

COMPRESSION GOLD VALVE INSTALLATION

FMGV 280601 WP 4CS

Dirt 28mm

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

[DVS Setup Sheet](#) - If you haven't already, go to [DVS Valving Search](#), insert your Access Code, and rider data and print your DVS Setup Sheet. If you are using a RT Adjustable Compression Base be sure to select YES LSV (Low Speed Valve).

CAUTION: IF YOU ARE UNFAMILIAR WITH REBUILDING AND REVALVING FORKS, STOP!!! DO NOT PROCEED; SEEK OUT A QUALIFIED SUSPENSION TECHNICIAN.

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 parenthesis the quantity is one. Example: (2).15x30 means quantity two, 15 hundredths of a millimeter thick by 30 millimeters in diameter.

The Left and Right Fork Leg are different. Keep all the components separate.

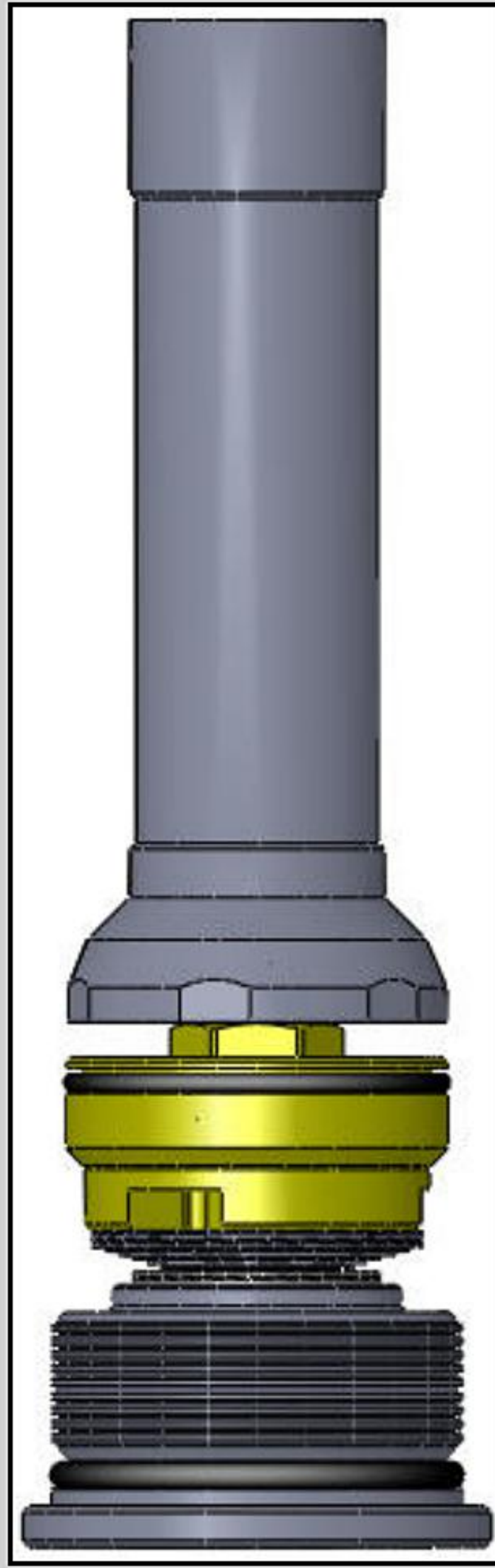
RT has a Spring Conversion Kit available for this fork that eliminates the Air Spring and replaces it with a Coil Spring. Call for details.



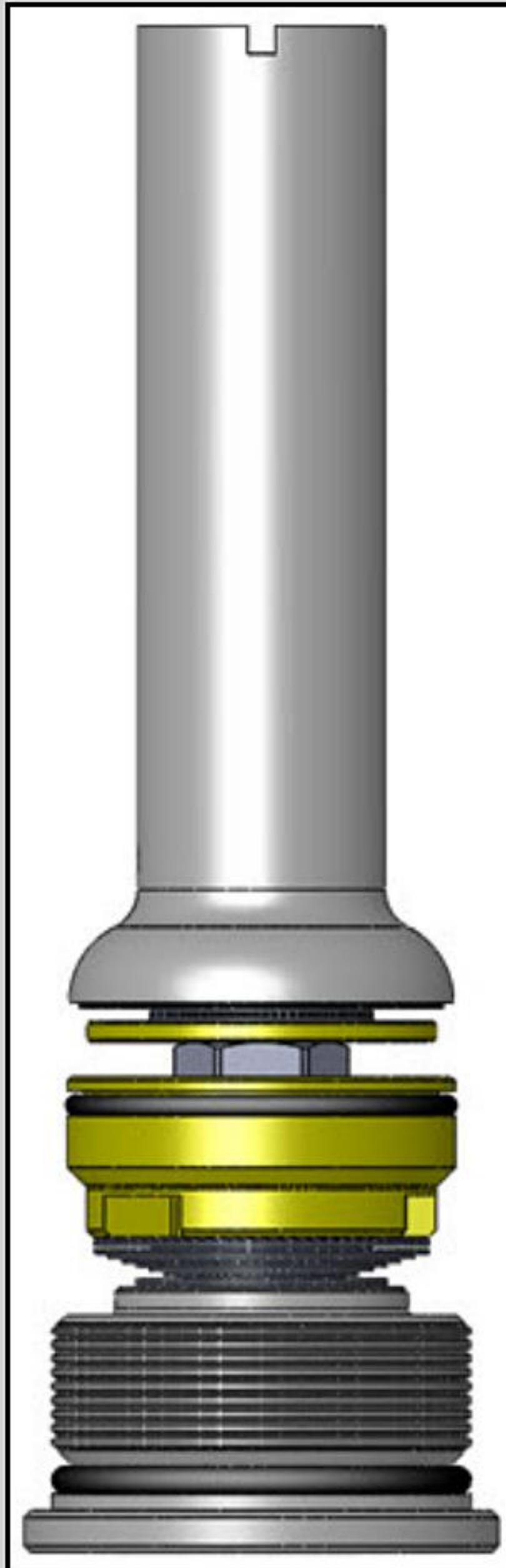
Tools Required

- In-lb torque wrench that accurately measures 0 to 50 in-lbs (0.58 kgf-m) (SnapOn Digital Torque Wrench shown)
- Hi-Strength Loctite (included)
- Metric calipers and micrometer

2013



2014 v1



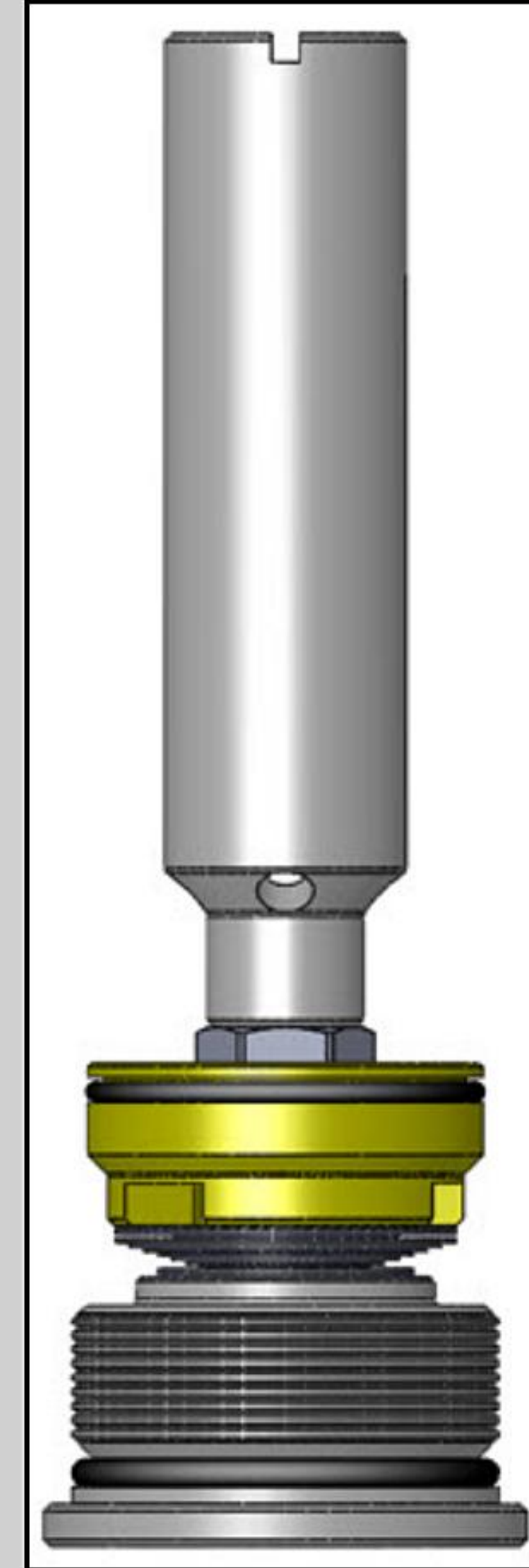
VC1- This is the Compression Base Valve. As of this printing there are 3 different types of Bottom-out Cups.

2013 and 2014 v1 have valving shims.

2014 v2 has no valving shims.

2016 there is no Bottom-out Cup.

2014 v2



VC2- Unscrew the Bottom-out Cup, in this case, with a large screwdriver. This particular "screwdriver" is made out of a wood chisel.





VC3- Remove the bottom-out cup. There are three different styles of bottoming cups plus none.

Notice that this time the Nut-Post unscrewed from the Compression Base Valve. Sometimes the Bottom-out Cup will unscrew from the Nut-Post. Either way is fine.

If it occurs like this one you can just clean it up and reinstall it during reassembly.



VC4- Remove the compression piston along with the valving stack.

Keep track of the bottom spacing shims. You will likely need them when you build the new compression stack.

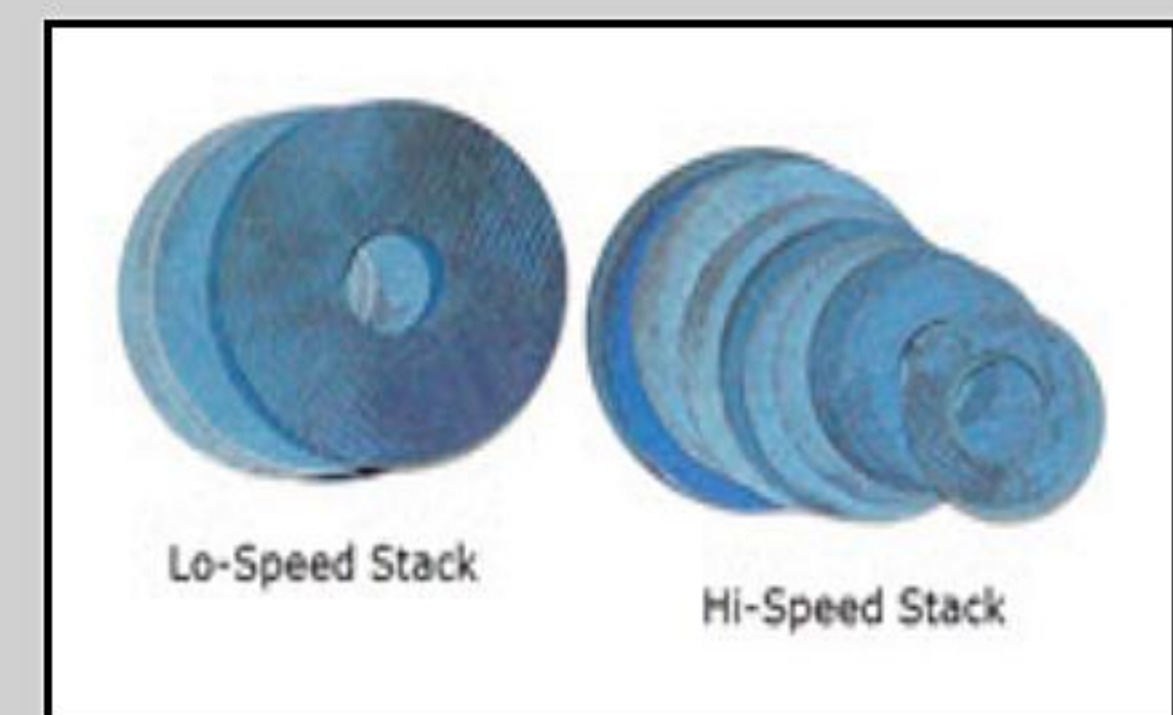
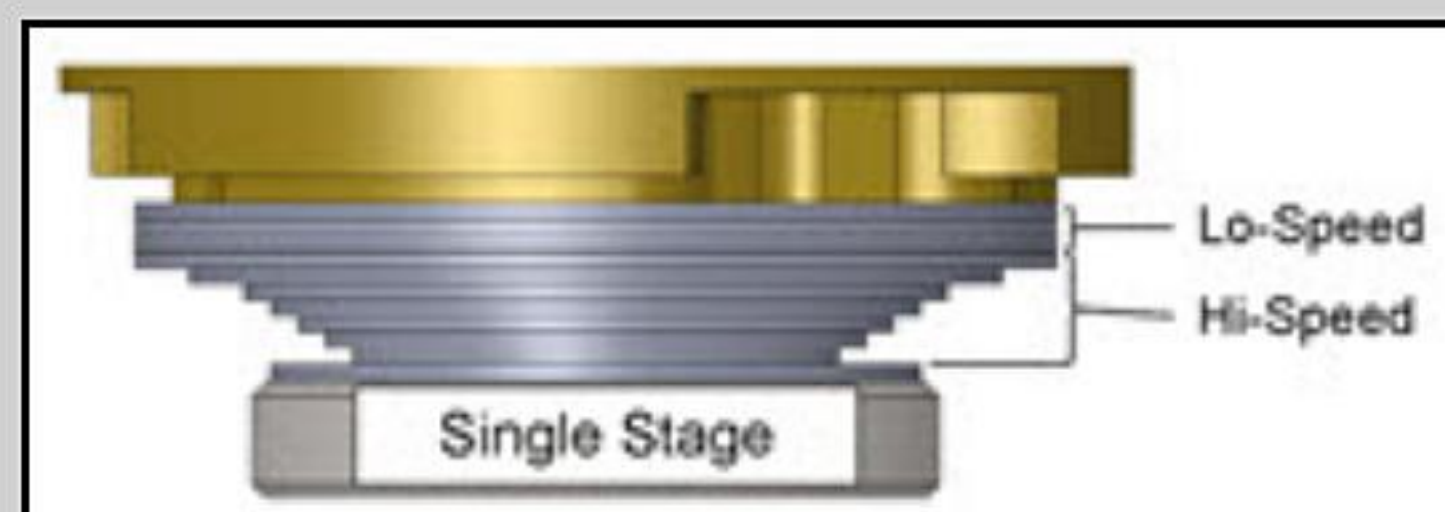
VALVING STACK TYPES - SINGLE OR TWO STAGE

VC5- You will either be building a Single Stage or a Two Stage Stack. The difference is the Crossover. The Crossover is a smaller diameter shim between the Lo-Speed and the Hi-Speed Stacks.

