RACE TECH

GOLD VALVE CARTRIDGE EMULATOR INSTRUCTIONS - DR & 88-89 XR

<IP FEGV 4321.doc> **FEGV 4321**   P Thede © 10-28-05   2 pgs

TOOLS REQUIRED - Air impact, 24 mm socket, 5/16" (8 mm) drill and drill motor, tape measure, tube cutter, US-3 (15wt) Fork Fluid (thicker fluid can be used if more rebound damping is required), fork springs.

IMPORTANT: This modification requires different fork springs. Consult www.racetech.com or call Race Tech.

1   **Remove forks from the bike and disassemble them** enough to get the damping rods out. An air impact and a 24 mm socket will help a lot. (Tip: Use a 17 mm socket to beat on the damping rod bolt to jar loose the threads before disassembly.) Unless you are doing a complete overhaul, you don't have to take the seals out. Simply take the fork spring and the damping rod bolt out, turn the fork upside down and the damping rod will fall out.

2   **Modify the stock compression valve. Once the compression adjuster has been removed, disassemble it**. Strip the springs and check plates off the compression adjuster assembly by removing the small nut. (They are not necessary once the Gold Valve Emulator is installed.) You will no longer have <u>external</u> adjustment, however your <u>internal</u> adjustment will be drastically improved.

3   **Modify the damping rod.** Drill one additional hole, 5/16" (8 mm) in diameter, 48 mm (1 7/8") from the compression end (bottom) of the damping rod. This is the same height as an existing hole so place it on the opposite side as that hole. Chamfer and deburr the compression holes only, inside and out. The exact size of the holes is not critical. It is only important to have <u>enough</u> flow, more than enough does not hurt. <u>Leave the rebound hole(s) stock and do not chamfer them.</u>

4   There is a steel plate pressed into the end of the damping rod that the fork spring sets on. **Check to see that it is pressed in straight**. If it is cocked, use a hammer and gently tap it in straight.

5   **Begin reassembly** remembering to install the top-out spring and bottom-out cone. Consult manufacturers specs for damping rod bolt torque.

6   Before you set the oil level and install the spring, **drop the Emulator down the tube**. It sits on top of the damping rod with the **valve spring facing up** and is held in place with the fork spring.
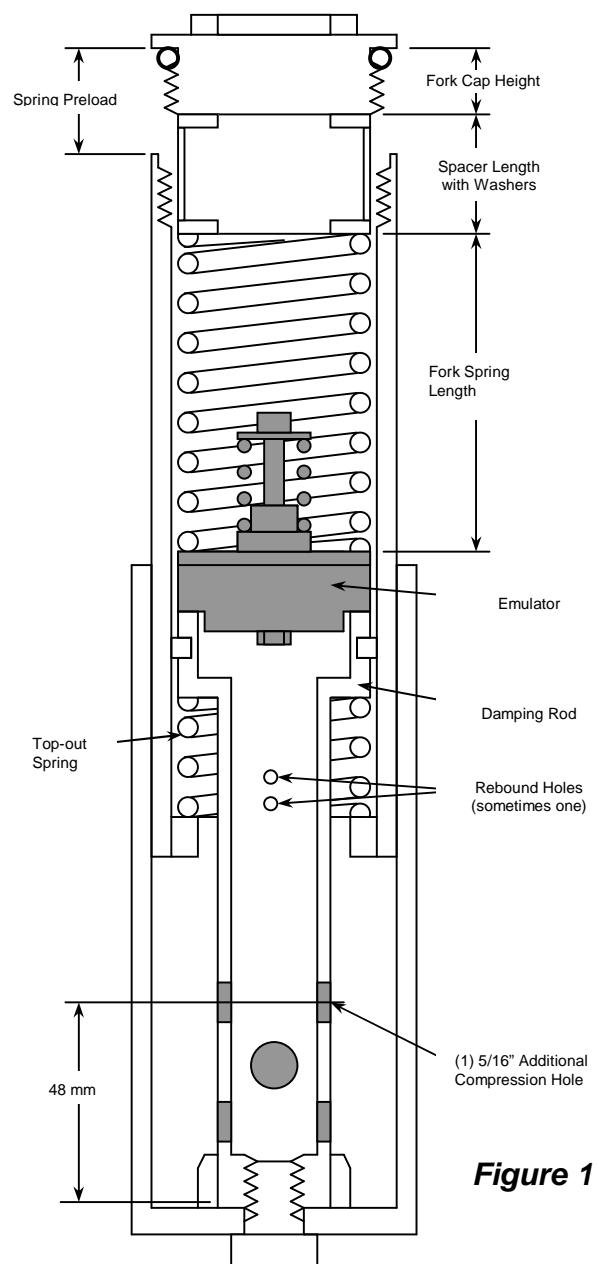
Figure 1

7   If you've already changed fork springs prior to this installation and you are going to use the same fork spring, the spacer must be shortened 25 mm (1") as that's how long the Emulator is. This can easily be done with a tubing cutter or a hack saw, depending on the material your spacer is made of. **We recommend new springs for all riders because the stock springs are too long and therefore have too much preload with the Emulator installed**. When changing springs, set the preload at 15 to 20 mm (0.6 - 0.8"). Preload is the amount the springs are compressed from their Free Length (uninstalled length) when they are installed.

8   **Install US-3 fork fluid** and bleed the forks by pumping them. With the forks collapsed and the springs out and the Emulators in, set your oil level. A good starting point for oil level is 130 mm (5").

9   **Finish reassembly** by installing the fork caps. With the forks off the bike, push on them, checking for any unusual drag or bind that would indicate and improperly seated Emulator. Install the forks back on the bike and **make sure the fork tubes are aligned on the axle**. Tighten all bolts including brake caliper bolts. If you have hydraulic brakes, pump them up and enjoy!

TUNING NOTES

To adjust the Gold Valve Emulator, simply remove it from the fork to make changes (you don't have to remove the forks from the bike in most cases). Remove the springs using a twisting motion to avoid oil drips. To remove the Emulator, use a 1/16" (1 mm) welding rod with 1/4" (6 mm) of both ends bent over 90 degrees into an "L" shape. Push the end into the rebound check valve slot and turn it 90 degrees to hook the Emulator. Before installation, be sure the jam nut on the Emulator is tight using a socket.

TUNING VARIABLES

VARIABLE	*Standard*	*Optional*	*Primary Effect*
Valve Spring Preload*	4 Turns	0 to 7 Turns	Overall firmness, controlling a mushy feel and the speed the front end dives under braking
Oil Viscosity	US-3 (15wt)	US-2 (10) to 20wt	Use oil viscosity to set rebound, this affects traction and stability
Valve Spring Rate	64 lbs/in	26 or 101 lbs/in	Overall firmness and the ride on square shaped bumps

* Measured from zero preload (no tension) on the Valve Spring. To find zero preload back off on the adjuster bolt until the spring is loose then tighten it until the spring just touches. **Use 2 turns for lighter riders or a plusher ride**.

Use oil viscosity to set the amount of rebound damping, then adjust the compression with the Emulator settings. The Emulator does not affect rebound, however oil viscosity does. The primary compression adjustment is the amount of Emulator Valve Spring Preload. Increasing Valve Spring Preload makes the fork stiffer. The effect of all the variables will overlap, this gives extreme tuning flexibility.