Dive Rite 200 & 300 Bar Isolator Manifold Service Manual

Principal Photography and Text by Pete Nawrocky

Warning

- *This manual is only to be used as a guide for trained Service technician. Possession of this guide does not qualify any individual in the service of Dive Rite Breathing Systems. Only qualified Dive Rite Dealers can Service Dive Rite Products. Improper servicing can lead to serious injury or death.*

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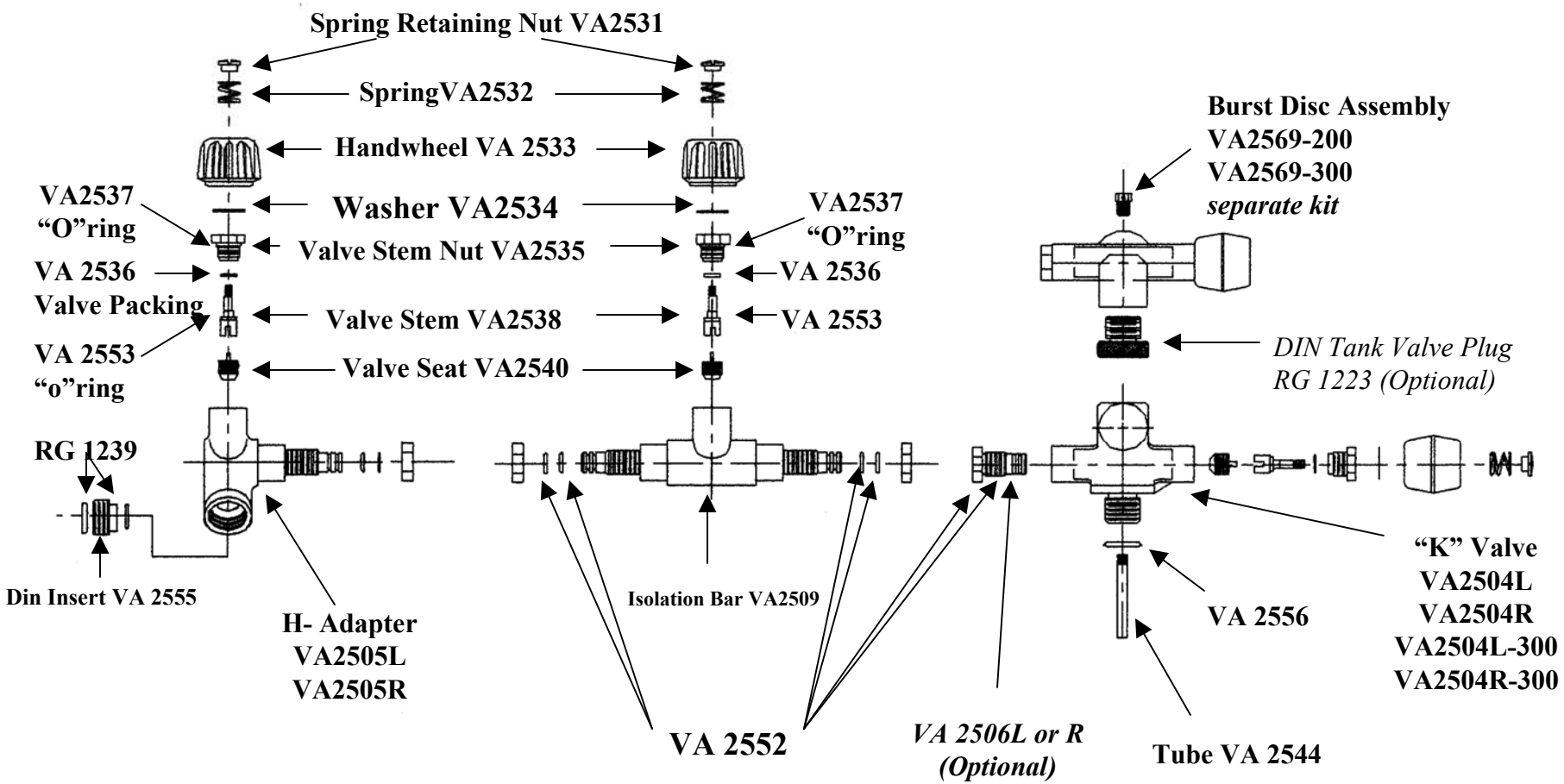
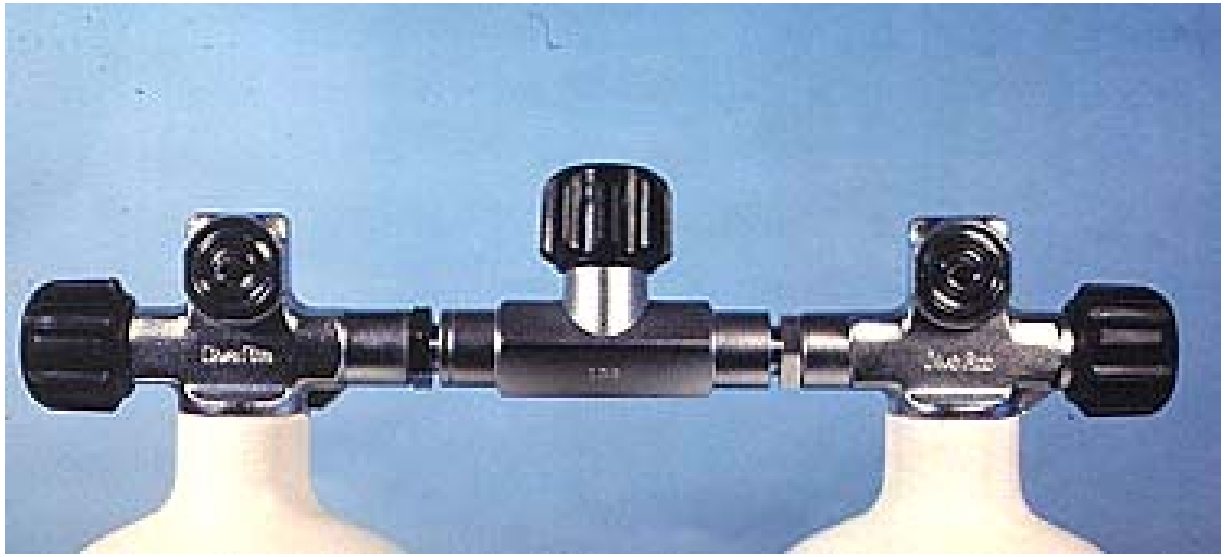
Note: 300 Bar Manifolds do not have the capacity to use the DIN Insert VA2555.
Yoke style regulator attachments are not designed for 300Bar service
200 Bar manifolds have a shallower DIN connector orifice than 300 bar Manifolds