Note: The DVS Custom Setup Sheet displays individual shims and does not label Hi-Speed, Crossover, and Lo-Speed. This is for your information only. Also you will not use all the shims provided in the Gold Valve Kit.

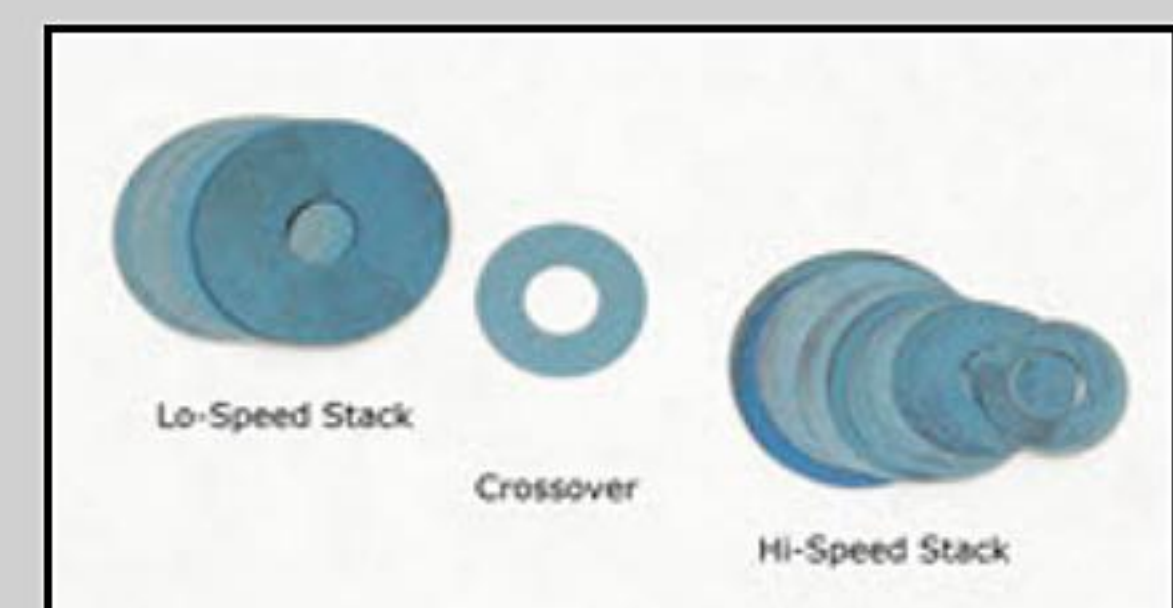
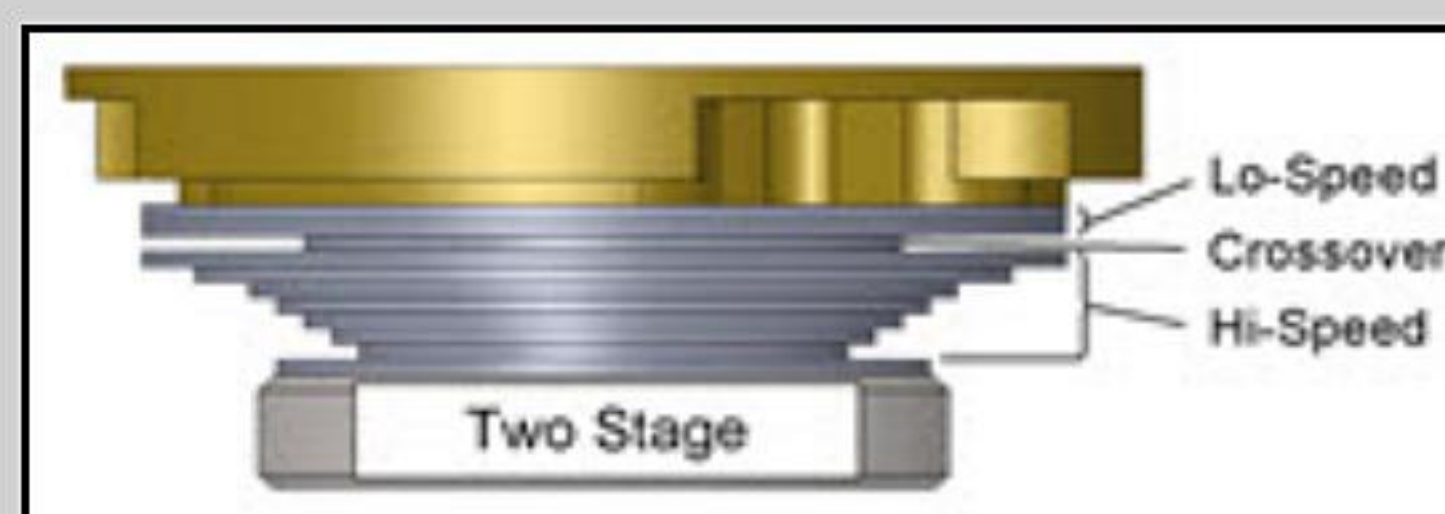
- **Single Stage** - made of:
Lo-Speed Stack
Hi-Speed Stack

There is NO Crossover
(it becomes one stack.)

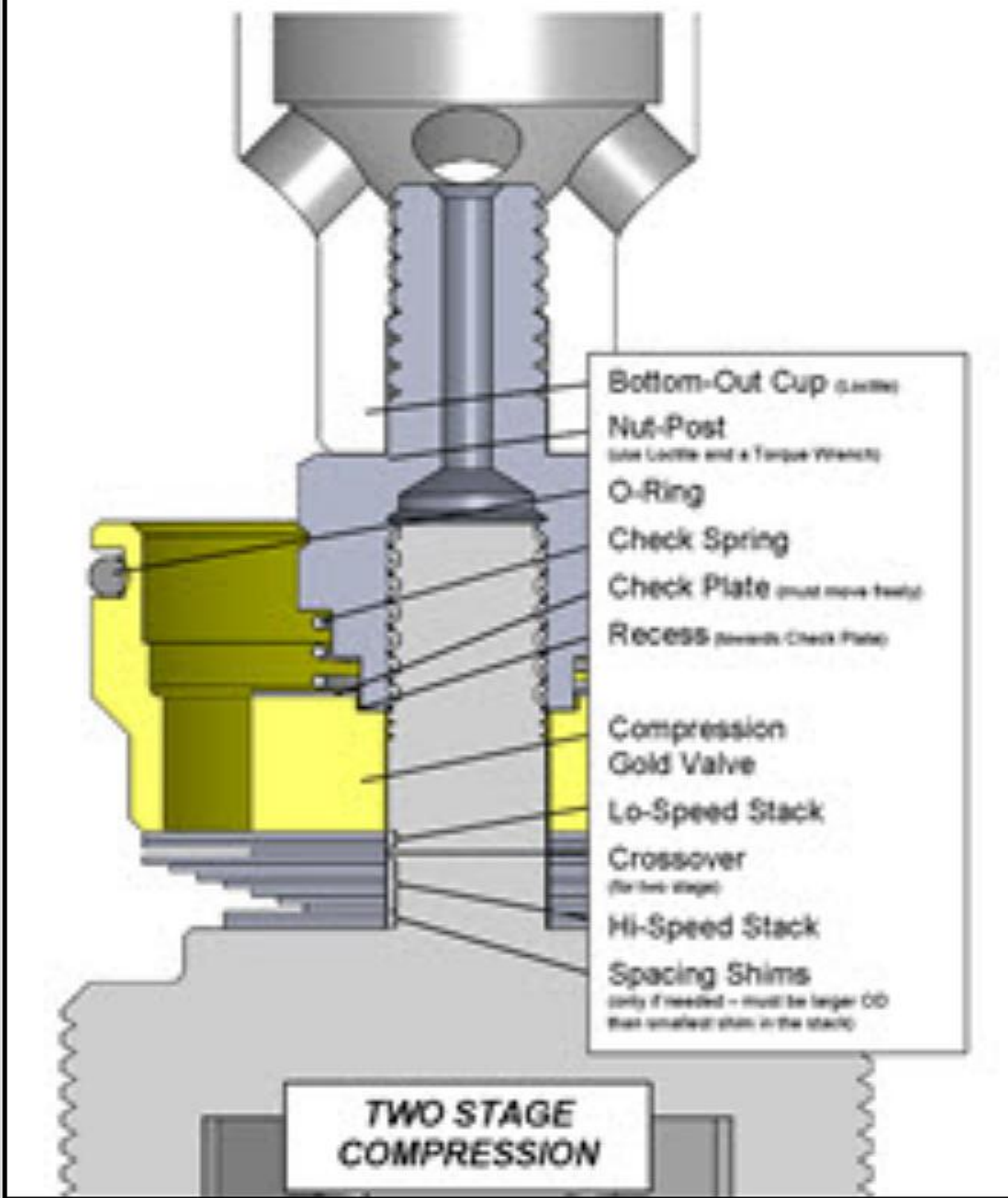


- **Two Stage** - made of:
Lo-Speed Stack
Crossover
Hi-Speed Stack

The Crossover Gap is visible



FMGV 280601 2014 V2 4CS 2 STAGE



VC6- Two Stage Example

(Single Stage is exactly the same except there is no Crossover)

Put the valving on the shaft **in the reverse of the order listed**, starting with the last (smallest) shim of the Hi-Speed Stack.

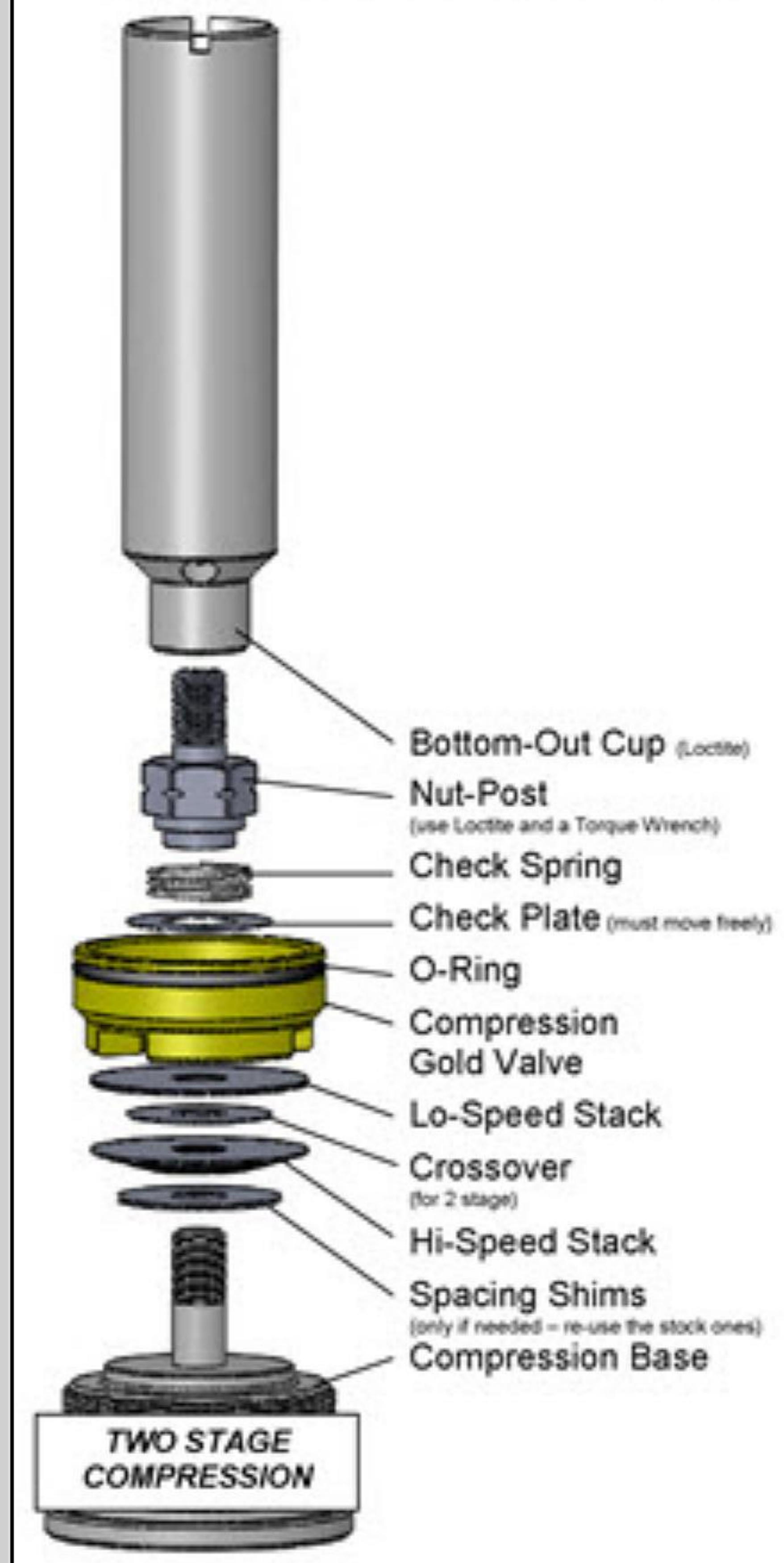
For Two Stage the total valving stack is made up of a:
Lo-Speed Stack
Crossover and a
Hi-Speed Stack

(this is only an example - not your setting)

The Total Valving Stack starting from the Gold Valve piston face:

- (4) .15x24 - Lo-Speed Stack
- (1) .10x16 - Crossover (notice the smaller diameter)
- (1) .10x24 - Hi-Speed Stack
- (1) .10x22
- (1) .10x20
- (1) .10x18
- (1) .10x16
- (1) .10x15
- (1) .10x14
- (1) .10x13
- (1) .10x12

FMGV 280601 2014 V2 4CS 2 STAGE



VC7- COMPRESSION BLEED HOLE

No Compression Bleed Holes are required on 4CS forks.

