



*Cressi-sub*  
Regulators repair and maintenance

## Airtech 2nd stage





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Regulators repair and maintenance

## Airtech 2nd stage

### WARNING !

- This document is intended for experienced technical personnel who have already attended a Cressi-sub training course on equipment repair and maintenance.
- We decline any responsibility for any maintenance and/or repair operation carried out by unauthorized personnel.
- Avoid carrying out maintenance and repair operations on the equipment without the correct training required.
- Should the information reported in this manual be unclear or not fully understandable, please contact Cressi-sub before carrying out any disassembling or maintenance operation.
- Before carrying out any operation, Cressi-sub recommend to read this manual carefully in order to get to know thoroughly all necessary **tools** and techniques to carry out a correct maintenance and repair of the equipment.



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## Airtech 2nd stage

### WARNING !

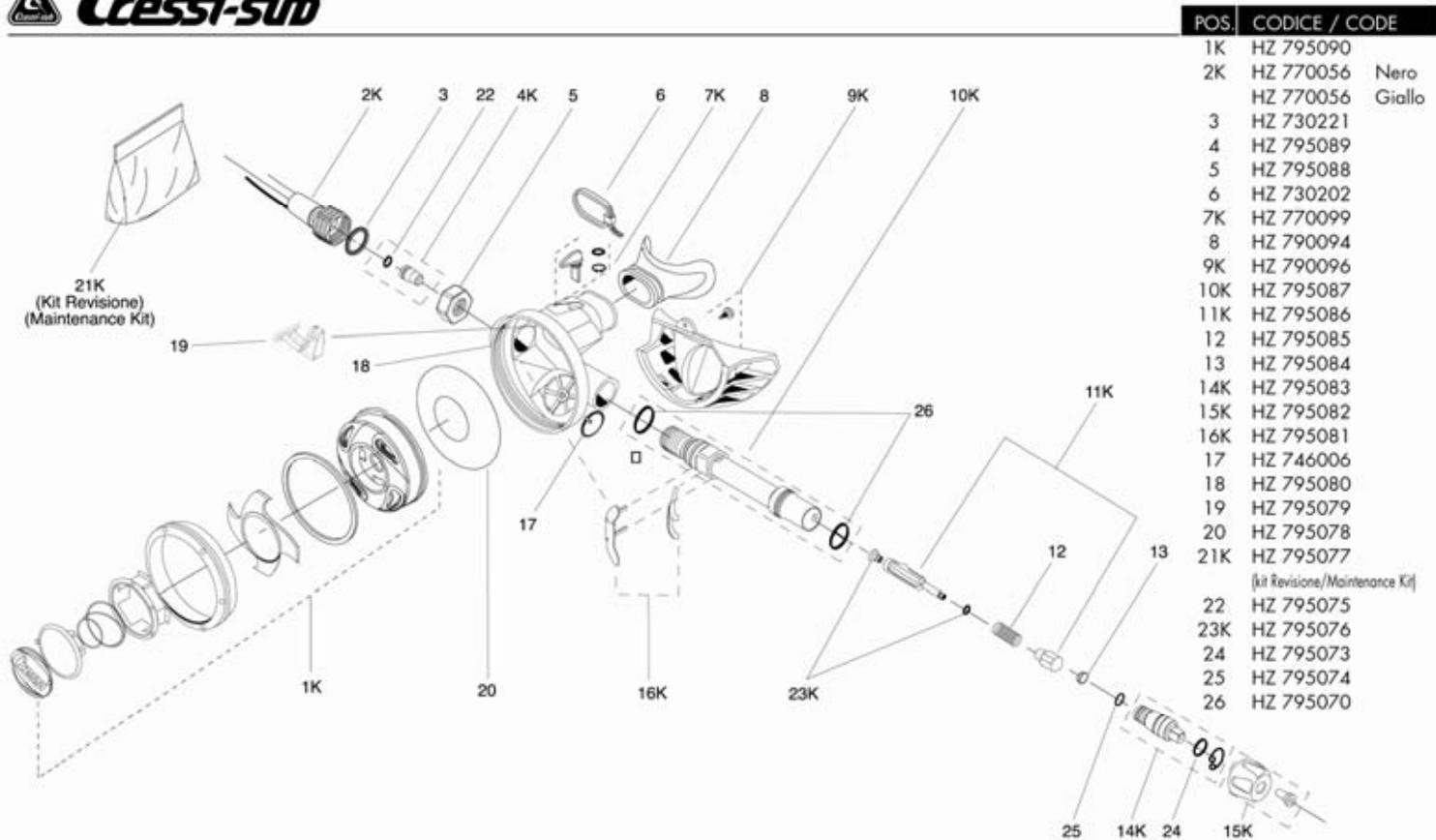
- Before any operation, Cressi-sub recommend to read carefully the present document in order to get to know thoroughly all necessary tools and techniques to carry out a correct maintenance and repair of the equipment.
- Use this document during every phase of the equipment maintenance and repair, in order not to leave out any sequence.
- On the contrary, bad working or even accidents might occur.
- Pay particular attention to the advices written on the sides of the pictures representing the different phases of maintenance and repair, in order to avoid any possible problem that might cause accidents.
- All operations described in this manual are relating and destined *only* to disassembling, maintenance and assembly of equipments to be used with air (21% oxygen, 79% nitrogen).



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## Airtech 2nd stage: spare parts



2° Stadio Airtech Bilanciato Regolabile / Adjustable Balanced 2<sup>nd</sup> Stage Airtech

Ed./Issue	AIRT/1
A/04	N° Tav./Rev.

AIRTECH 2<sup>nd</sup> STAGE HZ 795077  
ANNUAL REPLACEMENT KIT CHART  
(Real Size)



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## Airtech 2nd stage

- Airtech 2nd stage servicing kit



HZ 795077

(Real Size) AIRTECH 2<sup>nd</sup> STAGE (HZ 795077) ANNUAL REPLACEMENT KIT CHART

O-RING Reference Table					
HZ 795070	HZ 795073	HZ795074	HZ 795075	HZ 770099	HZ 795076
SPARE PARTS Reference Table					
1 Exhaust Valve HZ 746006	1 Setting Screw Seeger HZ 795083	1 Flow Deviator Clip HZ 770099	1 Poppet LP Seat HZ 795076		

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**Use only Cressi-sub original replacement units**

**Note: we recommend to carry out a complete maintenance of your regulator once a year or more in case of a particularly intensive use.**



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## Airtech 2nd stage

- **Yearly maintenance**

- Cressi-sub recommend a complete maintenance of the regulator at least once a year, and more frequently in case of a particular intensive use. Please replace all the parts contained in the yearly maintenance kit (cod.HZ 795077).
- The required tools to carry out the maintenance are described in a section of this manual.
- Wash the metal parts in warm water and soap, then rinse them in fresh water. Remove any concretion by means of ultra-sound cleaning or diluted acid solutions and rinse them carefully in fresh water.



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## Airtech 2nd stage

- **Yearly maintenance**
- Grease all new OR with a thin silicone film: this will reduce to the minimum the risk of damage during the assembly phases.
- You may grease the first two turns of the metal threads.
- All operations described in this manual are relating and destined *only* to disassembling, maintenance and assembly of equipments to be used with air (21% oxygen, 79% nitrogen).

