

Engine Refit

Let's jump right into this topic and clarify some confusion – an engine refit is not a simple task nor should it be performed by untrained technicians. And you must definitely not rely on your neighbor's advice when they say you need or don't need an engine refit.

We have performed dozens of engine refits and I talk from experience – the cost associated with not performing timely maintenance and maybe even an engine refit on your diesel truck is far higher than just performing one.



Source: www.equipmentworld.com

Having said that, let's start from the top now.

An engine refit/replacement is the process of removing the older engine and refitting it with a new, more modern, fuel efficient or more powerful engine. Many a times an engine maybe removed, rebuilt and refitted into the vehicle after it has passed all our inspection guidelines. Most of the time an engine refit is required because of a failed engine, non-compliant older engine or due to sub-par power performance. Older engines maybe recommended to be swapped out due to shortage of spare parts because the manufacturing of a particular engine by the OEM has stopped.

Customers also refit and swap to diesel engines due to improved fuel economy. And with the new Cummins R2.8 Turbo diesel engine you don't have to sacrifice performance for fuel economy. As the #1 Cummins engine refit dealer in Calgary we strongly advise that you look into high torque diesel engines if your vehicles have constant off-road applications.



Engine refits can either be done with another engine intended to work in the car by the manufacturer or to a totally different one. It completely depends upon your end-application. The former is relatively simpler than the latter. To fit a totally different engine into a vehicle that was not intended to accept it, requires relatively more work and money. And hence, there has to be a very strong and compelling reason to execute such a refit project. In our years of dealing with refit projects we have modified the vehicle to fit the engine, modified the engine to fit the vehicle, built after market engine mounts, transmission bellhousing adaptors to interface them along with a custom built driveshaft and so much more. Some small businesses in Calgary also build conversion kits for specific engine blocks.

Swapping an engine may have implications on the vehicle's safety, performance, handling and reliability. The new engine may be lighter or heavier than the existing one which affects the amount of weight over the nearest axle and the overall weight of the car - this can adversely affect the car's ride, handling and braking ability. Existing brakes, transmission and suspension components may be inadequate to handle the increased weight and/or power of the new engine with either upgrades being required or premature wear and failure being likely. Be sure to have your technician/repair mechanic establishment perform safety checks and run through an inspection checklist before accepting the vehicle back. As mentioned above, some of the things to look out for in the inspection are handling, reliability and safety.

Some of the most common type of replacement engines are

1. Used/rebuilt engine
2. New/crate engines and
3. Remanned (remanufactured) engines

The term crate engine refers to automobile engines that are ready to be installed right out of the crate. They are usually shipped in a crate to the customer and can be directly swapped into place. Engine accessories such as water pumps, fuel systems, exhausts, mounting blocks may or may not be supplied with the engine and are usually the only requirements that are needed to complete the job. For example, the R2.8 Turbo comes packaged with complete front-end accessory, vacuum pump, etc. for a quick, painless install. This majorly helps in the reduction of down-time and labor hours. We have found the most use for crate engines in daily applications, hot rod builds and motorsport applications. This is by far the most economical and reliable solution compared to full rebuilds or used engine refits.

You must get used to some of the terms when it comes to engine refit/replacement:

Long block - short block engine and a long block engine are two different engine states. While they are both the same in external dimensions, they differ in the amount of parts they contain. This type of engine is almost complete and comes with the head which is bolted to the short block. The long block engine will need to have some additional external parts installed. These parts include but are not limited to: valve covers, manifolds for the exhaust and intake, a timing cover and an oil pan.

Short block - Short block engines are not complete but they do come with a cam pistons, connecting rods and a crank.. They do require the installation of additional internal parts which include but are not limited to: an oil pump, cylinder heads and gaskets. Some short blocks are made available with camshafts and timing parts. The car engine performance provided by a long block engine is potentially better than that of a short block due to the state in which it is installed into a vehicle. Having more parts, there are fewer situations where problems could arise in the installation process. At the same time, the short block engine allows for more choice and potentially quality performance, in the additional parts that are necessary to the installation. The need for a short block replacement indicates that the engine block and some major internal parts have been damaged beyond repair.

Cylinder Head - A cylinder head is usually located on the top of the engine block. It serves as a housing for components such as the intake and exhaust valves, springs and lifters and the combustion chamber. The passages in the cylinder head allow air and fuel to flow inside the cylinder while permitting the exhaust gases to flow out of it. The passages are otherwise called ports or tracts. The cylinder head also channels the coolant into the engine block, thereby cooling down the engine components. The cylinder head uses a gasket that aids in preventing water or oil from leaking into the combustion chambers.

Camshafts - Camshafts are mostly found in the head of an engine, nestled above the cylinders. Running along the shaft are lobes which are manufactured to sit at different angles. These lobes are positioned in such a way that – when the camshaft is rotated – they come into contact with rocker arms that then open the engine valves.

Crankshafts - Crankshafts sit below the cylinders and pistons in the engine block. Their job is to convert the vertical movement of the pistons into a rotation to be transferred through to the flywheel and then the transmission. The crankshaft has crank pins along its length that line up horizontally with the pistons above and form the 'stepped' orientation of the shaft itself.

Valvetrain - The valve train refers to the assembly of components designed to open and close the intake and exhaust valves.

To close I would re-iterate the importance of getting your diesel truck inspected and routinely maintained. And if you are ever in the need of an engine refit, make sure you go to a repair shop that is an expert at these jobs.

A little about me and my business

My name is Brandon Mendell. Owner, leader and diesel engine enthusiast at Brandell Diesel Inc. I take great pride in running, fixing and appreciating diesel engines. As a boy growing up on the farmlands on Southern Alberta with my father I developed a love for these machines and have carried on, on the path for the past 20+ years.

We proudly serve companies, fleets and individual owners of diesel engine vehicles and personally look to it that we do whatever it takes of save our customers any downtime. We are known all across the province of Alberta for our fast turn around times on diesel engine vehicle repairs and the rescue service we provide on the roads with our trucks.

Don't hesitate to call me at 403 271 0101 for repairs or consultation on your diesel engine vehicles.

I look forward to hearing from you my friend !!