

# RACE TECH

1501 Pomona Rd, Corona, CA 92880 • 951.279.6655 • fax 951.279.7171 • [racetech.com](http://racetech.com)

FK code

## FORK GOLD VALVE INSTALLATION - DIRT 20mm

<IP FMGV 2040w.doc> FMGV 2040 P Thede © 12-5-15

**TOOLS REQUIRED:** (In addition to those required for fork disassembly.) In-lb torque wrench that accurately measures 0 to 50 in-lbs (0.58 kgf-m), 10mm wrench, Fine flat file, Hi-Strength Loctite (provided), Metric calipers, Metric micrometer 0-25mm.

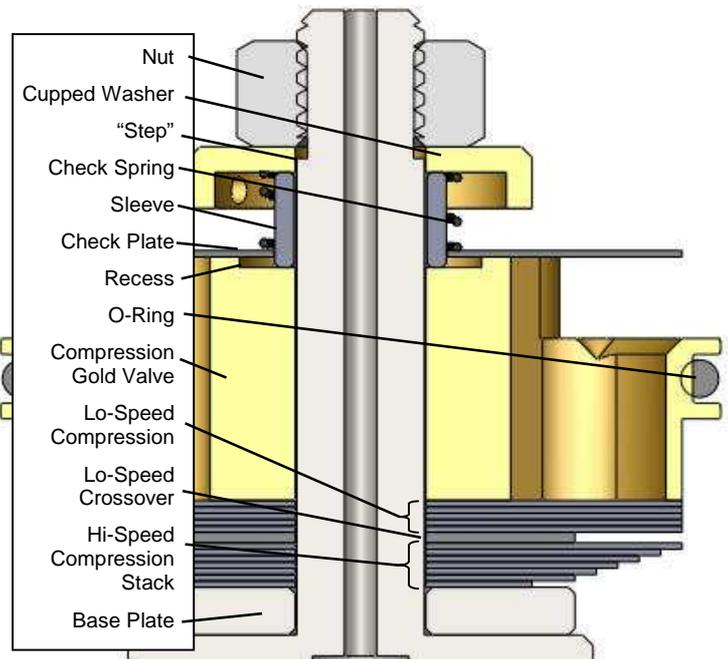
**NOTE:** Many riders require different fork springs. Please consult [www.racetech.com](http://www.racetech.com) or call Race Tech.

### DISASSEMBLY

- D1 **Completely disassemble and clean your front forks. If you are unfamiliar with this process, STOP! Do not proceed. Seek out a qualified suspension technician to complete the installation.**
- D2 **Remove the nut.** When disassembling the compression valve for the first time, **the peening on the threads above the nut must be filed off flat** before removal. Deburr the end of the threads. **NOTE:** On some models the compression valve is located inside the cartridge itself. There is a retaining ring that must be unscrewed from the bottom of the cartridge. To get to it, push the compression valve holder up into the cartridge about 5mm (1/4"). Unscrew the retaining ring, screw the bolt back in and work it out by pulling.
- D3 **Disassemble the valving stack.** Lay out the pieces in the order they come off the shaft. Clean and inspect all the original parts. Be careful to maintain the original order and orientation of the parts. (You may need some of the original valving for spacing purposes, do not discard.)

### VALVING SELECTION

- V1 **To obtain custom valving settings go to Digital Valving Search, insert your Access Code, input your personal specifications and print the custom setup information. If you do not have access to the web, contact our Technical Support Hotline 951.279.6655 for recommendations. Note: The Access Code is good for one limited-time use.**
- V2 Once you have selected your valving begin assembling the valve. (figure 1 or 2 – your exact configuration may be slightly different) Place the original Base Plate on the shaft of the compression valve.



**2-STAGE COMPRESSION**  
figure 1

V2a **Single Stage** - A Single Stage Stack is a two-part stack made up of a combination of a **Lo-Speed Stack and a Hi-Speed Stack with NO Crossover**. Put the valving on the shaft in the order listed, starting with the smallest diameter shim of the Hi-Speed Stack. Then the Lo-Speed Stack gets placed on top of the Hi-Speed Stack. **You will not use a Crossover.** (see figure 1 and 2 - your exact configuration may look slightly different.)

NOTE: On some models you will need to use the additional Base Plates provided to achieve the proper total valve thickness (see step 8). Also, you may end up with additional parts, don't worry.

V2b **Two Stage** (figure 1) - For Two Stage Stacks the total valving stack is made up of a combination of a Lo-Speed Stack, a Lo-Speed Crossover and a Hi-Speed Stack. Put the valving on the shaft in the order listed, starting with the smallest diameter shim of the Hi-Speed Stack. Then the Lo-Speed Crossover gets placed on top of the Hi-Speed Stack, then the Lo-Speed Stack ends up closest to the Gold Valve.

