



Cressi-sub
Regulators repair and maintenance

1st stage AC10



AC10 INT HZ 790097
AC10 DIN 200 bar HZ 790098
AC10 DIN 300 bar HZ 790093



WARNING!

- This manual 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.



WARNING!

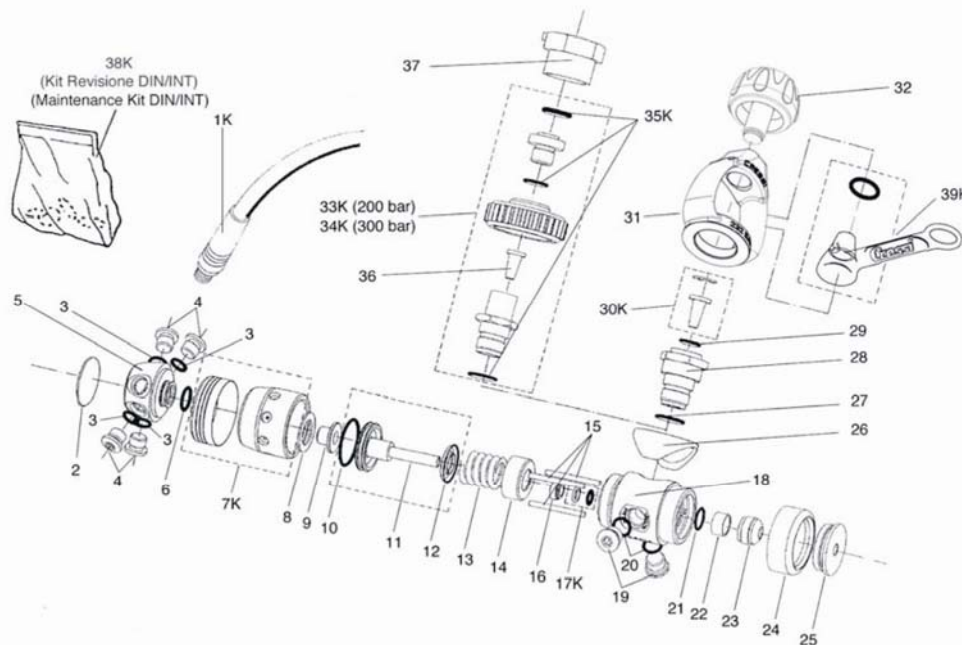
- Use this document during every phase of the equipment maintenance and repair, in order not to leave out any sequence. On the contrary, bad working or even accidents might occur.
- Pay particular attention to the advices written on the sides of the pictures representing the different phases of maintenance and repair, in order to avoid any possible problem that might cause accidents.
- This document does not replace in any way the user's handbook supplied with the equipment.
- 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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Regulators repair and maintenance

1° stage AC10: spare parts



POS	CODICE / CODE
1K	HZ 730222 Nero
1K	HZ 730225 Giallo
2	HZ 770090
3	HZ 730108
4	HZ 730106
5	HZ 770091
6	HZ 700095
7K	HZ 770089
8	HZ 770087
9	HZ 770088
10	HZ 735108
11	HZ 735136
12	HZ 735135
13	HZ 700097
14	HZ 735132
15	HZ 735131
16	HZ 770086
17K	HZ 770085
18	HZ 770084
19	HZ 730127
20	HZ 730132
21	HZ 735128
22	HZ 735138
23	HZ 735129
24	HZ 770082
25	HZ 770081
26	HZ 735127
27	HZ 735126
28	HZ 700088
29	HZ 730114
30K	HZ 730188
31	HZ 770080
32	HZ 730027
33K	HZ 735162 (DIN 200 bar)
34K	HZ 735163 (DIN 300 bar)
35K	HZ 735197 (SET OR DIN 200-300 bar)
36	HZ 735154
37	HZ 735170
38K	HZ 735050 INT (kit Revisione/Maintenance Kit)
38K	HZ 735051 DIN 200 bar (kit Revisione/Maintenance Kit)
38K	HZ 735052 DIN 300 bar (kit Revisione/Maintenance Kit)
39K	HZ 800090

1° Stadio a Pistone Bilanciato AC10 / Balanced Piston 1st Stage AC10

Ed./Issue	AC10/2
A/07	N° Tav./Rev.

