

RACE TECH

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GOLD VALVE CARTRIDGE EMULATOR INSTRUCTIONS 35mm VINTAGE BETOR, BULTACO, CERIANI, CZ, PENTON

<IP FEGV 3303.doc> FEGV S3303 M Wiley © 10-15-09

2 pgs

TOOLS REQUIRED – 6 or 8 mm Allen Socket, air impact, drill motor and 6 mm (1/4") drill, tape measure (metric), tubing cutter, and US-3 Fork Fluid; see racetech.com

IMPORTANT NOTE: Many riders require different fork springs. Consult www.racetech.com or call Race Tech.

NOTE: The damping rods fitted in your motorcycle use a special adapter with sealing ring supplied in this kit. You may need to install the Emulator and Adapter from the bottom of the fork tube on CZ and Penton Models; see page 3.

Please call Race Tech Technical Support for details if necessary.

- 1 Remove the damping rods.** Take the forks off the bike and disassemble them. An air impact and a long Allen socket helps a lot. For stubborn Damping Rod Allen bolts use a drift and beat on the head of the damping rod bolt to jar the threads loose. Unless you are doing a complete overhaul, on most models, you don't have to remove the seals. Simply take the fork spring and the damping rod bolt out, turn the fork upside down and the damping rod will fall out.
- 2 Drill the existing compression holes in the damping rod to 1/4 inch (6 mm) so you end up with Six holes (3 sets of 2 holes) (figure 1).** When drilling new holes, space them axially (lengthwise) at 10 mm (7/16") increments. Each set of two holes must be perpendicular to the last set so as not to weaken the rod (figure 1). After drilling, chamfer and deburr the compression holes, inside and out. **Do not add or enlarge the rebound holes and leave their edges sharp.**
- 9 Check the Emulator Valving.** The standard valving that is pre-installed is a 40 lb/in (Blue) Emulator Valve Spring with 3 turns of Valve Spring Preload. **Install the supplied adapter spacer with piston ring between the top of the damping rod & the bottom of the Emulator making sure to choose which end of the Adapter BEST fits your damping rod.** The adapter & ring will be a snug fit inside the fork tube. Make sure **Emulator bolt & spring are facing UP with Emulator sitting squarely on top of the adapter.**
- 4 Begin reassembling** the forks according to your manual. Remember to install the top-out spring and bottom-out cone if you have chosen complete disassembly. Consult manufacturer's specs for damping rod bolt torque.
- 5 Set the fork spring preload by making the correct length spacers.** This is done before installing the fork fluid.

