



Cressi-sub
Regulators repair and maintenance

XS Compact 2nd stage





Cressi-sub
Regulators repair and maintenance

XS Compact 2nd stage

WARNING !

- This manual is intended for use by expert technicians who have already received training in equipment repairs and maintenance from Cressi-sub;
- We decline all responsibility for any maintenance and/or repair performed by personnel not authorized by Cressi-sub;
- Avoid performing maintenance and/or repair operations on the equipment without the proper training required to conduct these operations;
- Users must never perform maintenance themselves; all maintenance must be performed **EXCLUSIVELY** by an authorized Cressi-Sub center;
- If the information provided in this document is unclear or not fully intelligible, please contact Cressi-sub before proceeding with any disassembly or maintenance procedures;
- Before proceeding, Cressi-sub recommends that you read the following document carefully to familiarize yourself with all the tools and techniques needed to perform proper equipment maintenance and/or repair;
- Use this document as a guide during the various steps of maintaining and/or repairing the equipment;



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Regulators repair and maintenance

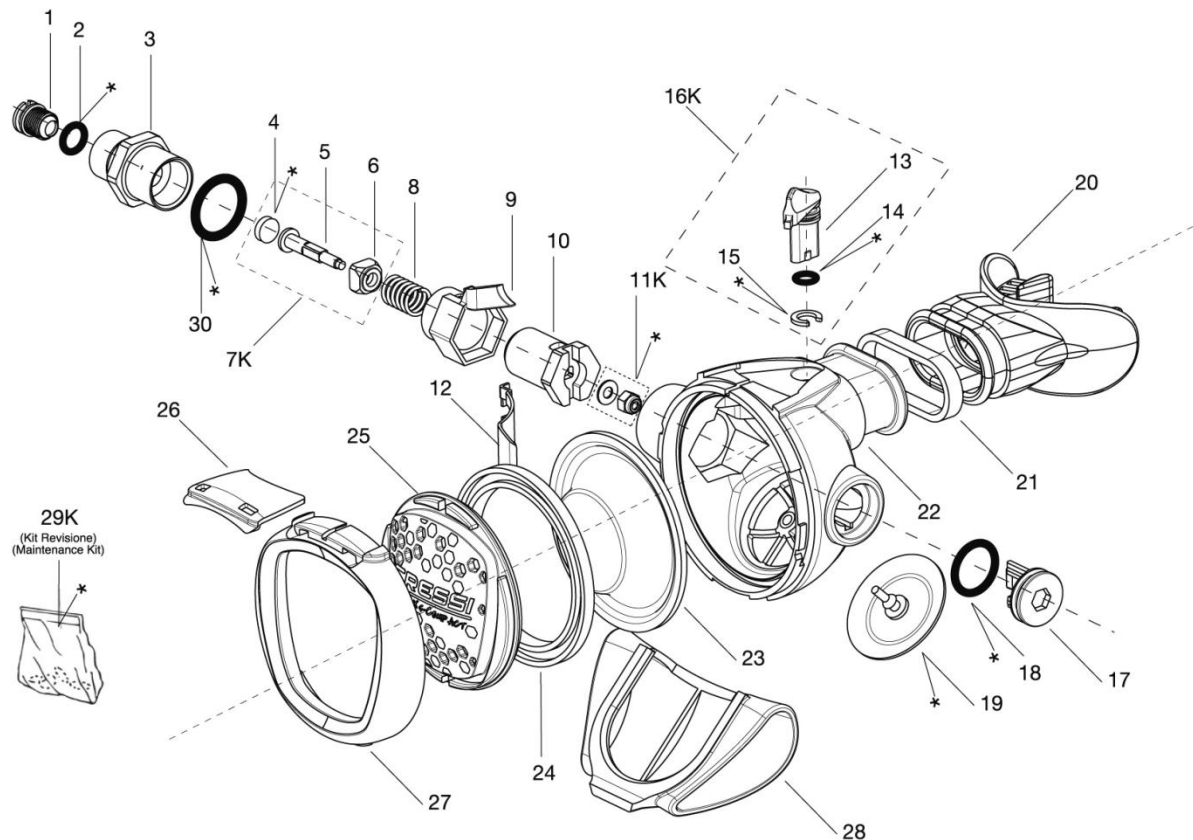
XS Compact 2nd stage

WARNING !

- All operations must be carried out strictly in the order provided in this document. Failure to do so could lead the equipment to function poorly, or worse, result in an accident;
- To prevent any assembly errors when performing maintenance and/or repairs, we recommend using **all** the replacement parts provided by Cressi-Sub in every operation;
- Pay special attention to the recommendations provided in the margin of the figures that show the various sequences of equipment maintenance and/or repair in order to avoid any problems that could result in an accident;
- The document below in no way replaces the equipment's instruction manual;
- The procedures described in this document are pertinent to and intended **only** for the disassembly, maintenance, and assembly of equipment meant for use with air (21% oxygen, 79% nitrogen);
- The instructions provided in this document are based on the most recent information available about the equipment, and Cressi-sub reserves the right to make changes at any time.



XS Compact 2nd stage: spare parts exploded diagram



POS.	CODICE / CODE
------	---------------

1	HZ 810094	
2	HZ 810095	
3	HZ 780080	
4	HZ 742013	
5	HZ 780079	
6	HZ 780078	
7K	HZ 780077	
8	HZ 730207	
9	HZ 780076	
10	HZ 780075	
11K	HZ 746094	
12	HZ 780074	
13	HZ 780073	
14	HZ 820069	
15	HZ 810080	
16K	HZ 780072	
17	HZ 780071	
18	HZ 820054	
19	HZ 810074	
20	HZ 790094	
21	HZ 730202	
22	HZ 780070	
23	HZ 780069	
24	HZ 780068	
25	HZ 780067	(Grigio/Gray)
25	HZ 780066	(Giallo/Yellow)
25	HZ 780065	(Rosa/Pink)
25	HZ 780064	(Bianco/White)
26	HZ 780063	
27	HZ 780062	
28	HZ 780061	
29K	HZ 780060	
(Kit Revision/Maintenance Kit) *		
30	HZ 780059	

2° Stadio XS Compact € / 2nd Stage XS Compact €

Ed./Issue	XSC/1
A/11	N° Tav./Rev.

XSCOMPACT 2nd STAGE HZ 780060 **ANNUAL REPLACEMENT KIT CHART** **(Real Size)**



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Regulators repair and maintenance

XS Compact 2nd stage

- XS Compact 2nd stage service kit

HZ 780060



XS COMPACT 2nd STAGE (HZ 780060) ANNUAL REPLACEMENT KIT CHART

O-RING Reference Table

(Real Size)



HZ820069



HZ 810095



HZ780059



HZ820054

SPARE PARTS Reference Table

1 Exhaust Valve
HZ 810074

1 Clip
HZ 810080

1 Poppet LP Seat
HZ 742013

1 Demand Lever Nut
HZ 746094

1 Washer
HZ 746094

[Go back to](#)

- **Use only original Cressi-sub replacement parts.**

- **Note:** we recommend that complete maintenance be performed on the regulator at least once a year, or more frequently if used intensively.



Regulators repair and maintenance

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XS Compact 2nd stage

• **Annual Maintenance**

- Cressi-Sub recommends complete regulator maintenance at least once a year, or more frequently in the case of particularly intense use;
- Maintenance must include replacement of all components provided in the annual equipment maintenance kit;
- The special tools for maintenance of this equipment are illustrated on page 8 of this document;
- Metal parts must be washed with hot water and neutral detergent and rinsed in fresh water. Any concretions must be removed using ultrasound cleaning or with diluted acid solutions, always followed by long and thorough rinsing under running water;
- Do not use acids or solvents on rubber components;
- The new ORs must be greased with a thin layer of silicon grease: this procedure reduces to a minimum the risk of damage during assembly;
- The metal threading can be lubricated with grease on the first two rings of threading.



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• Annual Maintenance

- The procedures described in this document are pertinent to and intended only for the disassembly, maintenance, and assembly of equipment meant for use with air (21% oxygen, 79% nitrogen);
- Users must never perform maintenance themselves; all maintenance must be performed EXCLUSIVELY by an authorized Cressi-Sub center;
- You can find your authorized Cressi-Sub center by asking your dealer, or Cressi Sub S.p.A. itself by sending an e-mail to:

info@cressi-sub.it.

• Use only original Cressi-sub replacement parts



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Regulators repair and maintenance

XS Compact 2nd stage Special tools

Codice HZ 710011
2nd stage setting gauge



Codice HZ 709011
Spring push tool



Codice HZ 709004
Extraction point tool



Codice HZ 709009
5.5 mm screwdriver



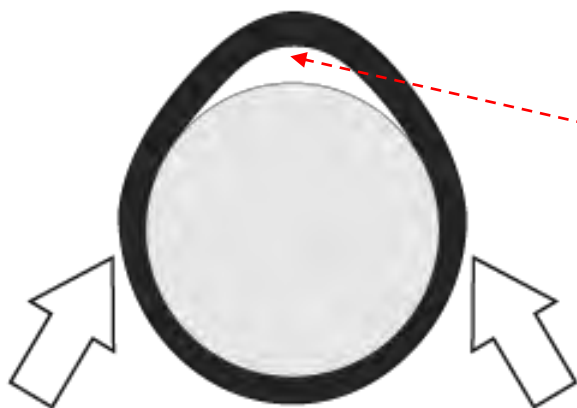
Codice HZ 709016
Tool to remove the nozzle





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Regulators repair and maintenance

XS Compact 2nd stage: steps in disassembly



- Remove and replace all gaskets in the 2nd stage;
- To remove the O-Rings, use a plastic tool, or a metal one, but with a rounded tip in order to avoid damaging the gasket seat;
- To replace the gaskets correctly, press on the sides of the O-Rings to create a protuberance under which you can insert the tool with the rounded tip used for removing O-Rings, as shown in the figure;
- **Important: ONLY USE ORIGINAL CRESSI-SUB GASKETS**



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Regulators repair and maintenance

XS Compact 2nd stage: steps in disassembly

- Place a 19 mm wrench on the 2nd stage valve seat nut and at the same time unscrew and remove the low pressure hose with a 17 mm wrench as shown in the figure;
- Check that the low-pressure hose shows no clear signs of wear, cuts, or scrapes, especially near the threaded connections.





