

RACE TECH

FORK GOLD VALVE INSTALLATION - DIRT KYB 28mm Type 3

FK code

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), Fine Flat File, Hi-Strength Loctite (provided), Metric Calipers, Metric Micrometer.

SPECIAL TOOLS REQUIRED to MOIFY REBOUND and MID VALVE ON 32/28mm CARTRIDGES: Shaft Holding Tool (TFSH 10), Cartridge Tube Holding Tool (TFSH 32) and Cartridge Holding Tool (TFCH 01).

NOTE: Many applications require different fork springs.

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 threads above the nut must be filed off flat. Lightly deburr the end of the threads.
- 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

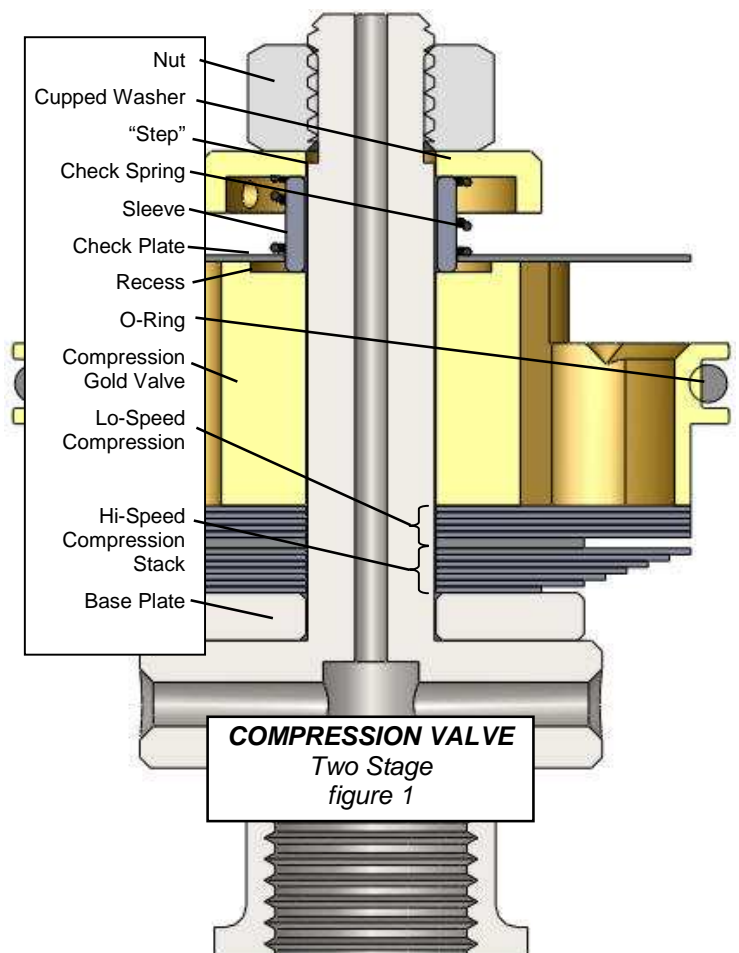
V1 **To obtain custom valving settings go to Digital Valving Search, insert your Access Code, input your personal specifications and print the custom setup information.**

V2 Once you have selected your valving **begin assembling the valve**. (figure 1) Place the original Base Plate(s) (*thick washer*) on the shaft.

V2a **Single Stage** - Put the valving on the shaft in the order listed, starting with the smallest diameter shim (*clamping shim*) of the Hi-Speed Stack and ending with the largest diameter closest to the Gold Valve. You will not use a Lo-Speed Stack.

V2b **Two Stage** - For Two Stage Stacks the total valving stack is made up of a combination of a Lo-Speed Stack 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 Stack gets placed on top of the Hi-Speed Stack starting with the small diameter and ending with the largest diameter shim closest to the Gold Valve. (figure 1 - your exact configuration may look slightly different.)