VC8- SET THE TOTAL VALVING STACK THICKNESS (This is critical!)

Before installing the valving on the shaft build the Valving Stack and measure the total thickness. **Make sure it is between 2.7 and 3.1mm thick.** If it is not, re-use some of the original .40x18 Spacing Shims to get into this range.



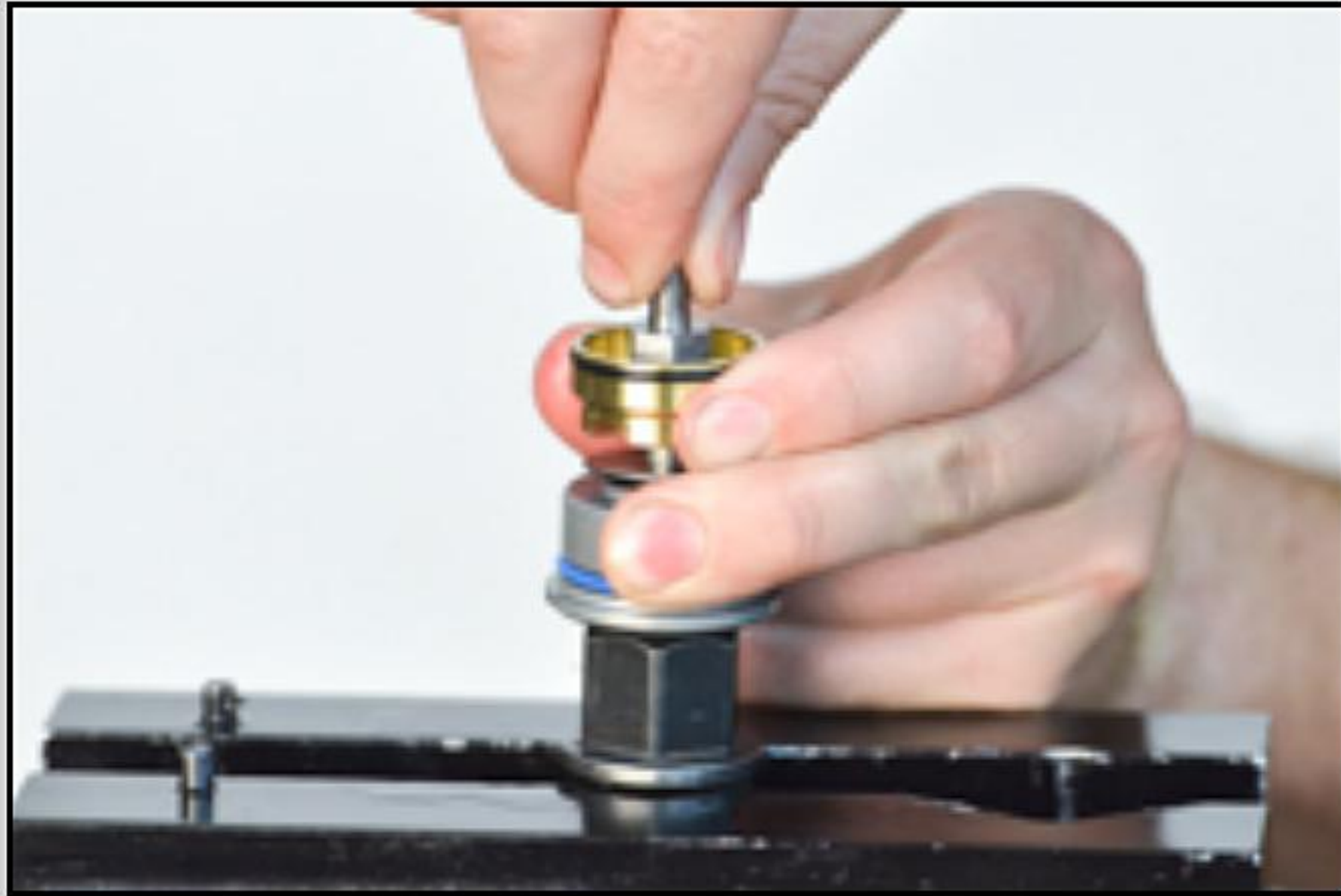
VC9- This conversion eliminates the Compression Adjuster at the top of the Left Fork Leg that doesn't do much anyway. Convert it to a Rebound Adjuster by removing both Check Needles inside the Bottom-out Pistons.

To get external compression adjustment RT has LSV Adjustable Compression Bases (FACB M3010001) available. If you have them use them at this time. **Note - select YES LSV (Low Speed Valve) in the DVS.**



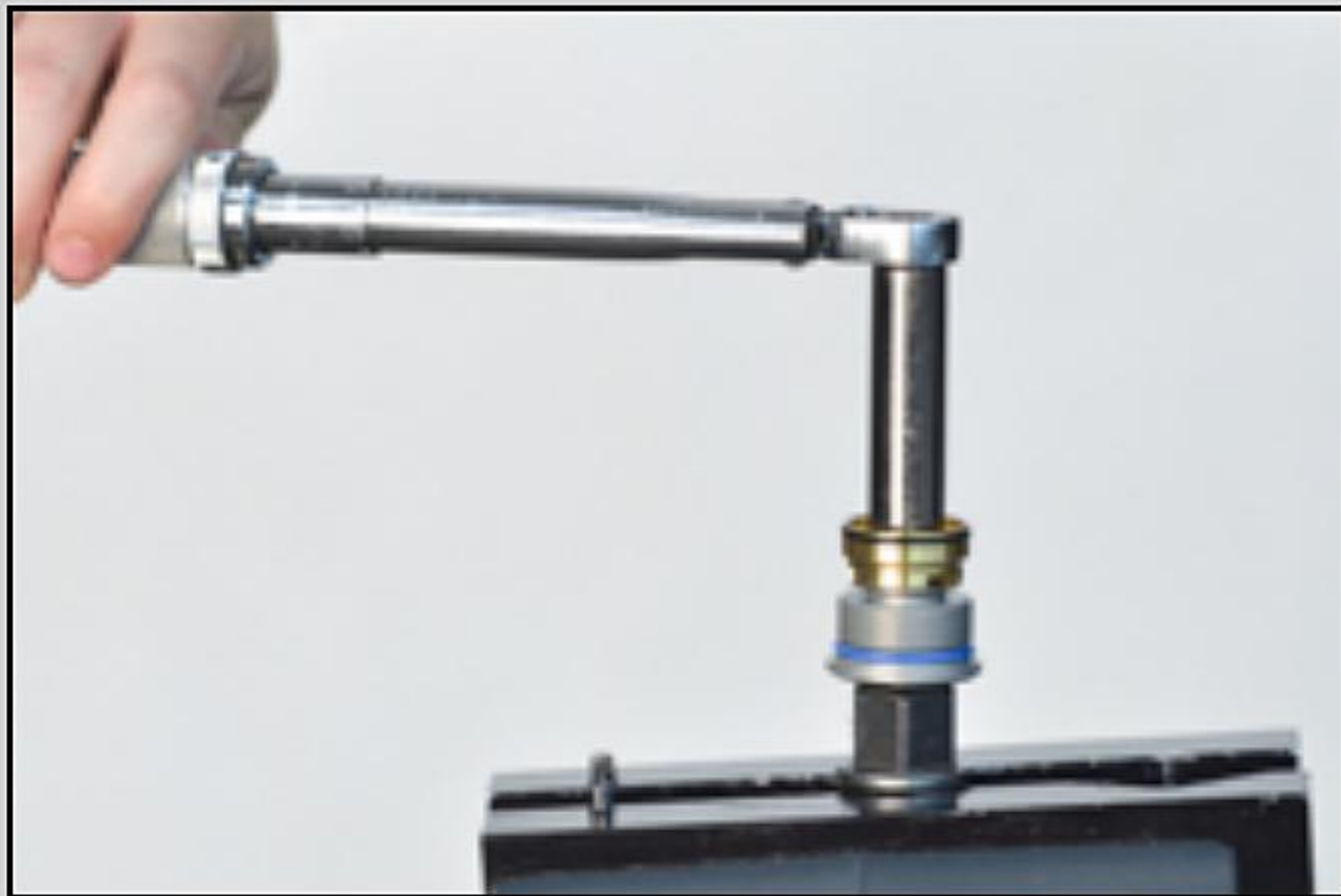


VC10- Install the compression valving stack starting with the packing shims.

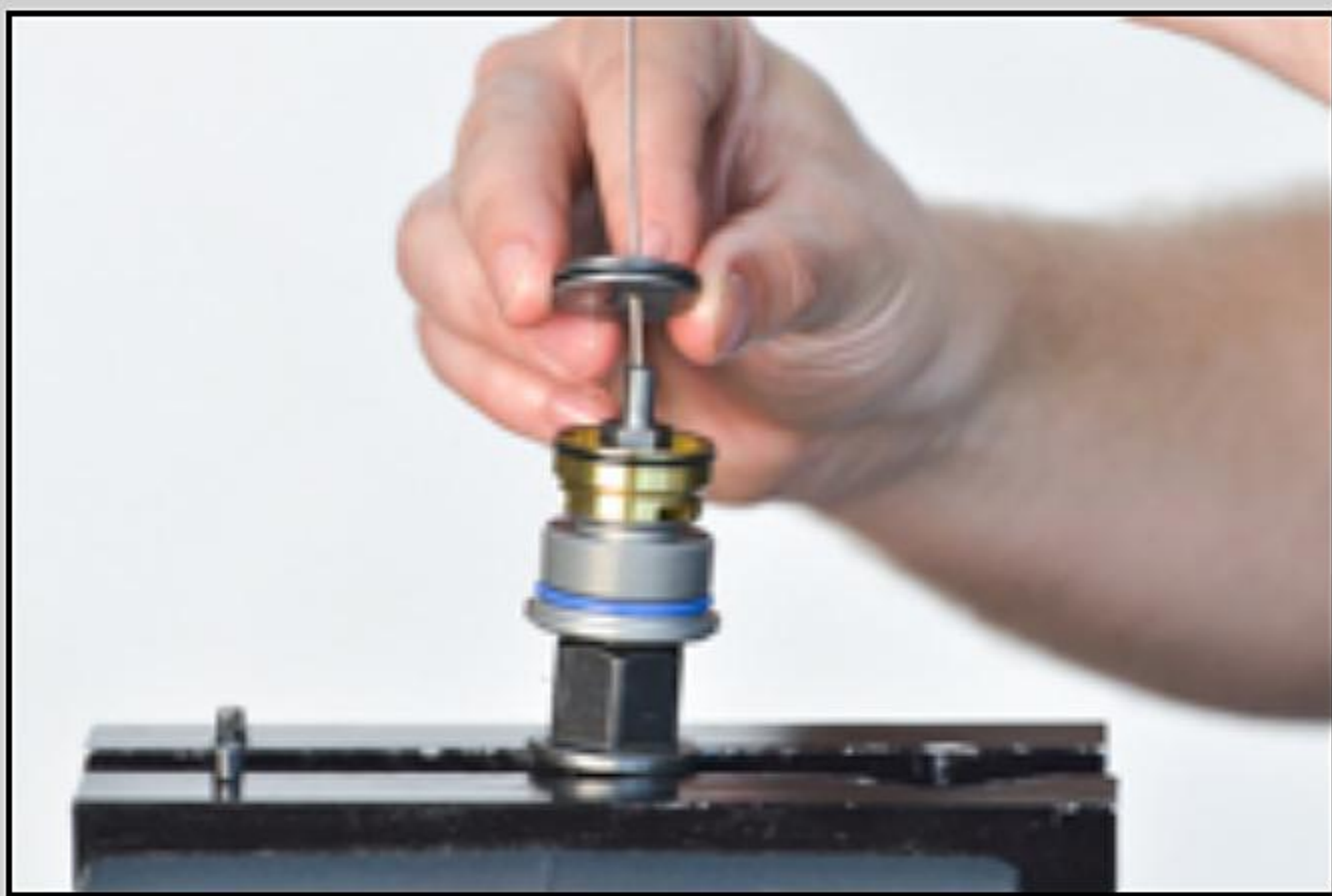


VC11- Install the Gold Valve on the shaft. Then the Check Plate and Check Spring. Put a drop of Loctite on the female thread of the Nut post.

Be sure the Check Plate is free and can move up and down against the spring without binding. This can be done by blowing air into the feed port just above the top shim. A Clip Tool can be used to manually open the valve from the top as well.



VC12- CAUTION! The threads can be damaged without extreme care. The Nut-Post 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.



VC13- Install the original Bottom-out Valving Stack (if required). Duplicate the original setup.

As of this printing there are three different Bottom-out Cup designs. Duplicate the original setup. The Bottom-out Cup Assembly screws onto the Nut-Post. Use Loctite on the female thread and torque it to 30 in-lbs.