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Regulators repair and maintenance

XS Compact 2nd stage: steps in disassembly

- In the annual overhaul, the O-Rings inside the hose must be replaced, and check that the low pressure hose shows no clear signs of wear, cuts, or scrapes, especially near the threaded connections.





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Regulators repair and maintenance

XS Compact 2nd stage: steps in disassembly



- Lever the dome lock retainer and pull it out of the 2nd stage as shown in the figure.





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XS Compact 2nd stage: steps in disassembly



- Unscrew the dome as shown in the figure.



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Regulators repair and maintenance

XS Compact 2nd stage: steps in disassembly



- Remove the dome, the button, and the button ring from the housing.



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XS Compact 2nd stage: steps in disassembly

27 = HZ 780062



26 = 780063



25 = HZ 780066
Giallo / Yellow



25 = HZ 780067
Grigio / Gray



25 = HZ 780065
Rosa / Pink



25 = HZ 780064
Bianco / White



23 = HZ 780069



24 = HZ 780068





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XS Compact 2nd stage: steps in disassembly

- Remove the diaphragm from the 2nd stage case.





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XS Compact 2nd stage: steps in disassembly



- Push up on the end of the 2nd stage case side cap fastening tab while simultaneously pushing it out of the regulator, as shown in the figure.





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XS Compact 2nd stage: steps in disassembly



- Once the side cap is removed, fully unscrew the 5.5 mm nut using the socket screwdriver, inserting it through the hole in the case.



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Regulators repair and maintenance

XS Compact 2nd stage: steps in disassembly

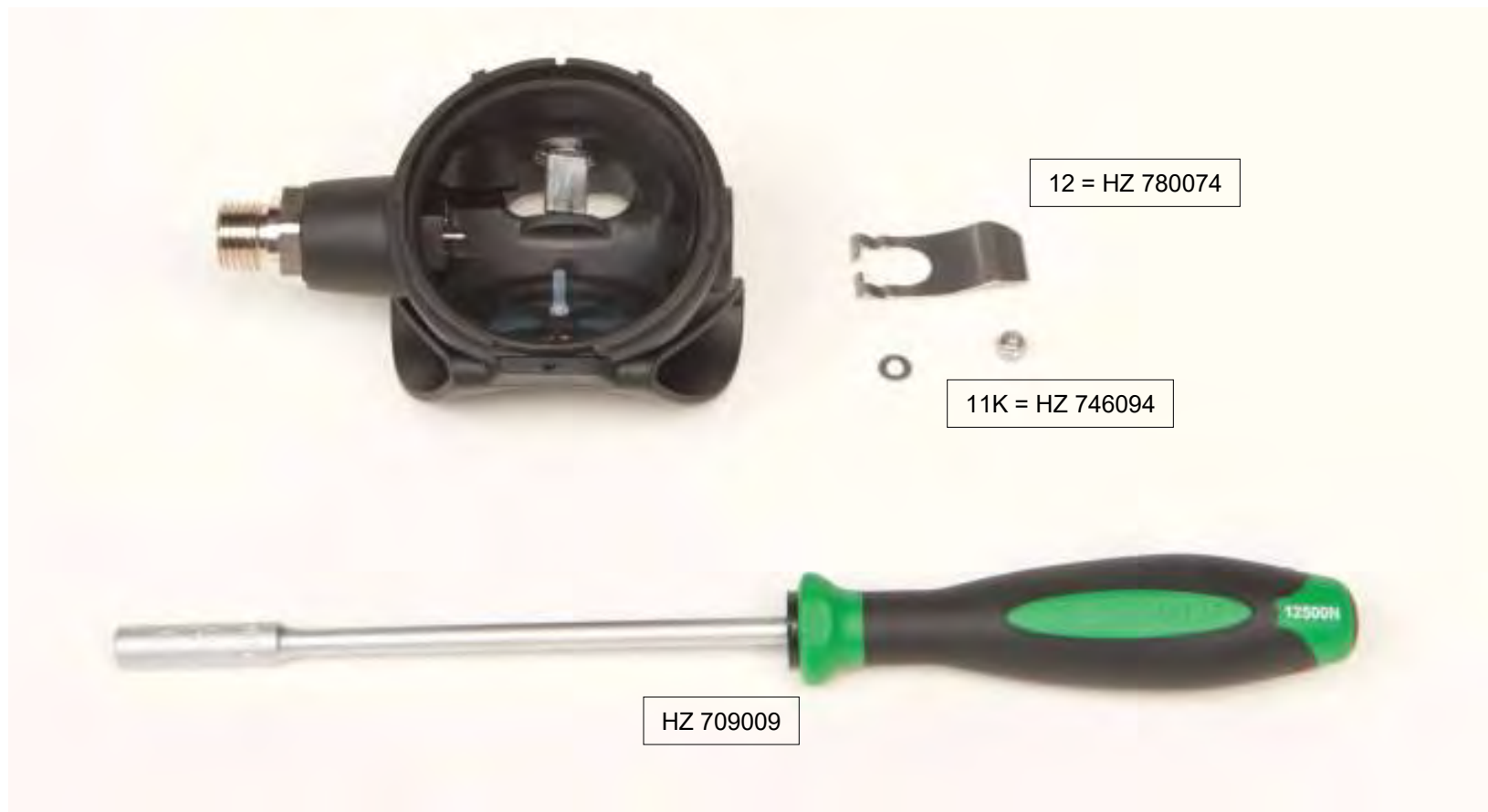


- Then remove the lever, the washer, and the nut from the 2nd stage.



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Regulators repair and maintenance

XS Compact 2nd stage: steps in disassembly





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Riparazione e Manutenzione Erogatori

XS Compact 2nd stage: steps in disassembly



- Rest the regulator case on the work surface, and loosen the adjustable nozzle unit with a 19 mm wrench as shown in the figure.
- In case the regulator has been used under water for a long time and shows oxidation traces, it may be useful to tap gently with a plastic hammer all along the perimeter of the area to be removed.



XS Compact 2nd stage: steps in disassembly



- Holding the valve body still in its seat inside the injector, unscrew the adjustable nozzle unit and remove the valve spindle and spring from the 2nd stage, as shown in the figures.





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Riparazione e Manutenzione Erogatori

XS Compact 2nd stage: steps in disassembly



- Replacing the 2nd stage poppet seat is very easy: simply slide the spindle bushing, removing the seat from its housing.



XS Compact 2nd stage: steps in disassembly



- Push the valve body from the inside, out of its hexagonal seat in the injector, removing it from the 2nd stage as shown in the figure;
- Then pull the injector out of the regulator pushing from the inside and grabbing it by the end as shown in the figure.



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Regulators repair and maintenance

XS Compact 2nd stage: steps in disassembly

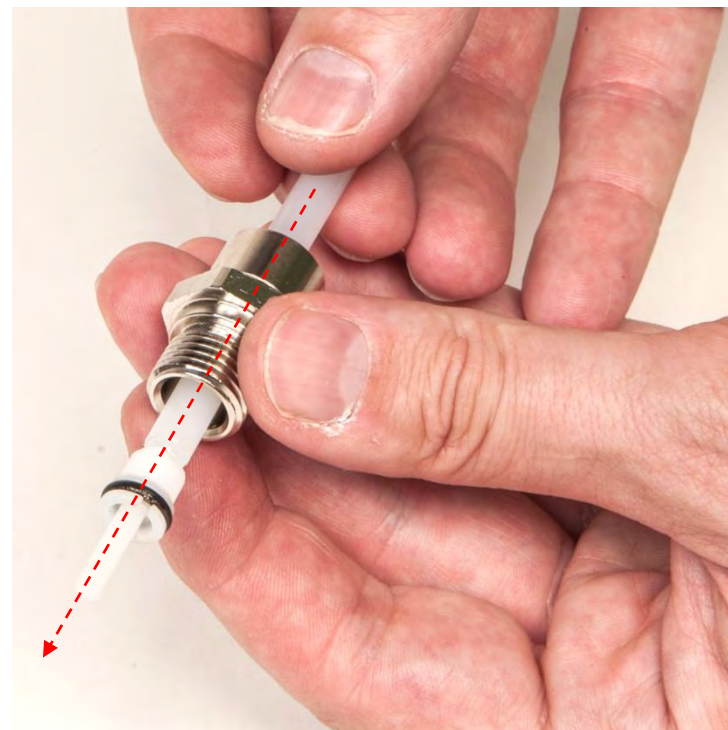
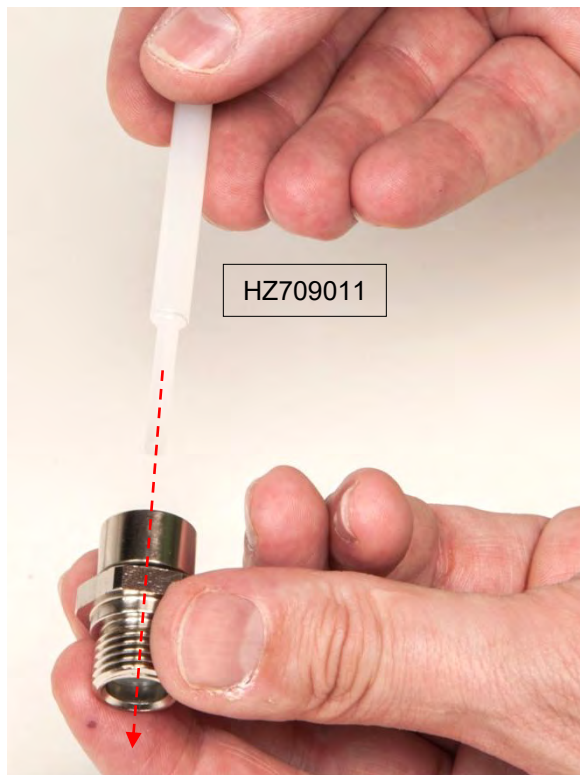


- Use a flathead screwdriver to fully unscrew the adjustable nozzle from its housing.



