

# Horsepower and Torque

One of the largest hurdles that Mitsubishi Fuso and other cab over truck manufacturers such as Isuzu have had to face, in selling their product in the market, is the apparent lack of horsepower.

The horsepower philosophy that, "If a little is good, more must be better!" makes it is hard to understand the seemingly under-powered cab over diesels.

The some truck manufacturers play to that misunderstanding by continuing to bombard the buyer with cubic inches and horsepower far beyond what it reasonably takes to move a load.

The oft overlooked element in this scenario is the torque output of a given engine. Torque is the more important component when we are speaking of a commercial application, because moving the largest load possible, from point "A" to point "B", for the least amount of money is what productivity is all about.

Torque is the component that gets the load moving, horsepower only allows you to maintain road speed, and in many cases road speed is limited by gearing.

I know what you're thinking. You're thinking that those mega-horsepower engines also generate loads of torque, and you'd be correct. But remember, there is always a trade-off. In order to get all that horsepower and torque, these engines are generally large – both physically, in size and weight, and in displacement. A heavy vehicle means less capacity left for payload. A large displacement, high horsepower/high torque engine means poor fuel economy. All this horsepower and torque also will show-up any weak point in the drive train. All that power is useless if you can't get it efficiently to the ground. High horsepower and torque drive trains will have a higher failure rate of transmissions, clutches, universal joints and axle shafts.

Providing adequate horsepower and torque to move the expected payload, based on the GVWR of the vehicle, without excess provides the operator with the most efficient means possible, gives better fuel mileage and longer component life – which means less downtime and higher productivity.

One manufacturer would equip a class 2 truck (maximum GVWR of 10,000 lbs.) with a 444 cubic inch diesel engine, producing 235 horsepower and 500 lb-ft of torque. If you opted for the manual transmission, this torque was going to ground through a 12" organically faced clutch. This is nominally the same size clutch, and type of facing, we use for the manual transmission FE series of chassis – which produce 145 hp and 275 lb-ft of torque. They knew they had a problem because the following year, they increased the clutch diameter by an inch, but didn't change the facing. Now the size was equivalent to an FH (175 hp / 325 lb-ft) but without the FH's tough cerametallic facing. We have a vehicle with numbers close to the above domestic example. Our FM-SP (and remember, this is a class 7 vehicle with a GVWR of 32,900 lbs.) produces 230 hp and 521 lb-ft of torque. What kind of clutch do we use in that chassis? A 15" cerametallic lined unit.

So what does all that horsepower and torque do for you? Well, if you can live with the poor fuel economy, reduced payloads and the downtime caused by driveline component failures, it does give you bragging rights at the drive-in. But that doesn't put any money in your pocket, and that's what the game is all about. **(This article is four years old but the principals still apply)**