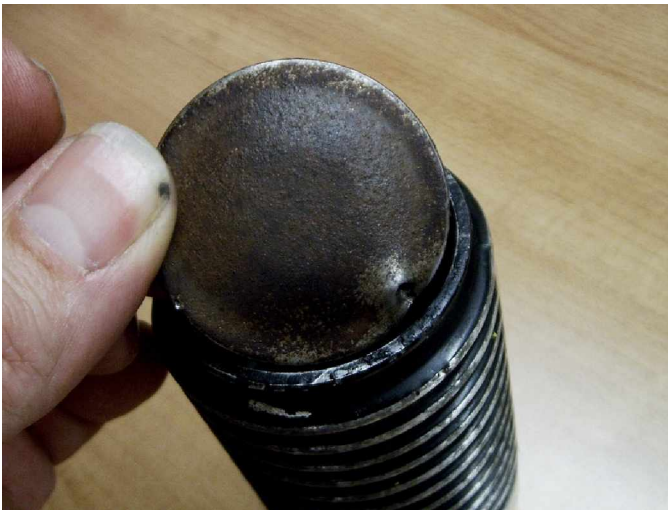


Rebuilding Honda FVQ shock absorbers.

The following is my own made up procedure for dismantling and reassembling these 'sealed for life' units. It is not endorsed by Honda or any other recognized authority. Use at your own risk.



First job is to remove the thin metal cap from housing gas canister housing by prying out. I have not found a good way to get it out without damaging it yet. Depress the Schrader valve underneath to dump any air pressure.



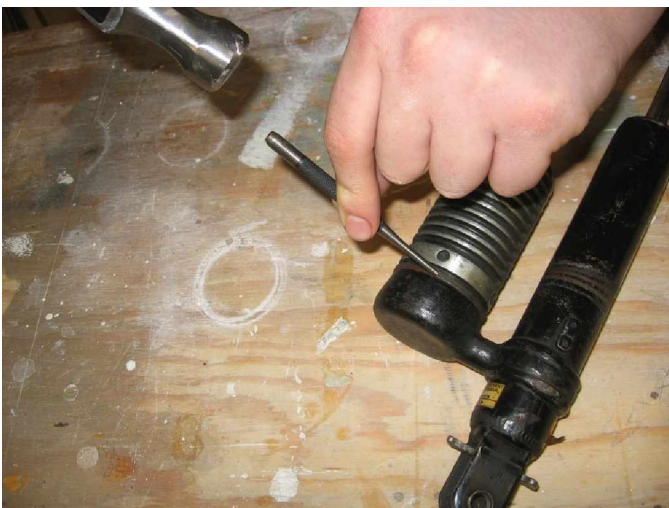
To remove the coil spring I use zip ties as spring compressors. Start with the spring adjuster set to its highest setting then compress the coils with 5 or 6 zip ties. After they are all in place you can work round and round pulling each one a bit tighter.



Then back off the spring adjuster to fully unload the spring and remove the cap etc.



Done.



Use a suitable wrench (or punch and hammer) to loosen the lock nut that secures the nitrogen bladder housing.



Use a pin wrench (or hammer and punch) to loosen the bladder housing then fully unscrew and remove the housing.



Oil will come out. I collected two shocks worth of oil and tested it by recording the time for a measured amount to flow through a fixed orifice. It came out as very slightly lighter weight than SAE 5 fork oil. I am guessing the viscosity drops a fraction with use and age so I use SAE 5 oil to refill units.



Rubber bladder is within housing.



Hold the canister in a soft vice and press the aluminum center down to expose the snap ring retaining it. Use a socket of suitable diameter and C clamp to do the pressing.



Once it is pressed in far enough, hook out the snap ring. Then either screw a valve tool onto the Schrader valve to pull with or unscrew and remove the Schrader valve, then screw a bolt into the threads. Pull bladder assembly out.



