DIVE GEAR EXPRESS

DGX Gears FIRST

First Stage Service Manual

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Revision	Date	Changes
4	10/07/2020	Initial publication
4a	03/31/2021	Added text to 5. Regulator First Stage Assembly (1).
5	09/23/2022	Minor technical edits for clarity; replaced Fig. 3; removed Figs. 4 and 5 and renumbered subsequent Figs.; updated Item B8/#21* Description on the schematic

1. Overview

(1) The availability of subassemblies and components, repair parts, specialized tools, and maintenance manuals does not imply qualification to assemble and/or service scuba equipment. Improper service of dive equipment can lead to severe injury or death. Dive Gear Express recommends that non-qualified individuals seek professional training/mentoring before attempting repairs or servicing on any diving equipment.

> **Failure to follow the procedures outlined herein may result in serious injury or death!**

(2) In the following pages will be found the disassembly, assembly, tuning and troubleshooting steps for these components. Photos are used throughout to illustrate the procedures.

> **Please pay special attention to all Caution Notes!**

(3) Whenever an item of extra importance needs to be observed, a “Caution Note:” will appear, followed by the required information. See below.

> **Caution Note: This must be read and followed!**

(4) Included in this manual is a list of recommended/required tools for each disassembly, assembly, and testing section. They are identified in each section where they are used.

(5) A schematic diagram is located at the rear of this manual. The diagram contains the detailed parts lists. The diagram also includes the torque specifications for parts where required.

(6) A general troubleshooting guide with space for notes is also included for those using a printed version. Those who prefer an electronic version should keep detailed notes in an accessible location for their own observations and service tips, as well as a record of service.

(7) Throughout the text, parts are referenced using the item number on the schematic to facilitate locating each individual component.

(8) Parts should not be taken out of their packaging until the actual assembly stage is reached, and the user is ready to lubricate, where necessary, and install them.

(9) Ensure the service area is free of any environmental factors that may cause problems during the servicing of your regulators. The area must be clean and organized. The use of nitrile gloves is highly recommended for final rinsing and assembly. This will minimize the risk of skin oils contaminating the internal components of the regulator.

(10) Ensure that all required servicing/testing air supplies are available and at the proper test pressures if not using a regulated supply from a single source. “**Modified Grade E” air as typically delivered at a dive shop fill station is preferred.**

> **Caution Note: Only use air from a breathing air source! Do not use a hardware store shop compressor.**

Cleaning and Rinsing - General Considerations

(11) Cleaning and rinsing of the components should be done using clean, fresh water.

(12) Only use degreasers that leave no organic residue (e.g., Extreme Simple Green, Blue Gold Cleaner, or any clear liquid dish soap that does not contain scents or dyes).

(13) To remove corrosion, use a 50/50 vinegar/water solution and nylon brushes. Areas of heavy corrosion not removed with vinegar can be addressed with mild phosphoric acid solutions available from scuba supply houses.

(14) Allow parts to air dry without the use of loop-weave cloths that may leave fibers.

(15) Once all service procedures have been completed and bench testing done, in-water testing in a confined environment such as a swimming pool is recommended to confirm proper function before taking the regulator on an actual dive.

Cleaning of Regulator Parts

(16) Cleaning of parts that are going to be reused is one of the most critical steps in servicing the regulator. As was stated earlier, use the proper solutions for the job at hand. Removal of hydrocarbons and debris should be accomplished before attempting removal of corrosion. Areas of corrosion are often also coated with old lubricant or oily contaminants. Before attempting to remove corrosion, use warm detergent and a soft brush to remove oils and debris. Then use an acidic solution to remove corrosion. Once corrosion has been removed, inspect parts and repeat detergent washing as needed. Wearing nitrile gloves throughout the process reduces the risk of contaminating the parts with skin oils.

(17) First, prepare a warm solution of detergent from the list above. Immerse both plastic and metal parts and agitate thoroughly. Protect critical delicate parts by washing them separately or isolating them in a small plastic container with holes. Use a soft nylon brush and/or soft rags soaked in detergent to scrub away visible debris and contaminants. Corrosion will likely not be removed during this step. Rinse repeatedly in clean water.

(18) Now address visible corrosion by submerging **metal parts only** in a 1:1 dilution of white vinegar and hot water. Do not immerse plastic parts in an acid bath - it will degrade the plastic and make it more susceptible to cracking. Agitate the parts occasionally and allow parts to stand in the acidic solution for ten minutes. Wearing gloves, remove and inspect parts, and reimmerse them for an additional ten minutes if visible corrosion is still noted. Removal of corrosion will leave bare brass behind, which will not affect regulator function, but will necessitate more frequent future inspection and service. After the acid bath, rinse all metal parts thoroughly.

(19) Best practice is to neutralize any possible residual acid remaining in crevices and threads, by immersing all acid-treated parts in a neutralizing solution of warm water and sodium bicarbonate (baking soda) in a ratio of 1 tablespoon per gallon of water. After a brief neutralizing soak, again rinse all parts thoroughly. In areas with high mineral content in the water, a final rinse with distilled water should be considered. A plastic colander is excellent for drainage after rinsing. For very small parts, a mesh strainer for sink drains works well. Often sold as a set, they are inexpensive and can be used for many types of regulator components. Again, protect delicate parts from contact with hard metal surfaces. Retained final rinse water should be allowed to stand and examined for a surface sheen indicative of residual hydrocarbon residue. If noted, return to step (17) above.

(20) After washing and rinsing the regulator parts, allow them to air dry. Using a drying rack will facilitate this. Do not lay the parts on a paper towel or loop-weave cloth towel. Doing so runs the risk of having fibers stick to them that will cause issues with sealing. If a cloth is used as an aid to drying, make sure to use a tight, flat weave lint-free cloth that has previously been well washed to remove fabric sizing.

Inspection After Cleaning

(21) Before assembling the regulator, it is necessary to inspect all the cleaned components. Using a magnifying glass or inexpensive USB microscope, ensure all parts are clean and contaminant-free, and check the components for damage that may have been hidden by corrosion or lubricant. Look for scratches that may affect the sealing of the regulator.

(22) Lay all parts out on your padded work surface following the schematic. A rubber or silicone mat of suitable size that is clean and free of contaminants works well for this.

(23) Now that all parts have been cleaned and checked, the assembly can begin. Remove the new parts from the service kit bag and lay them out following the schematic, matching them to the old parts for size. Then make sure all old parts that are to be replaced have been discarded or segregated.

> **Caution Note: Removing parts from their packaging before they are to be used runs the risk of mixing them up. Some O-rings are very close in size but are not interchangeable! Keep parts in their packaging until you are ready to exchange them for their used equivalent.**

(24) As with the parts that have been cleaned, it is a good idea to inspect the new parts as well. Inspect the HP Seat to ensure it is free of any defects. Check all O-rings and inspect them as you use them for nicks or imperfections. Inspect the washers to ensure they are free of burrs or other defects that could affect their function. It is critical to use the parts list on the schematic to ensure that all new parts are present and accounted for in their required quantities.

(25) **Lubrication can be overdone**. Doing so runs the risk of trapping excess dirt or debris on the parts. One way of reducing the risk of overdoing it is to use the lube-in-a-bag method - Fig. 1

Fig. 1

This involves using a small clean plastic bag containing a small amount of lubricant. The O-ring is inserted into the bag, worked around to evenly coat with lube while squeezing off excess, then taken out of the bag and used in its location - Fig. 2.