Disassembly

Isolator manifold

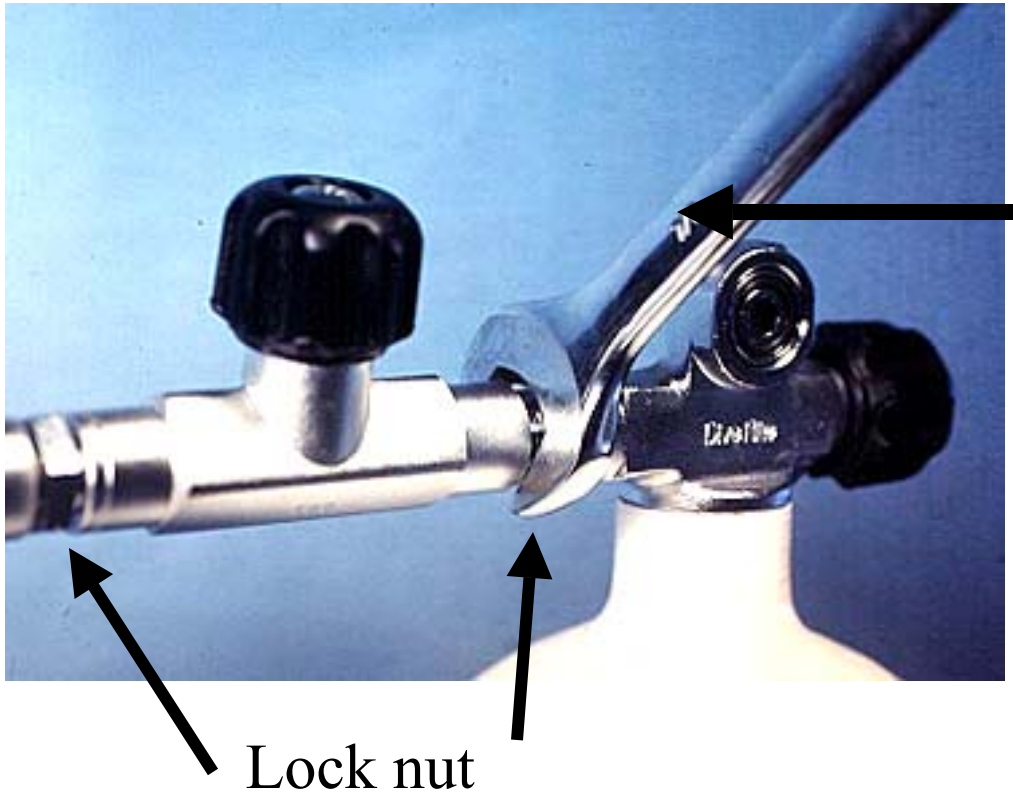


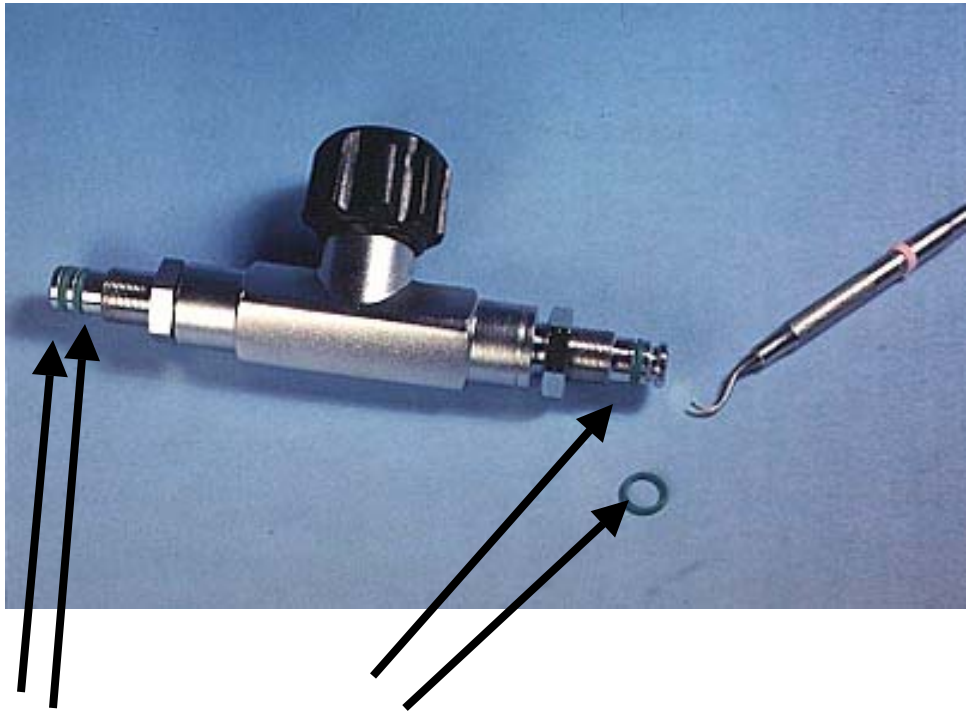
ATTENTION

DO NOT ATTEMPT TO SERVICE THIS MANIFOLD UNDER PRESSURE
ALL BREATHING GASES ARE TO BE PURGED BEFORE SERVICE
FAILURE TO COMPLY MAY LEAD TO **SERIOUS INJURY OR DEATH**

After purging the breathing gasses disassemble the manifold *after removing the bands.* Loosen the locking nuts utilizing a 22 mm wrench
Be aware that the left hand post (opening facing technician) is reverse threaded
The Isolator Bar can now be unscrewed by hand.

It is recommended that the Tank set be placed flat on the floor to avoid bending or cross-threading the Isolator Bar





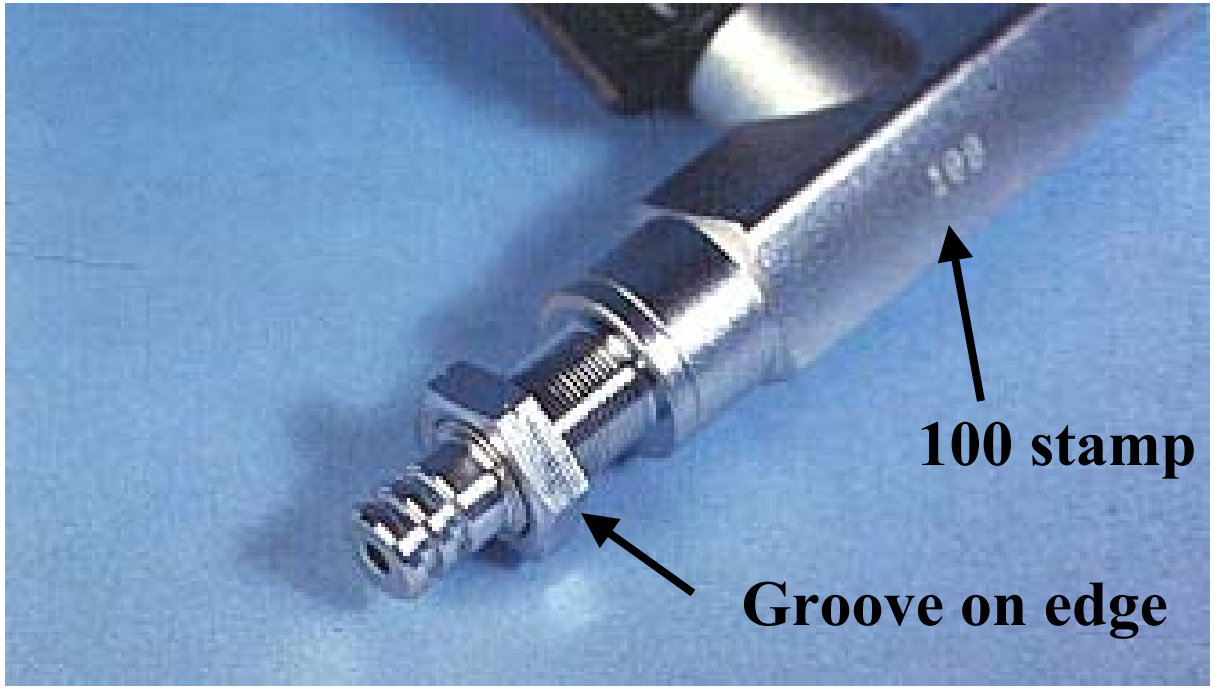
Part # VA 2552

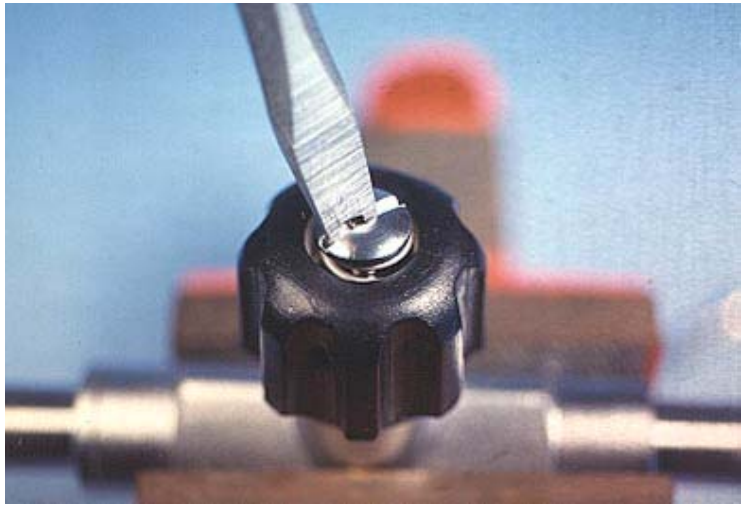
Using a pic designed for this purpose remove the 4 “O” rings from the Isolator bar (# VA2552)

