
I stage R2 ICE
DIN / YOKE 1st STAGE REGULATOR

Service and Repair Manual

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INTRODUCTION

Scubatech regulators are the products of many years of research and development. Scubatech has utilized proven materials and design to maximize reliability and performance. This manual is intended only as a guide for the experienced repair person that has completed a Scubatech service and repair seminar. It is not intended to educate inexperienced repair personnel or the consumer in all aspects of Scubatech regulator repair. Scubatech repair seminars are available periodically to Scubatech Dealers. Servicing and repair at the repair shop level mainly involves cleaning, inspection, adjustment, and replacement of worn parts.

If you have any questions on any of the procedures, inspections, or tests, please contact Scubatech Sp. Z O.O.:

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SAFETY PRECAUTIONS

This manual provides step by step instructions for the disassembly, inspection, cleaning, reassembly, and testing of the Scubatech R2 I've first stage regulator. It is recommended that all steps are followed in the order given. Read each section completely PRIOR to beginning work described in that section. This will familiarize the repair technician with important precautions to take during each service procedure. Pay close attention to all WARNINGS, CAUTIONS, and NOTES that are intended to draw your attention to items of importance.

Definition of Warnings, Cautions, and Notes:

GENERAL PROCEDURES

1. MAINTENANCE SCHEDULES

Regulators are subjected to a variety of environmental elements that over time can affect the performance of the product. As an Scubatech Dealer you are advised to inform your staff and customer that Scubatech regulator require complete servicing at least once a year. Under certain circumstances a complete servicing is required every 3-6 months. Some of these circumstances are:

- I. Frequent or improper use
- II. Inadequate routine fresh water rinsing
- III. Regulator use in dirty or polluted waters
- IV. Rental use
- V. Regular use in chlorinated (pool) water

Recommended maintenance schedules are based on average use under normal conditions and assume that recommended preventative maintenance and storage procedures have been followed as outlined in the Scubatech owner's manuals. Advise the customer that any adjustments or servicing on Scubatech regulators must be performed by Scubatech, or by an Scubatech Dealer that has attended a Scubatech service seminar.

2. INITIAL INSPECTION AND PRE-TEST

Prior to beginning the servicing of the regulator, a preliminary inspection and pre-test of the entire breathing system is recommended. This will help the repair technician identify any problems that may affect the first stage. Preliminary inspection should include:

a. First stage inlet filter

If the first stage inlet filter is discolored, the entire regulator should be completely serviced. Deposits of rust (red powder) or aluminum oxide (gray powder) on the filter may indicate that water has entered the SCUBA cylinder and caused internal cylinder corrosion. The customer should be notified that their SCUBA cylinder(s) may be in need of visual inspection, cleaning and testing. Advise your customers to regularly inspect the inlet filter for any discoloration or corrosion.

b. High pressure (HP) and Lower pressure (LP) hoses

Inspect the hoses carefully for any evidence of cracking, tearing, or excessive abrasion of the outer rubber covering. Remove all of the hose protectors and examine the area around the metal fittings for any damage to the hose. Inspect the fittings for signs of excessive corrosion.

Indicates a procedure or situation that may result in serious injury or death for either the technician or the user if instructions are not followed correctly.

Indicates any situation or technique that may result in potential damage to the product, or render the product unsafe if instructions are not followed correctly. Is used to emphasize important points and tips. Scubatech Regulator Service and Repair Manual

c. All chrome plated parts

Inspect for any excessive corrosion indicating weak or absent chrome plating. Also look for any signs of peeling or flaking of the chrome plating.

d. Regulator pre-test

A regulator pre-test should include all tests outlined in the test section for each regulator. A pre-test will assist the technician in determining if there are any specific performance deficiencies not mentioned by the customer.

INFREQUENTLY USED REGULATORS

Do not assume that the regulator is in good condition because of infrequent use or because it has been in storage. Deterioration of the O-rings and corrosion can still occur under these circumstances.

WORK AREA & REQUIRED TOOLS

Servicing and repair of the regulator should be carried out in a clean well lighted work area. As each regulator is disassembled all parts should be kept separate from parts of other regulators. Some special tools are required for proper disassembly and reassembly. Please see Table 1 (page 5) for a list of these tools.

O-RING REMOVAL

When removing O-rings, care must be taken to not damage the regulator surfaces in contact with the O-rings. Tools used to remove O-rings must not have any sharp edges or points that could scratch metal sealing surfaces. Scubatech recommends that all O-ring removal tools should be made of either brass or plastic.

LUBRICATION

O-rings should be lubricated with an approved compound (please refer to Table 2 for proper lubricants). O-rings should be lubricated only with a very light film of grease. Do not use spray (aerosol) lubricants under any circumstances. The aerosol propellant may damage the plastic and rubber components of the regulator, and the lubricant will quickly evaporate, providing little or no lasting benefit.

TABLE 1**RECOMMENDED TOOLS - R2 FIRST STAGE**

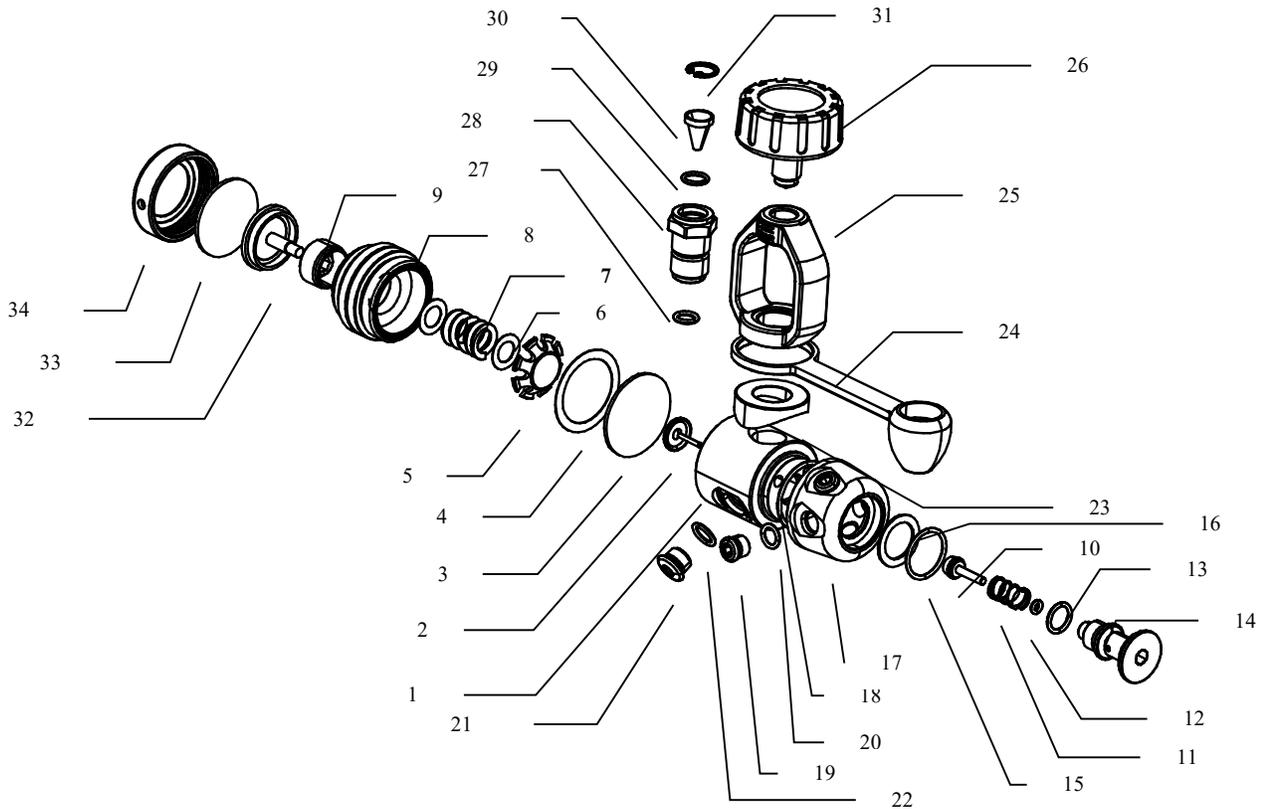
Scubatech PART NO.	DESCRIPTION	Application
FS-02	Spanner for 1 st stage Regulator Cap Adjustment "C-Spanner"	Removal/installation of body cap
FX-01	First stage holding Fixture	Constrain of regulator body
KIT-1002 ,YOKE ICE / YOKE/ DIN ICE/ DIN	Service kit for R2 YOKE ICE / YOKE/ DIN ICE/ DIN	Maintenance for regular type
N/A	3 mm Allen key	Removal/installation of LP Plug
N/A	13/16 longer hex socket	Removal/installation of DIN Housing
N/A	4mm Allen key	Removal/installation of HP plugs
N/A	19mm Hex Socket with extension tube(1/2 Female to 3/8 male)	Removal/installation of DIN/ YOKE retainer
N/A	O-Ring Pick Tool	Removal/installation of O-ring
FS-03	6mm Allen key for torque wrench	Removal/installation of Balanced Plug/ DIN retainer
N/A	Magnifier w/ illumination	Sealing surface inspection
N/A	0-40 Nm torque wrench	Torque setting
P-92	Inline adjusting tool with IP gauge	Measure the IP, adjust Orifice
N/A	0-10 Nm torque wrench	Torque setting

TABLE 2**LUBRICANT AND CLEANER****Lubricant / Cleaner Recommended Type Application Source**

Scubatech PART NO.	DESCRIPTION	Application
N/A	Christo-Lube® MCG-111	Compatible for all Material O-Ring
N/A	DOW CORNING, 111; Silicone grease	Only for NBR O-Ring
N/A	Crystal Simple Green	Industry Cleaner
	Chrome safe	Clean the oxidized brass