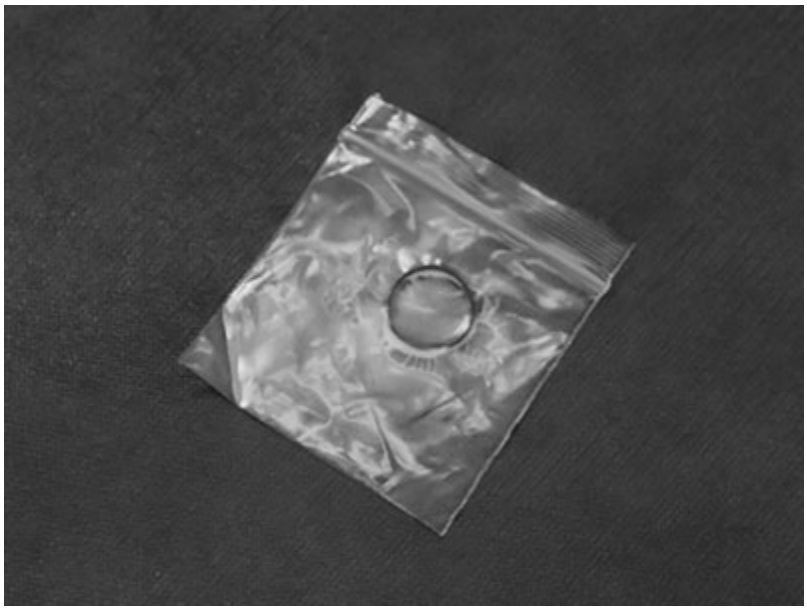


Fig. 2

(26) Another way is to apply a small amount of lubricant to the gloved index finger and massage the O-ring between the thumb and index finger.

(27) **Under most circumstances, a lubricant should be used very sparingly or not at all.** In nearly all scuba applications, if you can see the lubricant, too much has been applied. Before using any lubricant, any existing lubrication should be removed before new is applied. In dynamic applications, it is used to reduce excessive wear. Static O-rings do not generally require the use of lubricant.

(28) Do not unnecessarily lubricate parts. Certain parts are specifically noted to be installed without lubrication. Not lubricating unnecessarily helps to keep those parts clean and free of debris that might otherwise cling to the lubricant.

Caution Note: The DGX Gears FIRST Regulator flow-through piston first stage is primarily intended for use in inflation and light scuba applications such as oxygen decompression. When used as an inflation regulator, the Over Pressure Valve (OPV) that is supplied with the regulator must be used to ensure the safety of the diver should the Intermediate Pressure rise unexpectedly. When used as a decompression regulator, the second stage acts as an overpressure valve.

Caution Note: The output pressure of the regulator is set at the factory to 120 psi. Following the service instructions and using the authorized parts kit will restore the regulator to this setting. The OPV is set by the factory at 180 psi. When rebuilding the OPV using the provided materials in the service kit, pay close attention to the original position of the OPV Bullet/Spring Holder when screwed into its housing in order to decrease the factory setting to a more appropriate level.

Caution Note: The OPV rebuild should NOT be considered a temporary fix to a bubbling valve, which signals a high IP and a need for immediate service. Ideally, when the regulator is serviced, the OPV should be replaced.

https://www.divegearexpress.com/ over-pressure-relief-valve-user-adjustable

2. Tool List - Fig. 3

1. Open End Hose and 12mm or Adjustable Wrenches
2. Thin Wooden Dowel
3. Thin Brass Pick and Blunt Brass Spade
4. 1.27, 4 and 6mm Hex Keys
5. #5 Hook Spanner with 4.8mm Pin
6. 0-300 in-lb Torque Wrench
7. 3/4” | 19mm Deep Socket
8. Vise Handle (First Stage Body Holding Tool)
9. 6mm Hex Socket
10. Tribolube 71
11. 3/8” Breaker Bar or Ratchet Handle

Fig. 3

(1) The First Stage Body Holding Tool, Thin Jaw Adjustable Wrench, Spanner Wrench and Brass O-Ring Pick Set can be found at Dive Gear Express using the link below.

https://www.divegearexpress.com/tools/scuba-tools

(2) Tools may also be purchased from Scuba Tools at the link below.

www.scubatools.com

(3) Additional useful items are a magnifying glass or inexpensive USB microscope, nitrile gloves and, to aid in rinsing, a plastic colander and small mesh strainers for smaller parts.

3. Preliminary Testing

(1) Preliminary testing of the regulator is necessary to identify any issues with the first and second stages and verify the overall regulator function. This testing will include:

1. Visual inspection of the first stage
2. Inspection of the hoses
3. Intermediate Pressure (IP) check

Visual inspection is done to identify issues that could affect servicing and to ensure that pressurizing the system will not compromise the safety of the service technician.

Check all connections to make sure they are secure.

Check that there are no extruded O-rings, and hoses are tight.

Check that there are no defects in the SPG.

Ensure that the DIN assembly is secure, the O-ring is intact and is able to form a seal.

The technician will inspect the filter for signs of verdigris corrosion or discoloration suggestive of water intrusion.

Detailed inspection of hoses is done to ensure it is safe to pressurize the regulator set. Look for evidence that might lead to hose failure. Check all hose connection crimps. Defects must be addressed before pressurizing the system! Replacement of any suspect hoses is recommended.

> **Caution Note: Defects in hoses require replacement before pressurizing the regulator! Failure to do so may result in serious injury!**

(2) Check the SPG for any signs of cracking of the face, water intrusion, and corrosion around the SPG connection.

(3) The Intermediate Pressure (IP) of the system should be tested, after the preceding checks have been done, to ensure technician safety. Checking of IP is done by attaching an IP gauge to the low pressure (LP) inflator hose. The system is then pressurized using the OPV as a safety valve, or while partially depressing the purge button on an attached second stage. Depressing the purge button slightly on the second stage, or having an OPV, prevents damage to the system by providing a relief valve should the IP rise rapidly to unsafe levels. Once the system has been pressurized, the purge is released, and the IP is checked.

> **Caution Note: If a second stage is used, and is leaking even slightly, IP will be affected. If it is leaking, switch to a second stage that is not leaking, or replace the OPV.**

(4) The standard operating range for the system is with an IP of 135 psi. Ideally, the system is operating at 135 psi +/- 5 psi and show no signs of “creep” or instability at 3000 psi.

> **Caution Note: “Creep” will show as steadily increasing IP while the regulator is not in use. Normally the IP will drop 5-10 psi during a breath or purge and then return to its setting. It should not return to the setting and keep increasing. This indicates a problem with the HP Seat, Piston, or sealing O-rings.**

(5) If the system shows no sign of creep or IP instability, it may not be necessary to rebuild the first stage, with some exceptions.

> **Caution Note: If the unit shows signs of internal corrosion or the filter shows evidence of contamination, the unit must be rebuilt, regardless of the IP.**

(6) The regulator will require rebuilding if small bubbles are leaking from between the turret retainer and main body, from under the rubber cap, or out of the high-pressure seat retainer. Knowledge of flooding of the first stage will also require the unit to be rebuilt. Even fresh water contains dissolved minerals and other materials that, over time, may cause the regulator to malfunction.