note: *insure that removal of “O” rings does not damage sealing surface*

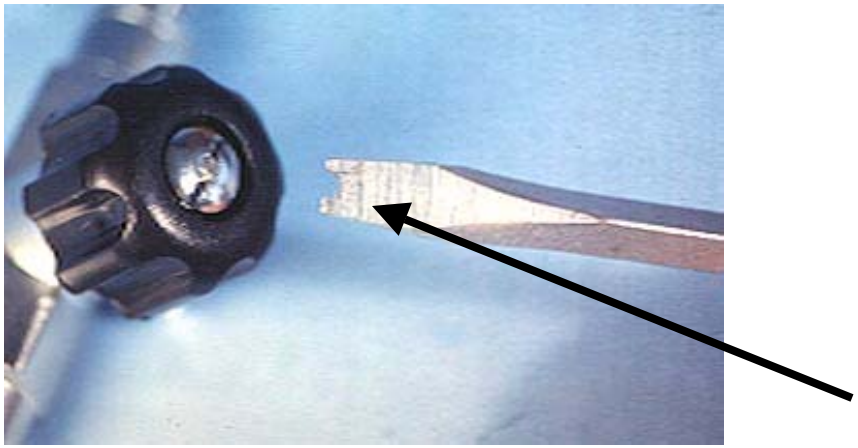
Remove the two (2) locking nuts

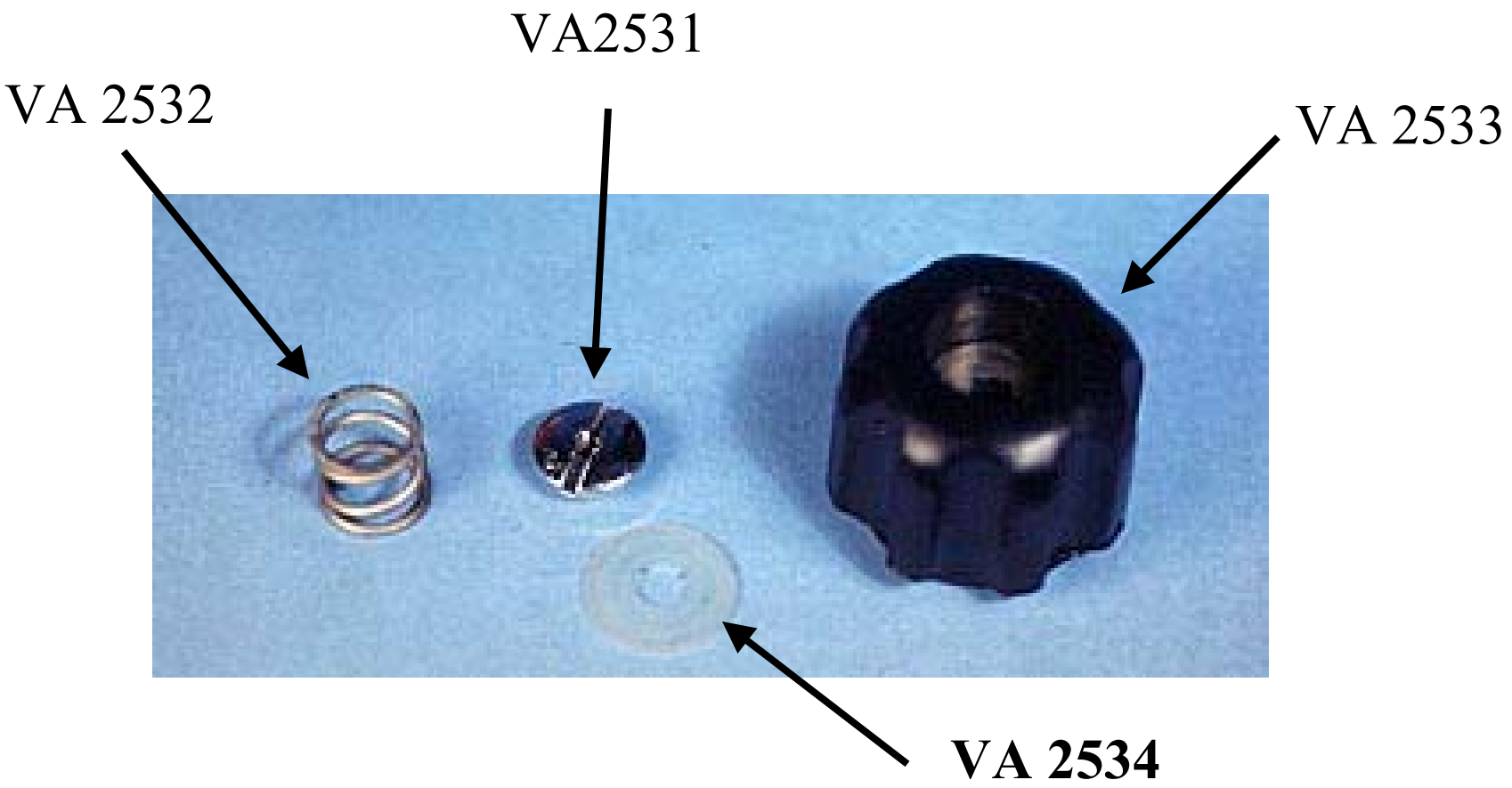
The Left locking nut is reverse threaded.
There is a small groove machined into the nut along the edge
Reinstall the nut on the same side as the 1 in the100 stamp





Insert the Isolator bar into a vise
Remove the locking nut using a Slotted Screw driver designed for this purpose

