Changing Fork Seals On Upside-Down Paioli Forks

NOTE: This procedure is identical for either fork leg.

1. Remove front wheel, fender, fork brace, and brake caliper.
2. Loosen the pinch bolts on the *upper* triple clamp. Leaving the lower triple clamp tight, break loose the fork cap. It is important to loosen the upper pinch bolt or it won't be easy to loosen the fork cap!
3. Loosen the pinch bolts on the lower triple clamp and slide the fork tube out of the triple clamps. Inserting a couple wedges (like a common screwdriver) into the triple clamp pinch area will help the fork leg slide out easily. Do not pry the pinch area open!
4. Unscrew the fork cap and remove it. The cap will be attached to a damper rod. Loosen the jam nut and unscrew the cap. The rebound side (no spring) cap will have a long, thin rod attached to it. There is nothing that will fall out or get lost (unless something is broken!), so just pull the cap and rod out of there, lay it on the workbench and don't worry about it. The compression (spring side) cap should just come off. Again, there is nothing underneath it to fall out or lose.
5. Find a drain pan and drain the oil by turning it upside down. You *could* do this while the forks are on the bike by pulling the little drain plug at the bottom, but I like to do it this way for a couple reasons. First, the oil will drain faster and more completely through the fork cap; I hang the fork leg over the drain pan and let it drain for 10-15 minutes. Second, it's possible that the forks are under a little pressure. If you remove the drain screw without loosening the cap you could blow oil all over your brake disc. This really doesn't do your brakes any good at all.
6. Lay the fork tube on the workbench and, using a common screwdriver, carefully pop the dust wiper off. Be sure you don't nick the fork tube or slice the wiper (or your hand!). Slide it to the axle end of the fork.
7. Using a thin screwdriver, remove the seal retaining clip. Slide it to the end of the fork, or carefully remove it completely.
8. Grab the slider (chrome tube) in one hand, the stanchion (aluminum tube) in the other. Push them together like you are compressing the fork then quickly pull them apart. You will need to perform this slide hammer action several times to separate the two tubes. Yes, this is the only way to do it! It works pretty slick, actually. Don't be afraid to whack it good when you pull them apart.
9. When it finally gives, slide the two sections apart. The wiper, retaining clip, seal, washer, upper bushing, and lower bushing will remain on the slider as you pull the slider out of the stanchion. Take a good look at the order and position (orientation) of the wiper, seal, washer, and

bushings. When you re-assemble everything you don't want to put anything in there upside down and have to do this all over again.

10. Carefully remove the upper bushing (opposite the axle end of the tube) by inserting a screwdriver into the split and spreading the bushing so it clears it's groove. Be careful not to scratch the coating on the bushing.
11. Remove the remaining bushing. It should slide off fairly easily.
12. Remove the washer, seal, retaining clip, and dust wiper. The dust wiper should have a little drag on the slider. If you push the wiper to the axle end of the slider then turn the slider vertical with the axle end up, and the wiper falls down the tube all by itself you should probably replace it.
13. While you've got the forks exploded all over your shop, you ought to clean them up really good. There will be nothing in the stanchion so it will be really easy to clean. The slider has the damping guts in it, and I don't recommend trying to remove that stuff. If you have some kerosene, or diesel fuel, or non-flammable solvent, pour some into the slider and pump the damping rod a few times then drain it. Repeat this several times until you are satisfied with the condition of the fork. You might want to let the slider drain for a while after you do this. While the solvent you use won't damage anything, it's best to get as much out of there as you can.

OK. Now you're ready to re-assemble.

1. With a clean rag, wipe the slider down.
2. Install the dust wiper (in the correct orientation) onto the slider.
3. You can install the seal retaining clip now or wait until later (you can spread it open enough to install it on the slider). Your choice.
4. Next you need to put the seal on the slider. You will have noticed by now that there is a recess on the end of the slider that one of the bushings (the upper bushing) lives in. This recess can have sharp edges and if you're not careful you could cut the sealing lip of the seal. To prevent damage to the seal, you can use a plastic pop bottle to fabricate a sleeve to cover the recess. Be sure to wipe some clean fork oil on the inner surfaces of the seal before you install it.
5. Now slip the washer and the larger diameter bushing onto the slider. Hope you remembered which way the washer came off!
6. Carefully install the smaller bushing into it's recess. Again, use a flat-bladed screwdriver to spread the bushing open and it should slip right on with no problem.
7. Wipe a little oil on the bushings and slip the slider back into the stanchion.
8. This is where it gets a little tricky. You will now need to drive the remaining bushing into *it's* recess in the stanchion. When you get to