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Regulators repair and maintenance

XS Compact 2nd stage: steps in disassembly



- Pull out the nozzle, inserting the plastic universal spring pusher into the side opposite the air intake for the nozzle unit. This tool is specially designed to avoid damaging the sharp edge of the nozzle;
- NOTE: you need to push firmly to exceed the friction exerted by the O-Ring on the wall of the body, before you can push the nozzle fully out of the nozzle unit.



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Riparazione e Manutenzione Erogatori

XS Compact 2nd stage: steps in disassembly



- Remove the deflector from the regulator case by pushing on the sides as shown in the figure, then pull out the discharge valve from its housing.



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Regulators repair and maintenance

XS Compact 2nd stage: steps in disassembly



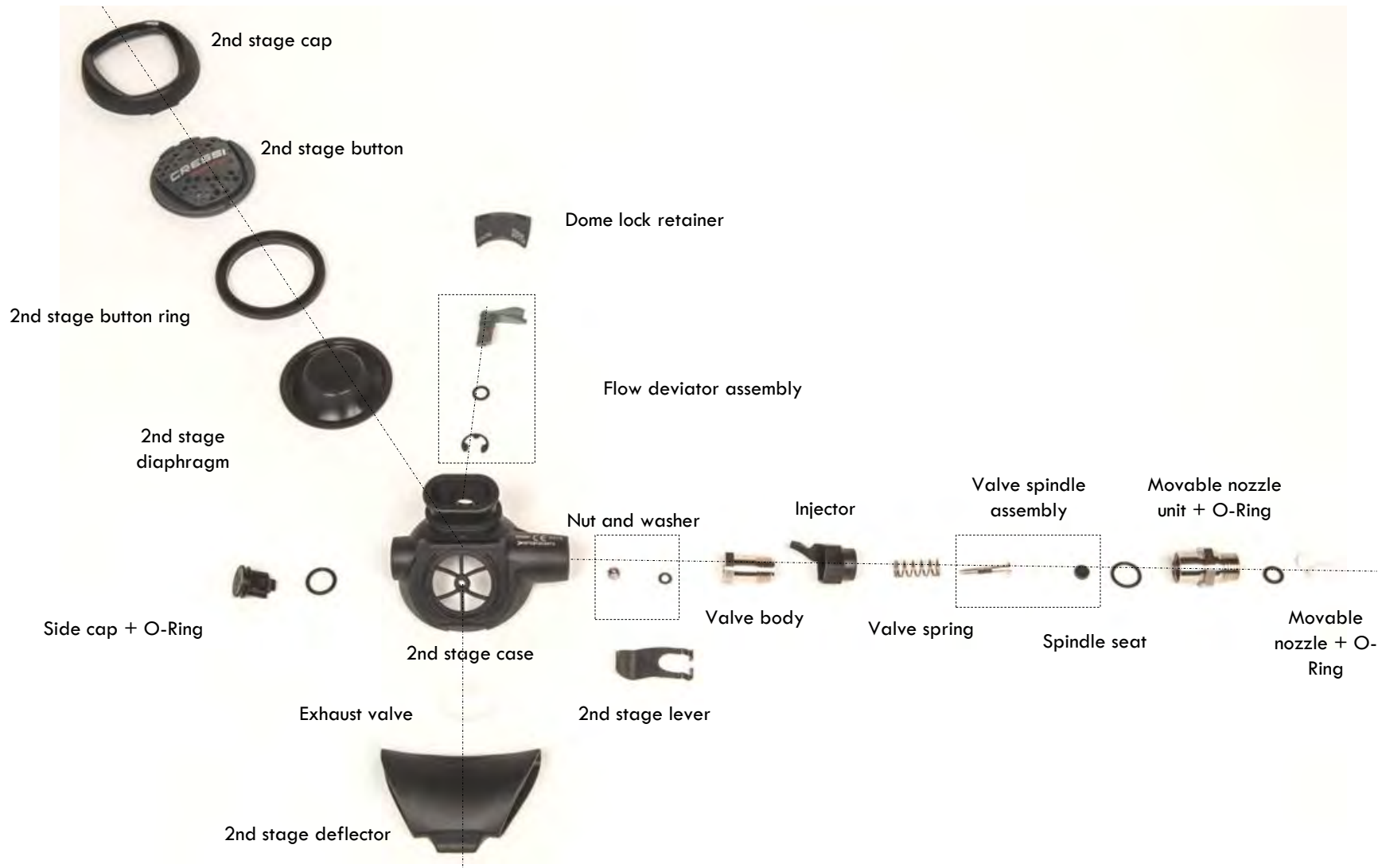
- Using a flat-tipped tool, remove the flow deviator clip ring, pushing outward. Then pull the flow deviator from its housing.



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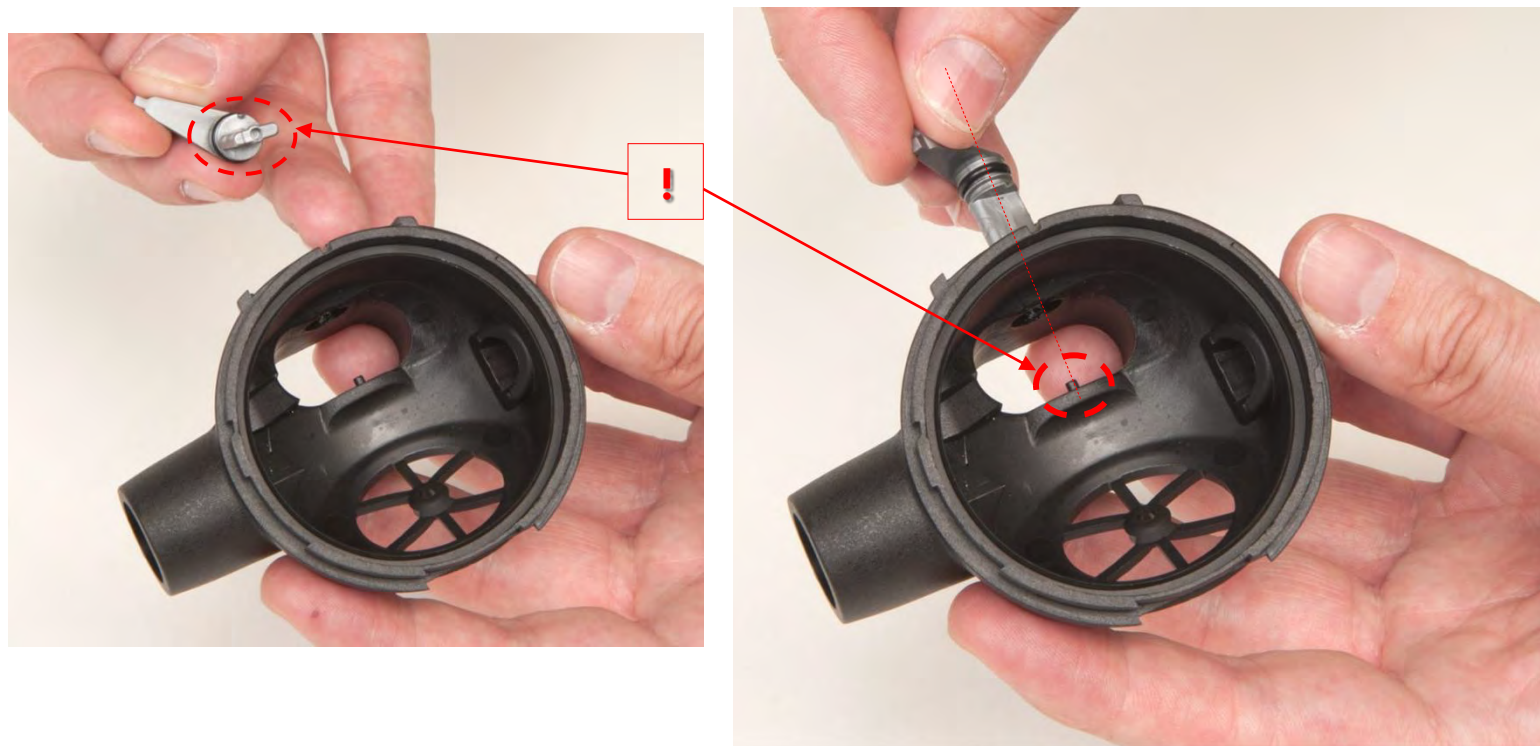
Regulators repair and maintenance

XS Compact 2nd stage





**XS Compact 2nd stage:
phases of assembly**



- Insert the flow deviator in its housing after lubricating the O-Ring.
- While doing so, be careful to line up the hole in the end of the flow deviator with the corresponding pin located inside the 2nd stage case, as shown in the figure.



