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FORK GOLD VALVE INSTALLATION
STREET / ROAD RACE 20 mm

<IP FMGV S2040.doc> **FMGV S2040, FMGV S2040B** P Thede © 6.2.10 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), 5 mm Allen Wrench, 1/2" Wrench, Loctite 271 (Red), Metric Calipers, 0-25 mm 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 cartridge. On some models there are punch marks at the bottom of the cartridge approximately 15 mm (0.6") up from the bottom. If this applies to your model, these must be drilled out with a 3/16" (4.8 mm) drill. Drill only through the steel cartridge tube not all the way through the aluminum valve body. Push the compression valve holder into the cartridge about 5 mm (0.2") to allow access to the wire retaining clip. Remove the clip with a small screwdriver, it comes out easily. Once the clip is out, pull the holder out by screwing the bolt back in and pulling.

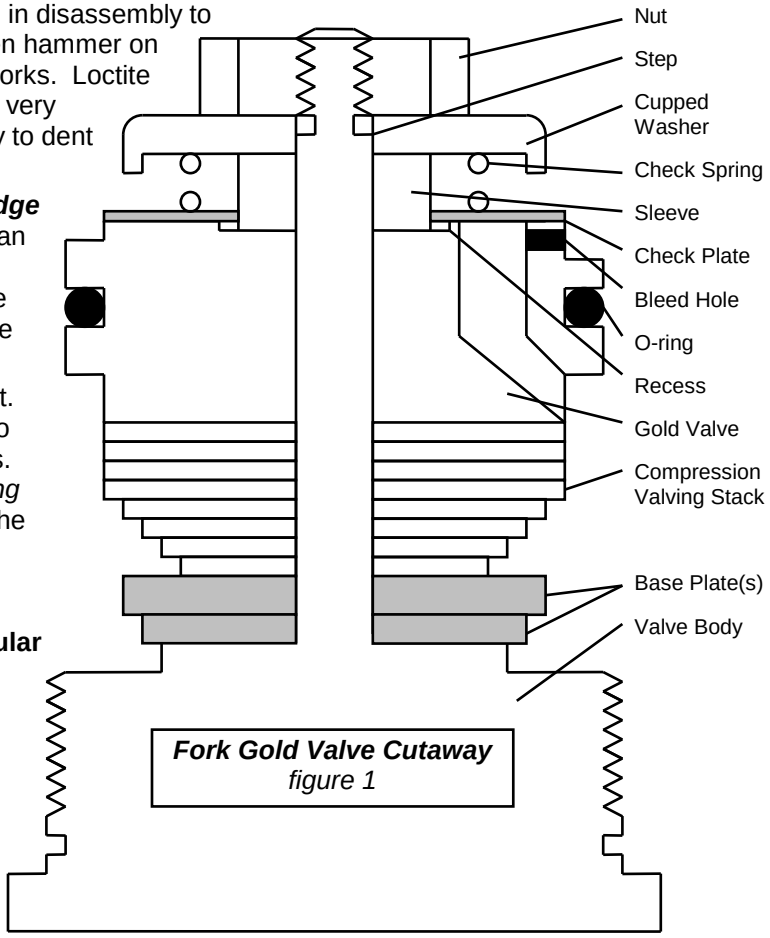
On some models the compression adjuster assembly screws into the bottom of the cartridge tube. This type uses a thread locking compound. Heat can be very helpful in disassembly to loosen the Loctite. Light tapping with a small ball peen hammer on the outside of the cartridge tube at the threads also works. Loctite must be used on reassembly on this type as well. Be very careful when holding the cartridge tube, it is very easy to dent or distort it.

3 If you had to drill out punch marks, ***deburr the cartridge tube*** so it doesn't damage the new o-ring. If there is an Allen bolt remove it and ***disassemble the valving stack.*** If there is a nut and 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 threads.