TABLE 3

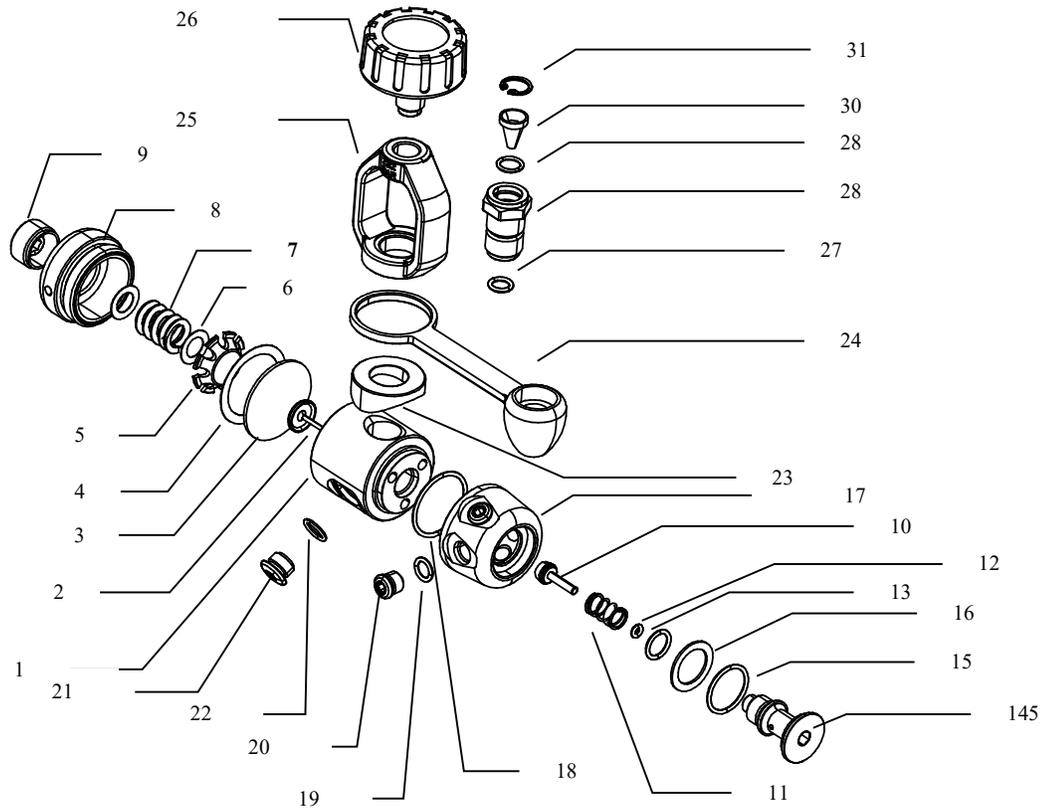
R2 YOKE ICE Schematic Drawing and DESCRIPTIONS



- | | | |
|-----------------------|---------------------|-----------------------------|
| 1. Main Body | 13. O-Ring -013 | 25. YOKE 232 Bar |
| 2. Lifter | 14. Balanced Barrel | 26. YOKE Knob |
| 3. Diaphragm | 15. O-Ring -019 | 27. O-Ring – 011 |
| 4. Diaphragm Washer | 16. Barrel Washer | 28. Yoke Retainer |
| 5. Spring Carrier | 17. Swivel Cap | 29. Filter |
| 6. Main Spring Washer | 18. O-Ring -023 | 30. O-Ring –EKM 9.0x 1.5 |
| 7. Main Spring | 19. LP Plug | 31. C-Clip (Retainer Ring) |
| 8. Diaphragm Clamping | 20. O-Ring -011 | 32. Transmitter |
| 9. Adjusting Nut | 21. HP Plug | 33. Environment Disk |
| 10. HP Seat | 22. O-Ring -012 | 34. Environment Cap |
| 11. Balanced Spring | 23. DIN/YOKE Saddle | |
| 12. O-Ring -006 | 24. Dust Cap | |

TABLE 4

R2 YOKE Schematic Drawing and DESCRIPTIONS

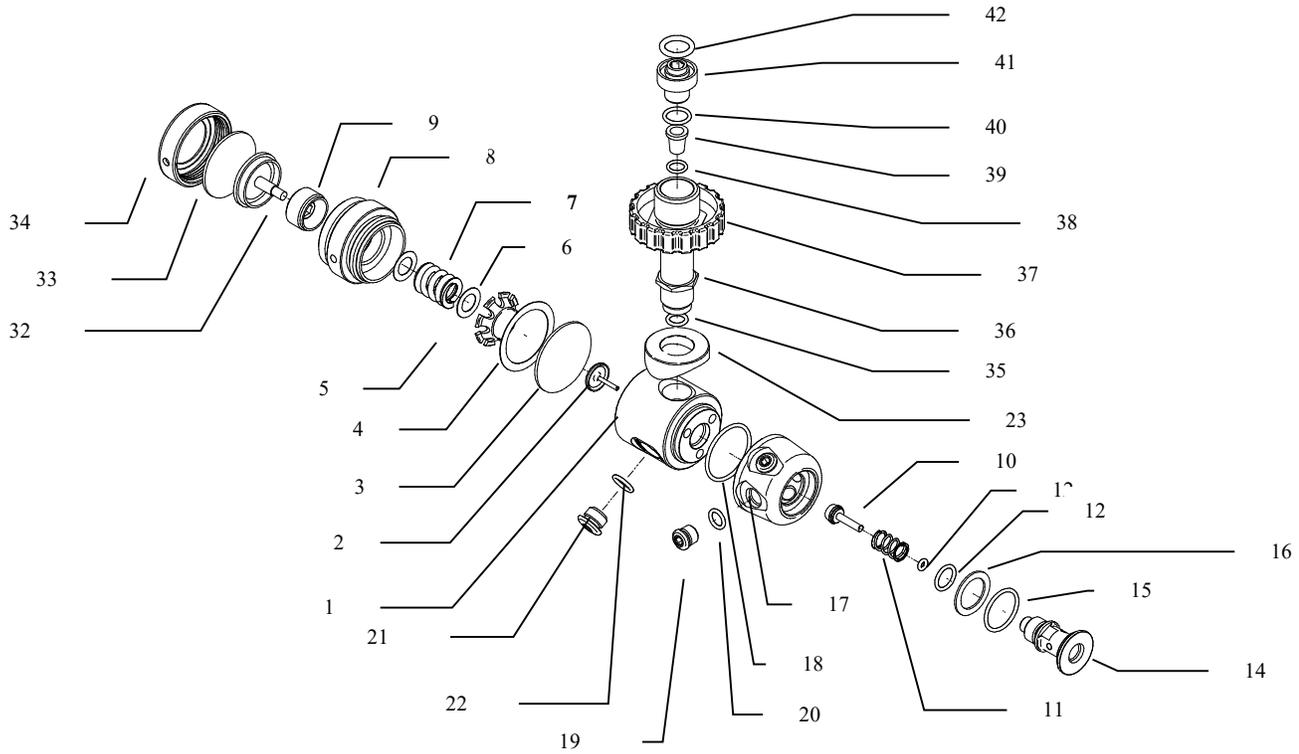


- 1. Main Body
- 2. Lifter
- 3. Diaphragm
- 4. Diaphragm Washer
- 5. Spring Carrier
- 6. Main Spring Washer
- 7. Main Spring
- 8. Diaphragm Clamping
- 9. Adjusting Nut
- 10. HP Seat
- 11. Balanced Spring
- 12. O-Ring -006

- 13. O-Ring -013
- 14. Balanced Barrel
- 15. O-Ring -019
- 16. Barrel Washer
- 17. Swivel Cap
- 18. O-Ring -023
- 19. LP Plug
- 20. O-Ring -011
- 21. HP Plug
- 22. O-Ring -012
- 23. DIN/YOKE Saddle
- 24. Dust Cap

- 25. YOKE 232 Bar
- 26. YOKE Knob
- 27. O-Ring - 011
- 28. Yoke Retainer
- 29. Filter
- 30. O-Ring -EKM 9.0x 1.5
- 31. C-Clip (Retainer Ring)

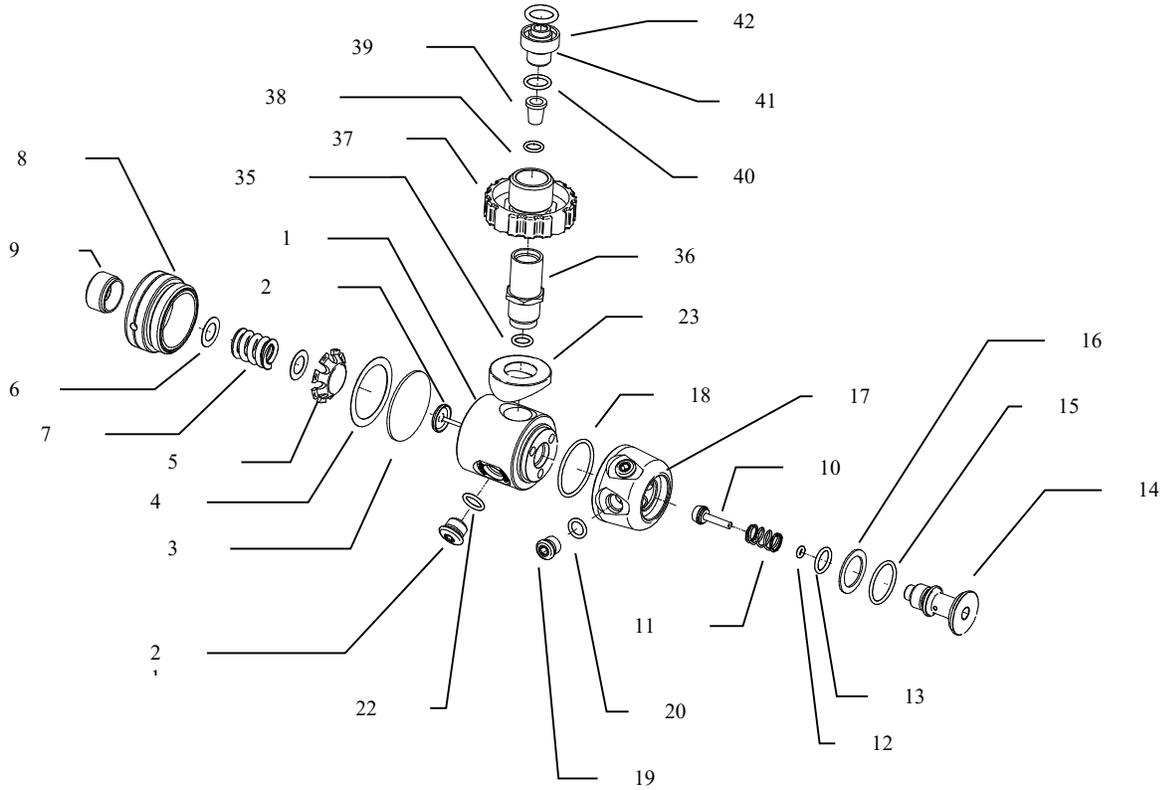
R2 DIN ICE Schematic Drawing and DESCRIPTIONS