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Regulators repair and maintenance

XS Compact 2nd stage: phases of assembly



- Push the flow deviator clip ring into place with one hand, and finish with a flat-tipped tool.

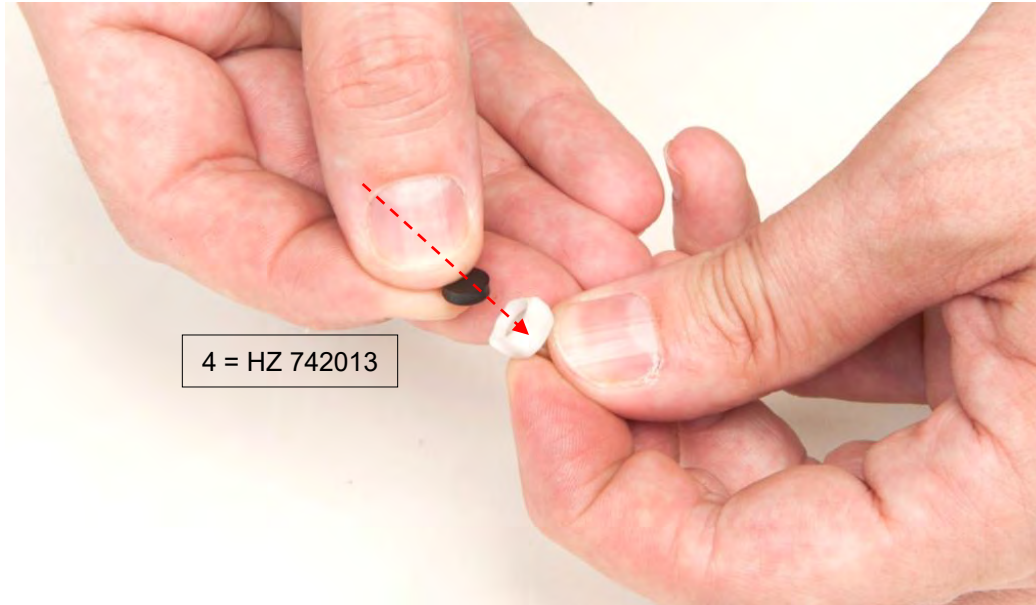


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Regulators repair and maintenance

XS Compact 2nd stage: phases of assembly



- Insert the discharge valve into the 2nd stage, checking that it lies against the case with no obstructions for a perfect seal. The correct position of the valve stem inside the regulator is shown in the small photo.

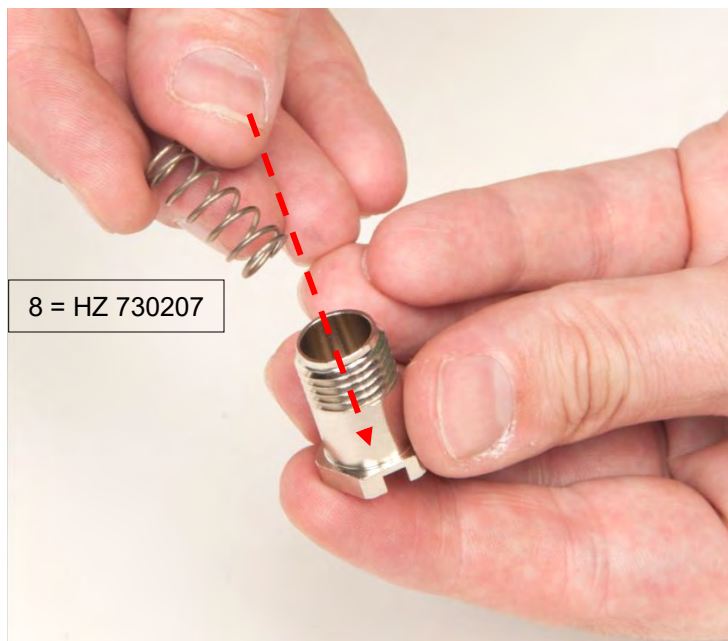


- First assemble the regulator valve, reinserting the ***seat that was just removed*** in the seat-holder bushing of the valve spindle;
- Note: the purpose of using the old seat - as we will see - is to prevent the new one from getting nicked in this step by the sharp edge of the nozzle.



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Regulators repair and maintenance

XS Compact 2nd stage: phases of assembly



- Insert the spring into the valve body, making sure that it inserts properly into its housing inside the valve body.



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Regulators repair and maintenance

XS Compact 2nd stage: phases of assembly

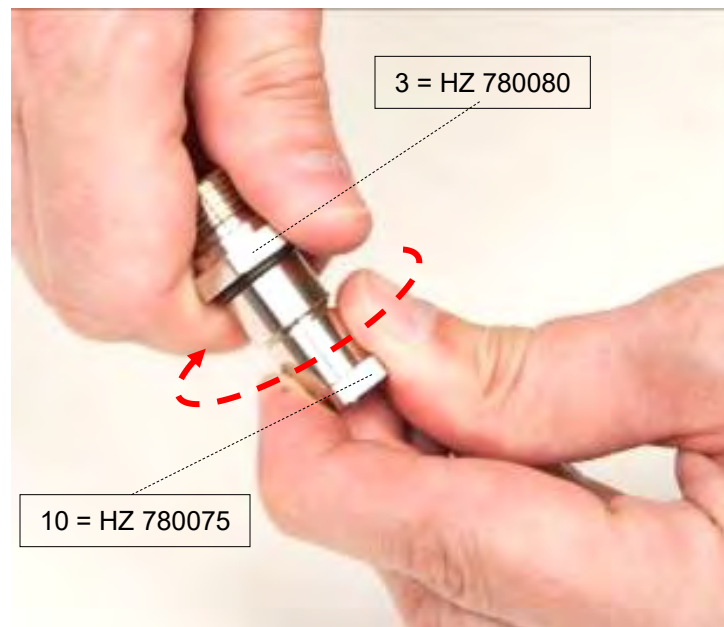


- Insert the spindle assembly (with the old seat) into the spring inside the valve body as shown in the figure.



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Regulators repair and maintenance

XS Compact 2nd stage: phases of assembly



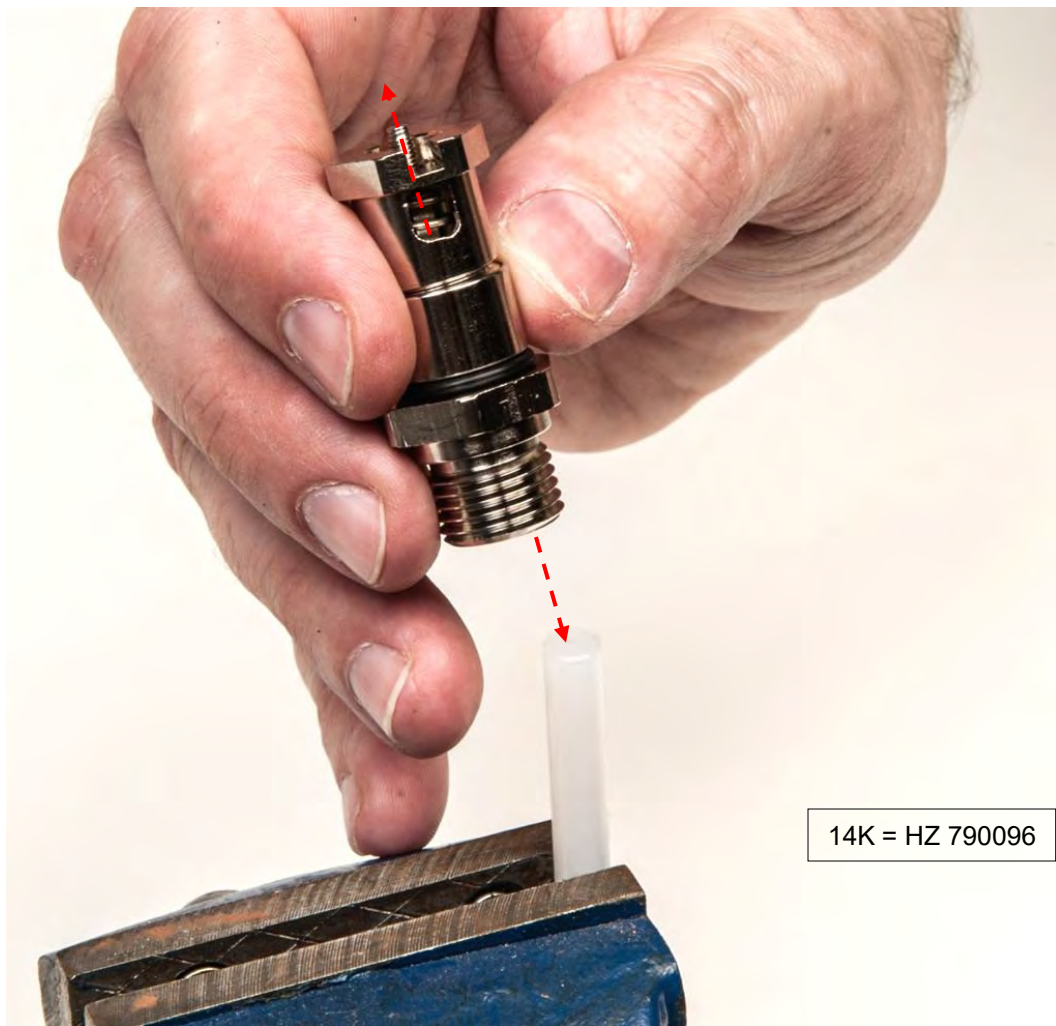
- Screw the two assembled components all the way to the end of the thread, without tightening.