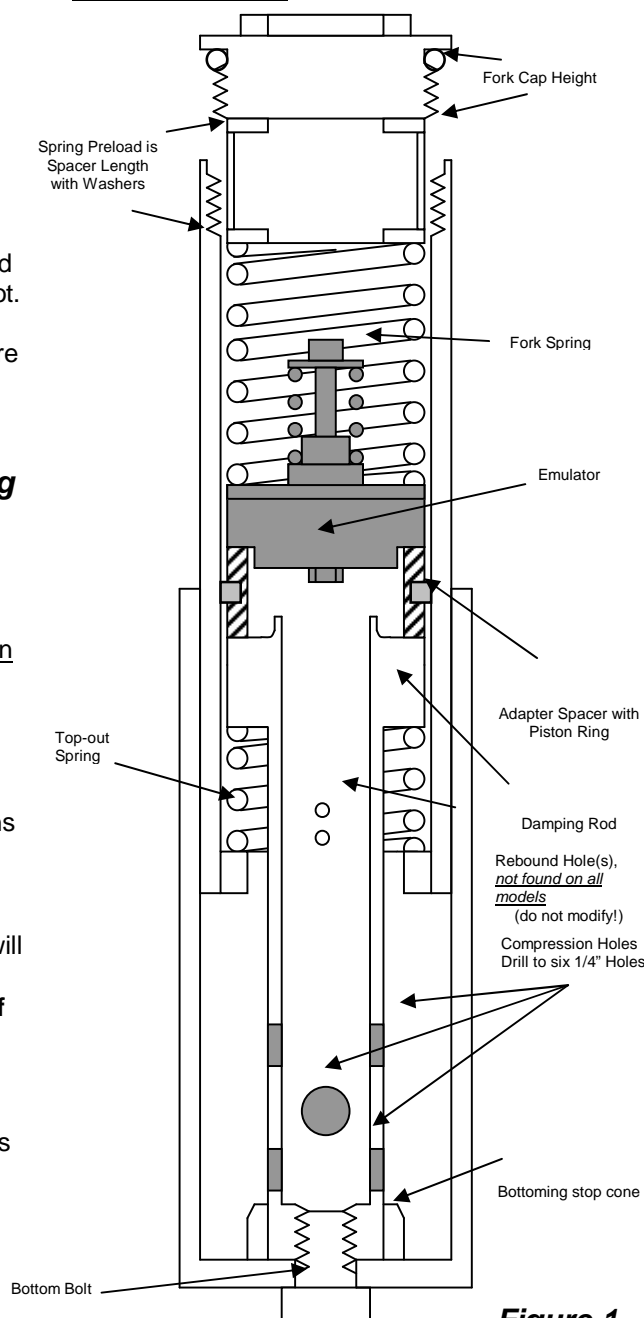


Figure 1

- a. Drop the Emulator down the tube on Betor, Bultaco & Ceriani Models. It sits on top of the adapter spacer & damping rod with the Emulator Valve Spring facing up and is held in place with the main fork spring. Refer to figure 1. Visually check to make sure the Emulator is sitting squarely on top of the damping rod. NOTE: On CZ Models the Emulator and Adapter MUST be installed from the bottom of the fork tube. Remove the snap ring holding the check valve at the bottom of the chrome tube. Remove the Damping Rod and top out spring (if present). Install the Emulator up into the fork tube, then the Adapter, damping rod, top out spring, check valve and snap ring. Some CZ Models MAY have a travel limiter that needs to be removed or cut down to allow space for the Emulator and Adapter due to the internal taper at the fork tube.
- b. Extend the fork tube all the way up and down thru it's travel making sure there is no interference in movement. Insert the fork springs into the fork tube on top of the Emulator. Install a fork spring spacer washer. Place the fork spring spacer tube in next, then another washer.
- c. Set the fork cap on the washer and determine the preload by measuring from the top of the fork tube to the sealing lip on the fork cap (see figure 1). This is a direct measurement of fork spring preload. Shorten the spring spacer tube to achieve the proper preload.

We recommend 5-16 mm (0.2-.06") of total fork spring preload.

NOTE: You must have washers on both ends of the spring spacer. The spacer must not rest directly on the spring or the cap.

- 6 **Install the fork fluid.** First remove the fork spring. Bleed the fork by pumping them. Install the Emulator and then set the oil level (typically 130mm, US-3/15wt see service manual) with the forks completely bottomed and the springs out, see racetech.com If you cannot find oil specs call **Race Tech Technical Support 951-279-6655**
- 7 **Finish reassembly** by installing the spring and spacer. Before you install the cap, re-check the spring preload. This will indicate whether the Emulator is seated properly. Install the fork caps and, with the forks off the bike, push on them, checking for any unusual drag or bind that would indicate an improperly seated Emulator. Install the forks back on the bike. **Align the forks on the axle for minimum bind Drum Brake Procedure:**
 - a. Install the Front Wheel, Backing Plate and Front Axle leaving the front axle loose enough to let the backing plate move around.
 - b. With the bike on a center stand spin the front wheel and slam on the front brake.
 - c. Hold the front brake on and tighten the front axle.
 - d. To align the fork tubes take the bike off the stand, hold the front brake on and pump the forks. Generally this is enough to align the tubes. Note: the right pinch should be loose enough to allow the fork pinch to move freely on the axle.
 - e. Tighten the right axle clamp to manufacturers specs.

TUNING NOTES

To adjust the Gold Valve Emulator you must remove it from the fork. When you remove the fork springs use a twisting motion to avoid oil drips. To remove the Emulator, use a parts grabber. Adjust the Emulator Valve Spring Preload a half turn at a time. More Valve Spring Preload will make the forks stiffer on compression. Oil Viscosity controls Fork rebound. 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*	2-3 Turns	0 to 7 Turns	Overall firmness, controlling a mushy feel and the speed the front end dives under braking & over larger bumps
Oil Viscosity	US-3 (15wt)	US-2 (10wt) to 30wt	Use oil viscosity to set rebound, this affects traction and stability. Heavier oil equals slower rebound, lighter oil equals quicker rebound.
Emulator Valve Spring Rate	40lbs/in (Blue)	26lbs Silver 40lbs Blue 64lbs Yellow	Overall firmness and the ride on square shaped bumps & high speed damping. Note that most 31-38mm vintage forks work better with the 40lb/in spring at 2-4 turns, some with the 26lbs Silver Spring
Emulator Valve Plate Bleed Holes	2 bleeds	Additional bleeds as desired up to 4 total	Initial fork movement low speed damping & plushness before valve plate opens; small bumps, chatter, etc.

* 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. More Preload gives more compression damping and a firmer ride. **2-3 turns of Valve Spring Preload for lighter riders or a plusher ride. 4-5 Turns for Firmer Race Oriented or aggressive Riders**