(7) After the IP has been checked, hoses and regulator body inspected, and SPG evaluated, the service of the first stage can take place.

4. First Stage Disassembly

(1) Additional tips for performing disassembly of the FIRST Regulator can be found in our video at:

https://www.youtube.com/watch?v=O_Wj3oy2rC4

(2) Ensure the system is depressurized. Document the position of all hoses, port plugs and the Over Pressure Valve (OPV). The use of small, clean containers to hold parts is recommended.

(3) In the following steps, the part numbers from the schematic will be used with their description. The numbers on the photos also correspond with the parts list on the schematic. Items in the service kits are identified in the same way, with some differences, which are noted on the schematic. Have the schematic in front of you while following the instructions. Be sure to keep all old parts organized and separate from new ones in the service kit. The old washers and O-rings marked with an asterisk (*) will be replaced with new ones from the service kit and the remaining parts will be cleaned and reused.

1. Note the position of all hoses and port plugs (10, 12) with O-rings (11*, 13*). Remove the (OPV) - Fig. 4.

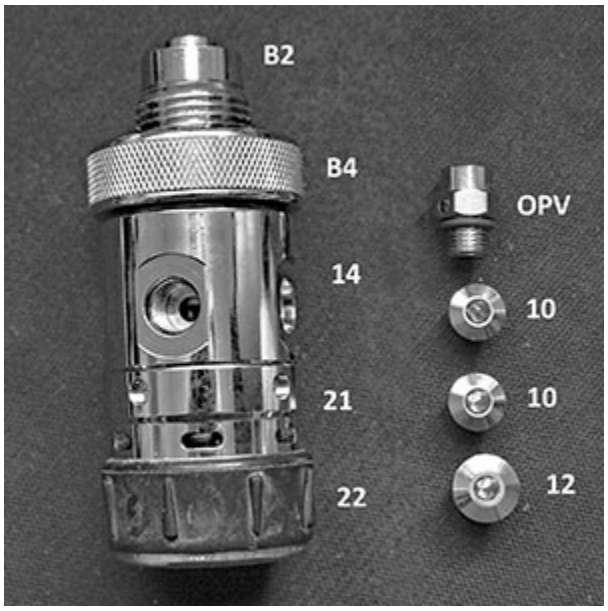


Fig. 4

2. Using a brass pick, work it under the Plastic Cap (22) - Fig. 5 and remove it - Fig. 6.

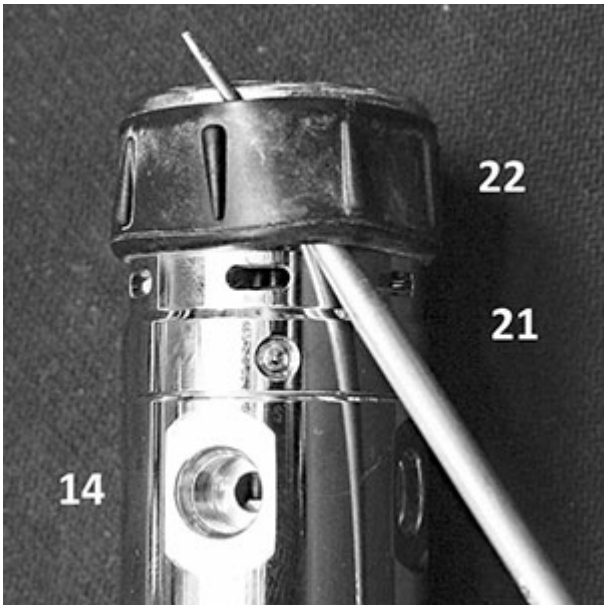


Fig. 5

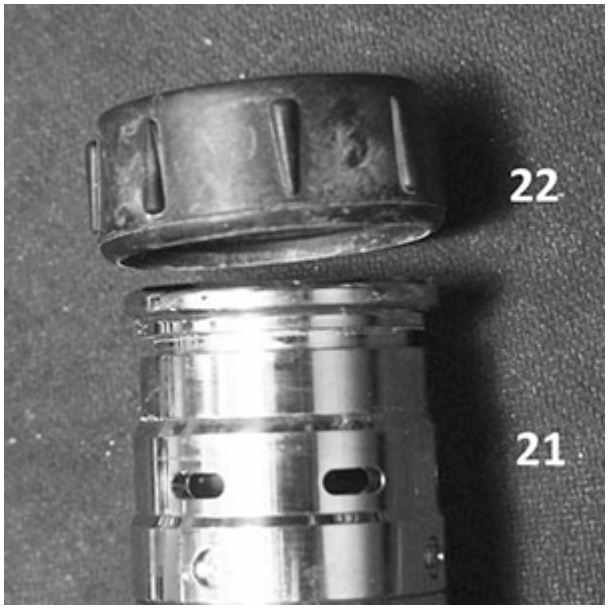


Fig. 6

3. Attach the First Stage Body Holding Tool to the regulator and secure the tool in a vise, DIN side up - Fig.7. In this orientation, you will remove the DIN Retainer (B2) and the DIN Knob (B4).

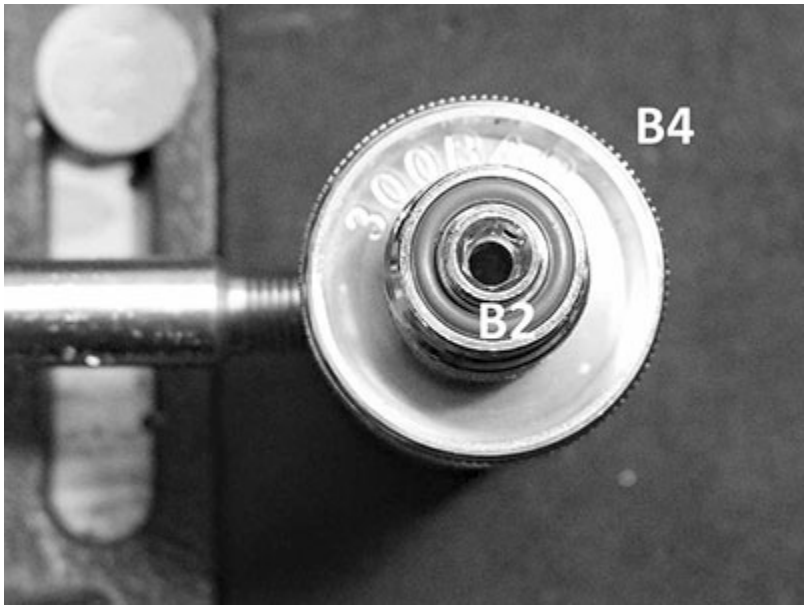


Fig. 7

4. Using the 6mm hex, remove the DIN Retainer - Fig. 8. This exposes the DIN Filter (B5*). Lift the DIN Knob off and use the 19mm deep socket or a 19mm wrench to remove the DIN Housing (B7) - Fig. 9.

Fig. 8

Fig. 9

5. Remove the O- ring (B8*) from the DIN Housing, the DIN Retainer O-rings (B1*, B3*), and remove the DIN Filter and its O-ring (B6*) from the DIN Housing - Fig. 10.

Fig. 10

6. Remove the holding tool from the vise and, using a 1.5 inch or adjustable pin spanner, loosen the Lower Body (21) from the Upper Body (14) - Fig. 11. Laying the regulator flat on the rubber pad and using even steady pressure will reduce the risk of damaging the Lower Body due to the spanner slipping.