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Regulators repair and maintenance

XS Compact 2nd stage: phases of assembly

- Clamp the spring pusher in a vise as shown;
- Then insert the end of the spring pusher into the nozzle seat to properly push out the squared section of the valve spindle in the corresponding square section of the valve body;



14K = HZ 790096



XS Compact 2nd stage: phases of assembly

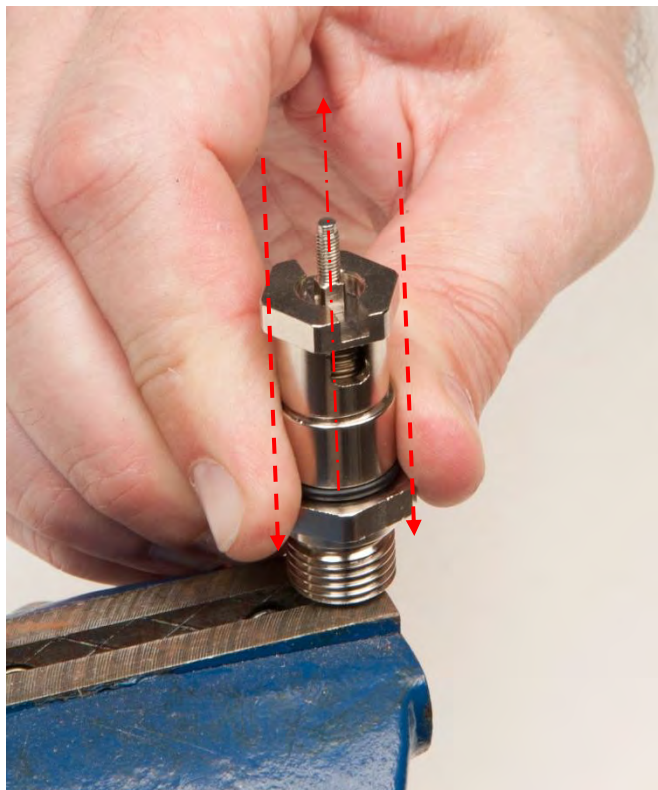
- Note: to make this operation easier, it can be helpful to rotate the end of the valve spindle so that its square section (visible through the air exhaust hole of the valve body) is lined up with the corresponding square section of the valve body in the outward direction.





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Regulators repair and maintenance

XS Compact 2nd stage: phases of assembly

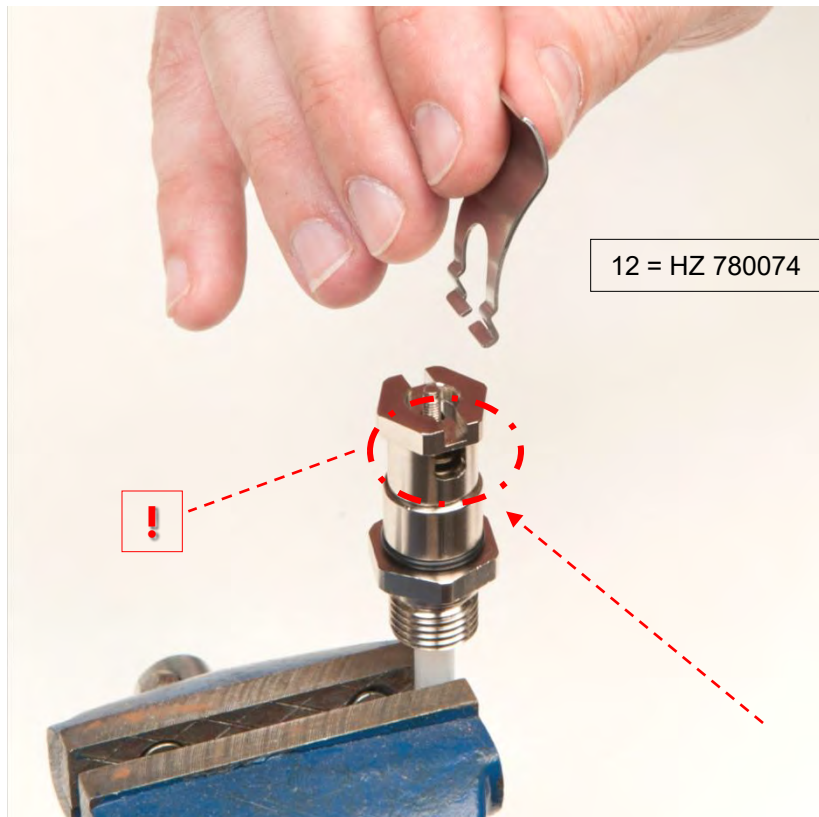


- Once you have checked the alignment, push the valve assembly on the spring pusher in the vise, until the square section of the valve spindle comes fully out of the corresponding square section of the valve body, as shown in the figure.



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Regulators repair and maintenance

XS Compact 2nd stage: phases of assembly

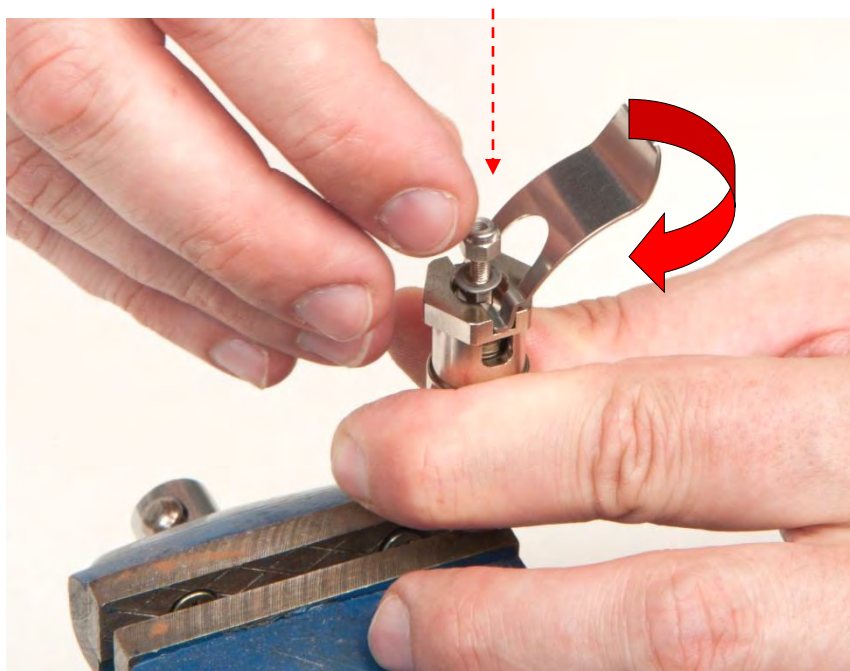


- Then, in sequence insert the lever, the washer, and the nut as in the figure;
- Note: make sure to insert the lever in the correct direction with respect to the valve body, using air exhaust hole for reference as shown in the figure.



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Regulators repair and maintenance

XS Compact 2nd stage: phases of assembly



HZ 709009

- Then screw down the nut with a 5.5 mm socket screwdriver by a few threads, enough to hold the lever in the up position, while awaiting the proper calibration that will be performed on the assembled regulator.



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Regulators repair and maintenance

XS Compact 2nd stage: phases of assembly

- Check that the valve functions properly by running through the full range of the lever corresponding to the spindle square exiting completely with respect to the valve body square.





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Regulators repair and maintenance

XS Compact 2nd stage: phases of assembly

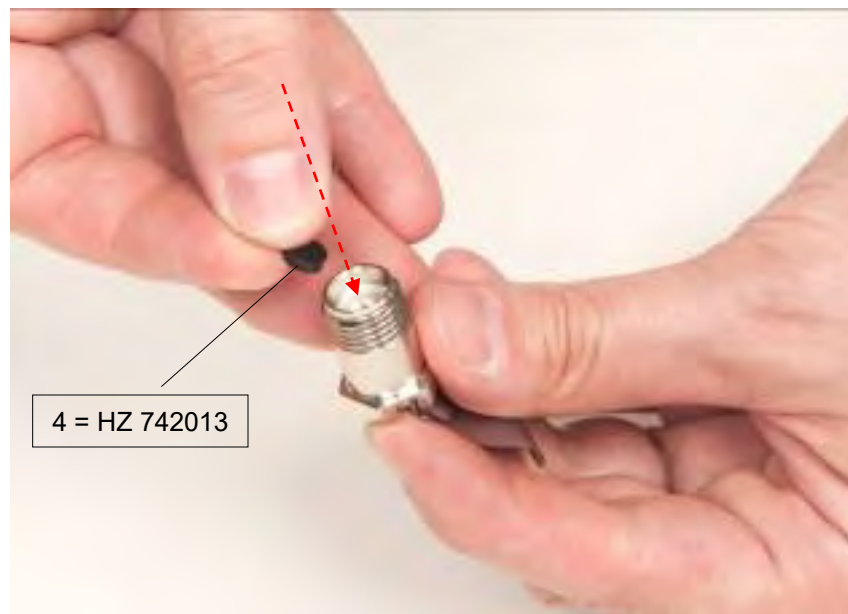
- Fully unscrew the movable nozzle unit from the valve body.