- | | | |
|-----------------------|---------------------|--------------------------|
| 1. Main Body | 13. O-Ring -013 | 33. Environment Disk |
| 2. Lifter | 14. Balanced Barrel | 34. Environment Cap |
| 3. Diaphragm | 15. O-Ring -019 | 35. O-Ring - 011 |
| 4. Diaphragm Washer | 16. Barrel Washer | 36. DIN Housing |
| 5. Spring Carrier | 17. Swivel Cap | 37. DIN Wheel |
| 6. Main Spring Washer | 18. O-Ring -023 | 38. O-Ring -EKM 9.0x 1.5 |
| 7. Main Spring | 19. LP Plug | 39. DIN Filter |
| 8. Diaphragm Clamping | 20. O-Ring -011 | 40. O-Ring -013 |
| 9. Adjusting Nut | 21. HP Plug | 41. DIN Retainer |
| 10. HP Seat | 22. O-Ring -012 | 42. O-Ring - 112 |
| 11. Balanced Spring | 23. DIN/YOKE Saddle | |
| 12. O-Ring -006 | 32. Transmitter | |

TABLE 6

R2 DIN Schematic Drawing and DESCRIPTIONS



- | | | |
|-----------------------|---------------------|--------------------------|
| 1. Main Body | 13. O-Ring -013 | 36. DIN Housing |
| 2. Lifter | 14. Balanced Barrel | 37. DIN Wheel |
| 3. Diaphragm | 15. O-Ring -019 | 38. O-Ring –EKM 9.0x 1.5 |
| 4. Diaphragm Washer | 16. Barrel Washer | 39. DIN Filter |
| 5. Spring Carrier | 17. Swivel Cap | 40. O-Ring -013 |
| 6. Main Spring Washer | 18. O-Ring -023 | 41. DIN Retainer |
| 7. Main Spring | 19. LP Plug | 42. O-Ring - 112 |
| 8. Diaphragm Clamping | 20. O-Ring -011 | |
| 9. Adjusting Nut | 21. HP Plug | |
| 10. HP Seat | 22. O-Ring -012 | |
| 11. Balanced Spring | 23. DIN/YOKE Saddle | |
| 12. O-Ring -006 | 35. O-Ring – 011 | |

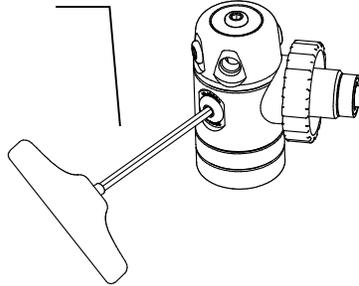
R2, 1st STAGE DETAIL DISASSEMBLY STEP

Before disassembling the first stage, remove the low pressure second stage hoses with wrench adjustable, and the low pressure inflator hose with wrench adjustable. Remove the high pressure hose with a wrench adjustable. Remove and discard the O-rings from the male fittings of each hose. Pre work: Remove High Pressure Plug (HP Plug) and Lower Pressure Plug(LP Plug) in advance.

I.

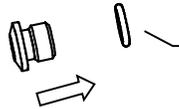
Apply 4mm Allen Key into HP/LP Plug and turn Counter-clockwise to remove from Main Body.

Apply 4mm Allen Key into HP/LP Plug and turn Counter-clockwise to remove



II.

Use O-Ring pick tool to remove O-Ring from HP/LP Plug and discard.



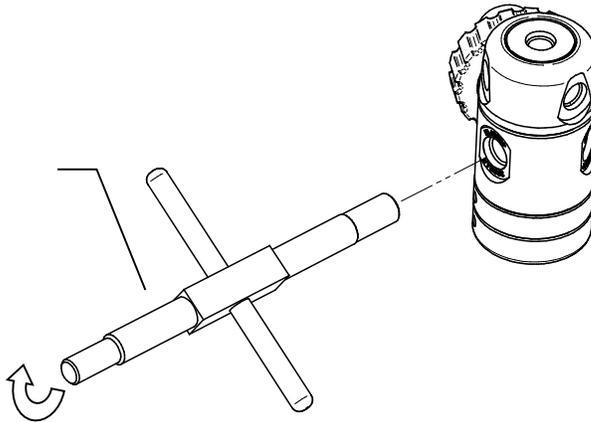
Use O-Ring pick tool to remove O-Ring from HP/LP Plug and discard.

III.

Set All HP/LP Plugs aside for cleaning procedure.

STEP 1: Install the FX-01 into the HP port of the Main Body

Turn the Clockwise to install the FX-01



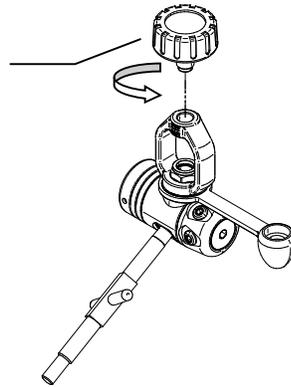
Apply the 7/16" thread end of FX-01 into the main body. The thread must full into the thread of the Main Body.

STEP 2 Removing YOKE Retainer form Main Body.

2.1

Remove the YOKE Knob

Turn the Counter-Clockwise to loosen and separate the Knob



2.1.2

Use Torque Wrench with Hex socket to disassemble the Yoke Retainer.

2.1.2.1

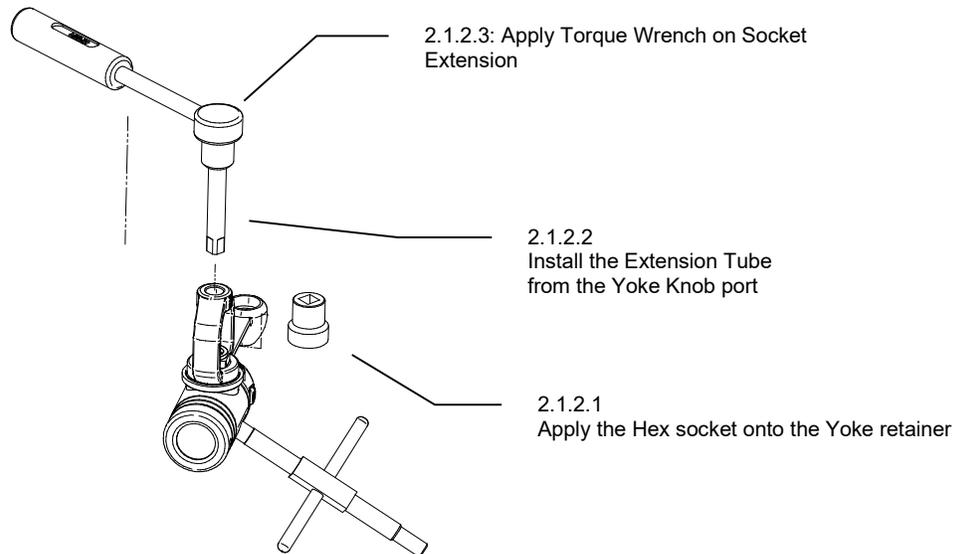
Apply 19mm Hex socket onto the Yoke Retainer.

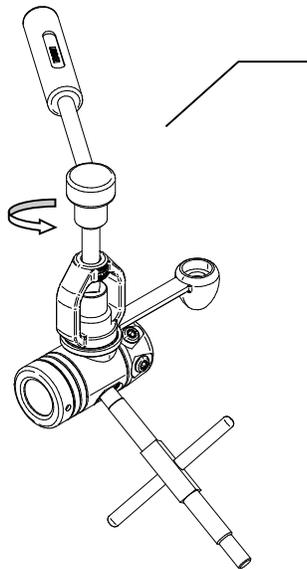
2.1.2.2

Install the Extension Tube from Yoke Knob port.

2.1.2.3

Apply Torque Wrench on Socket Extension and Turn Counter-clockwise to loosen the Yoke Retainer.

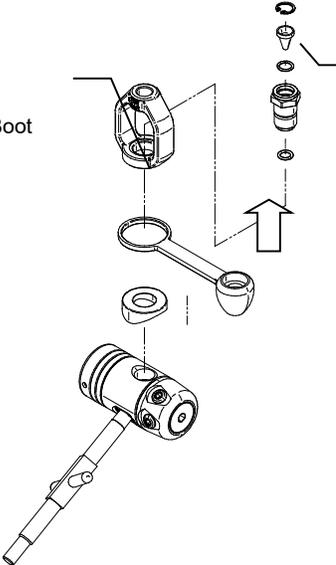




2.1.2.3: Turn Counter-clockwise to loosen the Yoke Retainer.

2.1.3 Separate the Yoke, Dust Cap and Yoke boot from Main Body.

2.1.5 Set Yoke Knob, Yoke, Yoke Retainer, Dust Cap and Yoke Boot aside for cleaning procedure.



2.1.4 Separate the Filter and O-Ring from Yoke Retainer and discard.

2.1.4 Separate the C-Clip, Filter and O-Ring from Yoke Retainer and discard.

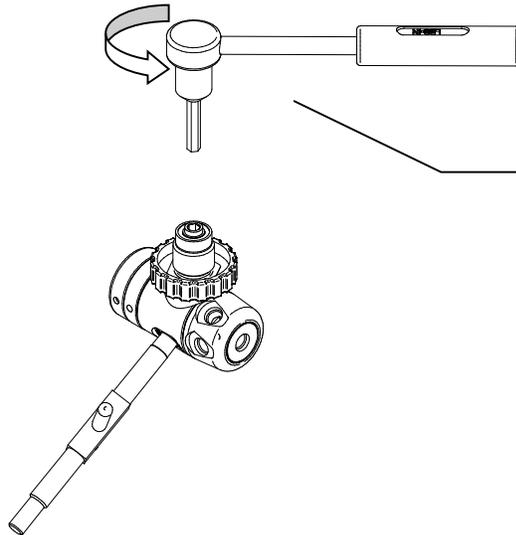
2.1.5 Set Yoke Knob, Yoke 232 bar, Yoke Retainer, Dust Cap and Yoke Boot aside for cleaning procedure.

STEP 2.2 Disassemble of DIN wheel:

2.2.1 Remove the DIN Retainer

2.2.1.1

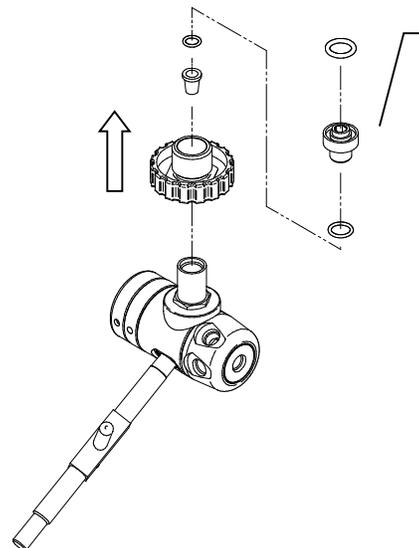
Apply a 6mm hex key to the DIN Retainer, and turn counter-clockwise to loosen and remove.



