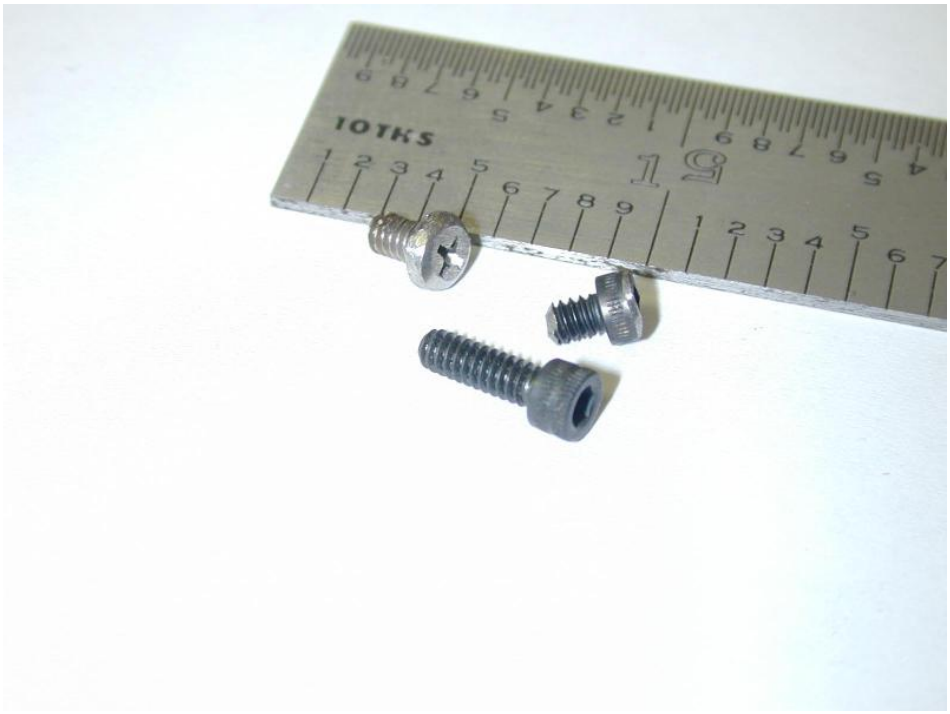
7.3L PowerStroke

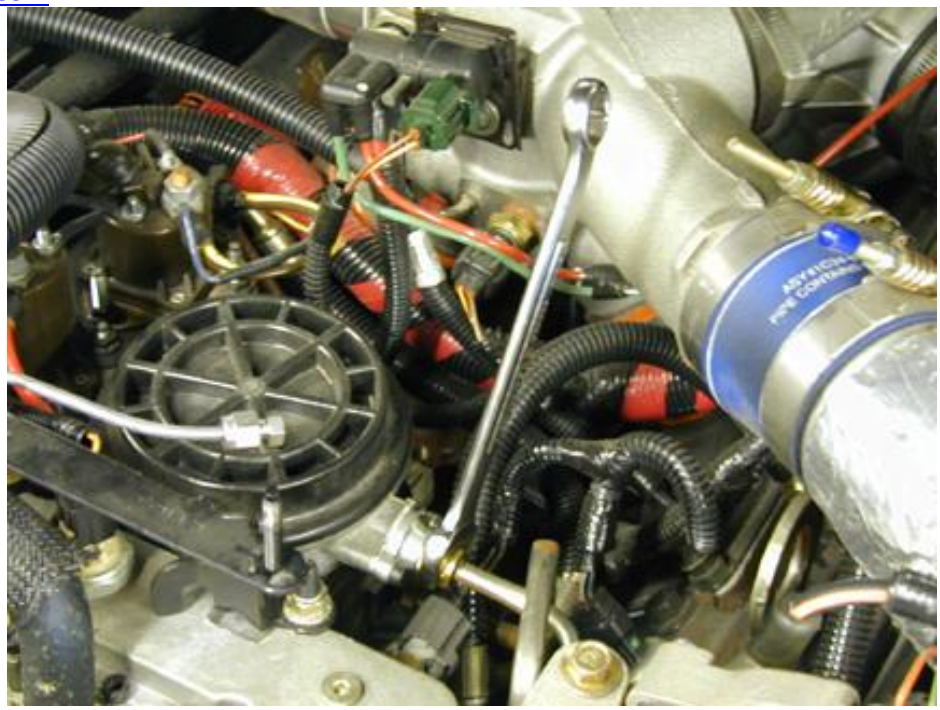
Fuel Pressure Regulator Shims

“the bug that has no cure”