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Regulators repair and maintenance

XS Compact 2nd stage: phases of assembly

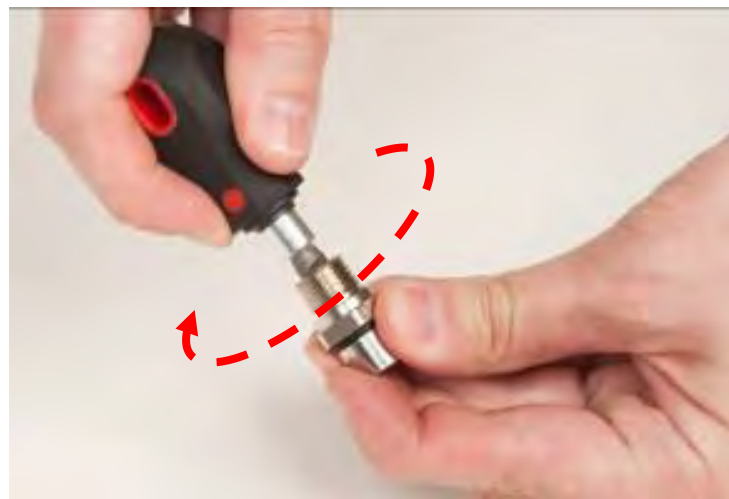
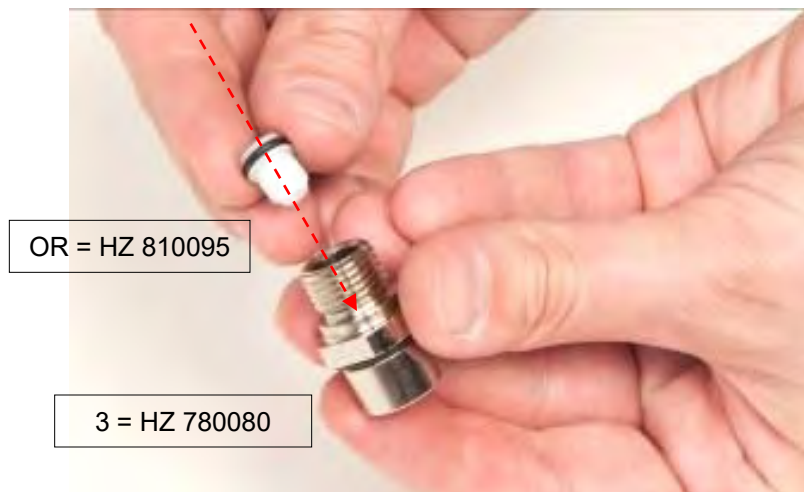


- Remove the old seat from the valve spindle and replace it with the new one contained in the annual maintenance kit.



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Regulators repair and maintenance

XS Compact 2nd stage: phases of assembly



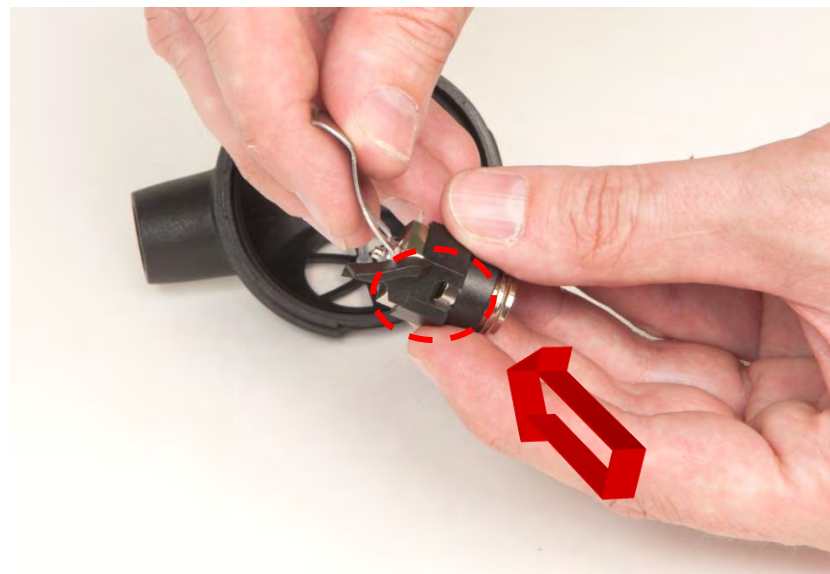
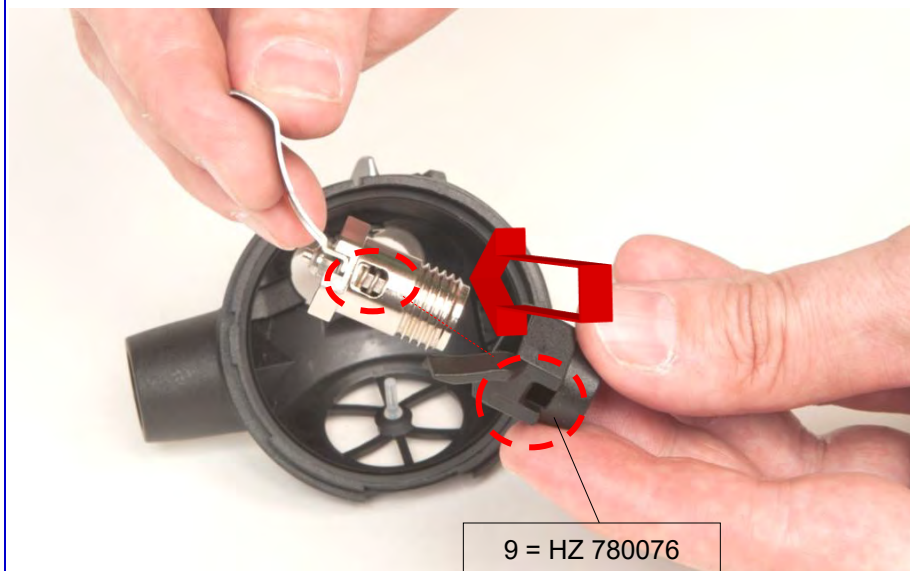
- After suitably lubricating the O-Rings, insert and push the movable nozzle into its seat to the beginning of the thread, following the direction of insertion shown in the figure;
- Screw the nozzle a few turns in its housing, but not too far, to prevent the sharp edge of the nozzle from nicking the seat during assembly with the valve body;
- Correct calibration will be done when the regulator is assembled.





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Regulators repair and maintenance

XS Compact 2nd stage: phases of assembly



- Insert the valve body, complete with lever, inside the corresponding hexagonal seat of the injector, making sure that the air exhaust hole lines up with the injector hole, as shown in the figure.



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Regulators repair and maintenance

XS Compact 2nd stage: phases of assembly



- Insert the injector complete with valve body and lever into the hexagonal set of the 2nd stage case;
- The correct insertion direction and placement of the assembly is shown in the figure.



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Regulators repair and maintenance

XS Compact 2nd stage: phases of assembly



- **Without applying excessive force**, tighten the nozzle unit to the valve body with a 19 mm wrench, taking care to hold down the lever so that the seat does not accidentally touch the sharp edge of the nozzle, as shown in the figure;
- Check for correct insertion of the walls of the injector on the corresponding stops of the 2nd stage case, which ensure the proper placement of the lever with respect to the diaphragm.



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Regulators repair and maintenance

XS Compact 2nd stage: phases of assembly



- Fasten the deflector to the 2nd stage case, sliding it against the appropriate stops, as shown in the figure.



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Regulators repair and maintenance

XS Compact 2nd stage: phases of assembly



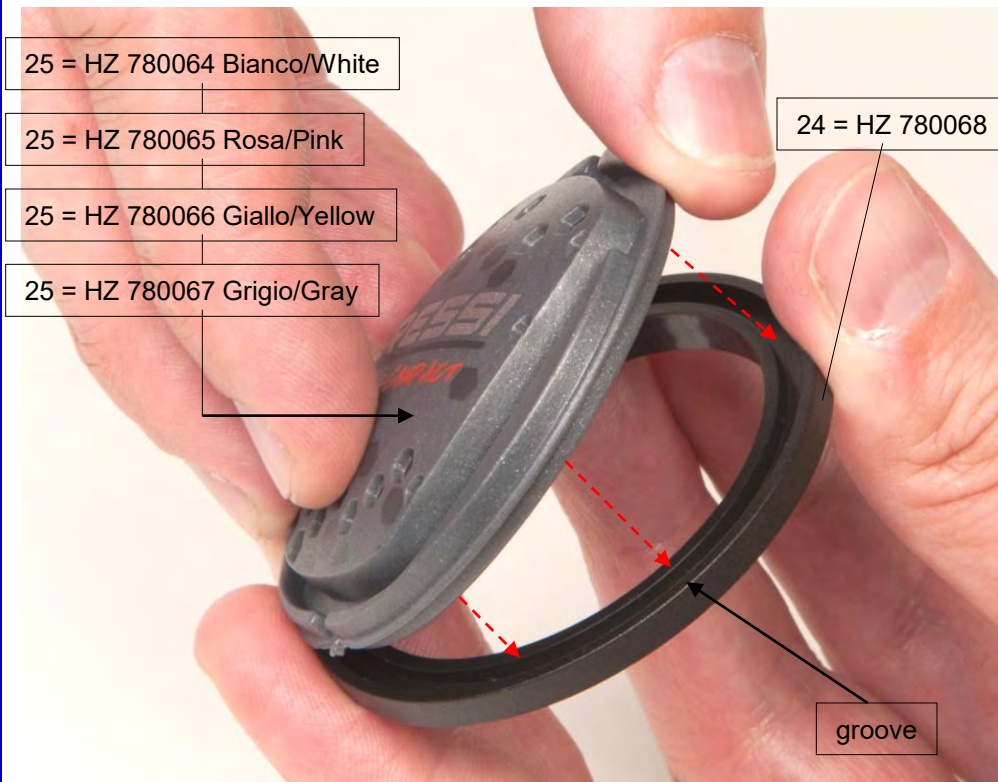
- Place the diaphragm in the 2nd stage case as shown in the figure;
- Then, carefully ensure that the outer edges of the diaphragm are seated perfectly in the regulator case.



