



**17+ Yamaha MT-09 / FZ-09  
Fork Piston Kit Installation Instructions**

**Recommended Tools/Supplies:**

1. Appropriate Factory Service Manual (FSM)
2. 24 mm combination wrench
3. Fork spring compressor (DIY, RaceTech, Dynamics, et al)
4. 17 mm combination wrench
5. 14 mm combination wrench
6. 8 mm allen key (long)
7. 18 mm combination wrench
8. Cartridge holder (Racetech or Motion Pro for 20mm KYB)
9. MAP Torch
10. Grinder
11. Assorted files (flat and round)
12. 10 mm combination wrench
13. M6x1.0 die
14. Loctite (red)
15. Vice
16. Soft jaws for your vice
17. Damping rod holder / bleeder tool
18. Oil level tool
19. Compressed air
20. Brake cleaner or similar solvent
21. CLEAN rags and work space
22. Torque wrench

**Included Parts:**

23. Pre-assembled compression piston
24. Pre-assembled rebound piston
25. QTY 2: Needle w/ installed o-ring Motion Pro, Traxxion
26. Drill bit
27. QTY 2: Crush washers
28. Stoltec Moto Fork Lower Decals

**Expected Installation Time:** 90+ minutes

**General Notes:** Stoltec Moto thanks you for purchasing the 17+ MT-09 / FZ-09 fork piston kit. Installation should only be performed by qualified motorcycle mechanics. If you do not possess the tools or ability to complete this installation, contact a qualified mechanic. Failure to properly install this part could result in loss of property, injury, or death. Stoltec Moto, LLC is not responsible for damages incurred from improper use or installation. This kit is designed for off-road use only. Please ensure legal compliance before altering your vehicle!



## Installation Notes:

READ THIS ENTIRE DOCUMENT BEFORE BEGINNING. If you do not understand anything in this procedure, please consult with a local professional suspension tuner.

- The tool list cited above is what we have on-hand at Stoltec Moto when we do fork work. In some cases, you may use alternate tools and/or make your own.
- Work in a well-ventilated area, as this process will generate significant smoke. As always, take care when applying heat to ensure that you don't burn your house or garage down. Have a fire extinguisher handy and ensure no combustible materials are in close proximity!
- Remember: Yamaha only sells complete fork cartridges. The internal components are not available for purchase and are typically very difficult to source – even from suspension tuners. Bottom line: don't break anything!

## Disassembly

1. Reference the appropriate Factory Service Manual (FSM) to remove the fork cartridge(s) from the fork. Be sure to mark the cartridges (rebound vs. compression). Use that fancy pants smart phone of yours to take a picture. Note that there are flow ports on the cartridge tubes that vary between cartridges. Also note that there is a proper orientation (up vs. down). This is important, so take notes and photos!
2. Allow the cartridge to drip-dry until all oil is drained. Do the same for your fork legs by pumping the outer tube and hanging upside down. If your forks have more than a couple thousand miles or have been in service for more than 2 years, take the time to do the fork seals. Again, reference your FSM.
3. Remove the inner metering rod and set aside.
4. Hold the cartridge in a vice with soft jaws. **DO NOT OVERTIGHTEN!** The vise jaws are only there to securely restrain the fork cartridge during disassembly – not to limit rotation!
5. Use a MAP torch to heat the bottom of the fork cartridge to loosen the thread locker. Do not overheat. We recommend applying force on the 18 mm wrench as you heat the cartridge around the base. This will ensure only the bare minimum of heat is used. It goes without saying, but the parts you remove will be **HOT!** Handle with care, set aside, and let cool.
6. Repeat step 5 on the other end of the cartridge (i.e. the bearing head). Some tips:
  - a. The cartridge tube is steel and the bearing head is aluminum. As such, the thermal expansion rates are different. As the parts are heated to loosen the thread locker, the aluminum will expand to 'lock' inside the steel cartridge. You'll need to allow the parts to cool enough for the aluminum to shrink before it can be unthreaded.
  - b. Generally, you'll see the steel tube turn a dark blue and then back to an original-ish gray color. This is a good estimate of when there is enough heat. This is when you'll let it cool.
  - c. Using your cartridge holder, apply torque to the bearing head while it cools. The required amount of time will be dictated by how much heat you added and how fast it cools. It could take up to a minute or so. This is one of those areas that goes by feel.