AC10 INT 1ST STAGE HZ 735050
ANNUAL REPLACEMENT KIT CHART (Real Size)

AC2 DIN 1ST STAGE HZ 735051/52
ANNUAL REPLACEMENT KIT CHART (Real Size)











1st stage AC10

- **Kit AC10 Int Yearly maintenance - Cod. N° HZ 735050**



(Real Size) AC10 INT 1st STAGE (HZ 735050) ANNUAL REPLACEMENT KIT CHART

O-RING Reference Table							
							
HZ 735108	HZ 735126	HZ 700095	HZ 735128	HZ 730114	HZ 730132	HZ 730108	HZ 770085
SPARE PARTS Reference Table							
1 HP Seat HZ 735138				1 Sintered Conic Filter HZ 730188			
				1 Back-Up Ring HZ 770085			
				1 Circlip HZ 730188			

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

Note: a full maintenance of the regulator at least once a year or more in case of intensive use is recommended.

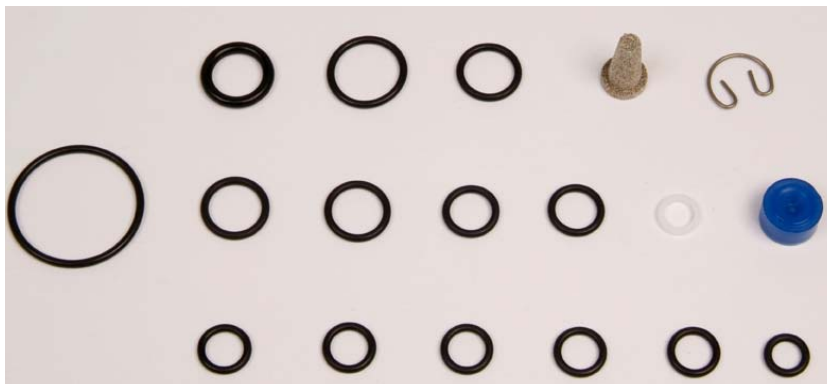


Regulators repair and maintenance

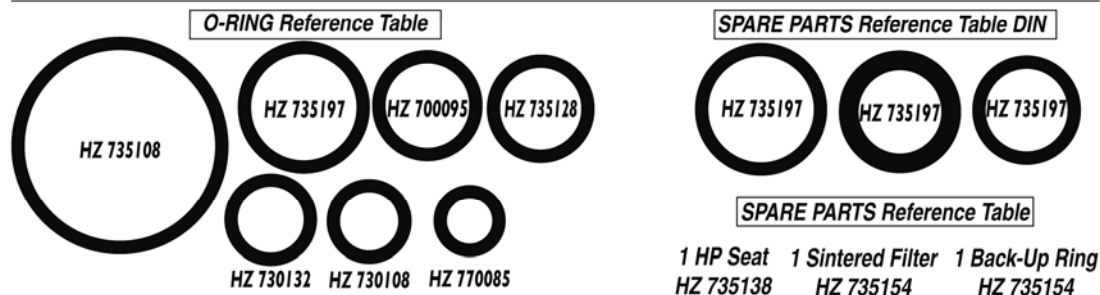
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1st stage AC10

- Kit AC10 DIN (200 – 300 bar) Yearly maintenance
 - Cod. N° HZ 735051/52



(Real Size) AC10 DIN 1st STAGE (HZ 735051/52) ANNUAL REPLACEMENT KIT CHART



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

Note: a full maintenance of the regulator at least once a year or more in case of intensive use is recommended.



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Regulators repair and maintenance

1st stage AC10

- **Yearly maintenance**

- Cressi-sub recommend a full maintenance of the regulator at least once a year or more in case of intensive use. The maintenance must include the replacement of every OR, of the conical filter, of the inox clip, of the first stadium HP pad and of the seal.
- 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 solution and rinse them carefully in fresh water. Grease all new OR with a thin silicone film. You may grease the first two turns of metal threads.