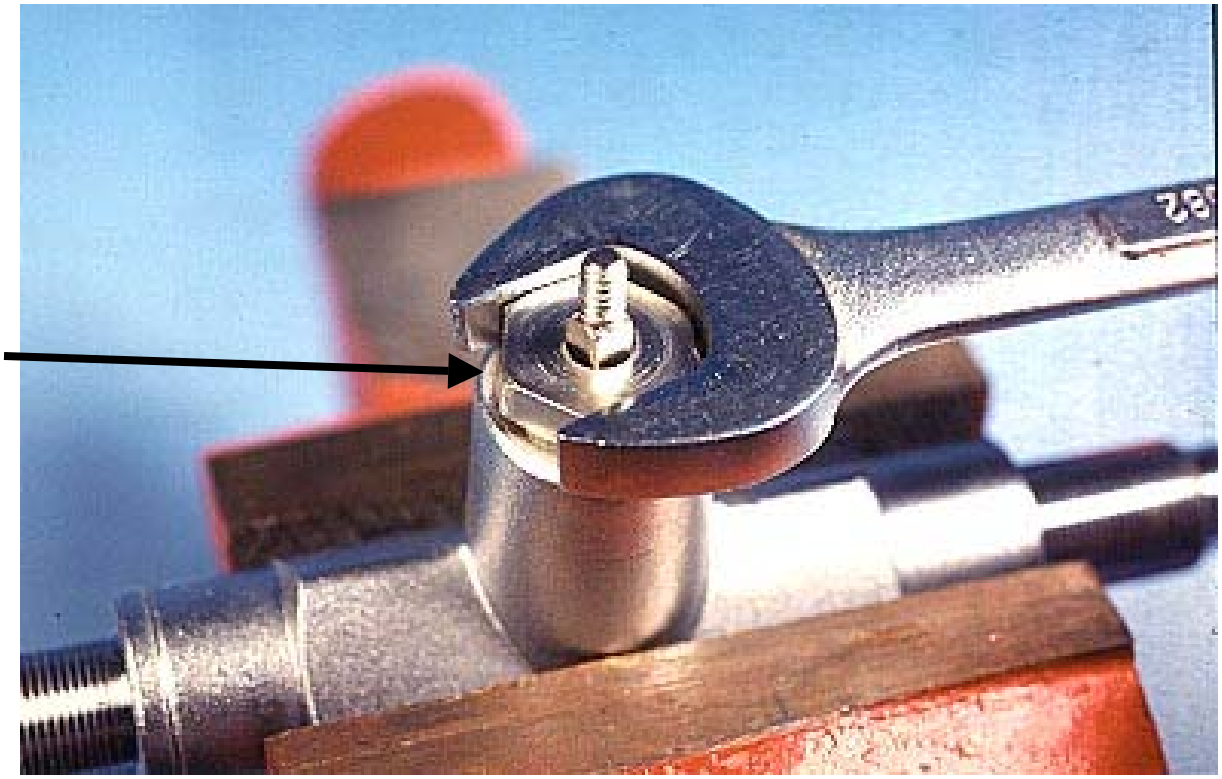


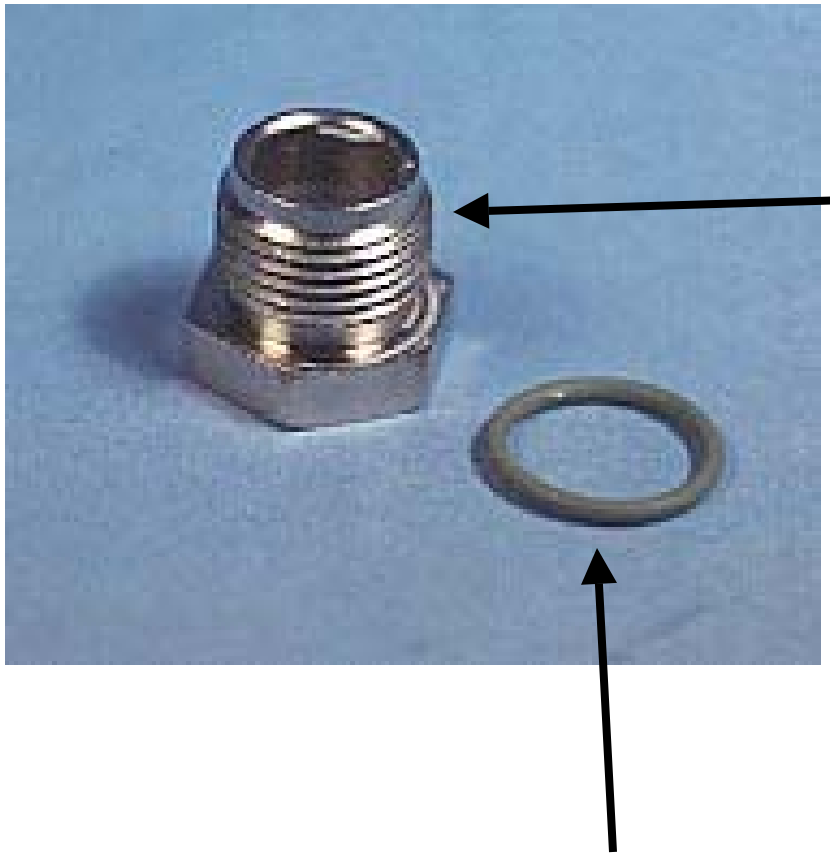


Remove the Locking Screw, Spring, Handwheel and Handwheel washer

Using a 3/4 inch wrench loosen and remove the Valve stem nut

VA 2535

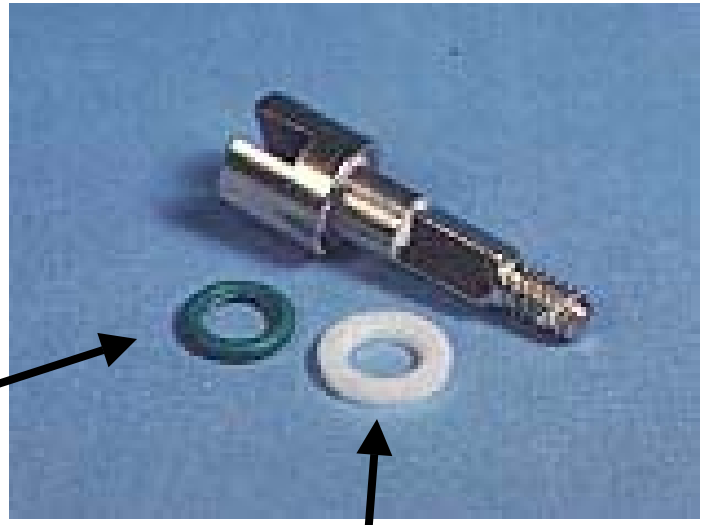




Remove “O” ring from valve stem nut Part # VA2537

Remove the Valve Stem #VA 2538

Remove Valve packing
Part # VA2536 and “O” ring VA2553

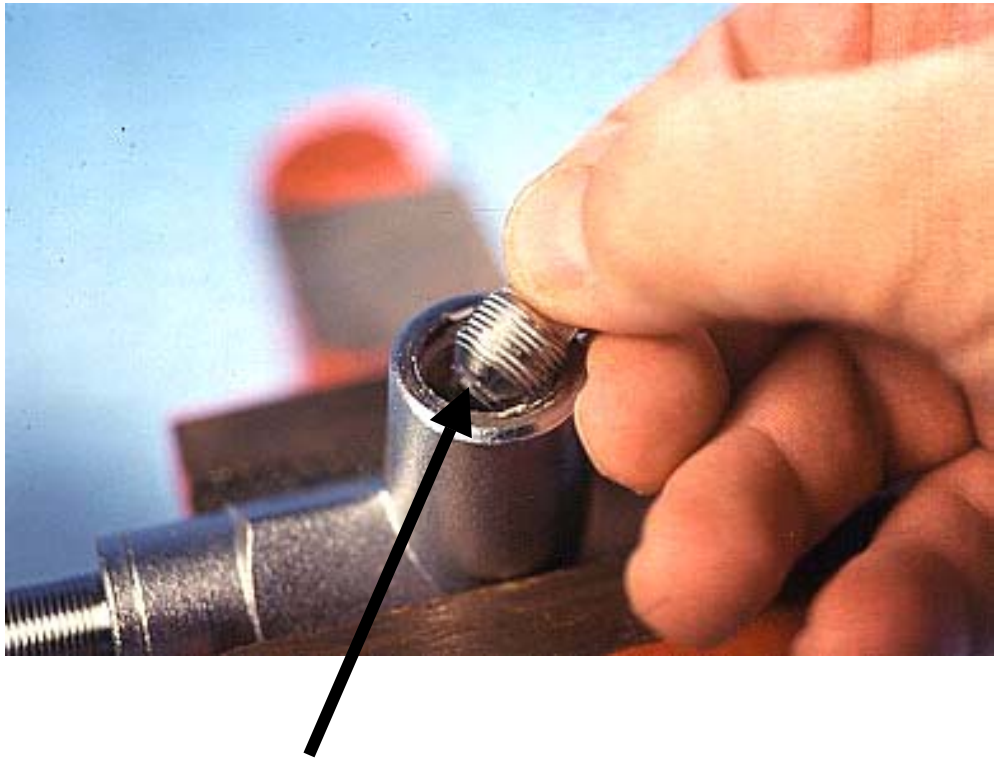


Part # VA2553

Part # VA2536

Remove Valve Seat

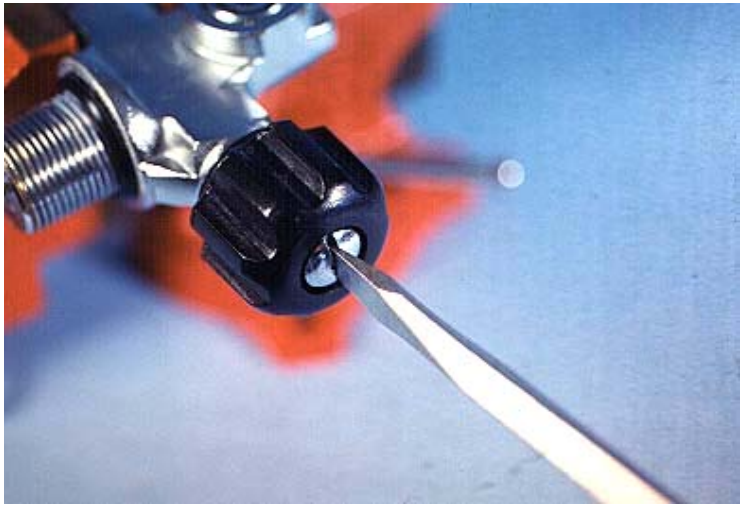
It may be necessary to use the valve stem to raise the seat high enough to grab

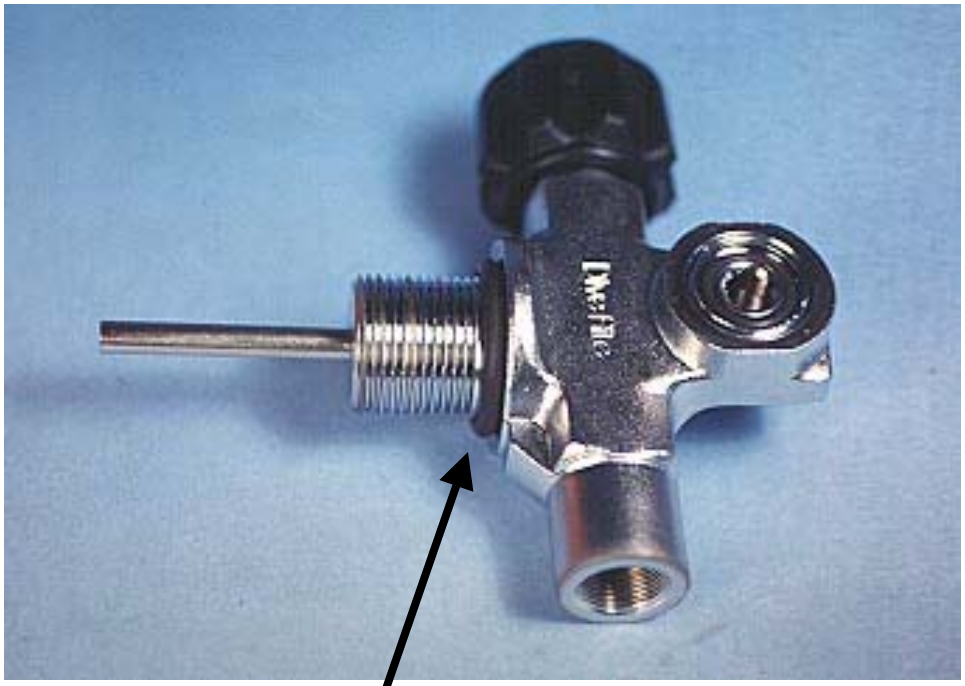


Valve Seat # VA 2540

Remove the valve posts from the cylinder using a flat jawed wrench secure the cylinder in a vise suitable for this purpose