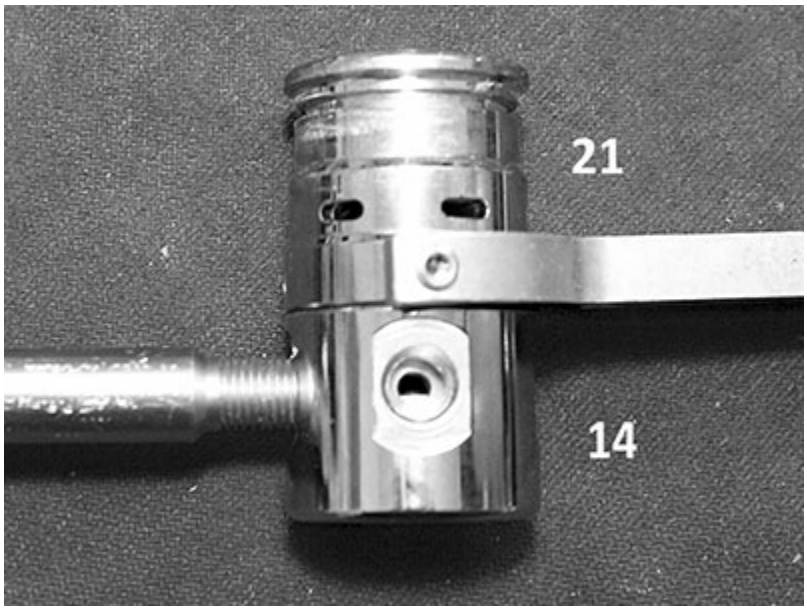


Fig. 11

7. Once it has been loosened, unscrew the two parts until a gap is seen. Be aware that there is significant spring pressure between the two parts - Fig. 12.

Fig. 12

8. Unscrew the Upper and Lower Bodies to reveal the Spring (16), Piston (19), and Washers (15). Note that one Washer is under the Spring - Fig. 13.

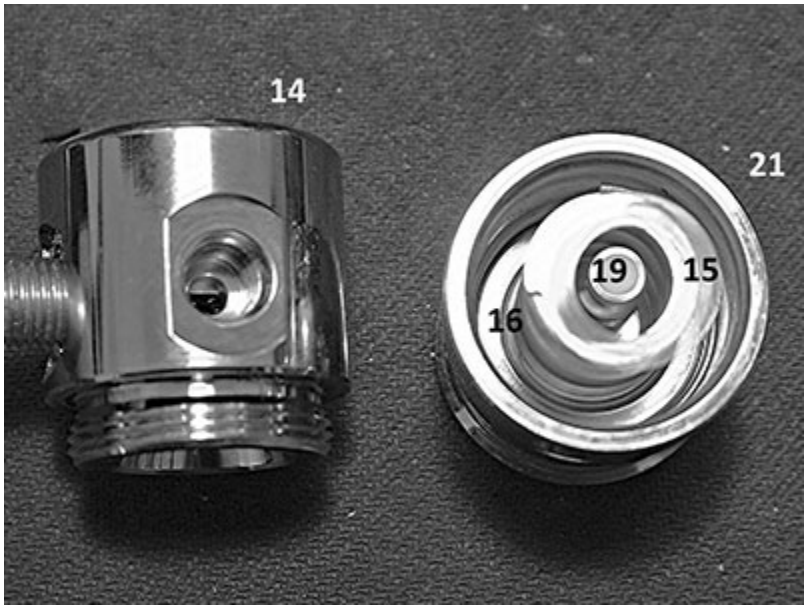


Fig. 13

9. Lift the Washer (15), Piston (19), Spring (16), and Washer (15) from the Body (21) - Fig. 14.

Fig. 14

10. Using a 1.27mm hex key, push the HP seat (17*) from the end of the piston. Then using the pinch method, remove the O-ring (20*) from the end of the Piston - Figs. 15 and 16. Using a thin brass pick, carefully remove the O-ring (18*) from the piston shaft. This O-ring is quite stiff and may break upon removal.

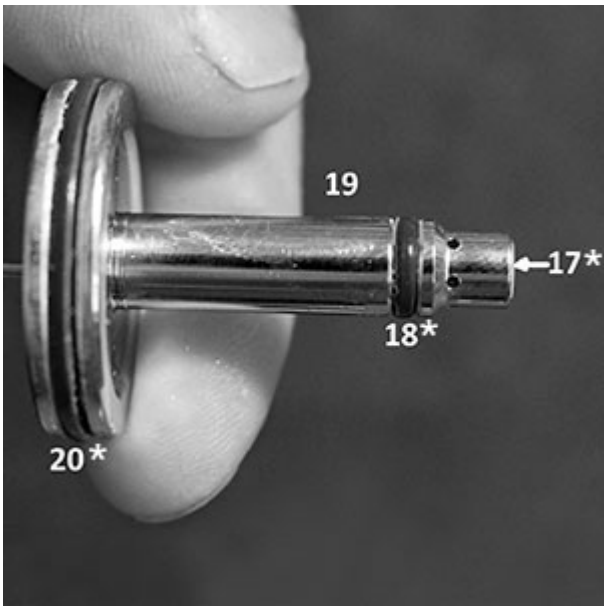


Fig. 15

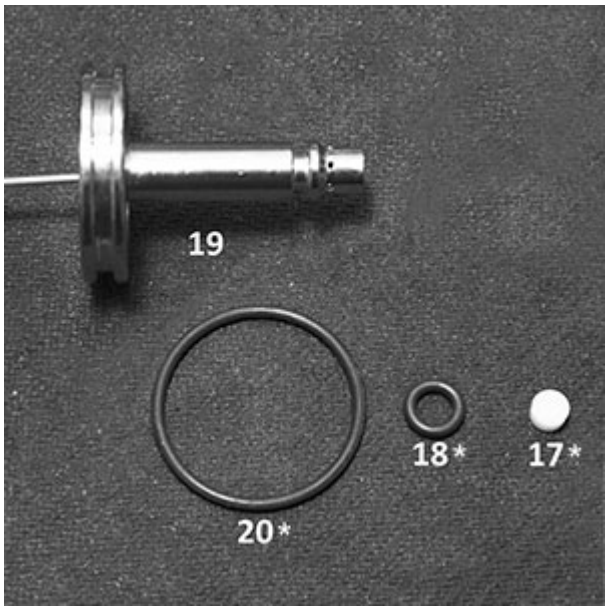


Fig. 16

11. **This step is optional. Ideally, when the regulator is serviced, the OPV should be replaced.** However, if the OPV is not to be replaced, unscrew the Spring Holder (O8) from the OPV Body (O7) using a 3mm hex. Remove the O-ring (11) and take the Spring (O9) and Bullet (OP10) out of the Body. Carefully separate the Bullet from the Spring. The Bullet and O-ring are discarded and replaced. This AS-011x70° O-ring is not included in the Service Parts Kit - Fig. 17.