• **Use only original Cressi-sub spare parts**



**Airtech 2nd stage:  
disassembling**

- Use a 0,75" (19 mm) and a 0,67" (17 mm) spanner to remove the low pressure pipe, by holding the valve seat nut steady with the former, and unscrewing the pipe with the latter.
- By yearly servicing, always replace the OR inside the pipe.





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## Airtech 2nd stage: disassembling

- Unscrew the cap holder ring using a ring spanner - code HZ 709013





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## Airtech 2nd stage: disassembling



1K = HZ 795090

- Remove the cap holder ring and the cap out of their seats



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## Airtech 2nd stage: disassembling

- Remove the seal out of its seat





**Airtech 2nd stage:  
disassembling**

- Place the regulator case on a workbench, as shown in the picture, and remove the lock nut using a 0,75" (19 mm) spanner.





**Airtech 2nd stage:  
disassembling**



- Push the regulator's valve set inside the case, letting the valve set holder plate come out of its seat, that allows you to take it out.



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## Airtech 2nd stage: disassembling



- Remove the 2nd stage mechanism out of the case, pushing the lever as shown in the picture and taking it out completely from the case.



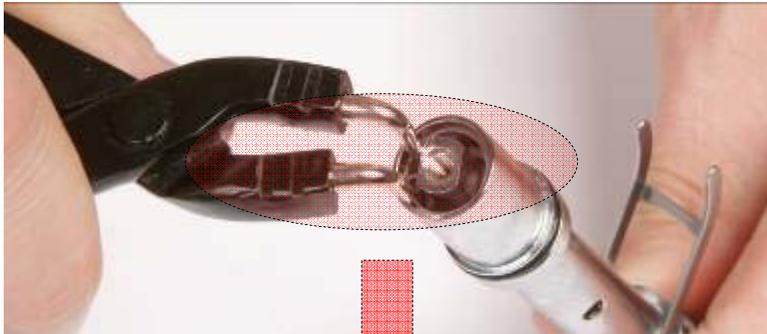
- Remove the adjustment knob's Allen screw using a 0,07" (2 mm) spanner.



- By means of the knob, turn the adjusting screw completely. As we are going to see later, this will make it easier to remove the adjustment screw seeger ring out of its seat.
- Remove the wheel.



**Airtech 2nd stage:  
disassembling**

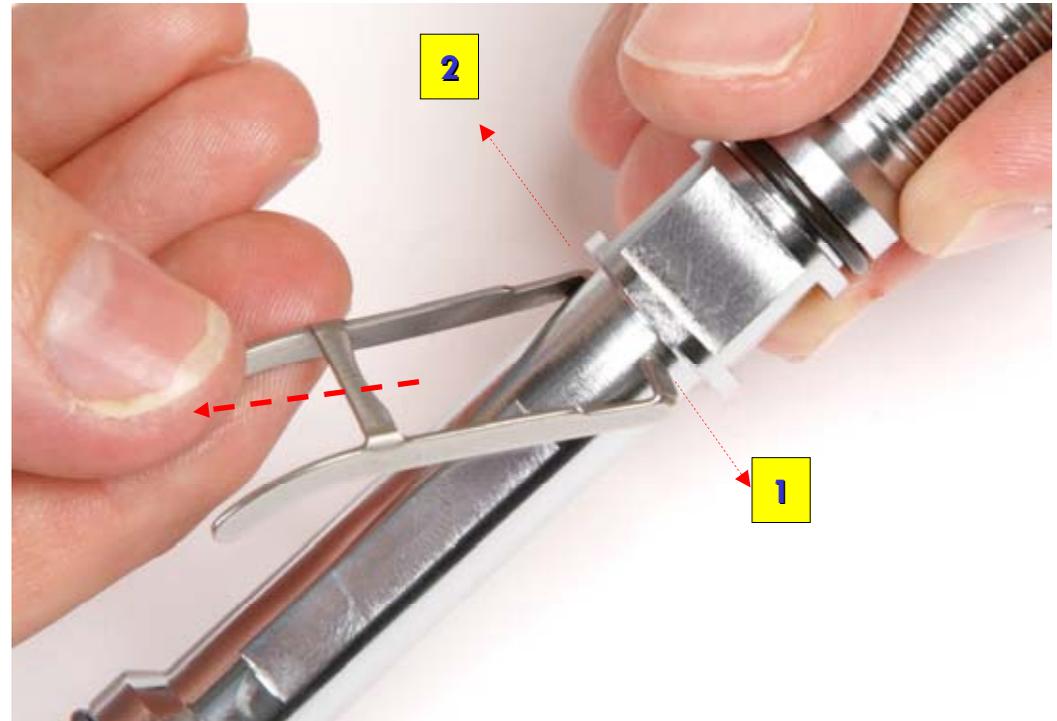


- Remove the adjusting screw seeger ring. Use the special seeger pliers to turn the seeger ring, so that both eyelets are lined up in correspondence with the milled side of the adjusting screw. This will make it easier to remove the ring out of its seat, that would be on the contrary rather difficult.



## Airtech 2nd stage: disassembling

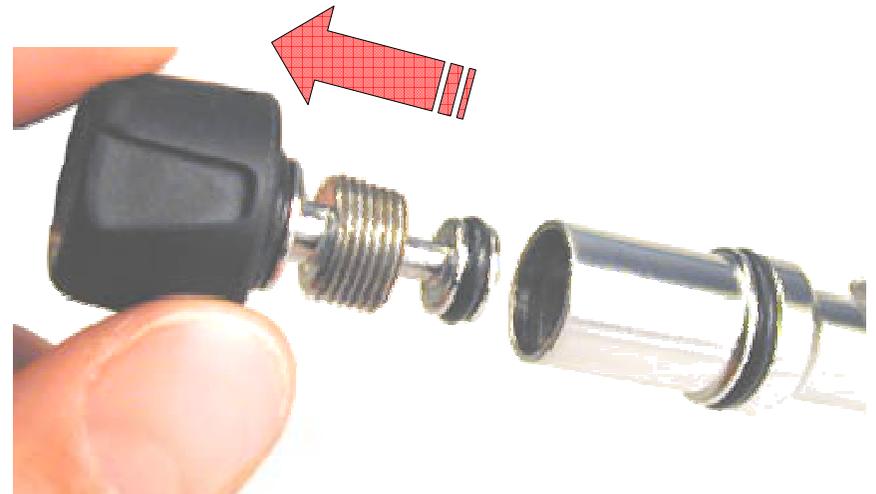
- Remove the lever, by softly widening one of the arms (1) and pulling it out of the slit; then repeat the operation on the opposite side (2).





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## Airtech 2nd stage: disassembling



- Remove the shaft adjusting screw, by unscrewing it completely using the adjusting knob. Then, screw the knob's Allen screw and pull it out, as shown in the picture.



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**Airtech 2nd stage:  
disassembling**



- Remove the setting washer and the shaft, including spring and balancing chamber.



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## Airtech 2nd stage: disassembling



9K = HZ 790096

- Unscrew the anchoring screw of the expiration fin and remove it, by levering on its edges.



- Remove the discharge valve out of its seat.