2.2.1.1 Apply a 6mm hex key to the din retainer (#35), and turn counter-clockwise to loosen and remove.

2.2.1.2

Separate the O-Ring, DIN Filter from DIN Retainer and discard, remove the DIN Wheel and Dust Cap from DIN Housing and set aside.



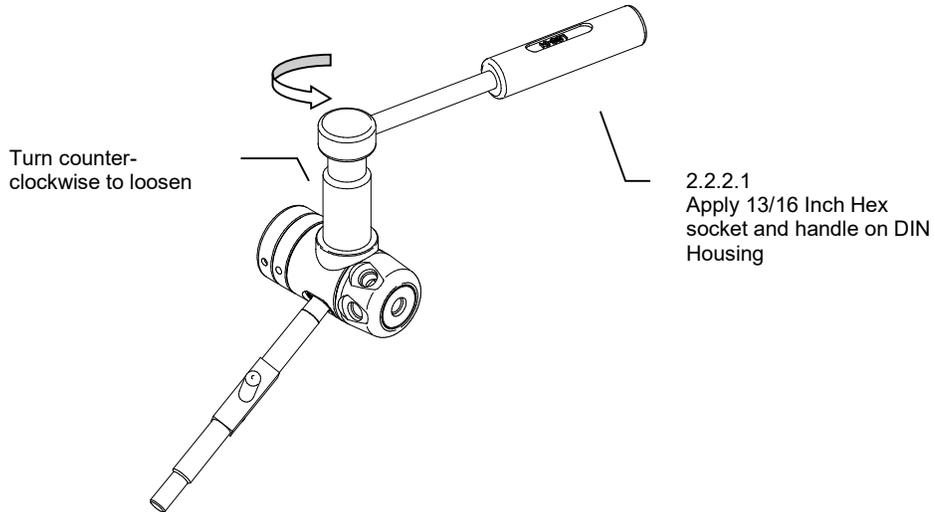
Separate the O-Ring, DIN Filter from DIN Retainer and discard, remove the DIN Wheel and Dust Cap from DIN Housing and set aside.

2.2.2

Disassemble the DIN Housing.

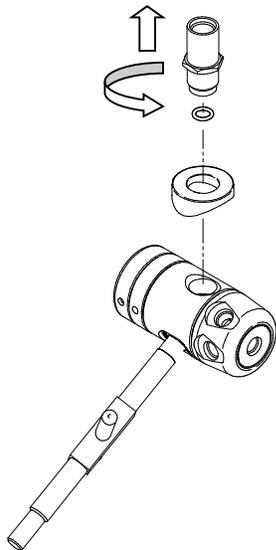
2.2.2.1

Apply 13/16 Inch Hex socket and handle on DIN Housing, turn counter-clockwise to loosen and separate the DIN Housing and saddle.



2.2.2.2

Remove the O-Ring from DIN Housing and discard.



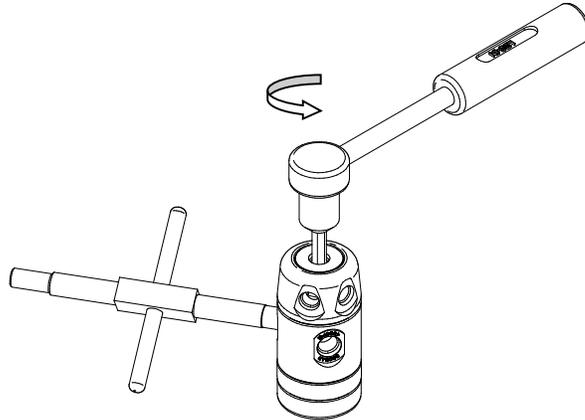
2.2.2.3

Set DIN Housing and Saddle aside for next cleaning procedure.

STEP 3: Disassemble the Balanced Barrel

3.1

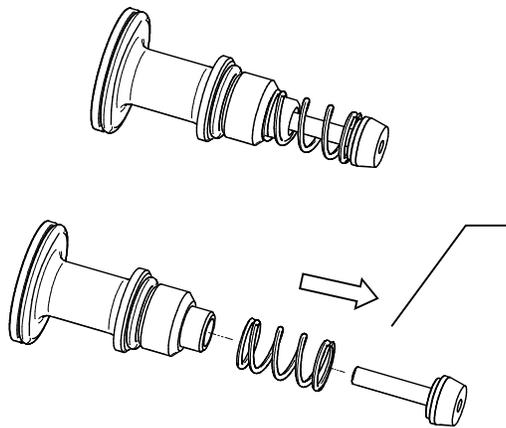
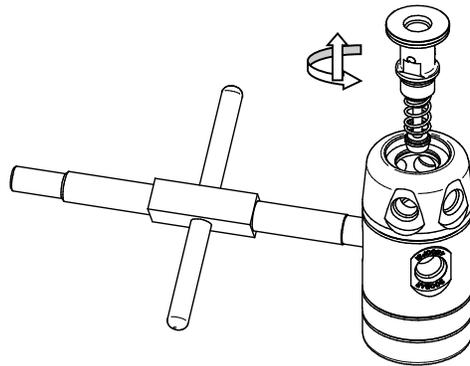
Apply 6mm Allen Key into Balance Barrel and turn Counter-clockwise to loosen the Balanced Barrel.



3.2

3.2.1

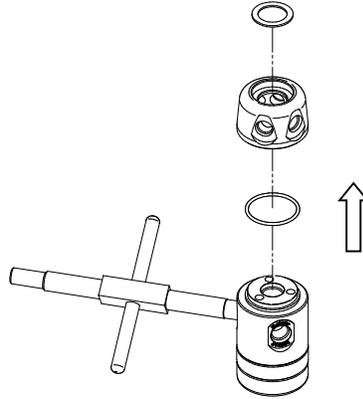
After loosen the Balanced Barrel, separate the Balanced Plug, Balanced Spring and HP seat from Main Body, set Balanced Spring aside and discard the HP seat.



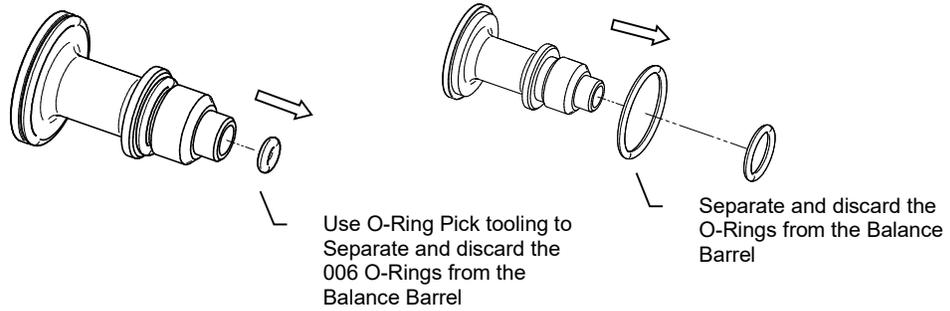
Separate the Balanced Spring and HP seat from Balanced Barrel

3.2.2

Separate the Barrel washer, Swivel Cap and 023 O-Ring from Main Body, set Swivel Cap aside and discard the O-Ring.



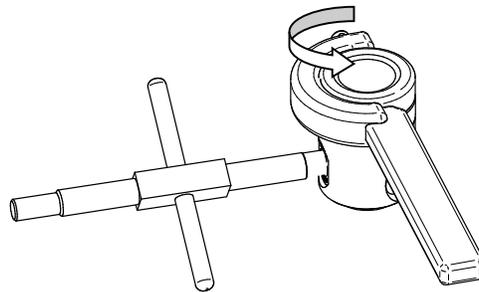
3.3 Use O-Ring pick tool to separate and discard the O-Rings from the Balanced Plug. Set Balanced Plug aside.



STEP 4: Disassemble the Env. Cap (Environment Cap)-ICE Model only

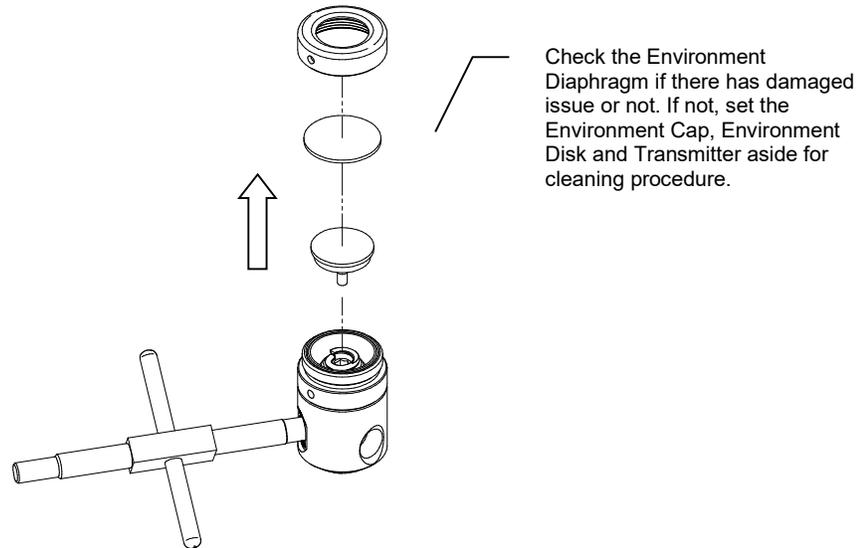
4.1

Apply C-spanner onto the Environment Cap and turn Counter-clockwise to loosen the Env. Cap.



4.2

Separate the Environment Cap, Environment Disk and Transmitter from 1st regulator.



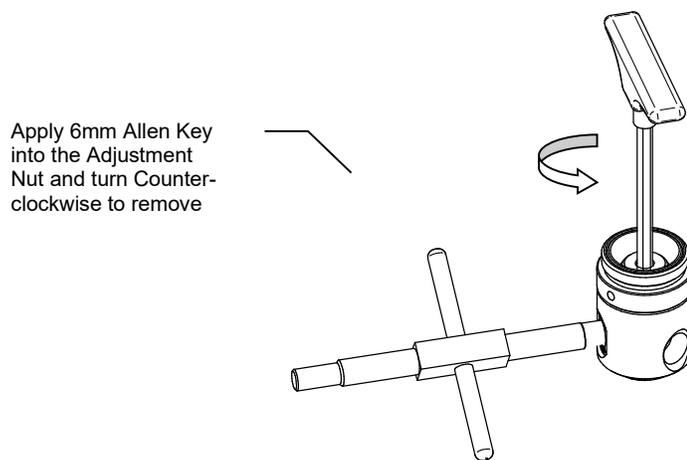
4.3

Check the Environment Diaphragm if there has damaged issue or not. If not, set the Environment Cap, Environment Disk and Transmitter aside for cleaning procedure.

