

Remanufacturing; What is it and what it is not?

The remanufacturing industry has now expanded and has evolved so much that we at Diesel Parts of America, felt the need of providing more information. There is also some misconception of what is Remanufacturing and we hope in the next few pages, we can clarify this and other issues.



a recent training session at DPA

1-Remanufacturing cycle

The remanufacturing cycle is the process of reviving and restoring used parts, and when necessary replacing worn out parts, to become equivalent of, or better than, the original new part. The key in this process is significantly changing performance. We do not sell used, second-hand, rebuilt, repaired or refurbished injectors, we remanufacture them and call them Newalized™. This process, maintains the intrinsic value of the product at the highest possible level, providing the same or better performance as the original injector. Remanufacturing guarantees high quality results for a new life cycle and provides a product that can be remarketed at a consistently profitable price. The process is about scrutinizing and renewing the ENTIRE injector, not just a part of it. Remanufacturing has also created a huge market for us, to sell components and repair kits for injectors, to those who engage in remanufacturing themselves. This process is described in more detail below;

Core receipt; “Core cost” or “core-charge” is what most people refer to, but to us, it is a “core-investment”. It is imperative to recuperate the money invested into a core, by making sure that

those cores are returned for credit, in a timely manner by your customers. When successfully developed and implemented, core management is the life blood of the remanufacturing industry. Remanufacturing products, instead of new units, are seen by the end customer as the best alternative and the best value proposition, with typical savings of 50% or more when compared to OEM products.



So, what is an acceptable core?

Injectors by far are more sensitive than most other engine products (such as an alternator or a cylinder head), so the core acceptance policy must be carefully adhered to. Cores must be in reasonably good and repairable condition. Every core needs to be visually inspected by the customer. Cores must be packaged and protected very well, to prevent any damage during transportation which would make the core unrepairable. Cores which are unacceptable include:

1. Visually damaged cores, such as broken housing, excessively rusty or pitted nozzle, broken plunger, broken tip, cracked retainer or damage to any other major component.
2. Any injector which has been disassembled or physically altered in any way.
3. Cores which are incomplete or missing any component. Some damaged components CAN be repaired or replaced at additional cost, but not all. When components are found to be missing or damaged, the customer will be notified in advance of the additional repair cost. Once the customer gives approval, we will proceed with the necessary remanufacturing process.

For more details on our core acceptance policy and how to properly send your cores to us, please visit our website at www.dpausa.com.



The Remanufacturing Process;

Disassembling; Cores are disassembled completely, down to the smallest components (some injectors have as many as 42 components). These components are all carefully sorted, keeping all parts within a cradle, as we carefully and literally “babysit” every injector.

Cleaning; Components which are deemed useable are placed through automated Sunnen cleaning equipment. Some core components require more thorough and manual cleaning which is also handled in-house.

Parts Qualification & Inspection; Next, we inspect every component; filters, screens, O-rings, buttons, shims, screws, etc., and replace them with brand new parts. The remaining components, such as the nozzle, plunger, control valve, and solenoid, typically do not need to be replaced and have plenty of life remaining. They only “stopped” working, in most cases, because some other component gave out and caused the injector to stop delivering fuel at its premium and required level.

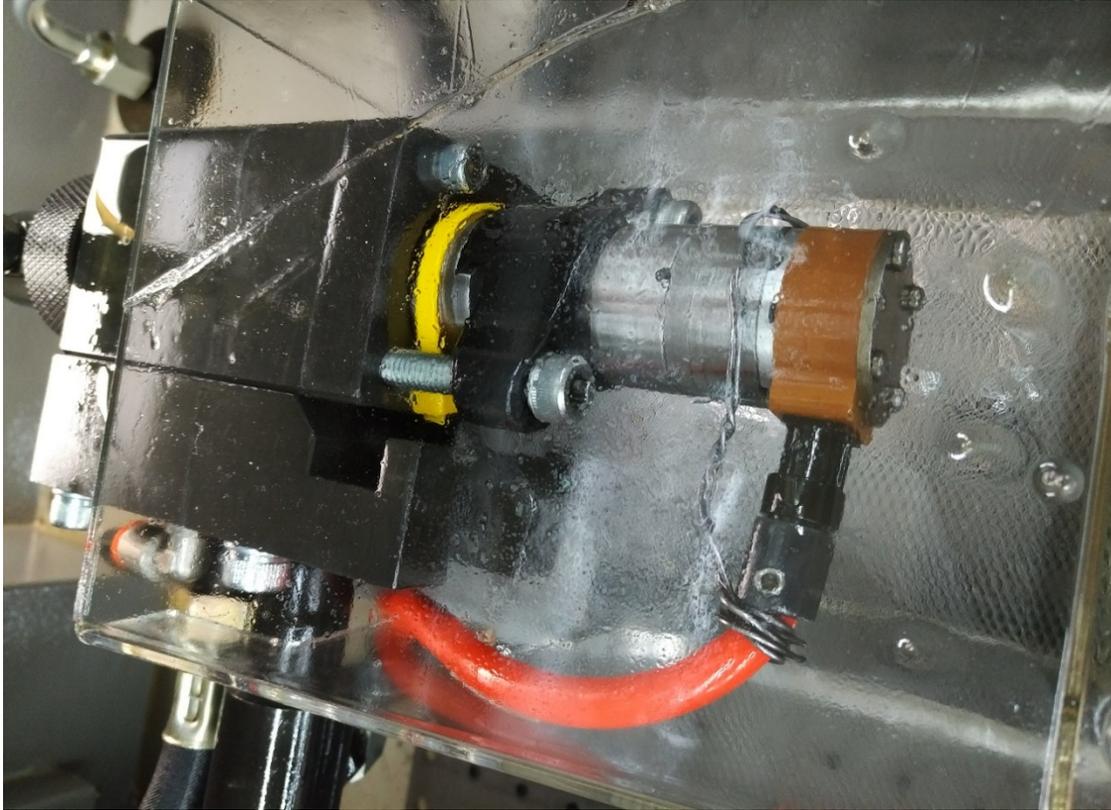
Replacing with new parts; A remanufactured component fulfills the same function as the new original component. When all the parts are qualified, replaced and readjusted, they are submitted to the final test to ensure that they function like a new component. Nozzles are placed through an intrusion honing process, pop-tested and flow metered, for accurate fuel flow and delivery. Solenoids are cleaned and tested carefully, making sure they receive the exact amount of electricity for pulsation.