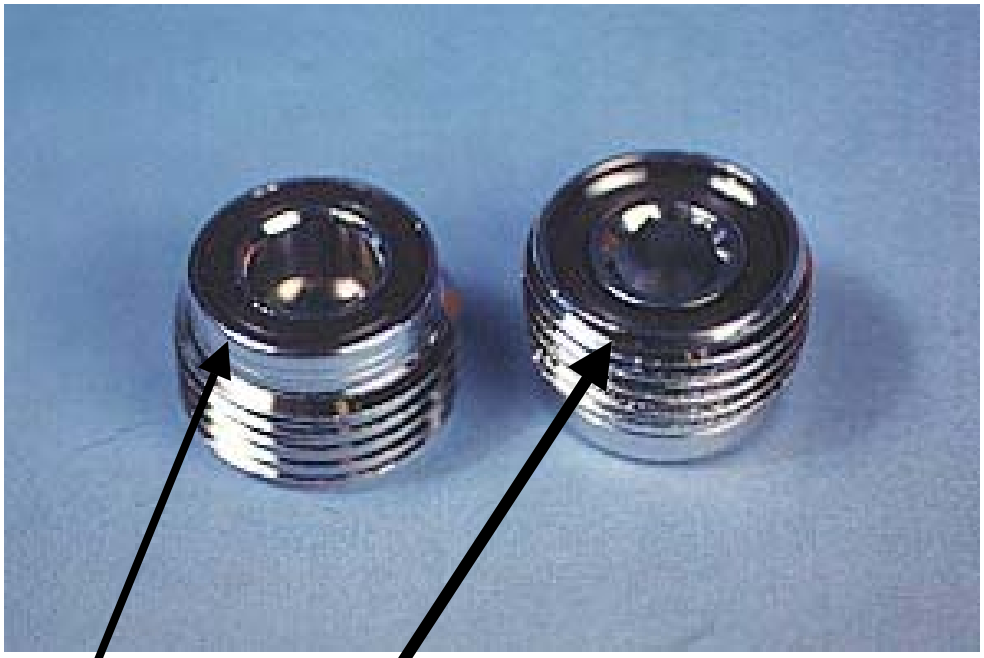
Valve posts have identical parts and procedures used in the servicing of the Isolator valve assembly
It is required that all valves be serviced in a vise
VALVES ARE NOT TO BE SERVICED WHILE INSTALLED IN A SCUBA CYLINDER





Remove “O” ring Part # VA2556

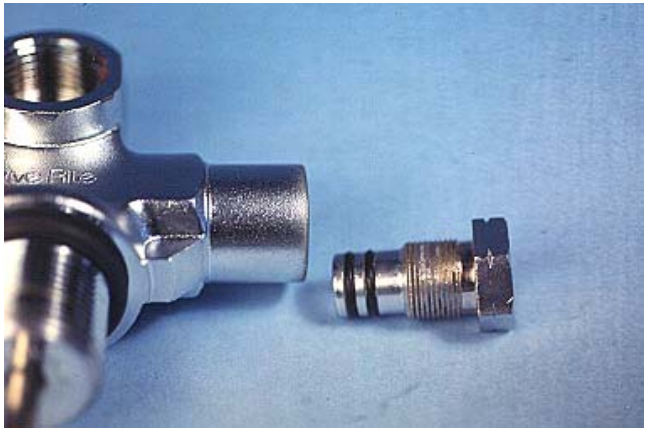
Remove the DIN Adapter using a 8mm hex wrench



Part # RG1239

Replace the Two (2) “O” rings on the DIN Insert

This insert is only available for 200 Bar (3400psi) Manifolds



The manifold can be disassembled and the valve posts used on single cylinders by installing a plug

Note: The Left hand post has a reverse threaded plug the plug has grooves cut in the edges for identification

Warning! Only original Dive Rite Replacement parts are to Be used in the servicing of the Isolator Manifold

A) All the old parts that are to be replaced are designated in the new rebuild kit . All Dive Rite Replacement parts are designed for Nitrox service.

B) The remaining parts should be cleaned in a solution designated for Nitrox cleaning

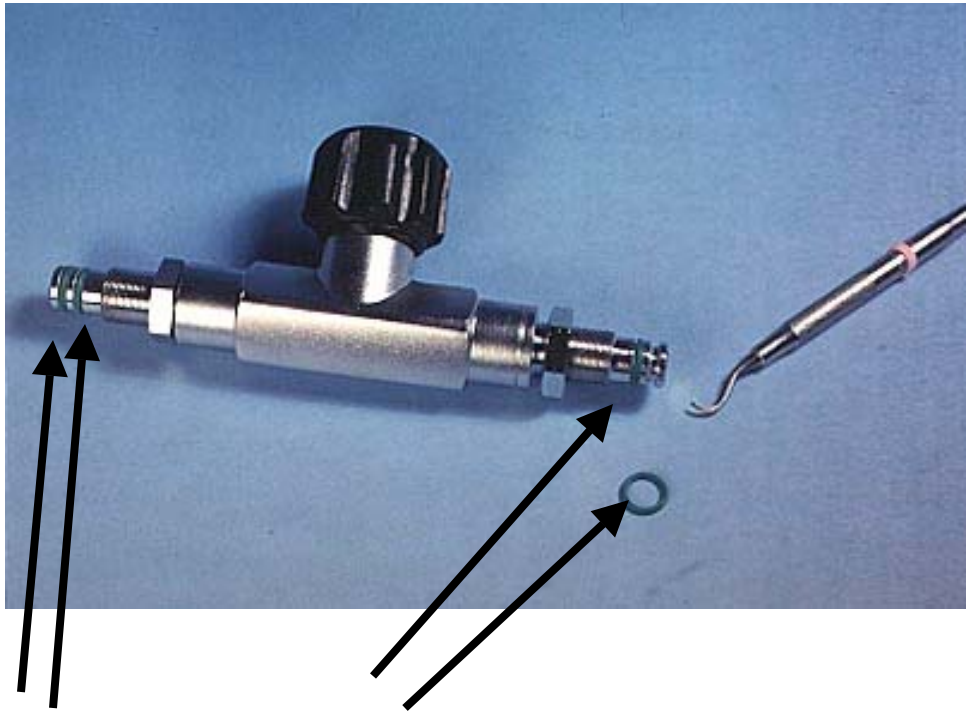
C) The following lubricants should be used in the reassembly of the First Stage. Christo-Lube, Krytox or any one of a number of products available for this purpose that are Nitrox compatible

VA2529 Parts List

- VA2534 hand wheel washer (3)
- VA2536 valve packing (3)
- VA2537 O-ring for packing nut (3)
- VA2553 O-ring valve stem (3)
- VA2552 O-ring crossbar/plug (4)
- VA2556 O-ring Viton 3/4 tank (2)
- RG1239 DIN O-ring (4)

Assembly

Isolator manifold



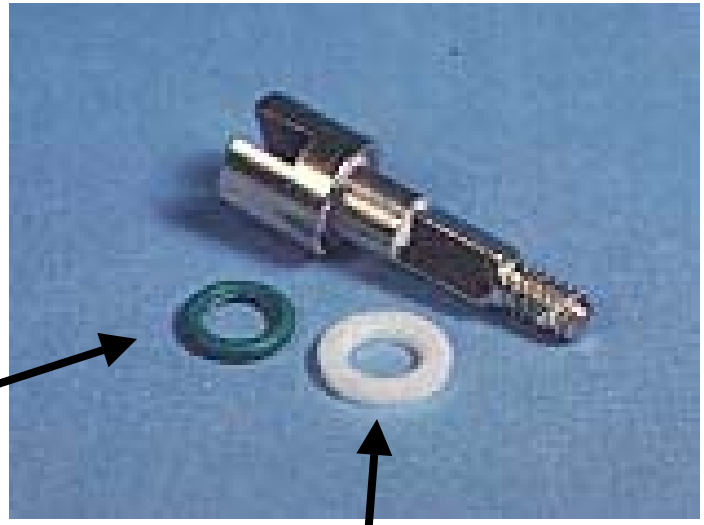
Part # VA 2552

Lubricate and Install the 4 “O” rings on the Isolator bar (# VA2552)

note: *insure that removal of “O” rings does not damage sealing surface*

Reinstall the valve seat
Check both seating surfaces for nicks or uneven wear.
Replace valve seat if uneven or extreme wear is found