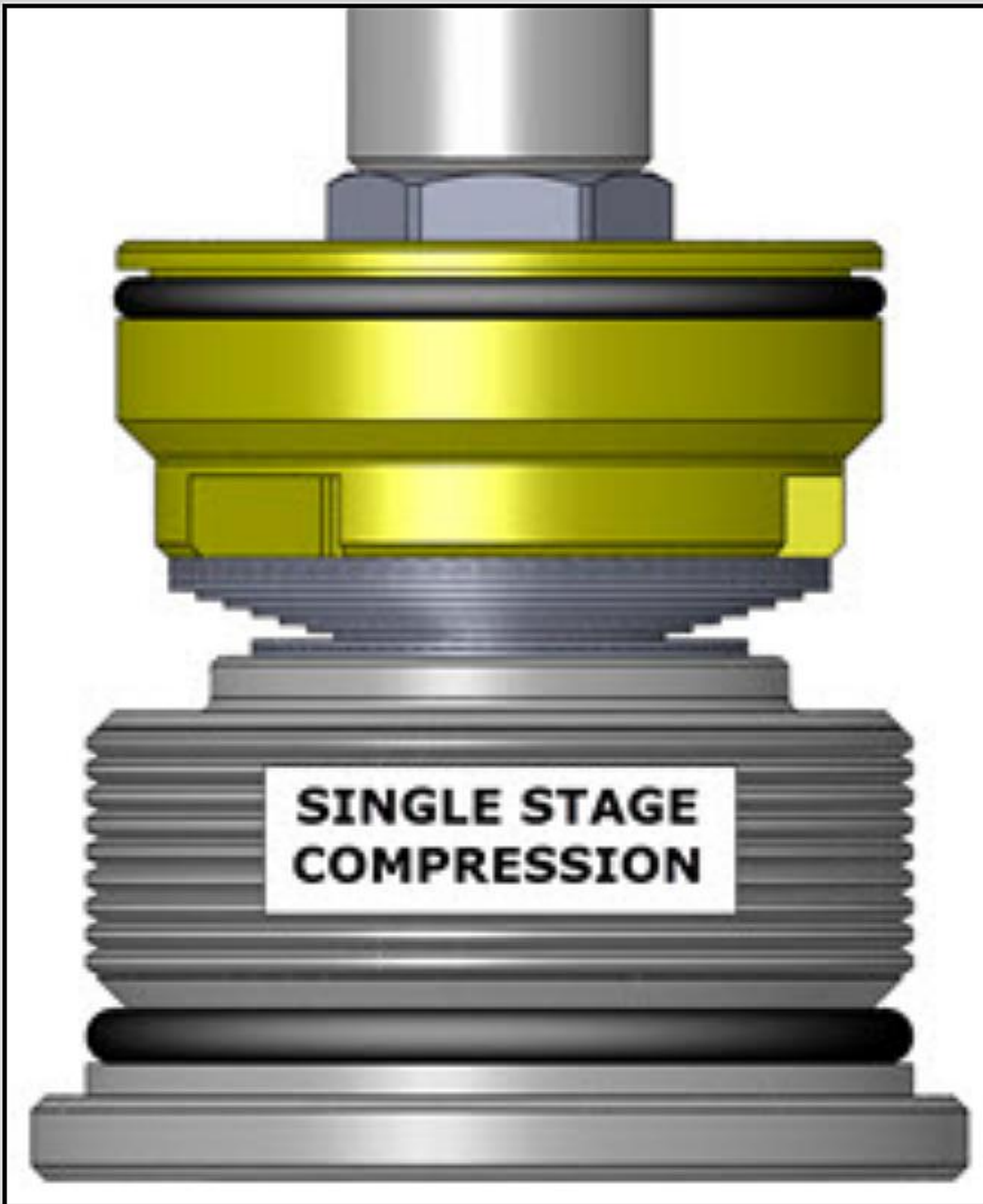


VC14- Install the Bottom-out Cup (if required).

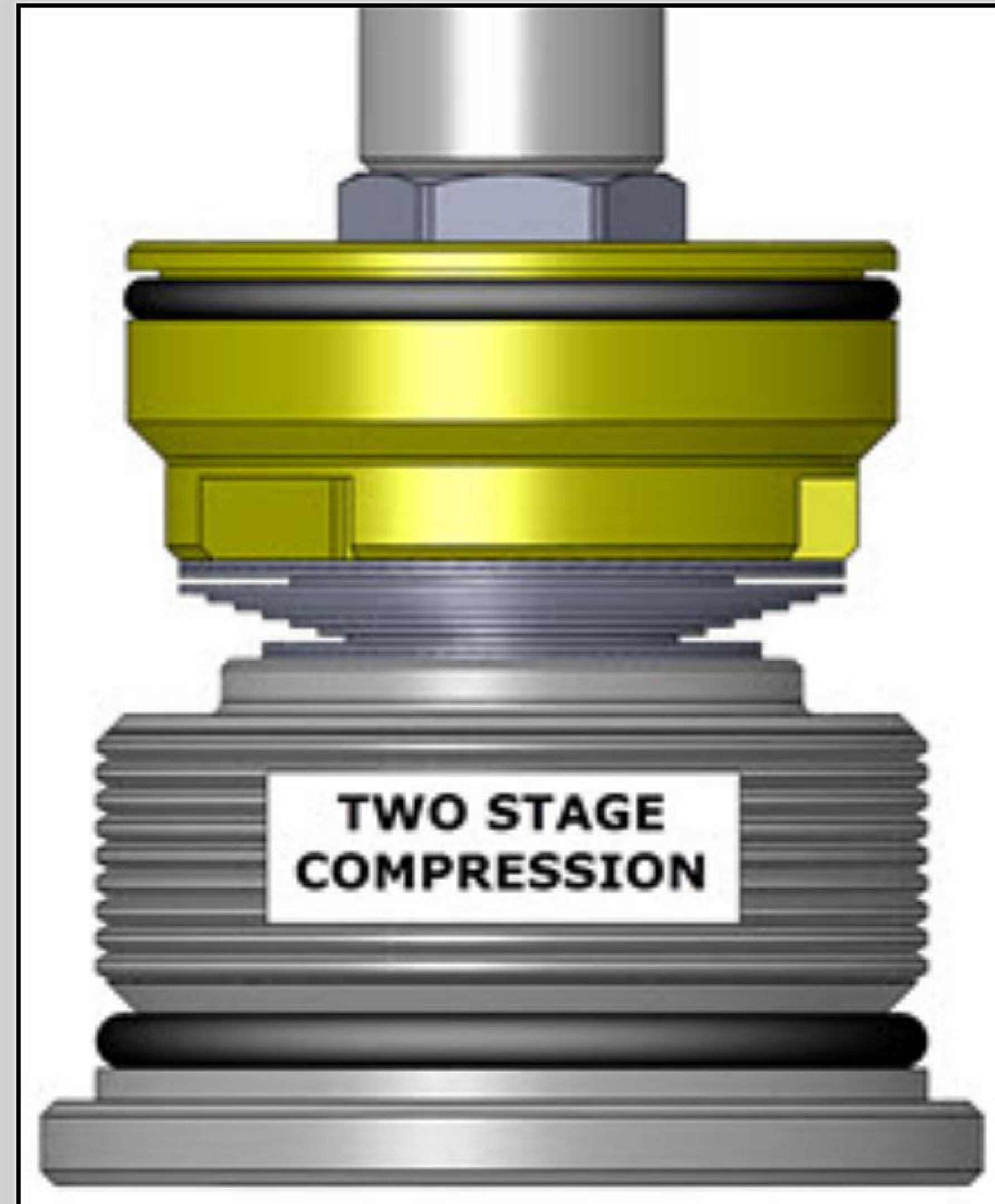


VC15- Using a large screwdriver, tighten the bottom-out cup to 30 in-lbs (2.5 ft-lbs or 0.35 kgf-m).

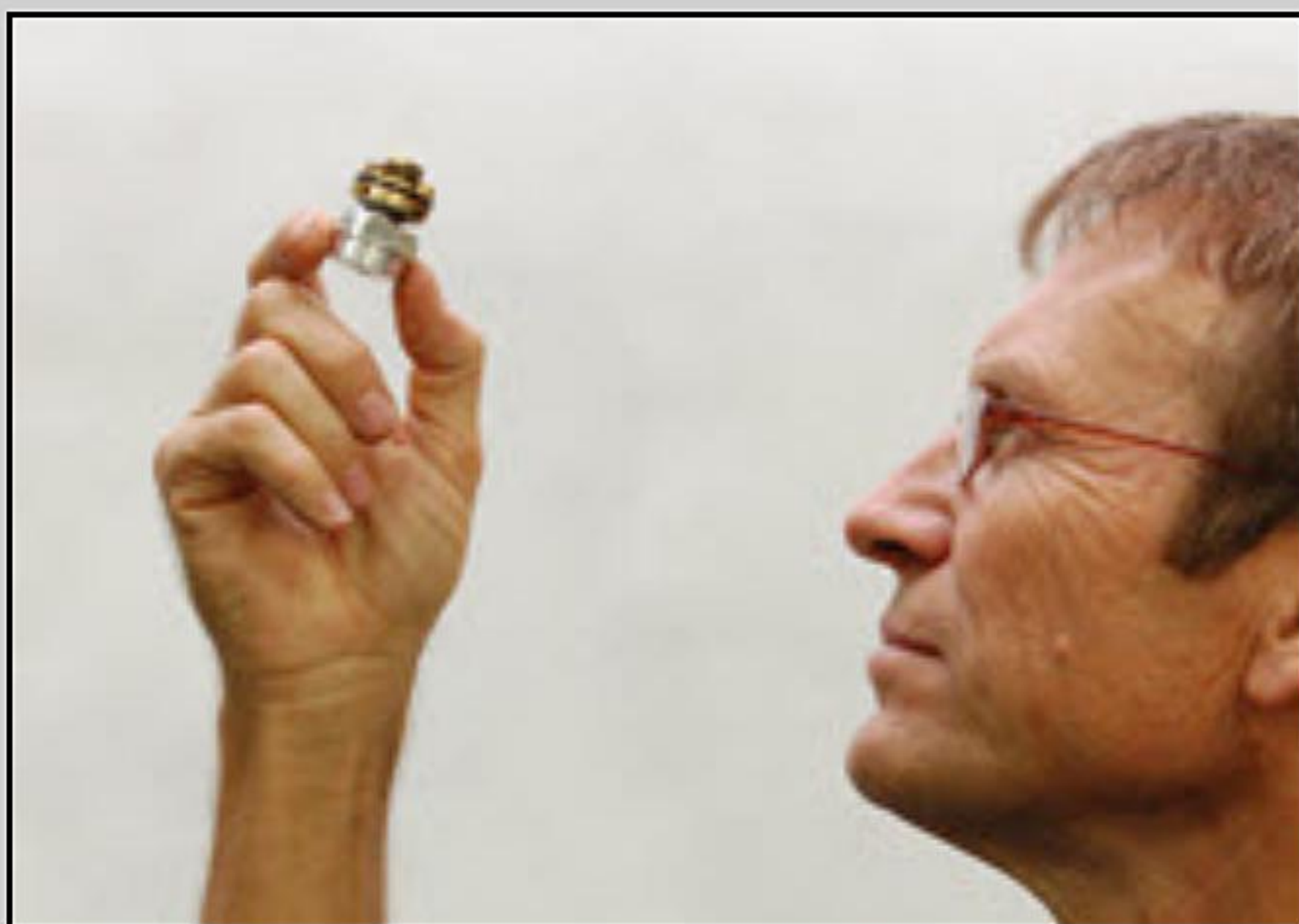
VC16- *Single Stage*



VC16- *Two Stage*



Notice the gap in the valving stack where the Crossover is. The Crossover Gap should be clearly visible.

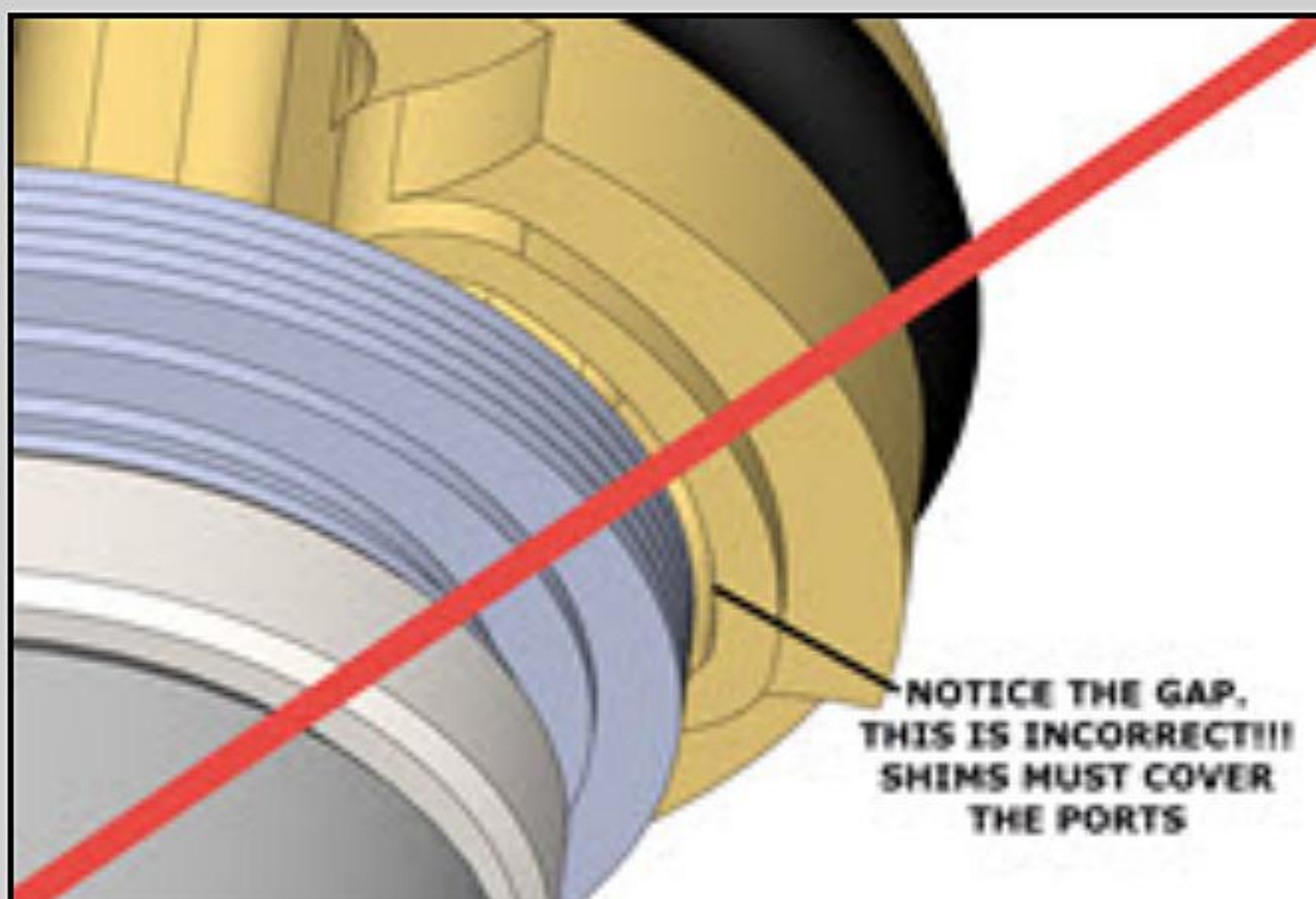


VC17- Visually check your work.

