

ST1300 LOWER TANK REPLACEMENT PROCEDURE

PRELIMINARIES:

This work was performed on a 2005 model ST1300.

This "how to" guide is intended as a compliment to the ST1300 Service Manual (SM). If you don't have a manual, get hold of a copy. There are some pictures and diagrams in the manual that would be helpful and some that you will need. At the very least, you'll need it for steps such as upper tank removal & installation (which I don't cover here), double checking torque values, and especially the fuel pump tightening sequence for your year model ST. Since those sequence diagrams are probably copyrighted, I did not include them.

The instructions below are laid out in sequence from beginning to end saving you the time of having to hop back and forth around the ST1300 SM. My step numbering system reflects the "nesting" that resulted from having been referred by the SM to multiple pages to perform subordinate steps.

Although I do mention the upper tank, this procedure basically starts with the upper tank already off.

As much as possible, I reference page numbers in the SM so that you can double check or look for clarification. Because I have both, I've referenced page #'s for the 2005 ST1300 and the 2003 ST1300. There are differences.

I've listed torque values for use in reassembly.

Tips & Notes will be in green text.

- it is important to read each step's notes before proceeding.

Steps are in red text.

Before Beginning...Words of Wisdom

1. Take pictures, lots & lots of pictures, from all different angles before you perform a step. These are absolutely invaluable when putting everything back together. Remember that every hose and every wire has to be connected back up AND routed exactly like it was from the factory. I took a bunch of pictures but wish I'd have taken more.

2. Because there are so many fasteners and parts involved in this procedure, put fasteners in a labeled, zip lock bag for each item. I even taped these bags to the part they go to when possible, such as the cowlings, fenders, etc. just to keep things as organized as possible.

3. Make ABSOLUTELY sure that there is no gas in the upper tank or connecting hoses & lines before removing the upper tank. To accomplish this, I ran the bike until there was one blinking bar on the gas gauge as indicated in the article at this link: <http://stwiki.notonthe.net/twiki/bin/view/ST13/FuelGauge>

BEGIN LOWER TANK REMOVAL PROCEDURE

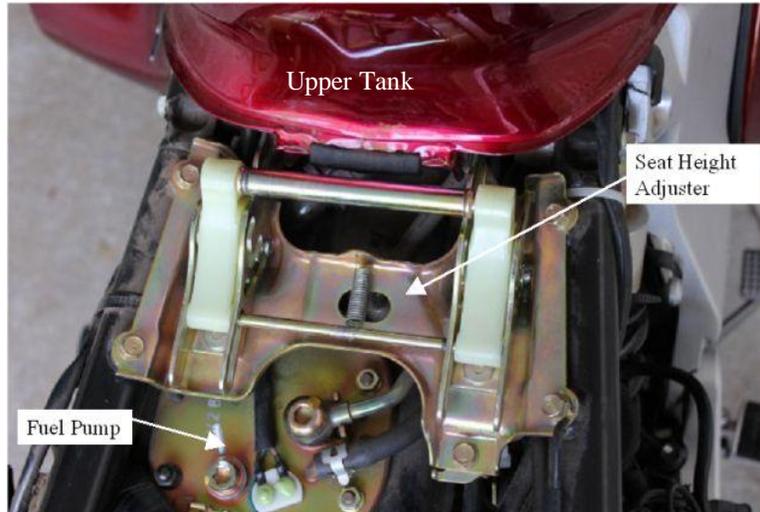
1. **Remove the panniers and rear side covers.** (pg 2-6, '05 & '03 SM)



2. **Remove the upper tank after making sure there is no gas in the tank or lines.**

Since most folks on this site have removed their upper tanks, I'll not go into the details of removal. If you've never removed the upper tank before, see pg 5-57 '05 SM (p 5-56 '03 SM) for removal, & 5-60 '05 SM (5-59 '03 SM) for installation.

3. **Remove the seat height adjuster.**



NOTE: When removing the seat height adjuster, be sure and put rags in open spaces where bolts could fall. This tip goes for any situation where bolts might fall and be trapped in nether regions of the bike or dropped on the ground and roll into hiding places.

3. **Remove the seat rail** (pg 2-22 in the '05 service manual(SM) & 2-19 in the '03 SM).

STEPS for rail removal:

A. **Remove rear fender "B"** (pg 2-9 '05 & '03 SM). This is the entire fender, not just the one that holds the license plate. It sounds like a simple task but there is a lot to it!

STEPS for Rear Fender "B" removal:

1a. **Remove rear fender "A"**. This is the one that holds the license plate. (pg 2-8 in '05 & '03 SM). There are four allen bolts to be loosened. Two on the outside facing to the rear and two underneath.



2a. **Remove the rear wheel.**.. Again, I'll not go into detail here since most have done this many times. If you've never done it, see pg 16-6 of the '05 SM & 16-5 of the '03 SM.