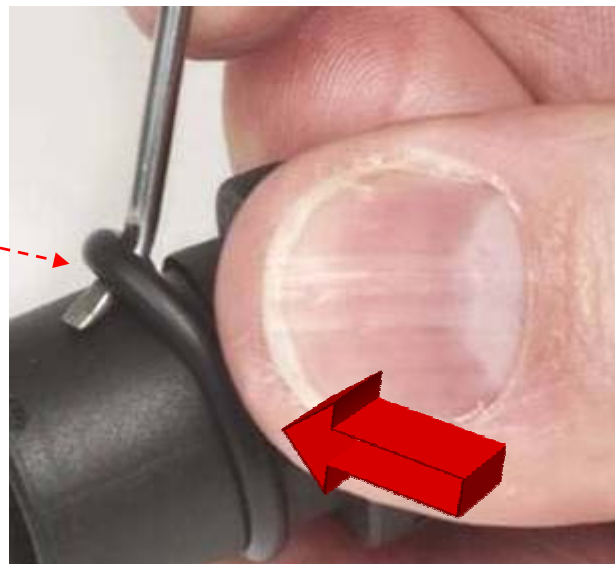
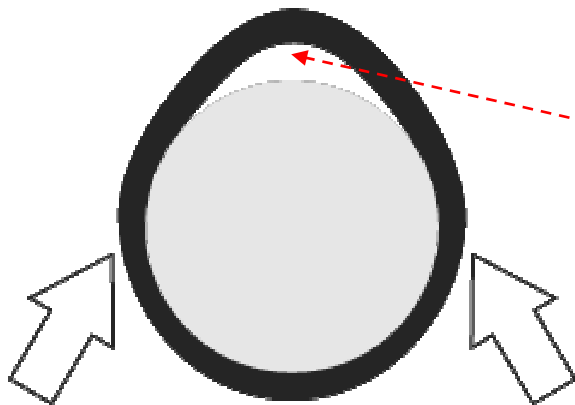
- Yearly maintenance

- 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 original Cressi-sub spare parts**



**1st stage AC10:
disassembling phases**

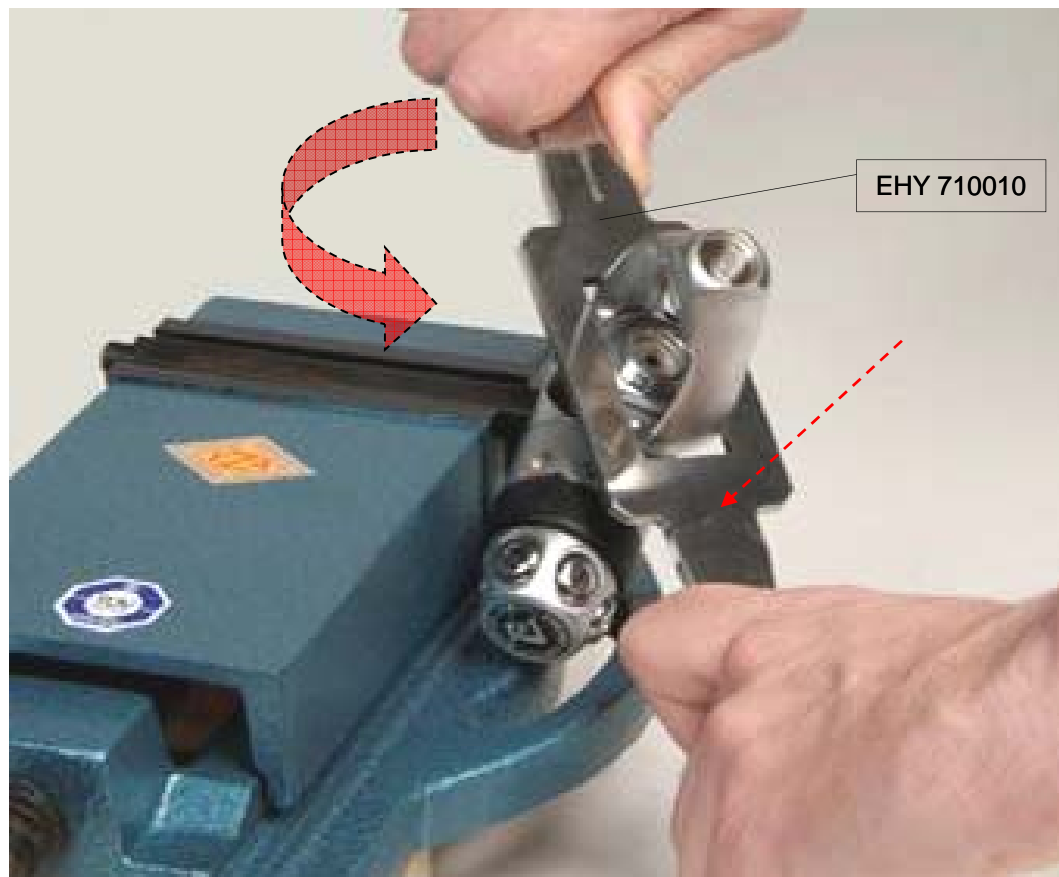


- Remove and replace all O-rings;
- Use a plastic tool or a round pointed metal one in order not to damage the O-ring seat;
- To replace the O-ring correctly, press its sides to create a bulge inside which to insert the round pointed tool, as shown in the pictures;
- ***Attention: USE ONLY ORIGINAL CRESSI-SUB SPARE PARTS***



**1st stage AC10:
disassembling phases**

- Remove the bracket, using the threaded tool in one of the regulator's HP ports. Close the bar in a vice and unscrew the lock nut using the special tool.





