997 Clutch Slave to GT2

This is how I built my own gt2 slave conversion kit, cost and any tips I found, I would say this mod on a level of 1-10, 10 being most difficult I would rate it a 4 but an 8 in accessibility and messy.
It took me about 7-8 hours by myself on my back with the car on 2 jack stands, with basic hand tools.
Parts needed:

GT2 mod bracket, dgreen78 on this web site sells them ($200.00) worked perfectly
4 allen head mounting bolts M10-1.5x45mm (size-threading x length) ($3.00)
3 small adjustable hose clamps 5/8th diameter ($1.50)
2 metal bolts (plugs) will explain ($0.80)
GT2 slave part number 996 116 237 90 ($125.25)
GT2 master part number 996 423 171 06 ($64.50)
GT2 assist spring part number 996 423 081 13 ($57.75)
Brake fluid reservoir cap part number 996 355 119 01 ($4.00)
GT2 hydraulic hose 996 423 377 90 ($115.25) this is optional build your own for $25-$30 I will explain below.

The evoms instructions for this mod (that can easily be found on this website) were helpful but very vague and missing some helpful points, my additions should help anyone figure this out way faster. But print them out as they will come in handy and all threads I mention in this post as you will need to refer to them.
I started with the removal of the power steering pump as it is super messy. Cut and past this into the 996 turbo/Gt2 search this forum tab. "DIY- PS Pump and Reservoir change"(without quotations of course) it was written adam669, thank you for this post is was quite helpful. Buy a fuel a/c line removal tool or use a door panel puller to help in removing the red quick connect couplers on the pump and slave. Pic of tool below
Use the evoms instructions to remove the drive coupler inside the pump after you have it removed the tank and power steering pump (its easy and the instructions from evoms were quite good) that stops the fluid from running to the turbos oem slave. Reinstall back into the car.
Next jack the rear of the car up as high as you feel comfortable (the higher the easier for access) but be careful not to hit the nose of the car on the ground and to put your jack stands in appropriate spots to still allow access to the slave without getting in your way or pinching any lines etc.
Remove the slave following this link to instructions http://www.renntech.org/forums/index.php?/tutorials/article/97-clutch-slave-cylinder-and-accumulator-replacement/
(sorry mods its from another website but I feel this post is good for the community and is necessary for this thread). Thank you jpflip super helpful. My tips for this, use an oil filter strap wrench to remove the accumulator, we all have one for removing standard style oil filters and is way better than destroying a perfectly good wrench to access the top bolt. And use a large ziplock bag around the accumulator when removing it to assist in catching any residual power

steering fluid. And don't reinstall the drive shaft or let the coolant hose go back into place yet for space while installing the gt2 slave.

Before you discard the oem slave remove the push rod you will reuse it on the gt2 slave. And keep the most forward line that attached to the green hard line you will reuse part of it.

Now for plugging the two most aft lines. Evoms cnc's their own threaded plugs as it is impossible to find I tried but it is not necessary to use there method and frankly mine is easier. To find where evoms wants you to connect to you need to follow the two lines way back towards the engine compartment and if you look hard enough you will find it but access is really difficult. Heres my method, the line with the quick connect on it cut the rubber hose at the end of the plastic connector, so as to save as much of the rubber hose as possible and then cut a second piece off about 2 ½ inches long. Take that "second piece" and find a two bolts that you can thread into it snugly, (doesn't matter if their metric, standard, smooth, brass or bare metal as long as you can thread it in) I had a bunch of left over bolts from previous projects over the years and just used 2 that I could thread into the rubber hose line. Install one bolt in the cut line under the car and use one small adjustable hose clamp to help it stay their. The "second piece" of rubber hose (2 ½ inch) that you cut off install the other bolt and TWO adjustable hose clamps, tighten one hose clamp over the bolt crawl under the car and push it on the hard line over the double flare end tighten other hose clamp to stay in place and ziptie the lines off to the side and out of your way. See pic below.

These two lines are completely dead, as no pressure flows through them because you removed the drive coupler in the power steering pump. All your doing is stopping any residual drips and dirt from getting into the lines.

Ok so now you have removed the power steering pump pulled the drive coupler in it, reinstalled the pump capped the two most aft lines on the oem slave and removed it as well as the accumulator. Your almost there.

Next take the green hard line under the car (most forward line on the oem slave) and connect a rubber hose to it in helping to drain the old pentosin out and to flush the new dot 4 brake fluid through. This line leads directly to your front reservoir. Here is a tip that helped out greatly with this step. Buy a motive power bleeder, their about $65 and really handy for this. Attach it to your front reservoir and pump AIR ONLY through it to evacuate all the old pentosin out then refill the front reservoir with dot 4 brake fluid and push that through AIR ONLY about 4 times to remove any left over pentosin. You could also just pump the clutch about a billion times trust me its money well spent.

Now that the line is clean and dry DO NOT REFILL YOUR FRONT RESERVOIR YET LEAVE IT EMPTY you need to install the new GT2 master and assist spring. Remove your drivers side floor mat and place a towel down to help catch any remaining dot 4 fluid but in my case there was none thanks to the power bleeder. Remove the a/c heater duct (just pulls off) remove the two bolts holding the oem master on and pull the two clips holding on the hoses. The pin holding the push rod on to the clutch pedal is simply held in place with a brass clip remove this also. The assist spring is just clipped in place both at the pedal and at its mount, just pull it out.

Here is a tip the gt2 assist spring has a cotter pin on the back of it which needs to be removed after install, do yourself a favour and get the cotter pin close to coming out before you install it and make sure the eye of it is pointed towards the ground upon install. It makes it easier to get a set of pliers on it to remove the cotter pin. Next install the gt2 masters two rubber lines by simply

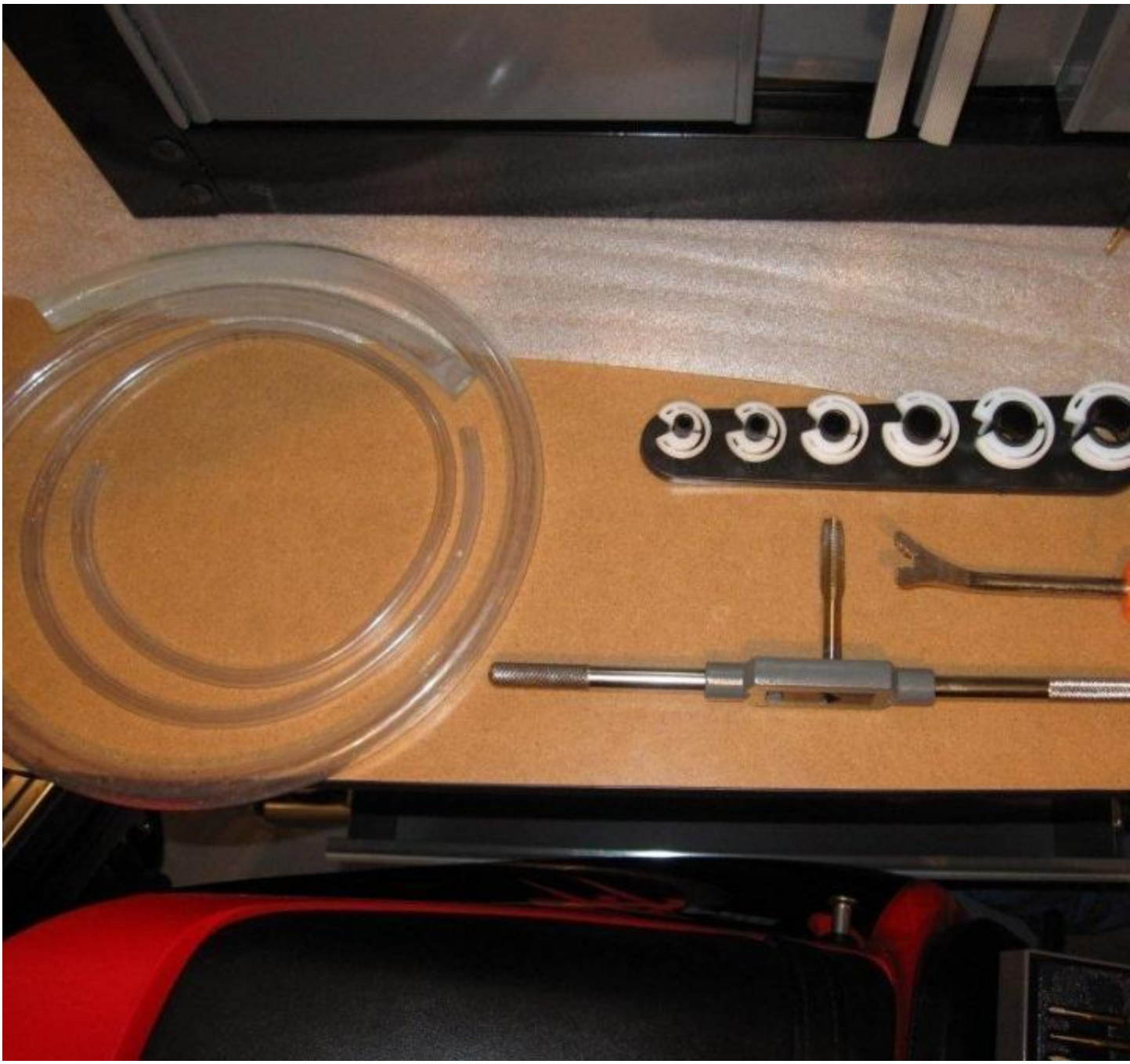
clicking them on with the clips, reinstall the two bolts and attach to the clutch pedal same way you removed it.
Now to the hydraulic hose that connects the hard green line under the car to the new gt2 slave. If you decide to buy the gt2 hydraulic hose the line is to short and will need to be extended. So build your own for $25 bucks, here's how. Take your old hydraulic line from the oem turbos slave and your new gt2 slave to your local hydraulic shop, tell them you need a 16 inch dot 4 resilient line that's 3/8 inch inner diameter and ½ inch outer diameter the part number is 100r5 #4. If they don't have this you can use 151-05 which is ¼ inch inner 5/8 outer diameter slightly larger but works just fine and both lines can withstand 3000 pounds of pressure . See pic below. Ask them to move the large two piece coupler off the old turbo line (connector on the left side of hose pic) and install on the new 16 inch line, and get them to find a connector that matches the new gt2 slave threading. Total length of hose and connector should be about 20 inches.
You just saved $90 bucks! But if you don't want the hassle of them not having the one connector buy the gt2 hydraulic line and get them to move both connectors to the new 16 inch hose.(**remember total length with connectors is around 20 inches**)
Next you need to tap the new gt2 slave as they don't come threaded. Use a M 10x1.5 tap and the tip is use a vise to hold the slave still so you thread it straight.
Attach the slave to the bracket with 2 allen head m10-1.5x45mm and attach the new 20 inch hydraulic line to the slave loosen the bleed screw and attach a rubber line to help with bleeding. Remove the gt2 slave push rod (just pull it out) and reuse your old turbos slave push rod as they are two different lengths. You will notice that it doesn't want to really stay in there well but try your best to get it to stay, I found this next step the most trickest but still very doable.
Ok here goes, lay under the car so you can "hug" the transmission with both arms, with your head pointed towards the front of the car use your right hand and hold the gt2 bracket with slave and the hydraulic line attached, the bleed screw loosened with bleed helper hose attached and two M10-1.5x45mm allen head mounting bolts to attach the bracket to the transmission. Now here's where it gets tricky, while holding this you need to hold the push rod between your fingers like your holding a cigarette as you push it into the bell housing. Keep it as straight as you can and make sure it goes into the receiver cup on the transmissions through out bearing. (I reached my fingers inside first so I could sense what I was going to hit as you are doing this blind) you will know if you hit it as there will be resistance. Now with your left hand keep pressure on the slave so it doesn't pop out and with your now freed up right hand thread the two bolts onto the transmission to hold the whole thing in place.
Take your time, this step is the most difficult and you do the whole thing blind, and have the possibility of having the push rod fall out of the slave and into the bell housing so be careful.
Got that done, good. Attach the hydraulic hose to the green hard line, go back to the front of the car and add dot 4 fluid to the reservoir, attach the power bleeder and slowly push the fluid through, but not allowing the reservoir to get empty before topping it up. It takes about 4 top ups before you will see the fluid coming out of the bleed screw helper hose. Remember you loosened it before installation of the bracket, now before the front reservoir goes dry quickly take a short 6mm wrench and tighten the bleed screw and remove bleeder helper hose.
Put your new dot 4 brake cap on the reservoir get in the car and pump the clutch to build pressure and to make sure it works. (it will☺) Top up your front reservoir. Let your coolant hose go into its original position and attach the coolant hose bracket, and reinstall your drive shaft. Jack the car down and enjoy.
The kits sell for $1000 you built your own kit for $481.80 if you build your own hose. Hope this

helps, and anybody can do this with these instructions and save a lot of cash in the process. Don’t be afraid, go for it I did.
And how about some rep points if you found this informative.
Thanks guys for your posts that made this one possible.
First pic is plugs, second is new hose, third is close up of hose, fourth is helper bleeder hose, tap, a/c fuel line tool for quick connectors or use panel pulley (orange handle) both work
Attached Images



0R5/J1402AII DOT FMVSS 106 ITALY
PULSAR 151 -05


PULSAR 151 -05 1/4" 3000



I just completed this conversion. It was a PITA, but this write-up was a big help. Here are a couple things I found.
-A 6-8 hour time window is required with moderate mechanical ability. This isn't a brake job or fluid change.

-This may be a good time to replace the serpentine belt. Mine got a good coating of pentosin when I pulled the PS pump, so I wasn't going to take the chance.
-I forgot to order Pentosin for the power steering and it is hard to find in town.
-When removing the power steering pump, unbolt everything, then lift and rotate the pump and res counter clockwise to get to the 10mm bolt in the back. It holds the res to the pump and I wasn't able to remove the pump and res together due to the A/C lines.
-When swapping the master cylinder, I found it easier to disconnect the two lines from the front of the car by the reservoir. It helps keep fluid out of the cab.
-I used this as an opportunity to install the GBox 2nd gear detent. I hate jacking up cars, so I tried to do as much as possible while it was up in the air.

A few other notes during the conversion:
- I did not take the lower brace off. Plenty of room with it in place. One less thing to put back.
- Getting to the location where the EVOMS kit provides the plugs is almost impossible. I also worried about leaks and getting to them in time. So, for the original flex hose, I cut it on one of the straight sections and used a bolt. No leaks. I left the hard line in place and in stock condition. I made a M12 brass plug, threaded right into the hardline fitting and worked like a charm. Zip tied it all for additional support to the clip right above it.

