GETTING TWISTED

WITH YOUR GAS CAP

Since you're reading this, you're likely dealing with one or more of the following: you're smelling gas even with the cap closed; the cap isn't latching properly; or, the key is having trouble turning in the lock. So, you'll need to pull it apart to deal with the problem.

We've rebuilt gas caps before – we cared for and fed one from a 650. This one, however, is a bit different. While the other style would work with the vast majority of the XJ line, this twist-on/twist-off type goes on the 650 Seca Turbo, 750RL, and most of the various 900 models. It can also be found on the XS400RJ, FJ600, and other non-XJ models.

While the two types share few common parts, we'll be borrowing some material from the writeup for the pop-cap rebuild, so if you see something that looks familiar, you'll know why.

Follow along as we delve into arcane mysteries without the need for incense, magic spells, or secret societies bent on world domination.

You'll likely be wanting:

A gas cap. One imagines you have this already. If you don't feel like rebuilding the one you have, or just plain need one, complete caps be gotten as OEM (**HCP2906**) or aftermarket (**HCP15756**), and come with the lock and keys.

The screws that are currently there will likely be corroded, so replacing them would be a good idea.

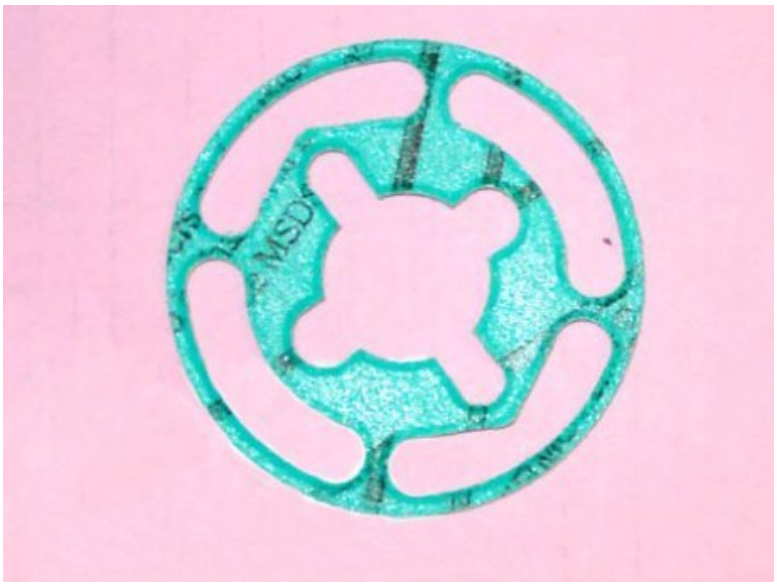
These hold the spring cup and latch ear retainer bracket to the plastic tower. This bright plated panhead screw is available as **HCP17613**. The lockwasher can be had in several flavors:

HCP326	OEM
HCP336	Aftermarket 18-8 stainless
HCP922	Aftermarket zinc plated
HCP342	Aftermarket black oxide

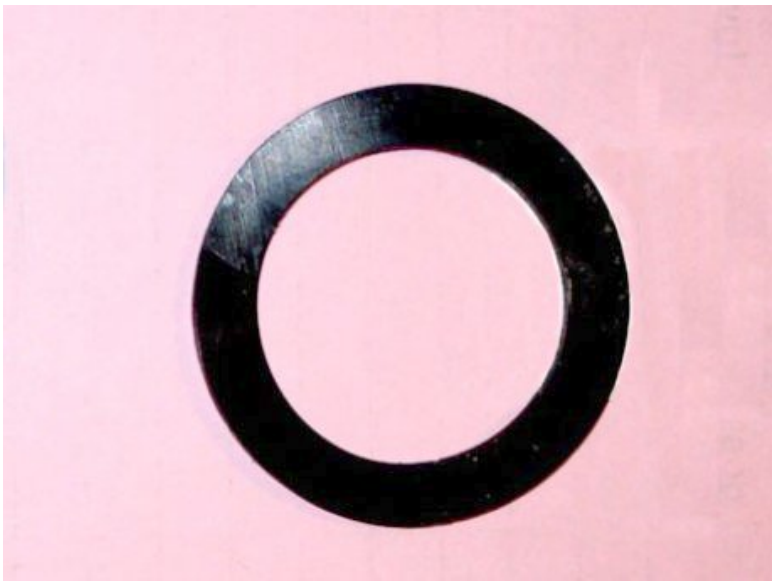
This screw (yes, it looks the same as the other one, but bear with us) holds the plastic tower to the cap base. Like its sibling, this **HCP14150** screw is a bright plated, phillips panhead type.