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.

On two-stage stacks make sure the Crossover Gap is clearly visible.

Make sure the o-ring is on the Gold Valve.



VC18- **Make sure the shims that go next to the Gold Valve completely cover the ports on both sides of the piston!** If the ports are not covered there will not be enough damping.

This could be caused by a number of reasons. Please call Tech Support if this occurs and you can't figure it out.

VC19- Return to the rebuild instructions and continue with Rebound Valving and Assembly.

***FORK REBOUND and MID-VALVE
GOLD VALVE INSTALLATION
FRGV 200603
Dirt 20mm WP 4CS***

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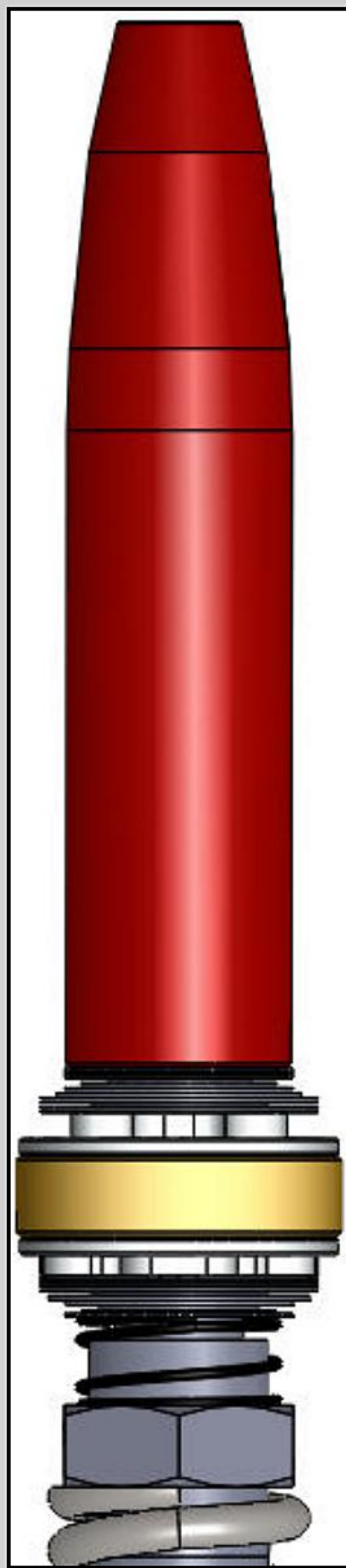
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NOTE: All measurements are metric (for inches divide by 25.4). The valving list starts at the piston face and goes towards the Base Plate. Valve specs are listed by (QUANTITY) THICKNESS x DIAMETER. A number in parentheses means quantity. If there is no number in parenthesis the quantity is one. Example: (2).15x30 means quantity two, 15 hundredths of a millimeter thick by 30 millimeters in diameter.



Tools Required

- In-lb torque wrench that accurately measures 0 to 50 in-lbs (0.58 kgf-m) (SnapOn Digital Torque Wrench shown)
- Hi-Strength Loctite (included)
- Metric calipers and micrometer



FRGV 200603 WP 4CS REB LEG 2 STAGE

TWO STAGE REBOUND
TWO STAGE MID-VALVE
REBOUND LEG



VR1- Unscrew the Hydro Stop (bottom-out) Needle with a T27 Torx bit.



VR2- Remove the Needle. There is a Check Valve inside the Bottom-out Needle. The Check Valve will be removed.

Removing the Check Valves converts both adjusters into Rebound Adjusters.



VR3- The Check Valves (the small "bullet" shaped pieces in the middle) will be removed during installation. Shown is the stock direction of the Check Valves.

Note - Removing the Check Valves will make the valving identical between the two fork legs.



VR4- Measure the post height extension above the rebound stack.



VR5- Remove the rebound valving assembly.

VALVING STACK TYPES - SINGLE OR TWO STAGE

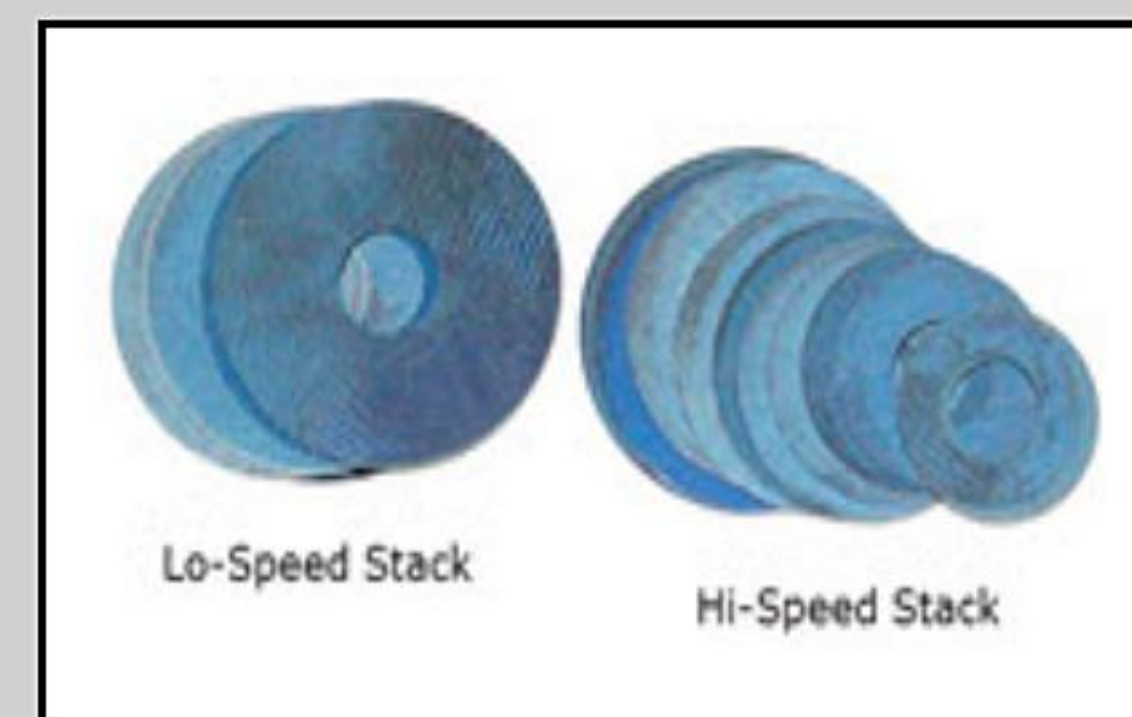
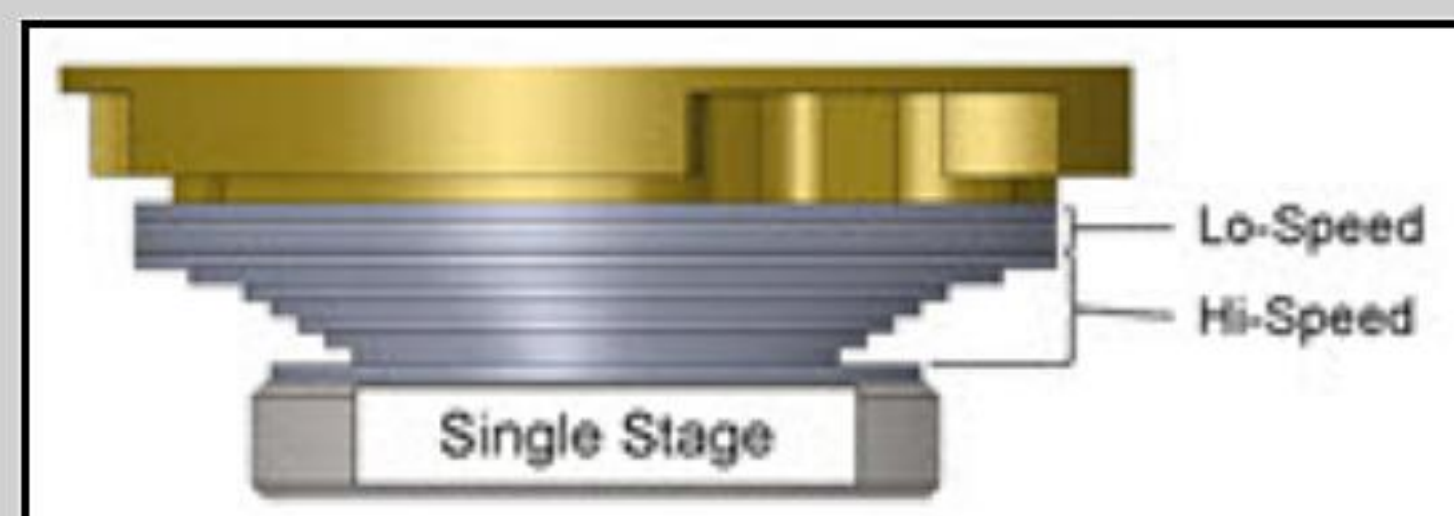
VR6- You will either be building a Single Stage or a Two Stage Stack for both the Mid-Valve and the Rebound Stacks. The difference is the Crossover. The Crossover is a smaller diameter shim between the Lo-Speed and the Hi-Speed Stacks.

Please note that the DVS might call for a Single Stage Mid-Valve Stack and a Two Stage Rebound Stack (or the other way around).

Note: The DVS Custom Setup Sheet displays individual shims and does not label Hi-Speed, Crossover, and Lo-Speed. This is for your information only. Also you will not use all the shims provided in the Gold Valve Kit.