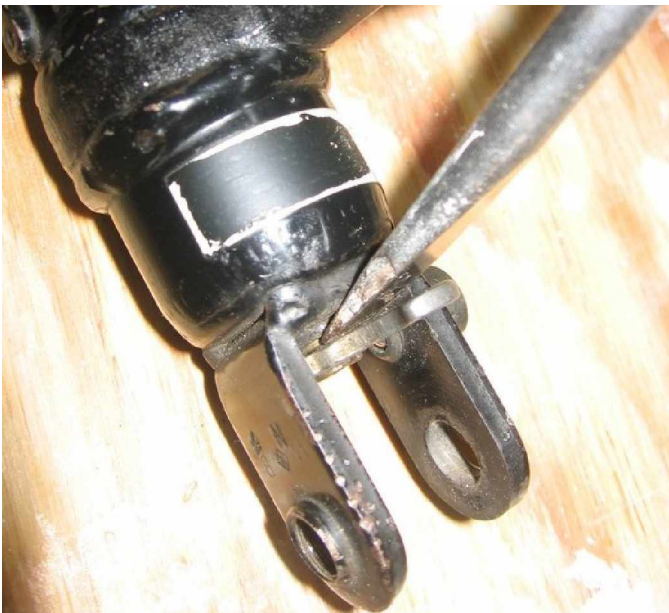
Thus. Now is a good time to clean and paint the aluminum housing. Screw the Schrader valve back into the bladder to keep crud out.



Take body of shock to bench grinder or belt sander and grind away rolled over crimp on top surface. BE VERY CAREFUL not to touch piston rod as any damage to this will make it useless.



You need to grind away enough until you see the witness mark of the tube ID. The tube wall thickness is 1.5mm. This requires grinding a little below the top surface of the washer. In this picture I did not go quite far enough.



Use a flat screw driver as a pry bar to lever off the damper adjustment. Note as this comes off a ball bearing will fall out. You will see a spring in the recess behind where the ball was but this can't come out until the shock is pulled apart.



Thus.



Use some kind of lever device to pull the shock apart. If you did not grind off enough in the previous step the shock wont pull out but the force you apply trying will trash the 'up stop' buffer inside the shock. It does take some effort to pull the shock apart but you should see the witness on the ground face showing almost immediately. Watch out for oil to come out the bottom as the shock pulls apart.

Make sure you save the spring from the damper adjuster that will now be free to fall out.



Shock pulled out.

If desired now is the time to clean and paint the shock body. Also carefully remove the sharp edges around the end to the tube that resulted from the grinding. This edge must be smooth and free of burrs or it will cut the O ring on reassembly.



Separate the damper assembly by tapping the upper bearing cap off the end off the damper tube. A flat steel bar or similar type device is best suited for this. Tap one side then the other to pull it off squarely.



Now use a 14mm socket with an extension attached or similar piece of tube to reach down inside the piston tube. Make sure socket or tube has a smooth flat end with no lumps or burrs on it.



Hold the shock tube in one hand and use the socket to drift the valve assembly out of the end of the tube. The impact is applied to the face of a valve washer that must be flat to work properly. I trashed my first one using a pin drift which put a dent in the washer.



And it's out.



The valve assembly is held together with a snap ring. Once this is removed it can be dismantled cleaned and reassembled. The O rings are Metric size: section 1.5mm Inside diameter 5.5mm



Once the valve has been cleaned and rebuilt it can be tapped back into the end of the cleaned tube. I used a 1/2" socket here.



To disassemble the shock rod, hold the top eye with a bar and use a 10mm wrench to undo the bottom nut. This nit was staked in place so a tread or two will be broken off as the nut comes undone. Note the retract buffer is missing from this picture as it got trashed during a disassembly learning process.



Once the nut is removed the rest of the piston assembly can be dismantled.

Note the little pin in the middle of the picture. This needs to be pulled out of the shaft after the piston head has been slid off the shaft.

Clean up the end of the threads in readiness for reassembly.



The DU bushing can be removed from the upper bearing cap by tapping it out with a 15mm OD socket or similar rod or tube.

Note cap is supported on a larger socket to give clearance to tap the bearing out.



Bearing removed.



Press in a new bearing. Oil the OD of the bearing and the bore prior to pressing it in.

These are made by Garlock under part number: MB1410DU.

MB1410DP4 would be preferable to DU as it has a longer life rating in shock absorber oil but they are hard to find off the shelf.