Lockwashers:

HCP296	OEM zinc plated
HCP7119	Aftermarket 18-8 stainless



No rebuild is complete without gaskets. This **HCP18624** base gasket seals the cap base to the plastic tower.

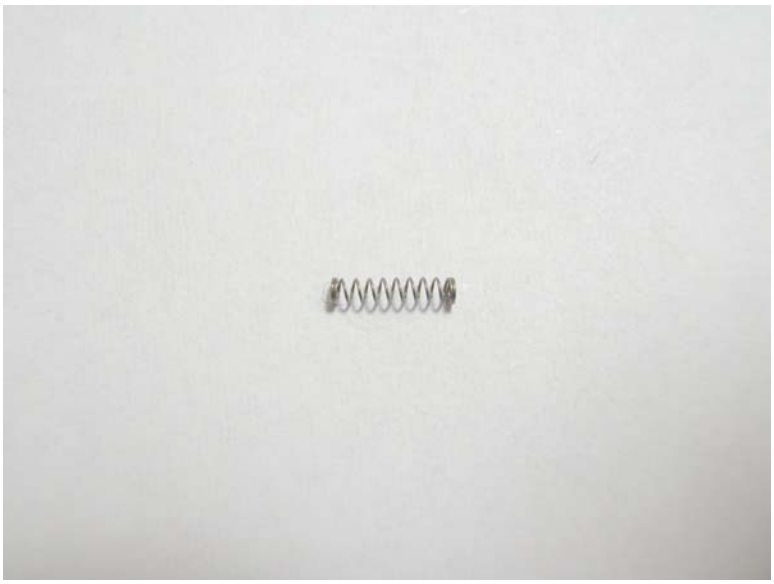


This **HCP18610** sealing gasket fits onto the base of the spring cup.

This is our **HCP18621** vapor filter. It fits into a little recess on the plastic tower, where the check ball valve goes.

If you're going to clean and lube the lock plug (it probably needs it), then you'll want this **HCP187** o-ring.

Graphite for the lock plug wafers. Silicone grease for lubing the outside of the plug.



Speaking of the lock plug, you'll notice in the Appendix that there are these dinky little springs for the wafers. If they get dropped or go missing, they will be difficult, if not impossible, to find. The good news is, they can be replaced by ordering **HCP17708**.

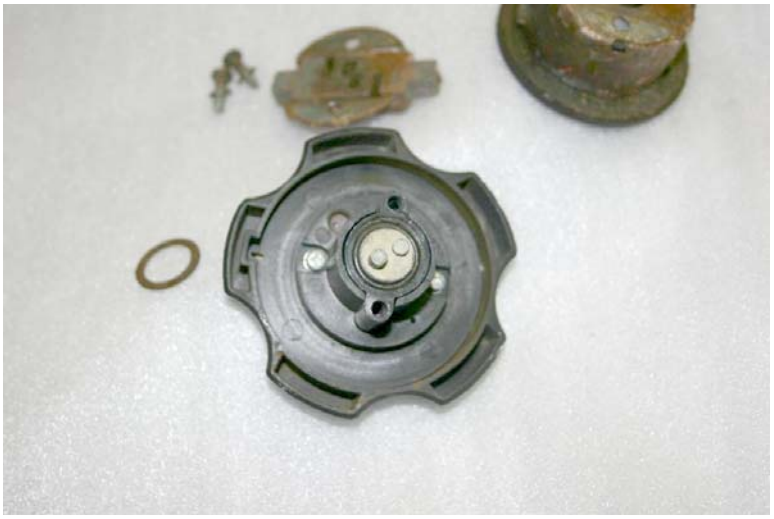
Tools as appropriate.

All set? Let's get busy.

