*1501 Pomona Rd, Corona, CA 92880 • 951.279.6655 • fax 951.279.7171 • racetech.com*

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# *FORK GOLD VALVE INSTALLATION*
## *STREET / ROAD RACE 20mm G2-R • 07-08 GSX-R1000*

<IP FMGV S2051G.doc> **FMGV S2051G** P Thede © 1.31.14 4 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), 5mm Allen Wrench, 1/2" Wrench, Hi-Strength Loctite (included), Metric Calipers, 0-25mm Metric Micrometer.

**NOTE: Many models require different fork springs. Please consult www.racetech.com or call Race Tech.**

## *DISASSEMBLY*

1 ***CLEANLINESS IS CRITICALLY IMPORTANT.*** 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.**

2 ***Remove the compression valve body*** from the fork leg.

3 If you are disassembling the compression valve for the first time, the threads above the nut must be filed off flat before removal.

4 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.)* Lightly deburr the end of the thread.

## *COMPRESSION VALVING*

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

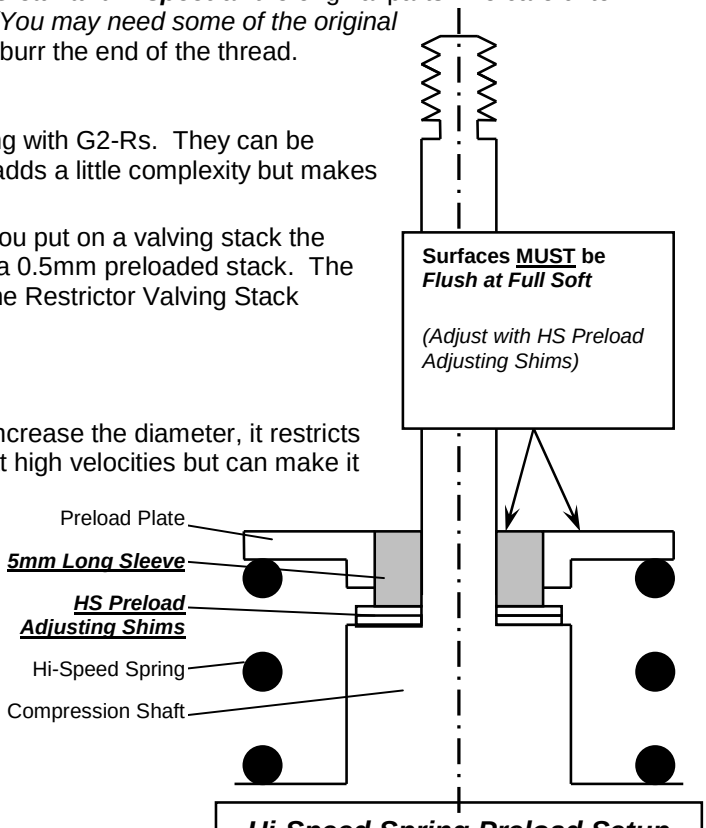
The piston face has a 0.5mm step on it. This means if you put on a valving stack the shims will be bent 0.5mm without opening. We call this a 0.5mm preloaded stack. The best preloads are typically between zero and 0.1mm. The Restrictor Valving Stack thickness adjusts the preload.

**(Step) – (Restrictor Valving Thickness) = (Preload)**

ex. 0.50 – 0.40 = 0.10 preload

The Restrictor Valving serves a second function. If we increase the diameter, it restricts the flow area of the ports. This increases the damping at high velocities but can make it harsher on more square-edge bumps.

5 **To obtain custom valving settings for your particular application log on to www.racetech.com, go to Digital Valving Search, 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.**