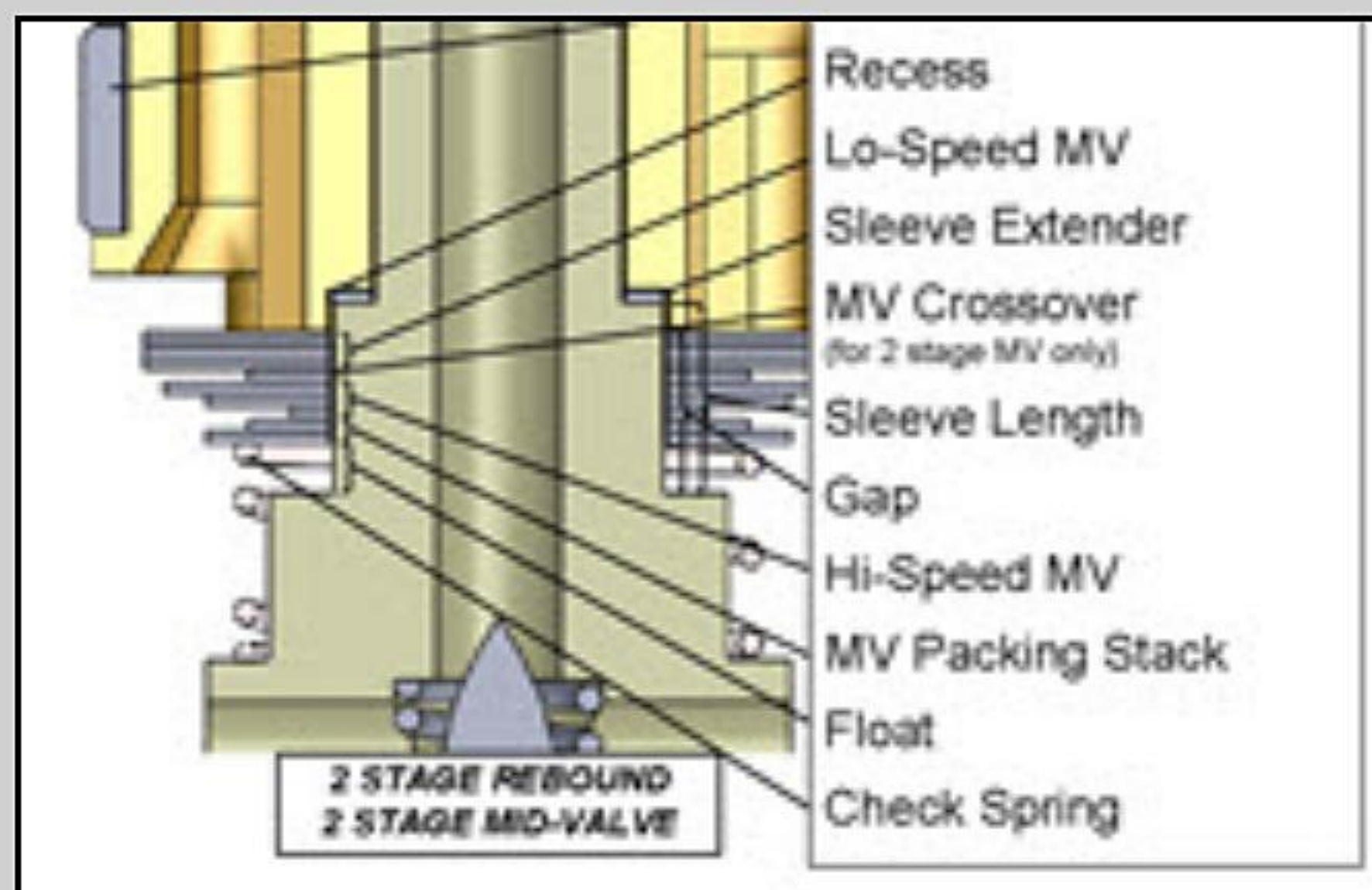
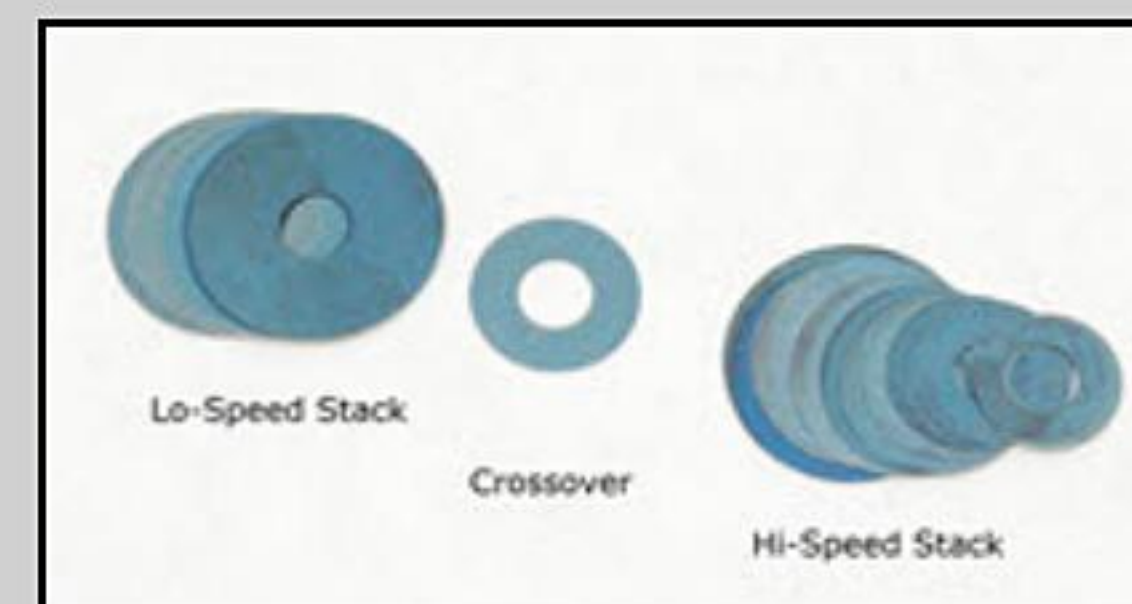
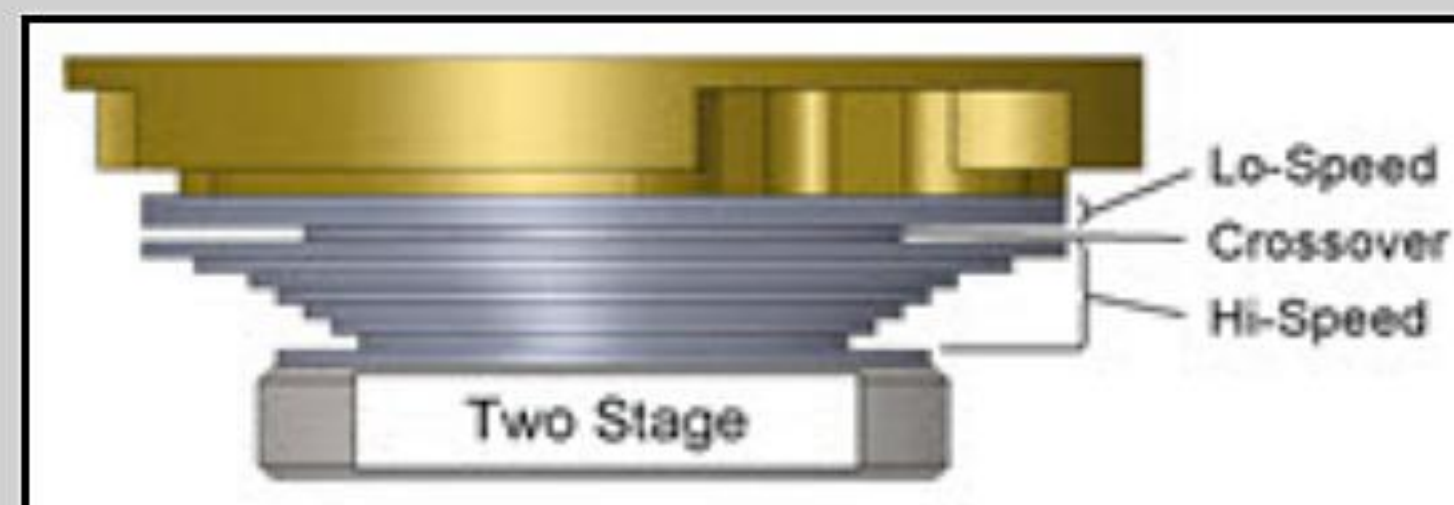
- **Single Stage** - made of:
Lo-Speed Stack
Hi-Speed Stack

There is NO Crossover
(it becomes one stack.)



- **Two Stage** - made of:
Lo-Speed Stack
Crossover
Hi-Speed Stack

The Crossover Gap is visible



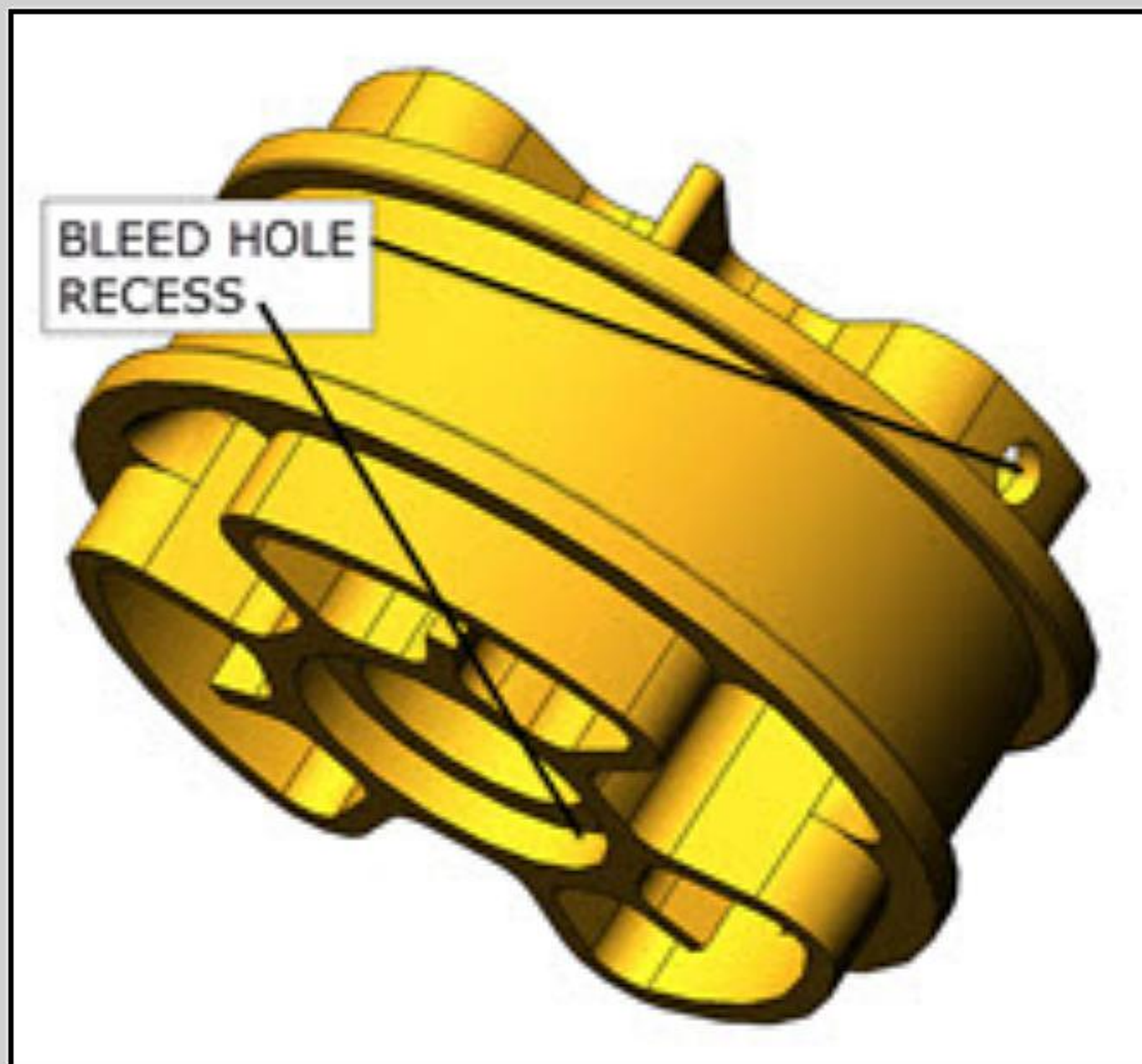
VR7- MID-VALVE STACK

The DVS calculates the entire stack with all the shims. Install the Mid-Valve Stack onto the Valving Shaft starting with the:

- Check Spring
- Mid-Valve Packing Stack
- Hi-Speed Mid-Valve Stack
- Mid-Valve Crossover (if it is a two stage Mid-Valve stack)
- Lo-Speed Mid-Valve Stack
- and
- Sleeve Extender Shim(s) (6mm id x 8mm od shims) (if required)

Float is the amount the Mid-Valve stack moves before it has to bend.

Once the **complete assembly** is built, **check the Float with a feeler gauge** (step VR17). This may be off due to production tolerances on all of the parts in the assembly. Adjust the MV Packing Stack to create the correct Float.

