

E-Z Fork Seal Replacement

by Rex Hefferan - rhefferan@yahoo.com © 2001 Rex Hefferan (Updated 6-7-2001)

Disclaimer: This procedure was performed on my 1993 KLR650 on March 3, 2001. There is no reason to expect successful results on your forks regardless of model or year by following the suggestions in this document. This is simply because my project occurred on the above date and yours didn't. It's probably due to the phase of the moon and alignment of the planets that occur once in a millenium or something. So don't come cryin' to me if something goes wrong.

The manual recommends at least 4 special tools and complete disassembly of the forks to replace the seals. However, it can be done with no special tools and minimal disassembly. (Special thanks to "Swede" for his experience and advice as it did not occur to me that the seals could be safely extracted with air pressure.)

While it is best to completely disassemble and inspect the bushings for wear limits, this procedure permits seal and wiper replacement without the extra labor if you have no intention to replace the bushings. It is best to clean the complete front end first. Then keep wiping the fork and cleaning your hands before each new seal installation in order to prevent dirt under the seals.

UPDATE I tried this again with a gage and checked after each short burst of air, **30+ lbs. of air is the estimated pressure attained.** The actual amount is still unknown, but it seemed I never got anywhere near that amount of pressure released from the seal area. Perhaps it only seemed that small due to the small volume. Perhaps you only need 5-10 pounds of pressure and can compress the fork to work the seal out by pumping the fork. If someone would attempt this method with low pressure and report back to me, I would greatly appreciate it. **UPDATE II** My 3rd personal experience showed **30-100+ lbs. of air is the estimated pressure needed to force the seals out of the seat.** The actual amount for your shock will vary. We still never got anywhere near that amount of pressure released from the seal area regardless of the pressure. Since the path air pressure moves from the internal chamber to the slider chamber to act to push the seal up is not yet understood by me, I can't explain the relatively small pressure that escapes when the seal finally does pop up.

Support the motorcycle under the skid plate so that the front wheel and the forks can be removed.

1. Remove the front wheel, unbolt the brake caliper and remove the cable/hose guide rings and reflectors. The speedo cable and caliper may hang free, or support the caliper to relieve stress on the brake line.
2. Loosen the upper fork clamps and loosen the fork caps.
3. Loosen the lower fork clamps and remove the forks.
4. Remove the fork gaiters. Inspect the fork tubes for scratches, pits and wear marks. Significant scuff marks may indicate bushing replacement.
5. Remove the fork caps and fork spacers and springs.
6. Drain the fork oil out of the top and then remove the drain screw and pump the fork to expel as much oil as possible. Replace the screw.
7. Reinstall the fork caps.
8. Look carefully at the seal retaining clips and note how they are seated in the internal groove. Remove the seal retaining clips.



9. Add air the the fork, it may take 20-30 lbs (I didn't check with a gage) and the seal will be forced out. Depending on your air source, try to limit the air to a few pounds at a time and wait a few seconds before adding more. I recommend NOT adding the air quickly until the seal pops out, in case something bad could happen. The seal movement can be delayed a few seconds, so watch the seal position for movement. Both of mine delayed about 3-4 seconds after a stop in adding air. You can probably try to pump the fork to help work the seal up, but I didn't do that. (I did check the feel of the pressure by trying to compress to fork a little. It had

enough pressure that it took a good lean onto the fork to compress it about an inch) It will pop up cocked and the air will spray some oil, so wear safety glasses or shield your face from the area of the seal.



10. Remove the old seals by working them out carefully with a couple of small screw drivers. Pay careful attention to the way the seal and wiper is installed, I have a report of someone installed his seals upside down. They sealed poorly that way.



11. Install new seals and wipers. A large flat screwdriver can be used to push the seal into place by working it down a little at a time all around the top. I have used a PVC pipe junction about the same diameter of the seal to be used as a seal driver. See Seal Driver note at bottom.

12. Make sure the new seal and wiper is fully seated down enough to allow the seal retaining clip to expand properly in the internal groove.

13. Wipe the fork tube clean and inspect and clean the fork gaiters interior before reinstalling them.

14. Reassemble the front suspension per the manual.

Manual fork specs.

Fork oil = 355ml of 10W (if simple draining while attached to the bike)
closer to 420ml (if drained as in this procedure)
Measure fork oil level 7.5" (190mm) from top of fork.

Fork tubes are 38mm Diameter

HOME_MADE SPECIAL TOOLS

Seal Driver Note: I purchased a PVC Plumbing drain cross fitting. See image at right.

A "T" or simple coupler may work fine also. Mine has the brand name SPEARS and 1 1/4" 420 012 molded on the part. I selected it from 2-3 other brands in the same bin due to it's beefier design, however it was a little too beefy. It needed to be reduced in diameter about 1/32" to fit inside the slider bore. Another brand may not need modification, but keep in mind that these are not precision engineered parts and expect different Outside Diameters (O.D.) between brands or possibly even among the same brand! The O.D. needs to be 2" or a little less.



Fork oil filler A simple device for getting the fork oil filled to the correct capacity can be made from a spray bottle head. Just cut the tube to the correct length which will be the measurement from the top of the fork tube to the desired oil level inside the fork tube. Measure the spray head tube from under the screw cap towards the end of the tube, mark and cut. To use: fill the fork with oil while holding the tube fully compressed. Fill the tube to your estimated proper amount then insert the spray head and pump out any excess into your fork oil bottle. (adjust the sprayer nozzle to "steam") If you can't pump any out, then the level would be too low. Add fork oil until you can pump some out, then pump until the level reaches the spray tube end which equals the proper oil level.