Typical Cat™, injector after reassembly

By this time, the injector components have all been inspected and qualified to be performing per the specifications set forth.

Testing: We then test EVERY single injector on various and specialized test benches. If an injector does not meet the flow test, delivery performance and calibration valuations, it is disassembled so we can find and correct the faulty component. After an injector passes the test, the test results for that injector are saved for the duration of the warranty.



Testing C7/C9 injectors, and gauging the results below

step: delivery

testing : 10R7225
vehicle : C7
model : C7
adapter no : KO1393

temperature °C	injection µsec	pressure high bar	delivery mm³/str
40 ± 15	2000	180 ± 5	36.5 ± 9.0
25	2100	0	38.8

engine speed rpm: 2100

pressure low bar: 3.0 ± 1.0

pressure low bar: 0.1

delivery test completed...

start cancel

www.maktest.com

Marking: The injectors all obtain a unique laser-marking, engraving the part number and an internal Remanufacturing code, for future reference.



Laser markings of our injectors

2-Warranty Like-New:

Our warranty is virtually the same for any new injector or product purchased from us. We make no distinction between new or remanufactured product warranty since our Newalized™ injectors are just as good as new products. For complete details, please read our warranty policy in our web site; www.dpausa.com.

3-Pricing Advantage

The typical price for a remanufactured injector can be 50% or less than the price of a new injector. If you supply your cores, the savings can be even greater. You can expect competitive prices of our Newalized™ injectors. This provides a distinct pricing advantage without giving up quality or warranty coverage, which is welcome news to most owners of trucks, tractors and all types of construction equipment. A reduction in the running cost of operating the diesel engine can lead to higher margins or more profitability.

4-Core Return: For many, the core return is a scary and difficult proposition. There has always been a stigma with core return. However; these fears are unfounded. We have cores sent to us from all over the world and from very far places such as Australia, Chile, India and South Africa. Because cores have value and can be remanufactured and sold again and again, they maintain a high residual value. When a customer realizes the value of the cores they have, even when considering shipping costs, customers soon realize it is well worth sending in a core to be

remanufactured. If you are located outside of the USA, we will provide you with specific instructions on how to send your cores to minimize unnecessary expenses and delays by US Customs and other authorities. US customers sending in two sets of cores or more can call us to see if they qualify for our [prepaid freight program](#).

5-Why and How Remanufacturing is Growing; The US is one of the world's largest producers, consumers and exporters of remanufactured goods in almost every industry. Companies who refuse to accept this or have their heads stuck in the sand, will be doing a disservice to their customers by ignoring this growing remanufacturing industry. This extends to cylinder heads, turbos, fuel pumps, alternators, starters and many other spare parts. Remanufacturing used to be an alternative to manufacturing, accounting for 20% of our business activities. Now, it makes up 85% of our daily business activities and revenues and continues to grow. Remanufacturing is created to overcome resource limitations and scarcity and is good for the environment as less products end up in landfills. Lucas Electric was one of the first to begin the remanufacturing process in 1940s, which was a direct result of demand created by World War II. These days, many large manufacturers design and build their products with the expectation that the products will be remanufactured, so the material used can be reused within normal production process. This is also known as circular economy, which adds to the value of products made. This in turn secures a sustainable economy and the growing potential is the fruits of such labor. All of us were taught that the product cycle consists of; Manufacturing, Marketing, Peak, Maturity and Volume Decline. We can now easily interject a new concept between Peak and Maturity - ***Remanufacturing***.

What is next for the diesel injector industry?

We believe there will be large growth in trim-coded injectors for optimum fuel delivery and fuel economy. Many Caterpillar injectors now require a trim-code etched on the injectors. This enables the injectors to have a more even-fuel-delivery within an engine, resulting in better fuel consumption. While we have the capability to do this, the end user must have the necessary tools, software, and diagnostic system to use the trim-coded injectors. At this time, this is on a customer required basis.

If you have any questions, concerns and or comments and suggestions, please contact me directly at ara@dpausa.com. I would be glad to help you and listen to your suggestions too.

Diesel Parts of America