V3 **Place the Gold Valve on the shaft** with the recess on the piston facing up. Make sure the o-ring is on the Gold Valve.

V4 **Place the check valve sleeve on the shaft**, then the check valve plate (*large ID washer*) and the spring. Be sure the sleeve fits into the recess in the piston and the plate is free.

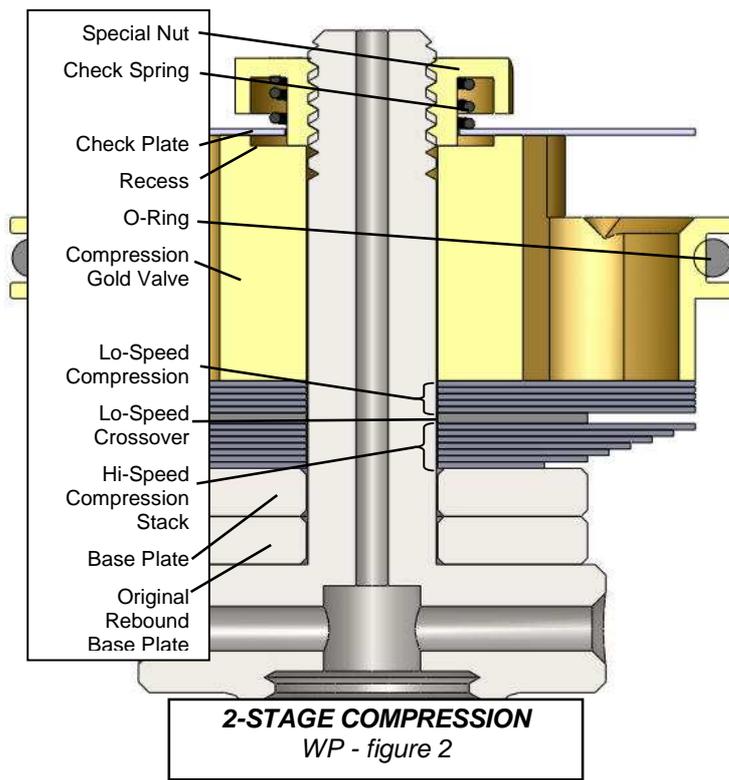
V5 **Put the spring cup on the shaft dished down.** On models that require the use of the special nut provided, do not use the original spacer, cupped washer and nut.

**On Showa's you must be very sure that the spring cup straddles the "Step" at the end of the thread. This is a critical part of the installation. If it does not one of two things will happen. Either the nut will tighten down on the Step instead of the valving causing it to come loose or not damp properly. Or the Spring Cup will catch on the Step and not tighten properly, also creating the possibility that the valve will loosen. To get the proper total valve stack thickness you may place some of the original shims on the shaft below the base plate. Be sure the spring cup straddles the Step!!!**

V6 **Make sure the check valve plate (*large ID washer*) is free** and can move up and down against the spring.

V7 **CAUTION! The threads can be damaged without extreme care. To install the nut you must use Loctite. The 6mm nut (10mm wrench) must be torqued with a torque wrench to 25 in-lbs (0.29 kgf-m), **NO MORE!** Do not take this step lightly.**

V8 **Inspect your work.** For two stage stacks, hold the compression stack up to the light and look for the gap at the crossover between the lo-speed and hi-speed stack (*the small shim near the top of the stack*). This gap should be visible, if it isn't, disassemble the stack and look for burrs to surface and/or dirt in the valving. Reassemble and check again.



**NOTE to KDX owners and some other models with "inverse bending shims": The original valving looks completely different than the Gold Valve (the original valving shims are on the top of the valve while the Gold Valve shims are on the bottom).**