NOTE: Torque values for use when remounting the rear wheel:

Muffler mounting bolts 17 NM <12 ft-lbs> (pg 2-4 '05 SM)

Muffler Band Bolts 22 NM <16 ft-lbs> (pg 16-13 & 2-20 '05 SM)

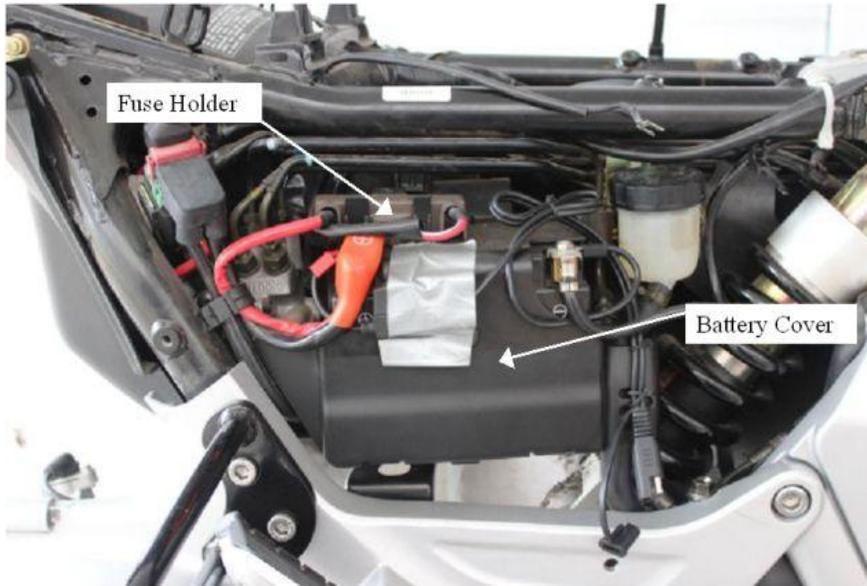
Caliper Stopper Bolt 69 NM <51 ft-lbs> (pg 16-12 '05 SM)

Rear Axle Nut 108 NM <80 ft-lbs> (pg. 16-13 '05 SM)

3a. **Remove the battery** (pg 19-5 in the '05 & '03 SM).

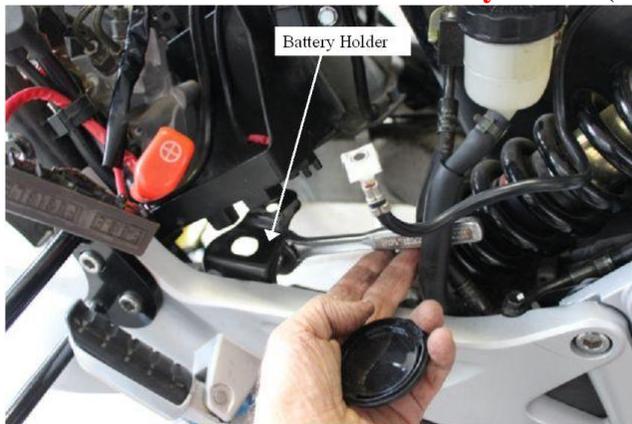
STEPS:

- I. **Remove fuse holder from the battery cover** (see diagram pg 19-5 '05 SM)
- II. **Remove battery cover** by releasing the tab from the rear fender groove and two hooks from the two tabs on the rear fender.



III. **Disconnect** negative then positive battery **cable** then remove battery.

IV. **Remove the metal battery holder** (support bracket)



4a. **Remove Rear Cowl** (pg. 2-7 '05 & '03 SM)

STEPS:

I. **Remove the Grab Rail Center Cover** by removing the 4 bolts, collars & nuts.

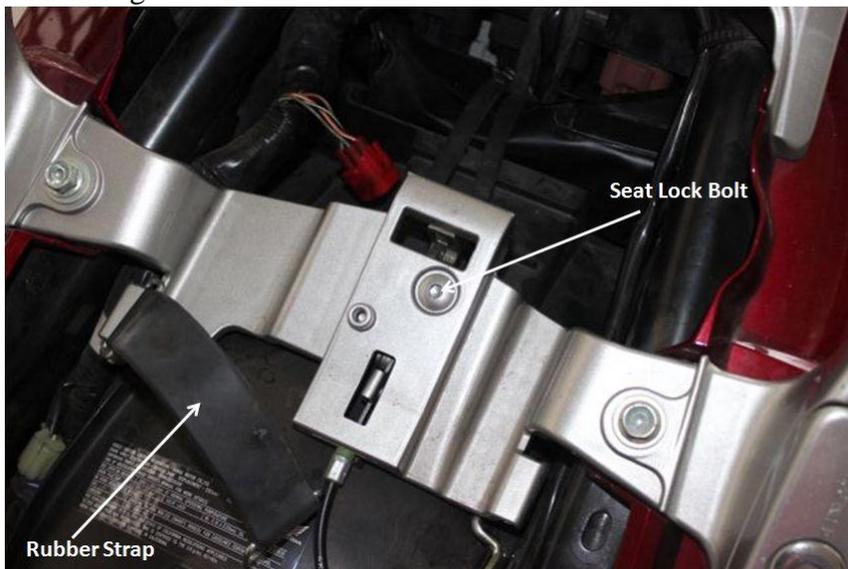


NOTE 1: Watch out for those collars & nuts! They will drop and go bouncing on the concrete and come to rest in places never to be found!
NOTE2: Torque values for reassembly. I used the standard for this bolt's size of 10 NM <7 ft-lbs> . These standard values can be seen on pg 1-12 of the '05 SM. The size is that of the threaded part of the bolt, not the head size.

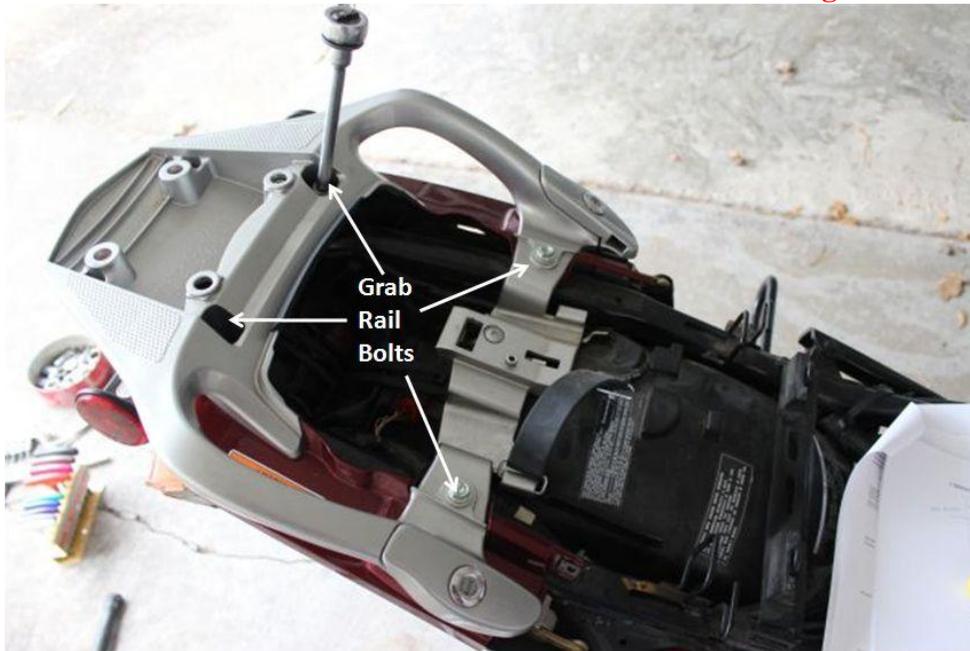
II. **Remove the rear grab rail** (pg 2-7 in '05 & '03 SM)

STEPS:

- **Remove the seat lock** by removing the rubber strap and the bolt holding the locking mechanism down.



- Remove the 4 bolts and washers that attach the grab rail.



NOTE: Torque for reassembly. I used the 22 NM (16 ft-lbs) from the standard torque value chart.

- Release the seat lock cable from the groove & remove the rear grab rail.

III. **Disconnect and remove the rear cowl** (pg 2-8, '05 & '03 SM)

STEPS:

- Remove the 4 screws, 2 socket bolts & 2 trim clips from the cowl.





NOTE: I have in my notes that I did not see or work with the "2 socket bolts" and that the cowl came off just fine.

- **Remove the rear cowl** and disconnect the rear turn signal 2 pin connectors & tail/brake light 3 pin connectors <Honda wording>.

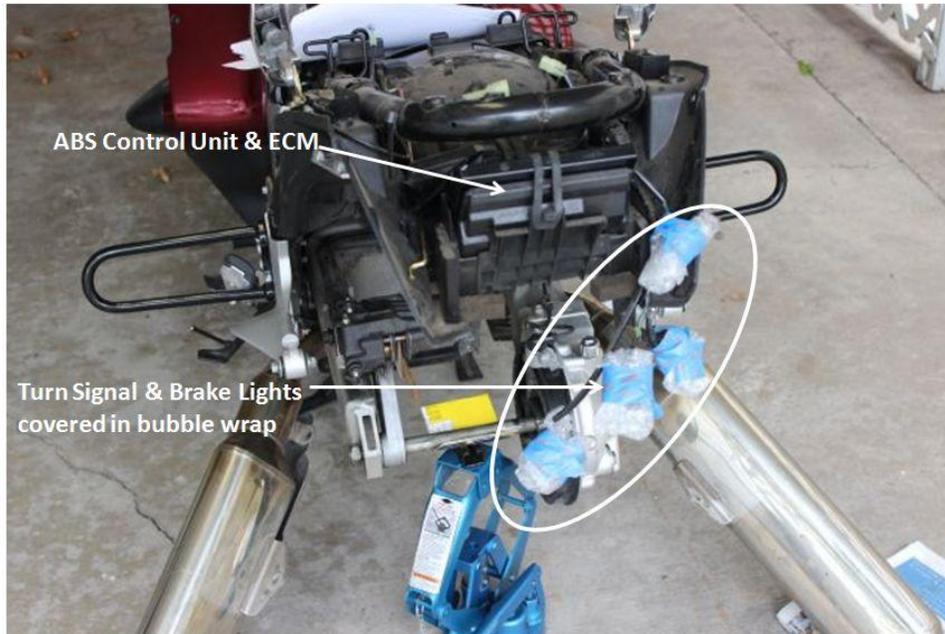
NOTE: I chose to just unscrew the bulb holders from the cowling instead. I then wrapped and taped bubble wrap around the bulbs to protect them.

