

RACE TECH

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GOLD VALVE CARTRIDGE EMULATOR INSTRUCTIONS 34/35mm KYB VINTAGE

<IP FEGV S3002.doc> **FEGV S3002** M Wiley © 01-20-09

3 pgs

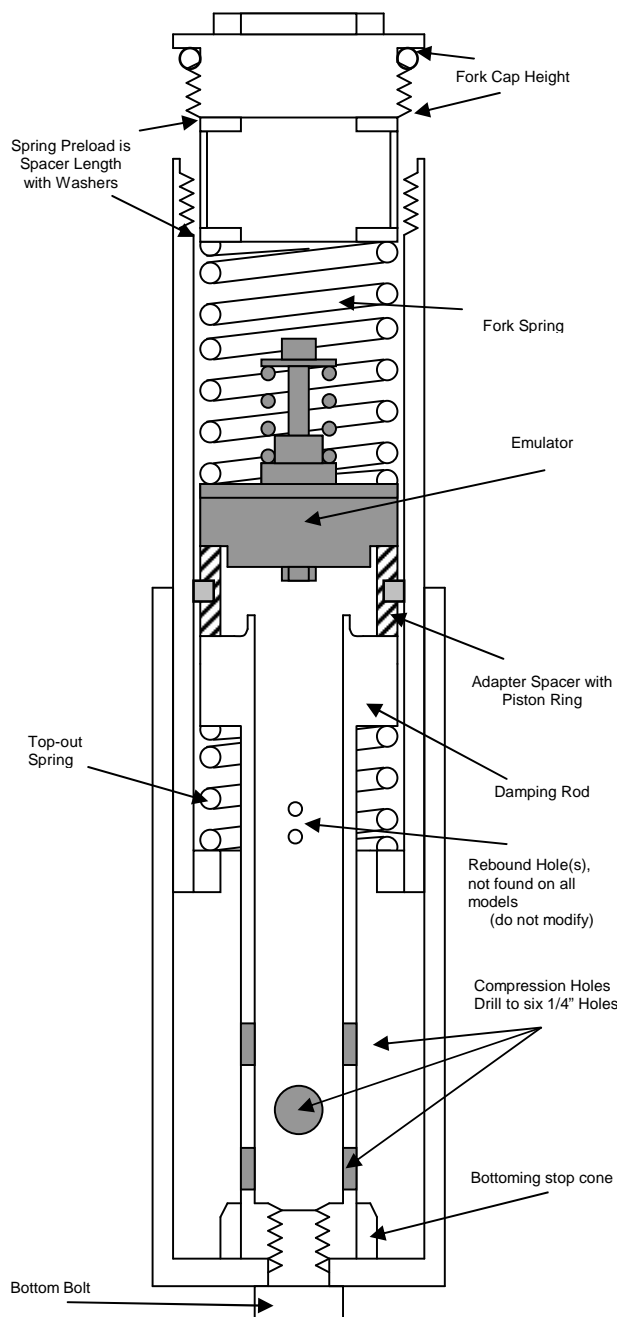
TOOLS REQUIRED – 6 or 8 mm Allen Socket, air impact, drill motor and 6 mm (1/4") drill, tape measure (metric), tubing cutter, and US-3 Fork Fluid; see racetech.com

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 must also remove roll pin from center of damping rod; 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.** You will need to cut down the roll pin in the center of the damping rod, see page 2 for details.
- 3 Check the Emulator Valving.** The standard valving that is pre-installed is a 26 lb/in (Silver) 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.** 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.



- a. Drop the Emulator down the tube. 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.
- b. Extend the fork tube all the way. 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 15-25 mm 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, 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 (can be done on bike). When you remove the fork cap don't loose washers or spacers remove the fork springs slowly & 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 for compression damping change. More Valve Spring Preload will make the forks stiffer. Use Stiffer or Softer Emulator Valve Springs if needed. Before installation, be sure the jam nut on the Emulator is tight using a socket. Rebound damping is controlled by oil viscosity; use heavier or lighter oil for slower or quicker rebound.