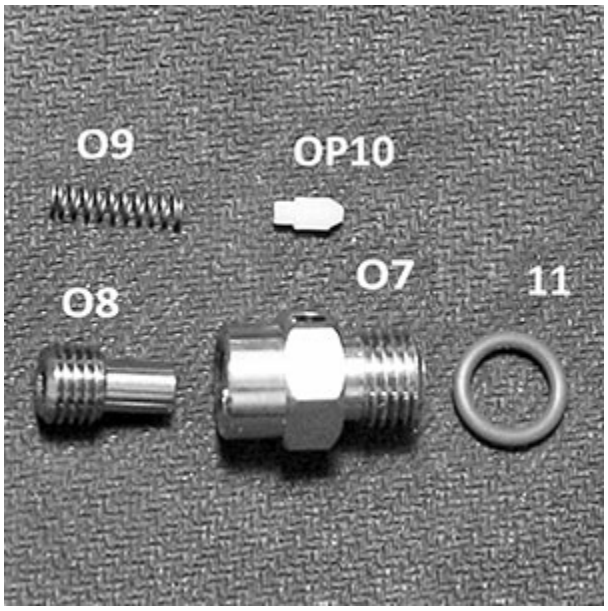


Fig. 17

This completes the disassembly of the FIRST Regulator.

(4) The photographs below show the disassembled first stage - Fig. 18 and First Stage Service Parts Kit - Fig. 19. All the parts not in the service kit need to be washed, rinsed and dried, as discussed previously. O-rings and washers that will be replaced with new from the service kit should be discarded.

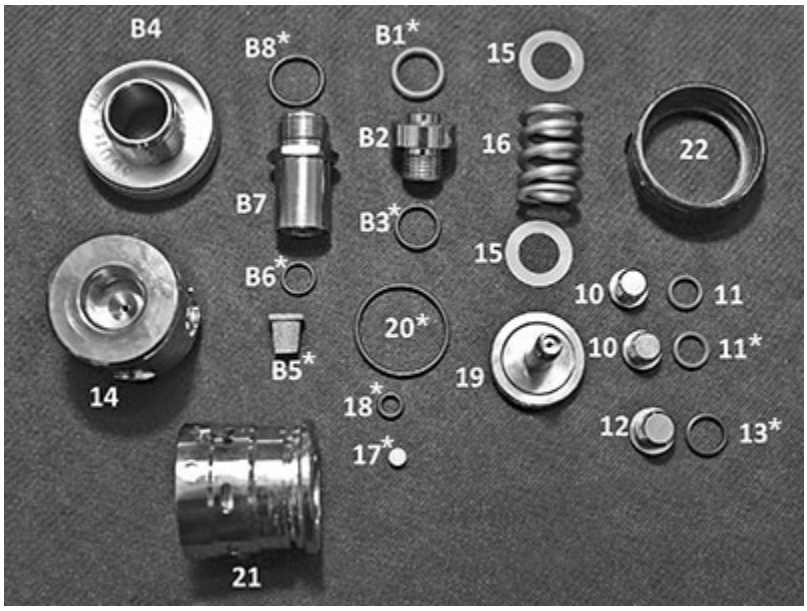


Fig. 18

Fig. 19

5. Regulator First Stage Assembly

(1) Additional tips for performing reassembly of the FIRST Regulator can be found in our video at:

https://www.youtube.com/watch?v=AVL7WdVFFLc

(2) Before starting the assembly of the second stage, complete a thorough inspection of all parts to be reused. Refer to the Overview Inspection section for details. At this time, open the service kit and lay out the parts. Use the schematic to identify each part. The service parts kit includes one low-pressure O-ring (11*) for use on the OPV included with most packages, plus one high-pressure O-ring (13*) for use on the SPG included with most packages. Additional LP or HP O-rings are not included and should be supplied as needed from your bench consumables.

Caution Note: Only use enough lubricant to lightly coat the O-rings and ensure no debris is trapped on them.

1. The first step in the assembly of the now cleaned first stage is to lubricate and install the O-ring (20*) on the Piston (19) - Fig. 20.

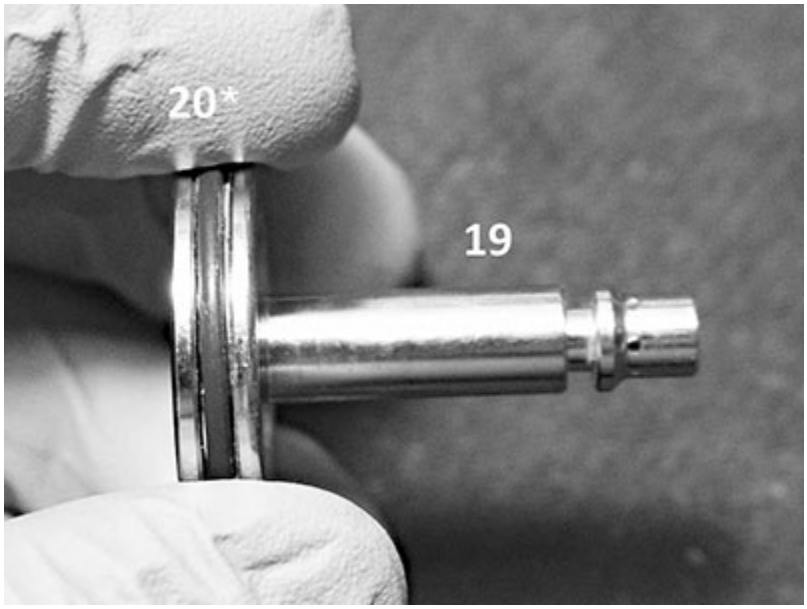


Fig. 20

2. Next, lubricate and install the O-ring (18*) on the Piston, being careful to not damage it on the edge of the Piston - Fig. 21. Ensure the O-ring is seated in the groove - Fig. 22.

Fig. 21

Fig. 22

3. Install the HP Seat (17*) at the end of the Piston - Fig. 23. Use the end of a wooden or plastic dowel to ensure the HP Seat is flat in the opening - Fig. 24. Set this assembly aside.