this point, you will see what I mean about being tricky. To save you some frustration, let me tell you how I prepare to drive the bushing and seal in place. First, I have a couple blocks of wood with "V" notches cut in them. I use these to clamp the stanchion, seal side up, in a vise without damaging it. I've done enough of these that I have a piece of rope hanging directly over the vise. I use this rope to keep the slider from succumbing to the force of gravity and sliding down into the stanchion while I'm trying to drive the bushing or seal in place. You can have an assistant hold the slider for you but I like the rope because it doesn't complain about it's arm getting tired. Finally, I use a little masking tape to hold the washer, seal, snap ring, and wiper up out of the way while I'm driving the bushing into place. You may find a better way to do this, but these tips might get you thinking in the right direction. Once you get everything in place and out of the way, you can use a pin punch and hammer to carefully tap the bushing in place. Two things you do *not* want to do is nick the slider tube or mushroom the top of the bushing! So be careful and be patient.

9. Once the bushing is in place, let the washer fall into place and drive the seal into place. You can use a punch and hammer for this too. Be careful not to cut the seal with your punch!
10. Install the retaining ring and the wiper. You're essentially done.
11. Thread the fork cap back onto the damper rod and snug the jam nut on.
12. Now's a good time to add the oil, and also a good time to discuss fork oil. The normal amount of oil used in these forks is 300cc. You can actually add up to about 20cc more if you like a little stiffer fork. This reduces the volume of air in the fork tube; this air acts like a secondary spring. The more air in there, the softer this secondary spring is. You can also vary the action of your forks by using different weight oil. And there's no law that says you have to use the same weight oil in both tubes. With the Paiolis used on Betas, the right leg is rebound (and compression somewhat) damping, and the left leg (which has the spring) is more compression damping. By experimenting with different weight oil you can really fine-tune those forks to suit your riding style. One last thing about oil – I suggest using a good quality oil specifically designed for forks. It's a personal thing, and you may be happy using something like ATF (automatic transmission fluid), but I don't mind spending a dollar or two more for designated fork oil. On thing I advise against is oils with "seal swelling" agents. I had an experience once where this particular oil with "seal swell" really worked. Swelled up the seals to the point that the forks would stick down. Again, this is a personal thing and you may find this type of oil to be OK.
13. After adding the fork oil, screw the fork cap into the leg hand tight and run the slider in and out by hand a few times. This will purge air out of the damping cartridge.

14. Using some contact cleaner or brake cleaner and a clean rag, wipe off the stanchion tube and the inside of the triple clamps that hold the fork tube. Insert the fork leg and snug down the *lower* pinch bolts.
15. You can now snug down the fork cap with a wrench.
16. Tighten the upper triple clamp pinch bolt. Do not over tighten these pinch bolts. They need to be snug but there should be some gap in the pinch area. You can break the triple clamp if you over tighten!
17. Reinstall the wheel, brake caliper, fender, and fork brace (not necessarily in that order). Get the bike off the stand, grab the front brake, and pump the forks up and down several times to bleed any remaining air out of the damping cartridges.
18. Go ride.

Alternate reassembly procedure:

This option was provided to me by a customer that found a different (and I think better) way to assemble the forks. I've not had the opportunity to try this yet, so I don't know how easy it is!

1. Carefully install the lower bushing into the stanchion. It will need to be tapped in, so be careful that you don't mushroom it or put any burrs on it.
2. With a clean rag, wipe the slider clean.
3. Install the dust wiper (in the correct orientation) onto the slider.
4. You can install the seal retaining clip now or wait until later (you can spread it open enough to install it on the slider). Your choice.
5. Next you need to put the seal on the slider. You will have noticed by now that there is a recess on the end of the slider that one of the bushings (the upper bushing) lives in. This recess can have sharp edges and if you're not careful you could cut the sealing lip of the seal. To prevent damage to the seal, you can use a plastic pop bottle to fabricate a sleeve to cover the recess. Be sure to wipe some clean fork oil on the inner surfaces of the seal before you install it.
6. Now slip the washer onto the slider. Hope you remembered which way the washer came off!
7. Wipe a little clean fork oil on the slider and slip it into the stanchion. Slide it all the way in until the two tubes bottom out. Now you will install the upper fork bushing onto the slider from the top of the assembly (where the fork cap usually lives). I've never done it this way so I don't know how difficult this is, but I've been told it can be done. Once you've installed this bushing into its groove on the slider, go to step 9 on the reassembly procedures and carry on from there.