The bottom screw is a 4-40 socket head that is the base material for a shim. At top, I also used a pan head screw, but had to grind down the sides to fit the OE regulator cover. The screw top right has been reworked for 75 PSI. Its head height is 0.075 inch and the threaded section has been ground down to about 3/16 inch so the OE regulator will not bottom out if the filter gets clogged. For reference, a nickel is 0.065 inch thick and 2 dimes 0.090 inch thick if you don't have a caliper

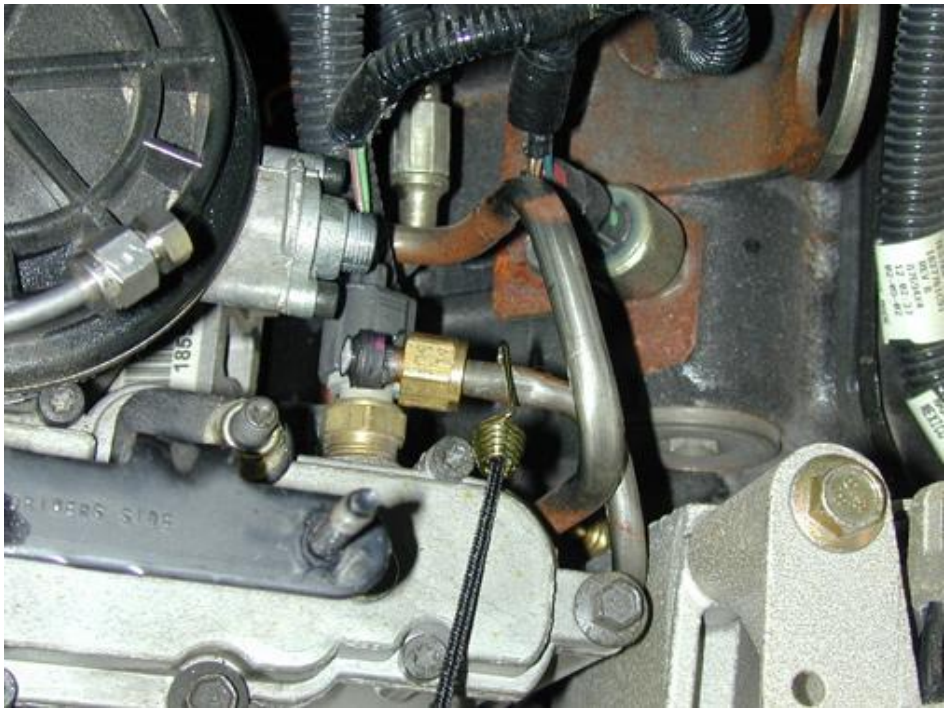
These are all the tools necessary when installing a shim to the OE regulator to increase the fuel pressure. 16mm Open wrench, 13mm socket, 25 Torx bit, and all important bungee cord (metal ends, size unimportant. I also have a 1/4 open end wrench shown, but not necessary. You also need padding because you going to be kneeling on the radiator support killing your knees while praying to the PSD god. - Please don't let me screw this up.



Remove fuel line nut after using the 13mm socket to remove the fuel filter PowerStroke cover, the 16mm wrench is used to loosen the retaining nut from the fuel outlet line. Take note of the position of the original Navistar paint "torque to spec" marking at 12 o'clock.

The rubber sleeves that seals the line tends to attach itself to all the metal parts, so while being removed it can tear and abrade itself. But it still seals when going back together. It helps if there is a little grease or Vaseline on it to prevent this from happening in the future.