So I'm having this GT2 clutch slave conversion done, but my installer saw some notable issues with the shaft for the clutch slave cylinder. Since the OEM one is held in with a boot, and the GT2 one is held in with a stop machined at the end, he said it was silly to use the OEM slave cylinder shaft that could and would simply fall off into the bellhousing (either during installation, or during future servicing). Plus it doesn't even sit very well when it's shoved into the new GT2 slave cylinder. For comparison, the rod on the left is the OEM slave cylinder shaft and the rod on the right is GT2 one. Both have already been sectioned...

He basically sectioned the two pieces with a lathe and created one (via tig welding) that would not only stay in the new GT2 slave cylinder, but would also point straight out for easier installation alignment..... the best of all worlds! The overall length is the same as the OEM slave cylinder rod. Here is the final product:

PM me if anyone else is doing this mod right now or plans to and might want this done, I'm sure he can do it and send the parts back with a pretty quick turnaround time. Can't wait to try out the upgraded GT2 conversion!

I kept the stock boot on the shaft and used a two pieces of electrical tape to hold the boot to the new slave. That way I didn't have to hold the shaft. If I ever remove it, I can still hold the boot. The welded shaft is a good addition. I was going to make a new shaft on the lathe but got lazy.

-Gt2 Slave thread size is **12x1.0** (bubble fitting or an fitting)
this "hunt for the right size " is useless information.

-double check with your local hydraulic places on making this line yourself. I encountered huge problems with quite a few places, that couldnt or wouldnt make me a line. They either didnt have appropriate tubing, the right fittings or couldnt cut the old line off and re crimp it. Or they just wouldnt. Becareful mentioning anything to do with the clutch. YMMV. being vague helps.

At the end of the day you can find a premade line for this specific mod around $100 from many vendors. I would just do this route. It will come to your house. No need to run around to potentially save yourself $40... in the end I ended up using the stock gt2 line with an extension piece I had made. Cost a lot of time and money. (And yes the gt2 line by itself IS too short)

Gbox also stocks the weird voss fitting.

It was one the biggest PITA things Ive had the pleasure of doing and Im not a newb to wrenching.

TAKE THE GOD DAMN STARTER OUT Why this isnt recommended by OP I dont know. It just makes things harder for yourself. Not only does taking the starter out free up space for your arm/hand to help you from that side. It also exposes the inspection cover/hole where you can actually see(with a mirror or taking cell phone pictures) wtf is going on (help guide the rod directly into the cup) and see whether or not you were successful in getting the rod into the cupped section. None of this close your eyes and pray malarkey. Initially I did not do this. I wasnt satisfied I had gotten it done correctly so I went back to double check. good thing I did. It had not taken and I had to redo it. Thank goodness I checked!

The starter comes out so easily I dont know why you wouldnt take the 5 minutes to remove it.

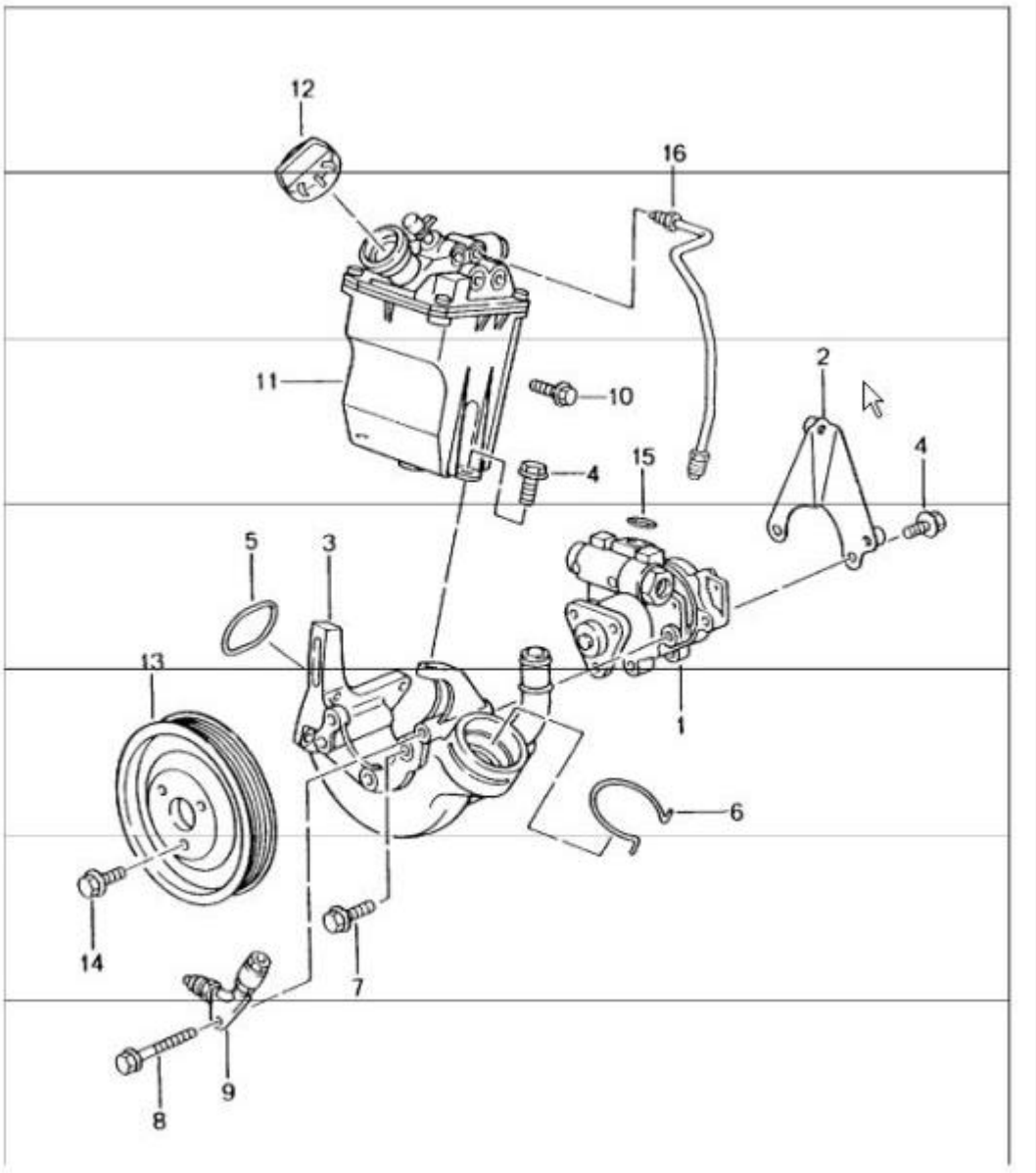
I also removed the drivers seat to give me more room. It was still tight as hell working there. If you are over 5'7 and over 140lbs. Forget trying it with the seat installed.

Also the master's are identical(the one you removed compared to the new one). you could likely flush your old master and use it. The seals would be fine. I still used a new one but it was just something I noticed.

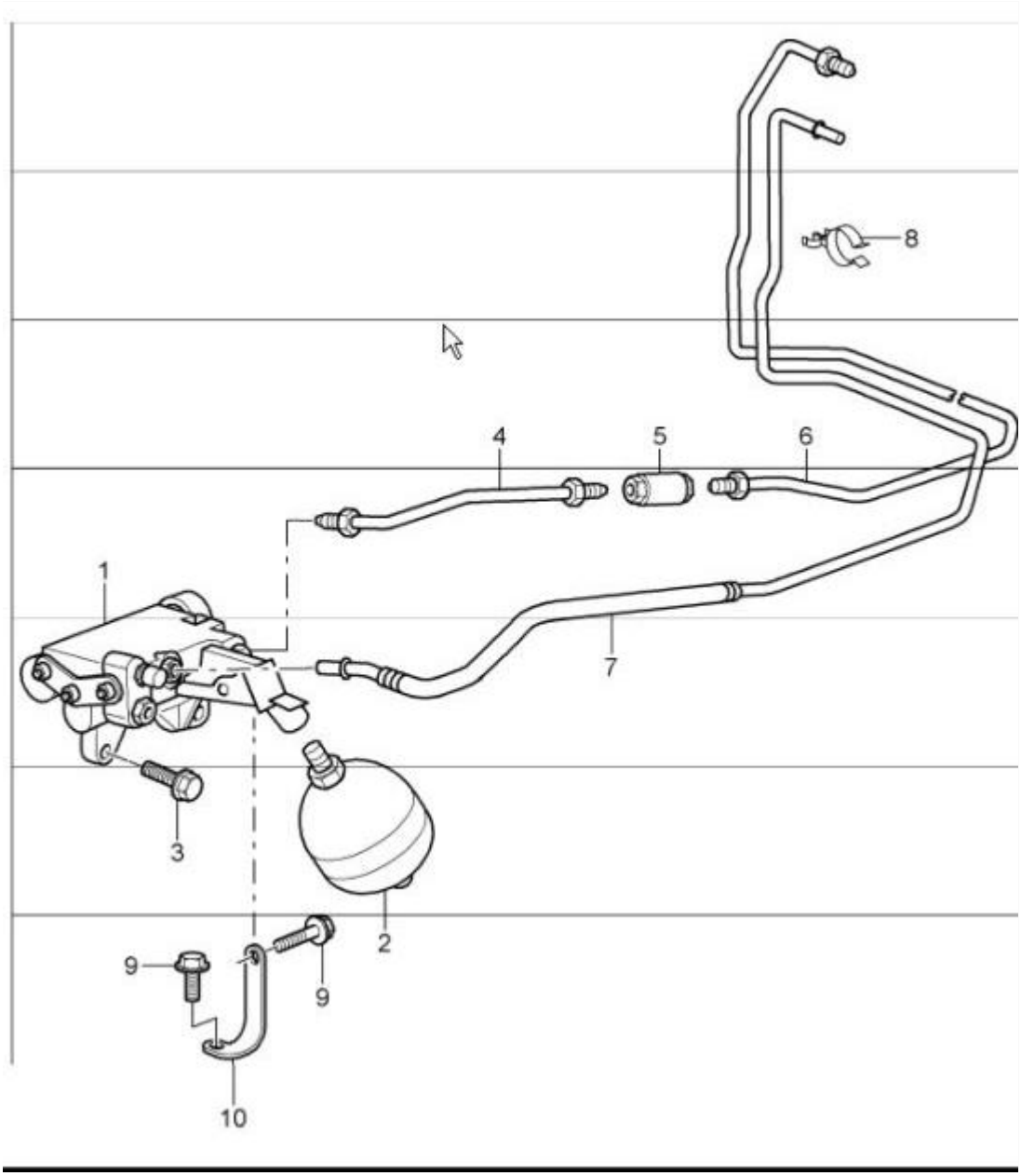
I used dgreens bracket and rod(thanks again!) His rod was sized between the stock gt2 rod and the OEM turbo rod. stock clutch set up.

Regarding which line is which on the pump side, I'm using these diagrams and assuming it's the rear-most line that feeds the clutch. The diagram for the steering circuit makes it look like the one to the front (#16) just dives straight down where the clutch diagram shows a longer line (#6) snaking toward the front of the car toward the slave.

Steering circuit:



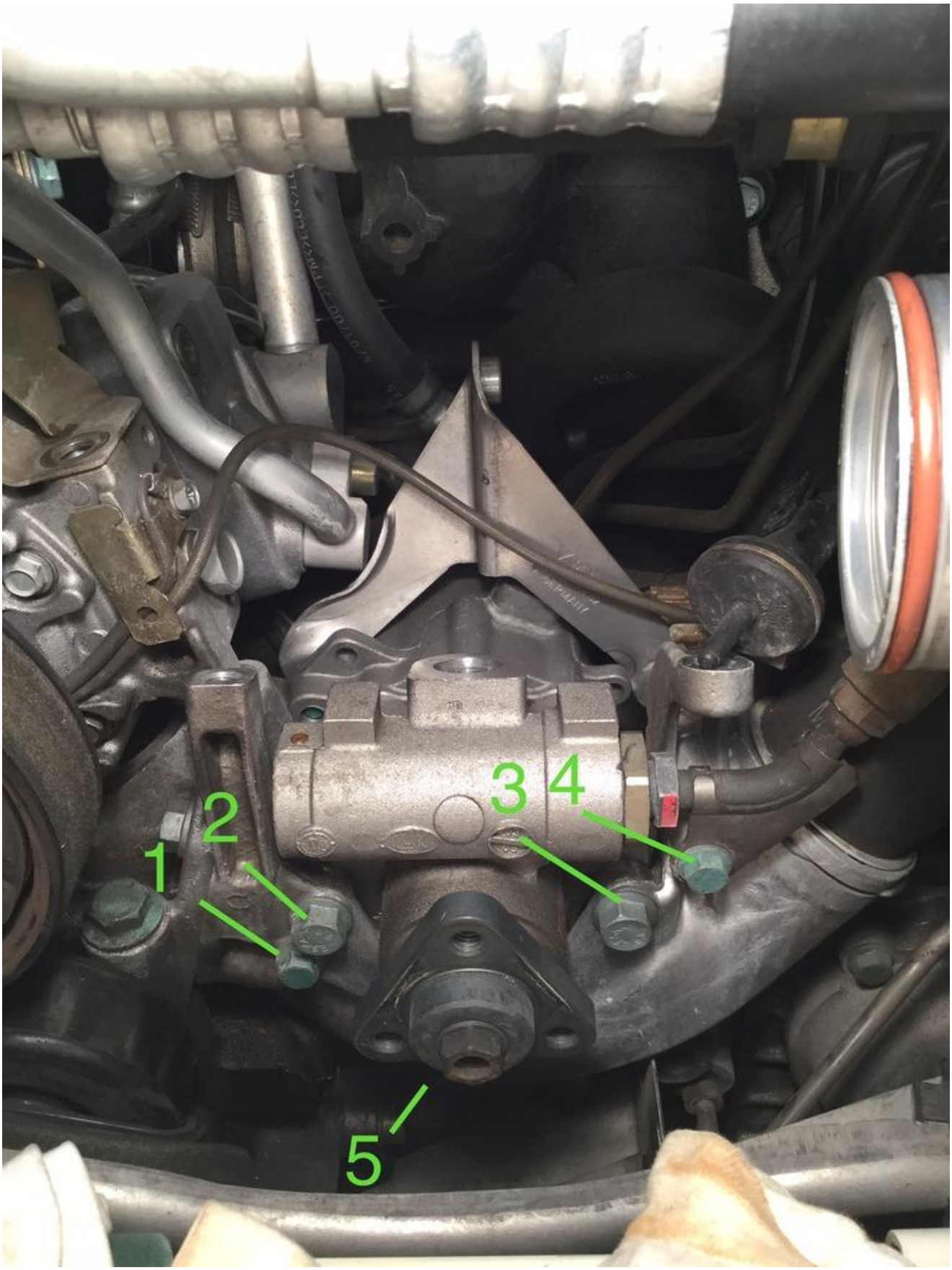
Clutch Circuit:



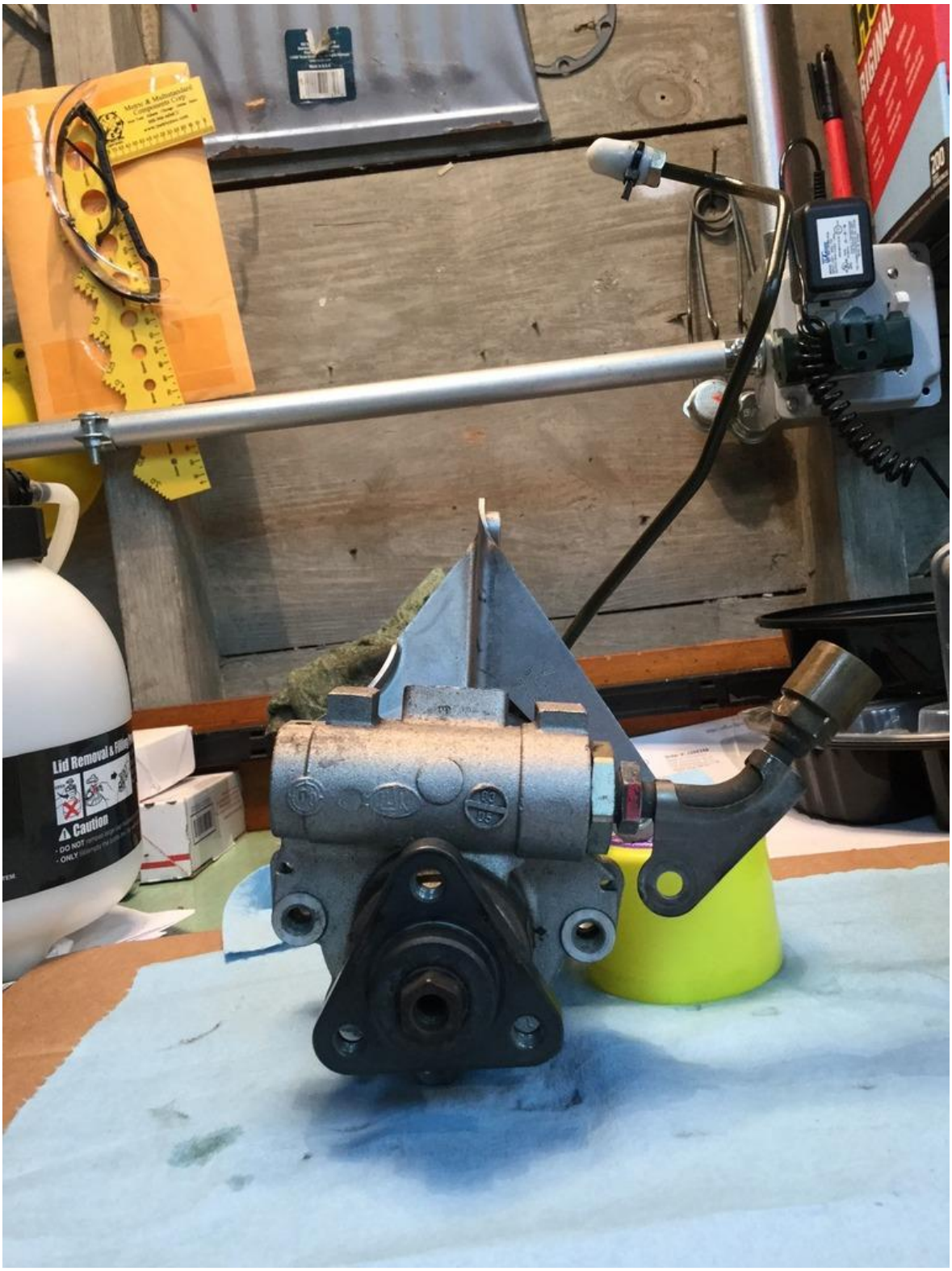
Got the pump out last night, split it and removed the coupler.

(Disclaimer and Credit Where Due: I know I'm not the first to do this - standing on the shoulders of giants here - but tried to take some good pictures as a reference for anyone else thinking about his approach. I have more for anyone who wants specific shots and I will write this up more completely once I fee like it's actually *done*.)

Take out these 5 bolts:


1
2
3
4
5

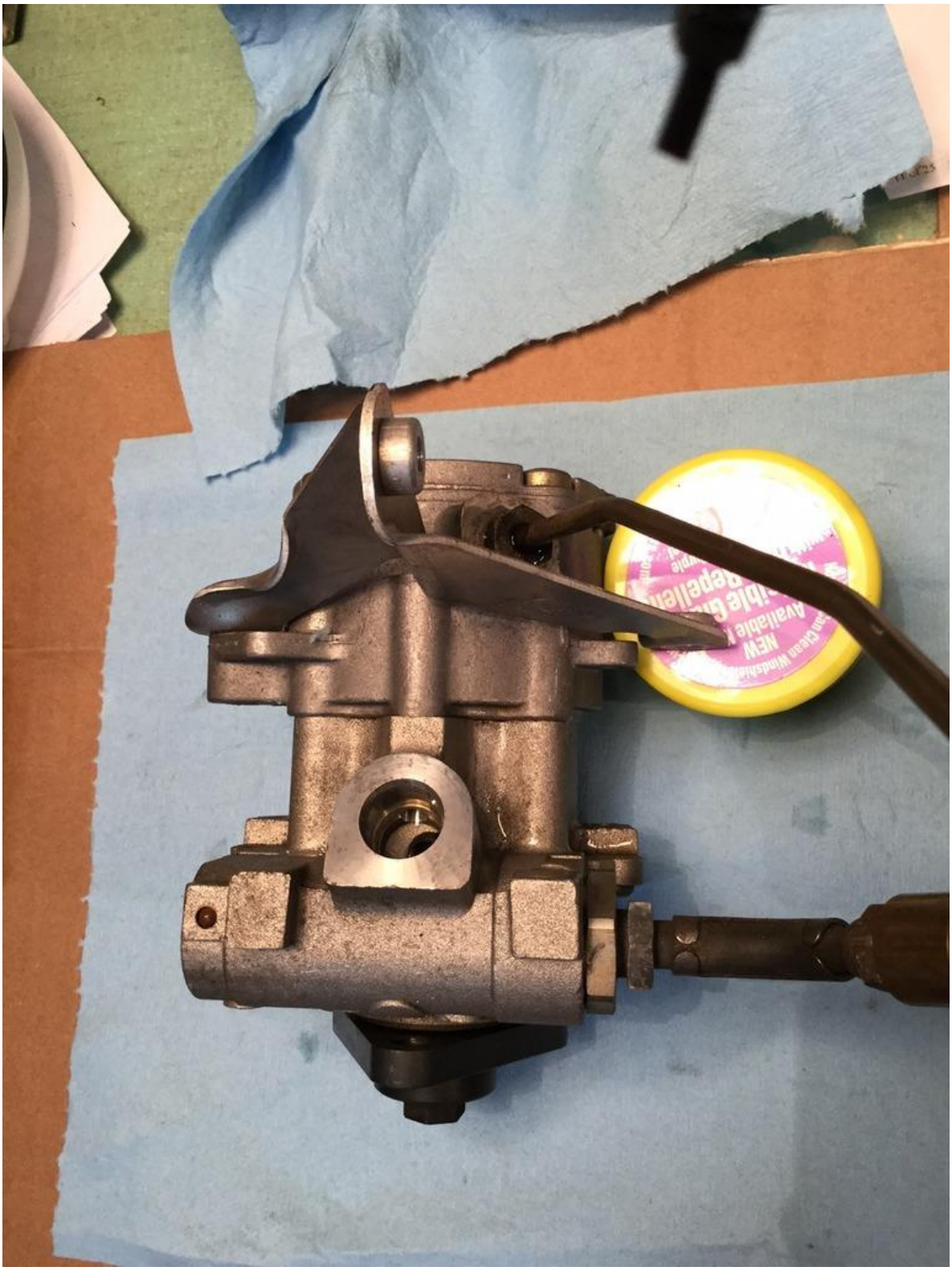
Pump out:



How it sits in the car looking at the engine from the rear - minus the pulley on the pump and the lid on the reservoir:


Caution

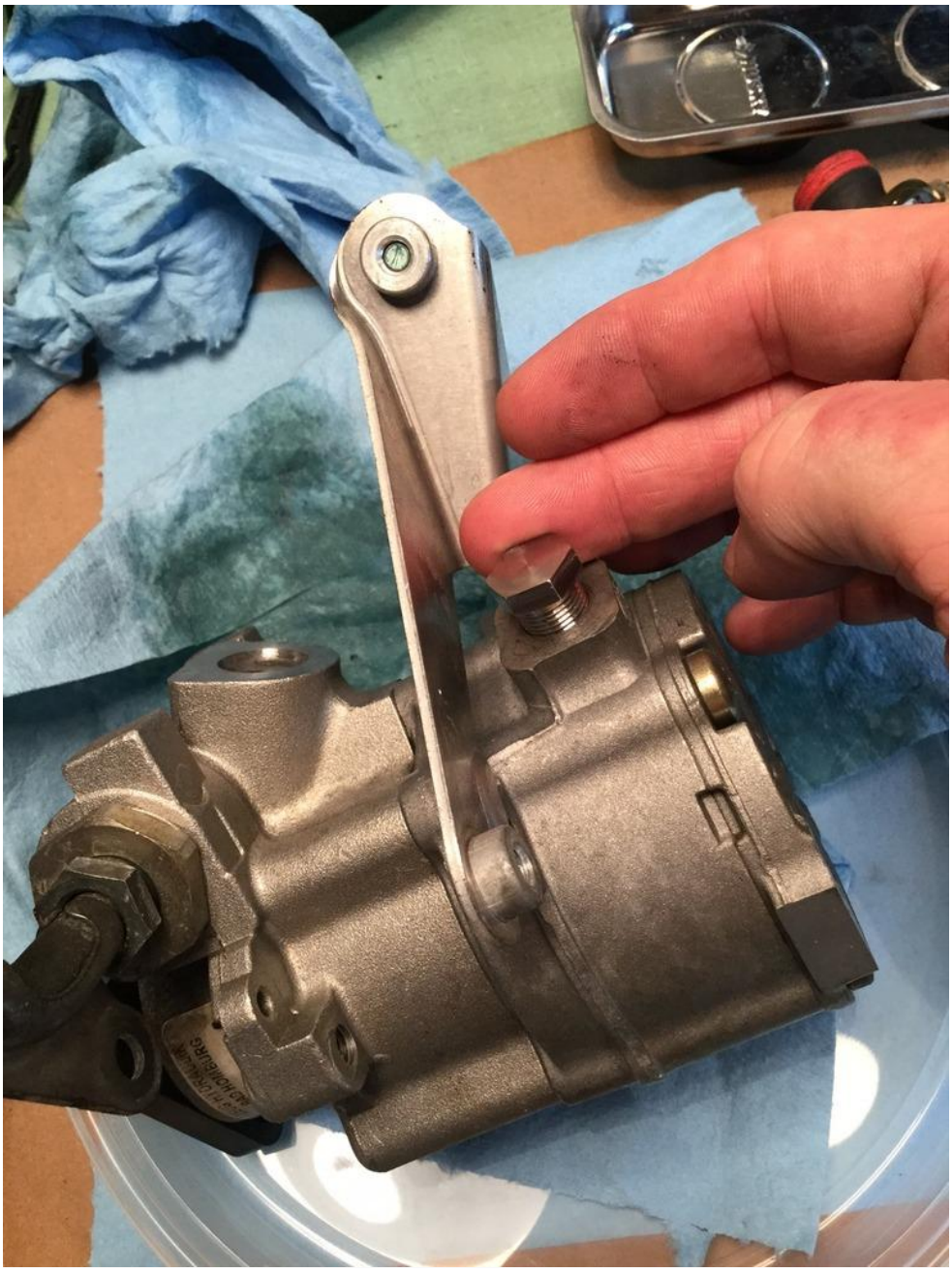
Bird's eye View. The hard line (by the yellow cap the pump is propped up on) is the high pressure line for the slave and will be removed and the port plugged.



Pump split (Power steering on the left, clutch on the right...coupler in the foreground):

With the coupler removed:

Hard line removed and replaced with beautifully made M12 x 1.0 flare plug. Thank you again, "TheDeckMan" !! :

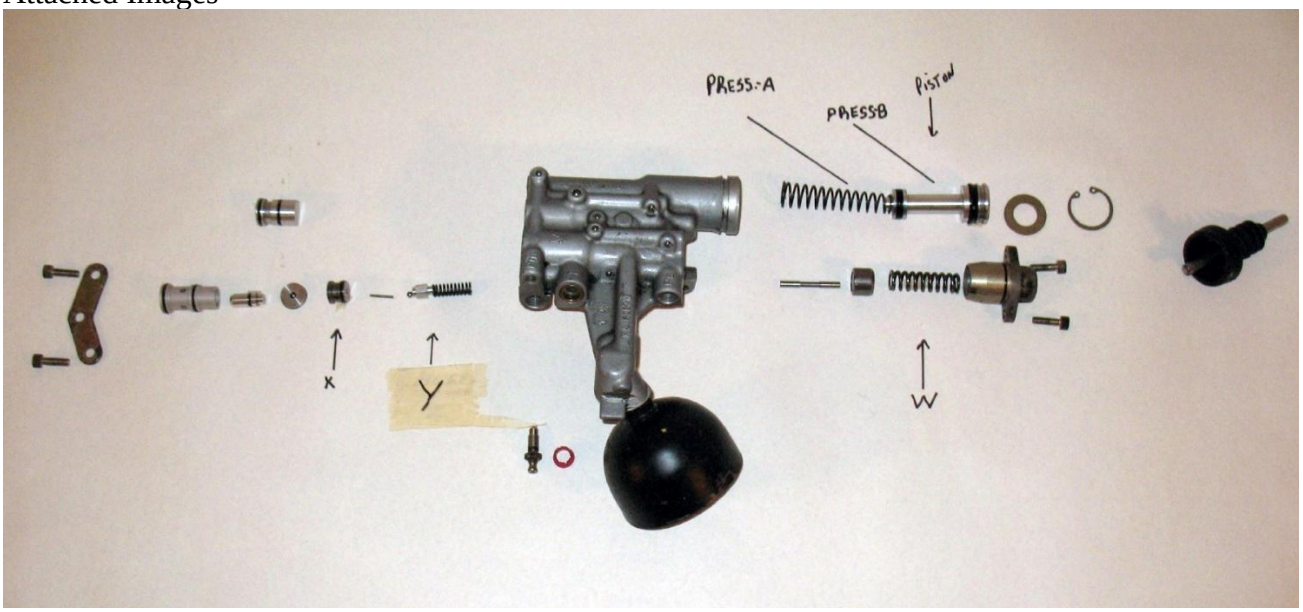



LUK
LUK
RG 1772

Have reinstalled the pump (with the high pressure port plugged) and will replace the seal between the pump and the reservoir (Part # 99970720440) before reinstalling the reservoir.