STEP 5: Disassemble Diaphragm Clamping, Diaphragm and Lifter.

5.1

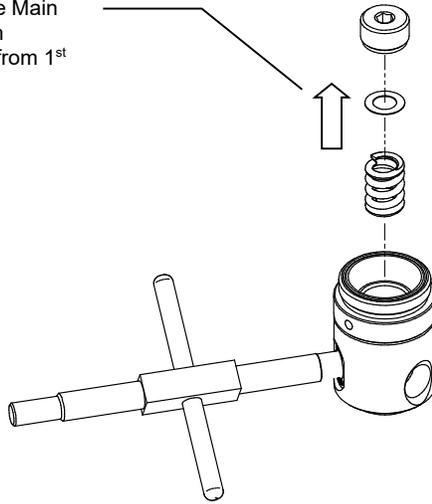
Apply 6mm Allen Key into the Adjustment Nut and turn Counter-clockwise to remove the Adjustment Nut from Diaphragm.



5.2

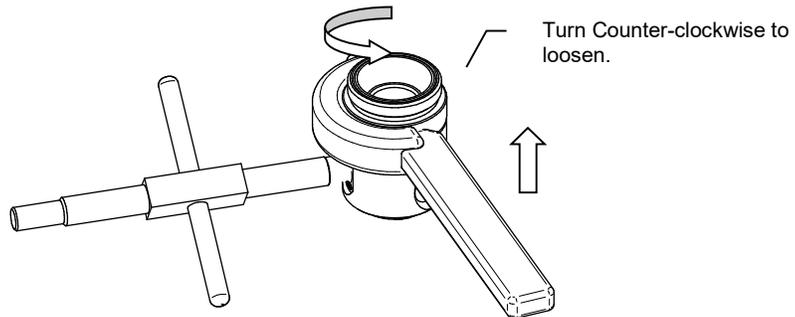
Separate the Main Spring and Main Spring Washer from 1st regulator.

5.2 Separate the Main Spring and Main Spring Washer from 1st regulator.

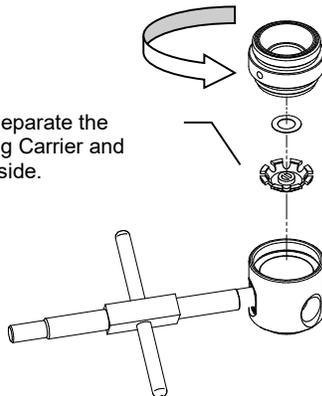


5.3

Apply C-Spanner onto Diaphragm Clamping and turn Counter-clockwise to loosen.



5.4 Separate the Spring Carrier and set aside.



5.4

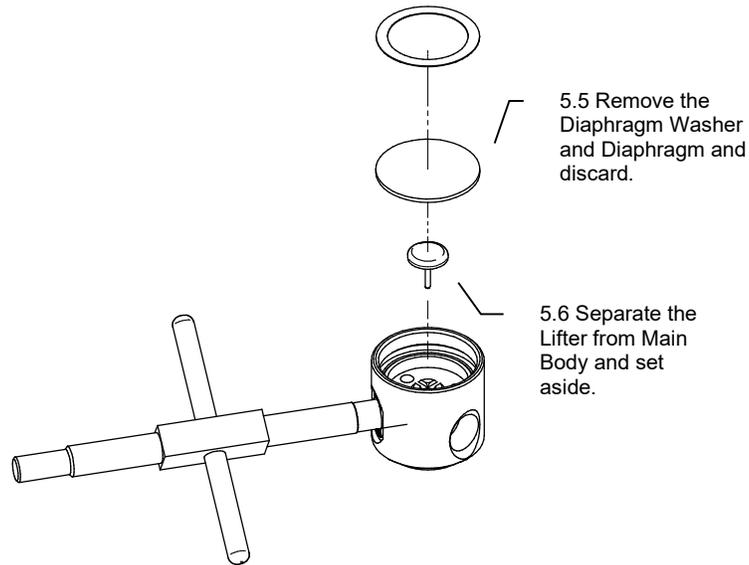
Separate the Spring Carrier and set aside.

5.5

Remove the Diaphragm Washer and Diaphragm and discard.

5.6

Separate the Lifter from Main Body and set aside.



STEP 6: Remove the FX-01 from Main Body.

CLEANING & INSPECTION PROCEDURES

All parts should be cleaned first in a warm (not over 56C) mild soap and water solution. Use a soft nylon bristle brush to help remove any excess or loose contamination. After an initial warm water and soap cleaning all parts should be thoroughly rinsed in clean fresh water and dried with filtered low pressure (2 bar) air. After an initial cleaning in warm soap and water solution, metal parts should be cleaned in an ultrasonic cleaner using the appropriate ultrasonic cleaning solution (see Lubricant and Cleaner Table 2, the Crystal Simple Green cleaner usually use on the Oxygen Clean).

Be sure all O-rings and other rubber or plastic parts are removed before cleaning in an ultrasonic cleaner or chemical bath. Cleaning solutions may damage these components.

If an ultrasonic cleaner is not available, metal parts can be cleaned by soaking the metal parts in a chemical bath solution of Chrome safe (see Lubricant and Cleaner Table 2) and agitating gently for 3-4 minutes. Cleaning of metal parts can also be done by soaking in a mild acetic solution (distilled white household vinegar) for 10-15 minutes. Cleaning times in excess of those

recommended may damage plated parts. Never clean parts for longer than specified by the manufacturer of the solution used. After completion of cleaning in any solution, thoroughly rinse parts with clean fresh water and blow dry with low pressure (2 bar) air. Only brass, plated brass, and stainless steel parts should be immersed in chemical cleaning solutions. Use hand and eye protection when handling chemical cleaning solutions.

After cleaning, all parts should be thoroughly rinsed in fresh water and dried with filtered low pressure (2 bar) air. Before performing any reassembly, it is important to inspect all parts, both new and those that are being reused, to ensure that each part is clean and free of any contamination, corrosion, or blemish.

All O-rings should be replaced at every servicing. New O-rings should be inspected for contamination and/or imperfections, and lightly dressed with a thin film of approved lubricant prior to installation. (See Lubricant and Cleaner, Table 2.) Do not use any petroleum based lubricants or products, or any aerosol silicone sprays on any part of Scubatech regulators. The petroleum base or propellant gas may attack or weaken plastic or rubber parts. Refer to Table 2 for a list of approved lubricants.

In addition to the O-rings, the following parts should be routinely replaced at the time of servicing:

- I. HP Seat
- II. Diaphragm
- III. Conical Filter - YOKE Retainer
- IV. Conical Filter - DIN Connector

All O-rings and the above mentioned routine replacement parts are included in the Overhaul Service Kit (P/N:).

The following parts should be closely inspected for the damage listed below. Close inspection is best accomplished by using strong magnification under bright lighting.

1. Main Body: Inspect all cavities for any nicks, scratches, pitting, or any defects in the plating. Pay particular attention to the sealing edge of the valve cone and the diaphragm seating shoulder.
2. Diaphragm Clamping: Inspect for signs of permanent corrosion, including pitting or cracks in the surface of the metal.
3. Environment Cap: Inspect for signs of permanent corrosion, including pitting or cracks in the surface of the metal.
4. Main Spring: Inspect for signs of permanent corrosion, including pitting or cracks in the surface of the metal.
5. Balanced Spring: Inspect for signs of permanent corrosion, including pitting or cracks in the surface of the metal.
6. Balanced Plug: inspect the interior sealing area and O-ring sealing groove for any nicks, scratches, pitting, or any defect of the chrome plating
7. Lifter: Inspect the interior cavity for any nicks, scratches, pitting.
8. DIN or Yoke Retainer: Examine the condition of the threads and the O-ring

sealing groove at the base for any signs of damage.

9. DIN wheel: Examine the condition of the threads for any signs of damage.

For any of the listed parts show any damage, they must be replaced with new part.

Check all metal parts for excessive wear or corrosion. Check all metal sealing surfaces which make contact with O-rings for any signs of contamination and/or imperfections that may cause leakage past the O-ring seal. Examine all chrome plated surfaces for any evidence of peeling or flaking of the chrome plating. Inspect all threads for galling, cross threading, or damage to the chrome plating. If any parts show damage or excessive wear, they must be replaced with new.

REASSEMBLY PROCEDURES

Before performing any reassembly, it is important to inspect all parts, both new and those that are being reused, to ensure that every part and component is perfectly clean and free of any dust, corrosion, or blemishes. Before dressing each O-ring with Christo-Lube® or DOW CORNING Silicone grease, check to ensure it is clean, supple, and free of any blemish. Use only genuine Scubatech parts, subassemblies, and components whenever assembling any Scubatech product.

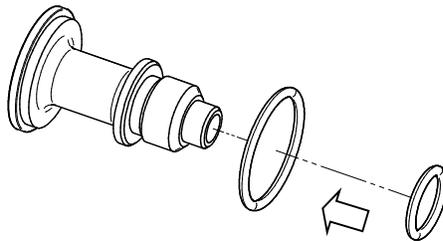
NOTE:

DO NOT attempt to substitute an Scubatech part with another manufacturer's, regardless of any similarity in shape, size, or appearance. Doing so may render the product unsafe, and could result in serious injury or death.

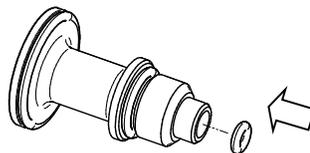
STEP 1

Insert the new dynamic O-Ring of Balance Barrel sub-assembly:

- 1.1 Install the Static -013-O-Ring and -019-O-Ring onto Balanced Barrel.

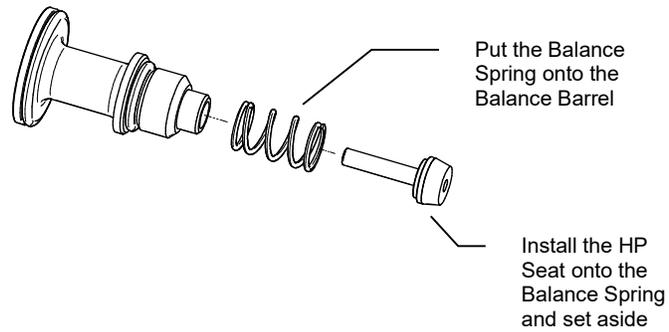


- 1.2 Use the O-Ring pick Tool with ball end to push dynamic -006-O-Ring into Balanced Barrel.



