1501 Pomona Rd, Corona, CA 92880 • 951.279.6655 • racetech.com

FK code

G2-R COMPRESSION GOLD VALVE INSTALLATION

KYB AIR FORK SPRING DIRT 32

<IP FMGV 3230Gw.doc> FMGV 3230G P Thede © 12.3.15 5 pgs

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 (supplied), Metric calipers and micrometer.

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.***

NOTE: Twin-Chamber Forks are slightly different than open cartridges. When removing the damping rod from the cartridge carefully inspect the thread on the end of the damping rod for sharp edges. **These edges can tear the shaft seal.** As a precaution pack the thread with heavy grease before you slide the damping rod out.

D2 ***Remove the nut***. When disassembling the compression valve for the first time, ***the thread above the nut must be filed off flat.*** Lightly deburr the end of the thread.

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.)*

COMPRESSION VALVING

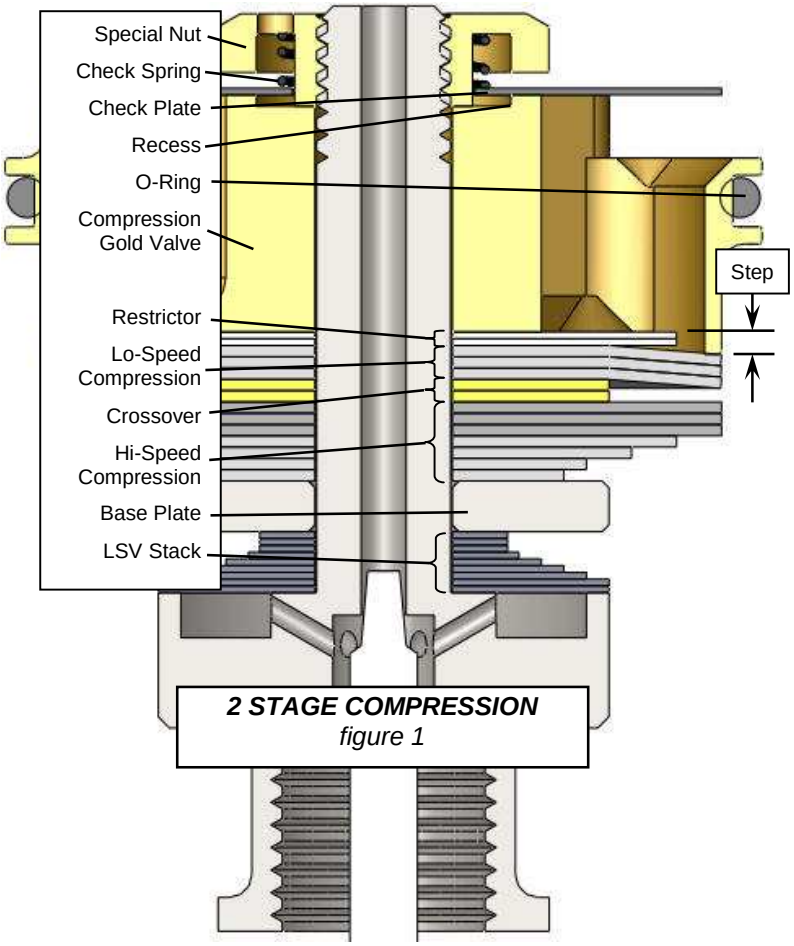
G2-R Theory - There are many ways to setup the valving with G2-Rs. They are made to be preloaded (digressive) or restricted (progressive). This adds a little complexity but makes them extremely versatile.

The Gold Valve piston face has a **1.0mm step** on it. This means if you put on a standard valving stack, without a Restrictor Stack, the shims will be bent 1.0mm without opening. This is called a 1mm preloaded stack. We have found that the best preloads are typically between zero and 0.10mm. The Restrictor Valving Stack thickness adjusts the preload.

'Step'–'Restrictor Stack Height'='Preload'

example. 1.00 – 0.90 = 0.10 preload

The Restrictor Valving serves a second function. Increasing the diameter restricts the flow area of the ports. This increases the damping at high velocities like landing off a jump.



2 STAGE COMPRESSION
figure 1

V1 **To obtain custom valving settings visit www.racetech.com, go to Digital Valving Search (DVS), insert your Access Code (printed on the top of the first page), 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**. Start by building the **Lo-Speed Bleed Valve Stack (LSV)** according to the DVS Sheet. Then place both the original Compression and Rebound Base Plate on the compression shaft.

V2a**Single Stage Stacks** (figure 2) - 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 but you will use a **Restrictor Valving Stack** installed next to the Gold Valve itself.

V2b**Two Stage Stacks** (figure 1) - For Two Stage Stacks the total valving stack is made up of a combination of a **Restrictor Valving Stack, a Lo-Speed Stack, a 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 Crossover gets placed on top of the Hi-Speed Stack and ending with Lo-Speed Stack closest to the Gold Valve. Then the **Restrictor Valving Stack** is installed next to the Gold Valve itself.

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.