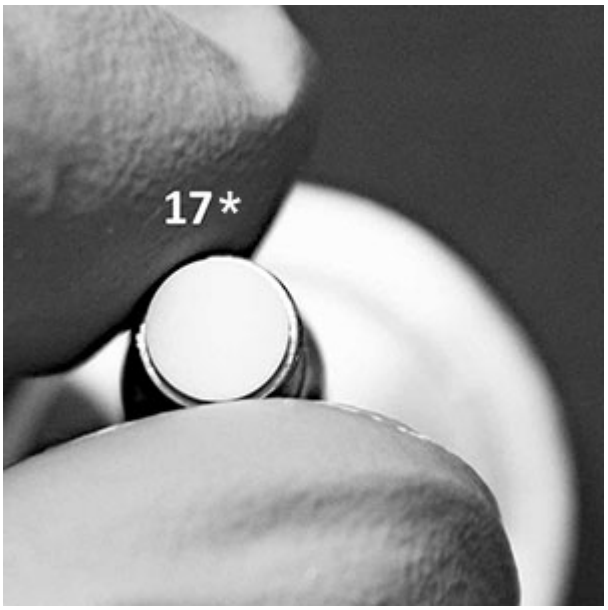


Fig. 23

Fig. 24

4. Install the Plastic Cap (22) on the Lower Body (21) - Fig. 25.

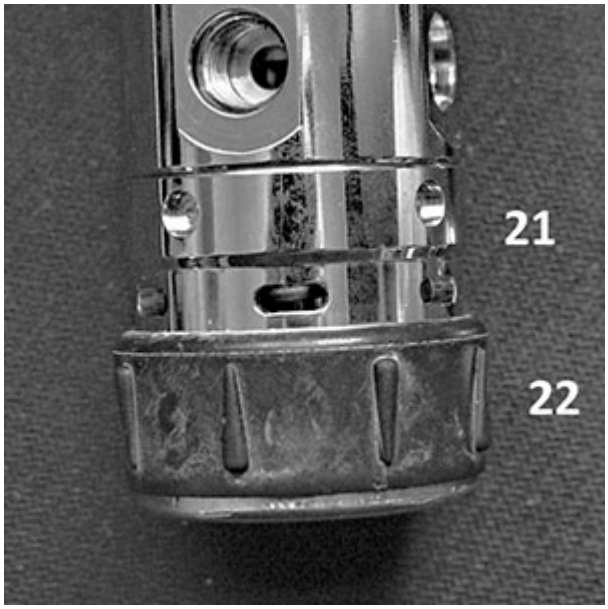


Fig. 25

5. Place the assembled Piston into the Lower Body, making sure not to damage the O-ring (20*) - Fig. 26.

Fig. 26

6. Stack the Washer (15), Spring (16), and Washer (15) on the Piston - Figs. 27 and 28.

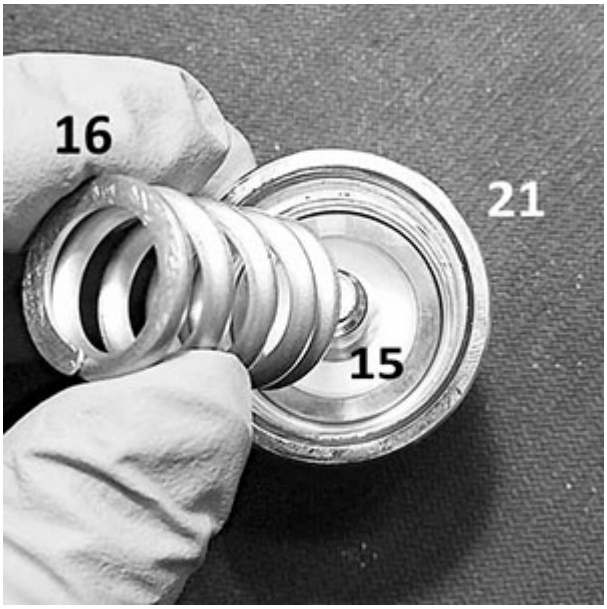


Fig. 27

Fig. 28

7. With the Lower Body and Piston assembly held firmly on a flat surface, screw the Upper Body (14) onto the assembly - Fig 29.

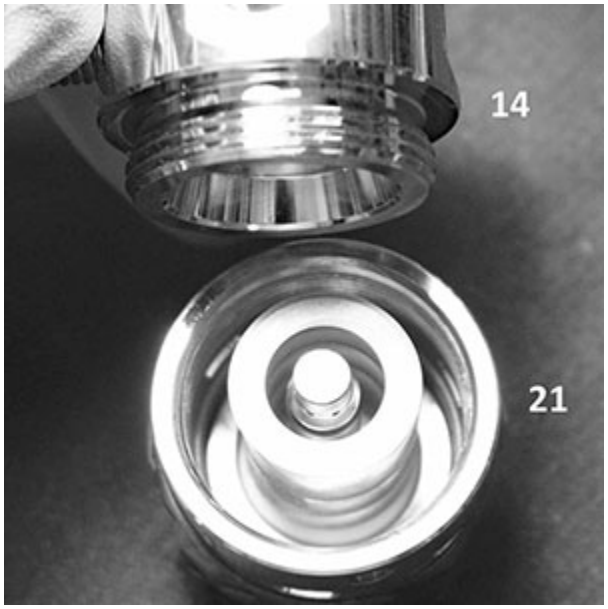


Fig. 29

Caution Note: The amount of spring tension here is significant. Having the Lower Body held firmly on a flat surface will aid in overcoming the tension and reduce the risk of the top Washer being dislodged from its place atop the Spring and falling into the side of the opening.

8. Screw the Upper Body onto the assembly so that the threads are firmly engaged and install the first stage handle into one of the ports - Fig. 30. Tighten the parts together by hand until no gap is seen - Fig. 31.

Fig. 30


Fig. 31

9. Using the pin spanner and first stage handle, tighten the body connection. There is no torque specification for this. Make sure it is snug. The easiest way to do this is to lay the assembly down on the rubber pad and use steady, even pressure until no movement is felt - Fig. 32. Set the assembly aside.


Fig. 32

10. Install the unlubricated O-ring (B6*) onto the Filter (B5*) as shown - Fig. 33. Insert the Filter into the DIN Housing (B7) - Fig. 34. Place the O-ring (B8*) on the DIN housing - Fig. 35.

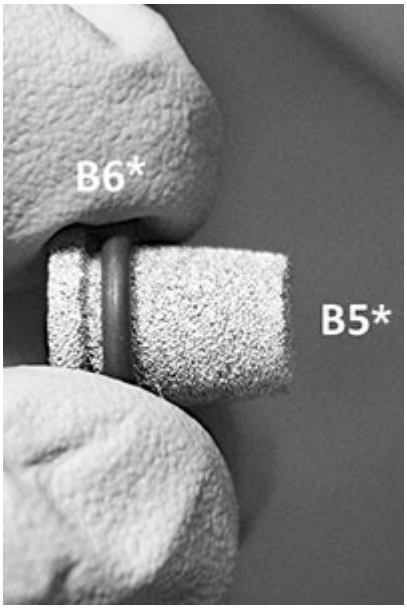


Fig. 33

Fig. 34

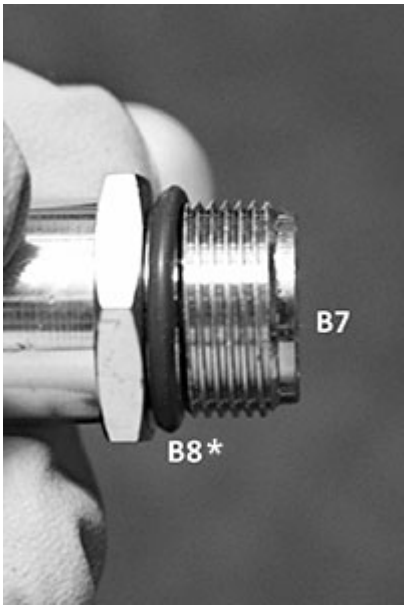


Fig. 35

11. Clamp the regulator with the air inlet side up in the vise using the first stage handle. Screw the DIN Housing into the Upper Body - Fig. 36, and torque this to 260 in-lbs/300 kgf-cm/30 N·m - Fig. 37.