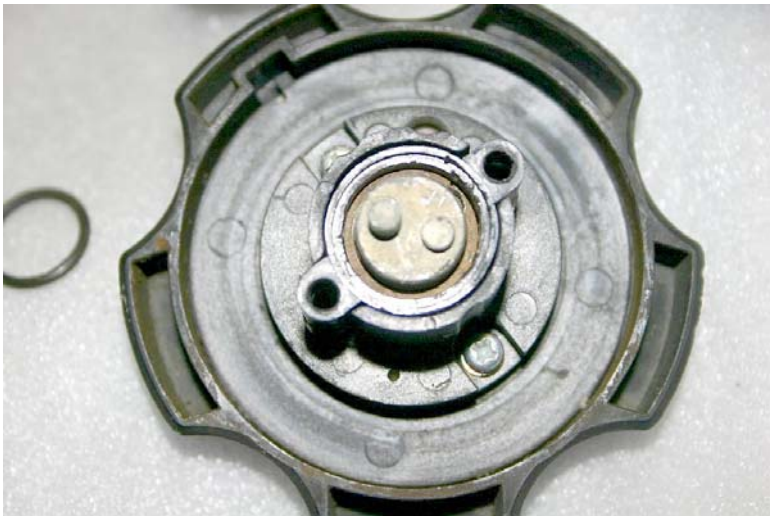
We start with a quick overview. First, the top view…

…and the bottom. Being exposed to fuel for so long certainly has had an effect.

Grab a Phillips screwdriver and remove the two visible screws with their lockwashers. This allows you to remove the retaining bracket that holds the latch ears in place. (There may or may not be some small springs installed in the latch ears, so watch for them.) This bracket also acts as a retainer for the spring cup underneath. Remove it as well.



Underneath the spring cup is a plastic tower. Visible here is the bottom of the lock plug. There's a washer-looking thingie here that covers an o-ring. It should come off easily; if not, use a knife blade or thin screwdriver.



We're getting closer to removing the lock plug, but we need to get that o-ring out next. Again, a knife blade or very thin screwdriver. You'll likely tear the old one up a bit getting it out, so it's a good thing you bought that new one.

Next, remove the other two screws holding in the plastic tower and lift it off. Set it aside for now.

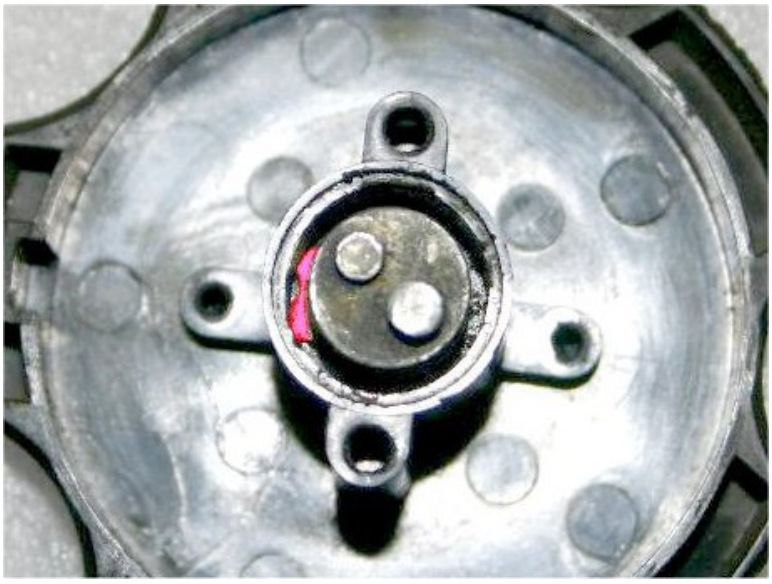
On the underside of the tower, you'll see what looks like a little piece of felt – that's the vapor filter we mentioned earlier. If you're not replacing it, keep it safe in a baggie or something, as you won't want to be losing it.

Underneath the filter is the ball check valve. Unlike the other XJ gas caps, this one is captive, and can't fall out.

Underneath the plastic tower you'll see another gasket. That will be replaced later, but first we need to see about removing that lock plug.

The next step is to remove the collar that hides the retaining latch for the lock plug. If you're going to pull the plug out to clean and lube it, this needs to be done to continue. Since it could be frozen in place, this might not be as easy as it sounds.

If it's stuck, hit it up with the penetrant of your choice, be it WD40, PB Blaster or Kroil, and work at it with a needle or thin blade until it can be made to move. Turn the cap upside down and get the collar close to the edge, and pull it out with a magnet.