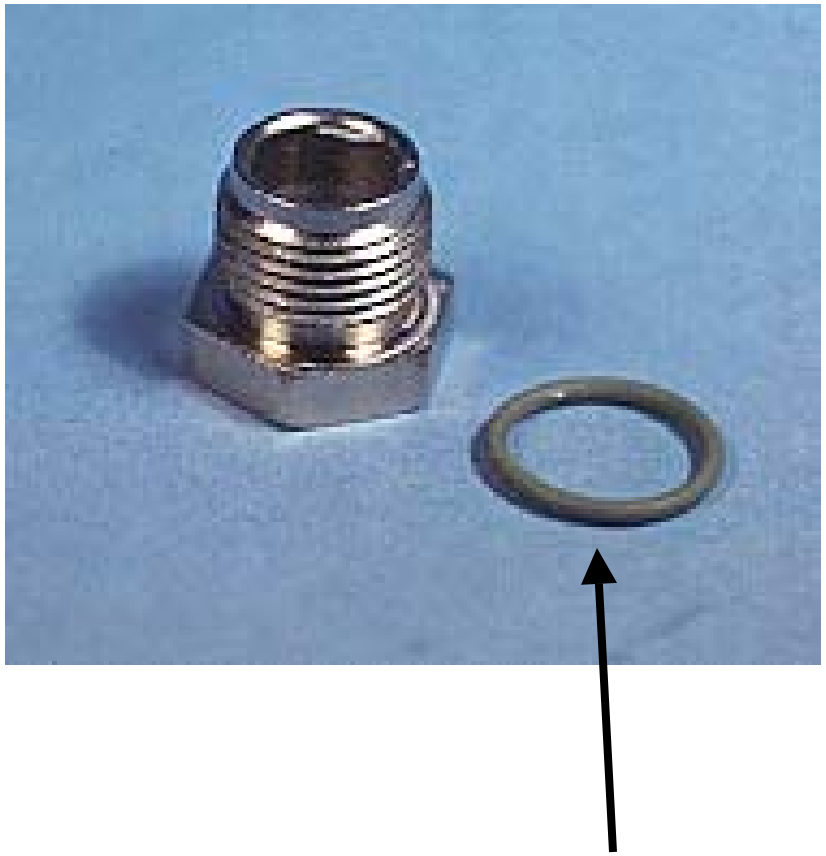
Lubricate and install “O” ring VA2553 first, and then Replace Valve packing VA2536



Part # VA2553

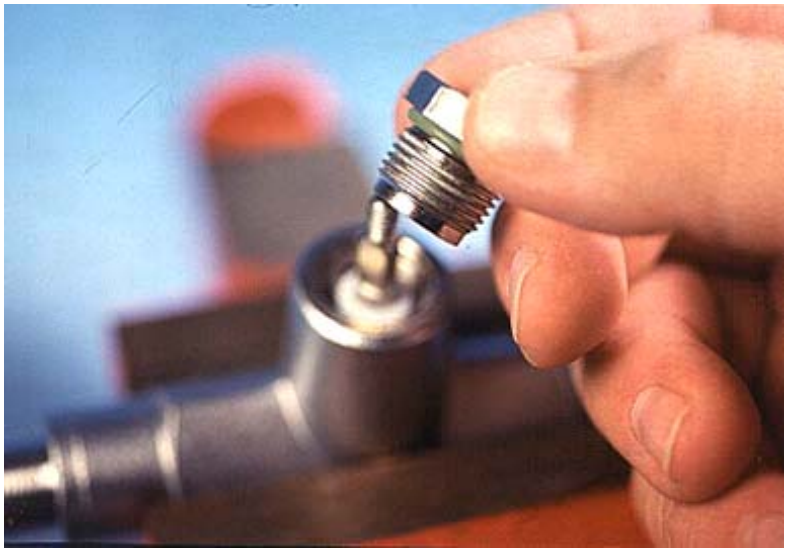
Part # VA2536

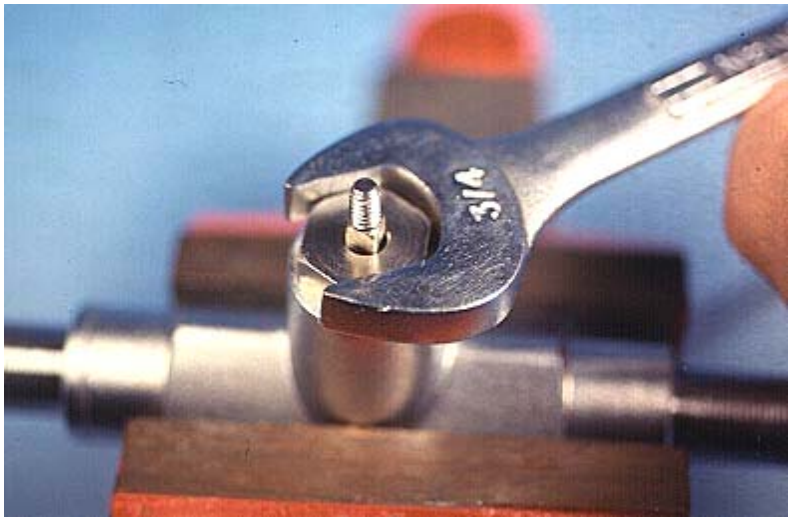
Reinstall valve stem
Align with top of valve seat