COMPRESSION VALVING

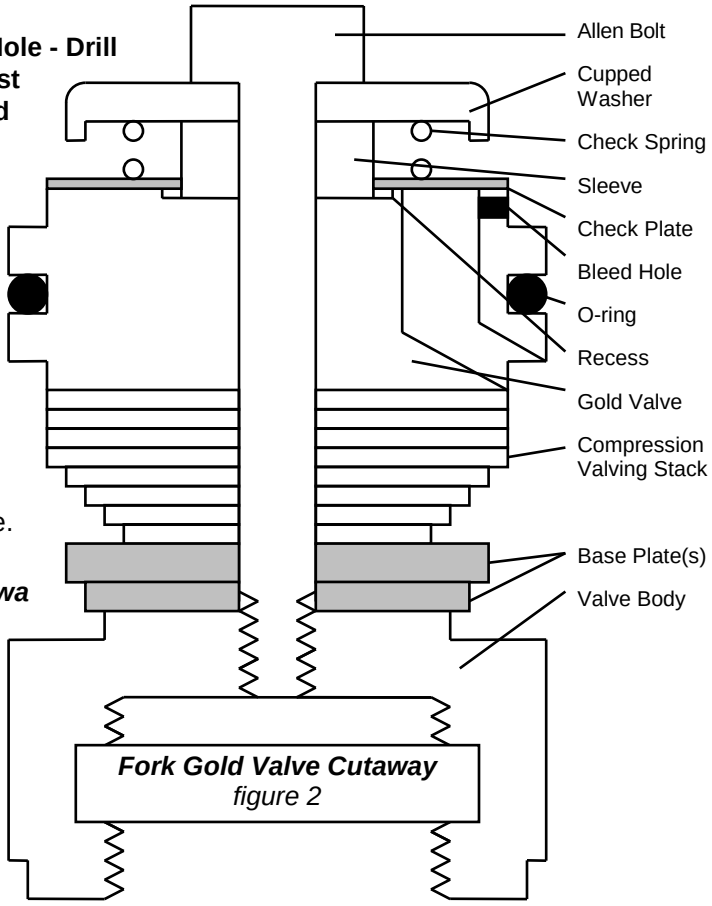
5 **To obtain custom valving settings for your particular application log on to www.racetech.com, go to Digital Valving Search, insert your Access Code (printed on the top of the first page), input your personal specifications and print the custom setup information. If you do not have access to the web, contact our Technical Support Hotline 951.279.6655 for recommendations. Note: The Access Code is good for one limited-time use.**



Fork Gold Valve Cutaway
figure 1

6 **If your Custom Setup requires a Compression Bleed Hole - Drill one hole <u>horizontally</u>, through one of the port walls just above the step for the o-ring on the Compression Gold Valve. Placement is not critical. If your application is Racing please use the Bleed Hole size recommended in the Valving Notes section of the DVS Custom Setup Sheet.**

7 ***Begin assembly (figure 1, type 2 or 3).*** Place the original base plate(s) *(thick washer)* on the shaft of the compression valve body. **Put the valving on the shaft** in the order listed, starting with the smallest diameter shim. Put the o-ring on the Gold Valve. Place the Gold Valve on the shaft with the recess on the piston facing up. 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.



Fork Gold Valve Cutaway
figure 2

8 ***Put the spring cup on the shaft*** (if applicable), dished down. ***This is a critical part of the installation (on Showa particularly, this does not apply on some models). If there is a step at the end of the threads you must be very sure that the spring cup 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 some of the original shims or an additional spacer on the shaft below the base plate. Be sure that the spring cup is straddling the step!!!***

9 ***Install the nut or the bolt*** and tighten it. **CAUTION! The threads can be damaged without extreme care. You <u>must</u> use Loctite 271. It <u>must</u> be torqued with a torque wrench to 30 in-lbs (2.5 ft-lbs or 0.35 kgf-m), <u>NO MORE</u>! 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.

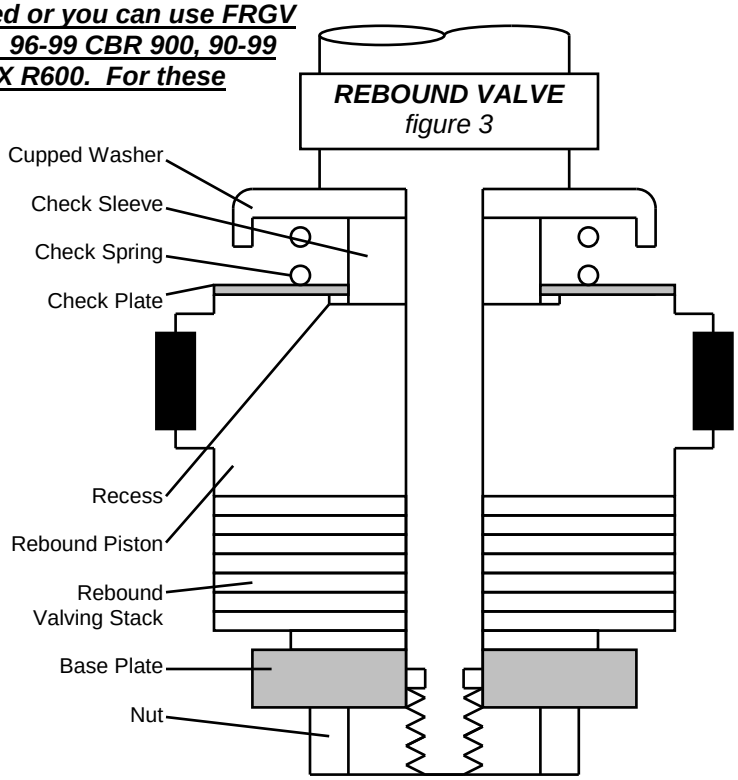
<u>NOTE for FMGV S2040B Kit: Most KYB forks, notably ZX6R, ZX7, ZX7R, YZF 750 and FZR 1000, have aluminum damping rod bushings that wear and leak badly. Race Tech has special Teflon® bushings that cures this problem (part number FKRB 1015P, included in the kit). They should be installed at this time.</u>