***Hi-Speed Spring Preload Setup***
*figure 1*

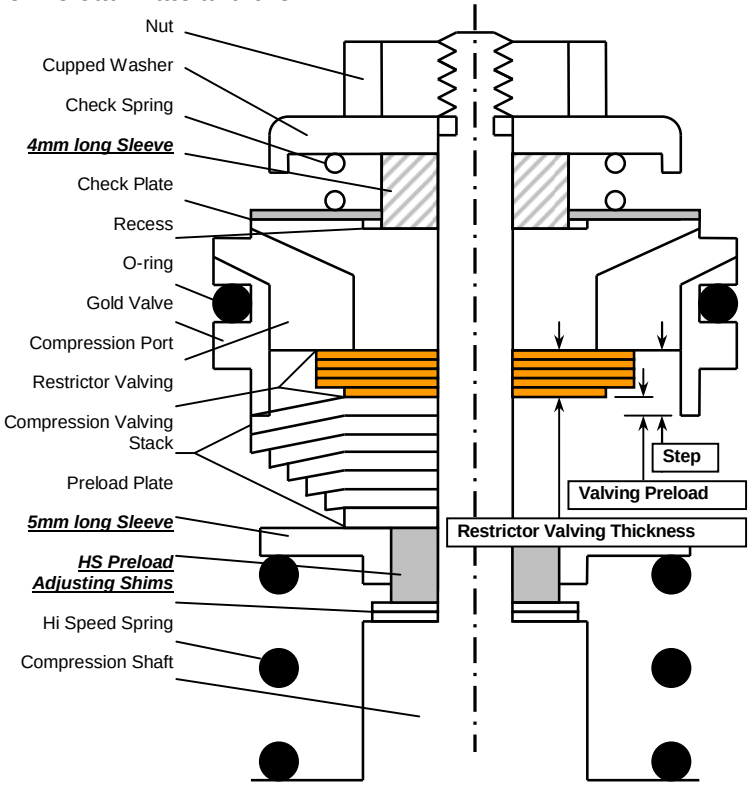
6 ****IMPORTANT** Set Hi-Speed Preload to zero (figure 1).** First back out the Hi-Speed Compression Adjuster all the way

(counterclockwise). Install the Hi-Speed Spring, the ***5mm long Sleeve***, and the Preload Plate. ***Add HS Preload Adjusting shims (9mm od shims) until the top of the Preload Plate and the top of the Sleeve are equal (zero preload).***

7 ***Put the compression valving on the shaft (figure 2)*** in the order listed, starting with the smallest diameter shim. Put the Restrictor Valving on next.

Put the o-ring on the Gold Valve. Place the Gold Valve on the shaft with the small recess on the piston facing up. Place the ***4mm long 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.

8 ***Put the cupped washer on the shaft***, dished down. ***This is a critical part of the installation. If there is a step at the end of the threads you must be very sure that the spring cup or thick washer straddles this step (see drawing). 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 possibly that the valve will loosen. To get the proper total valve stack thickness you may place Base Plates (thick washers) on top of the cupped washer. Be sure that the Cupped Washer or Base Plate is straddling the step!!!***




***G2-R Gold Valve Cutaway***
*figure 2*

9 ***Install the nut*** and tighten it. **CAUTION! The threads can be damaged without extreme care. You must use Loctite. It must be torqued with a torque wrench to 30 in-lbs (2.5 ft-lbs or 0.35 kgf-m), NO MORE! Do not take this step lightly.**

10 ***Inspect the assembled stack.*** Hold the compression stack up to the light and look for proper assembly. If there are any problems, disassemble the stack and look for burrs to surface and/or dirt in the valving. Reassemble and check again.

11 ***Install the compression assembly into the cartridge.*** Install the retaining clip and seat the compression valve assembly if it is that type.

## *REBOUND VALVING*

***GSXR-1000s benefit from an HFR Rebound Gold Valve Kit see www.racetech.com. Follow the instructions included with the kit.***

## *REASSEMBLY*

12 ***Reassemble the forks according to the procedure in your manual. Please use the proper spring rate.*** Bleed the cartridge and **set the oil level** with the forks and the damping rod completely bottomed. ***Set the oil level and spring preload*** according to the Digital Valving Search Setup Sheet.

13 ***Install the cap.*** Use Loctite on the damping rod threads at the cap and torque it to manufacturer's specs. Most models require careful positioning of the rod in the cap so the proper number of rebound clicks are available for adjustment and the forks are the proper length. If the rod is threaded too far into the cap there will not be the full number of clicks. If the cap is not threaded on far enough, it will not touch the adjuster and it could come off the shaft. On this type, set the total number of available clicks to 16 to 20 (or 4 turns if there are no "clicks"). Consult owner's manual for the proper procedure.