1.3 Put the Balanced Spring onto the Balanced Barrel.

1.4 Install the HP Seat onto the Balanced Spring and set aside.



STEP 2

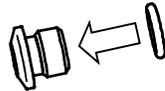
Install O-Ring onto all HP/ LP Plugs

2.1

HP Plug x2

2.2

LP Plug x3

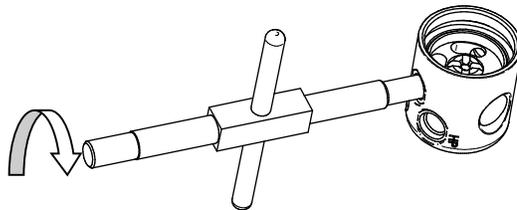


STEP 3

Diaphragm Clamping with Diaphragm assemble

3.1

Install FX-01 on Main Body; make sure the FX-01 thread is full into the Main Body.



3.2

Assemble the Lifter, Diaphragm and Diaphragm Washer into the Main body.

3.2.1

Install the Lifter into the Main Body and make sure the Mushroom feature of Lifter was full in and flat onto the Main Body.

3.2.2

Install the Diaphragm into the under-cut groove of the Main Body. Make sure the Grey side was on the top.

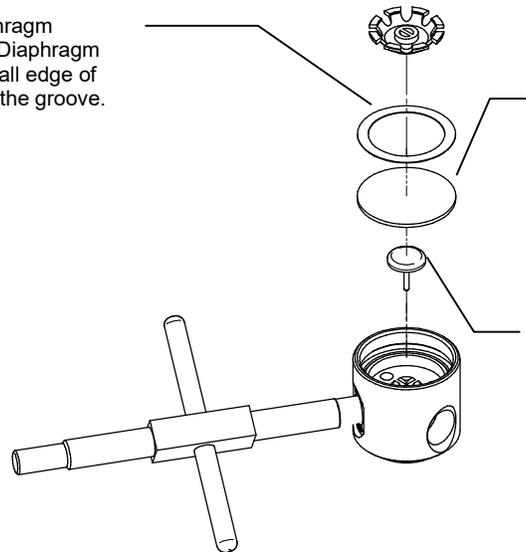
3.2.3

Install the Diaphragm Washer on the Diaphragm and make sure all edge of washer full into the groove.

3.2.4

Put the Spring Carrier on the Diaphragm.

Install the Diaphragm Washer on the Diaphragm and make sure all edge of washer full into the groove.



Install the Diaphragm into the under-cut groove of the Main Body. Make sure the Grey side was on the top

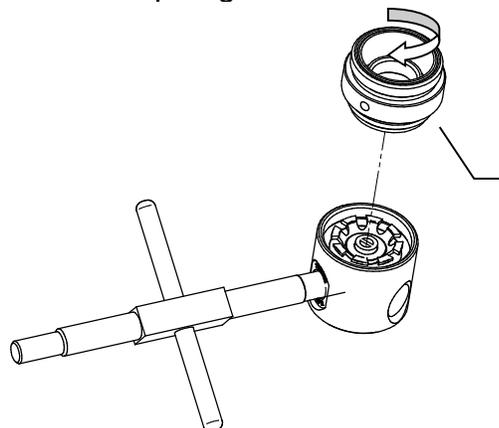
Install the Lifter into the Main Body and make sure the Mushroom feature of Lifter was full in and flat onto the Main Body

3.3

Assemble the Diaphragm Clamping

3.3.1

Turn the Diaphragm Clamping clockwise into Main Body, until feel the Diaphragm Clamping touch the Diaphragm.



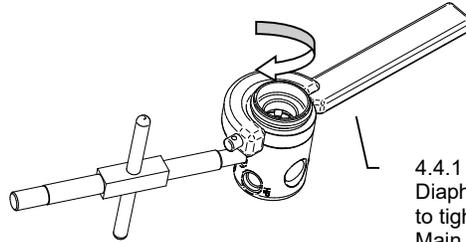
4.3.1 Turn the Diaphragm Clamping clockwise until feel the Diaphragm Clamping touch the Diaphragm.

4.4

Tightening the Diaphragm Clamping.

4.4.1

Apply the C-Snapper on the Diaphragm Clamping and turn clockwise to tighten until Diaphragm Clamping and Main Body metal to metal. Set the torque as 14Nm



4.4.1 Apply the C-Snapper on the Diaphragm Clamping and turn clockwise to tighten until Diaphragm Clamping and Main Body metal to metal

4.5

Assemble the Main Spring

4.5.1

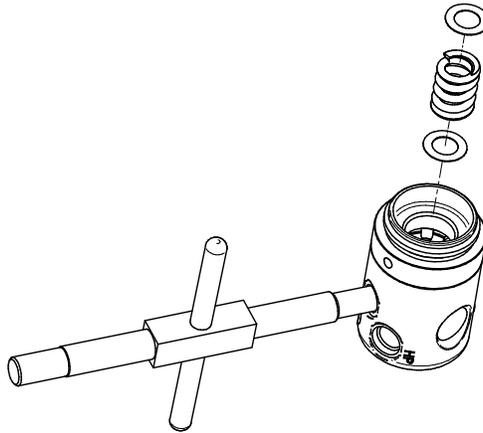
Put the Main Spring Washer on the Spring Carrier.

4.5.2

Put the Main Spring on the Washer

4.5.3

Put the Main Spring Washer on the top of Main Spring.



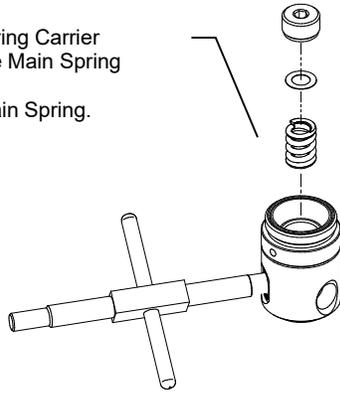
4.6

Assemble the Main Spring and Adjusting Nut

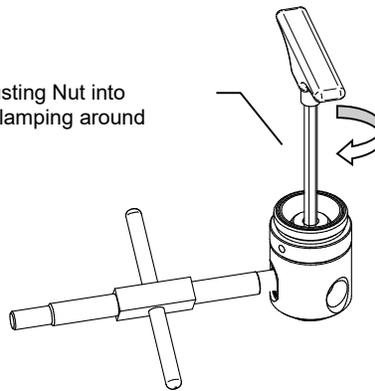
4.6.1

Put the Main Spring on the Spring Carrier and Apply 6mm Allen key into the Adjusting Nut and turn clockwise around 3 turns in.

1. Put the Main Spring on the Spring Carrier
2. set Main Spring Washer on the Main Spring and
3. Apply Adjusting Nut on the Main Spring.



Turn the Adjusting Nut into Diaphragm Clamping around 3turns.



STEP 4

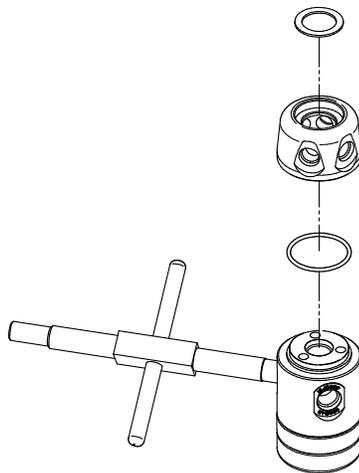
Reassemble Balance Barrel and Swivel Cap

4.1

4.1.1 Install the O23 O-Ring on the Main Body.

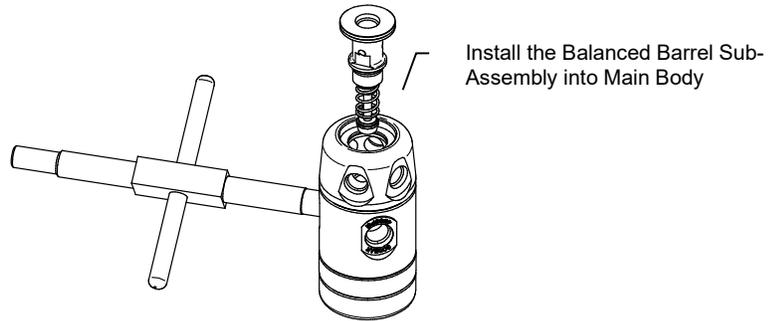
4.1.2 Install the Swivel Cap on the Main Body

4.1.3 Put the Balanced Barrel Washer on the Swivel Cap

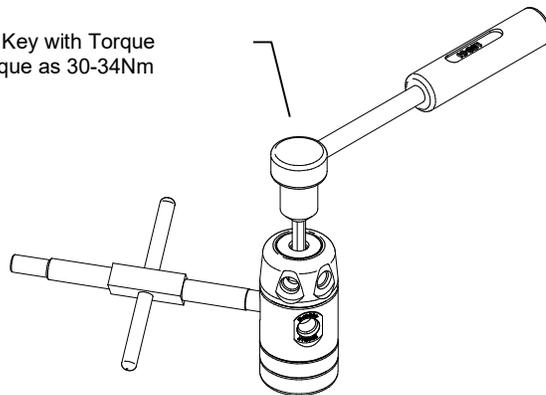


4.2

Turn the Balanced Barrel Sub-assembly into the Main Body and apply a 6mm Allen Key with Torque wrench. Set the torque as 30-34Nm



