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## DT466 injector replacement procedure

04-28-2019, 10:54 AM #1 Bus Nut  **Join Date:** May 2018  **Location:** the Missouri Ozarks  **Posts:** 255  **Year:** 1997  **Coachwork:** BlueBird  **Chassis:** International 3800  **Engine:** 466e  **Rated Cap:** its Yuge  **DT466e injector removal - how many beer job?**  Looking to remove the injectors from my 97 DT466e this afternoon so that I can get them tested and look at the orings. Thanks to those that have helped me get this far! I have a 6 of the Beast in the fridge. Is this a bigger job than that? Thanks  **04-28-2019, 10:59 AM #2 Skoolie  **Join Date:** Dec 2017  **Location:** Arkansas  **Posts:** 177  **Year:** 2005  **Chassis:** School bus  **Engine:** Cummins  **Figure on 2 - 3 hours**  be sure to drain the hpop oil from the head or like I do crank the motor with the injectors out to blow out the oil that drains into the cylinder when you rem've the injectors or risk hydrostatic lock up and engine damage  **04-29-2019, 10:53 AM #3 Bus Nut  **Join Date:** May 2018  **Location:** the Missouri Ozarks  **Posts:** 255  **Year:** 1997  **Coachwork:** BlueBird  **Chassis:** International 3800  **Engine:** 466e  **Rated Cap:** its Yuge  **Thanks Doe, I ended up putting it off to do some more research. how do i drain that oil is it big round plug on the back beside the head?**  Also, I read something about draining fuel also, not sure how to do that. Attached Images 20190428 165136.jpg (215.8 KB, 20 views)  **04-29-2019, 01:15 PM #4 Skoolie  **Join Date:** Apr 2018  **Posts:** 109  **No experience with the DT466e but they use the same injectors as the T444e so the concept is the same. If you are pulling them out of the motor the Orings are bad. they can't be reused. So order a new kit. I had my injectors rebuilt by jim at rosewood diesel. great prices and quick turnaround time. If you send them to him his prices include new o rings. I had my injectors pulled in about 5 beers... and I have 8 of them in a ford cutaway (no room to move). Edit... If you pull that oil rail plug you will also need a set of orings for that to re install. I dont think you need to take that out to change injectors. Just make sure to purge the motor thru the glow plug holes (NOT the injector holes, then fuel and oil mix and shoot everywhere) before trying to restart.  **04-29-2019, 02:08 PM #5 Skoolie  **Join Date:** Mar 2018  **Location:** Fingerlakes region  **NY Posts:** 204  **Year:** 1999  **Coachwork:** AmTran/Wolflington  **Chassis:** 3800  **Engine:** International DT466E 190HP  **variant Rated Cap:** 72 hp 29500 GVWR  **Quote:** Originally Posted by E450Shorly  **Just make sure to purge the motor thru the glow plug holes (NOT the injector holes, then fuel and oil mix and shoot everywhere) before trying to restart. The DT466E does not have glow plugs so clearing the cylinders must be done through the injector holes instead. I'd probably have a few more than a 6 pack at the ready. Just go slow, take a ton of pictures and you'll be able to do the removal and install. As for releasing fuel pressure in the rail you can poke the Schrader valve on the fuel filter head or (I believe) the one on the back of the cylinder head to let the pressure go. Wear eye protection just in case!  **04-29-2019, 02:20 PM #6 Skoolie  **Join Date:** Apr 2018  **Posts:** 109  **Quote:** Originally Posted by WARGEAR  **The DT466E does not have glow plugs so clearing the cylinders must be done through the injector holes instead. I'd probably have a few more than a 6 pack at the ready. Just go slow, take a ton of pictures and you'll be able to do the removal and install. As for releasing fuel pressure in the rail you can poke the Schrader valve on the fuel filter head or (I believe) the one on the back of the cylinder head to let the pressure go. Wear eye protection just in case! Well you learn something new every day I guess. Thanks!  **04-29-2019, 04:37 PM #7 Skoolie  **Join Date:** Dec 2017  **Location:** Arkansas  **Posts:** 177  **Year:** 2005  **Chassis:** School bus  **Engine:** Cummins  **I've never personally given any thought to releasing fuel pressure as it's so low anyway nor have I bothered with the drain plugs in the Head I've just popped out the injectors and let it all dump into the cylinders just be sure to change the oil when you are done. As for purging yeah it's messy through the injector or the glow plug ports but didn't know that motor didn't have. Glow plugs either but then again I've only had the valve covers off 7.3s on trucks  **05-04-2019, 12:22 PM #8 Bus Nut  **Join Date:** May 2018  **Location:** the Missouri Ozarks  **Posts:** 255  **Year:** 1997  **Coachwork:** BlueBird  **Chassis:** International 3800  **Engine:** 466e  **Rated Cap:** its Yuge  **Thanks fellas!**  Injectors out Really appreciate the help with this fellas, you are great! I was able to disconnect the fuel file from the rail, but couldn't get that oil plug out to let it drain, so will still have to deal with that so it doesn't hydrolock or whatever was mentioned. Here is a pic, on the 5th down, the top o-ring was torn, and on the last one, the bottom o-ring seemed shaved off and the bottom end is black and rougher. So now to send them off. It may be a while before they come back, I can throw a trash bag over the head, but does the hood do a pretty good job of keeping rain out? I have never really checked? Thanks! dave Attached Images 20190504\_114534.jpg (392.6 KB, 34 views)  **05-04-2019, 12:32 PM #9 Skoolie  **Join Date:** Dec 2017  **Location:** Arkansas  **Posts:** 177  **Year:** 2005  **Chassis:** School bus  **Engine:** Cummins  **Quote:** Originally Posted by Mambajack  **Really appreciate the help with this fellas, you are great! I was able to disconnect the fuel file from the rail, but couldn't get that oil plug out to let it drain, so will still have to deal with that so it doesn't hydrolock or whatever was mentioned. Here is a pic, on the 5th down, the top o-ring was torn, and on the last one, the bottom o-ring seemed shaved off and the bottom end is black and rougher. So now to send them off. It may be a while before they come back, I can throw a trashbag over the head, but does the hood do a pretty good job of keeping rain out? I have never really checked? Thanks! dave If you found bad o rings and it were me I would replace the o rings and try starting it before sending them off because usually when you find a problem visually it's solved not always but usually  **05-06-2019, 01:56 PM #10 Skoolie  **Join Date:** Mar 2018  **Location:** Fingerlakes region  **NY Posts:** 204  **Year:** 1999  **Coachwork:** AmTran/Wolflington  **Chassis:** 3800  **Engine:** International DT466E 190HP  **variant Rated Cap:** 72 hp 29500 GVWR  **This is one of those "while you're in there" cases. Good idea sending them out to be rebuilt. Cover the whole head with a big ole trash bag and duct tape it to the motor. Last thing you want is foreign shizzelzizzle getting into the cylinders, oil galleries, head, etc. The right most injector does appear suspect. If you have access to a borescope take a gander inside the cylinders and see how the walls look. Gives you an idea of how long the motor has left before a rebuild is a good idea.  **05-06-2019, 04:44 PM #11 Bus Nut  **Join Date:** May 2018  **Location:** the Missouri Ozarks  **Posts:** 255  **Year:** 1997  **Coachwork:** BlueBird  **Chassis:** International 3800  **Engine:** 466e  **Rated Cap:** its Yuge  **Quote:** Originally Posted by WARGEAR  **you have access to a borescope take a gander inside the cylinders and see how the walls look. Gives you an idea of how long the motor has left before a rebuild is a good idea. I was going to try this, but the head on my cheap scope is too big to fit through the injector hole.  **05-10-2019, 12:31 PM #12 Bus Nut  **Join Date:** Aug 2018  **Location:** Philadelphia  **Posts:** 397  **Year:** 2007  **Coachwork:** IC  **Chassis:** FE  **Bus Engine:** DT-466 7.6L Turbo Diesel  **Rated Cap:** 77  **While you have the head apart you should pull the oil pan and replace the crank bearings(main bearings) \$200. It's a 5 beer job too, but will basically put you with a new motor provided the pistons and sleeves are in good shape.  **05-15-2019, 05:23 PM #13 New Member  **Join Date:** May 2019  **Location:** AZ  **Posts:** 7  **Depends on the beer.  **05-16-2019, 12:58 AM #14 Bus Nut  **Join Date:** Mar 2011  **Location:** Port angeles, Wa  **Posts:** 108  **Year:** 90  **Coachwork:** bluebird  **Chassis:** International  **Engine:** 466e  **Rated Cap:** 72  **Here is a trick I learned years ago. This would apply to any engine like this. Remove the rearmost injector first. This lets all the oil and fuel go into that cylinder. Before you install that injector, get your handy dandy vacuum pump and suck out all the fluid. Make sure you get into the combustion bowl. After full reassembly, roll the engine over by hand a few times or bump the starter over a few. It would be wise to unplug the ECM. Once you sure there is no hydrolock, hook it all up and crank away. Be prepared for lots of smoke at first.  **05-16-2019, 07:01 AM #15 Bus Geek  **Join Date:** May 2009  **Location:** Columbus Ohio  **Posts:** 16,416  **Year:** 1991  **Coachwork:** Carpenter  **Chassis:** International 3800  **Engine:** DTA360 / MT643  **Rated Cap:** 7  **Row Handicap**  I came in late here to this party. . . 1. Injector O-rings should be replaced if you pulled the injectors. . . i consider them one-use parts. . . esp if they have been installed for years. . . rubber O-rings conform to the shape of the space they are occupying. . . the chances that an O-ring is rotated slightly on injector removal is high. . . as is the likelihood one is ever so slightly damaged when being removed. . . esp older rings that have been heated and cooled a bunch. . . I would consider re-using them if you simply Bumped an injector install and needed to pull it soon after or has been installed. . . you are dealing with 3000 PSI on the HPOP side. . . secondly, you need the oil to be out of the cylinders. . . fuel will likely run by the ring-gap and into the pan but oil will stay and will ruin things quickly. . . the HPOP is mechanical, and even at minimum the IPR will command flow. . . so cranking the engine by starter will pump oil into the cylinders with the injectors out. . . a while before they come back, I can throw a trash bag over the head, but does the hood do a pretty good job of keeping rain out? I have never really checked? Thanks! dave If you found bad o rings and it were me I would replace the o rings and try starting it before sending them off because usually when you find a problem visually it's solved not always but usually  **05-16-2019, 07:36 AM #20 Bus Geek  **Join Date:** May 2009  **Location:** Columbus Ohio  **Posts:** 16,416  **Year:** 1991  **Coachwork:** Carpenter  **Chassis:** International 3800  **Engine:** DTA360 / MT643  **Rated Cap:** 7  **Row Handicap**  that big nut is the fan clutch. . . its a 2" wrench. . . and if the belt doesnt slip you can turn there. . . I turn my engines after they are all back together as there is no sorry other fuel or oil pump sending liquids back down into the cylinders. . . turning slowly means you will squeeze the liquid out without damage. . . its likely to see more liquid in one cylinder than others as the first injector you yanked out will cause the rail itself to drain into that hole. . . and then the next most. . . would be the one that is physically the lowest in relation to gravity. . . I rotate mine the hard way which is underneath with a pry bar or big screw driver in the flywheel from the inspection hole. . . yeah its the hard way. . . i painted a mark so i k new when i made a rotation. . . it was easier for me to lay on a creeper and take my time than it was to try to yrand muscle the engine. . . Muscles and body weight to throw at an engine arent something i have much of. . . I should be glad the next one i do is a 444E with an accessory hole. . . I'd do it with the injectors out until each piston hits TDC (top dead center) and then try and use your syringe method to remove any fluid that have gotten into each cylinder.  **05-21-2019, 07:41 PM #18 Bus Nut  **Join Date:** May 2018  **Location:** the Missouri Ozarks  **Posts:** 255  **Year:** 1997  **Coachwork:** BlueBird  **Chassis:** International 3800  **Engine:** 466e  **Rated Cap:** its Yuge  **Getting closer, got the injectors put in last night, but am going to need to get . . . a smaller torque wrench to snug them down with. Think i am going to stick with the current harness for now. Seems in good shape, and it looks like the clips go way up in there so i don't think there will be an issue with that one connector. Once I get everything back together, what is the trick to getting everything primed? I also have new fuel filters that i got in Thanks, dave  **05-24-2019, 12:02 PM #22 Skoolie  **Join Date:** Dec 2017  **Location:** Arkansas  **Posts:** 177  **Year:** 2005  **Chassis:** School bus  **Engine:** Cummins  **Quote:** Originally Posted by Mambajack  **Getting closer, got the injectors put in last night, but am going to need to get . . . a smaller torque wrench to snug them down with. Think i am going to stick with the current harness for now. Seems in good shape, and it looks like the clips go way up in there so i don't think there will be an issue with that one connector. Once I get everything back together, what is the trick to getting everything primed? I also have new fuel filters that i got in Thanks, dave Usually just crank it till it starts. . . keep an 1 on that connection they can send you on a lot of goose chases  **05-24-2019, 12:56 PM #23 Bus Geek  **Join Date:** May 2009  **Location:** Columbus Ohio  **Posts:** 16,416  **Year:** 1991  **Coachwork:** Carpenter  **Chassis:** International 3800  **Engine:** DTA360 / MT643  **Rated Cap:** 7  **Row Handicap**  I think your year of 466 does have a fuel primer pump to at least pump the rail full. (a little plunger pump on the left side of the engine crank for 10 seconds wait for 20 seconds, crank for 10. . . etc. . . have a battery charger on the batteries. . . it wont start with low batteries. . . Christopher  **05-24-2019, 01:06 PM #24 Bus Nut  **Join Date:** Aug 2018  **Location:** Philadelphia  **Posts:** 397  **Year:** 2007  **Coachwork:** IC  **Chassis:** FE  **Bus Engine:** DT-466 7.6L Turbo Diesel  **Rated Cap:** 77  **Some dt466 have a screw on filter, the ones with the green canister have a prime plunger at the bottom of the canister you turn to the left and pump. I think it just primes the filter canister though, not sure about the rail.  **05-24-2019, 01:18 PM #25 Bus Geek  **Join Date:** May 2014  **Location:** West Ohio  **Posts:** 2,800  **Year:** 1984  **Coachwork:** Bluebird  **Chassis:** International 1753  **Engine:** 6.9  **International Rated Cap:** 65  **It should prime the whole system up to the fuel pump. Once the plunger starts to get hard to push, lock it in place and crank. You'll have to try cranking a few times before the fuel and oil will get to the injectors. Once it does start, it will run rough until the air is all bled from the system. Replace the harness, in your picture, the connector between your middle and pointer finger looks to be missing a terminal.  **05-27-2019, 09:52 AM #26 Bus Nut  **Join Date:** May 2018  **Location:** the Missouri Ozarks  **Posts:** 255  **Year:** 1997  **Coachwork:** BlueBird  **Chassis:** International 3800  **Engine:** 466e  **Rated Cap:** its Yuge  **Appreciate the advice guys, the clip on the wiring harness that seemed to be gone was actually just pushed back a little bit. I was able to push it back forward to where it actually went and made sure the wire didn't slip when i plugged it into the injector. Think i got it all put back together yesterday, but the batteries were too low to turn the engine over so let them charge overnight. Fresh oil, oil and fuel filters changed. Filled with liquid through the outer holes before installing. Also, I found the fuel primer pump as mentioned and pushed up and down like 100 times, at that point the line going into the fuel rail wasn't quite tight and loosening it a bit had fuel there. Tightened it back up. Briefly tried to start this morning, no luck, tried 2x for prob 10 seconds each. Did show an error code 108 but haven't been able to see what that is. . . yet. Will try again tonight.  **05-27-2019, 10:24 AM #27 Bus Geek  **Join Date:** May 2009  **Location:** Columbus Ohio  **Posts:** 16,416  **Year:** 1991  **Coachwork:** Carpenter  **Chassis:** International 3800  **Engine:** DTA360 / MT643  **Rated Cap:** 7  **Row Handicap**  code 108 or the PID for the code is 108? I dont have a code 108 in my book. PID 108 relates to the Baro sensor. (maybe got unplugged by accident? although the sensor is supposed to be under the dash somewhere according to the book).  **05-27-2019, 10:35 AM #28 Skoolie  **Join Date:** Dec 2017  **Location:** Arkansas  **Posts:** 177  **Year:** 2005  **Chassis:** School bus  **Engine:** Cummins  **Quote:** Originally Posted by Mambajack  **Appreciate the advice guys, the clip on the wiring harness that seemed to be gone was actually just pushed back a little bit. I was able to push it back forward to where it actually went and made sure the wire didn't slip when i plugged it into the injector. Think i got it all put back together yesterday, but the batteries were too low to turn the engine over so let them charge overnight. Fresh oil, oil and fuel filters changed. Filled with liquid through the outer holes before installing. Also, I found the fuel primer pump as mentioned and pushed up and down like 100 times, at that point the line going into the fuel rail wasn't quite tight and loosening it a bit had fuel there. Tightened it back up. Briefly tried to start this morning, no luck, tried 2x for prob 10 seconds each. Did show an error code 108 but haven't been able to see what that is. . . yet. Will try again tonight. What is your icp at cranking speed ?  **05-27-2019, 12:47 PM #29 Bus Geek  **Join Date:** Dec 2017  **Location:** Dawsonville, Ga.  **Posts:** 10,471  **Year:** 1999  **Coachwork:** Genesis  **Chassis:** International  **Engine:** DT466/3060  **Rated Cap:** 77  **I couldn't get the pump to ever build any pressure, so I replaced it and it still does nothing, only the resistance of the spring in it. Pumped a couple hundred times, nothing. Hopefully the tech coming tomorrow will have her up and running. Mine sits right on top and behind the fuel filter. Still trying to find out where the opening is on my airfilter housing so i can try some starter fluid. Attached Images 20190527\_134134.jpg (104.9 KB, 5 views)  **05-27-2019, 12:55 PM #30 Bus Geek  **Join Date:** May 2009  **Location:** Columbus Ohio  **Posts:** 16,416  **Year:** 1991  **Coachwork:** Carpenter  **Chassis:** International 3800  **Engine:** DTA360 / MT643  **Rated Cap:** 7  **Row Handicap**  I had to positively pressurize my DT360 system once. . . couldnt get the lift pump to ever pull fuel no matter how much i cranked and stabbed that pump. . . I took the line off where it came from the tank and into the water separator and pushed fuel from ma job with a hand pump and stabbed that little pump, and finally got it to start on its own. once I hooked back up to the tank all was good. . . not sure why sometimes that hand pump seems to do zero.  **05-27-2019, 01:07 PM #31 Bus Geek  **Join Date:** May 2009  **Location:** Dawsonville, Ga.  **Posts:** 10,471  **Year:** 1999  **Coachwork:** Genesis  **Chassis:** International  **Engine:** DT466/3060  **Rated Cap:** 77  **The mechanic said they pressurize the tank sometimes to help, by putting a rag over the opening and blowing air into the tank. Sorry, but I just don't see how that method would build more than a lb or 2 trying to pressurize through a rag. Would it help to drill a hole in the cap and mount a Schrader valve and pressurize it to 4-5lbs  **05-27-2019, 01:16 PM #32 Bus Geek  **Join Date:** May 2009  **Location:** Columbus Ohio  **Posts:** 16,416  **Year:** 1991  **Coachwork:** Carpenter  **Chassis:** International 3800  **Engine:** DTA360 / MT643  **Rated Cap:** 7  **Row Handicap**  I had to positively pressurize my DT360 system once. . . couldnt get the lift pump to ever pull fuel no matter how much i cranked and stabbed that pump. . . 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