On most KYBs, screw the adjuster in all the way and back it out ¼ turn with the cap off. On most Showa's, there's no stop when you screw the adjuster in, so the procedure is a little different. Screw the adjuster out all the way, and then screw it in 3 to 4 turns.

Then for either type, install the cap onto the rod until it starts to feel tight (the adjuster needle is bottomed out). Hold the position of the cap in relation to the rod, back out the adjuster 1 turn (so the needle isn't damaged when it's tightened) and torque the jam nut to proper specs (consult manual). Check to see you have the proper number of clicks.

Tighten the Jam Nut.

14 ***Adjust the compression and rebound adjusters*** according to the Digital Valving Search Setup Sheet.

15 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, and 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.

16 If you have ***any questions*** please call our Technical Support Hotline at 951.279.6655.

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### *TUNING NOTES*

- Damping is sensitive to vertical wheel velocity, not position in the stroke. If your valving needs to be stiffer, move to the right. This will improve bottoming resistance by increasing damping overall, making it stiffer through the entire speed range. If the forks are too firm, go the opposite direction, to the left.
- Please feel free to use the compression damping adjuster. It controls the lowest speed damping and affects the entire range. The closer to maximum damping *(full clockwise)* the more effect one click makes. In other words going from 3 to 2 has a lot more effect than going from 14 to 13.
- Spring rate is dependent mostly on rider and bike weight. Spring rate, preload and low-speed compression damping; affect dive, wallow and bottoming.
- 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").
- If the forks feel too soft all the way through, increase compression damping with the external adjuster (if available). If that's not enough, change the compression stack internally.

***Visit www.racetech.com, go to Digital Valving Search with your Access Code (from the top of page 1) for your personal computer calculated valving setup!***

# *BUILDING the VALVING STACK – STREET / ROAD RACE 20mm G2-R*

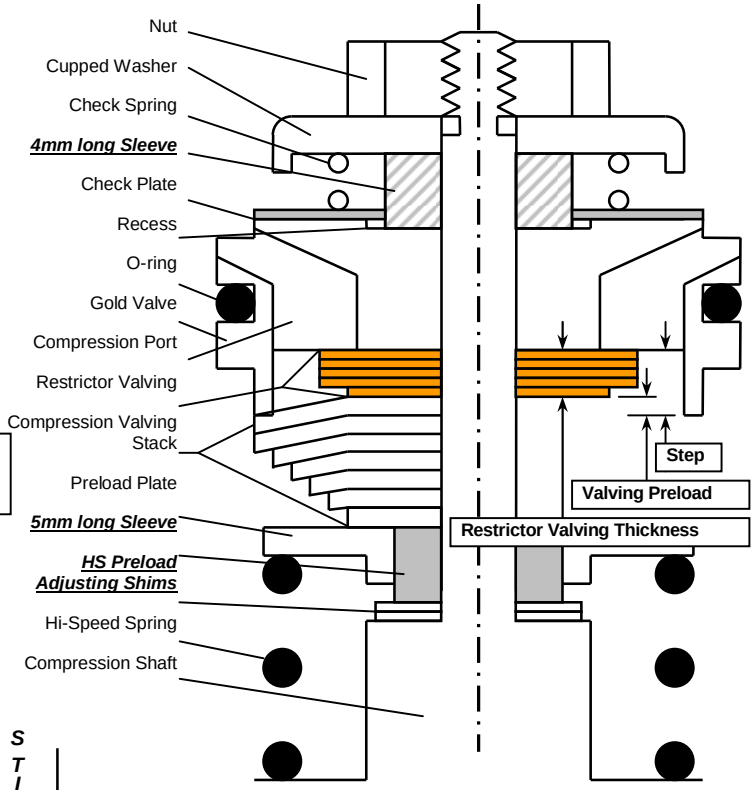
Welcome to the wonderful world of Gold Valving. **To obtain your personal Custom Suspension Settings:**

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

**If you do not have access to the Internet, contact our Technical Support Hotline 951.279.6655.**

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

Measurements are metric *(for inches divide by 25.4)*. The valving list starts at the piston face. Valve specs are listed by (QUANTITY) THICKNESS x DIAMETER. Example: (2).15x17 means quantity two, 15 hundredths of a millimeter thick by 17 millimeters in diameter.