- d. During heating, we recommend extending the damping rod enough to expose the rubber bump stop. This allows heat to escape the cartridge tube and limits the bump stop from melting. However, do not FULLY extend the damping rod.
7. Set aside cartridge tube and allow to cool.
8. Use your fancy-pants smart phone to take a picture of the valves, taking note of the proper orientation (shim stacks and check valves).
9. Remove the OE rebound and compression valves; the compression leg's base valve (bottom of the cartridge) is not altered, so you do not need to disassemble. You'll need to use a grinder and/or a file to remove the peens before removing the nuts. Take the peen off all the way down to nut face. Failure to do this will very likely destroy the valve holders! The check valve assembly (check plate, spring, retainer, and center bushing), nut, and shim stack base washer (the really thick washer) will be reused. Zip tie the rest of the parts together and set aside.
10. Place the damping rod assembly in the vise with soft jaws.
11. Thread your fork bleeder onto the damping rod and tighten with factory jam nut. Apply heat to rebound valve holder to loosen thread locker. Remove the rebound holder while simultaneously holding the jam nut on the other end.
12. Remove the factory needle and spring from the damping rod. Retain the spring for re-use.
13. Disassemble the parts from the damping rod taking note of the proper order and orientation (bearing head, top out spring washer, and top out spring).

### **Cleaning/Inspection**

14. Use an M6x1.0 die to chase threads on rebound piston and compression valve holders. Finish up with a file to ensure that the factory nuts thread on by hand and that no burrs are present. This is a critical step! Any burr left behind can break free down the road and cause catastrophic damage to the fork assembly.
15. Using the supplied drill bit, enlarge the compression cartridge's upper flow ports. There are two small holes up top. Ensure that there are no burrs left behind ON EITHER SIDE! Follow up with a file or die grinder, as needed, taking care not to damage the sliding surfaces. Patience is key here to ensure the bore is not damaged.
16. Clean ALL parts thoroughly with brake or contact cleaner. This means all old oil, dirt, debris, burrs, old thread locker, etc. must be completely removed from all surfaces of all parts. This is another critical step that will make or break your project, so be methodical!

### **Assembly**

17. Reassemble damping rod components (bearing head, top out spring washer, and top out spring).
18. Apply a light layer of fork oil to the needle o-ring and assemble to damping rod.
19. Install needle spring.
20. Install piston holder with a liberal amount of red thread locker. Do not use so much that the needle, spring, or flow orifices are clogged, but enough to coat the threads. Torque by feel – don't overdo it.
21. Install the check valve assembly (retainer, bushing, spring, check plate) on the rebound valve holder.



22. Install supplied piston taking care to ensure the correct piston is used in the appropriate leg. As supplied, the rebound piston is held together with one zip tie; the compression piston has two zip ties. The counterbored side of the piston mates with the check valve assembly's bushing; the flat surface mates with the supplied shim stacks. On the rebound pistons, the shim stacks are located UNDER the piston when installed on the bike! This means the nut is against the shim stack. Failure to do this properly will eliminate any and all damping from the fork. Reference your original photos if unsure!
23. Install OE shim stack base washer.
24. Install OE nut with red thread locker. Again, coat the threads on the nut.
  - a. Do not use so much that the thread locker oozes out into the bleed port or shim stack! b. Tighten nut by hand.
  - c. Before torqueing, ensure that check valve plate is free to actuate. You should be able to lift the plate with your finger nail (against spring pressure) and let it snap back in place on its own. If the check plate is pinched between the bushing and piston while tightening the nut, it'll be damaged and rendered useless.
  - d. Check to ensure that there is no axial slop in the assembly. If the piston assembly is free to slide AT ALL, you'll need to shim the entire assembly with the necessary number of OE 17 mm face shims under the check valve retainer.
  - e. Tightening this nut is another matter of feel. Don't overdo it.
25. Remove bleeder tool from damping rod.
26. Repeat for the compression piston, noting the proper orientation. Remember, on this side the piston assembly is flipped (shim stack facing up and check valve facing down). Check the installed valve for any axial (vertical) play. If play exists, you will need to place a few of the original 17 mm shims under the base washer to add additional height to the piston assembly. This is not required on all bikes, but be sure to check carefully. The piston assembly should be fixed in place when the nut is torqued!
27. Reassemble cartridge tubes using red thread locker on both top and bottom. Take care when inserting the damping rod into the cartridge so as not to damage the sliding piston band. Before assembling the base valve holder (or plug) on the bottom and torqueing, add a couple drops of oil inside the cartridge and slide the damping rod in and out to lubricate the piston band. It should operate smoothly and quietly without any sticking, skipping, or odd noises. Be sure the cartridge tube is oriented properly before torqueing (up vs. down). Again, torque by feel.
28. Remove bleeder tool from damping rod.
29. Insert metering rods. Ensure that pushing down the meter rod moves the needle. The metering rod should return on its own. Do this a few times to ensure it slides and returns smoothly.
30. Reassemble cartridges to forks per FSM with supplied crush washers.
31. Reassemble forks onto bike per FSM.
32. Set rider sag to 42 mm using '[Race Tech Method](#)'.
33. Turn damping adjuster all the way in (clockwise). Do not overtighten!
34. Turn out 1-1/2 turns as a starting point.
35. Adjust/tune as appropriate.