Job well done, congratulations!!!!! Happy for you with that good result. I did an open heart surgery of an old slave and accumulator . Unfortunately nothing obvious found in the slave. All the seals looks really good and the cylinder wall looks good also....My thinking was the fluid might escape between the high pressure and low pressure on the piston itself(pressure A pressure B). Al the other components where perfect....The accumulator bladder was damage. It slip from his joint....Strange but it seems the rubber did not react properly with the Pentosin.... I can be wrong there also ;-) Keep us inform of your findings if you ever attempt to dig deeper into the mysterious slave failure

Attached Images



Quick update.

My underlying reason for looking for a “shortcut” to disable the power assist was to avoid having to split the reservoir and the pump. Every write-up I’ve seen says “get as much Pentosin out of the reservoir as possible but have lots of bags and rags ready to catch whatever is left”.

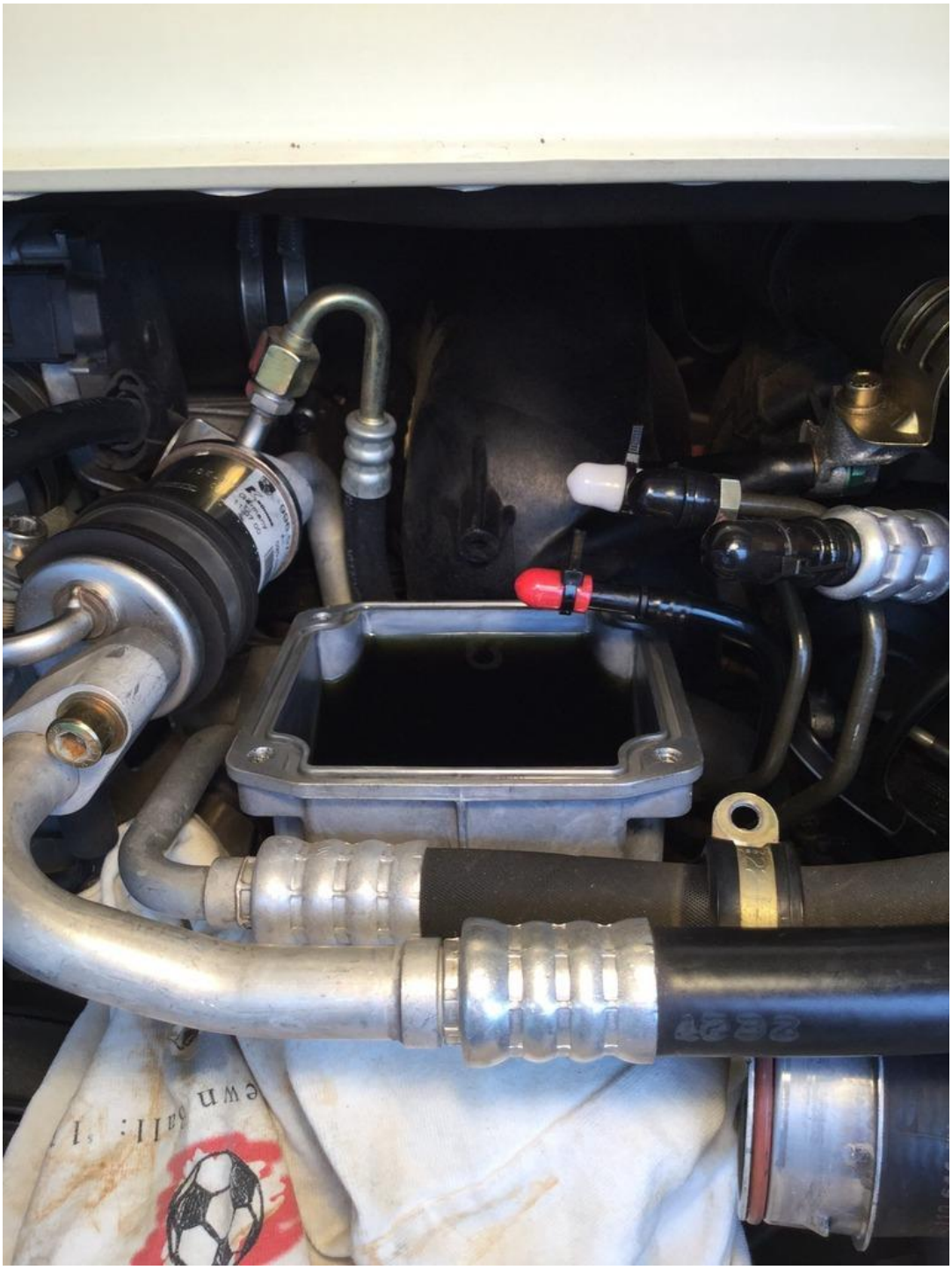
My engine is in pretty nice shape and didn’t want to test the ability of the stuff to find every nook, cranny and rubber hose.

Turns out there seems to be a pretty easy way to sidestep the mess (and in my case, the angst.)

There are 4 – T30 torx screws holding on the “lid” of the reservoir. All are plainly visible and accessible without the aid of mirrors, extensions, universals or magic - which is more than can be

said for some of the other bolts in the pump/slave/accumulator job.

Top comes off:



BS Harbor Freight siphon pump goes in….Pentosin comes out:

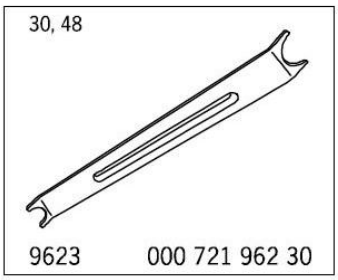
2 (two) shops towels got it this dry inside:


996.311.420.1R
GD-AlSi10Mg
Made in Switzerland

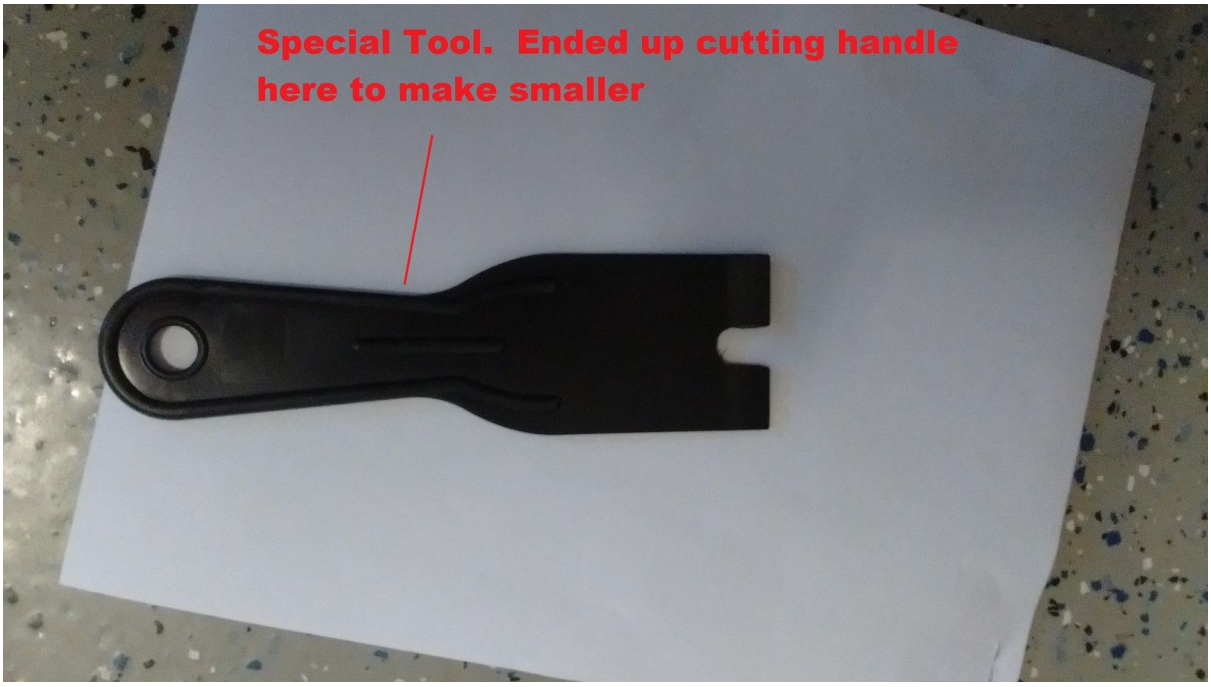
Seven more bolts and the pump is out.

orsche special tool.
The attached image shows the tool.

9623	**Testing tool**
Order Number:	000 721 962 30
Model:	986; 986 S; 996; GT 3;
Use:	Coupling, steeringclutchpipe



To replicate this tool, I used a plastic (nylon probably) putty knife. Drill a 13/16 inch hole and then cut out an area so that the tool can be slid over the tubing. I used plastic instead of metal because it is rigid enough and trivial to work with. The tool takes only a few minutes to make. The diameter of the line the tool needs to fit over is 0.41 inch.



Some postings mentioned using a panel tool as an alternative. The one I tried was cumbersome and the opening looked too small to fit over the tube.

997.1 TT to GT2 Slave Conversion

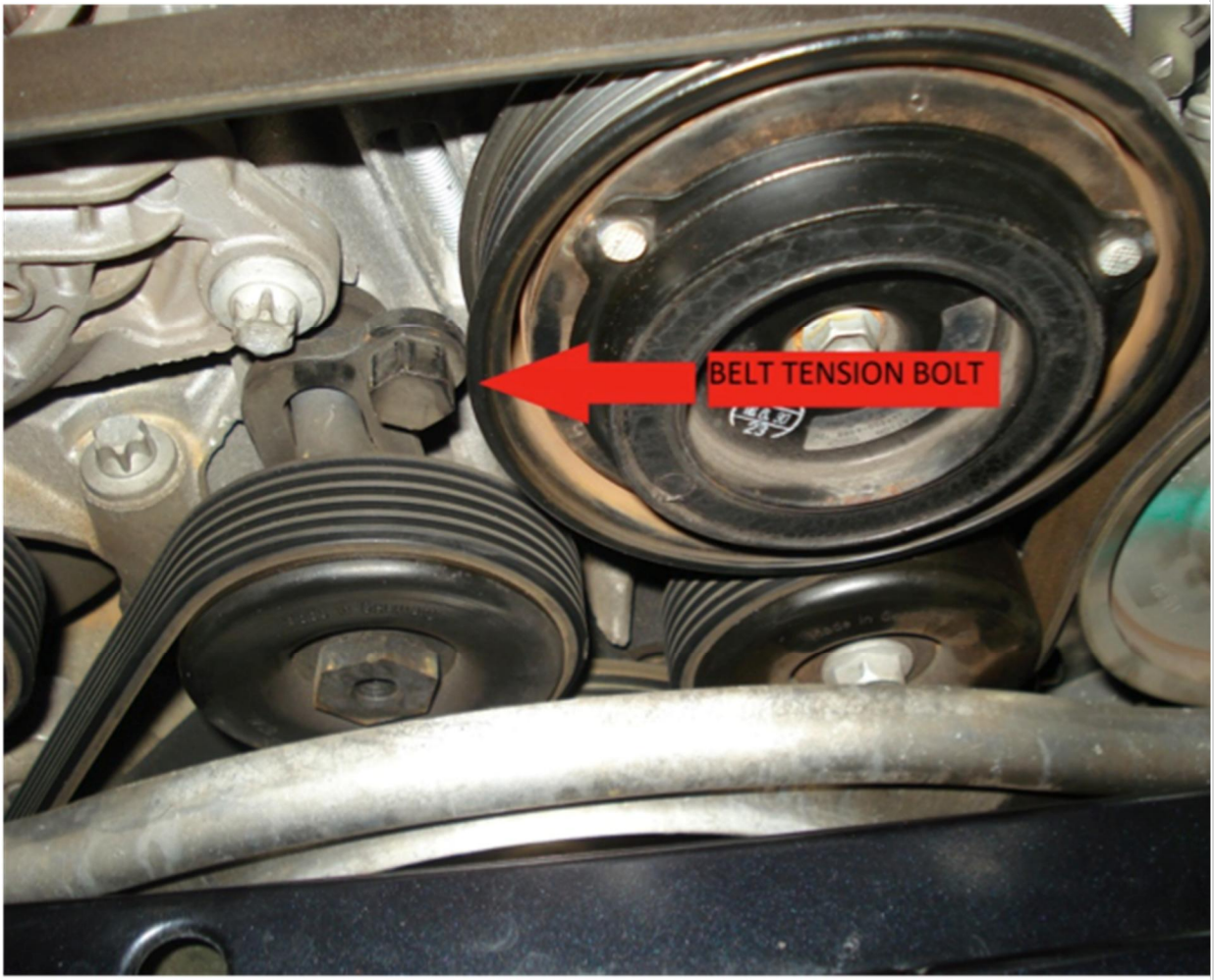
SOME OF THESE PHOTOS WERE TAKEN FROM ANOTHER VEHICLE BUT SHOW THE PERTINENT INSTRUCTION. IF THESE PICTURES ARE YOURS AND I AM IN VIOLATION OF SOME COPYRIGHT LAW THEN LET ME KNOW SO THAT I CAN REMOVE THEM

THE KIT: I purchased my kit from Motowheels.com (full price of the original 996TT kit, so no affiliation). I cannot speak for the other kits currently being advertised, but if they are as pictured then they will NOT bolt on and require modification to either the bracket or the top of the transmission (not a big deal if you drop it). However, I wanted to do this so the average Porsche owner (haha) could do the DIY in their garage without a lift or special tools. The other kits may bolt on without issue and perhaps they are not picturing the actual items so as to protect their hard work in R&D so I am not trying to talk bad about them. I spoke with many individuals prior to committing to this and many stated their kits would work, but I can only assure you that the kit from Motowheels.com or Martin on 6speedonline is validated and blue collar TT owner approved to bolt on without modification. We spent about two weeks working through the kinks and differences between the 996TT and the 997.1TT variations. I have not yet seen or crawled underneath a 997.2TT so I have no idea, but would be glad to talk through anything with you. The guys at Motowheels.com have been extremely helpful and were outstanding to work with; I would not hesitate to recommend them to anyone.