Apply a 6mm Allen Key with Torque wrench. Set the torque as 30-34Nm



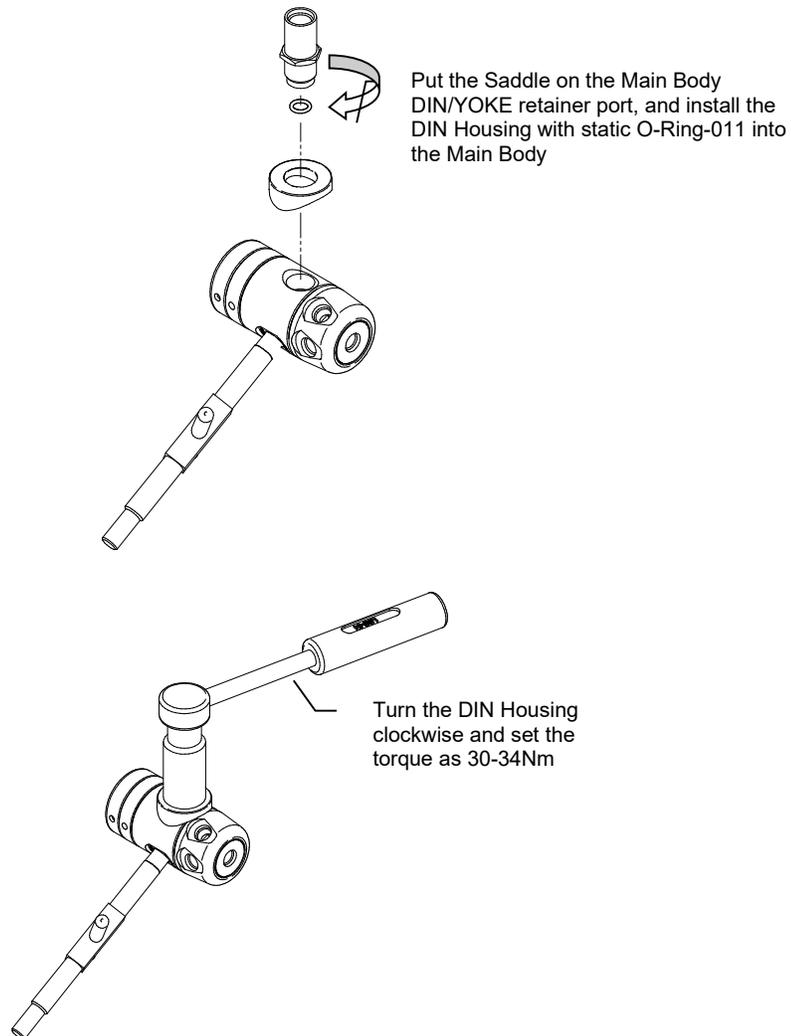
STEP5 Reassemble Yoke Adapter/ DIN Adapter

5.1

Reassemble the DIN kit:

5.1.1

Put the Saddle on the Main Body DIN/YOKE retainer port, and install the DIN Housing with static O-Ring-011 into the Main Body. Apply 13/16 inch Hex Socket on DIN Housing. Turn the DIN Housing clockwise and set the torque as 30-34Nm



5.1.2

Put on the Dust Cap and DIN wheel into DIN Housing

5.1.3

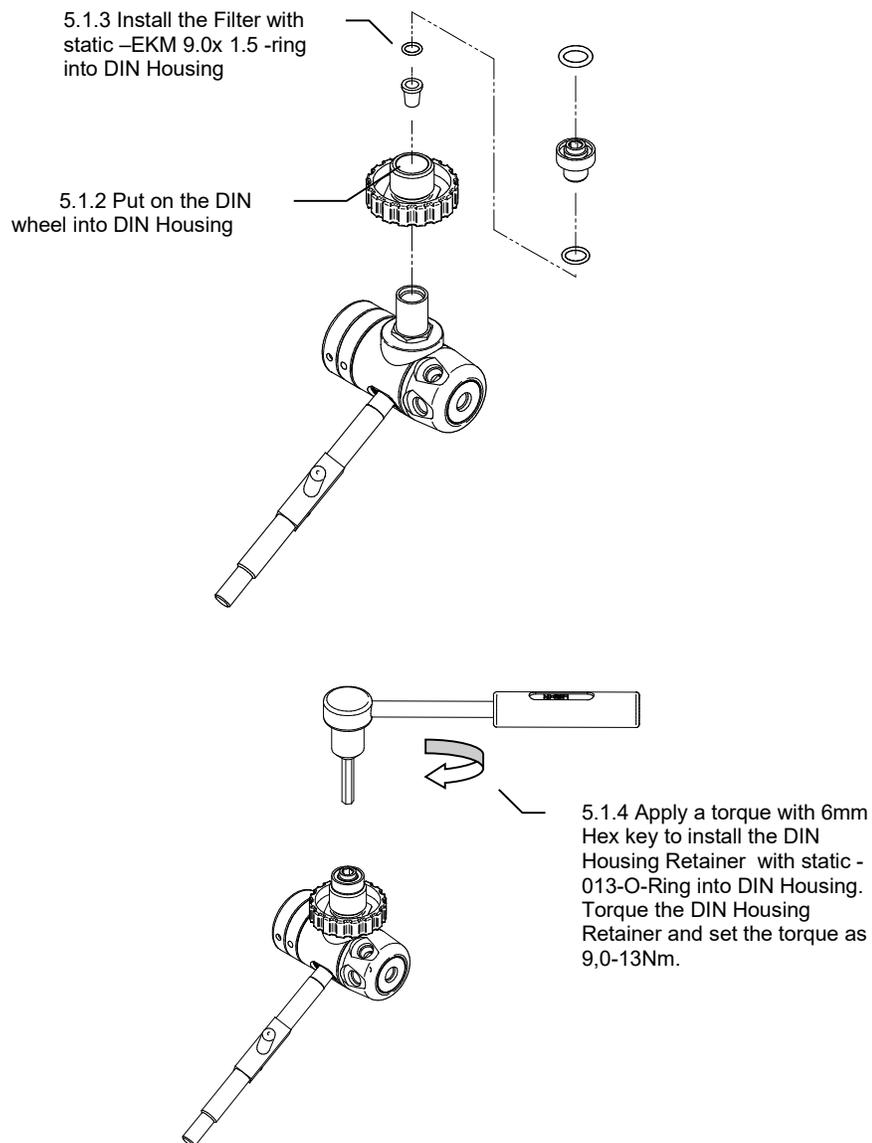
Install the DIN Filter with static -S-8 O-ring into DIN Housing.

5.1.4

Apply a torque with 6mm Hex key to install the DIN Housing Retainer with static -013-O-Ring into DIN Housing. Torque the DIN Housing Retainer and set the torque as 9-14Nm.

5.1.5

Install the static -112-O-Ring on the DIN housing retainer



5.2

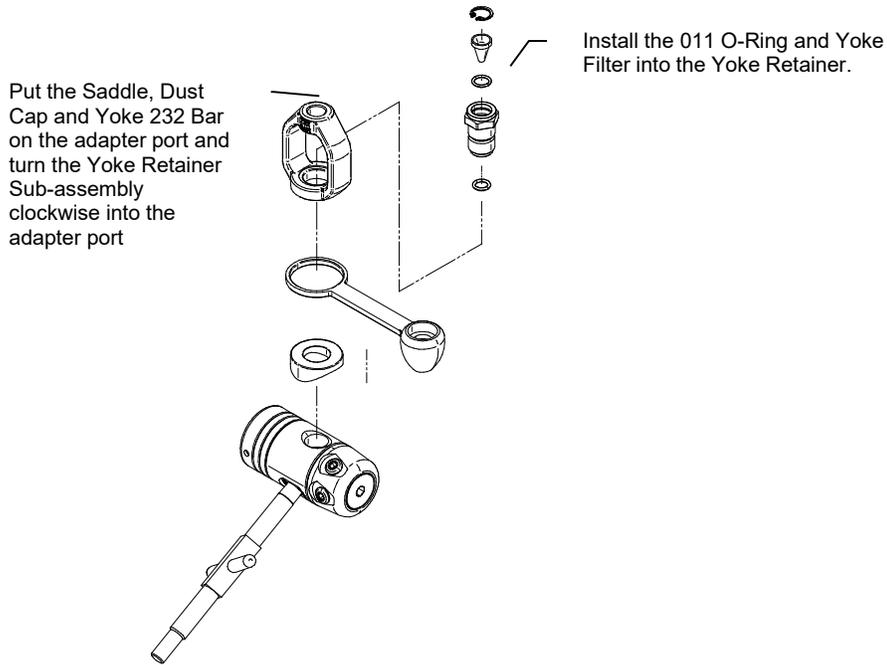
Yoke adapter reassembly

5.2.1

Install the 011 O-Ring and Yoke Filter into the Yoke Retainer.

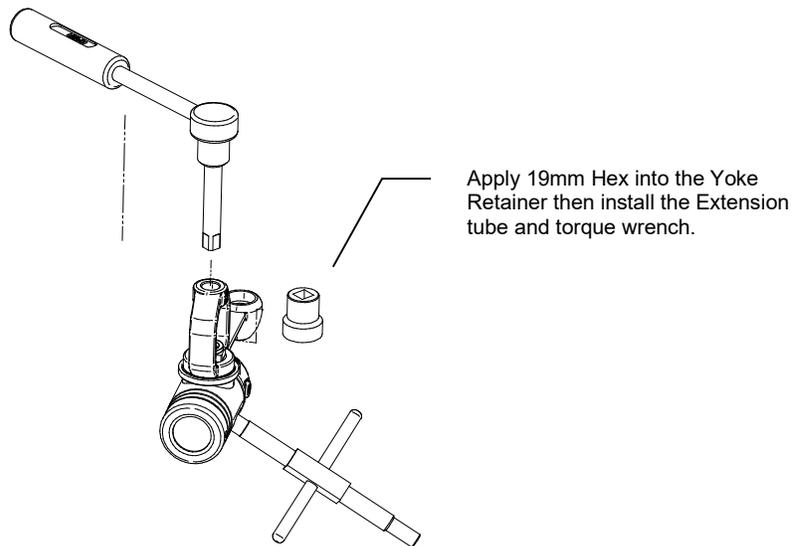
5.2.1

Put the Saddle, Dust Cap and Yoke 232 Bar on the adapter port and turn the Yoke Retainer Sub-assembly clockwise into the adapter port



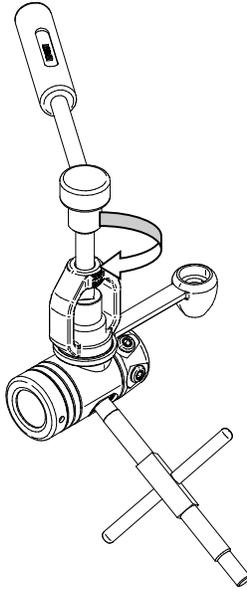
5.2.2

Apply 19mm Hex into the Yoke Retainer then install the Extension Tube and torque wrench.



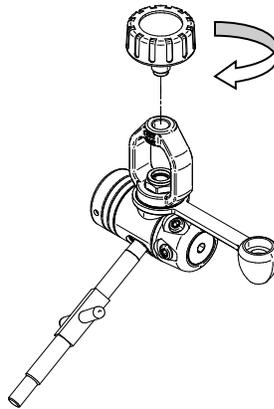
5.2.3

Turn the torque wrench clockwise and set torque as 30-34Nm



5.2.4

Install the YOKE Knob



STEP 6 Final assembly and Pre-set IP on Tank with gas in.