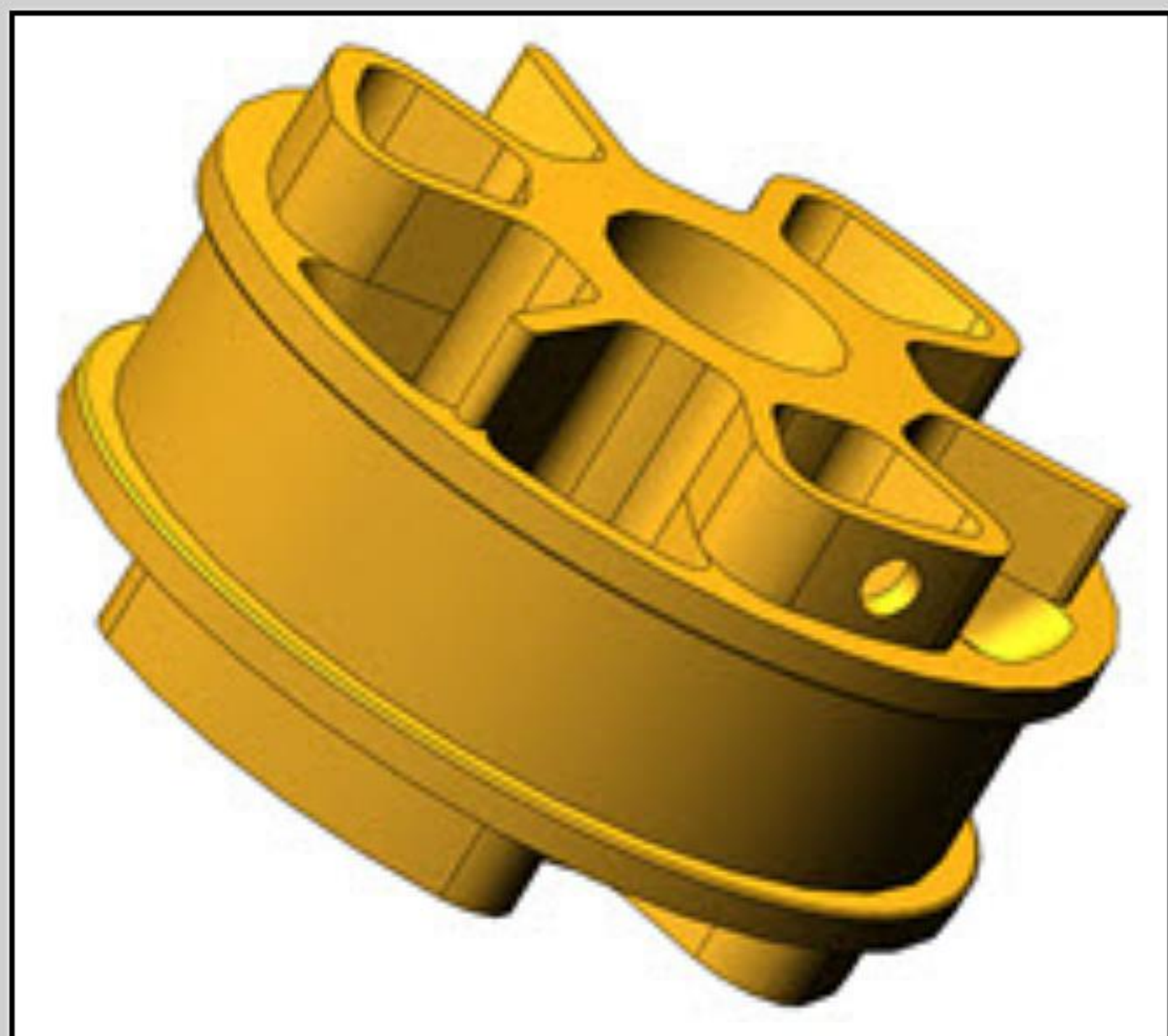


VR8- REBOUND BLEED HOLE

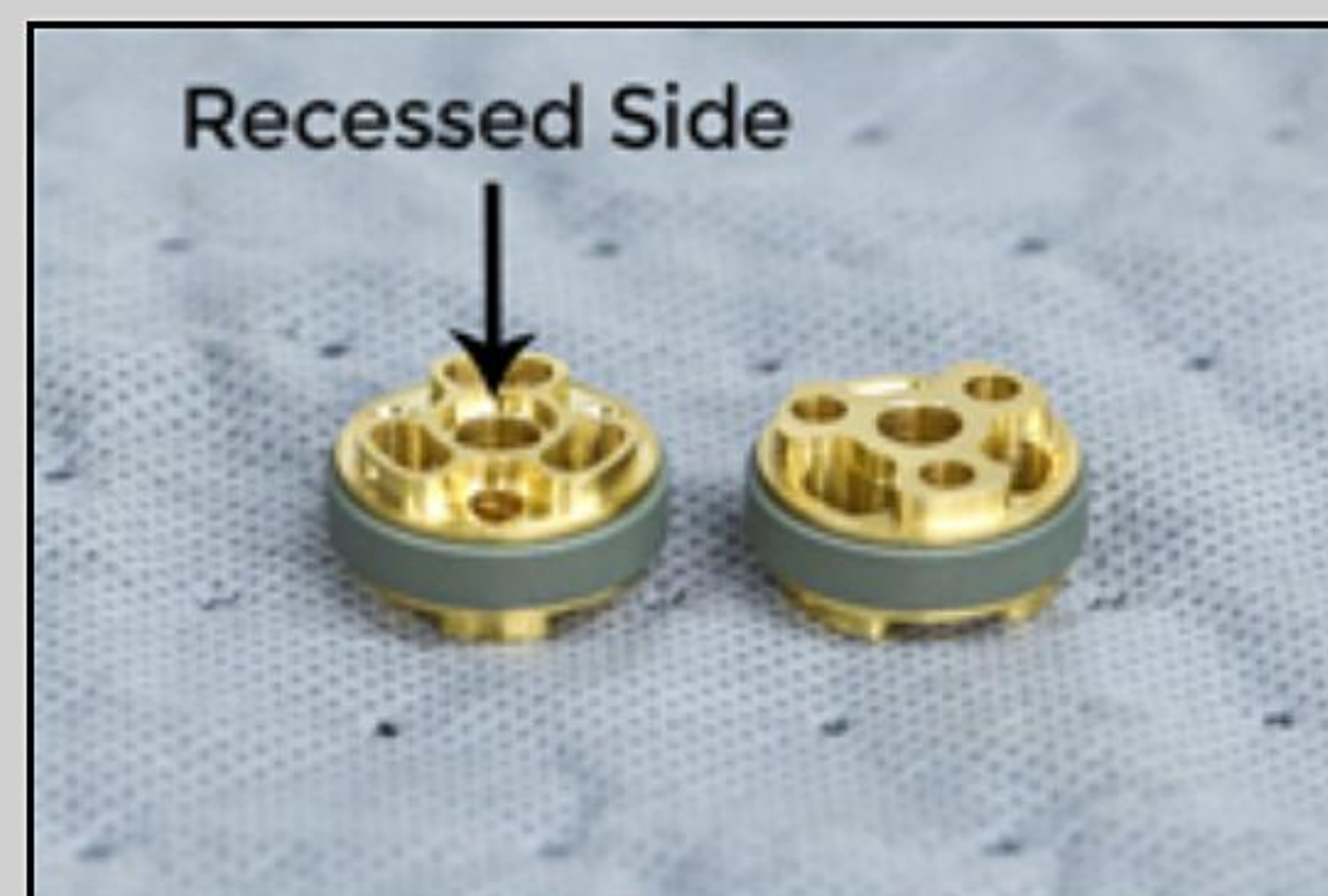
If the DVS does not call for a Rebound Bleed Hole skip this step.

If your DVS Setup Sheet calls for a Rebound Bleed Hole check to see if there is one already pre-drilled in the piston. If one is called for, and there is no pre-drilled bleed hole, you will need to drill one.

Notice that the bleed hole is on the **opposite** side of the piston with the Recess and is drilled sideways. It connects the two sides of the piston and bypasses the valving stack. The exact location is not critical.



VR9- Install the Rebound Gold Valve **WITH THE RECESS IN THE GOLD VALVE FACING DOWN TOWARDS THE MID-VALVE.**





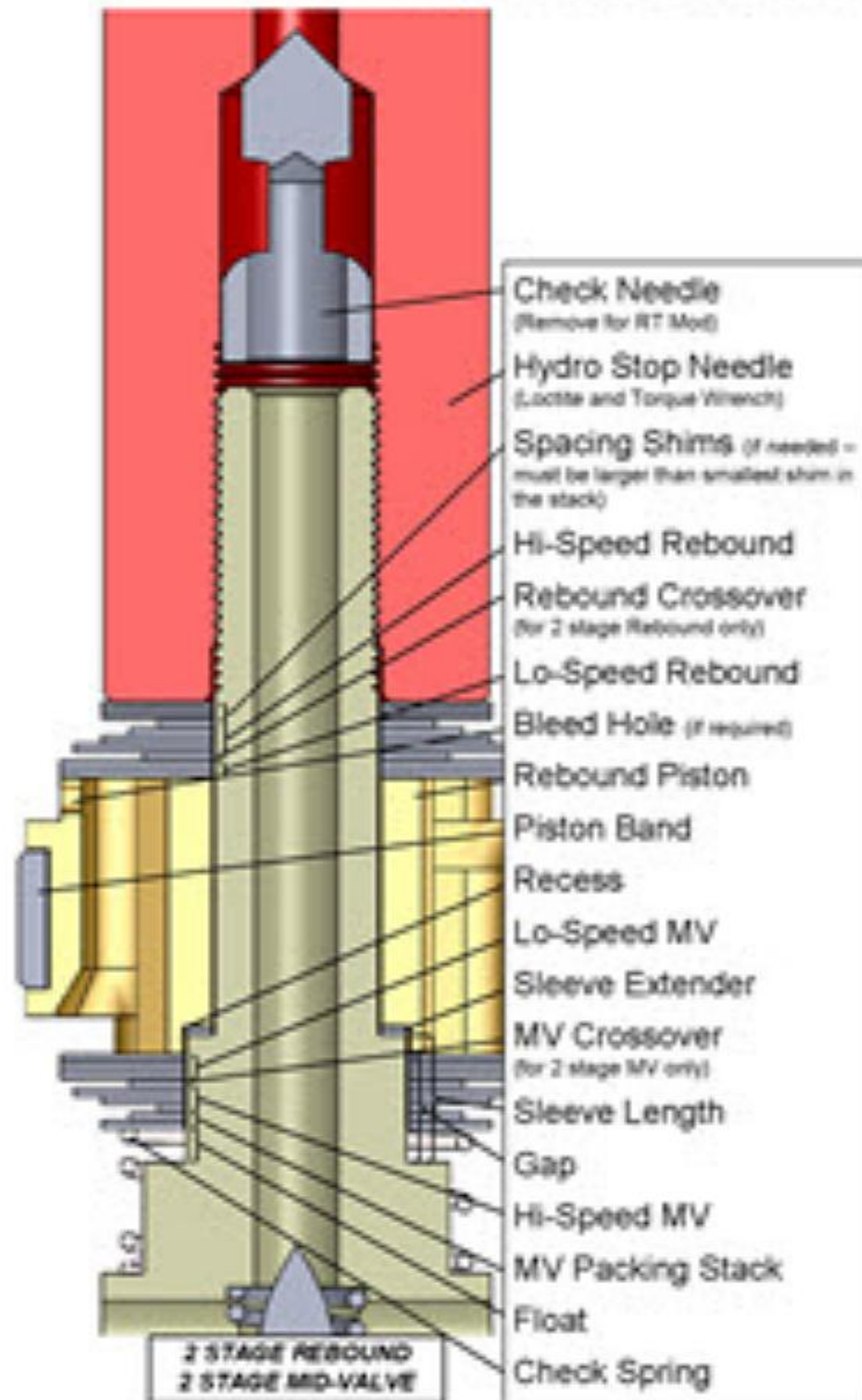
VR10- REBOUND STACK

Install the rebound stack with the largest shim of the Lo-Speed Stack first against the piston face. Make sure the shims completely cover the ports.

If a two stage rebound stack is called for in the DVS, install the Rebound Crossover.

Install the Hi-Speed Rebound Stack in the order listed starting with the largest diameter shim and ending with the smallest diameter shim.

FRGV 200603 2 STAGE REBOUND 2 STAGE MID-VALVE



VR11- Two Stage Rebound Example

(Single Stage is exactly the same except there is no Crossover)

For Two Stage the total valving stack is made up of a:
Lo-Speed Stack
Crossover and a
Hi-Speed Stack

(this is only an example - not your setting)

The Total Valving Stack starting from the Gold Valve piston face:

- (4) .15x17 - Lo-Speed Stack
- (1) .10x11 - Crossover (notice the smaller diameter)
- (1) .10x17 - Hi-Speed Stack
- (1) .10x16
- (1) .10x15
- (1) .10x14
- (1) .10x13
- (1) .10x12
- (1) .10x11
- (1) .10x10

VR12- **Measure the post extension beyond the rebound stack.** The new measurement must be 10.3 to 10.7mm. **CRITICAL!!**

Adjust the Total Rebound Stack Thickness with Spacing Shims as needed to achieve this.

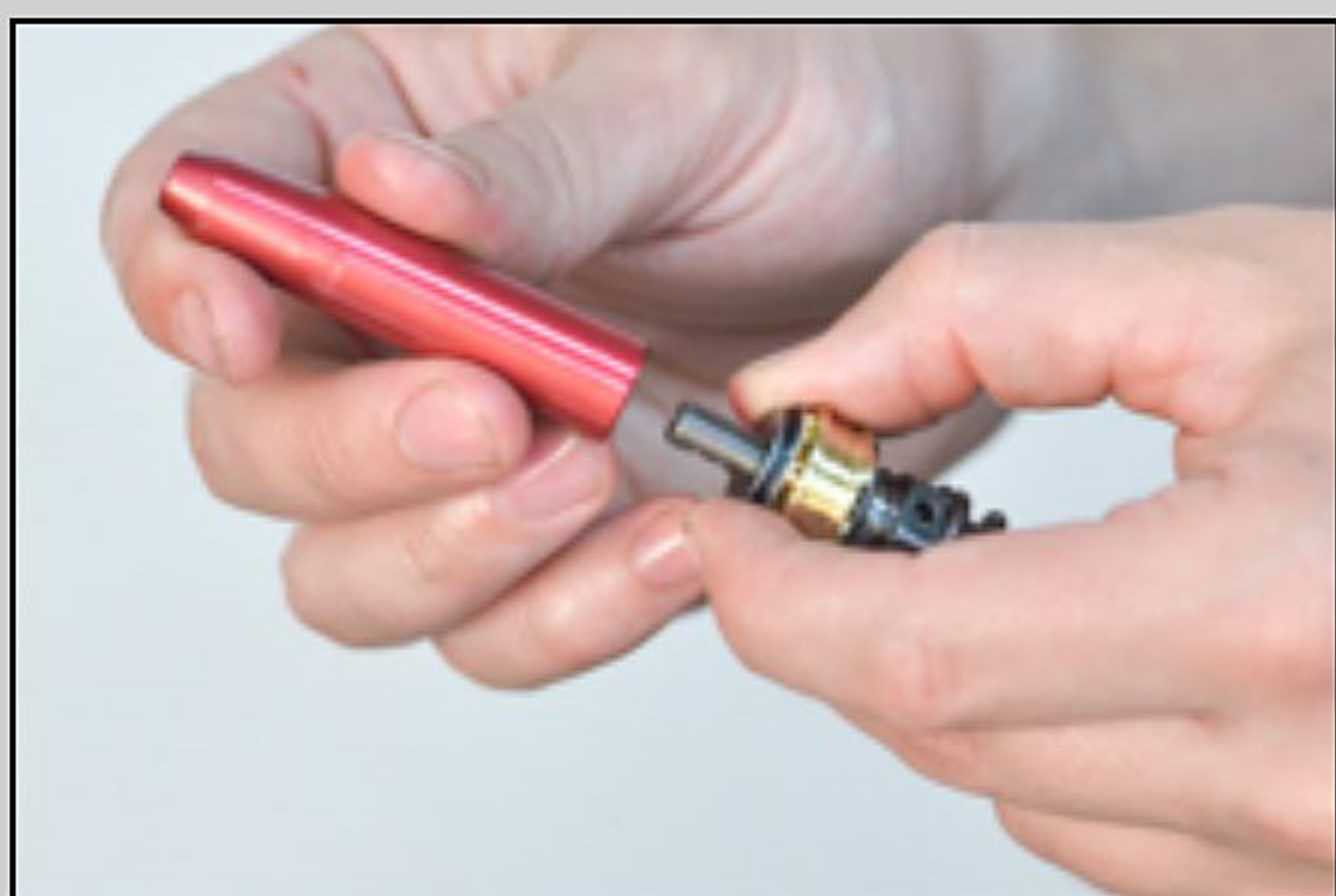
The Spacing Shims must all be larger in diameter than the smallest shim in the Rebound Stack.



VR13- Apply a small drop of Loctite onto the thread of the rebound valving shaft.



VR14- **Do not install the Check Valves in either leg.** Install the Hydro Stop Bottom-out Needle.