- **Disconnect white plug on the seat rail near the ECU**



- **Release the band that secures the ABS control unit and ECM.** Tape the whole mess to the back of the seat rail.

NOTE: Not totally sure this step didn't come after step 6a. My notes are unclear on this.



NOTE 2: The scissors jack in the above picture above was NOT touching the axle as I did not want to bend it. It was about 1/2" away from the axle and was there just in case something were to happen to cause the rear end to tip down. Very unlikely but thought I'd be cautious.



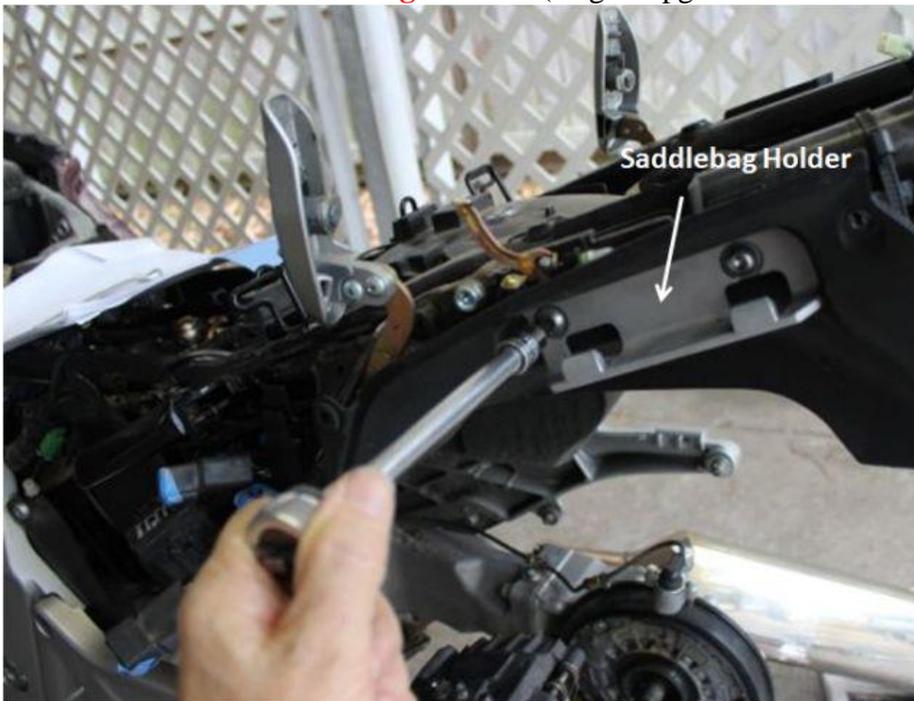
5a. **Remove the relays & fuse boxes from the tabs on the rear fender** (pg 2-9, '05 & '03 SM & pg. 1-45 '05 SM)

NOTE 1: I put tape on the top of each relay and numbered them. These numbers were then recorded on a copy of the relay cluster found on pg. 1-45 of the '05 SM & pg. 1-42 in the '03 SM.

NOTE 2: I have in my notes that there are release tabs on the fuse boxes.



6a. **Remove the saddlebag holders.** (diagram pg 2-9 '05 & '03 SM)