6.1

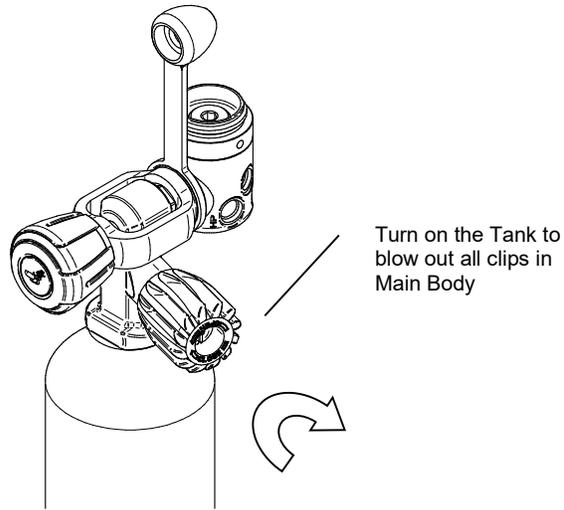
Prepare a Scuba tank with pressured at least at 100 bar.

6.1.1

Install R2 on Tank with finger tightening for Yoke Knob /DIN Wheel.

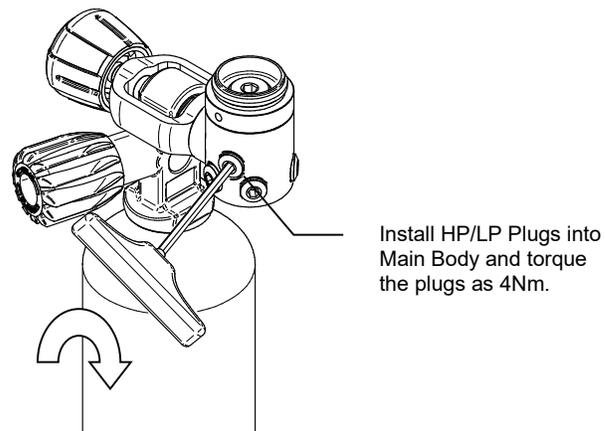
6.1.2

Turn on the Tank to blow out all clips in Main Body. (The clips may made by thread assembly during the assembly procedure)



6.2

Install HP/LP Plugs into Main Body and torque the plugs as 4Nm.



6.3

Preset the IP,

6.3.1

Assemble the LP hose, P92 check gauge and dual adjusting tool and 2nd stage on the 1st stage.

6.3.2

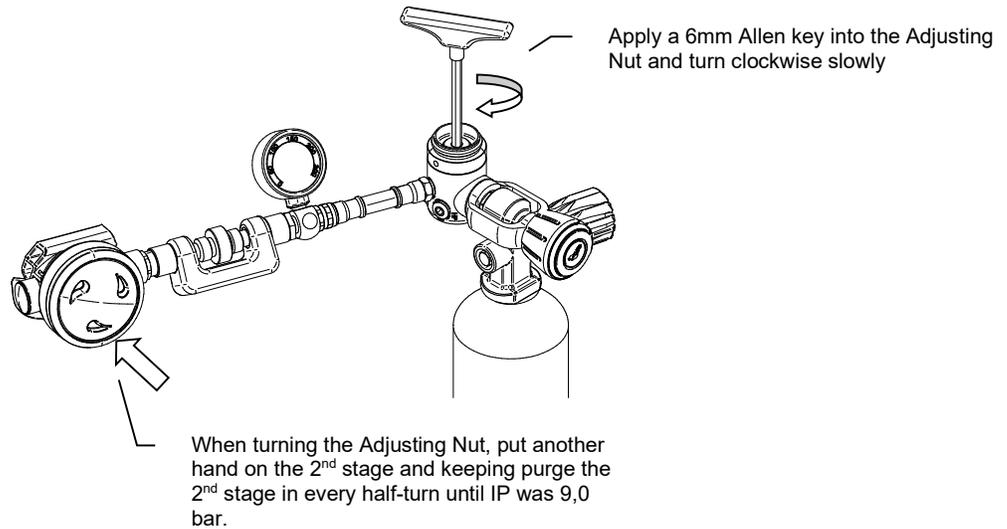
Apply a 6mm Allen key into the Adjusting Nut and turn clockwise slowly.

6.3.3

When turning the Adjusting Nut, put another hand on the 2nd stage and keeping purge the 2nd stage in every half-turn until IP was 9,0bar.

6.3.4

Check the IP gauge sweeping and stop in 9,0bar in every purge. After purge 20 times, the intermediate pressure may creep and over 9,0bar. The standard setting of Scubatech was creeping do not over 0,4 bar and hold after 5 minute.

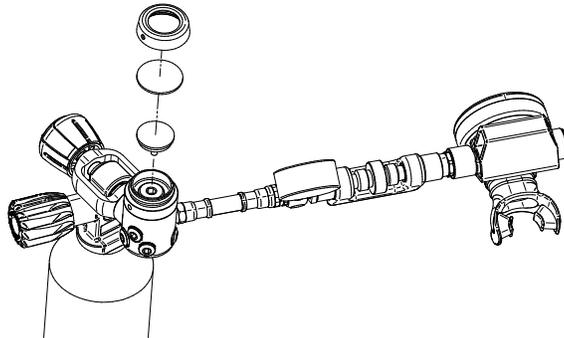


6.4

Install the Env. Kit. (Environment Kit)

6.4.1

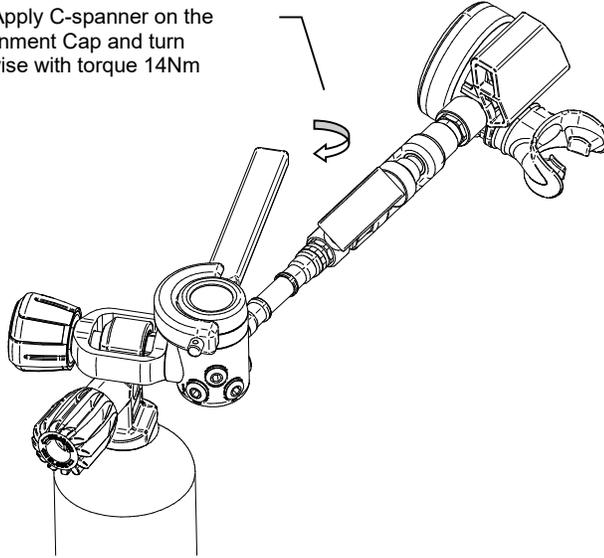
Install the Environment Transmitter, Environment Diaphragm and Environment Cap onto 1st stage.



6.4.2

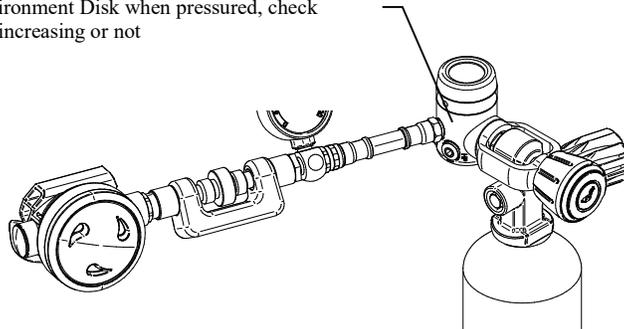
Apply C-spanner on the Environment Cap and turn clockwise with torque 14Nm

6.4.2 Apply C-spanner on the Environment Cap and turn clockwise with torque 14Nm



6.4.3 Test the Environment Kit working

Deep push the Environment Disk when pressured, check the IP gauge show increasing or not



CAUTION:

Before testing intermediate pressure, it is important to connect the 1st stage to a fully assembled and properly adjusted second stage. This will provide a safety relief valve if the intermediate pressure exceeds 11-12 bar. If a properly adjusted second stage is not available, be sure to open the bleed valve of the test gauge before pressurizing. Failure to relieve intermediate pressure in excess of 28 bar may result in damage to the test gauge or LP hose.

FINAL ADJUSTMENT AND TESTING PROCEDURES

With a stabilized IP the working IP range for the R2 is 9,0-9,5 bar. A higher or lower IP is out of specification and not acceptable.

Higher IP failure process:

See the trouble shooting table.

Lower IP failure process:

See the trouble shooting table.

TABLE 7

R2 1st STAGE TROUBLESHOOTING

SYMPTOM	CAUSE	ACTION REQUIRED
Restricted airflow/ high inhalation resistance through entire system (Hard to breath).	<ol style="list-style-type: none"> 1. Cylinder valve not completely opened 2. Cylinder valve requires service 3. Disc filter is contaminated 4. Insufficient intermediate pressure 	<ol style="list-style-type: none"> 1. Open valve, check fill pressure. 2. Connect to a different cylinder 3. Replace with new. 4. See below in "Lower IP"
External air leakage 1. (Immersion Test) -or-hydrostatic diaphragm is abnormally distended or burst	<ol style="list-style-type: none"> 1. Balanced Barrel. 2. HP Plug. 3. LP Plug. 4. DIN/ YOKE connector loosening 5. Diaphragm Clamping 6. Environment Diaphragm(ICE model only) 7. Swivel Cap 	<ol style="list-style-type: none"> 1. Replace the static 019 O-Ring, and tighten again 2. Replace the static 012 O-Ring and tighten the plug again 3. Replace the static 011 O-Ring and tighten the plug again 4. Replace static 011O-Ring and tighten again. 5. Replace a new Diaphragm and make sure 100% follow the step 4. 6. Open the Environment Cap to check the Environment Diaphragm if damaged, replace a new one and tighten again. 7. Replace the static 023 O-Ring and tighten the Balanced Barrel again
Drift (Creep)	<ol style="list-style-type: none"> 1. Lockup but over 5psi 2. Non-lockup 	<ol style="list-style-type: none"> 1. Replace the damaged HP Seat. 2. Replace the Dynamic 006 O-Ring, HP seat and check the orifice edge of the Main Body if there have any dents or depth scraping. If yes, replace a new Main Body
Higher IP	<ol style="list-style-type: none"> 1. Main Spring supporting force too strong 	<ol style="list-style-type: none"> 1. Turn the Adjusting Nut "Counter-clockwise" to decrease the IP output pressure.
Lower IP	<ol style="list-style-type: none"> 1. Spring force too weak 	<ol style="list-style-type: none"> 1. Turn the Adjusting Nut "clockwise" to increase the IP output pressure.