I. Hydraulic Pump Removal

- The car can remain off stands for this portion and you should not have to be under the car. This task also leads to a gateway of other DIYs.
- Remove air intake system to include airbox, y-pipe and throttle body. (I don't have any pics for this portion, but if you are unsure then perhaps this is not the best DIY project to start into.) I know you are probably wondering why to remove all of the kit I am listing, but this was my technique/way. There are other and probably better ways, but I spent a lot of time trying to "cut" corners and I either did not have the tools to shorten the job or the mental capacity.
- Remove the passenger side intake pipe (with MAF sensor) to allow for additional room in and around the hydraulic pump. (Also a great time to install those sweet RSS Tarmac Performance Engine Mounts if you have them.)
- Loosen the three pulley bolts on the hydraulic pump pulley (power steering pump) before you remove the belt since the tension will allow you to break the bolts loose. This calls for a Torx socket which I bought from the local NAPA store. You could probably get away with twelve or six points sockets, but I avoided taking as much risk as possible.
- Remove the serpentine belt by applying clockwise tension on the bolt in the picture (15mm I believe). Bottom line: This is a sweet design and as you apply tension on the bolt it flexes the tension wheel about 1/2 inch to allow for just enough slack to slide belt off the other wheels. You just release the pressure and the tension goes right back into place. What better way to ensure proper tension and ease of changing the belt. Now, don't go tearing the belt off since I took pics so that if it fell off some of the other pulleys then I would have the routing correct when it goes back. (Easy Serpentine DIY in the future when you see wear, plus a generic belt goes for about $15 at O'reilly Auto Parts) You actually have to get down underneath to work the belt around the all the pulleys, but none of that is

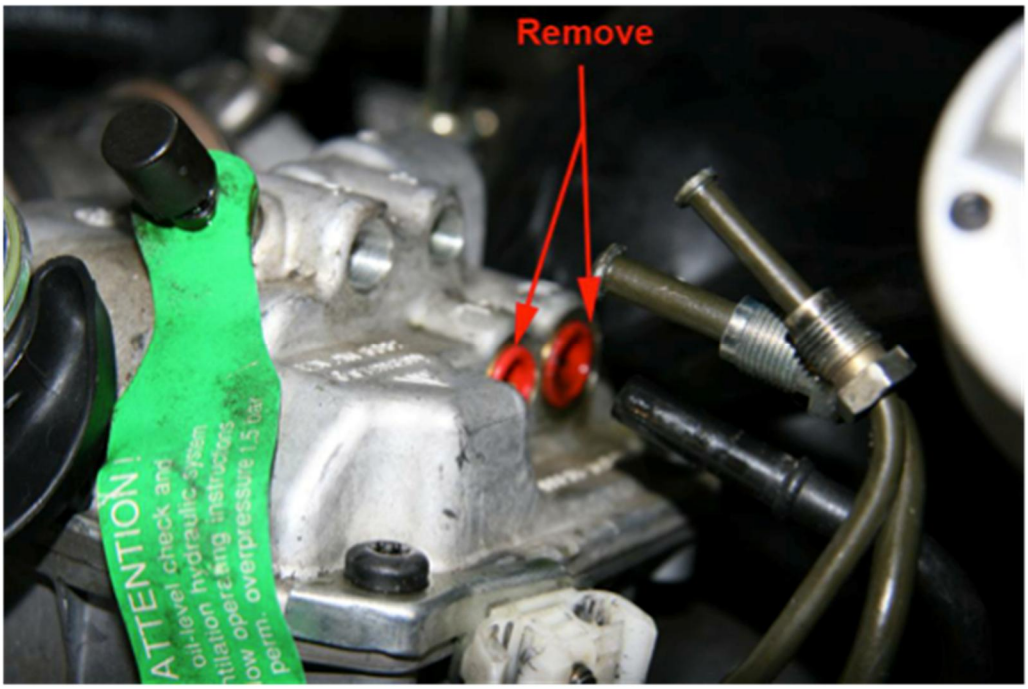
necessary for this project, just get it off of the hydraulic pump pulley and push it down out of the way.



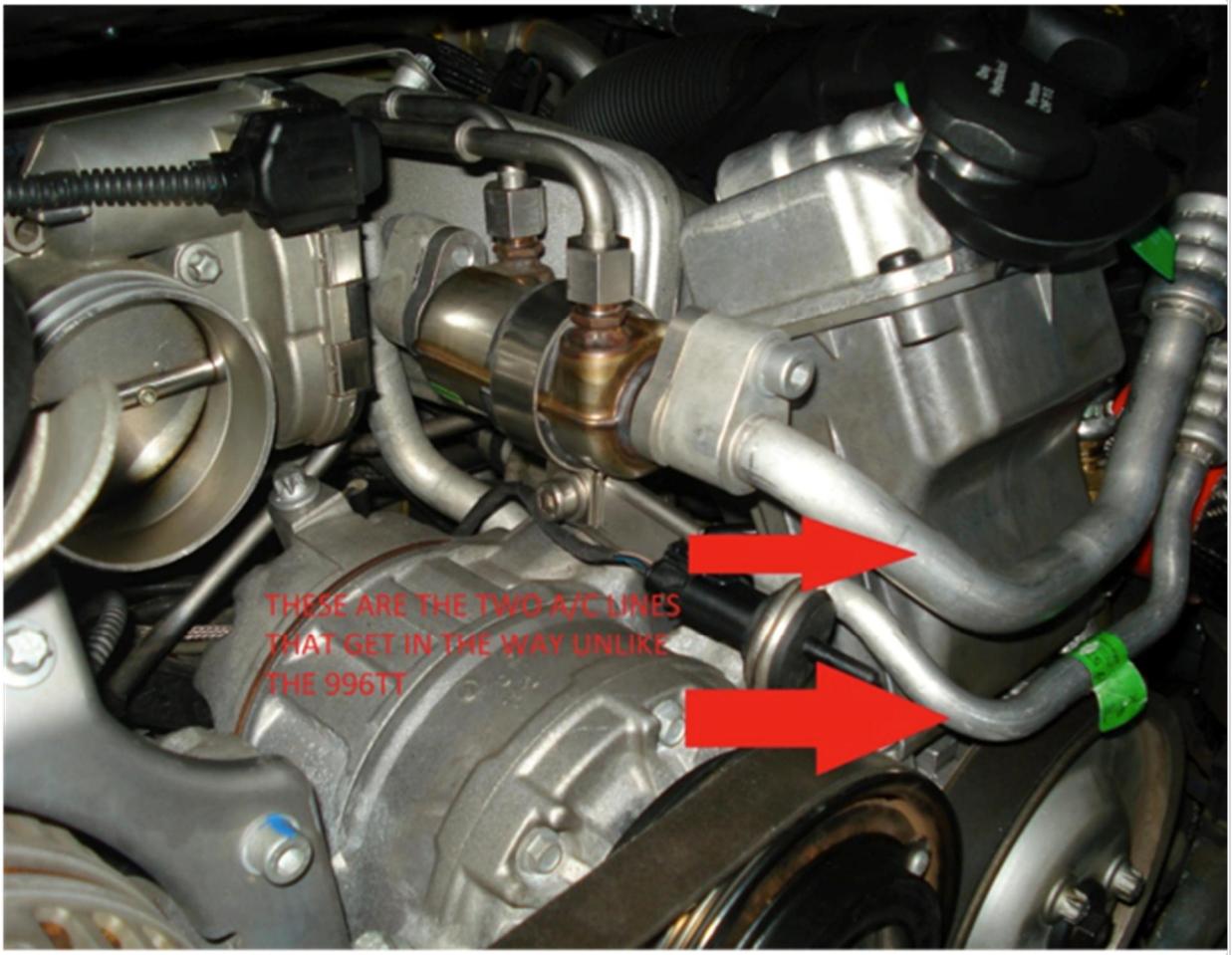
- Remove the three bolts and remove the hydraulic pulley
- Now for the messy part. I could not figure out how to remove the filter screen from the hydraulic pump reservoir and was therefore unable to siphon out as much fluid as possible. The Pentosin is apparently quite corrosive for rubber products and probably removes paint similar to Brake Fluid. I used Ziploc bags to catch as much fluid as possible and stuffed rags below that to catch anything residual. I had about a half a cup total fall down onto the engine block total which I figured wasn't too bad. So, without further adieu, loosen and remove the four lines feeding the hydraulic pump on the top passenger side. The top two produced the most fluid so it gets better. I used a fuel disconnect tool ($10 piece of plastic for O'reilly Auto Parts) to remove the rear most bottom line. The forward line will not work with the fuel line removal tool and I used a door panel removal tool/spanner/fork tool to hold the red plastic piece into the pump while I pulled on the line. I'm sure there is a Porsche specialty tool, but I never entertained attempting to buy one. All you

need is a way to push the red ring in will you pull the line. It isn't that sexy and I even used a set of right angle pliers opened up around the line to push in the ring. You will probably need to remove the plastic line bracket held onto the top of the pump on the rear most passenger side corner into to get the lines out of the way.

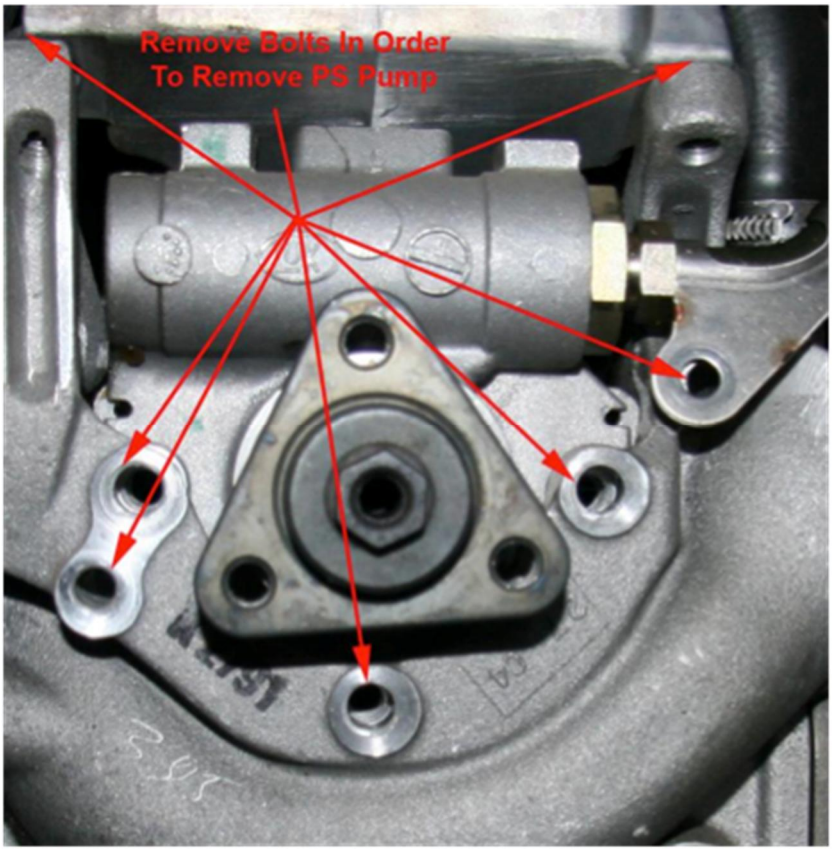

ATTENTION!

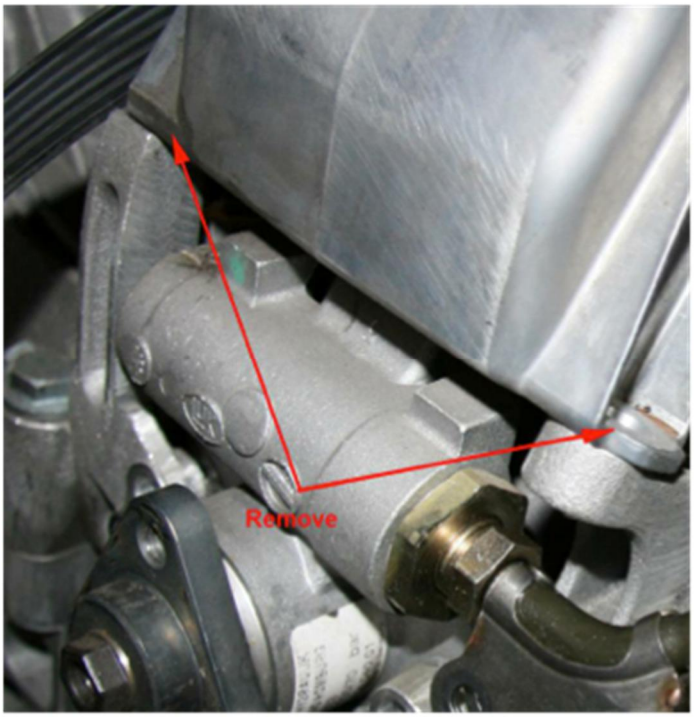

Remove
ATTENTION!

- Now to the driver side of the pump, remove the three bolts holding the A/C compressor down. (Consider yourself lucky for once if you don't have A/C because this makes the job much easier) The biggest PITA was getting around the A/C lines and compressor. Remove the bracket securing the compressor line on the side of the pump and also remove the probe (I assume thermal) facing the rear of the vehicle in the picture. The probe simply pulls out by hand and is held in place via a rubber grommet. You will need to remove the metal bracket that keeps it in place as well.



- Now you are ready to remove the seven bolts holding the pump and reservoir in place. BE CAREFUL not to get in a hurry since dropping any of these bolts will result in an exponential increase on the A$$ pain meter. Some are different sizes so don't just dump them in a big pile. The top two are the most difficult to access.