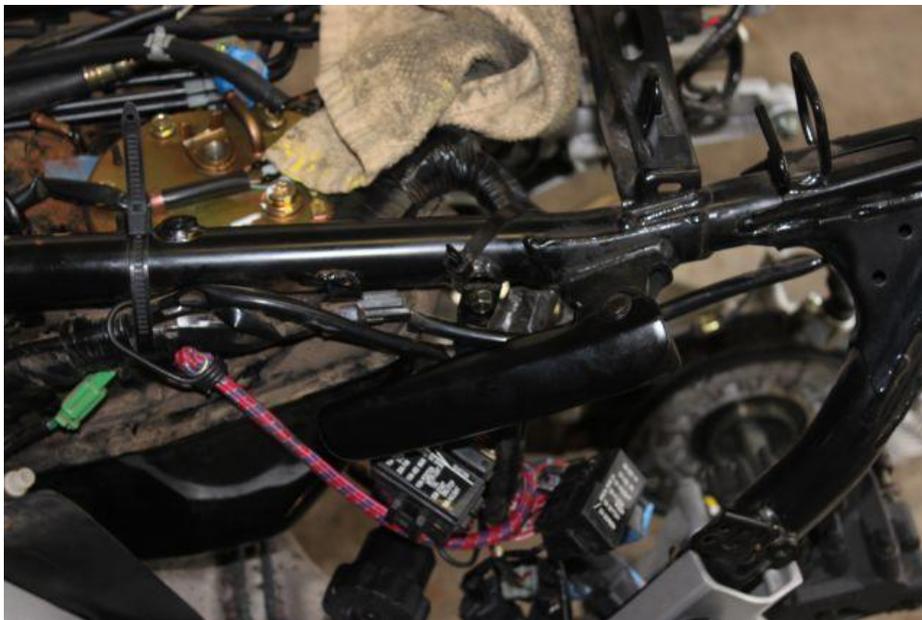
NOTE: Torque for reassembly of these saddle bag holder bolts is 26 NM <20 ft-lbs> (pg 1-15, '05 & '03 SM, under "Frame Body Panels/Exhaust System)

7a. **Remove the remaining bolts from the rear fender & pull the fender out** (diagram, pg 2-9 '05 & '03SM). See notes below before proceeding.

NOTE 1: There is a bolt to take off near the relay shelf (see silver bolt, bottom right in the picture in step 5a.). I think there might have been one on the right side (didn't take enough pictures or notes!!).

NOTE 2: There are all kinds of things in the way when trying to pull the fender out the rear of the bike. I had to back off the lower seat rail socket bolts (pg 2-23 '05 SM & 2-20 '03 SM) until the ends were flush with the frame. These are the bolts that your Bydawg tip-over bars attach near the passenger foot pegs. I also had to loosen the bolt that goes to the remote shock adjustment bracket where it attaches to the frame (pg 2-22 '05 SM & 2-19 '03 SM).

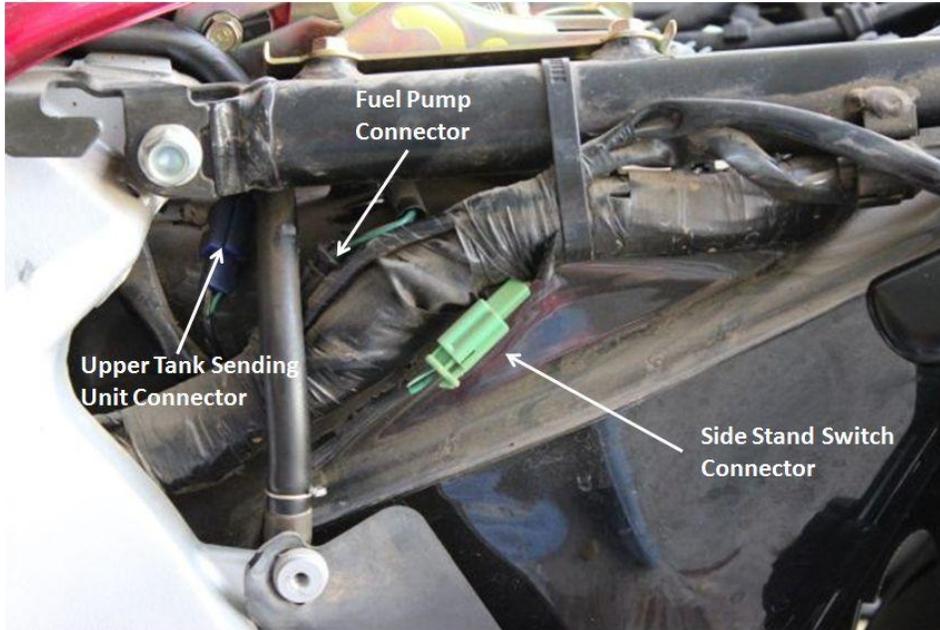
NOTE 3: At this point you've got quite a gaggle of relays and wires hanging after they were removed from the rear fender in step 5a. These could get in your way when you try to pull the fender back and/or tank out. I used a bungee cord and wrapped the whole mess up into a bundle and pulled it out of the way. Unsure I if I did this before the fender removal or before the tank removal. (see pic below)