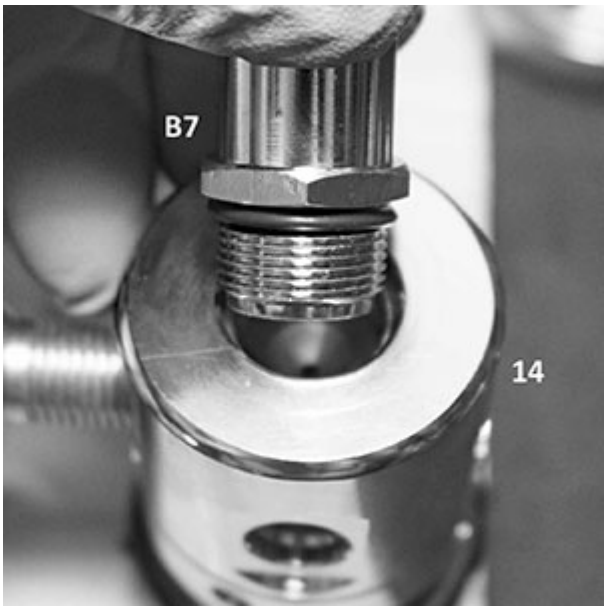


Fig. 36

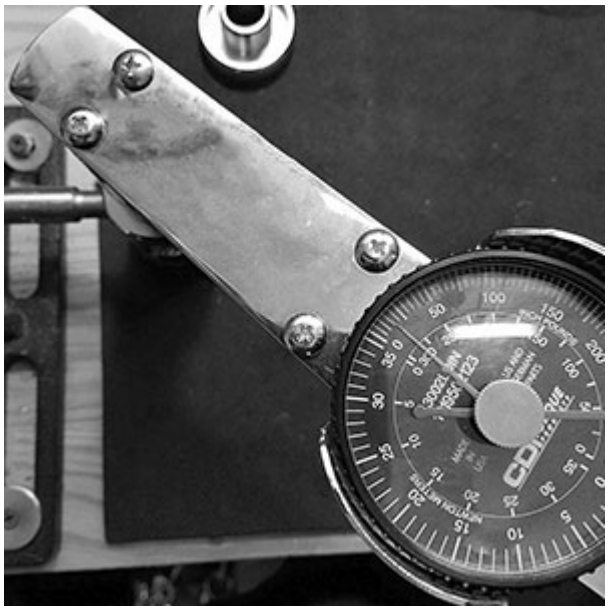


Fig. 37

Caution Note: The hex head on the DIN Housing is thin. Be sure the socket or crowfoot is held securely to prevent it from slipping and damaging the hex surfaces.

12. Place the O-ring (B3*) on the DIN Retainer (B2) and the O-ring (B1*) into its groove - Fig. 38. Place the DIN Knob on the DIN Housing. Screw the DIN Retainer into the DIN Housing - Fig. 39.

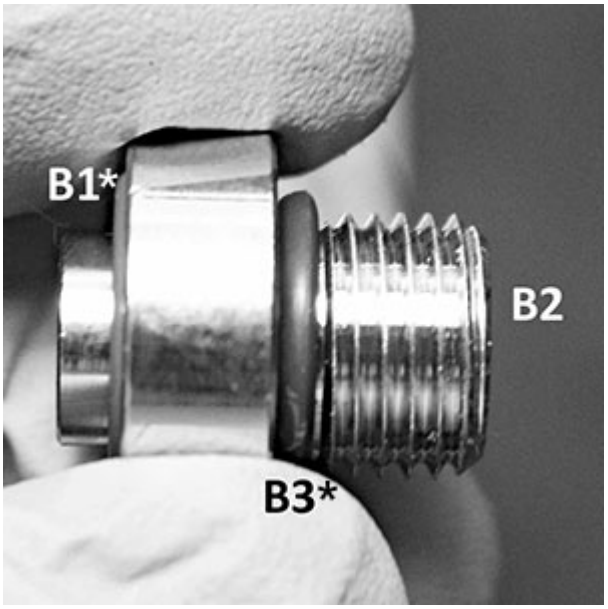


Fig. 38

Fig. 39

13. Torque the DIN Retainer to 150 in-lbs/170 kgf-cm/17 N·m using the 6mm hex - Fig. 40.


Fig. 40

Caution Note: Note that the differences in torque for the DIN Housing and DIN Retainer are necessary for the two to avoid becoming seized. If the specified torques are not used, and the assembly does become seized, the entire assembly can loosen and cause a catastrophic loss of gas. Loosening of the DIN Retainer is most often caused by pressurizing the regulator on a cylinder and then trying to orient the regulator for desired hose routing. Only orient the regulator when the cylinder valve is off and pressure bled from the first stage.

14. Reinstall the required hoses, port plugs, and if not using a second stage regulator, the Over Pressure Valve (OPV) - Fig. 41.

Fig. 41

15. **This step is optional. Ideally, when the regulator is serviced, the OPV should be replaced.** If the OPV is not being replaced and servicing is required, use the Bullet (O10) from the service kit. Place the new Bullet into the Spring (O9), screw the assembly in flush in the OPV Housing (O7) - Fig. 42. Use another adjustable first stage set to 140 psi intermediate pressure to calibrate the setting of the OPV, then install it into the first stage. Calibrate it to begin to release at 140 psi then turn it an extra 1/4 turn - Fig. 43.

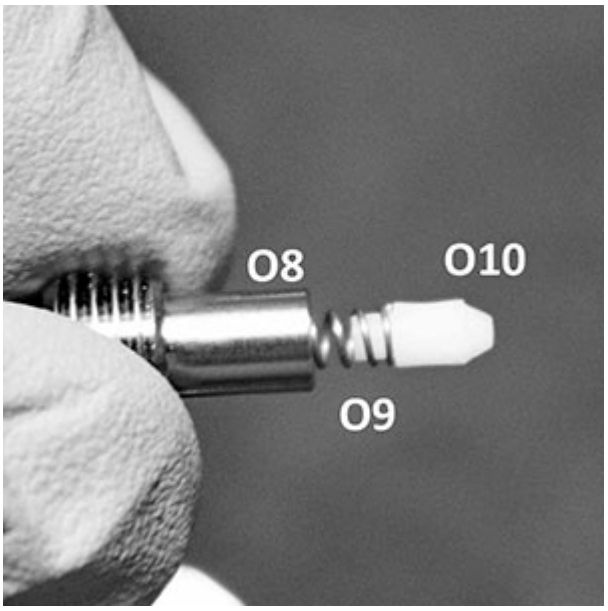


Fig.42

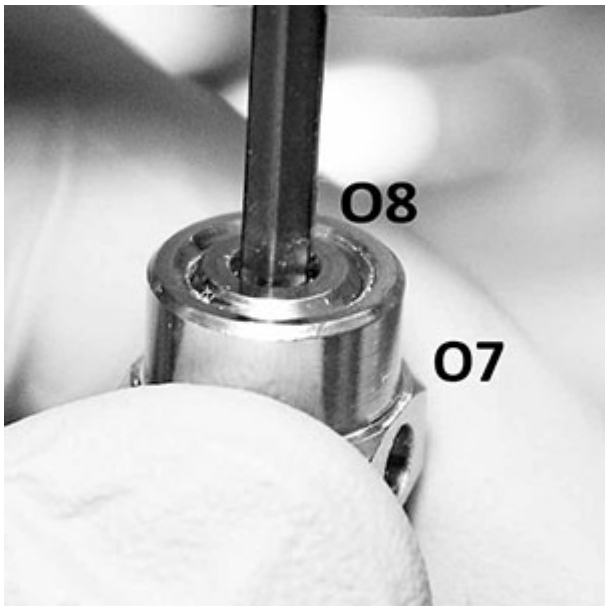


Fig. 43

Caution Note: Failure to properly calibrate the OPV may result in a loss of gas or damage to the inflator mechanism on the device being used (BCD, Drysuit, etc.). It is recommended to only rebuild the OPV if absolutely necessary. It should be replaced at annual service.

