2010

1991 BMW 750iL

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# REBUILD INJECTORS (BENCH TOP)

Clean and rebuild injectors, bench top approach.

## Bench Top Injector Rebuild

Car: 1991 BMW 750iL, mfg 4/91

***Symptoms:***

Other than the EML light coming on during start-up on cold mornings and a rough idle until the engine warmed up, (intake manifold gaskets), I really didn't have any problems with my injectors.

But since I had the fuel rails out, I took advantage of the opportunity to refresh them. Total cost was under $30 for all 12 and I had all the cleaning materials already on hand.

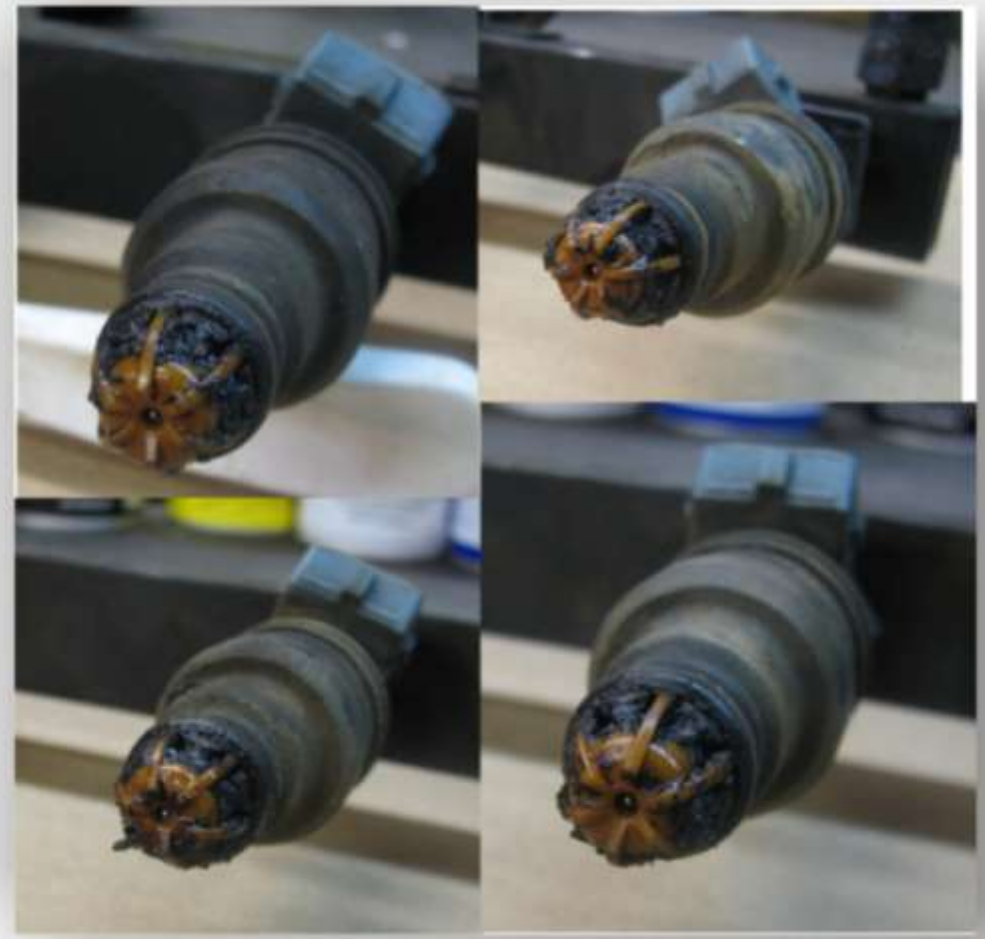
I purchased a rebuild set from Mr. Injector, (http://www.mrinjector.us/)

# Fuel Injector Removal

If this is the first time the injectors have been removed you may find them wedged tightly in their ports. If they can't be removed by rocking and pulling up, you may need to use some additional force as shown below. Go gently, be very careful not to bend or tweak the fuel rails.

# Fuel Injector Removal

Once the fuel lines have been disconnected and the rails removed go ahead and drain the rails (there's probably about 350 ml of gas in them.) The views below show what the injectors look like.



# Fuel Injector Cleaning

Since I planned to replace the pintle caps, O-rings and filters, I started by cutting off the lower O-rings. I didn't want to damage the injector body so I slipped a dental probe under the O-ring and cut against it. See below.

# Removing O-rings

I found it easier to cut off the O-rings with the injectors removed from the rail. First remove the retaining clip, simply push it off in the direction shown.  The O-rings were dried and pretty much hermetically sealed in the rails, I found by giving them a direct blast of brake cleaner they twisted/rocked out much easier. I used a razor blade to cut through the O-rings against the probe below right.

# Remove Pintle Caps

After the O-ring was removed, I used a 5/16" open end wrench to pry off the pintle cap. My Craftsman brand wrench was the perfect thickness to fit the O-ring gap. The pintle popped right off with a little prying.

## Pintle Cap Removed- before cleaning

The view below shows a typical injector with the washer, O-ring and Pintle cap removed.