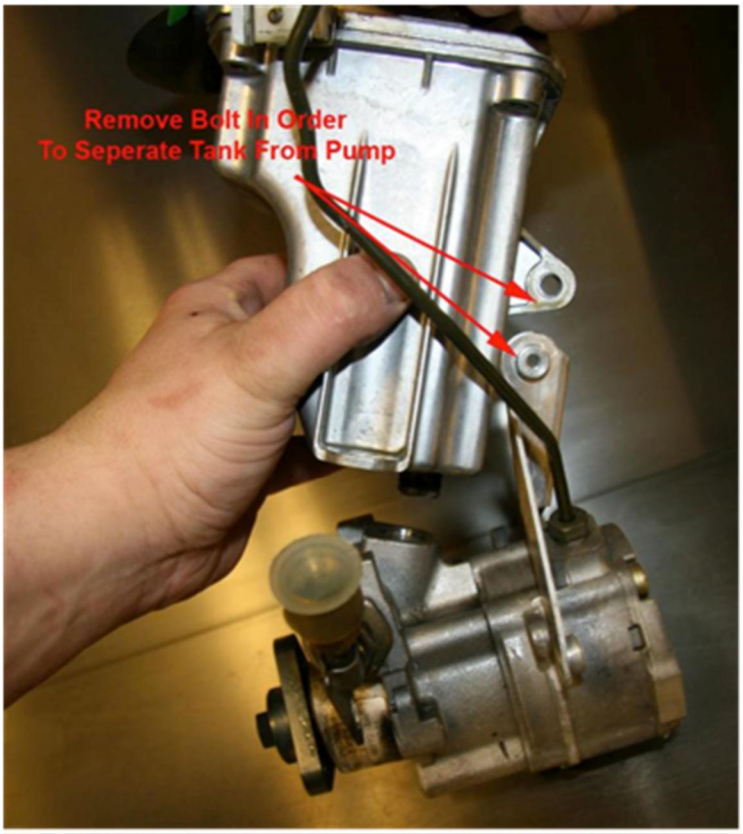

Remove Bolts In Order
To Remove PS Pump

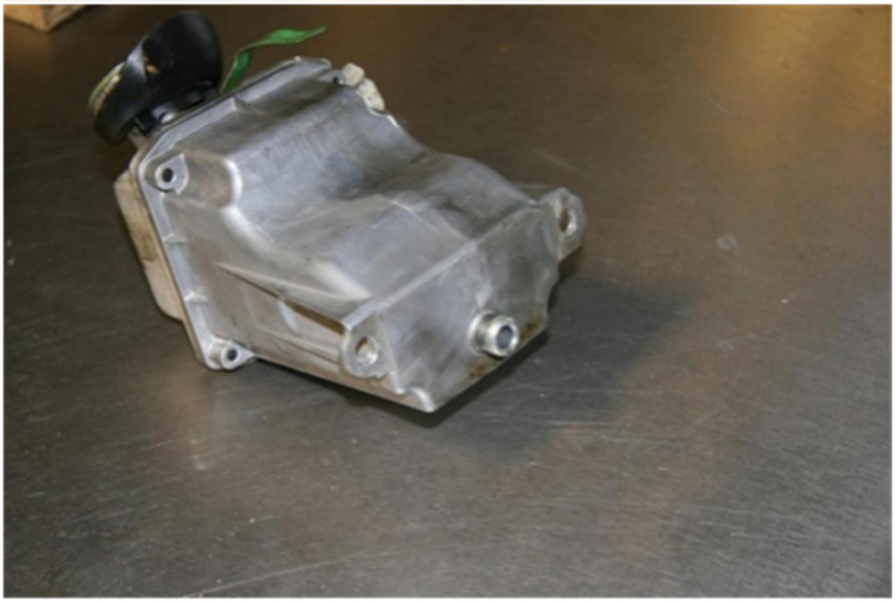

Remove

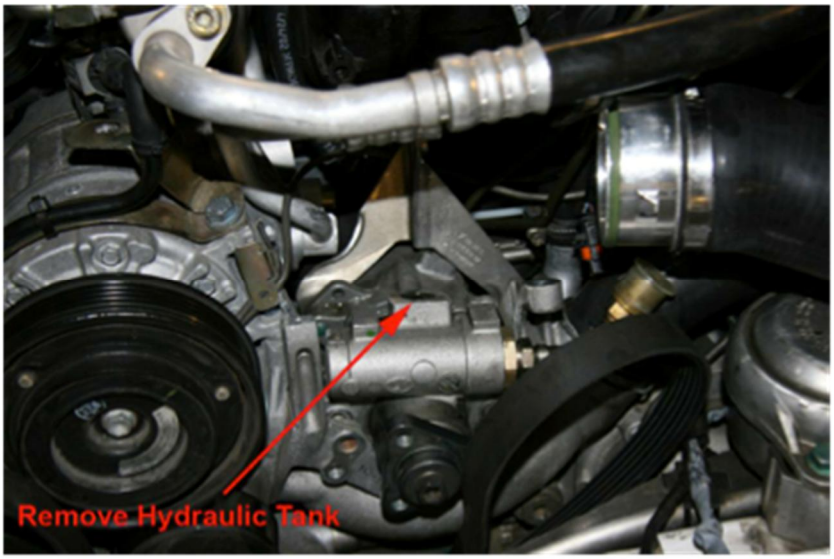
- DON'T start yanking on the reservoir just yet. You must disconnect one final line and there is yet one more bolt. The line on the passenger side at the base of the pump where it meets the reservoir must be removed. Remove the plastic grey clip and then utilize a (15mm I believe) to separate the fitting. This connection is tight and difficult to take apart, but it will separate. You must apply counter torque and get the best leverage possible. This is not a quick disconnect line. There will be fluid so be prepared with rags and bags, hopefully no blood.

- The final bolt before you begin the gentle massage of removing the pump is located on the back of the pump (this is the portion closest to the front of the car). The only way I could reach it was using a ¼ drive with extension and a 10mm socket going from driver to passenger side over top of the A/C Compressor. The bolt is threaded into the bracket adjoining the pump and reservoir so there is no nut to catch, but don't drop the bolt.


BOLT BEHIND RESERVOIR
CONNECTING TO PUMP


Remove Bolt In Order
To Seperate Tank From Pump

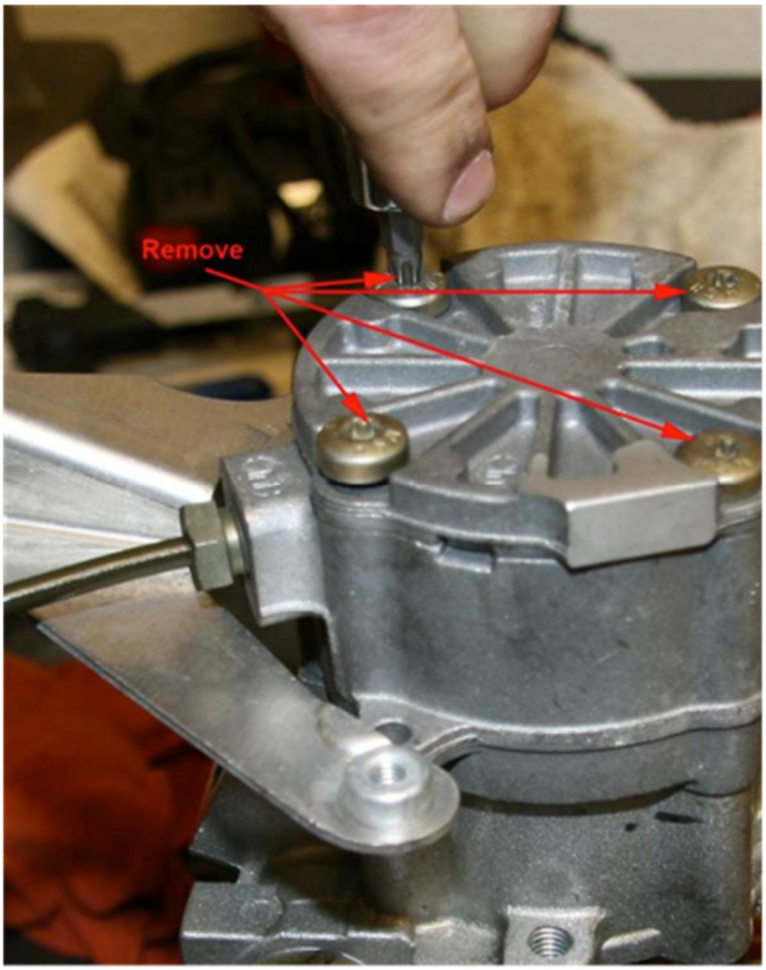


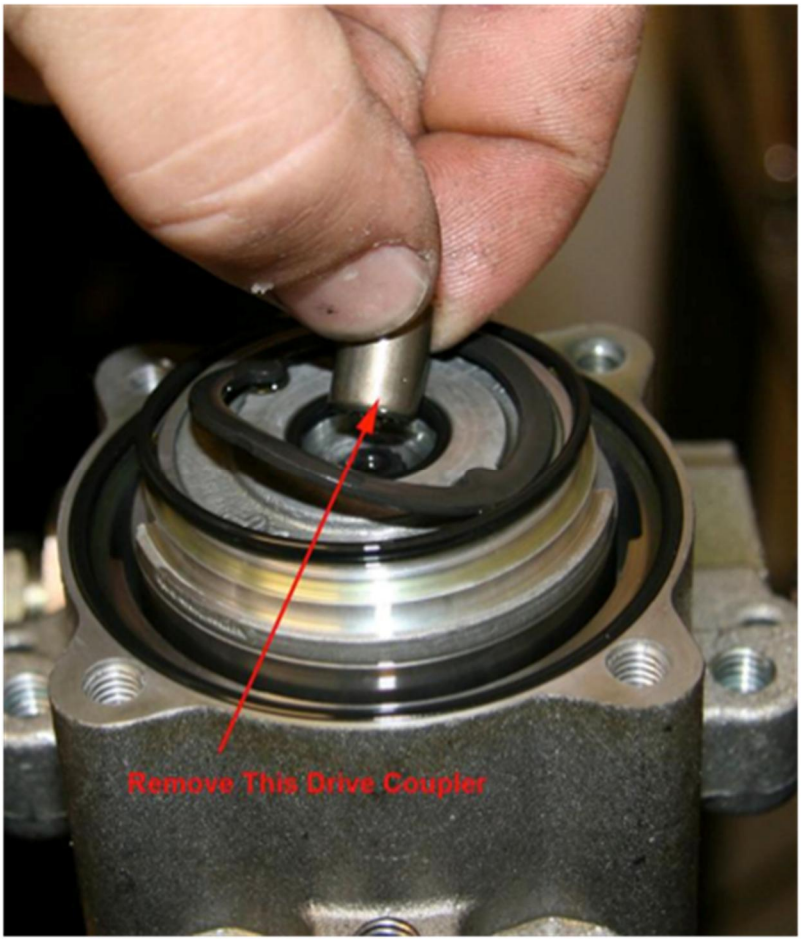


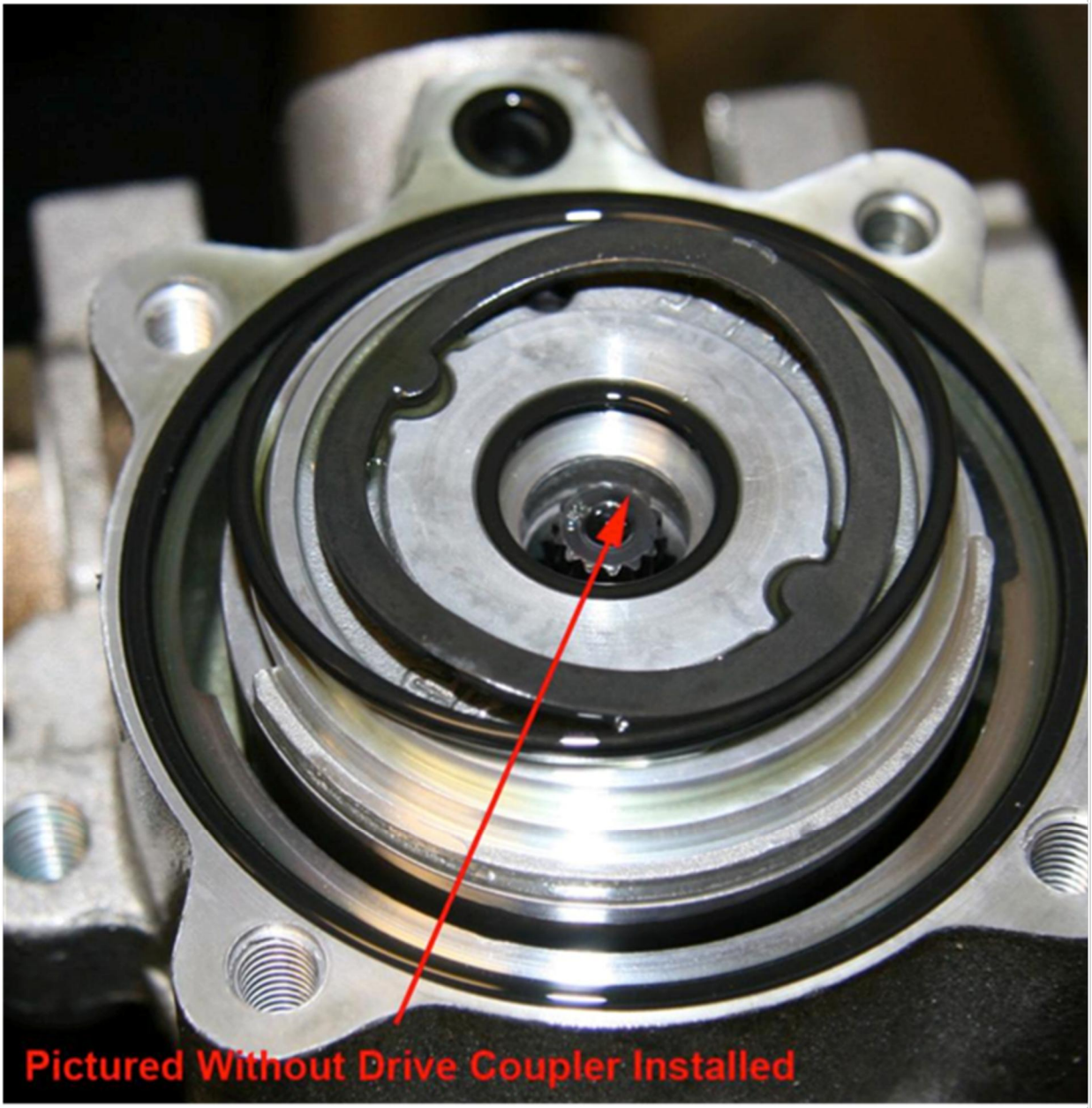
- Removing the pump is insane and takes a little while trying to maneuver it around the A/C lines that run between it and rear of the car. I accomplished this first by lifting the A/C compressor lines and wobbling (technical term) the A/C Compressor up just slightly (1/2 inch maybe). This should allow you enough room to get the reservoir out (it is the one on top with the cap and green label). The pump is held onto the reservoir only by an O-ring at this point I gently pried with a screwdriver to break the seal and deal with the pump only. You won't be able to remove the two combined. Of course, there will be some fluid split once you separate these two as well. One of the top two fluid lines removed from the pump earlier is connected to the reservoir so be gentle and don't lose track in the midst of your rage. I also separated the oil fill pipe from its bracket and pushed it out of the way. I found it easiest for the pump to come out lifting the rear most portion

first over its mounting position and then tilted back end high towards the rear of the car and out (mind the hard line still attached). The further up you get the compressor lines out of the way the easier this will be. Also, mind the bracket that held on the reservoir and try not to deform it as much as possible. This bracket won't line up correctly with multiple bolts you removed and once again cause a significant emotional event as you must remove it all over again (ask me how I know).

- Now that you have the heart out, remove the four (T-30) screws on the back of the pump. Finally, remove the drive coupler in the middle and put the pump back together. Now just reassemble everything back together (this was painful and perhaps the worst portion of the whole DIY). There is no easy way about this and may God have mercy on your soul.




Remove This Drive Coupler



Last edited by bbywu; 06-19-2012 at 02:44 PM.

