

Swamp's Diesel Performance

Competition Parts For Your Diesel

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This is the first of 2 articles dealing with the Power stroke fuel injector.

Part 1 is Injector Parts, explaining how the injector is assembled and what function the various parts fulfill. Part 2 is Injector Operation; a detailed explanation of what each part does during the injection cycle.

The injectors are produced to Metric dimensions; so all measurements are given in millimeters. To follow these articles, go to www.dipacodieselparts.com, download 4 small *.pdf files, and then print them out so you can see everything at once. The links are below.

Power stroke Injector Parts 2 Referred to as FI-77 in these articles
Power stroke Plunger and Barrel Group Referred to as FI-69
Power stroke Nozzle Group Referred to as FI-68
Power stroke/HEUI Injector Application Guide Referred to as FI-135

Part 1. HEUI Injector Parts

Start with #FI-77. There are 47 parts in the injector, grouping into several subassemblies. The 4 solenoid screws go through the solenoid, through the spacer, and into the adapter. The 4 assembly screws go through the adapter into the piston and valve body. The piston & valve body screws into the lower body. The 6 dowels keep things aligned during assembly, but do nothing else.

When assembled, the spacer is sandwiched between the solenoid and adapter, and the armature is inside the spacer and is able to move up or down to open or close the poppet valve.

The first O-ring goes inside a groove in the adapter, and the sleeve fits through the poppet shim into the adapter. The O-ring seals between the sleeve and adapter. The adjusting screw goes through the armature and threads into the poppet valve. The shim, spacer and spring are all on the upper half of the poppet. The poppet spring is sandwiched between the poppet valve and the sleeve. When assembled, the armature is on top of the adapter, about half of the poppet is inside the adapter, and half of poppet and spring are below it. The lower part of the poppet fits inside the piston & valve body.

There are 2 O-rings after the piston and valve body; one fits on the outside of the valve body to seal it to the body, the other fits inside to seal the piston. The piston fits into the bottom of the piston & valve body. The retaining ring is a snap ring that goes on the upper end of the plunger; the retaining washer is held by the ring and is a seat for the spring. When assembled, the spring and 2/3 of the plunger are inside the piston, the rest of the plunger fits inside the barrel.

The upper side of the barrel mates to the piston & valve body. The retaining spring girdles the barrel, and holds the check ball in position on a vent hole in the side of the barrel. This valve allows oil or fuel that leaks past the piston or plunger to be vented into the fuel supply, preventing "hydro lock" of the injector. See FI-69 for a close up. The piston is not shown, but would cover everything except the barrel. The check ball and check plate are sandwiched in pockets between the stop plate and the stop.

The ball lets fuel into the barrel, but closes off during injection. Then the plate lets fuel into the spacer sleeve, and from there into the nozzle, but closes off to prevent fuel from flowing back into the barrel from the nozzle when the nozzle needle closes, dampening the needle, and prevents the plunger from drawing fuel out of the nozzle.

The nozzle needle fits inside the nozzle tip; the spacer sleeve fits against the nozzle tip, and the lift spacer sits on top of the needle, with the stop pin on it, going inside the spring. See FI-68 for a detail view. The spacer sleeve is not shown in FI-68. The spacer sleeve mates with the stop on the top end. The stop pin limits the travel of the needle to about. 38mm.