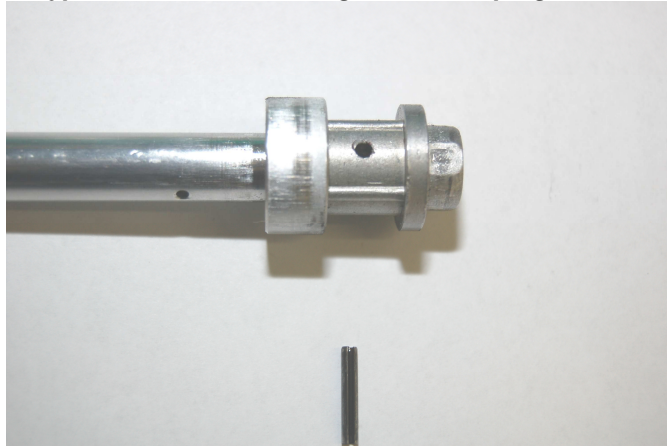
TUNING VARIABLES

VARIABLE	STANDARD	OPTIONAL	PRIMARY EFFECT
Valve Spring Preload	3 Turns	0 to 7 Turns	Overall firmness, controlling a mushy feel and the speed the front end dives under braking. <u>Add turns of Valve Spring Preload for Racing or for heavy riders.</u>
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.
Valve Spring Rate	26 lbs/in (Silver)	26 (Silver), 40 (Blue) or 64 (Yellow) lbs/in	Overall firmness and the ride on square shaped bumps. Note that most 33-36mm vintage forks work best with the Emulator spring at 2-5 turns Range
Emulator Valve Plate Bleed Holes	2 bleeds	Additional bleeds as desire up to 4 total	Initial fork movement low speed damping & plushness before valve plate opens; small bumps, chatter, etc.

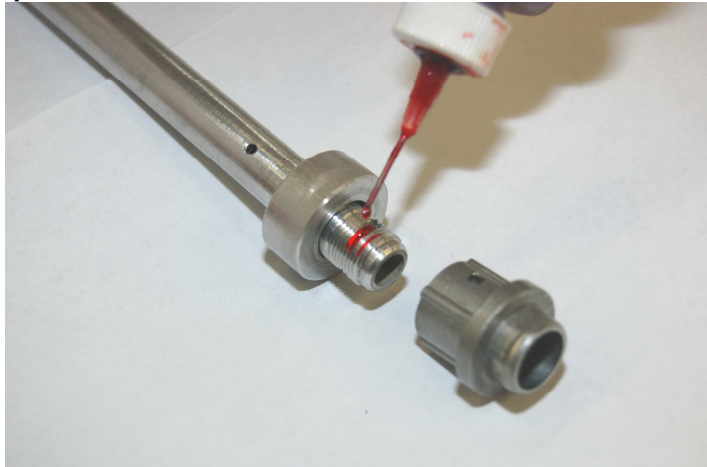
* Measured from zero preload (no tension) on the Valve Spring. To find zero preload back off on the adjuster bolt until the spring is loose then tighten it until the spring just touches. Use oil viscosity to set the amount of rebound damping, then adjust the compression with the Emulator settings. The 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 or Colored Spring makes the fork stiffer. The effect of all the variables will overlap providing extreme tuning flexibility.

NOTE: Some KYB Damping rods require some machining, see racetech.com for details or please call Race Tech Technical Support at 951.279.6655 for information. See details below.

Typical KYB 34mm Vintage Fork Damping Rod Mod



Remove roll pin & cut down so as not to block oil flow thru center of damping rod



Loctite & reinstall damping rod head, re-install cut down roll pin portions to secure.



KYB protruding top style Damping Rod requires machine work along with custom adaptor.