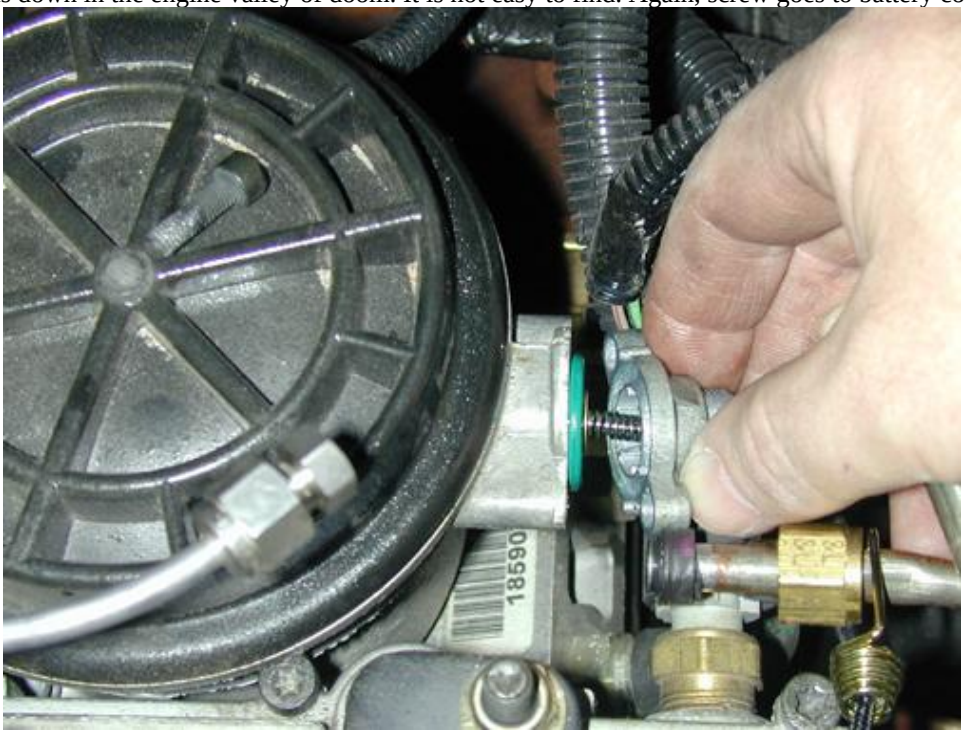
The inlet line needs to be put to the side for access to the regulator cover. I've found it's best to twist the entire line clockwise and get the vertical part of the line next to alternator bracket. Then the entire assembly can be moved towards the HP oil reservoir.



A bungee cord of any size can be used to keep the line away from the cover. The ones with a metal hook end work better then the plastic molded hooks. I've done this way too many times to know that.

First break the screws loose 1 turn with the T25 Torx screwdriver. I've found it best to use my left hand for this while holding myself up with my right hand on the alternator - unless you are taking pictures with your right hand. Then use you head against the hood for balance.

Removing screws: Push on the regulator cover against the housing with my left hand thumb while I undo the screws, usually with my fingers. If they are tight (usually so 1st time), I just turn by them by the shank of the screwdriver. I remove the screw towards the radiator first, and keep in on top of the drivers battery cover. Then the back screw shown here is removed. It's real important not to drop any of these items down in the engine valley of doom. It is not easy to find. Again, screw goes to battery cover for