**Airtech 2nd stage:  
disassembling**



- Remove the injector, inserting a small screwdriver in the space between it and the case. Levering, let the injector come out of its seat, as shown in the picture.



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## Airtech 2nd stage: disassembling



- Using a flat pointed tool, remove the lock ring of the flux diverter, pushing it outwards.
- Then remove the flux diverter out of its seat.



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## Airtech 2nd stage: disassembling

- Replace and grease the flux diverter' s OR.



HZ 795080

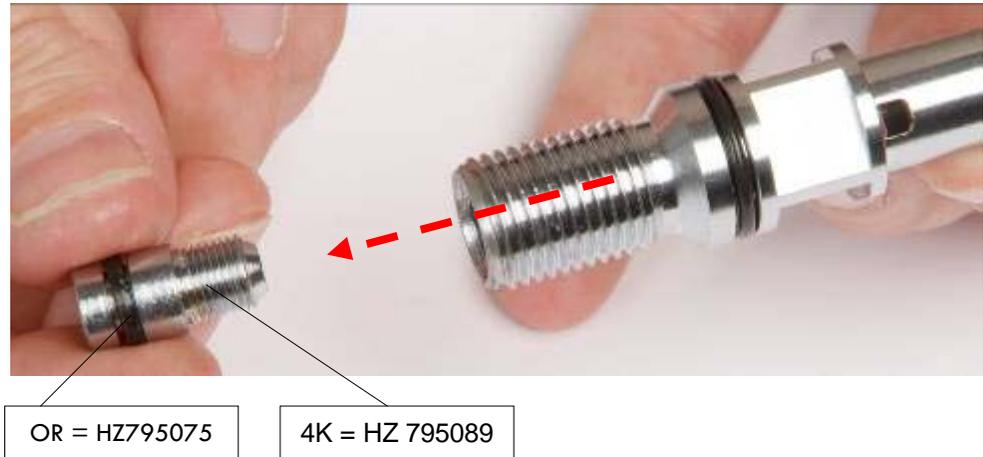
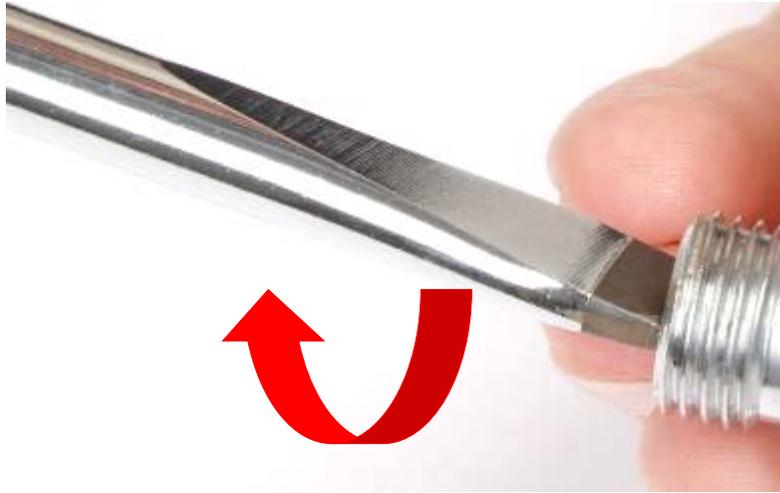


7K = HZ 770099



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## Airtech 2nd stage: disassembling



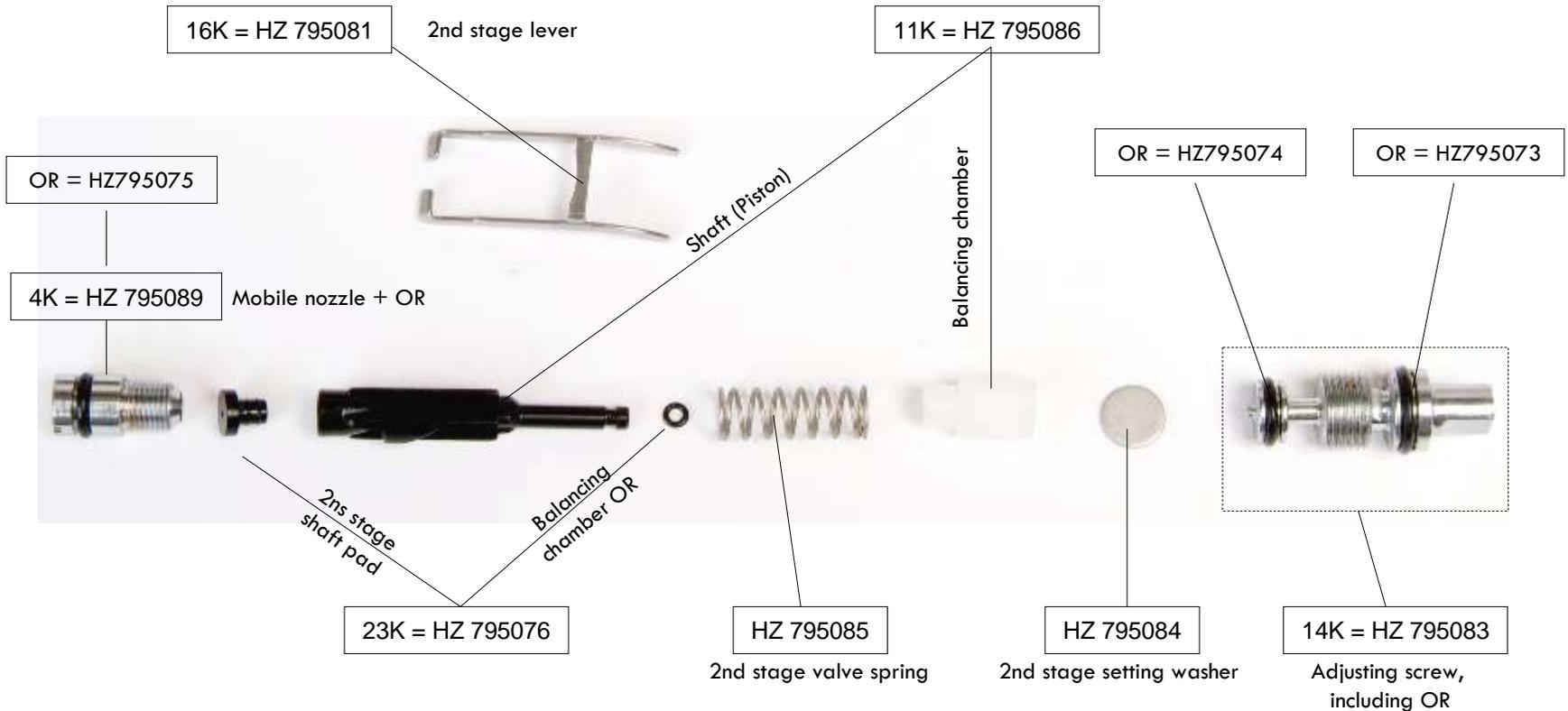
- Unscrew the adjustable nozzle completely out of its seat.
- Remove the nozzle, inserting a plastic cylindrical tool in the opposite side, so that you do not damage the nozzle edge, and push it out of its seat.
- NOTE: you have to use some strength in order to win the OR' s friction on the case wall and to push out the whole nozzle.