Lubricate and Install “O” ring on valve stem nut
Part # VA2537

Install Valve Stem Nut
#VA 2535

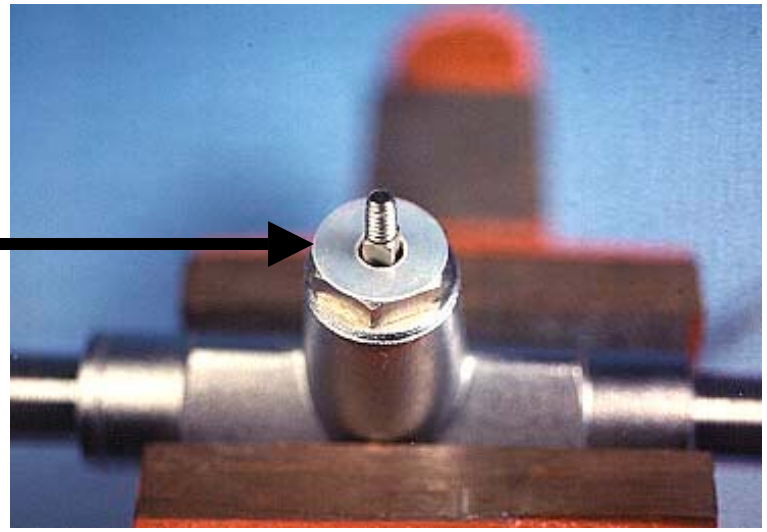


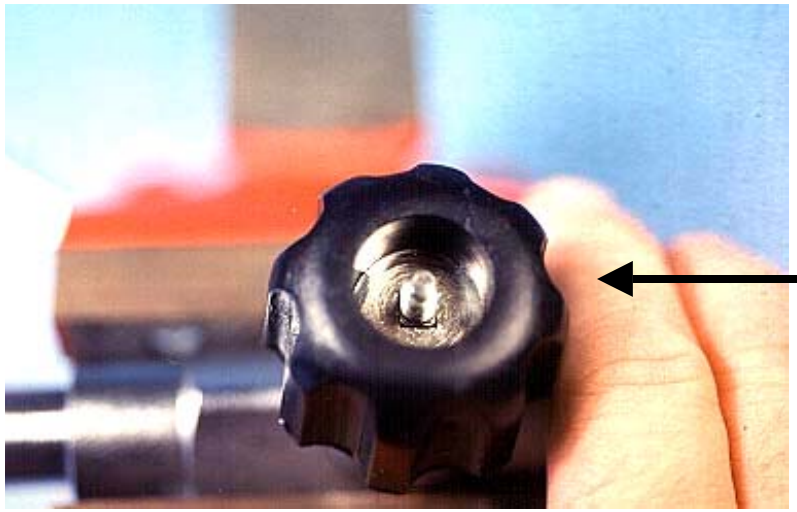


Tighten with a
3/4 inch wrench

Install Handwheel washer over valve stem

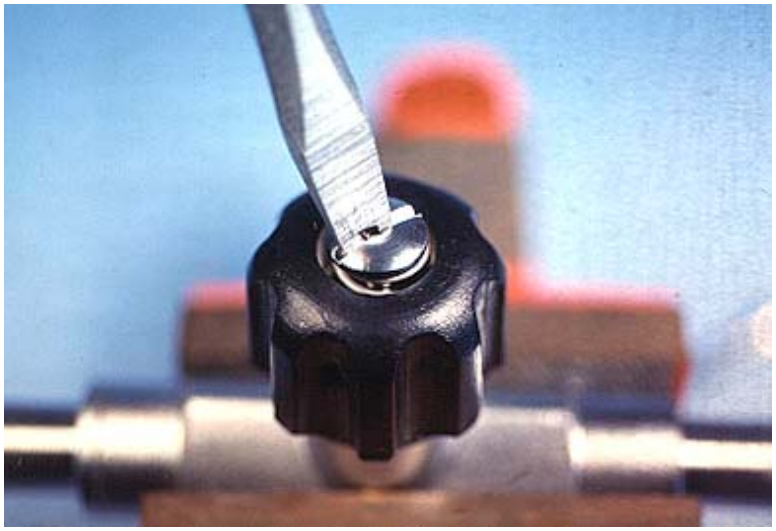
VA2534



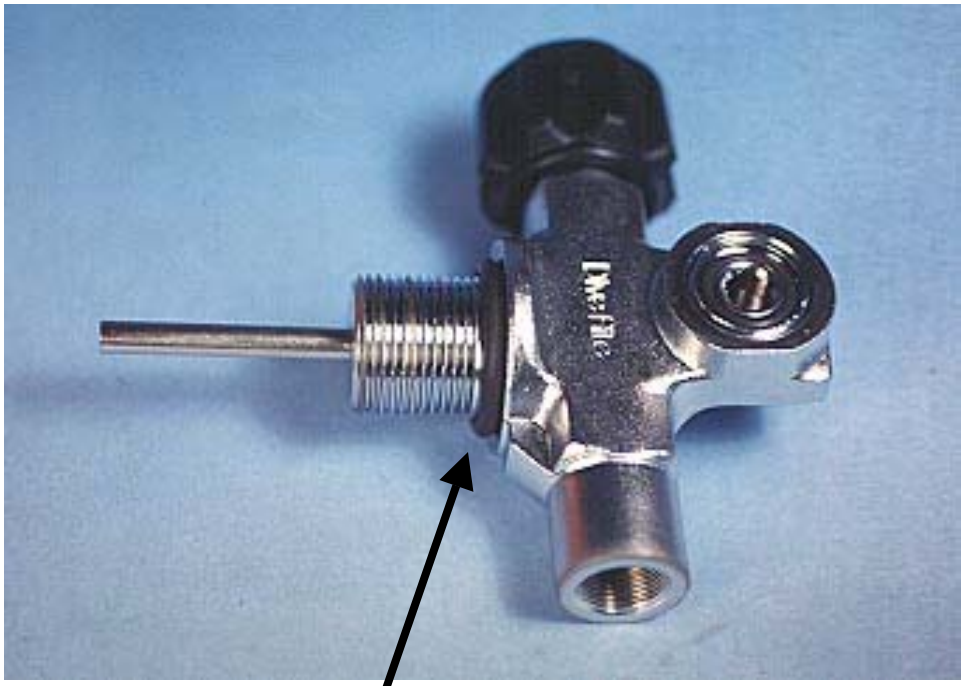


Install Hand wheel VA2533

Reinstall Spring
VA2532



Install and tighten
Spring Retaining Nut VA2531
with slotted screwdriver



Lubricate and Install “O” ring Part # VA2556

Testing valve assembly

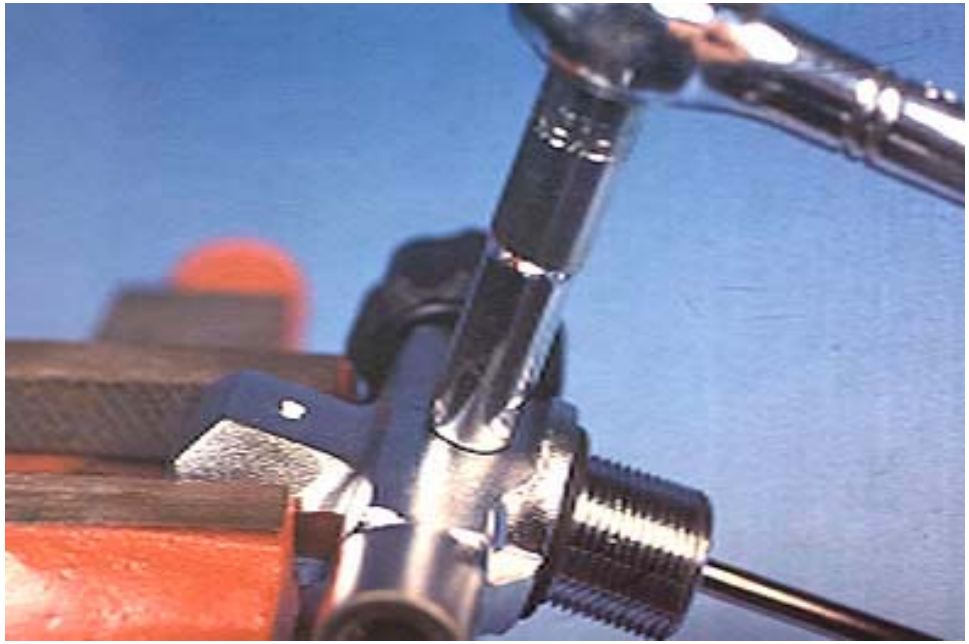
- Reassemble valves in cylinders including tank bands
- Close isolator valve
- Fill one cylinder
- Open Valve of empty cylinder
- No air flow should be evident
- All other connections can be checked by immersing unit in water

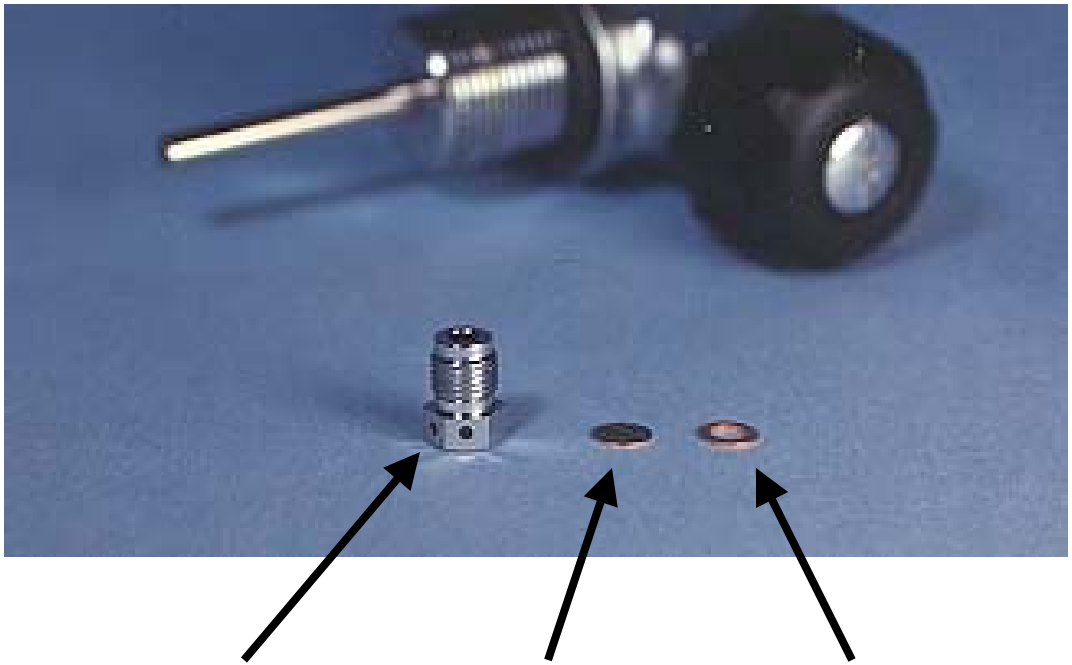
Repairing Burst Disc

Burst Disc Assemblies should changed periodically or if any pressure loss is evident.

The appropriate Repair Kit is required for 300 Bar or 200 Bar replacement

Using a 10 mm socket remove the Burst Disc Plug RP9587

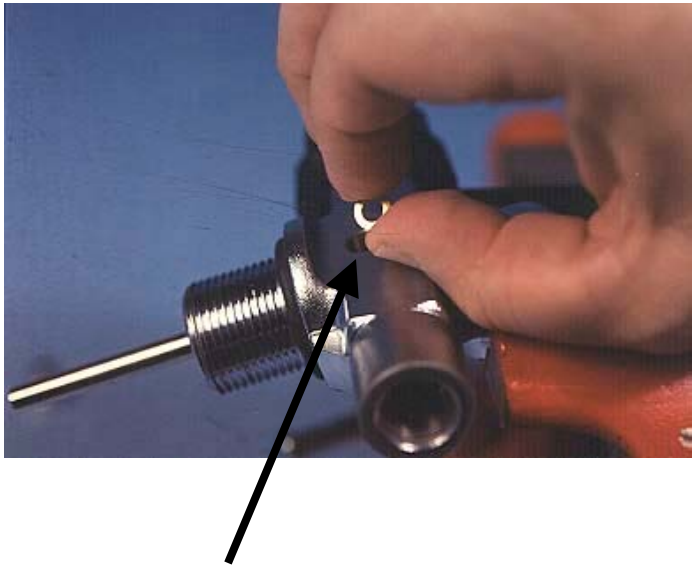




Plug RP9587 Disc RP9585 Washer RP9589

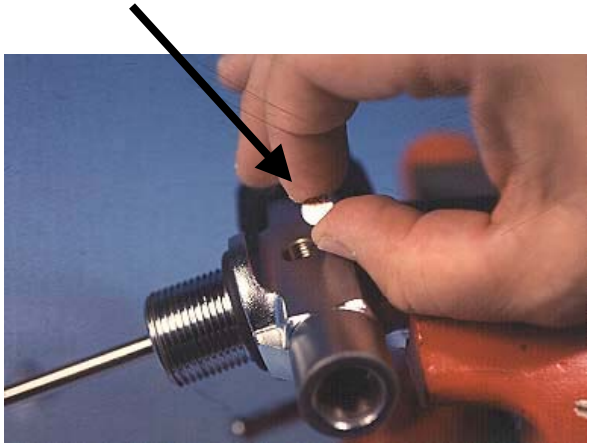
Remove the parts listed, it may be necessary to use a pick to remove the disc and washer. Take care not to damage the threads.