- V3 Make sure the o-ring is on the Gold Valve. **Place the Gold Valve on the shaft** with the recess on the piston facing up.
- 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. You must be very sure that the nut does not run out of threads onto the straight part of the shaft. If



it does, the nut will not tighten down on the valving. This will cause incorrect operation or the nut will come off. This is a critical part of the installation. To get the proper total valve stack thickness you may need to place some of the original shims on the shaft just after the base plate. NOTE: Any shims added must be larger in diameter than the last shim in the stack. **Be sure the nut is fully engaging the threads!**

- 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 using extreme care. They are made out of aluminum and strip easily.** To install the nut you must use Loctite. The 8mm nut (12mm wrench) must be torqued with a torque wrench to 48 in-lbs (4 ft-lbs or 0.56 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.

→ CYLINDER SEAL INSTALLATION requires CARTRIDGE DISASSEMBLY

CYLINDER SEAL INSTALLATION (32mm Cartridges only)

FMGV 2831, 32, 81, 82 ONLY (98-02 YZs and 98-99 CR125)

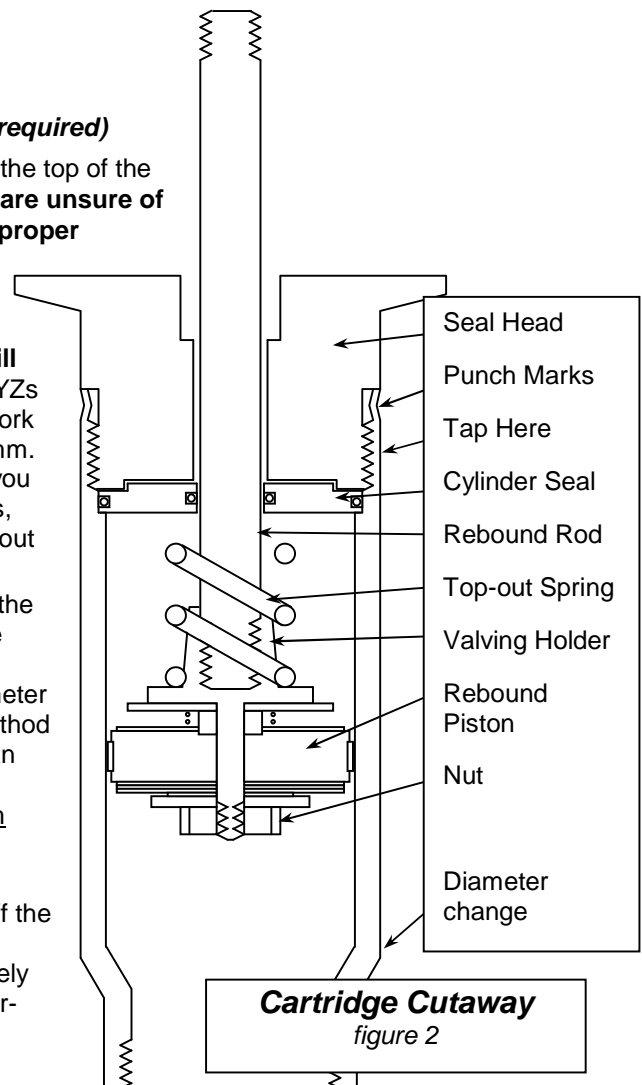
CARTRIDGE DISASSEMBLY (figure 2) (special tools required)

- C1 **Remove the Seal Head** (the end cap where the spring sits) from the top of the cartridge tube. This can be an extremely tricky operation. **If you are unsure of your ability to perform this operation or you do not have the proper special tools STOP!!! and seek out a qualified technician.**

The Seal Head is threaded into the top of the tube and must be unscrewed. There are four punch marks to insure the Seal Head does not come off in use. Use a 5/32" (4mm) drill to **carefully drill through the punch marks** on the outer wall. (NOTE: On 98-02 YZs and 98-99 CR 125 this is extremely critical as the function of the fork can be destroyed if you drill too deep. Do not drill deeper than 2mm. In fact, if you can avoid drilling through the outer wall completely you will eliminate the possibility of leakage in this area. In other words, drill just enough to make the wall at the punch mark very thin without actually breaking through.)

- C2 The threads are also Loctited. Hold the Cartridge horizontally on the anvil portion of a vise. Rest the Cartridge Tube on the anvil at the junction of the Tube and the threaded portion of the Seal Head. **Loosen the Loctite on the threads** by tapping on the outer diameter of the tube at this junction with a ball peen hammer. (Another method is to use a Propane torch to gently heat the Loctite to no more than 350°F or 175°C) Use TFSH 03 Shaft Holding Tool to hold the cartridge tube where the tube changes diameter from 28 to 32mm near the bottom (where it is strongest). Use TFCH 01 Cartridge Holding Tool to **unscrew the Seal Head**.