The original seal and top washer are discarded and replaced by a new seal head and lower washer. The seal head accepts a new seal and a wiper. An O ring is used to seal the OD of the seal head.



Wrap the end of the chrome tube in a single layer of aluminum tape to protect the seal from the sharp edges. Dip the wrapped end in shock oil to fully wet it then carefully work it through the new seal assembly. Remove the aluminum tape once the seal is on the shaft.



Reassemble piston rod assembly with new seal and bearing. Note this pic shows an earlier seal option and the washer that is located between the seal and end cap is missing.

The O rings on the center shaft are cross section 1.5mm Inside diameter 8.5mm.



View of piston end. Note the parts are pretty much Poke Yoke and only assemble one way.

Be careful to ensure that all the various discs remain centered and do not get clamped up in the shaft steps when the nut is tightened. Apply loctite to threads before installing nut



Check for free movement of the compression adjuster and if OK, beat the end of the rod over with a hammer to fully secure the nut. Wipe off any excess loctite.



Lube the ID of the tube and piston rod end with SAE 5 shock oil. Insert rod assembly into tube compressing the piston ring to get it started.



Tap the assembly fully together by standing it up in open vice jaws and using a socket to apply the hammer force to the end of the tube assy.



Finished assembly. Put it in a nice clean place until you are ready to install it.



Install a new O ring (cross section 2.0mm Inside diameter 43.5mm, standard size S44) into the lower bladder housing. Lube O ring with SAE 5 shock oil.



Wipe end of bladder housing that engages with O ring with SAE 5 shock oil. Then ensuring lock nut is in place screw bladder housing into shock body. Screw fully in then back out to align vertical ribs on housing to face fore and aft. Tighten lock nut.



Install spring into bottom of housing and stand housing vertically in a vice.



Immerse end of shock assembly in SAE 5 shock oil and pump unit up and down until oil is pumped out around bearing. Keep pumping until the oil coming out is free of air bubbles.



Note the small lug on the side of the valve body. Look down inside the main shock body and you will see a recess at the bottom that this needs to engage into. Slide the tube assembly into the shock body. (The O ring should be nicely lubed from the previous operation).



Once piston assembly is fully pressed down, Check that the little spring is still in the housing at the bottom. (If not you will have to pull the assembly back up a bit to reinstall the spring). Now half fill bladder housing with SAE 5 shock oil and gently work piston up and down a few times while holding top bearing down with a screw driver tip or similar.



Insert cleaned bladder into bladder housing. Oil should overflow around bladder before it is fully inserted to ensure no air is entrapped. Add more oil to housing if necessary.



Press bladder assy down far enough to uncover snap ring groove. Install snap ring.



Pull bladder back up using valve tool or remove Schrader valve and screw a bolt into threads to pull with.



Top off the oil in the main cylinder and then carefully work the piston up and down about $\frac{1}{2}$ " at the top of its stroke while topping up the oil. This is to work the last of the air out. Lower the seal washer down over the bearing housing.



Finish with the cylinder full to overflowing with no more air bubbles coming up. Remove the Schrader valve core and lower the seal head into the end of the tube. The reason to take out the valve core is to deplete any internal pressure as the cap goes in. if you don't do this it can ride back up again.



Carefully work around the seal with a thumb nail or similar to ease the seal down over the edge of the tube. (This is where the seal will get cut if you did not previously smooth of the sharp edge and remove any burrs). Press the seal cap down gently while working the O ring into place. Once O ring is below the edge of the tube press the seal head fully down into place.



I made up a clamp block to support the tube wall while staking over the edge of the tube using a hammer and punch. I found the best method was to have a helper hold the shock body horizontally and slowly roll it along while I did the tapping.



Edge fully crimped over. Need to fix the paint now.



Turn shock upside down. Install the ball into the housing (spring should still be there) then replace the shock adjustment lever. Use a pin punch to spread the brass around the shock adjuster lever to secure it in place.



Reinstall Schrader valve core and inflate bladder to 28psi. Work shock back and forth by hand checking function of adjusters and for any oil leaks. Let sit for 24 hours and recheck air pressure. It should not leak down.