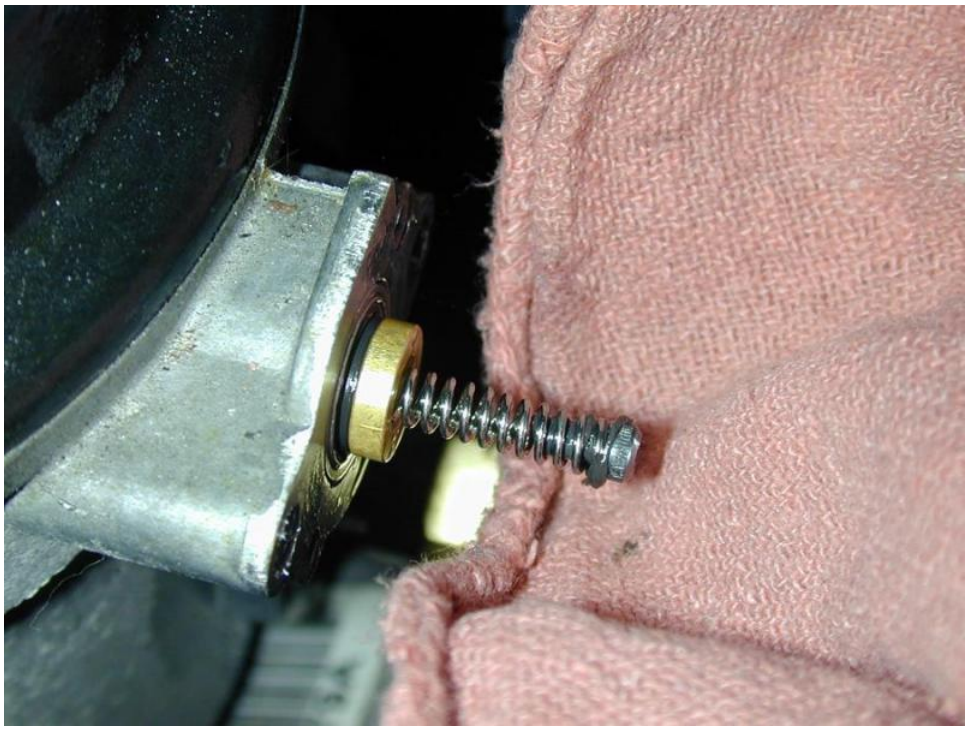
Removing cover: While still keeping the cover tight to the housing with my left thumb, I switch over to my right hand and back the cover off. On this motor the O-Ring stayed with the housing (another part not to drop). There is a lot of spring tension BTW.

Sometimes when getting to this point you may find the spring and / or piston is coming with the cover. It's best to keep it in the housing.

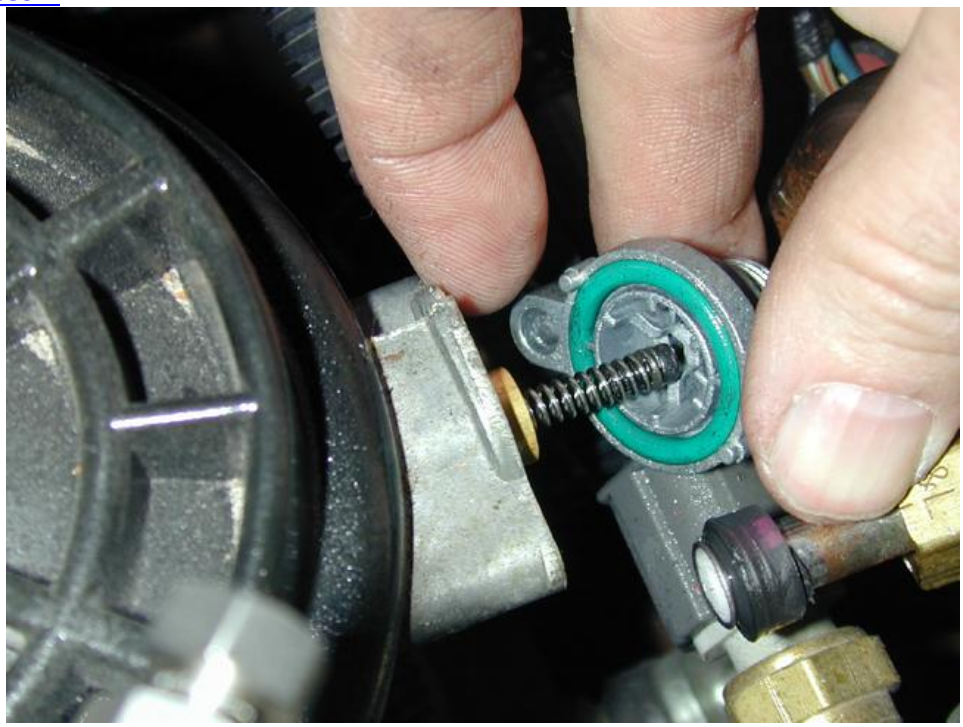
The recess in the center of the cover is where the spring sits. If your putting the spring back in with the shim and do not get it centered into this recess, you'll get about 110 PSI.

