# Race Tech Installation Instructions For R100GSs

## Why?

The BMW R100GS forks dive on a whim, dance imprecisely at highway speeds and easily bottom-out off road. To address these shortcomings you can install a Race Tech Gold Valve cartridge emulator in the compression side of your forks. This installation should be the first modification made to the GS in your attempt to get it to stop and handle better than the stock POS. Any brake improvements done without first changing the front suspension are a waste of time and money.

The Showa-made forks have a compression leg and a dampening leg. Learn how to tell the difference in the internal components of each leg as sometimes they are switched. On most bikes the right side (as you sit on the bike) is the compression side and the left is the rebound side. Again, you will be modifying the compression side only. You will be replacing the oil in both.

I strongly suggest that you have a Haynes or Clymer manual handy for torque specs and any other pertinent information that I may have overlooked. Be sure to have plenty of paper towels and some disposable gloves nearby, as this can be a messy procedure.

## Parts:

- New for drain screw O-ring seal (2)
- New Lower fork leg Allen bolt washer with integral rubber seal (2)
- Fork cap nut O-ring (2)
- RTV silicone sealant
- 15 wt fork oil
- Blue Loctite thread locking compound
- Stock BMW fork springs…NOT PROGRESSIVES!!!!

## Tools:

- 30 mm socket with flat face
- Pipe Cutter
- A good torque wrench
- Wire for suspending brake from fork brace
- Misc. Allen head sockets 6-8mm
- Haynes or Clymer repair manual

## Procedures:

1. Read, understand and follow Race Tech instructions.
2. Remove front wheel. Tie a strap from the crash bar to the center stand or put a block under the motor to prevent the bike from collapsing. This is embarrassing in front of chicks and a good way to get hurt!

3. Cover tank with an old, thick towel and remove Allen bolts that clamp the handlebars.
4. Pull bars rearwards and onto the protected tank.
5. Remove front brake caliper and hang it from fork brace using a piece of wire, wire tie, silk tie etc. It is not necessary to drain or otherwise mess with the brake system unless you have a low fender, which should be removed and burned at once for they are very bad.
6. Remove fork cap nut (1 per fork leg) using 30 mm socket. NOTE: It helps to grind the face of the socket flat on a grinding wheel so that the socket makes maximum contact with the flats of the fork cap nut.
7. Extract oil covered and dripping preload spacer (looks like a gray PVC plastic pipe) and even messier fork spring. Set both aside.
8. Drain fork oil and replace fork drain screw. NOTE: Use a new o-ring and tighten to the proper torque.
9. Loosen RIGHT fork leg upper <u>and</u> lower triple clamp pinch bolts. Make a note of the fork tube insertion height relative to the upper triple clamp.
10. Loosen all of the fork brace bolts and remove the two that attach to the RIGHT fork leg. If you have a low fender this would be a good time to partially remove it for this procedure or to replace it with a much more sexy Acerbis high fender. (You'll have to muck around with the brake line in this case)
11. Twist and pull right fork leg downward and out of the triple clamps. If you have fork gaiters you have to remove the clamps or tie wraps before you can remove the fork leg.
12. Loosen and remove the Allen bolt on the bottom of the fork leg/slider. Discard sealing washer. More oil will spill out onto you and anything expensive and easily damaged by oil.
13. Pull and separate lower fork leg/slider from the fork tube. Be careful not to damage fork seal nested in the top of the lower leg/slider.
14. Invert the upper fork tube and catch the dampening rod as it slides out. There will be a bottoming spring in there as well.
15. Drill additional holes in/through the dampening rod according to Race Tech instructions. It helps to start with a small drill bit and work your way up to the end size. It also helps to hold the rod in a soft-jawed vise. De-burr sharp edges of holes with file. Clean ALL filing and metal debris from dampening rod.
16. Replace dampening rod and smaller spring into fork upper. Slide upper into lower/slider and insert the Allen bolt with its NEW sealing washer and a little silicone sealant into the bottom of the fork lower/slider. Tighten bolt to specified torque.
17. Measure the stack height of the Gold Valve and its aluminum spacer. Remove this amount from the preload spacer using a pipe cutter. A hacksaw will never cut this straight so don't even think about it!
18. Set preload on Gold Valve according to Race Tech instructions (I'm 210 lbs and set mine to 2.5-3 turns of preload).
19. Insert Gold Valve aluminum spacer and then the Gold Valve into the fork leg followed by the main spring, and newly shortened preload spacer.

20. Fill both forks with 15 wt (yes 15 wt!) per BMW spec volumes and replace fork cap nuts.
21. Re-install fork leg into lower triple clamp ONLY.
22. Install gaiter onto fork and insert fork to height recorded in step #8.
23. Tighten triple clamp bolts to specified torque.
24. Replace front wheel.
25. Replace brake caliper.
26. Replace fork brace bolts using blue Locktite thread locking compound. Tighten ONLY by hand and leave loose.
27. Roll bike off of center stand and exercise the front end a few times by applying the brakes and compressing the fork springs. Place bike back onto center stand. All of this is to ensure that there is no preload or misalignment of the fork lower assembly.
28. Tighten fork brace bolts to specified torque.
29. Fix gaiter fasteners.
30. Replace handle bars and tighten bolts to specified torque.
31. Go to sleep because it's now late and you're very sleepy……

No, now go and enjoy your new front end. Make sure you pump up the front brake BEFORE you tear off down the street and into a parked car!

You may need to re-adjust the Gold Valve preload more or less to your liking.

PS: I probably left something out as it is late and I am knackered…feel free to contact me with any questions you may have.

Cheers,
Jorge