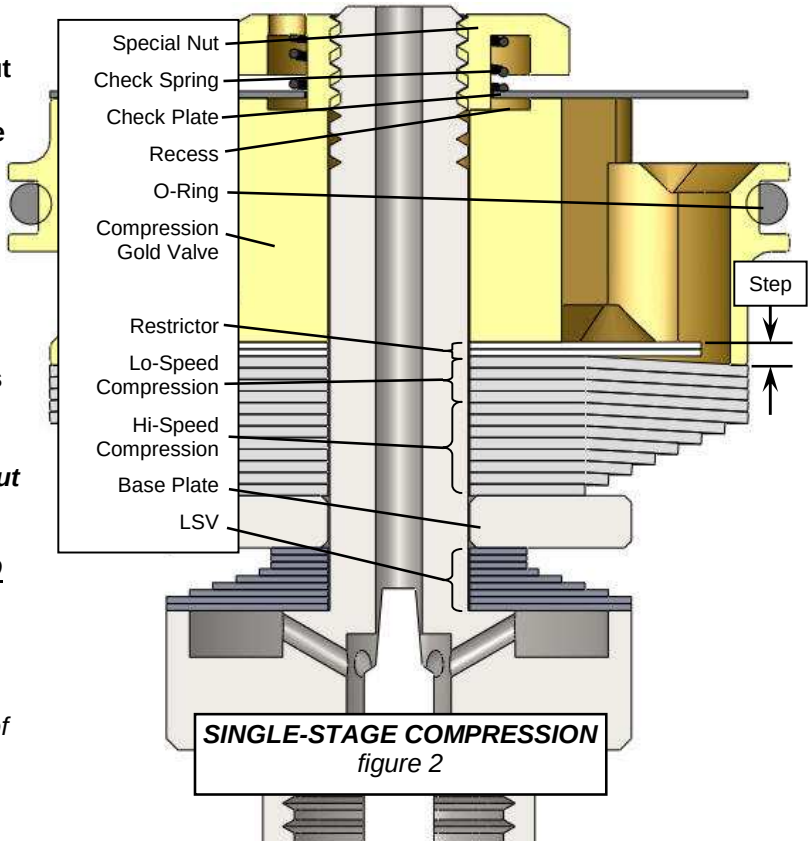
V4 **Place the check plate *(large ID washer)* and the spring on the shaft**. Next install the Special Nut. Be sure the check plate is free to move on the Special Nut before you tighten it.

V5 **Check to see the total valve stack thickness is correct. WARNING: *You must be very sure that the nut does not run out of thread 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 thread!**

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

V7 ***CAUTION! The thread can be damaged without extreme care. Use Loctite on the Special Nut. The 8mm nut 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 cross-over 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.



SINGLE-STAGE COMPRESSION
figure 2

MID-VALVE AND REBOUND

Rebound Gold Valve Kits are highly recommended. You can expect significant improvement in both plushness and traction with these kits. This is a great time to install them.

ASSEMBLY

A1 **Install the damping rod into the cartridge.** Reassemble the forks according to the procedure in your manual. For Twin-Chamber Forks the damping rod shaft seal must be protected. Pack the thread with heavy grease before inserting it into the cartridge.

A2 **Fill and bleed the cartridge.** Before installing the compression assembly which includes the reservoir piston and cap make sure the oil level is 130mm (5.1") down from the top of the cartridge with the damping rod fully extended. Once you have tightened the cap compress the damping rod all the way. This will push out any extra oil from inside the cartridge and should be poured out of the holes in the top of the reservoir. Torque the cap to manufacturers specs. Consult service manual for specs.

A3 Use Loctite on the damping rod thread at the Rebound Adjuster Bolt and ***torque it to manufacturers specs*** (typically 16 to 21 ft-lbs [21.7 – 28.5 NM).

A4 ***Adjust the compression and rebound adjusters, air pressure, and oil level*** according to the Digital Valving Search Setup Sheet. **IMPORTANT-THE AIR PRESSURE SHOULD BE SET EVERY TIME THE BIKE IS RIDDEN!**

A5 ***Install the forks on the bike***. 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 call if you need us. Have fun!

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.** Moving to the right on the Lo-Speed Chart will stiffen up lo-speed damping. This will improve bottoming resistance with minimum increase in harshness. Moving to the right on the Hi-Speed Chart will increase damping overall, making it stiffer through the entire speed range. If the forks are too firm, go to the left.
- **Spring rate affects ride height, dive and bottoming.** Typical spring preload should be 3-5mm.
- **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 (0.4").

<FCR322801-140312>

RESTRICTOR VALVING ***STIFFER*** *(Diameter)* →

0.00 Preload	**cR00.17**	**cR00.22**	**cR00.24**
0.00	(6).15x16	(6).15x22	(6).15x24
	(1).10x16	(1).10x16	(1).10x16
0.05 Preload	**cR05.17**	**cR05.22**	**cR05.24**
0.05	(5).15x16	(5).15x22	(5).15x24
	(2).10x16	(2).10x16	(2).10x16
0.10 Preload	**cR10.17**	**cR10.22**	**cR10.24**
0.10	(6).15x16	(6).15x22	(6).15x24

S T I F F E R ↓

The Restrictor Valving Stack serves 2 purposes. First, its diameter can restrict the port size. Second, its thickness can create preload.

The piston face has a 1.0mm step on it. This means if you put on a standard valving stack the shims will bend 1.0mm without opening. We call this a 1mm preloaded stack. Testing has shown that the best preloads are between zero and 0.10mm. The Restrictor Valving Stack thickness adjusts the preload.

'Step' – 'Restrictor Stack Height' = 'Preload'