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"The pain of poor quality lasts long after the joy of a cheap price"

No one likes spending hard-earned money, no one. Well, maybe everyone except Madonna; she loves spending money. But the unfortunate reality of life is that the finer things typically cost the most money, and more often than not there's a good reason for it. Case in point, is the DISI fuel pump from Mazda (Hitachi).

Shelling out \$650 for a fuel pump sounds kind of ridiculous until you consider what actually goes into making them. In the past, port fuel injected (PFI) engines used a single electric fuel pump in the gas tank to supply the engine with fuel, but the DISI motors require a heck of a lot more pressure than any electronic pump could offer. Not to mention, the pump must be able to reliably compress fuel to 1800psi through millions of cycles! Producing a device like this is NOT trivial, and requires some of the most state of the art equipment in order to machine, measure, and test the functionality of the fuel pump before gasoline ever runs through it.

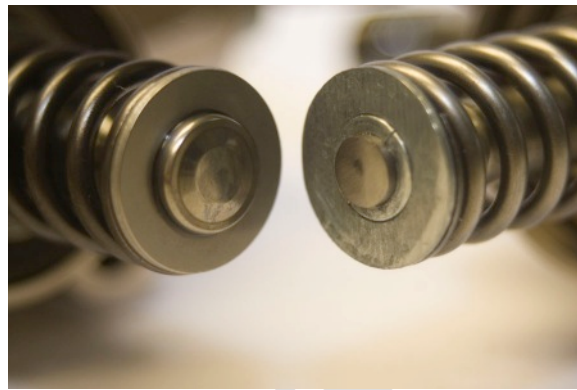
The cp-e™ fuel pumps start out as OEM Hitachi fuel pumps. The pump piston and the barrel are both made from very high carbon steel, which is heat treated and then coated with Diamond Like Carbon (DLC). The DLC coating essentially provides diamond-like properties to whatever it bonds to. In this case, it protects the piston and barrel from wearing over time (remember those /millions/ of cycles we talked about?), and also reduces the friction between the two working surfaces for smoother operation. The DLC process has been around for many years, and is quite reliable. In addition to the piston and barrel, even the spring, seals, and retainer is upgraded. This is to accommodate the larger mass and size of the upgraded piston and barrel.

After the pump is assembled in a clean-room facility they aren't simply shipped out to the customer. Instead, the pumps are run at their operating pressure for 45-minutes in a specialized, computer controlled testing rig. Every other company that offers a high pressure pump replacement skips this step! In addition to properly breaking in the pump, the machine tests the pumping efficiency and flow rate to ensure that the pump is working properly. Excessive leak-down, improper tolerances, or incorrect assembly will be identified during this testing period.

When the pumps are removed the testing rig, they're shipped with a print-out from the machine indicating the pump's actual performance. That way YOU know exactly how your pump is going to perform even before you install it. There is no finger crossing!

So there's a lot that goes into making these pumps. However, if what you just read made your eyes glaze over from an overdose of technical jargon, here are some visual differences between a cp-e™ pump and one of the competitors. They say pictures are worth a thousand words anyhow: The competitor's pump next to a cp-e™ upgraded unit (cp-e™ is on the left, competitor on the right):

Here, you can compare the end of the pump shafts to each other. Notice the difference in finish, and the apparent wear that's taken place in each.



Upon further disassembly, you can see the wear that is taking place inside the pump. Here is a shot of the competitor's spring retainer. You can see that it has completely cracked and deformed under the pressure.



Our competitor claims to have a hardness coating on the internal components, but it is not a DLC coating. Here you can see both the piston and plunger are showing considerable wear almost immediately.



Finally, now that the shaft has been removed from the pump we can get a closer look as to how its 'eroded' over time. The face is no longer flat, and the sides are very sharp.



I think these pictures do a good job at illustrating exactly what happens when people try to cut corners.

And where do you think all that shaved metal goes? Considering the fuel injectors have orifices that are on the order of 1/10,000" it stands to reason that those metal particles could clog the injectors, which is not good!

We offer the cp-e™ pump as a high-capacity, direct replacement to the factory Hitachi unit. Yes, our pump is quite expensive compared to other electric fuel pumps, and the other "Do it yourself" fuel pump internals kits. But at the end of the day, is a precise machine like a cam-driven fuel pump really the place where you want to pinch pennies?

Buy the cp-e™ fuel pump and know that you've purchased the finest high pressure pump on the market so you can drive with confidence.