***G2-R Gold Valve Cutaway***
*figure 2*

## *FORK GOLD VALVE G2-R COMPRESSION CHART – RR 20x6mm*

<FCR2017-070222> © P Thede

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

| .00 Preload | cR 00.09 | cR 00.12 | cR 00.13 | cR 00.14 |
|---|---|---|---|---|
| 0.00 | (2).15x9 | (2).15x12 | (2).15x13 | (2).15x14 |
| | (2).10x9 | (2).10x9 | (2).10x9 | (2).10x9 |
| **.05 Preload** | **cR 05.09** | **cR 05.12** | **cR 05.13** | **cR 05.14** |
| 0.05 | (3).15x9 | (2).15x12 | (2).15x13 | (2).15x14 |
| | | .15x9 | .15x9 | .15x9 |
| **.10 Preload** | **cR 10.09** | **cR 10.12** | **cR 10.13** | **cR 10.14** |
| 0.10 | (2).15x9 | (2).15x12 | (2).15x13 | (2).15x14 |
| | (1).10x9 | (1).10x9 | (1).10x9 | (1).10x9 |

***STIFFER*** ↓

***EXAMPLE:***
The **Valving Stacks are** cR05.13 & cH63:
Starting from the Gold Valve piston face
**Restrictor Stack – cR05.13**

(2) 0.15x13
(1) 0.15x9

**Compression Stack – cH63**

(3) 0.15x17
(1) 0.10x15
(1) 0.10x13
(1) 0.10x12
(1) 0.10x11
(1) 0.10x10
(1) 0.10x9
(1) 0.10x10
5mm Long Sleeve x8
**HS Preload Adjusting Shims**

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

**Preload**

The piston face has a .50mm step on it. This means if you put on a standard valving stack the shims will be bent .50mm without opening. We call this a .50mm preloaded stack. The best preloads are typically between 0 and .10mm. The Restrictor Valving Stack thickness adjusts the preload.

**(Step) – (Restrictor Valving Thickness) = (Preload)**

ex. 0.50 – 0.40 = 0.10mm preload

<2006GS-070222>

***COMPRESSION VALVING*** ***STIFFER →***

| cH60 | cH61 | cH62 | cH63 | cH64 | cH65 | cH66 | cH67 | cH68 | cH69 |
|---|---|---|---|---|---|---|---|---|---|
| .10x17 | (1).15x17 | (2).15x17 | (3).15x17 | (4).15x17 | (5).15x17 | (6).15x17 | (7).15x17 | (8).15x17 | (9).15x17 |
| .10x15 | .10x15 | .10x15 | .10x15 | .10x15 | .10x15 | .10x15 | .10x15 | .10x15 | .10x15 |
| .10x13 | .10x13 | .10x13 | .10x13 | .10x13 | .10x13 | .10x13 | .10x13 | .10x13 | .10x13 |
| .10x12 | .10x12 | .10x12 | .10x12 | .10x12 | .10x12 | .10x12 | .10x12 | .10x12 | .10x12 |
| .10x11 | .10x11 | .10x11 | .10x11 | .10x11 | .10x11 | .10x11 | .10x11 | .10x11 | .10x11 |
| .10x10 | .10x10 | .10x10 | .10x10 | .10x10 | .10x10 | .10x10 | .10x10 | .10x10 | .10x10 |
| .10x9 | .10x9 | .10x9 | .10x9 | .10x9 | .10x9 | .10x9 | .10x9 | .10x9 | .10x9 |
| .10x10 | .10x10 | .10x10 | .10x10 | .10x10 | .10x10 | .10x10 | .10x10 | .10x10 | .10x10 |
| 5mm Sleeve x8 | 5mm Sleeve x8 | 5mm Sleeve x8 | 5mm Sleeve x8 | 5mm Sleeve x8 | 5mm Sleeve x8 | 5mm Sleeve x8 | 5mm Sleeve x8 | 5mm Sleeve x8 | 5mm Sleeve x8 |
| P/L Adj Shims | P/L Adj Shims | P/L Adj Shims | P/L Adj Shims | P/L Adj Shims | P/L Adj Shims | P/L Adj Shims | P/L Adj Shims | P/L Adj Shims | P/L Adj Shims |

SHIM SIZING: (QUANTITY) THICKNESS x DIAMETER in mm (for inches divide by 25.4)