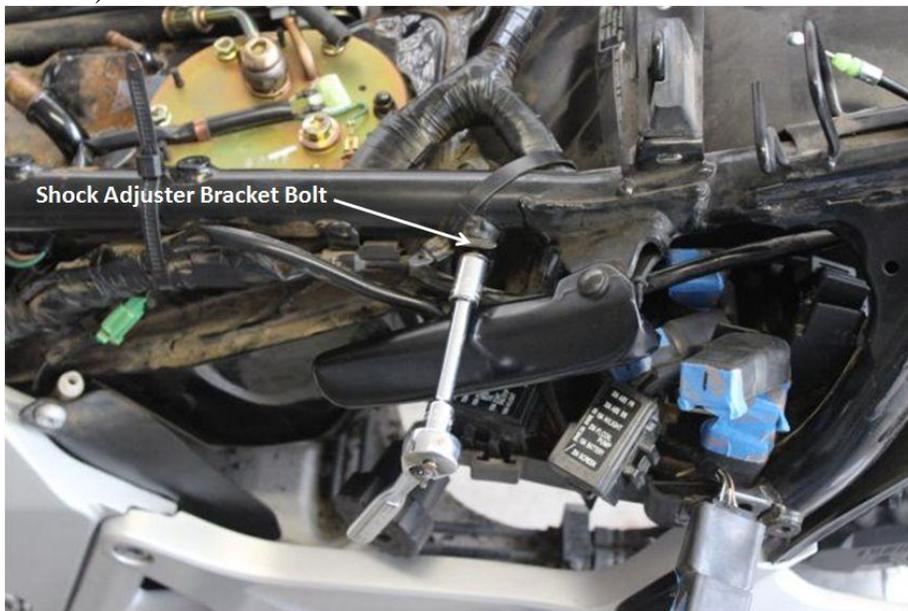
NOTE 4: I had to let the rear brake caliper hang free before the fender would come out.

NOTE 4: Pulling the rear fender out requires that the fender be squeezed and jiggled around quite a bit to get it out.

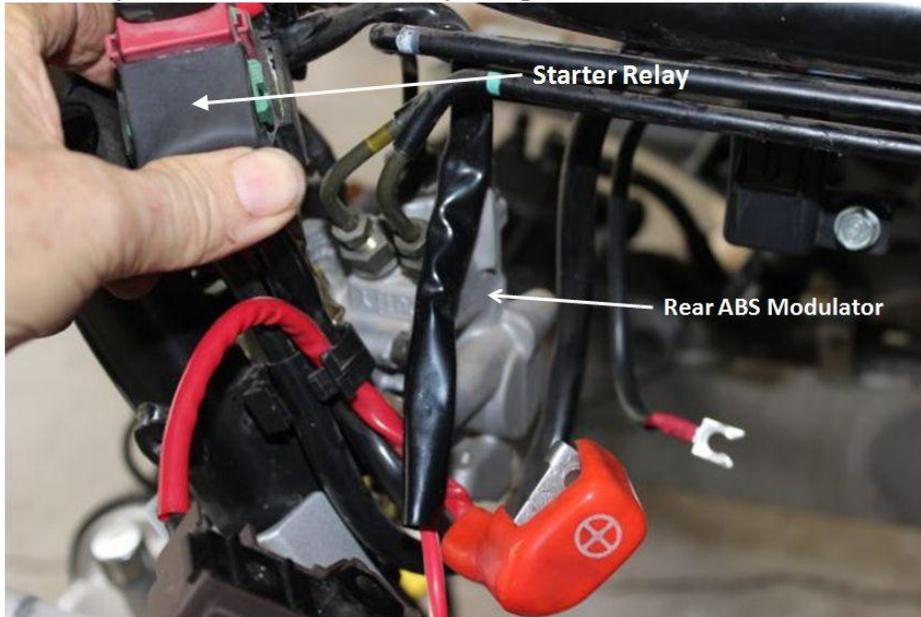
B. **Disconnect the green, side stand switch 2-pin connector and the black fuel pump connector** just underneath the upper seat rail near the front tank. **The blue connector also located in this area should already be disconnected** from having removed the upper tank.



C. **Disconnect the shock adjuster bracket from the seat rail** (pg 2-22 '05 SM & 2-19 '03 SM).



D. **Remove the starter relay switch from the seat rail** (pg 2-22 '05 SM & 2-20 '03 SM). This relay is rearward of the battery compartment.



E. **Remove the bolts and the rear ABS modulator** <Honda's wording> (pg 2-22 '05 SM & 2-20 '03 SM). ***** See note below before proceeding *****

*****NOTE:** This step is the only place where I almost got into trouble. I took the above (step 7) to mean to disconnect the modulator from the bracket then remove the ABS modulator from the bike. This would have entailed disconnecting the four brake lines that feed into it. Made sense because when the modulator was separated from its bracket, it was suspended at the end of long, small diameter, metal brake fluid pipes. It looked like the weight of the modulator could cause the pipes to bend.