Now that the collar is out, we can finally remove the lock plug. That little bit we've highlighted is the retaining latch, which will need to be pushed inwards. You'll need a thin brad nail or ***VERY*** thin screwdriver, as there isn't a whole lot of room to do this.

Once you've pushed the latch in far enough, make sure the key is inserted (there's a reason) and S-L-O-W-L-Y push the lock plug out with your thumb. Details of the plug itself are shown in the **appendix**.

There – everything's apart. Base gasket is removed. Once you get everything cleaned up, we can start reassembly.

With your lock plug cleaned and lubed, put a light coat of silicone grease in the hole where the plug sits, then insert the plug. The metal collar follows.

A light coat of silicone grease for the o-ring, then install.

On top of that goes the washer-looking thing that hides the o-ring. Don't turn the cap over now or it'll just fall off.

Gasket goes on next. Set it aside for now.

If you're replacing the vapor filter, now's the time. Make sure the captive ball can move freely; brake cleaner or even contact cleaner should do the trick.

Then, install the filter in that little recess.

Flip the tower over and install onto the cap base. Snug down with the two screws/lockwashers. Make sure you don't crossthread when putting them in.

Now comes the fun part… the spring cup.

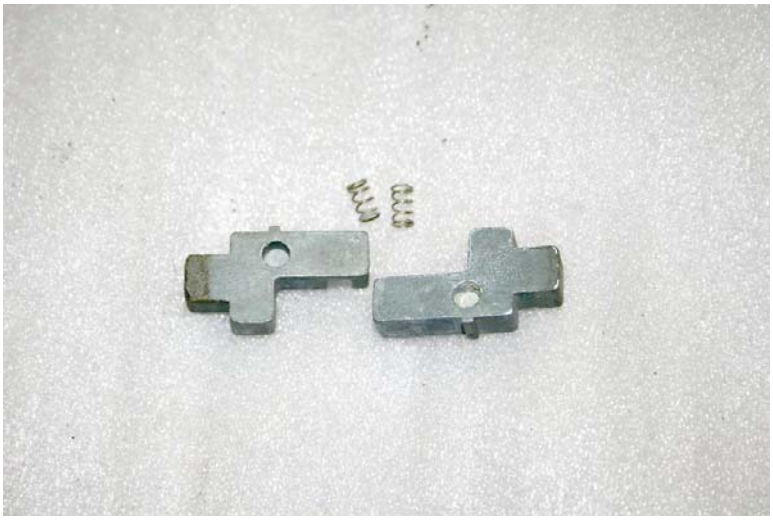
We're not taking it apart, but we'll go into the gritty details for the sake of information. It's composed of the body, the spring inside of it, a sealing gasket, and has two tabs that ride on the sloped ridges inside the filler neck that pull the cap against it.

The spring inside the cap then presses the gasket against the filler neck to create a seal. (If you want a walrus, you're on your own.)

Check the gasket for cracks – now would be a good time to swap it out.

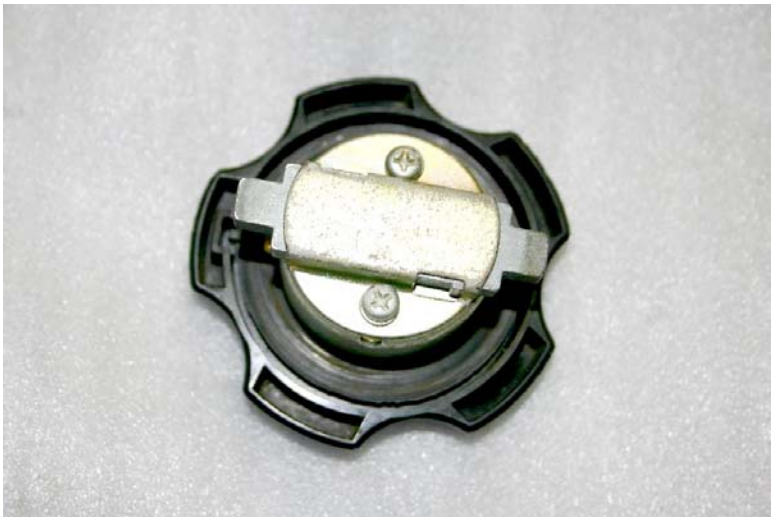
Then there are the locking tabs. They rest inside this retaining bracket, sliding back and forth as the key is turned. If you noticed the little nubs on the bottom of the lock plug, they fit in those little notches in the middle. (A bit of grease in those notches is recommended.)