**1st stage AC10:
disassembling phases**



HZ 735127

HZ 770080

HZ 730027

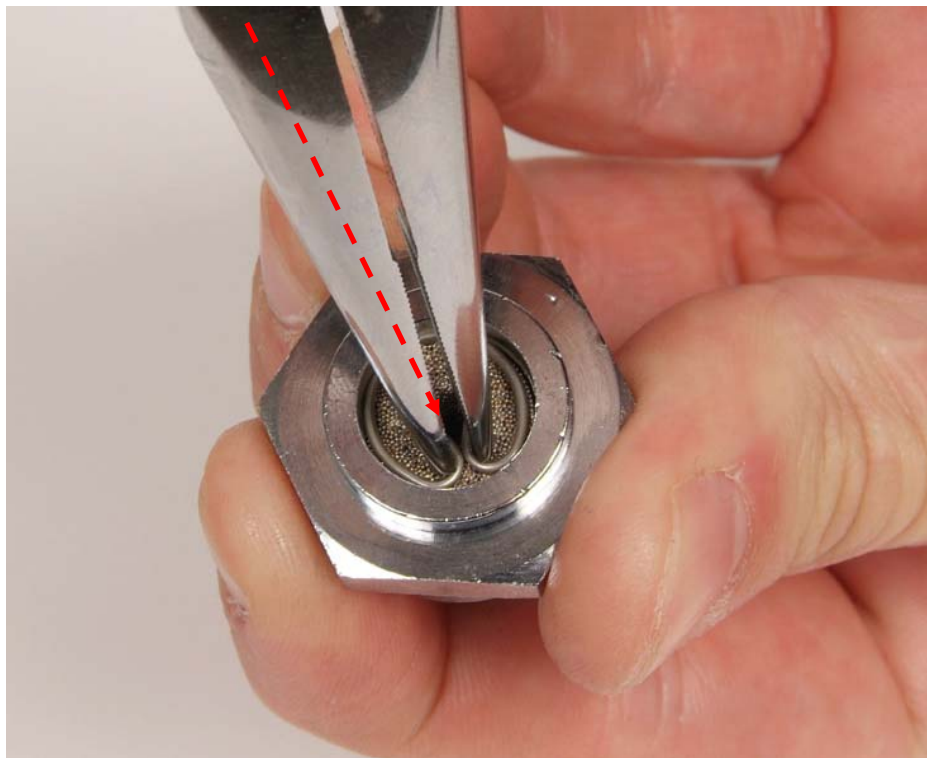
39K=HZ 800090

- Remove the 1st stage nut and bracket.



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Regulators repair and maintenance

