding of carbon prevents tyres from rapidly deteriorating because when ozone combines with the ultraviolet light from the sun. It attacks the polymer of the tyre.