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## Airtech 2nd stage



- We have got, at this point, to having all the elements of Airtech 2nd stage valve mechanism on our workbench.



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## Airtech 2nd stage: yearly servicing

- Remove and replace all seals included in the 2nd stage.
- To remove the OR, use a plastic or metal blunt tool, in order not to damage the seals' seat.
- **Warning: USE ONLY ORIGINAL CRESSI-SUB SPARE PARTS**





**Airtech 2nd stage:  
assembling**

- After greasing its OR, insert the flux diverter in its seat.
- Push the flux diverter seeger ring in its seat using your hand first, then a blunt tool.



7K = HZ 770099

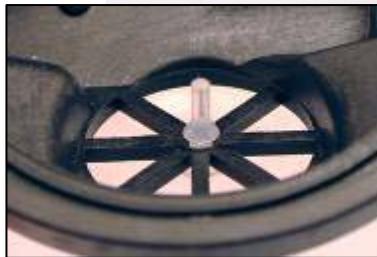


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## Airtech 2nd stage: assembling



- Insert the injector in its dovetail seat in the case and push it to the bottom, as shown in the picture.



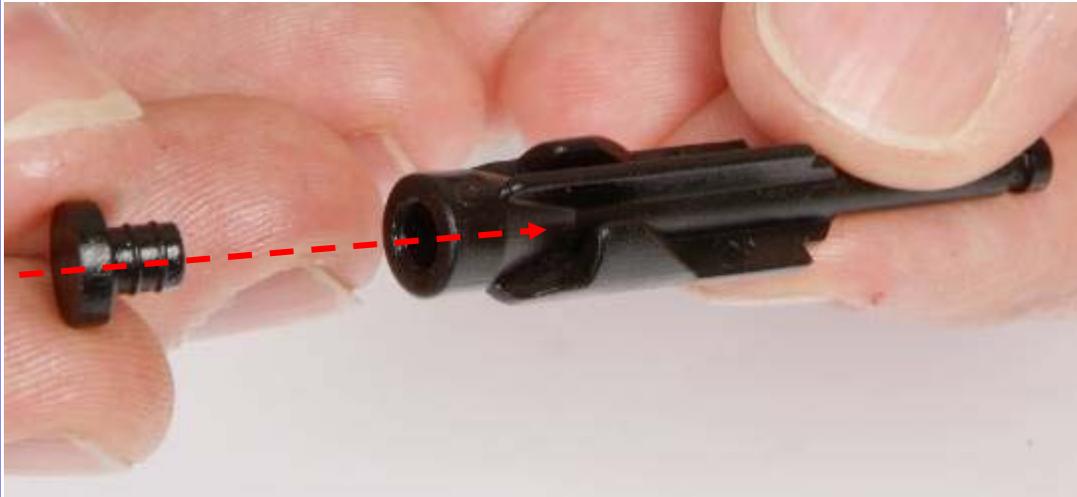
HZ 746006

- Insert the discharge valve in its seat. The small picture shows the correct position of the valve stem inside the regulator.



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## Airtech 2nd stage: assembling

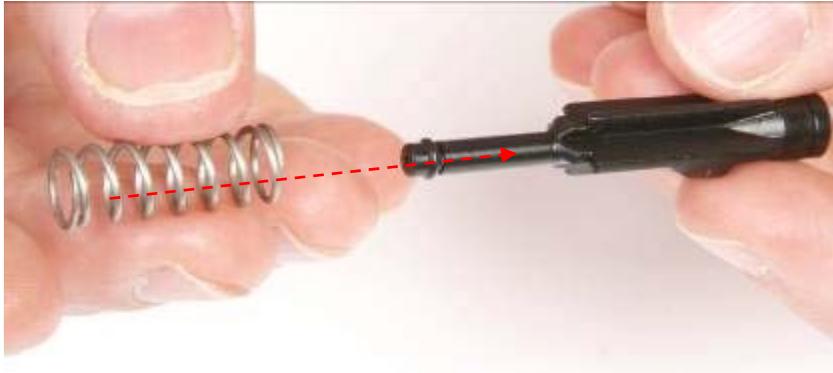


- Insert the fresh pad, by pushing it in its seat in the piston. Please note both bulges on the pad stem, which guarantee the perfect coupling between pad and piston.
- After greasing it, insert the balancing chamber' s OR in its seat on one of the piston' s edges.
- NOTE: it is essential to grease the parts correctly, in order to make the regulator to work perfectly.



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## Airtech 2nd stage: assembling

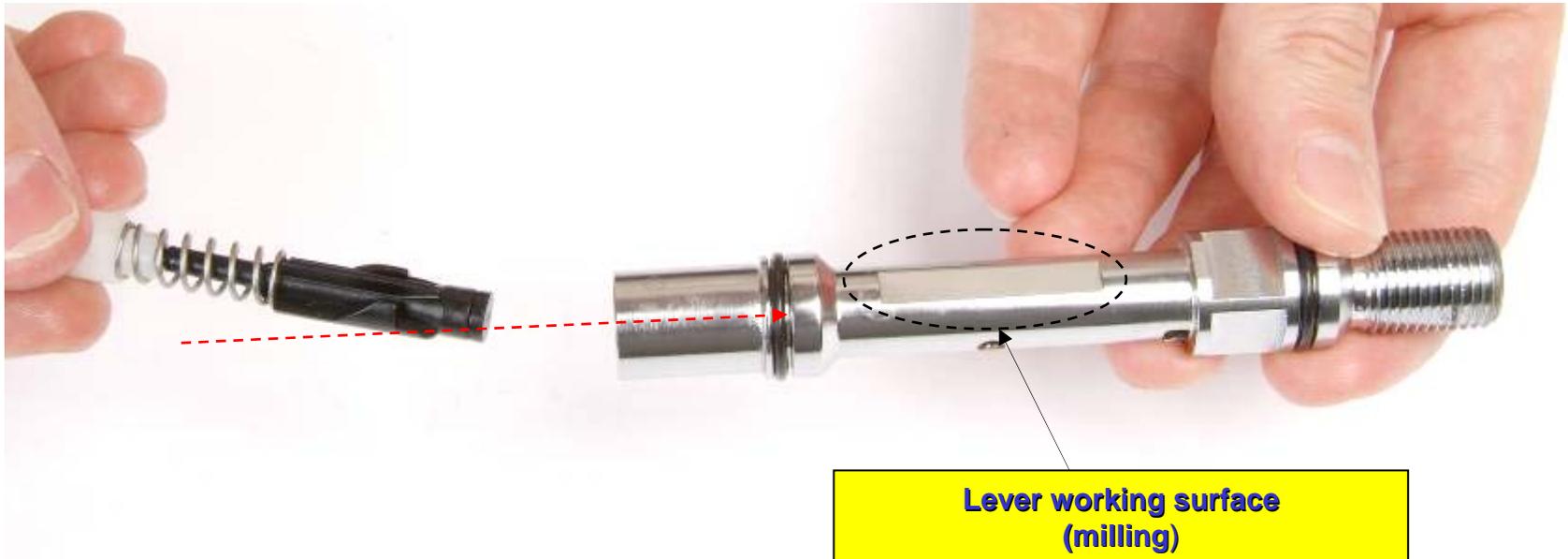


- Go on assembling the instrument, inserting spring and balancing chamber in the piston, as shown in the picture.