- C3 **Disassemble the Rebound Valving.** To remove the nut grind off the peening that keeps it from being removed. When grinding this peening it is recommended that you grind into the nut approximately 1mm as the threads usually are smashed and damaged from over-peening at the factory.



CYLINDER SEAL INSTALLATION

This modification blocks off the flow through the Cylinder Valve and makes the valving much more consistent, firmer and plusher as well. **If you have one of these models and you are not using the Cylinder Seal you will have to make the Compression Valving stiffer to compensate for this Valve (see Valving Selection Criteria).** NOTE - The Cylinder Valve Seal will work on all 32mm cartridges.

- C4 **Remove the Valve Holder from the Damping Rod.** It is also Loctited onto the Rod. Use the same method of tapping on the outside of the threads as outlined in step "B". (Or you can use a Propane torch.) Use Shaft Holding tool TFSH 10 to hold the shaft being careful not to damage the rod. Tip – Polish the Damping Rod with 400 grit (very fine) sandpaper.
- C5 **Install the Cylinder Seal Plate onto the Rod.** Check to see the o-ring and the Rod Seal are properly located on the Cylinder Seal Plate.

There are two types of Cylinder Seal Plates:

- 1) 98 and earlier has the Top-out Spring Holder on the Cylinder Seal Plate itself. Use a screwdriver and pry off the original Top-out Spring. Install it on the new Cylinder Seal Plate. Install the Cylinder Seal Plate onto the Rod. (99 model shown in fig 2)
- 2) For 99–01, the plate is flat. Simply install the Cylinder Seal Plate onto the Rod with the flat side towards the inside of the Cartridge.

C6 **Install the Rebound Valving Holder** onto the Rod. Use Loctite and torque it to 25 ft-lbs (34 NM).

ASSEMBLY

A1 **Reassemble the forks according to the procedure in your manual.** Torque the compression valve body to manufacturers specs. For most forks this is 43 to 60 ft-lbs (58 - 82 NM). Consult owner's manual for specs. Bleed the cartridge and set the oil level using Ultra Slick USF-05 (5w).

NOTE: 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 slightly higher oil level settings than the manufacturers recommend.

A2 Use Loctite on the damping rod threads at the cap and **torque it to manufacturers specs** (typically 16 to 21 ft-lbs [21.7 – 28.5 NM]). Consult owner's manual for specs.

A3 **Adjust the compression and rebound adjusters, spring preload, and oil level** according to the Digital Valving Search Setup Sheet.

A4 **Install the forks.** When the forks are put on the bike it is very important to align the fork tubes. First tighten the axle all the way, and then align the tubes 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.

BUILDING the VALVING STACK - DIRT 25/28mm - KYB

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 Digital Valving Search (DVS) Setup Sheet**

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

Single Stage - made up of a Lo-Speed Stack 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 (figure 4):

Starting from the Gold Valve piston face:

Lo-Speed Stack

(4) .15x24

Crossover – none

Hi-Speed Stack – cH150

- (1) .10x24
- (1) .10x22
- (1) .10x20
- (1) .10x18
- (1) .10x16
- (1) .10x15
- (1) .10x14
- (1) .10x13
- (1) .10x12

Example Two Stage (figure 1):

Starting from the Gold Valve piston face:

Lo-Speed Stack

(4) .15x24

Crossover

(1) .10x16

Hi-Speed Stack

- (1) .10x24
- (1) .10x22
- (1) .10x20
- (1) .10x18
- (1) .10x16
- (1) .10x15
- (1) .10x14
- (1) .10x13
- (1) .10x12

NOTE: All measurements are metric (*inches divide by 25.4*). The valving starts at the piston face and goes towards the base plate. Shims are listed by (QUANTITY) THICKNESS x DIAMETER. A number in parentheses means quantity. If there is no number in parenthesis the quantity is one. Example: (2).15x24 means quantity two, 15 hundredths of a millimeter thick by 24mm in diameter.

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).
- **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 10mm/cc.