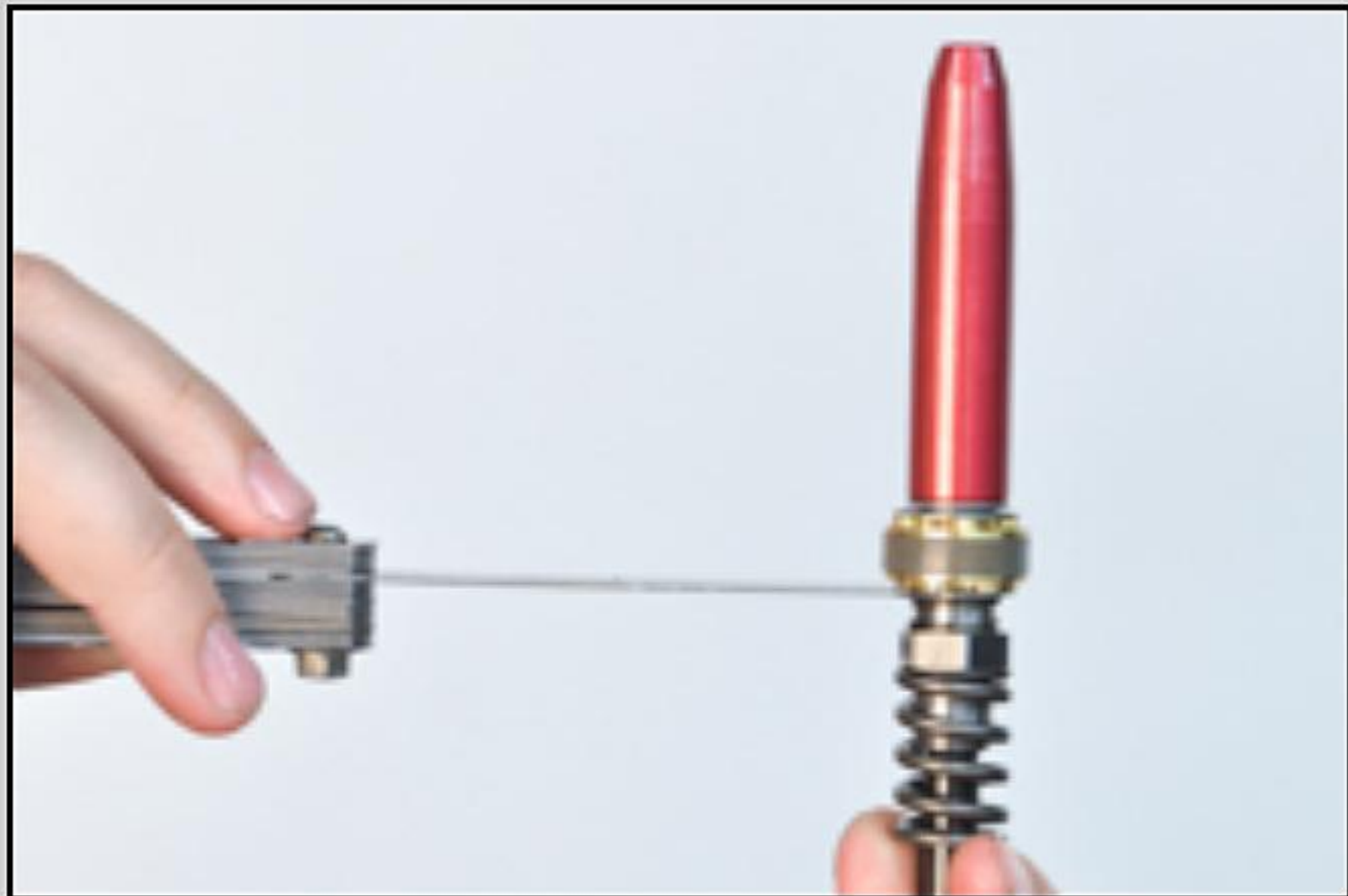


VR15- Torque the Needle to 30 in-lbs.





VR16- Install the rebound piston band. Curl it up tightly, then install it. You may find it helpful to use a bit of grease to hold it into the groove.



VR17- CHECK THE FLOAT

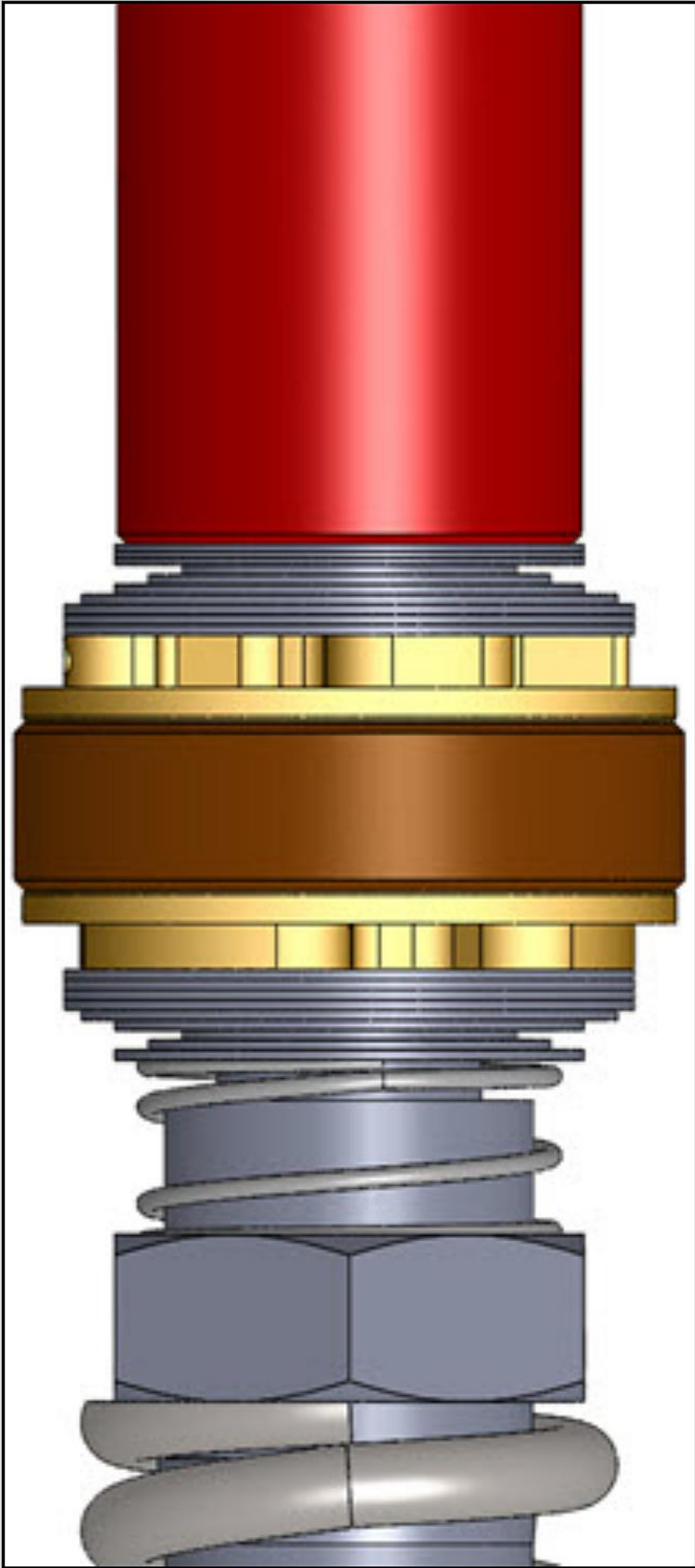
The most critical valving setup in the entire front fork is the **FLOAT**. Use a feeler gauge to measure the actual "float" of the mid-valve. The float is the amount the stack moves before it has to bend.

Insert the feeler gauge between the Gold Valve Piston face and the first shim. Make sure the feeler gauge goes all the way in to the surface of the inner sleeve.

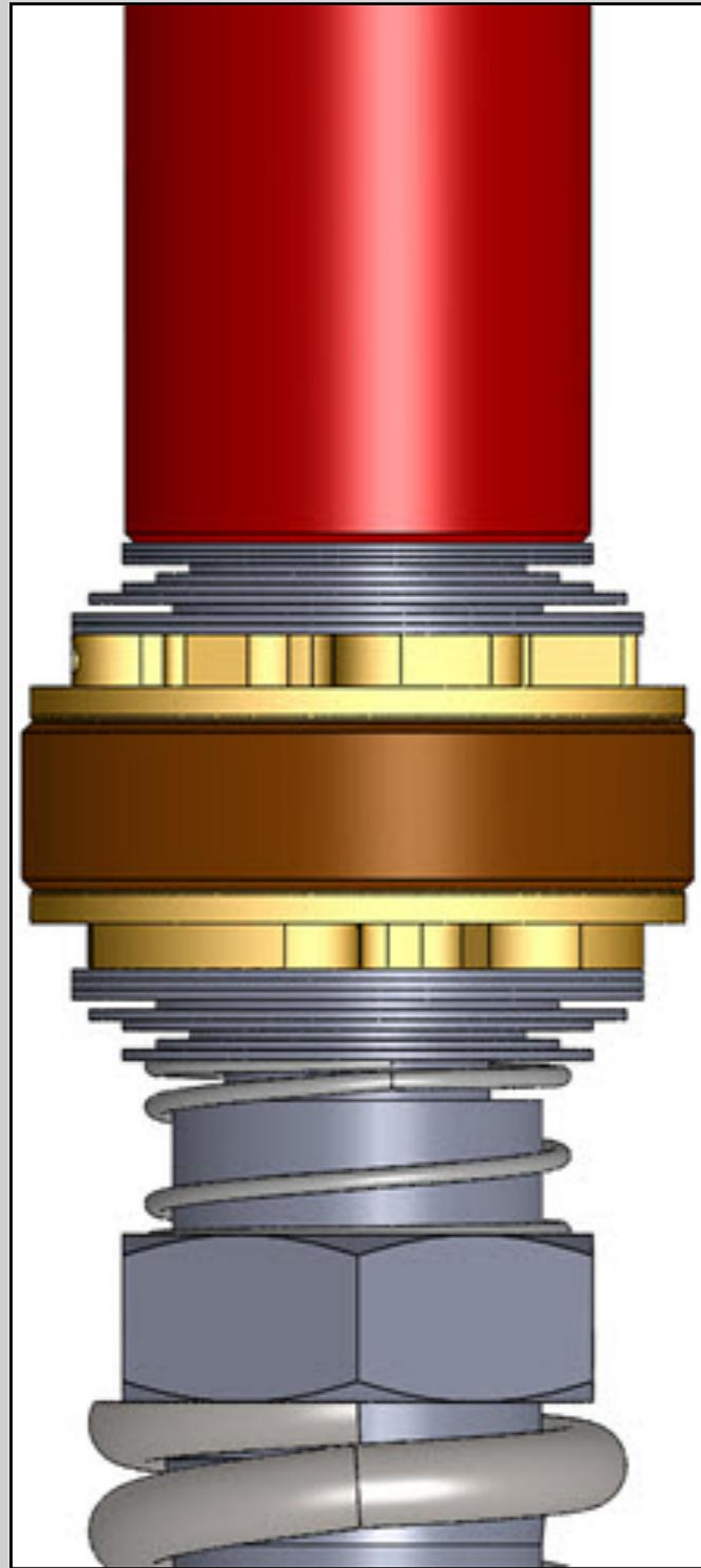
This is the best way to check the float as there are always production tolerances that will throw the predicted float off of the calculated number.

Adjust the packing stack to get the correct float. **THIS IS CRITICAL!**

VR18- **Single Stage Rebound
and Single Stage Mid-Valve**



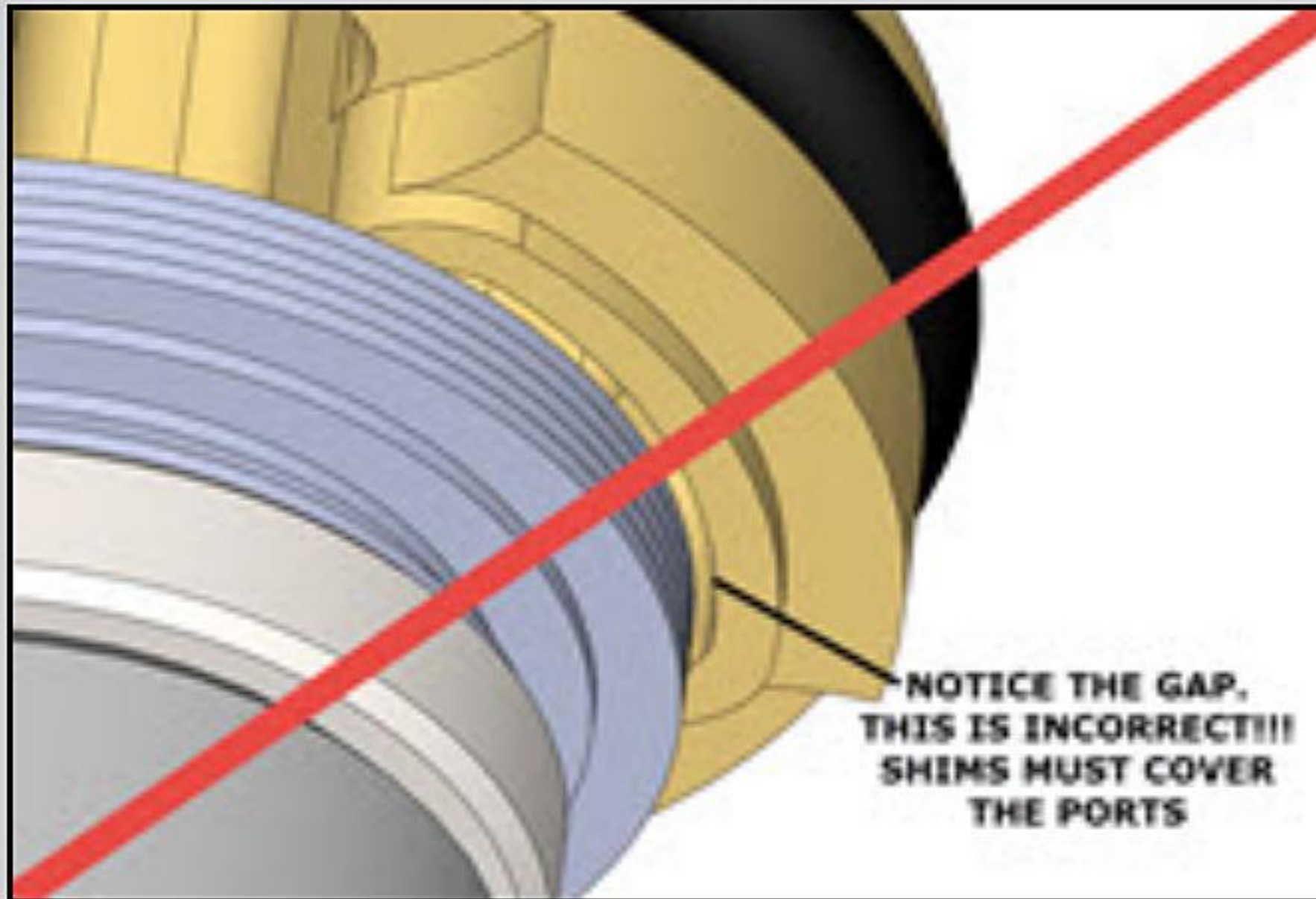
VR18- **Two Stage Rebound
and Two Stage Mid-Valve**



Notice the gaps in the valving stacks where both the Rebound and Mid-Valve Crossovers are. The crossover gap should be clearly visible upon inspection.



VR19- Check your work. Hold the Valve 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.



VR20- **Make sure the shims that go next to the Gold Valve completely cover the ports on both sides of the piston!** If the ports are not covered there will not be enough damping.

This could be caused by a number of reasons. Please call Tech Support if this occurs.

VR21- Continue with the Compression Gold Valve installation and Fork Assembly.