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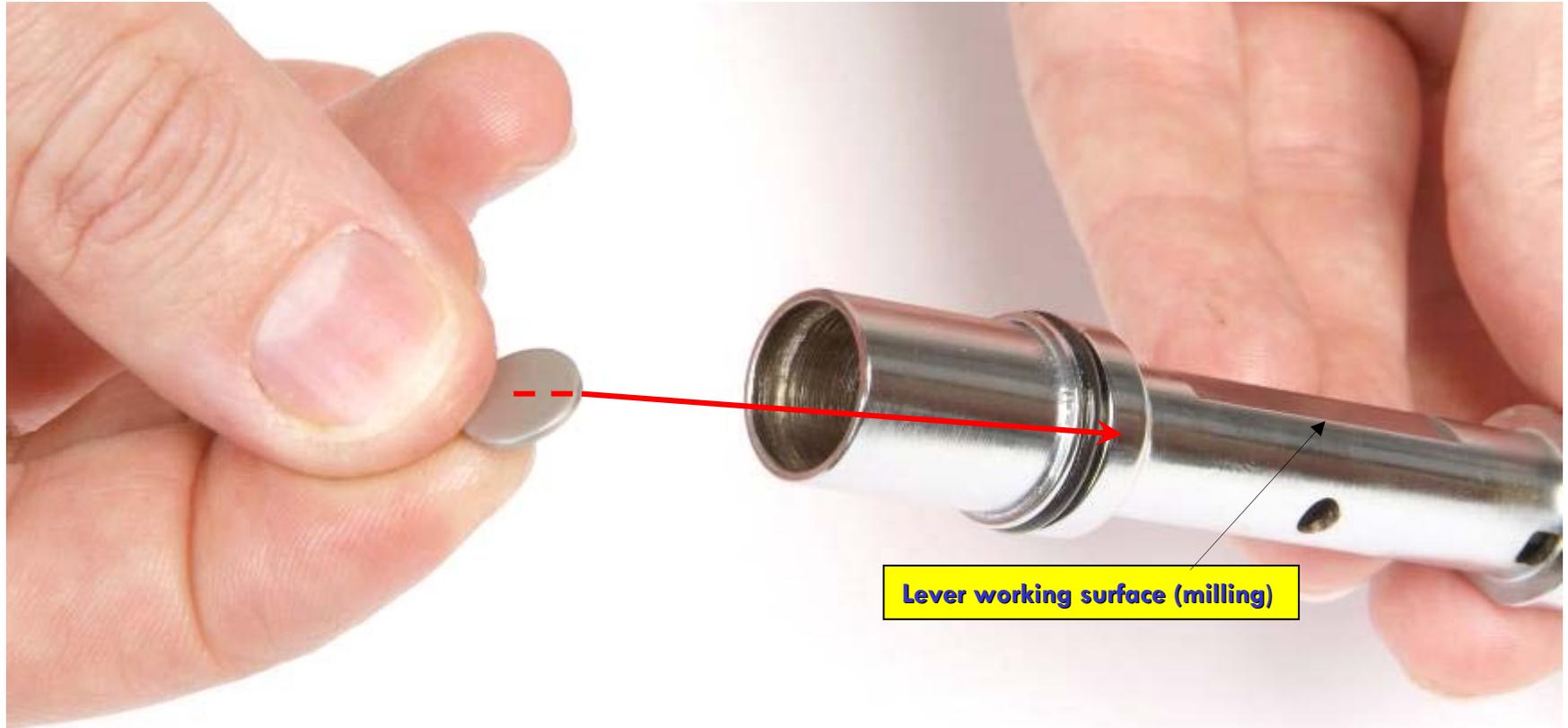
## Airtech 2nd stage: assembling



- Insert the full valve inside the regulator' s valve set, as shown in the picture.



**Airtech 2nd stage:  
assembling**

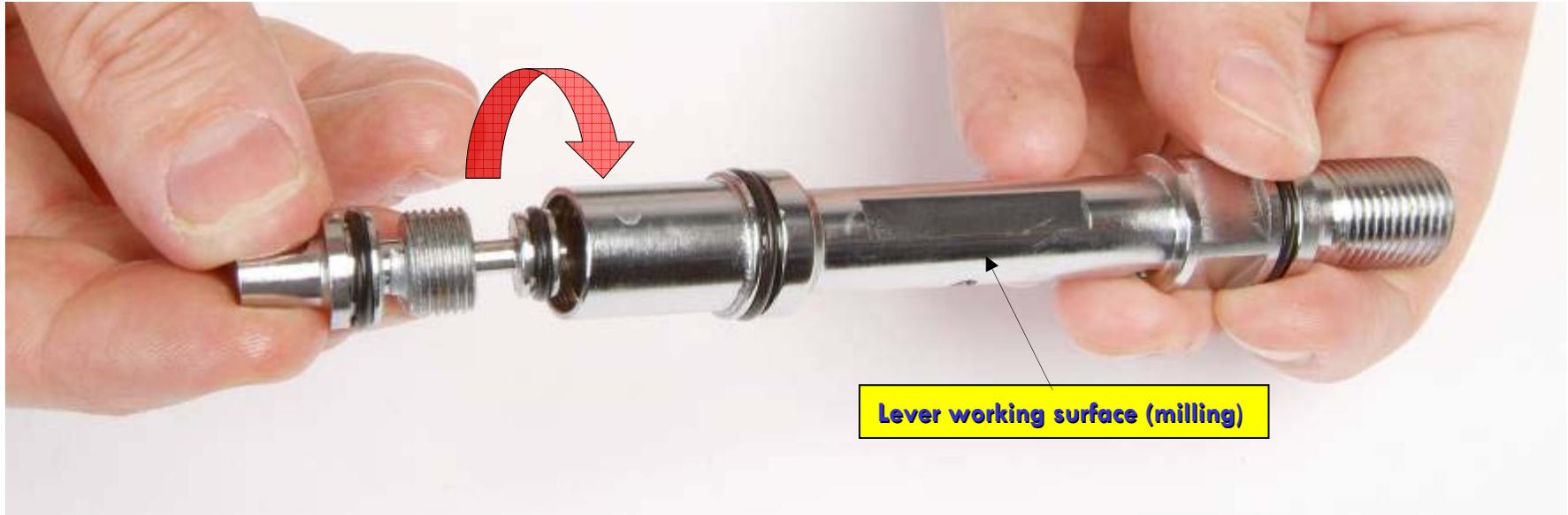


- Insert the 2nd stage setting washer inside the regulator' s valve set, as shown in the picture.
- NOTE: the washer is equipped with a sharp and a blunt edge. The former must be placed inside, touching the balancing chamber.