## ASSEMBLY

- A1 **Reassemble the forks according to the procedure in your manual.** Torque the compression valve body to manufacturer's specs. For most forks this is 43 to 60 ft-lbs (58 to 82 NM). Consult owner's manual for specs. Bleed the cartridge and set the oil level using Ultra Slick USF 05 (5w). NOTE for Twin Chamber Forks: To protect the cartridge seal pack the thread with heavy grease before you insert it into the cartridge.  
*NOTE: Upside-down KYB forks without a bleed hole in the inner (chrome) tube, require special care to set the oil level. There is a space between the inner and outer tube and without a bleed hole there is no way to know how much oil is in this space. To deal with this situation extend the outer tube all the way before setting the level, this will dump all the oil from this space into the inner tube. This will call for higher oil levels than the manufacturer recommend.*
- A2 **Set the fork spring preload.** See the Instructions in the "Tech Support" Section of racetech.com.
- For Open Chamber Forks:**
1. First compress the outer fork tube all the way. Put the spring into the fork. Measure the distance from the top of the outer fork tube to the top of the spring. This is the **Relaxed Reference Length**.
  2. Locate the point on the fork cap where the spring seats. If the cap is recessed, i.e. the point where the spring contacts the cap is covered up by part of the cap, you must measure the depth of the recess.
  3. Next install the fork cap and measure from the top of the outer fork tube to the end of the spring. This is the Set Reference Length.
  4. The difference between the Relaxed Length and the Set Length is the Preload. Keep in mind that if there is a recess it must be considered in the calculation.
- A3 **Install the fork cap.** Use Loctite on the damping rod threads at the cap and torque it to manufacturer's specs (typically 16 ft-lbs or 21.7 NM). Consult owner's manual for specs.
- A4 **Adjust the compression and rebound adjusters, spring preload, and oil level** according to the DVS Setup Sheet. Be sure to bleed the cartridge.
- A5 When the forks are put on the bike it is very important to **align the fork tubes**. This is done by first tightening the axle all the way, then the tubes are aligned by pumping the forks up and down with the right-hand axle clamp loose. This will line the tubes up so they won't bind. Finally, tighten the axle clamp.
- A6 If you have any **questions** please call our Technical Support Hotline at 951.279.6655. Feel free to experiment and please stay in touch. Have fun!

### **NOTE FOR 43 and 45mm UPSIDE-DOWN SHOWA FORKS:**

43 and 45mm Upside-down Showa forks need a different bushing design to work properly. When the front wheel hits a bump the forks bend backwards. They bend where they have the most leverage, which is right below the triple clamp. This means the upper bushing is trying to go into the upper tube that has a kink in it. The amount of force it takes to create a bind is incredibly small. The best cure available is **Race Tech Ultra Slick Bushings**. They have a different design, which helps the upper bushing get through the kink without increasing clearances. The difference is substantial.

### **TUNING NOTES**

- **Damping depends on vertical wheel velocity, not position in the stroke.**
- **If the forks feel too soft all the way through**, increase compression damping with the external adjuster. If that is not enough, change the compression stack internally.
- **The compression damping adjuster controls the lowest speed damping and affects the entire range.** NOTE: The closer to maximum damping (full clockwise) the more effect one click makes. In other words going from 3 to 2 out has a lot more effect than going from 14 to 13. Adjusters are numbered from all the way clockwise (the slowest or firmest setting).
- **If your valving needs to be stiffer, move to the right on the valving chart.** If the forks are too firm, go the opposite direction, to the left.
- **Spring rate affects ride height, dive and bottoming.** Typical spring preload should be 3-5mm (0.1-0.2").
- **Oil level can drastically alter bottoming resistance and only affects the last part of the travel (near bottoming).** If you like the action but the forks bottom too easily, raise your oil level by 10cc.

# **BUILDING the VALVING STACK - DIRT 20mm**

Welcome to the wonderful world of Gold Valving. To obtain your personal Custom Suspension Settings:

1. Go to Digital Valving Search (DVS)
2. Input your Access Code (on top of page 1) when prompted
3. Input your personal specifications
4. Print your DVS Custom Suspension Setup Sheet

If you do not have access to the Internet, contact our Technical Support Hotline 951.279.6655 for recommendations. Note: The Access Code is good for one bike, limited-time use.

Once you have your valving settings, build your valving stacks.

**Single Stage** - made up of a Lo-Speed and a Hi-Speed Stack. You will not use a Lo-Speed Crossover.

**Two Stage** - made up of a Lo-Speed Stack, Lo-Speed Crossover and a Hi-Speed Stack.

## **Example Single Stage:**

Starting from the Gold Valve piston face:

### **Lo-Speed Stack**

(2) .15x17

### **Hi-Speed Stack**

- (1) 0.10x17
- (1) 0.10x15
- (1) 0.10x14
- (1) 0.10x13
- (1) 0.10x12
- (1) 0.10x11
- (1) 0.10x10
- (1) 0.10x9

## **Example Two Stage:**

Starting from the Gold Valve piston face:

### **Lo-Speed Stack**

(2) .15x17

### **Crossover**

(1) .10x11

### **Hi-Speed Stack**

- (1) 0.10x17
- (1) 0.10x15
- (1) 0.10x14
- (1) 0.10x13
- (1) 0.10x12
- (1) 0.10x11
- (1) 0.10x10
- (1) 0.10x9

**OIL LEVEL, EXTERNAL ADJUSTERS, SPRING RATE, and PRELOAD are all listed on the DVS on racetech.com.**

NOTE: All measurements are metric (*for inches divide by 25.4*). The valving list starts at the piston face and goes towards the base plate. Valve specs are listed by (QUANTITY) THICKNESS x DIAMETER. A number in parentheses means quantity. If there is no number in parentheses the quantity is one. Example: (2).15x17 means quantity two, 15 hundredths of a millimeter thick by 17 millimeters in diameter.