This completes the assembly of the FIRST Regulator.

First Stage Torque Specifications

(3) For a successful rebuild, it is necessary to use proper torque on all connections that require it. The following specifications should be used, listed in the order they occur in the assembly:

DIN Housing (B7) to Upper Body (14)	260 in-lbs/300 kgf-cm/30 N·m
DIN Retainer (B2) to DIN Housing (B7)	150 in-lbs/170 kgf-cm/17 N·m
Port Plugs (10, 12)	35 in-lbs/40 kgf-cm/4 N·m

6. First Stage Testing

(1) To test the first stage, a regulated breathing air supply, OCA Grade Source, if the regulator is to be used with Nitrox, or several SCUBA cylinders are needed. **It is also necessary to use a second stage for testing the regulator even if it is only used as an inflator regulator.** If using a regulated supply, set the initial supply to 500 psi. If using cylinders, 3 are recommended with 500 psi, 1500 psi, and 3000 psi levels. You will need to move the regulator between the cylinders, and each time it is pressurized, be sure to have the purge button depressed slightly and allow the supply pressure to come up with this safety measure used. A transfill whip like the one from Dive Gear Express will make setting up the cylinders easier.

https://www.divegearexpress.com/dgx-transfill-hose-with-analog-gauge

(2) Attach a second stage with a hose with an in-line tool/IP gauge combination, or a second stage with a hose and a low pressure inflator hose with plug-in IP gauge. With the supply set to 500 psi, slowly pressurize the regulator while slightly purging the second stage to act as a safety.

(3) Allow the second stage to slightly flow and release the purge button slowly. Observe the IP. It should come up to 120 psi +/- 5 psi and stay at that reading. Breathe the second stage or depress purge button 25 to 50 times. Observe the IP. It should drop slightly, 5-10 psi, on each purge, then come back up. If the IP goes above 145 psi and continues to climb, shut off the air supply and purge the regulator to avoid damaging it.

> **Caution Note: If the Intermediate Pressure (IP) goes over the recommended level and continues to climb, an issue with the regulator is indicated. It could be an issue with the HP seat, the sealing surface between an O-ring and another component, a damaged volcano, or a missing component. The regulator will need to be disassembled, inspected carefully, and rebuilt again. It cannot be tested further with an improper IP.**

(4) If the IP is stable, listen for any leaks. If none are noted, the testing can continue.

(5) Next, increase the supply to 1500 psi and repeat the procedure. Observe the IP and ensure that it is not creeping. It may change a few psi as the seat and the piston edge begins to develop a groove. This is normal and does not indicate a problem.

(6) Now increase the supply pressure to 3000 psi and repeat the procedure as before. The IP should be higher than at 500 psi. It should be steady and show no signs of creep or drop below the recommended range. Finally, take the first stage with the second stage and LP inflator hose and place it on a cylinder that can be submerged in water. Submerge the first stage and check for any leaks between the body sections, DIN connection, port plugs, and hose connections, and if none are present, the first stage service and testing is complete. Static IP at all tank pressures must be between 115 and 145 psi.

> **Caution Note: Do not submerge the second stage with the in-line tool attached or with the plug-in IP gauge on the low pressure inflator. They are made for surface use only and submerging them may result in damage to the tool or gauge!**

(7)General Trouble Shooting – Not all possibilities may be noted.

No airflow	Check supply pressure
Free Flowing	Excessive IP; HP Seat bad; piston edge damaged
Excessive IP	Bad HP seat; HP Seat or Piston O-ring (s) bad
Leaks between seams on body	Bad O-rings; excessive IP; body/end caps damaged; dirt introduced during a rebuild; body sections not properly tightened

B2 Torque: 150 in lbs
170 kgf cm/17 Nm

B7 Torque: 260 in lbs
300 kgf cm/30 Nm

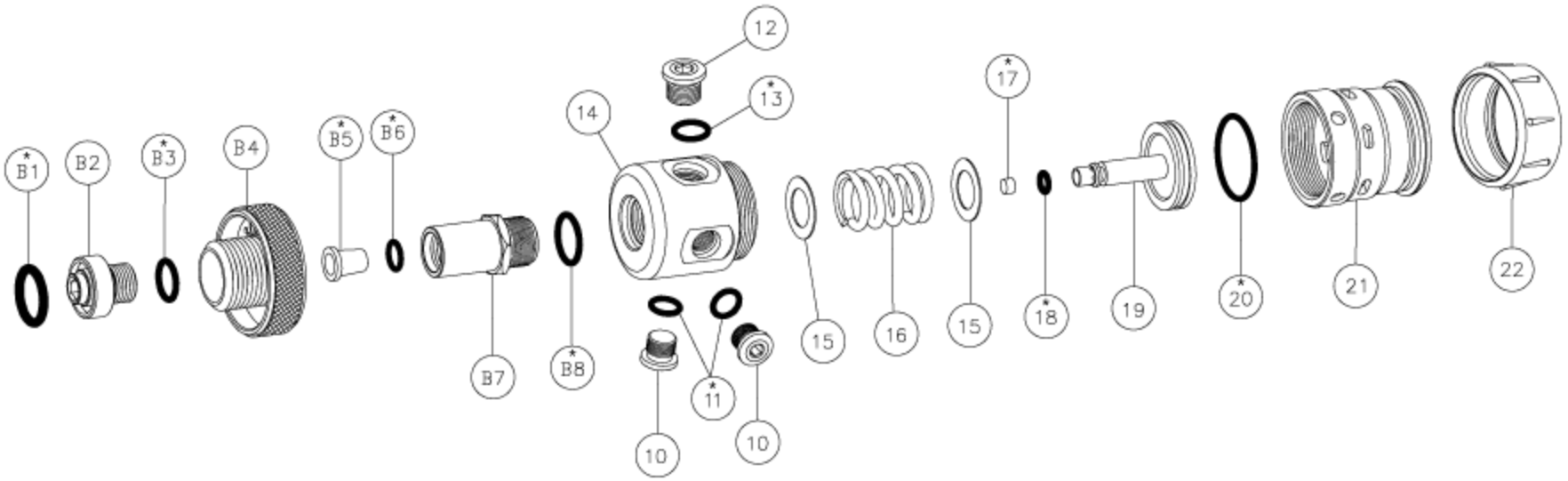
10, 12 Torque: 35 in lbs
40 kgf cm/4 Nm

Item	Description	Qty	Item	Description	Qty	Item	Description	Qty
B1/#2*	AS-112x90°	1	B8/#21*	AS-015x90°	1	16	Spring	1
B2	DIN Retainer	1	10	LP Plug	2	17*	HP Seat	1
B3/#4*	AS-013x90°	1	11/#12*	AS-011x70°	1	18*	AS-008x90°	1
B4	DIN Knob	1	12	HP Plug	1	19	Piston	1
B5*	DIN Filter	1	13/#14*	AS-012x90°	1	20/#16*	AS-020x70°	1
B6*	S-8x70°	1	14	Upper Body	1	21	Lower Body	1
B7	DIN Housing	1	15	Washer	2	22	Plastic Cap	1

Note: Items marked with * are included in service parts kit to be replaced at time of service; #s indicate service parts kit labels, where different.

DGX GEARS FIRST REGULATOR

DX-701022A



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