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## Airtech 2nd stage: assembling

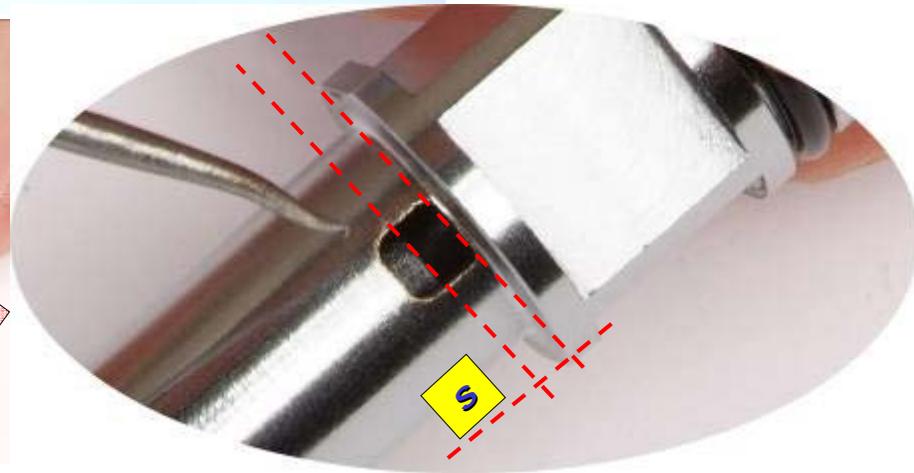
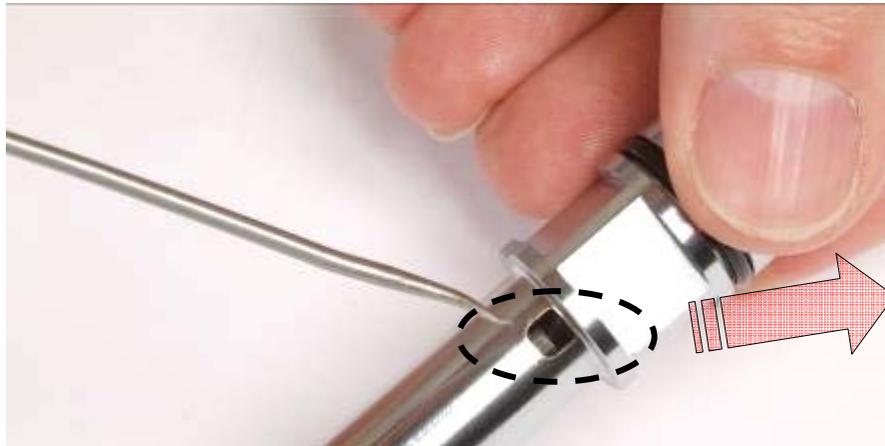
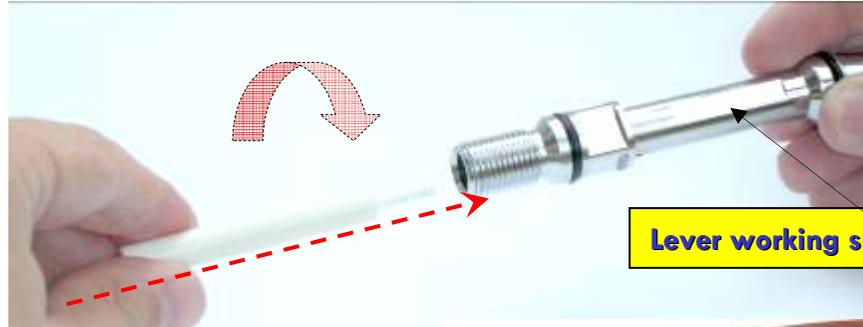


- After replacing and greasing its OR, insert the 2nd stage adjusting screw inside the regulator's valve set.
- Softly turn the adjusting screw, in order to make it easier to assemble the lever.
- Note: the thread between both seals is **watertight**. Greasing it richly will make the adjusting screw to work easily and perfectly for a long time.



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## Airtech 2nd stage: assembling



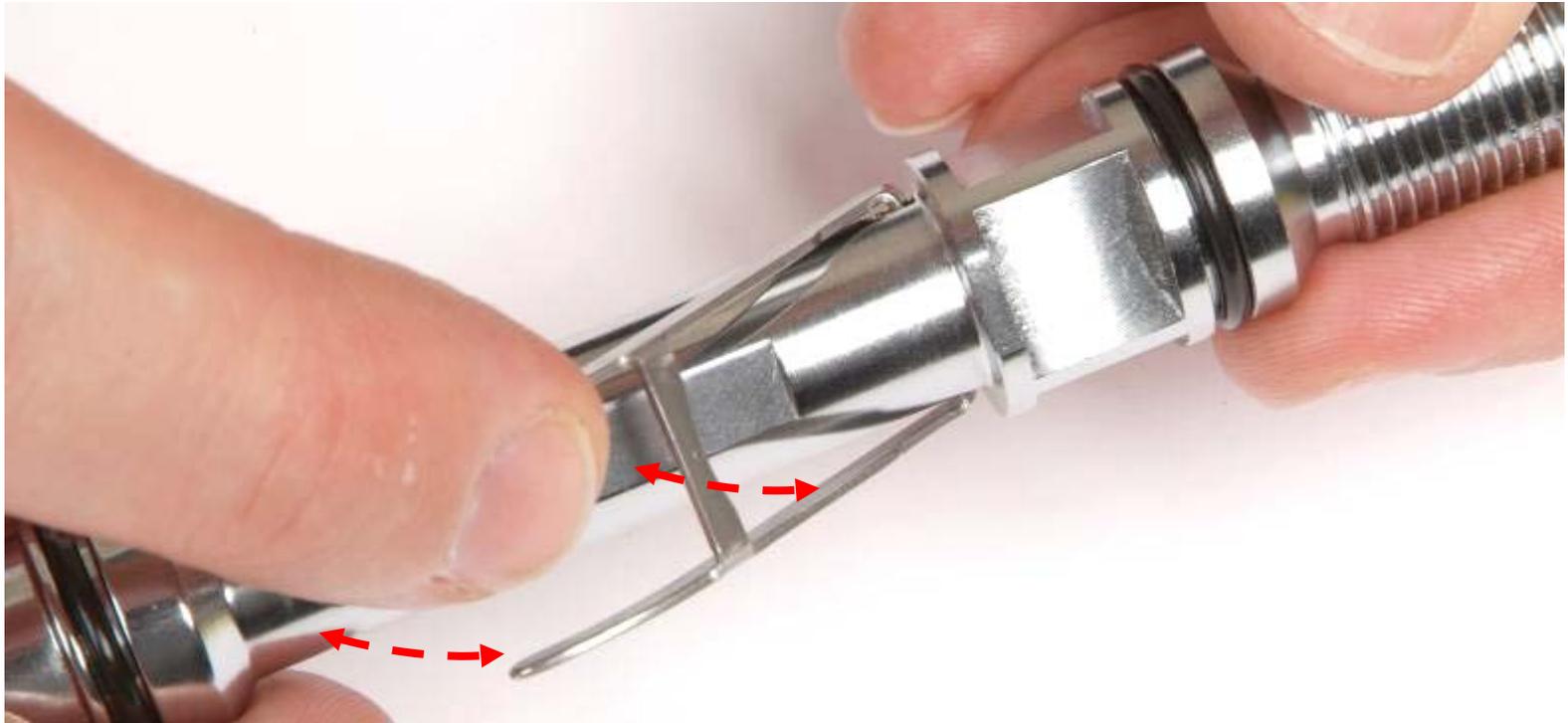
- Insert the spring-pushing tool in the valve set, as shown in the picture; press the piston until the distance between the piston fulcrum and the valve set wall is such, that the lever can be inserted in both sides of the valve body. Should such distance not be guaranteed, turn and go on pressing the piston with the spring-pushing tool, until the S space shown in the picture is visible on both sides of the valve set, it being the fulcrum of the lever working.