**** DO NOT REMOVE THE BRAKE LINES FROM THE ABS MODULATOR ****

I disconnected one of the lines then went to remove a second. I did not have a set of flare nut wrenches so I just used an open end 10mm wrench. When I tried to disconnect that second line, I managed to round part of the nut. It was like someone put it on with an impact wrench! I looked at the SM and it turns out these nuts are torqued down to 34 NM! No wonder I was having such a difficult time.

At this point, still not knowing that I had misinterpreted the instructions, I said to heck with it, there's no way I'm going to be able to remove those lines so I decided to just leave them connected and see how it went.

When I went to reconnect the one flare nut I managed to remove, I encountered great difficulty because the long, finely threaded connector wanted to cross thread. Hard to describe but I couldn't get the modulator in the right position because the other 3 lines kept the modulator in a slightly off kilter position. After many attempts, I finally got it back on and breathed a huge sigh of relief.

To prevent damage to the metal brake lines, I made a cardboard support for the modulator which can be seen in this picture:



NOTE: Torque for ABS Modulator mounting bolts for reassembly = 12 NM <9 ft-lbs> . (pg 1-12 '05 SM)

F. **Remove the 4 lower fuel tank mounting bolts & washers** (p 2-22 '05 SM & 2-20 '03 SM)

No pictures but you can see them in the SM pictures at the pages noted above. The location of these bolts are unmistakable at this point.

NOTE: for reassembly, the four tank mounting bolts are torqued at 12 NM <9 ft-lbs>. (p 1-12 '05 SM)

G. **Remove the seat rail lower mounting socket bolts** (pg 2-23 '05 SM & 2-20 '03 SM). These are the bolts that the affix the Bydawg tip-over bars if you have them.

NOTE: for reassembly, the bolts are torqued to 42 NM <31 ft-lbs>.



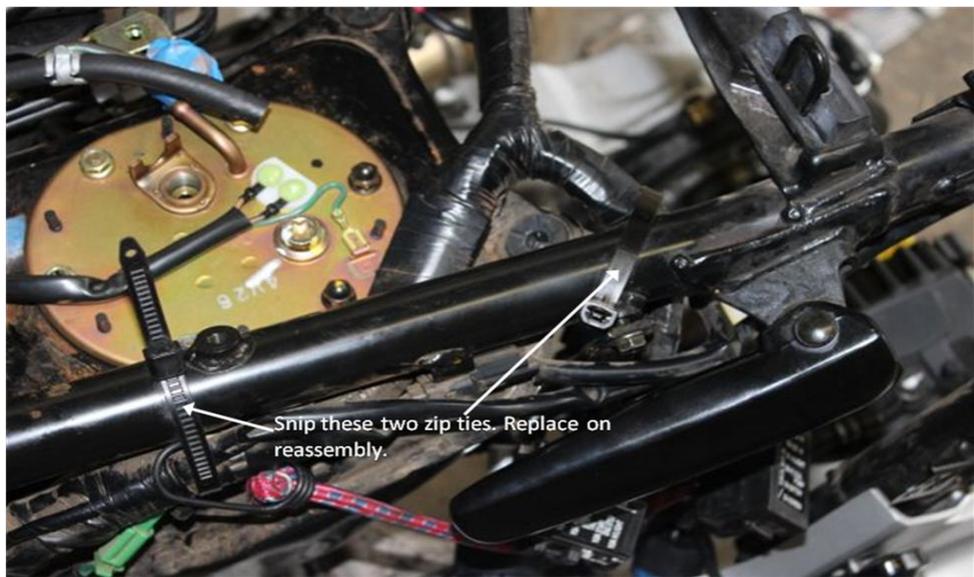
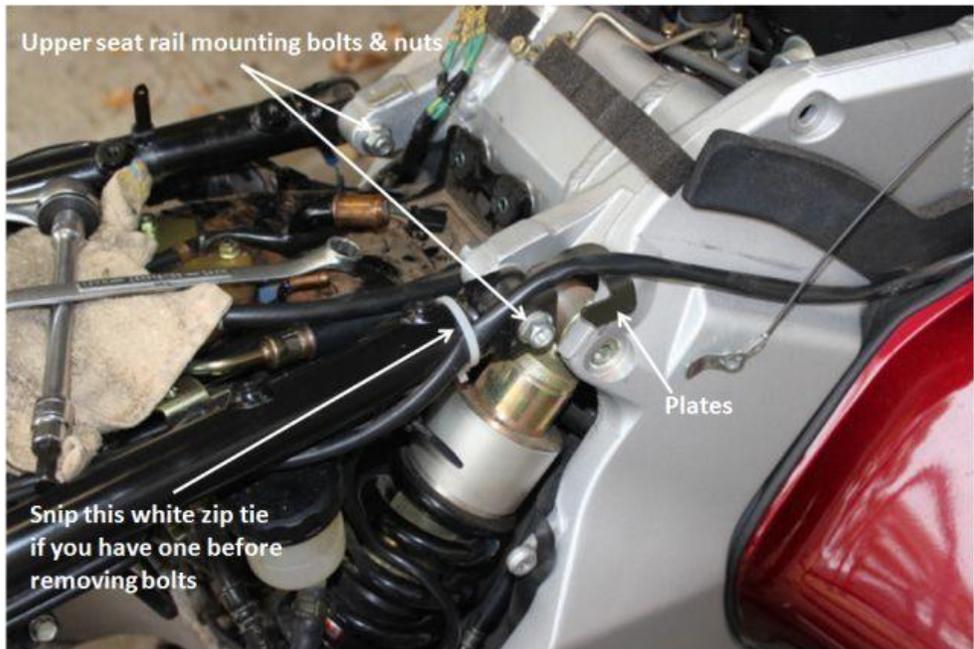
H. **Remove the upper mounting nuts, plates & bolts** then remove the seat rail <Honda's wording> (p 2-23 '05 SM & 2-20 '03 SM). See pics in the SM.