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 ***(optional) – figure 3)***

Many models benefit from rebound damping changes. Some models require a Rebound Gold Valve Kit p/n FRGV S01. These models are: KAWASAKI 91-94 ZX7R, 91-92 ZX7J, 93-95 ZX7L, 94-97 ZX9, 98-99 TRIUMPH Thunderbird Sport, YAMAHA 96-98 YZF 600, 99-00 YZF R6, 94-98 YZF 750, 98-00 YZF R1. If you use FRGV S01 Rebound Kit use US-1 Fluid.

On the following models the stock piston can be revalved or you can use FRGV S02 Rebound Kit. HONDA 96-99 RS 125, 94-00 CBR 600, 96-99 CBR 900, 90-99 VFR 750-800, KAWASAKI 95-97 ZX6R, SUZUKI 97-98 GSX R600. For these models follow these instructions:



REBOUND VALVE
figure 3

A Remove the damping rod from the cartridge. ***Disassemble the rebound stack.*** File the peening off the end of the shaft that holds on the nut (just as on the compression valving stack). Lay out the parts in the order they come off the shaft. Clean them thoroughly.

B ***Reassemble*** in reverse order starting with the Cupped Washer, Check Sleeve, Check Spring, Check Plate and Rebound Piston with the recess on the piston face toward the check plate. ***Create a valving stack*** using a combination of original shims and Race Tech shims. Starting from the piston face the valving stack should be: [(quantity 6) 0.15x17, (quantity 1) 0.10x9], then the Base Plate and the Nut. Be very careful to stack up the total valving thickness as in Step 8.

C ***Install the nut or the bolt*** and tighten it. **CAUTION! The threads can be damaged without extreme care. You must use Loctite 271. The 6 mm bolt 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.**

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. If you are using FRGV S01 Rebound Kit use US-1.

13 ***Install the cap.*** Use Loctite 271 on the damping rod threads at the cap and torque it to manufacturer's specs. Some models require careful positioning of the rod in the cap so the proper number of rebound clicks are available for adjustment. 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 15 to 20 (or 4 turns if there are no "clicks"). Consult owner's manual for the proper procedure.

On most KYB's, screw the adjuster in all the way and back it out 2 clicks 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 5 clicks (so the needle isn't damaged when the slop is taken up in the threads) and torque the jam nut to proper specs (consult manual). Check to see you have the proper number of clicks.

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.

BUILDING the VALVING STACK - STREET / ROAD RACE 20 mm

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

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

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.

EXAMPLE:

The **Total Valving Stack** is c33:
Starting from the Gold Valve piston face

Compression Stack – c33

(3) 0.15x17
(1) 0.10x15
(1) 0.10x13
(1) 0.10x12
(1) 0.10x11
(1) 0.10x10
(1) 0.10x9

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!

OIL LEVEL, EXTERNAL ADJUSTERS, SPRING RATE, and PRELOAD are all listed on the Digital Valving Search on www.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.

FORK GOLD VALVE CHART - STREET / ROAD RACE 20 mm

Chart #20S--054 © P Thede ***STIFFER*** ⟶

c30	c31	c32	c33	c34	c35	c36	c37	c38	c39
.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

Shim Dimensions - (QUANTITY) THICKNESS x DIAMETER in mm *(for inches divide by 25.4)*

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, pre-load 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 10 mm (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.
- The Clamping Shim is the shim that goes closest to the base plate. It is the most critical shim as it affects damping overall.
- If you would like assistance, please contact the Race Tech Technical Support Hotline 951.279.6655.