# Injector Cleaning

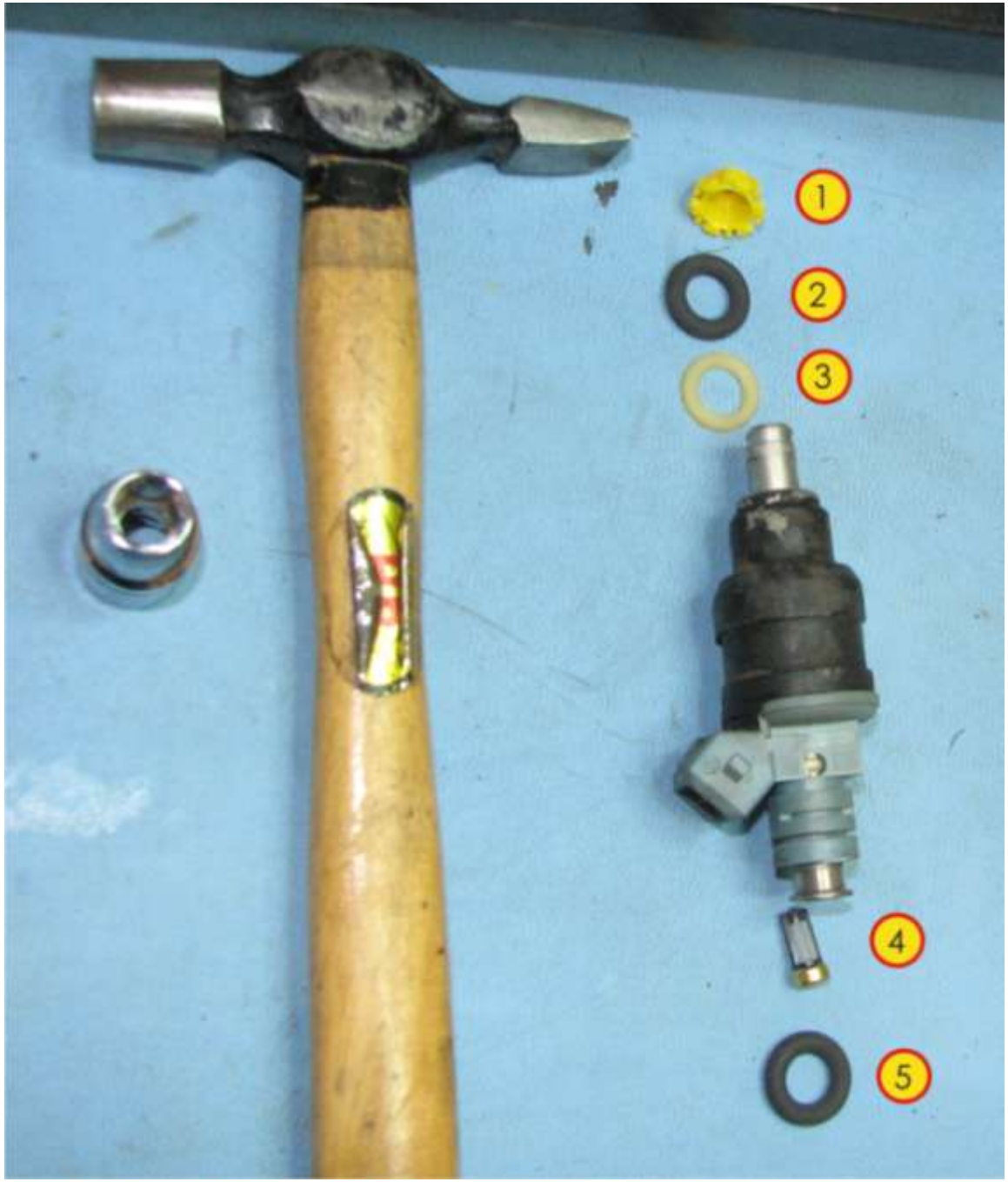
I reinstalled the injectors back into the rails to serve as a convenient cleaning rack that I could suspend over my bench top ultra sonic cleaner. I used 1/3 Purple Power to 2/3 water and brought the level just to the base of the injector bodies. I let them “buzz” for about 15-20 min.

# Injector Cleaning - After

After a “buzz” clean in the ultrasonic cleaner.

# Remove Fuel Filters

Mount a sheet metal screw (I used a pan head) whose thread diameter is a very tight fit with the fuel filter. Screw the injector onto the sheet metal screw so the screw is firmly embedded.  Pull back on the injector, slightly rocking side to side - the injector should slide off the filter.  Note the fuel filter in the view below sitting on the vise and still attached to the screw below.




## Rebuild Kit

The view to the left shows the rebuild kit items and tools required.

1. Pintle Cap
2. Bottom O-ring
3. Washer

Injector Body

4. Fuel Filter
5. Top O-ring

Small Hammer

## Assemble lower injector

Place a new washer, O-ring and pintle cap on the end of the injector and very briefly use a heat gun to heat up the pintle cap.

Place the assembly on a socket as shown and press down on the injector body ensuring the pintle is aligned squarely with the injector.

You'll feel a little resistance and then it'll "snap" onto place.

Next, while holding the injector in one hand, slide the top O-ring on and place a fuel filter into the top of the injector. Using a small hammer, tap the filter in so it is flush with the top of the injector.

When reassembling the injectors into the rails, lightly coat the O-rings with engine oil as well as the ports on the rail. When inserting them you should feel a slight "pop" as the O-ring seats in the rail.

If not installing right away, make sure to keep injectors clean.

# Replace Fuel Hoses

While the rail is out, you might as well replace the fuel hoses. These are 8 mm ID high pressure fuel hose. The hose on the left bank rear rail is approximately 4 1/8" (10.5 centimeters)

The hose on the right bank rear rail is 4 5/8" (9.21 centimeters)