***** IMPORTANT NOTE: *****

NOTE 1: I did NOT completely remove the seat rail as there is no need to do this AND there were still things attached. What I did do was snip just the harness zip ties near the lower tank (see pic below) so that I could just raise the rail out of the way to enable to tank to slide back.

I also snipped the white zip tie seen in the photo. It secures the wire that plugs into the OEM, auxiliary electrical socket mounted near the right fairing pocket. Take note of how it runs if you have this wire.

NOTE 2: for reassembly, the upper rail flange bolt is torqued to 39 NM (29 ft-lbs). (pg 2-23 '05 SM)



4. **Remove the lower fuel tank**

STEPS:

A. **Be sure that the fuel pump electrical connector is disconnected** as well as all hoses & lines.

B. **Lift the seat rail up and slightly back, then slide the lower fuel tank out the back.** You will have to jiggle it a bit where it connects to the seat rail but it'll come out.

... out she comes:



End Removal

INSTALLATION OF REPLACEMENT TANK

Installation basically consists of doing everything in reverse. I do have a couple of notes on this though:

NOTE 1: You will have to reuse the rubber grommets from your old tank. These are located in the tank mounting holes. They just pull right out. To put them in the new tank, just spray a little silicone oil on them, do a bit of squeezing and pressing, and they'll pop right in.



NOTE 2: I put my new fuel pump in the replacement tank before I slipped it into the bike. To do this I just put the pump in and lightly finger tightened the nuts. I did this because I did not want to fight the wiring harness that hangs over the left rear corner of the tank when it is installed.

NOTE 3: VERY IMPORTANT. When you get the lower tank back in and fastened, the next step is to torque down the fuel pump nuts on the new lower tank. There is a definite sequence and torque value that has to be followed when tightening these nuts. This sequence differs for '03 and post '03 ST13 models.

The fuel pump tightening sequence diagram is located on pg 5-56 & 5-57 of the '05 SM. It's also located on 1-15 '05 SM where it also shows the torque values for the various fasteners. If you don't have a SM, just google for it under the subject "ST1300 fuel pump replacement" or ask on an online, ST1300 forum.

Before I even slipped the tank back in, I wrote the correct sequence number on the top of the fuel pump by each nut using a black felt tip marker. Unfortunately I did not take a picture of it.

After the tank was installed and every thing else buttoned up, I first finger tightened each nut as much as possible in sequence. I then worked in sequence around the pump in steps, tightening just a little during one round, then a bit more in the succeeding rounds using a torque wrench until I reached recommended torque of 12 NM <9 ft-lbs> seen on the above pages.

NOTE 4: I used new washers on the large banjo fitting that attaches the outgoing gas line to the fuel pump. Not sure it's needed but they are cheap and I wanted to minimize the possibility of leaks so that I'd have to do this job only once!

UPPER FUEL TANK REPLACEMENT (pg 5-60 '05 SM & 5-59 '03 SM):

I won't go into detail on this but I do have a few notes on this:

NOTE 1. Honda recommends to use a new fuel joint hose (connects upper to lower tank) and clips. I followed their advice.

**** NOTE 2.** Check for leaks. Once the tank is on and completely hooked up, slowly pour in gas in steps and check for leaks. Raise the upper tank occasionally to check for leaks at the fuel joint hose beneath the tank. I looked at <http://stwiki.notonthe.net/twiki/bin/view/ST13/FuelGauge> to get a feel for how much gas to put in to fill the lower tank plus a little bit in the connecting hose. After a brief check, I proceeded in a step wise manner putting more and more gas and checking for leaks. I did this in steps because the more fuel that's in the top tank, the higher the pressure in the joint hose and on the fuel pump seal.

After filling the tank with a bit over 5 gallons, let it sit overnight before starting to make sure there are no small leaks.

Final Note - no leaks, the bike ran well, all was good.

That's all folks. Hopefully you'll never have to replace a lower fuel tank.