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Regulators repair and maintenance

XS Compact 2nd stage: phases of assembly

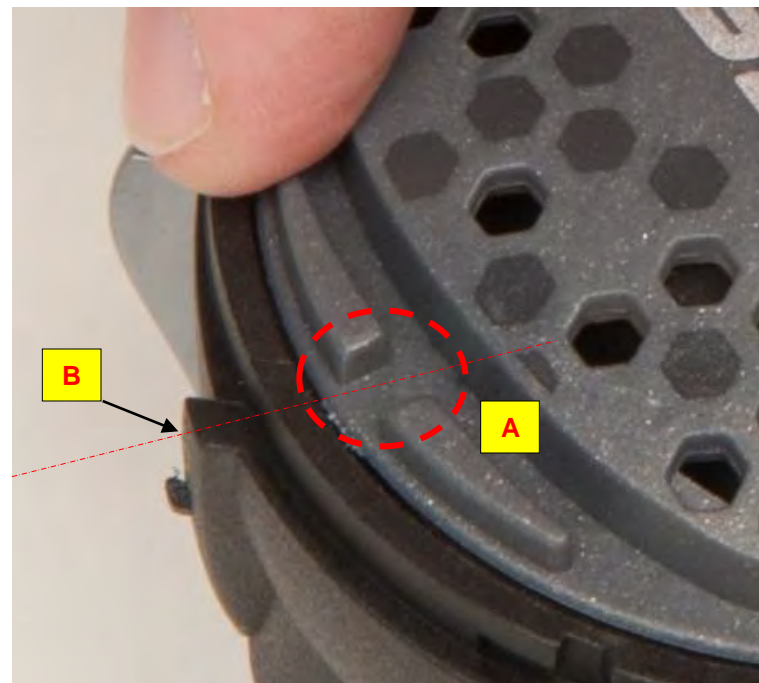


- Insert the button into the groove provided on the button ring as shown in the figure;
- This combination serves to center and anchor the diaphragm in its working seat inside the 2nd stage case.



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Regulators repair and maintenance

XS Compact 2nd stage: phases of assembly



- Insert the button and diaphragm centering ring assembly, rotated slightly, so that space A on the button is positioned near B (end of dome travel) on the case, as shown in the enlargement of the figure.

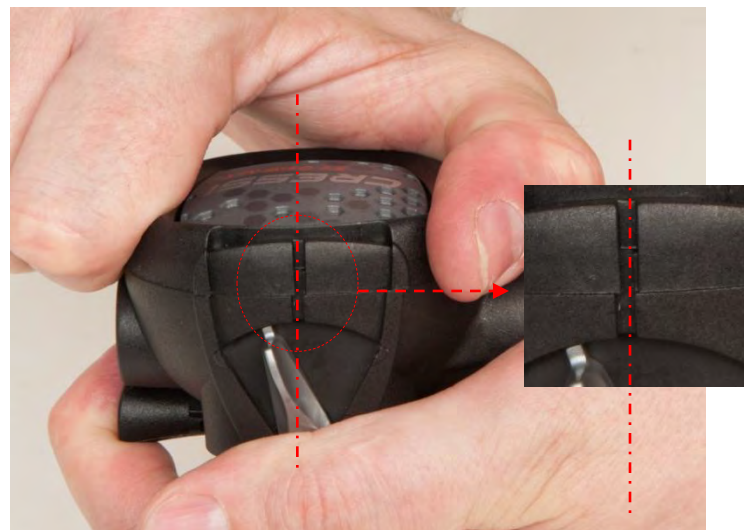


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Regulators repair and maintenance

XS Compact 2nd stage: phases of assembly



- Place the dome on the button, and then screw it on all the way so that the dome lock lines up with the corresponding one on the case.





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XS Compact 2nd stage: phases of assembly



- Rotate the flow deviator all the way to make this step easier, and then insert the dome lock retainer, pushing it into its seat on the case, as shown in the figures.





XS Compact 2nd stage: phases of assembly

- Once in the correct position, press on the sides of the dome lock retainer until you hear a small click, which indicates that it has fitted perfectly with the 2nd stage case as shown in the figure.





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Regulators repair and maintenance

XS Compact 2nd stage: calibration steps

- **Calibrating the XS Compact second stage: *adjusting the valve nozzle (pg. 58)***
- **Screw the 2nd stage to the calibration gauge (HZ 710011) connected to a properly calibrated first stage with a low pressure hose;**
- **Mount the regulator assembly (1st + 2nd stage) on a tank filled to 200 bar, or on a test bench with similar pressure, and then slowly open the air valve while simultaneously pushing the 2nd stage purge button;**
- **If the regulator releases slowly, press and simultaneously rotate the calibration gauge ring (HZ 710011) clockwise (+) until flow ceases; this way, the sharp valve edge should just rest against the closing seat, ensuring proper operation;**
- **Next, rotate the nozzle just over 1/2 a turn;**
- **Once the valve nozzle has been adjusted correctly, the gauge indicates the correct calibration of the 1st stage;**



Regulators repair and maintenance

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XS Compact 2nd stage: calibration steps

- **Calibrating the XS Compact second stage: *valve nozzle adjustment***

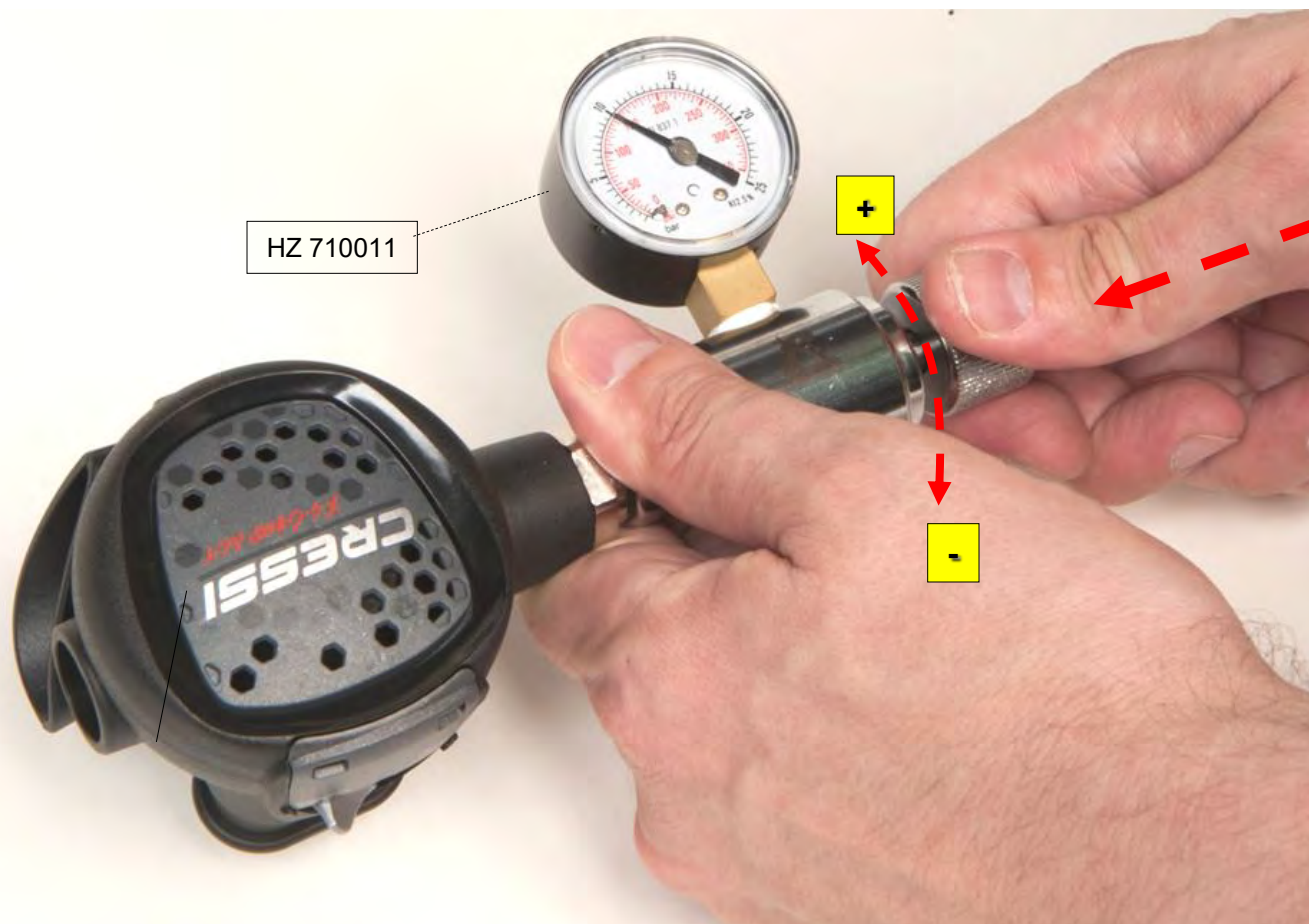
- ***N.B.:*** Be careful not to screw the valve nozzle too far, or the closing seat could cut be pressed into significantly, resulting in inhalation effort due to excessive compression of the valve spring;
- **What's more, excessive compression of the valve spring will change the correct height of the lever, compromising the regulator's breathing performance.**