**Airtech 2nd stage:  
assembling**



- Use the spring-pushing tool to keep the piston pressed in the previously described position; take the lever working surface as reference - which was obtained by milling the valve set outside surface – and insert first one arm of the lever in one side of the valve set, as shown in the picture; then insert the other one as well in the symmetrically opposite side.



- If the lever moves and springs back easily to the upper position, it means the lever is correctly inserted in the regulator's valve set. On the contrary, repeat the operation, following exactly the above described indications.



- By means of the knob, turn the adjusting screw completely, in order to be able to insert the seeger ring correctly.

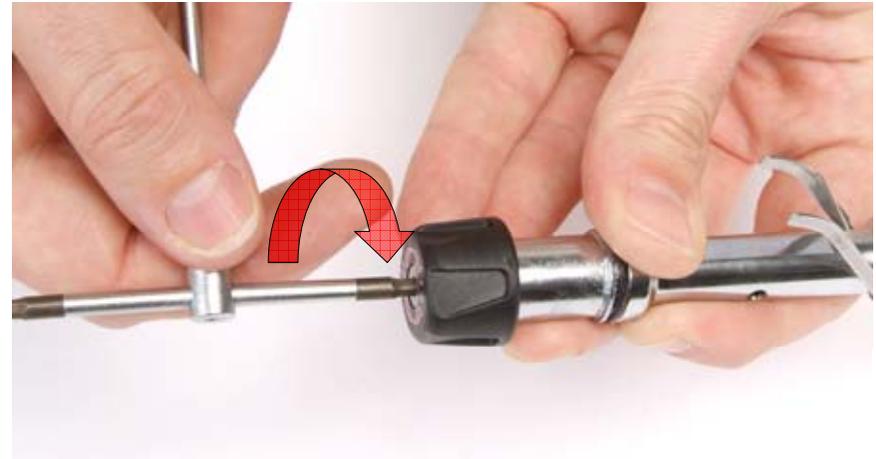


- Insert the seeger in its seat inside the valve set, as shown in the picture. The seeger eyelets must line up in correspondence with the milled side of the adjusting screw.



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## Airtech 2nd stage: assembling



- Unscrew the 2nd stage adjusting screw completely, by means of the knob. Lock it with its 0,07" (2 mm). Allen screw.



**Airtech 2nd stage:  
assembling**



- Assemble the expiration fin, by fitting it in the special points, as shown in the picture. Lock it with its special screw.
- Warning: use only the special screw supplied by Cressi-sub. A different length screw might perforate the valve set and allow the water getting into the case!





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## Airtech 2nd stage: assembling



- After greasing the valve set' s OR, insert the regulator' s mechanism, paying attention to the direction shown in the picture.



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## Airtech 2nd stage: assembling

- Insert the valve set holder plate, by placing its both fins in the valve set seat, as shown in the picture.





**Airtech 2nd stage:  
assembling**

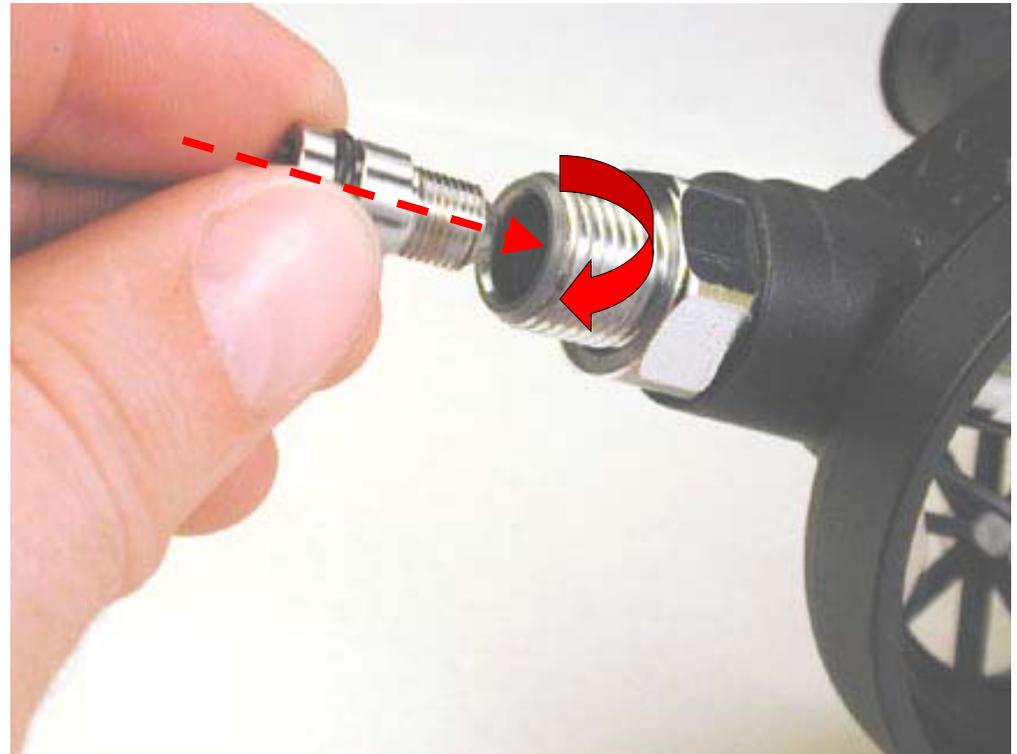
- Use a 0,75" (19 mm) spanner to screw the mechanism lock nut.
- Should you use a dynamometric spanner, apply 5 – 6 N/m.





## Airtech 2nd stage: assembling

- After greasing the OR, insert and push the mobile nozzle in its seat down to the beginning of the thread.
- Keeping the 2nd stage lever pressed, turn the nozzle in its seat a couple of times.
- Do not screw too tight, in order to prevent the nozzle edge from damaging the pad.
- The regulator is to be correctly set, when it is completely assembled.





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## Airtech 2nd stage setting

### • Airtech 2nd stage setting: *adjusting the valve nozzle*

- Connect the 2nd stage to the correctly set 1st stage.
- Open the 2nd stage adjusting screw completely.
- Place the whole regulator (1st + 2nd stage) either on a 200 bar pressurized tank or on an equally pressurized test bench; open the air tap softly, while pressing at the same time the 2nd stage discharge air button.
- Should the regulator release air, close the air tap, unscrew the pipe and use a sharp tool to screw the valve nozzle.
- Repeat the last operation until the air stops flowing: the valve sharp edge should be hardly touching the lock pad, that guarantees its correct working.
- **NOTE:** take care you do not screw the nozzle too tight, otherwise the lock pad might be pressed upon too much, causing the inspiration to become too tiresome, because of the valve spring being too compressed.
- **NOTE:** the same setting operation can be carried out using the special setting tool, as shown in [picture T1 on page 49.](#)