Here's what they look like underneath. Yours may or may not have those little springs.



Make sure the tabs are nice and clean; use the WD-40 and 600 grit sandpaper if need be. Ditto for the bracket the tabs go in. A light coat of grease to keep things moving. Put the tabs (and springs if you have them) back in the mounting bracket.

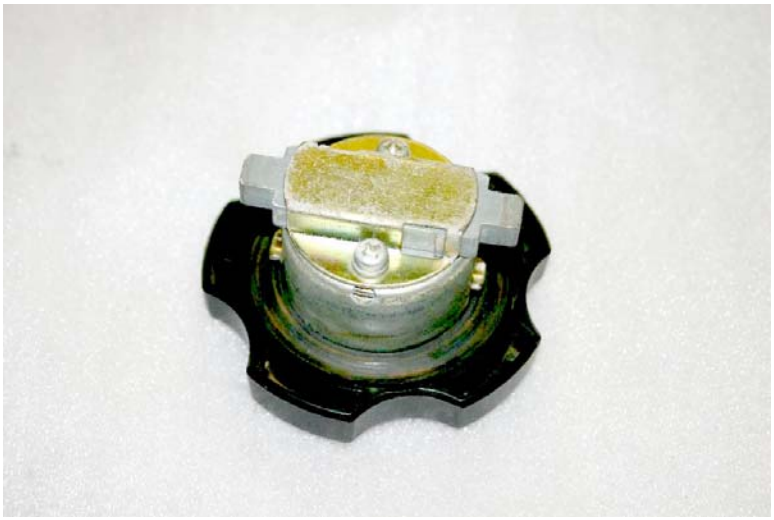
Next, put the spring cap in place. The next step is a bit tricky, so set everything up ahead of time by lining up the mounting holes and putting the lockwashers on the screws.



Now the fun part.

CAREFULLY take the locking tab/mounting bracket and flip it over on top of the spring cap. Carefully, because if you have the springs for your locking tabs, you run the risk of losing them if you bump the thing and pieces go flying everywhere.

Push down on the setup with one hand, grab a screw/lockwasher with the other, and start it in the hole. Again, make sure you don't crossthread the screw.



Stick the second one in, snug them both down, and you're done!

Stand back and admire your handiwork. The key turns smoothly now, locks easily, doesn't leak fumes and looks a whole lot better.

APPENDIX: YOUR LOCK CYLINDER, THE PLUG, AND YOU

Here, we're going to dive into the guts of the lock itself. There aren't that many parts, but most of them are tiny, and you do NOT want to lose them, or put them back in out of order. If you do, your key won't work anymore.

To start, let's identify the type of lock. A standard "pin tumbler" lock uses springs, driver pins, and key pins of various lengths inserted into a plug. The plug is inserted into an outer lock cylinder. Where the plug and cylinder meet is known as a "shear point". When no key or the wrong key is inserted, the point where the driver pins and key pins meet does not line up with the shear point, and the plug will not rotate.

The ignition and gas cap locks on the XJ bikes work on a similar principle, but rather than the pin tumbler type, it instead uses what is known as a "wafer tumbler" lock.

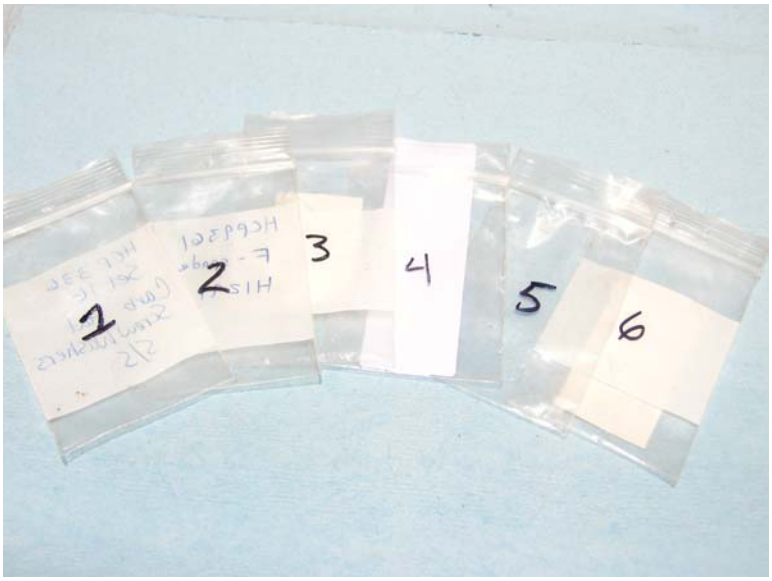
Without the key inserted, the wafer protrudes beyond the edge of the lock plug. This is why you put the key in when removing the plug – we don't want the wafers and springs to go every which way when you slide it out.