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XS Compact 2nd stage: calibration steps

- **Calibrating the XS Compact second stage: *valve nozzle adjustment***





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XS Compact 2nd stage: calibration steps

• Calibrating the XS Compact second stage: *lever height adjustment (pg. 60)*

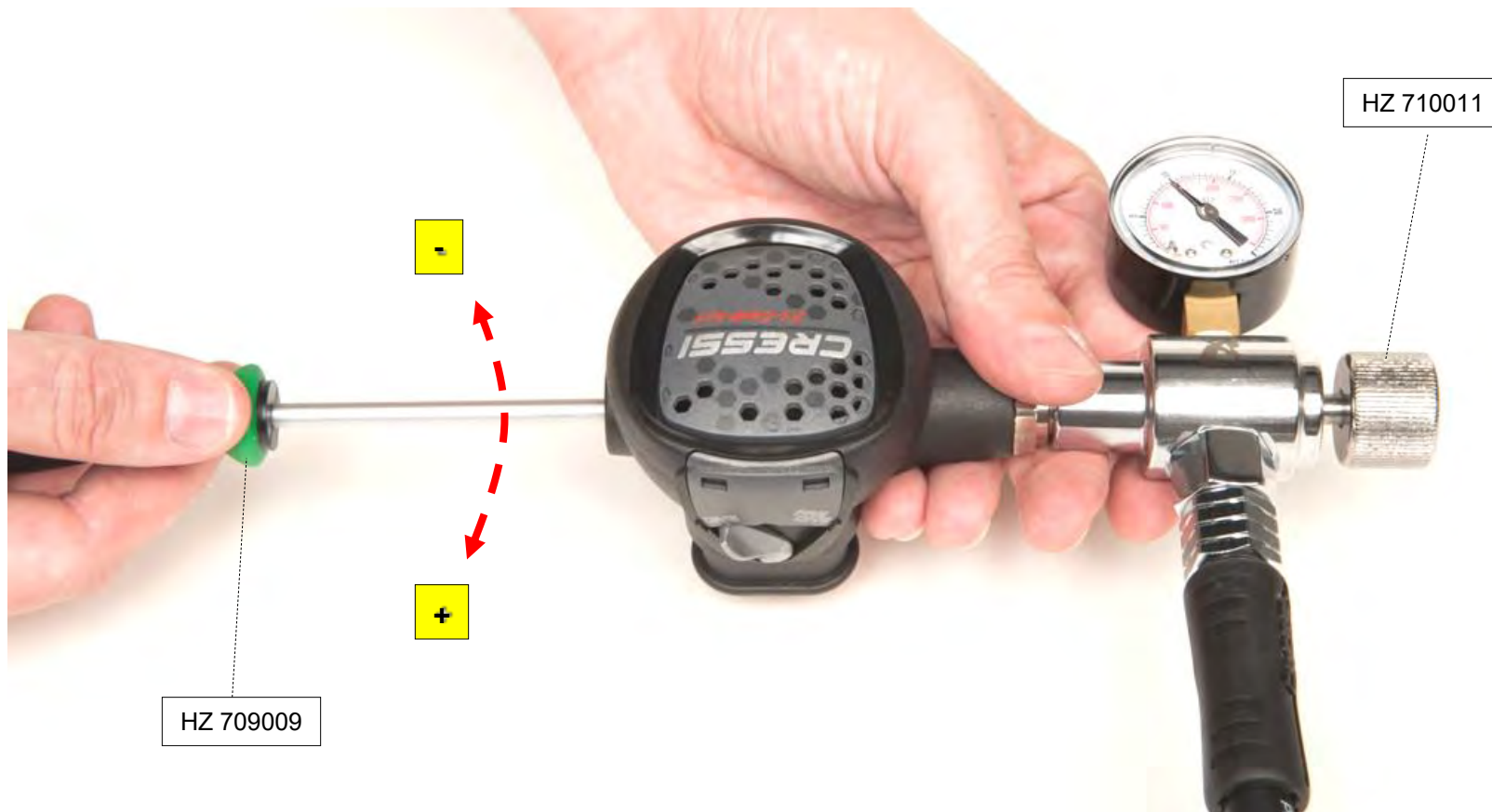
- Once the correct depth of the valve nozzle has been adjusted, you can proceed with final calibration, adjusting the height of the valve flow lever;
- This move is performed with the regulator under pressure, connecting the 2nd stage to a properly calibrated first stage with an intermediate pressure hose;
- Insert a 5.5 mm socket screwdriver (HZ 709009) into the side opening and rotate the valve nut clockwise (+) until the regulator starts flowing gently;
- Then rotate the calibration nut counter-clockwise (-) until flow stops, and then continue a bit further to ensure short length of idle travel for the lever;
- Correct calibration of the XS Compact stage is achieved when, with the regulator under pressure, the lever has a short length of idle travel, about 1.5 - 2 mm from the diaphragm plate.



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XS Compact 2nd stage: calibration steps

- **Calibrating the XS Compact second stage: *lever height adjustment***





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Regulators repair and maintenance

XS Compact 2nd stage: phases of assembly



- Once the 2nd stage has been correctly calibrated, insert the side cap, making sure to insert it in the right direction as shown in the figure;
- The correct direction to insert the cap is shown in the figure.
- Note: check the O-Ring of the side cap and replace it if necessary.





- Once the regulator is calibrated, keeping the regulator under pressure with a properly calibrated 1st stage, making the following final checks:
- Immerse the second stage slowly in water with the mouthpiece facing up, with the Venturi control lever in the Dive "+" position, and without letting water enter from the mouthpiece;
- After about 5 cm of water, the regulator should start to release air, until the second stage free flows completely;
- Then check the proper operation of the Venturi flow deviator, swiveling the lever to the "-" position; the continuous flow **must** cease;
- Completely immerse the regulator in water with the flow deviator in the pre-dive position (-):
- Wait about a minute, and then check that there are no leaks by looking for any columns of bubbles that indicate a leak (do not confuse these with the exit of air trapped in the 2nd stage);
- In the event of leaks, refer to the manual about the steps of calibration.



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Regulators repair and maintenance

XS Compact 2nd stage: overhaul sheet

**Download
Tab**

CRESSI
SINCE 1946

Service Record

Client: Record n°

Model: 1st Stage serial number

2nd Stage serial number

Date of purchase:

Stated defect:

Operations performed

- | | |
|--------------------------|--|
| <input type="checkbox"/> | Full disassembly of the equipment and any accessories |
| <input type="checkbox"/> | Removal of previous lubricants |
| <input type="checkbox"/> | Washing of components in ultrasound machine with specific solution |
| <input type="checkbox"/> | Washing of components with specific solution |
| <input type="checkbox"/> | Rinsing and drying |
| <input type="checkbox"/> | Checking all components subject to wear and/or seal |
| <input type="checkbox"/> | Replacement of parts in the annual maintenance kit |
| <input type="checkbox"/> | Replacement of defective, worn or worn-out parts (see list) |
| <input type="checkbox"/> | Lubrication |
| <input type="checkbox"/> | Assembly and final check |
| <input type="checkbox"/> | Washing and cleaning after flooding |
| <input type="checkbox"/> | Manufacturer's recommended update |
| <input type="checkbox"/> | |

Checks and adjustments

- | | |
|--------------------------|--|
| <input type="checkbox"/> | Calibration of first stage IP valve |
| <input type="checkbox"/> | Adjustment of second stage lever |
| <input type="checkbox"/> | Adjustment of Octopus second stage lever |
| <input type="checkbox"/> | Inhalation force calibration |
| <input type="checkbox"/> | Data check using test bench at different pressures |
| <input type="checkbox"/> | Pressure seal check |
| <input type="checkbox"/> | Valve functioning and seal check |
| <input type="checkbox"/> | |
| <input type="checkbox"/> | Type of operation performed: |
| <input type="checkbox"/> | Replacements parts according to the list: |

Replacement parts

- | |
|-------------|
| a) |
| b) |
| c) |
| d) |
| e) |
| f) |
| Notes |

Location, stamp, and date:
Type of operation performed:
Replacements parts according to the list:

Store this sheet until the next technical operation.

<input type="checkbox"/>	Location, stamp, and date:	The Technician
<input type="checkbox"/>	Warranty <input type="checkbox"/> YES <input type="checkbox"/> NO	Date of the next scheduled maintenance
<input type="checkbox"/>	Annual Overhaul	
<input type="checkbox"/>	Special Maintenance	
	Notes	
	
	
	

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Regulators repair and maintenance

XS Compact 2nd stage: service records

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Maintenance / Service Record

MODEL	SERIAL NUMBER	DATE	DEALER NAME	TECHNICIAN'S NAME	NOTES ON PROCEDURES (Date of the next scheduled maintenance)	SIGNATURE