QUOTE

#11
06-19-2012, 01:47 PM

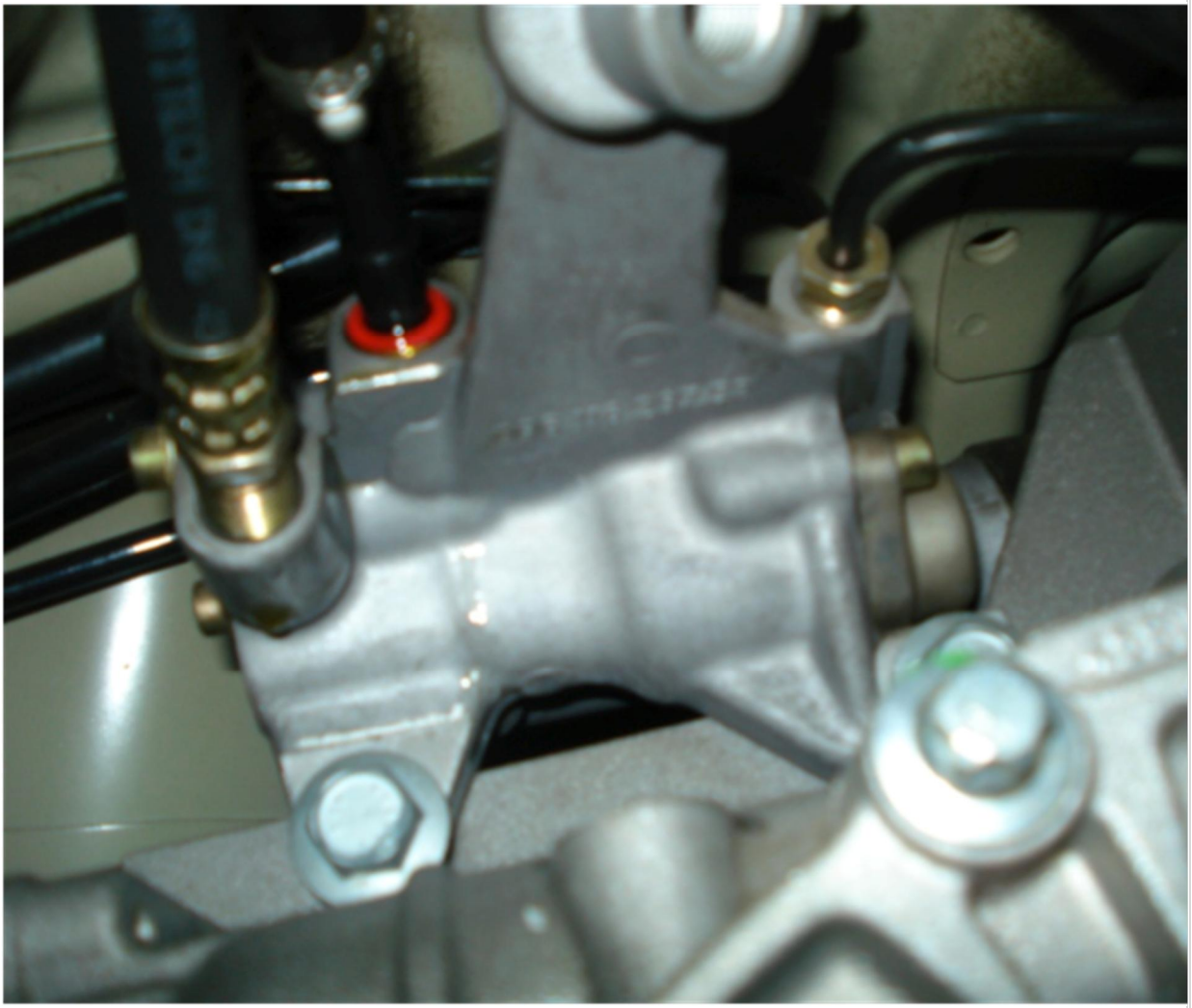
bbywu
Administrator

Join Date: Jan 2007
Location: OR Room 5
Posts: 10,898
Rep Power: 1002

II. Slave Cylinder

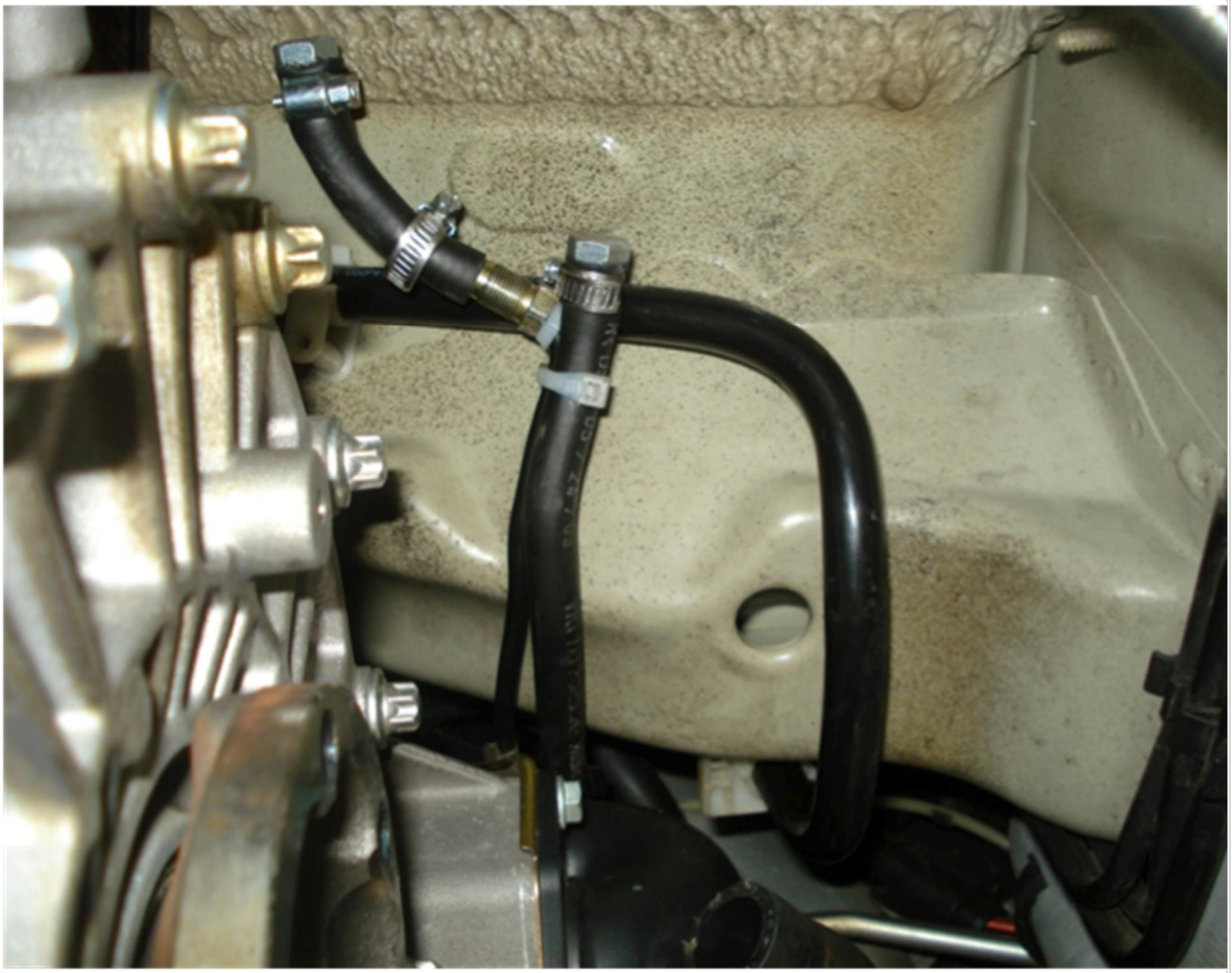
- Lift up the rear of the car as high as possible. I have seen and heard numerous variations of this just be careful. I used two by fours under the front tires and placed jack stands as high as I could get under the control arms (not sure if that is the right term).
- Remove two rows of panels underneath and the cross member.
- Remove the driver side half shaft (T-55) and push it out of the way (you will move it back and forth, but I never had to completely remove it away from the wheel only slide around from front and rear and just let it rest on the sub-frame underneath. Just because I didn't think about this before, your parking brake is your friend here. Put the car in neutral and release the parking brake to roll the driver side rear wheel. This will allow much easier access to all of the halfshaft bolts. You will need to reengage the parking brake before you start to torque anything though.
- Remove the two water lines that cross underneath and go up the driver side of the transmission. On the 996TT you apparently can just move these out of the way, but I couldn't make this happen and was ready to gnaw my way through them after many painful hours. (Just in case you get carried away, there will fluid here so I used a brand new oil catch pan and just trapped all of the fluid for recycling back into the system once complete). There are three bolts that hold the lines to the transmission.
- At this point, I bled as much fluid from the slave as possible. Many have praised the use of a MOTIV Power Bleeder, but I was too inpatient and couldn't find one locally. In hindsight it would have probably been the best way to go. I had to pull via crappy vacuum from the bleed valve instead of push compressed air from the FRONT reservoir located on the driver side of the battery under the plastic panel just next to the upper driver side shock mount. Remove the panel that surrounds the blue windshield washer fluid cap. Bottom line: You want to get the line as clean and dry as possible from all the Pentosin.
- Get back under the car; the hard green line coming from the front of the car located along the driver side rail comes from the master cylinder and front reservoir. Disconnect this line by removing the plastic grey piece again and then two 15mm wrenches to counter torque and disconnect. There should not be much fluid at this point, but there will be residue throughout.
- Remove the accumulator. I used a filter strap style wrench I picked up at Northern Tool Supply. You can cut a 22mm wrench in half, but I didn't have one and the belt was easy to work around it. Have your Ziploc bag ready for this one as well and be prepared for decent workout since it is fairly snug on there.

- Remove the bracket that supports the ear where the accumulator plugged into.
- Remove the three hydraulic lines feeding the OEM slave. One is the feed line from the front master cylinder located closest to the front of the car on the slave (not too difficult but you will need to remove the brass collar on the end of this line, more later on), the second is a return line to the rear reservoir in the middle of the other two on top almost of the OEM slave (once again your fuel line removal plastic tool works well here), and lastly the hard input line from the rear of the vehicle connects to the OEM slave at the rear most portion (this line was the worst and I recommend you leave the slave somewhat mounted on the transmission while removing this line because of the awkward angles. It is a 13mm brass nipple and just takes some maneuvering since the ear that the accumulator mounts onto gets in the way.)



- Remove the OEM Hydraulic slave from the top of the transmission. There are two 15mm bolts that enter from driver side and you should be able to feel them. Don't worry about losing the actuator rod, it will not fall out. Once out, remove the actuator rod from the rubber sleeve and retain for use with your GT2 Slave.
- Now you need to kill the feed lines that come from the rear of the car. They are dead since you removed the drive coupler from the hydraulic pump and will only hold residual fluid. I first cut off the fuel line style quick connect plastic piece from the soft line and then cut off another 2" from this line for later use. I plugged the soft line with a 3/8" bolt and a hose clamp. I took the excess 2" line that I cut and slid it over the hard line coming from the rear. I secured it with a hose clamp and plugged the other end with another 3/8" bolt and hose clamp. Don't worry about the brass fitting on the hard line, just push it back and secure the hose over the flared tip. You have now isolated the slave completely. Any bolt will do from the picture below augmented with a hose clamp and zip tie to keep out of the way.

Below should be your view with your feet under the engine looking up under the back seat on the driver side of the transmission.



Last edited by bbywu; 06-19-2012 at 02:45 PM.

QUOTE

#12
06-19-2012, 01:50 PM

bbywu
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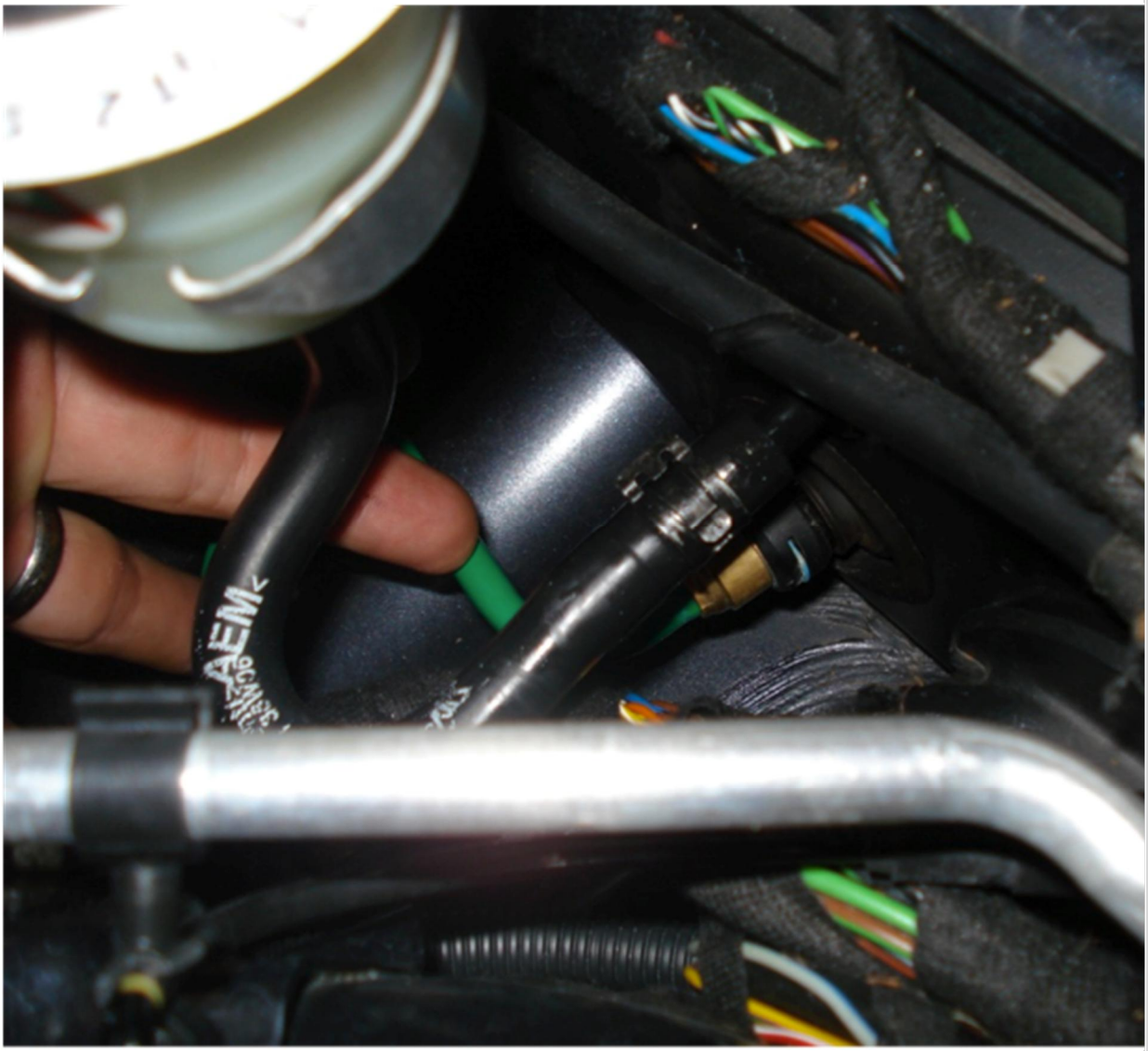
Join Date: Jan 2007
Location: OR Room 5
Posts: 10,898
Rep Power: 1002

III. Master Cylinder and Spring Assist

- Warm up with some Yoga first since this is a little painful. I pushed the driver seat all the way back and removed the floor mat. I laid down a towel to prevent scratching anything with tools and catch any residual fluid.
- Remove the C-Clip retaining pin behind the clutch pedal and the pin attaching the master cylinder to the pedal. Nothing sexy just a screwdriver will do and then remove the two 10mm bolts that go from driver to passenger side from the top of the master cylinder just as it comes through the firewall. You won't see them so use the force or your hands.
- I only unplugged the light initially down here as it blinds you and becomes extremely irritating. You will also need to twist the clutch pedal sensing switch 90 degrees to remove it from the bracket. I initially removed the bracket and it was a royal pain in the rear so I wouldn't recommend it as I don't believe it was necessary.
- The clutch spring assist is attached to the front arm of the clutch pedal and is held in place by friction only. DO NOT USE THE SAME PROCEDURE AS THE MASTER CYLINDER. The spring assist C-Clip retainer and pin stay attached since it will snap out of the mounting position on the pedal. This hosed me big time and I didn't figure this out after a while. Once it is off, there is some magic maneuvering involved to get it out but that is the only connection.
- Go under the front hood/bonnet and remove the plastic surrounding the blue windshield wiper fluid reservoir. This is on the driver side from

the battery compartment. The green capped reservoir and infamous green line will be right underneath it.