The protruding wafer(s) extend into the large slot at the top or bottom of the outer cylinder (which you can't really see here), depending on how the plug is installed. With the proper key inserted, the wafers retract, and allow the lock plug to rotate.

To learn more on this topic, go to:

http://www.capricorn.org/~akira/home/lockpick/

Next up: cleaning and lubricating the wafers.



So. We have teensy-weensy parts that we want to keep in order, and most assuredly don't want to lose. How do we do this?

We'll use some small parts bags we've got sitting around here. You've got plenty of these left over, right? <GRIN> Label them 1 to 6.

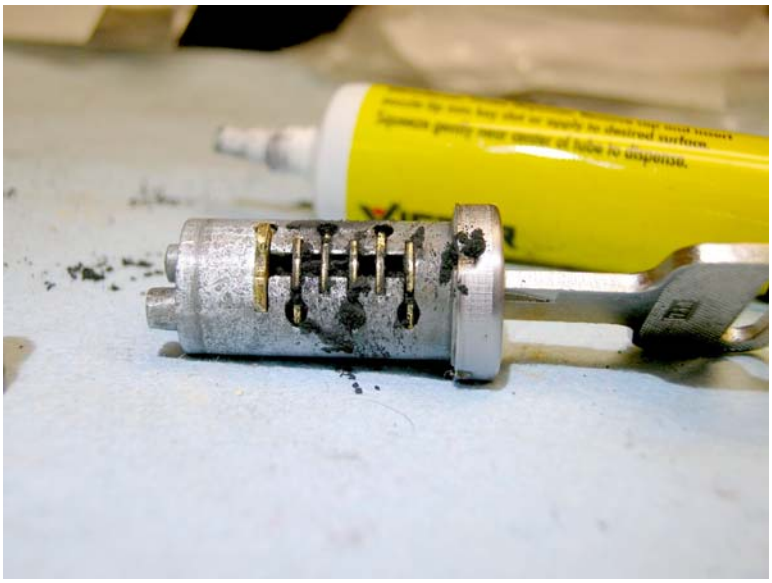
Wafer slot #1 will be at the front of the key plug, with #6 at the rear being the retaining latch. With a pair of needlenose pliers (and a toothpick for the spring, if needed) CAREFULLY remove the wafer and spring from its slot, put them in a bag, and SEAL THE BAG. If those teensy little springs go flying, they'll be almost impossible to find, and you'll have to order new ones.

You can clean up the inside of the lock cylinder, the outside of the plug, and the slots where the wafers go with some 600-grit sandpaper wetted with WD-40.

Likewise for the wafers – this retaining latch certainly needs it. (You may wish to forego the WD-40 and/or go to a stronger grit if you have a lot of buildup. If it's REALLY bad, then a dremel, a sanding disc, and a light touch.)

If you do go with the dremel, remember – we don't need to grind anything down; we're just removing gunk. The wafers need to be nice and smooth so that they'll pop up and down like they're supposed to.

Reassembly, they say, is the reverse of removal. Spring in the hole, followed by its wafer.



Once you've done all the wafers, press them down into their slots with your thumb, then insert the key to hold them in place. Then give them a good dose of graphite, both from the top, and in the keyhole as well.

Wipe off any excess graphite. Lubricate the lock cylinder and the outer plug surface with a light coat of silicone grease, then press down on the retaining latch with the tool of your choosing, and slowly slide the plug home. You should hear the retaining latch snap back into place.

See? That wasn't that hard at all.