**Airtech 2nd stage setting**

**• Airtech 2nd stage setting**



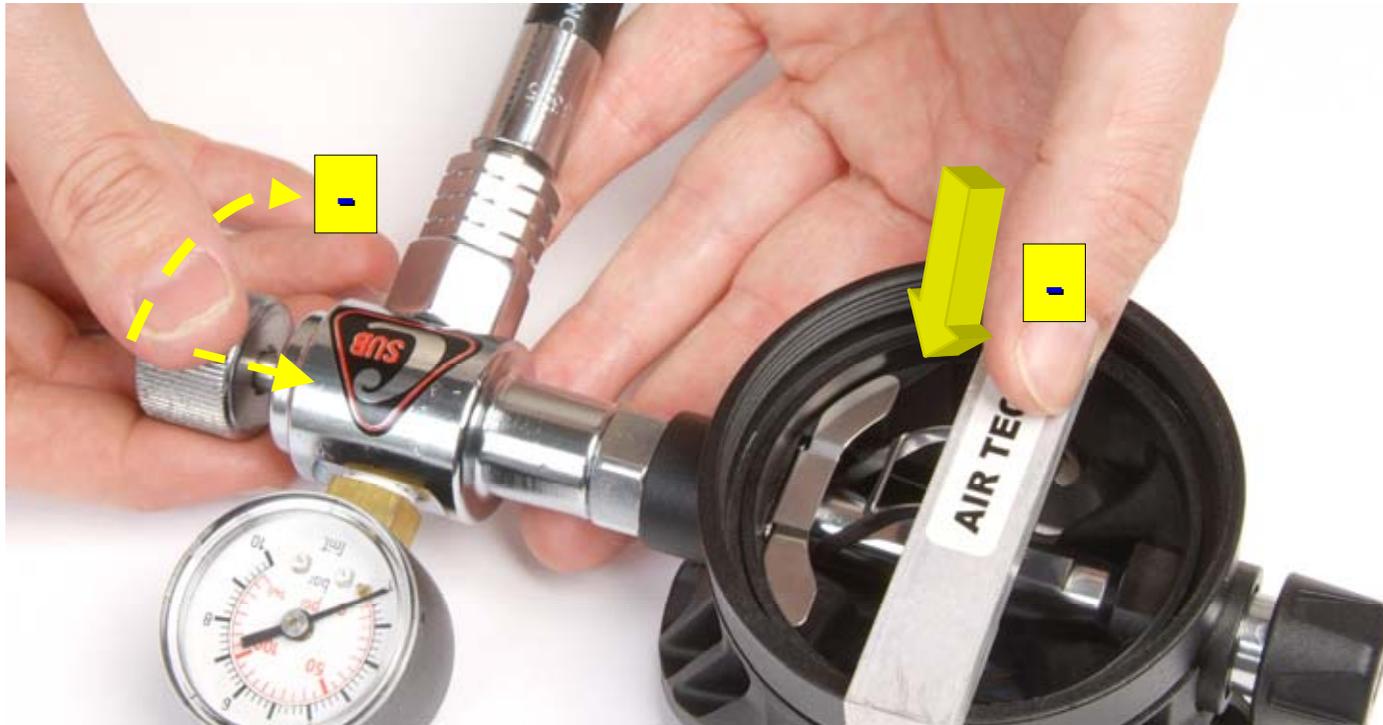
Picture T1

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- **Airtech 2nd stage dima setting**



- Turn anticlockwise, until the air stops flowing, then turn a little more, until the lever is allowed a short idle stroke.



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**Airtech 2nd stage setting**

- **Airtech 2nd stage dima setting**

- Airtech 2nd stage is correctly set, when - under pressure - the lever is allowed a short idle stroke of about 0,08" (1,5 – 2 mm) as to the dima.





**Airtech 2nd stage:  
assembling**

- Insert the seal, letting the seats on the seal itself fit in the corresponding stops on the case, in order to prevent the seal from rotating, once the cap is completely locked.





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## Airtech 2nd stage: assembling

- Insert the 2nd stage cap, letting the seats on the cap itself fit in the corresponding stops on the case.





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## Airtech 2nd stage: assembling



- Screw the cap holder, taking care you hold the cap steady with your hand in the position given it by the iron lock teeth on the case.



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## Airtech 2nd stage: tools

(Small) spanner

HZ 709013



Airtech 2nd stage setting dima

HZ 709015



2nd stage  
spring-pushing tool

HZ 709011



Seeger inserting/removing pliers

HZ 709005



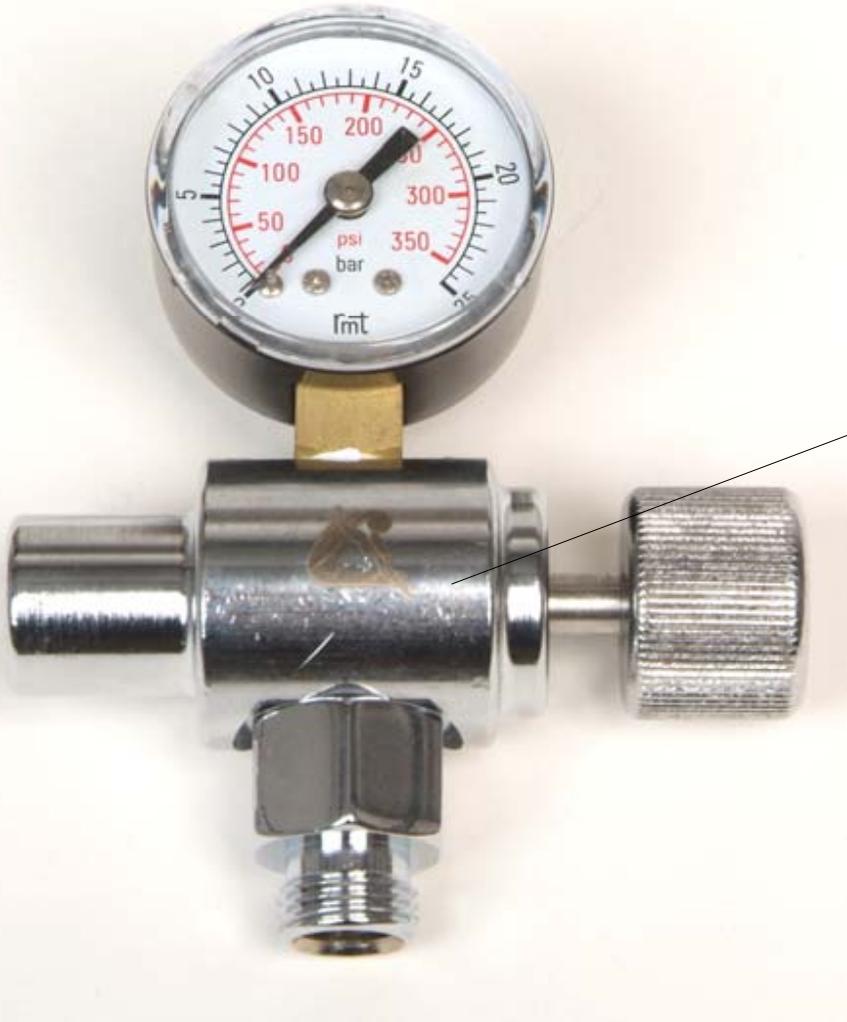
Point

HZ 709004



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**Airtech 2nd stage: tools**



2<sup>nd</sup> Stage Setting Gauge

HZ 710011

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