Installing Progressive Fork Springs in V-Star 650

I just put the progressive springs in my front forks, and am very impressed with the change in the ride. Much improved! The soft pogo-stick feel of the front fork was the only thing I did not like about the stock bike. With the progressive springs, it feels just right.

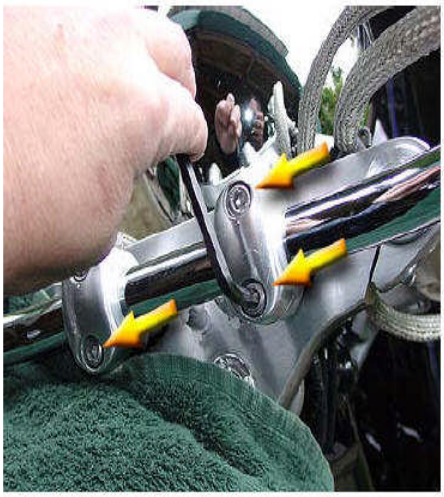
I searched around the forum for information prior to doing this, and thought it would be useful to give a short how-to for others with questions similar to mine. (The included pictures below are taken were found on the forum.)

Parts needed:
Progressive Springs made by Progressive Suspensions
http://www.progressivesuspension.com , part # PS-11-1126 (available from Phat Performance Parts for about $58). Fork Oil 10W, 16 oz bottle

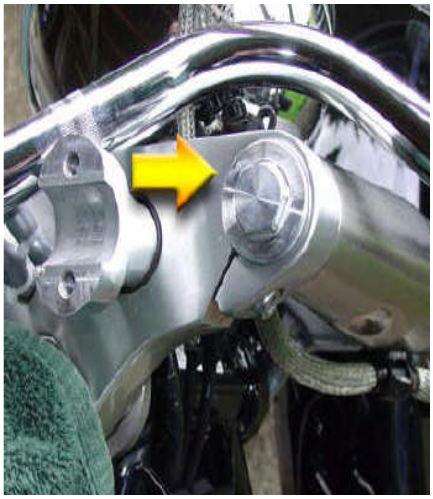
Tools needed:
22mm Socket for the fork caps (this size was not in my tool chest). The caps are torqued on at 75 ft lb (factory setting), and you will need a 18" socket handle to get them off and back on tight. A big syringe or turkey baster and 30" of tubing to suck the old oil out of the forks. Allen wrench to loosen handle-bar clamps.

Steps:

1. Put the bike on a lift with the front wheel entirely off the ground. Cover the gas tank with an old towel to protect it from oil and scratches. Use a knife blade to gently pry the plastic bolt covers off the four bolts holding the handle bar clamps. Loosen and remove the bolts. Remove handle bars, rest the handle bars on the tank -- no need to remove any cables.



2. You can now reach the 22mm cap covers on the forks. To protect from scratching, I place a few wraps of Teflon pipe tape around the hex head of the caps before putting the socket on them. To remove the caps use the 22mm socket with a long wrench handle. They are on tight – about 75 ft lb according to the manual – so they take firm pressure to loosen. Set the caps aside, keep caps and the o-rings on them clean. When the caps come off, the spacers inside will spring up about 2 inches. They are not under much compression with wheel off the ground so don't worry about losing an eye when the cap comes free.



3. Pull out the metal factory spacer tubes. Use a wire hanger with a bend on the tip to fish out the springs. Pull then out slowly, they will come out dripping oil. Save the washers that rest on top of the springs - these serve as a base for the spacer tube.

This picture shows the progressive spings compared to the stock springs:

4. Fully compress the front fork by placing some blocks under the front wheel. Make sure it is pushed all the way up and fully compressed.

5. Put some vinyl tubing on the end of the turkey baster, run the tubing down the fork, and suck out the old fork oil. I was able to suck out about 200 ml of fluid from each fork.

6. Make sure the fork is full compressed and the springs are removed from the fork tube – this is critical for measuring the proper amount of oil filling the fork. Yamaha manual says to use 10W Fork Oil. Progressive says use the factory suggested weight, and I followed their suggestion -- 10W fork oil. I do not think a heavier weight oil is a good idea. People did use a heavier oil (20W and higher) with the stock springs in attempts to tighten up the suspension. This does not seem necessary with the new springs.

7. Yamaha service manual says fill to about 3.75 inches from the top of the fork – DO NOT do this. Progressive says the fork should NOT be filled to a level above 5.5 inches from the top of the fork. The progressive springs are bigger and take up more volume, thus there is less room for the oil. If you put in too much oil, the pressure in the fork will be too high and you will blow out a seal when you hit a big bump. LESS oil is okay – but there is no room for MORE oil. I filled the fork to 6 inches from the top of the fork. This took about 210 ml of fork oil for each fork. (Be careful not to spill oil on the front disk brake and pad – it is right below!)

8. Remove the block from under the wheel and gently move the fork up and down to circulate the new fork oil in the damper. Then reblock the wheel with the fork fully compressed. Check the oil level again and correct the level as necessary. Remember – DO NOT put in too much oil. 6" from the top seems a good fill level for safety, and my fork performs well with this amount in it.

9. Remove the block from under the wheel so the fork fully extends. Clean the new springs, removing any dust or dirt particles on them. Put them in the tube. It does not matter which side goes down, but I put the heavy spring end down. Put the washer (either the ones saved from the stock setup, or the washers provide by Progessive) into the forks resting flat on top of the springs.

10. Now cut the new spacer. Progressive says the springs should be preloaded with about ¾ to 1 inch of compression. People doing the "VStar fork mod" have used much larger spacers and preload in an attempt to stiffen the stock springs and lengthen the forks. There is no sense in using a larger compression preload on the progressive springs – you will just push in the "soft" end of the spring, and give yourself a very hard riding spring with a shortened compression travel. Put the uncut PVC spacer tube supplied by Progressive into one of the forks so that it rests on the new spring. Mark the spacer at the top of the fork, and cut to this length – this should give you a spacer that is about 3.5 inches in length. By cutting the spacer to a length so that it sits just above the top of the tube, when the cap is screwed in it will compress the spring about 1 inch – the recommended amount of preload for these springs. (On my bike this feels just right.)

Make sure and cut the spacer PVC square across, and carefully clean any chips and dust of PVC off the spacer before installing.

11. Clean the threads of the fork with clean cloth. Clean the cap nut threads and o-ring. Inspect the o-ring to make sure it is not nicked or cracked. Push the cap against spacer, compressing it into the tube, and carefully thread the cap in by hand. It is aluminum and easy to cross-thread, so if it is not turning easily after a quarter or half turn, back it out and try again. Tighten it up. Factory manual says 75 ft lb. That's about a 40lb pull on the end of a 18" wrench handle. That's tight. (But do not "over-tighten" and strip the aluminum threads!)

12. Reinstall the handle bars. Tighten the forward bolt on the handle bar clamp first.

13. Clean up the mess, mop up the oil. Polish up the forks.

14. Drop the bike off the lift. Pogo stick the front fork a few times. It should feel nice and tight, not at all like the old stock spring. Take it for a short ride, hit all the bumps and pot-holes. Better, no? Now check for any leaks of oil around the caps and seals. Check these for the next few days to make sure you have everything tight and right.

Hope this is helpful to someone out there. I highly recommend the modification. It makes a big improvement in the ride of the bike. On my bike, I notice the front fork was about a ½" longer (more extended) with the new springs installed per these instructions. (My old sotck springs had lost a little length with compression over time.)