- Remove the reservoir and bracket. Remove the blue retaining clip on the master cylinder from the green line. I worked the green line off from this point as well. The rubber seal in the firewall can be a huge pain so it would behoove you to try and leave it in place in lieu of removing it with the master cylinder. Just push the master cylinder through it at this point. The top line that the reservoir was attached to will push through as well, so go ahead and get back under the dash and pull it out.
- I dry fitted the GT2 master cylinder to the green line up front prior to crawling under the dash and pushing it through to make sure everything was good to go. I recommend only putting in one bolt on the master cylinder and then go under the

bonnet to attach the lines and replace the reservoir. I replaced the green cap with the black DOT 4 cap at this time and flipped the plastic ring over wrote "DOT 4 ONLY GT2 SLAVE" around the ring in three places so if Porsche does maintenance then there will more than just the cap to prevent someone adding Pentosin to the mix.

- The GT2 clutch spring assist has a cotter pin on it to preload everything. DO NOT REMOVE AT THIS POINT. Do yourself a favor and pull until almost removed to make it easier later. I would also recommend perhaps some lacing wire threaded through to pull on an increased opening to make it easier to remove the pin once mounted. Make sure when you install that the cotter pin will pull downward since it will be quite difficult to get access above it. The spring goes in fairly easily and just snaps into place. At this point I remove the cotter pin with pliers or you could just yank the lacing wire and string.

- DO NOT PUT any fluid into the reservoir yet.

Last edited by bbywu; 06-19-2012 at 02:46 PM.

QUOTE

#13
06-19-2012, 02:08 PM

bbywu
Administrator

Join Date: Jan 2007
Location: OR Room 5
Posts: 10,898
Rep Power: 1002

IV. GT2 Slave Mounting

- Tap the GT2 Slave with a M10x1.5 tap and then mount to the bracket.
- Attach the GT2 Line that came with the kit after you attach the old OEM brass collar. To remove the collar from the old OEM line, you will need a pick to reach down inside and pull on the black spider collar holding the collar in place. Slide the collar down on the line as you do this to relieve pressure on the clip and pry out. The clip is split and will come off revealing the bare needle looking fitting on the hose that comes in the kit, just slide the collar on and place the spider clip inside to snap in place. Now attach the GT2 hose and a bleeder line to the GT2 Slave cylinder.
- Replace the GT2 actuator arm with your OEM Slave actuator arm. (it won't fit as snug, but the pressure will keep it in place…more to follow)
- Lay on the ground with your head closest to the front of the car as if you were hugging the transmission. Your left hand can go around the starter and you shouldn't have any clearance issue for the right. I first held the actuator arm with my left fingers like a cigarette up against the clutch fork so that I knew it was aligned properly (the red dot below is the cup that the rod sits in so there is no possibility of it sliding off, you will know when it is in the cup). I placed the bracket with slave mounted on top with my right hand and lined up the other end of the actuator arm in the rubber indention on the GT2 Slave. Once I felt the arm was pinched in between the slave and the clutch fork, I maintained pressure with my left as I fed in the mounting bolts with my right. This is probably the trickiest part and not to scare anyone, but you don't want to drop the actuator arm down into the bell housing. Your forearms are going to be more smoked than the first time you were introduced to a Playboy so prepare well for this move. There is a significant amount of tension on the arm from the fork and the slave so thread the bolts as best you can and then you will need a ratchet (8mm allen) to completely seat them in the bracket. I fought with an allen key for awhile so as to make sure everything was lined up, but it will not go in all the way with the tension on the bracket.

- Connect the hydraulic line to the frame rail hard green line and add DOT 4 fluid to the front reservoir.
- Bleed accordingly and don't forget to top off all of the other fluids (Pentonsin for the PS pump and the Coolant from the line removal) Also don't forget to bleed the hydraulic pump as well (just fill and turn the wheel lock to lock multiple times after starting the engine to burp the system and then recheck fluid level). Note: On the coolant, if you kept what came out it won't all fit back in until you reopen the thermostat, so get what you can in and then enjoy the drive before trying to fill it up completely.
- Now enjoy the appropriate adult beverage of choice, but only after your test drive

Yep install the clutch fork inside the bellhousing and move it front to back. You will see if it hits . Then clear it. Takes 5 min. Look at the d/s flat spot on the trans across from oem slave. There are bosses cast in place. Remove slave rod set tge slave in place and mark the mount holes. Drill and tap. Center of them is were you drill a 3/4â€ hole for the slave rod. Send me your email I can send some pics

The gt2 setup flips the fork from pass side to d/s . So in order to do the conversion you need a clean fork a slave and m/c. P/s pump has to b modified and lines removed or capped. Slight clearance on the inside of the bellhousing is needed.

TAPPING THE TRANSMISSION FOR GT2 SETUP

I wanted to post this DIY for people that want to mount the GT2 slave as it is on a GT2.

Before you tackle this project know you may want to extend the the slave shaft 1/16" to 1/8". If you look at the side where the stock slave went you notice they machined the case a bit. when i measured it, it was about 0.060". That is what you want to add to the shaft.

John@speedtech says his clutch engages almost at the floor. He did this same mode but did not extend the shaft. We both think that is is best to lengthen the shaft a little to give you engagement at 75% of the way with the pedal.

Related thread:

https://www.6speedonline.com/forums/996-turbo-gt2/261187-993-gt2-slave-conversion.html

Parts needed:

- GT2 slave part number 996 116 237 90
- GT2 clutch fork part number 99711608690
- Two M8 x 1.25 studs
- Two M8 x 1.25 nuts
- 1.375" hole plug

Tools needed:

- Drill
- M8 x 1.25 thread tap and tool

- 17/64" drill bit
- 7/8" max diameter step drill bit
- Flat file
- Round file
- medium/fine grit sand paper
- Two 2x4 pieces of wood
- pencil
- center punch

Ok this is really not a hard thing to do but take your time so you don't screw it up.

1. Plug the vent on the top of the transmission so oil can't come out. Using two pieces of 2x4, stand the transmission up. It should be very stable.

2. Using the flat file, evenly file the rough casting marks on the area where the slave will mount to. After you get it cleaned up with the file, use sand paper with a block to smooth it out.

3. Take you new slave and pull the shaft out. Place the slave over the area where is needs to go. You can see that it follows the shape of the transmission case. Also align the holes over the areas that have the extra aluminum where you will drill and tap. You can referance the pictures below.

4. Using a sharp pencil, trace the holes that you will drill.

5. With the slave removed, use a center punch to mark the center of the hole to help guide your drill bit.

6. Using your drill, drill the holes out about 1.25" deep. Start with smaller bits and end with your 17/64" bit. Make sure you are drilling straight!!

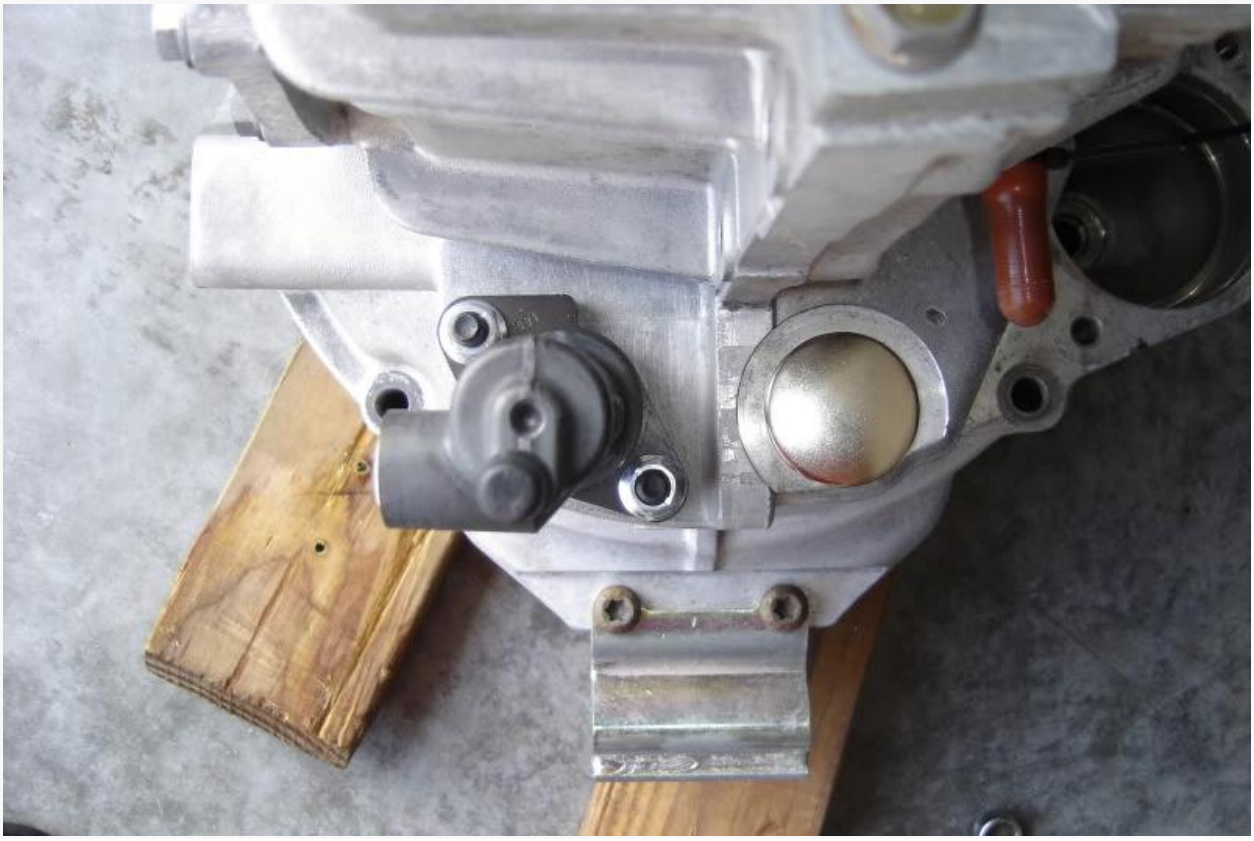
7. Now drill a hole directly in between those two holes. This is for the slave cylinder shaft. Use the step bit to drill a 7/8" hole. Use a file and sand paper to smooth all sharp edges.

8. Clean everything before you start to tap the holes!!!!

9. Using oil on the tap, tap the holes until the tap hits the bottom. Cut slow and pull the tap out and clean it as you are going down. Use oil each time you go back in. Use a vacuum to clean and shavings. Use brake/carb cleaner and air to clean out the holes really well after you're done.

10. Plug the hole for the old slave with your 1.375" hole plug you got from the hardware store.

11. Install your new studs. I put a little oil on my threads to make sure they never get stuck in the future.



I'll post on how to mod the shaft later.

NEW NEW NEW!!! you have to check for this. make sure your clutch fork does not hit the inside of the bellhousing. i found this the hard way. The GT2 has a hole in this area so it does not hit. This made my feel clutch rock hard until i took some material away so the clutch fork could pass.

After i fixed it:

The clutch feels perfect now.

Join Date: Mar 2011

Location: Florida

Posts: 183

Rep Power: 35

I wanted to add a boot so things would be sealed so i cut the stock turbo slave boot to fit. You'll have to install the shaft in the boot then shove the boot into the hole first when installing the slave cylinder. you'll install the slave last.

Quote | Multi Quote | Quick Reply

#8

12-31-2011, 07:14 PM

02turbo996

Registered User

Thread Starter

Join Date: Mar 2011

Location: Florida

Posts: 183

Rep Power: 35

Follow the instructions to remove the drive coupler to stop the second pump for the clutch assist. A simple search will find the thread. I'm going to remove all the lines from my car

too.

Using a 1/4"npt tap, i tapped and plugged the output from the back of the pump. Porsche feeds the pressure from here to the resevoir lid and then out to the clutch slave.

In this picture, "P" is the pressure input from the back of the power steering pump, "A" is the pressure output to the clutch slave, "T1" is the power steering return line and "T2" is the clutch return line.

You want to use a 1/8" NPT tap to thread into "T2" so you can use a 1/8" NPT plug to plug it. Use a pick to pull out the O-rings first. Only run the tap 3/4 of the way.

for "P" and "A", just find a nice plastic plug at the hardware store to plug them. at this point there is nothing running through them. Clean every thing out with brake clean so any petosin can't eat your plugs.

I think this is the plug you need to plug the pump. two if you want to cap the large one on top of the reservoir.

can verify that, Hardware section, speciality drawers, 1 3/8=39mm zinq coated plug for around 3$. Directly bought the NPT plugs for the PS-Pump also

4. Do an oem style GT2 clutch conversion.

- Drop Transmission
- Drill and tap is easy for a shop that has done it before,
- New GT2 slave,
- New GT2 reverse clutch fork.
- New GT2 line,
- New GT2 clutch pedal spring,

- Flush/re-use existing master cyl.
- Un-couple clutch circuit in power steering pump.

I recently had this done, along with a GT2 clutch, it is an incredible improvement. And honestly, saving all the extra $$ that BBI and EvoMS charge for their "kits" goes a long way to paying for the Tranny R&R labor. The OEM GT2 clutch slave/line/spring parts themselves are pretty reasonable.