Shim (screw) head: Along with grinding down the head of the screw, I also put a slight chamfer on the edges.

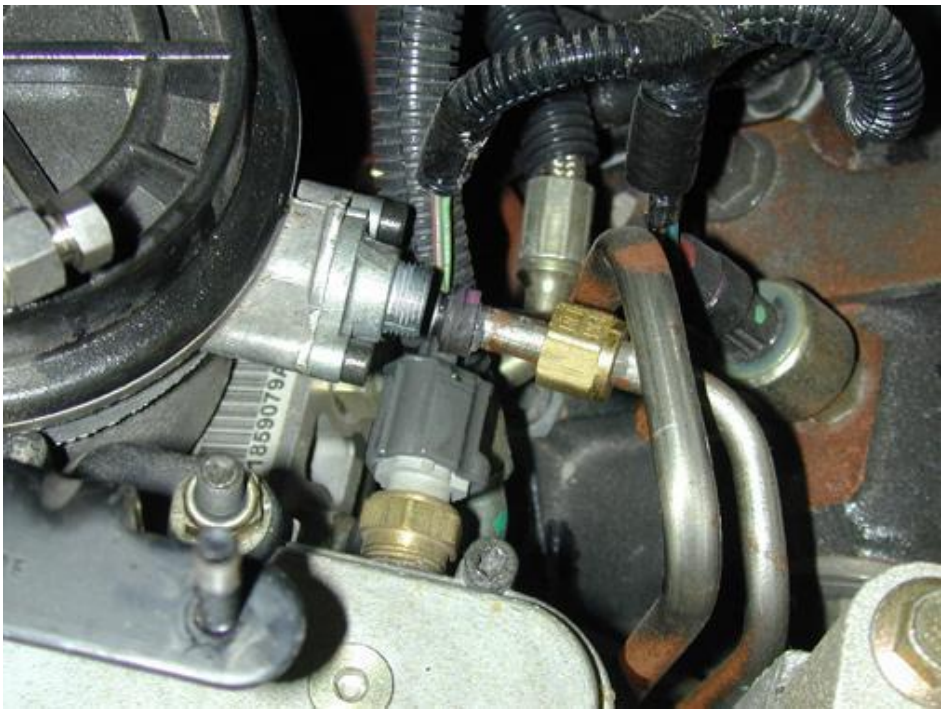
This is how the screw as a shim will fit in the cover. If your using something else besides a 4-40 hex head screw, check it to make sure it bottoms.



Shim installed: In order to make life easy, I put the screw into the center of the spring with some grease on the threads to keep it in place. Any kind of petroleum grease will work (not silicone), even Vaseline. While I used this shop rag for a photo backdrop, spreading one under this area would be a good idea to catch any of the little parts you may drop.



Cover going back: Start to reinstall the cover, making sure the spring and shim are in the recess of the cover. Making sure the cover is proper against the housing with the little nubs in their appropriate holes, repeat the thumb torture test while putting in the screws. Put the back screw in first just with my right hand fingers, and then do the same for the front screw. A slight rock of the cover may help ease the turning of the screw. Then a final tighten with the screwdriver. It doesn't have to be real tight. You're screwing into aluminum and it's easy to strip threads. That's why you hand install them.



Fuel return line nut back on: Not only have I gotten back on the radiator support, but I'm ready to re attach the fuel return line. Again, we will be screwing onto aluminum. After getting the end of the hard line into the cover, I push the nut against the cover. I then rotate the nut in reverse until I feel the click when the threads match up, then I screw the nut on, most of the way by hand. If it takes any force, try rocking the line a little. Otherwise, something's wrong and you do NOT want to mess up here.

You're compressing the rubber sleeve, not tightening the nut to a spec. It will bottom out just at or past the original Navistar paint marking and that's all you need to do.

Final Steps:

Start the motor, the pump will come right up to pressure, and you can now read the idle pressure. When you're ready to disassemble, if re-shimming is necessary, wait for the pressure to drop, open the drain valve, and start from the top.

NOTE: Use our Engine mounted Fuel Pressure Gauge Kit to read Fuel pressure.
Pictures and notes provided by: fmtrvt on webshots.com

Questions: Send email to Support@dfuser.com

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