Assembling Burst Disc Kit VA2569

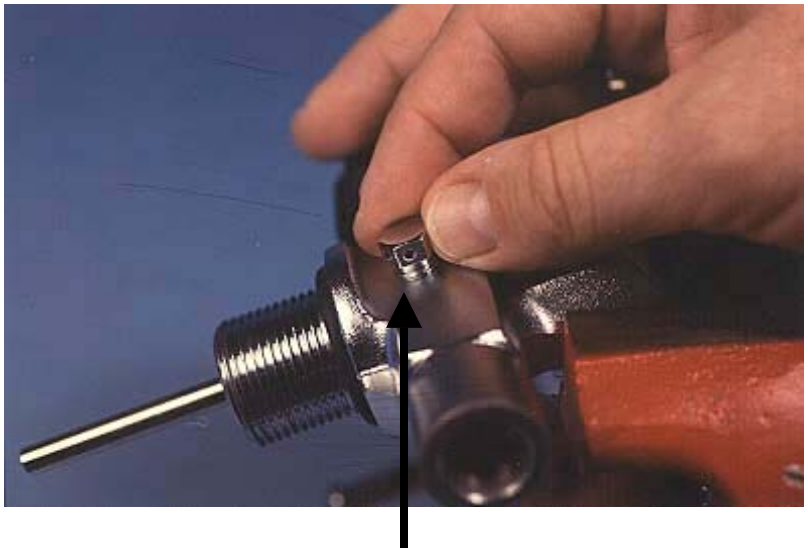


1) Insert Washer RP9589

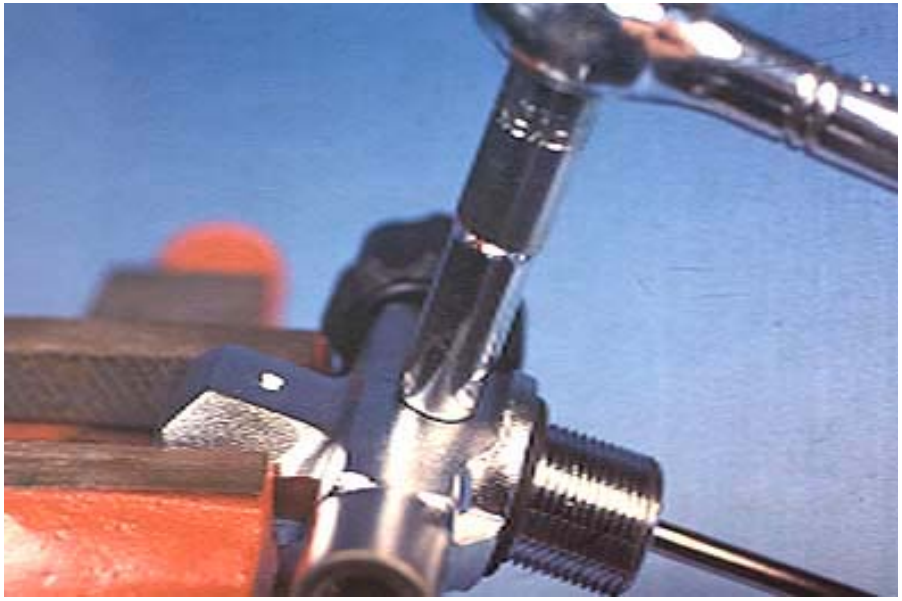
2) Insert Disc RP9585



3) After insuring that the washer and Disc are laying flat on the bottom of the chamber.
4) Insert Plug RP9587 and tighten until the plug stops.



Plug RP 9587



Tighten the Plug to 100in/lbs.
This completes the Burst Disc Kit VA2569-200
or VA2569-300

Burst Disc Kits

200 Bar Kit VA2569-200

Plug	RP9587
Disc	RP9585
Washer	RP9589

300 Bar Kit VA2569-300

Plug	RP9587
Disc	RP9588
Washer	RP9589

Assembling Double Cylinders utilizing Dive Rite Manifolds, Bands and Bolt kits

1) Disassemble the manifold into its three primary components (outboard K-valves and center isolator or cross bar). Lubricate all exposed threads and O-rings with the appropriate grease (02-compatible for components that will, at any time, be exposed to gas mixtures with FO2s of greater than 40 percent). Make certain the isolator lock nuts are tight against the center of the isolator or cross bar body.

2) Install one outboard K-valve into each cylinder.

3) Place the cylinders on the table or flat surface upon which you will be working, parallel to one another.

4) Carefully orient the center isolator or cross bar so that its threads correctly match those of the outboard K-valves (this is important; serious manifold damage may result otherwise). The notched lock nut (indicating threads that turn opposite the normal direction) goes on the side of the manifold which will be on the diver's left.

5) Slowly turn the isolator or cross bar in the direction that will cause it to thread itself into both K-valves simultaneously. This is very important: If one side does not engage you must back the isolator or cross bar all the way out and begin again. Be patient. This may take more that one try.

6) When the isolator or cross bar threads engage properly, turning this center unit will draw the tops of the cylinders together. To keep the cylinders parallel to one another as this happens, stop periodically to gently tap the bottom of the cylinders together. You can tell when to do so because the isolator or cross bar will become difficult to turn when the cylinders are no longer in proper alignment (This also helps explain why it is important you avoid using wrenches for this step and turn the isolator or cross bar only by hand; any resistance you feel will tell you something is wrong.).

7) Repeat step 6 as often as necessary until you reach a point where no more than 1/8-inch/3mm of threads shows on each side of the center section.

8) (Isolation manifolds only.) Make certain the isolator knob is positioned at the desired angle. (Again, if necessary, it is permissible to have as much as 1/8-inch/3mm worth of threads showing on each side of the isolator section; this may be necessary to ensure adequate clearance between tanks for the bolts.)

9) Turn the center unit lock nuts so that they rest snugly against the outboard K-valves. Lock them in place with the 22mm wrench. Do so gently; these components are brass and easily damaged by unnecessary force.

Now you are ready to install the tank bands and bolts.

10) Remove all the nuts and washers from the all-thread shafts (headless bolts)--except the aircraft nut (the nut with the nylon insert).

11) On the end of each shaft, opposite the aircraft nut, install a wing nut (turned upside down) followed by a regular nut. Lock these nuts against one another. This will enable you to hold the shaft without damaging any threads.

12) Place a 1/2-inch box-end wrench (or a 1/2 deep socket wrench) on the aircraft nut and another 1/2-inch wrench on the regular nut. Turn the aircraft nut until it is positioned so that approximately 1/8-inch of shaft protrudes from its top. Unlock the regular nut from the wing nut and take them both off the shaft.

13) Prepare the bands by stretching them outward (this will make them easier to work with). Begin by grasping the bands by the flat sections and pulling outward. Repeat by pulling on the outside of the hoops. Doing so pulls the bands in four opposite directions (with the wider GM1037 bands for larger cylinders, this may take some additional effort).

14) Pull the cylinders to the edge of the table. Let the cylinders extend beyond the edge so that the portion where the upper band will go will be exposed. Make sure the valve orifices face upward.

15) Place the top band right at, or just below, the shoulder of each cylinder (the shoulder is where the side of the cylinder begins to turn toward the valve).

16) Place a flat washer on the end of the shaft with the aircraft nut. Push the shaft up through the band's bolt hole from below. On the other end of the shaft, place a flat washer, followed by the lock washer and regular nut. Put one 1/2-inch wrench on the aircraft nut; the other on the regular nut. Tighten the regular nut until the band is moderately snug.

17) Turn the cylinders around to their bottom ends will be exposed. Position the bottom band so that the bolts will be spaced 11 inches apart, when measured center to center. (A back plate makes a good measuring device.) Repeat step 16 to install the bolt in the lower band.

Left K-Valve **Isolator/Crossbar** **Right K-Valve**