**1st stage AC10:
disassembling phases**

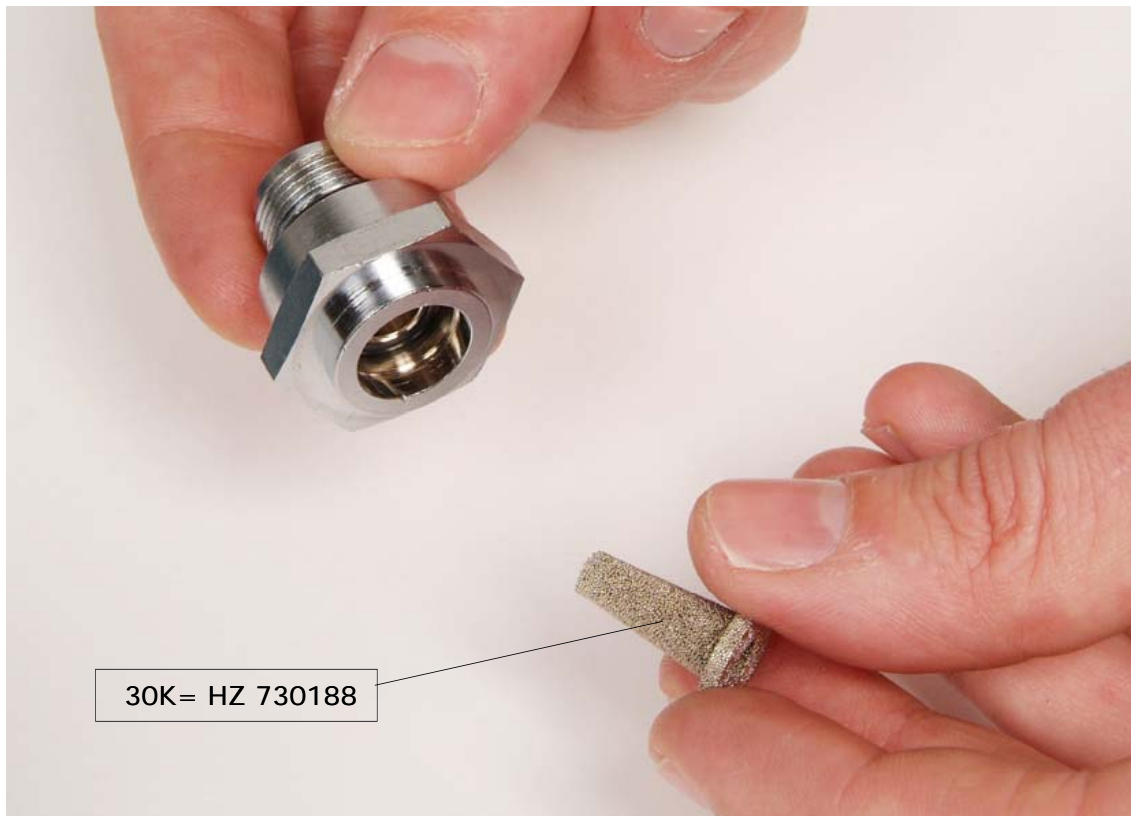


- Use thin pliers to remove the inox clip of the sintered filter.



**1st stage AC10:
disassembling phases**

- Pull the sintered conical filter out of its seat.



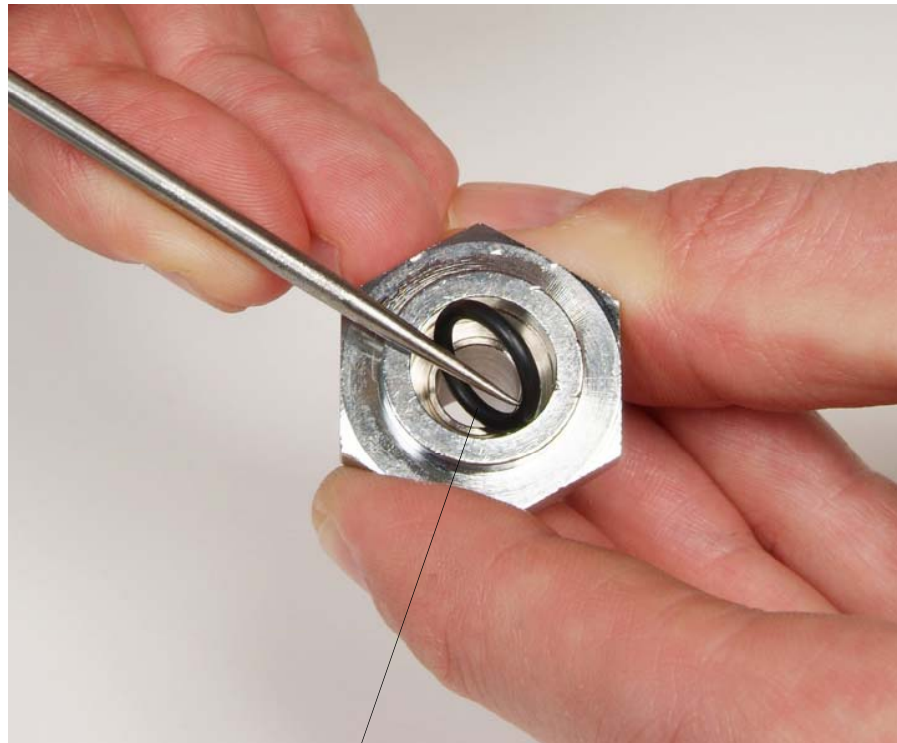


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Regulators repair and maintenance

1st stage AC10



HZ 735126



HZ730114

Remove the nut' s OR



**1st stage AC10:
disassembling phases**

- After screwing the special threaded bar in one of the 1st stage HP ports, tighten the bar in a vice and remove the regulator cap using the special spanner.
- ***Note: we advise to cover the tool edge with adhesive tape, in order not to damage the regulator chrome plating***





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Regulators repair and maintenance

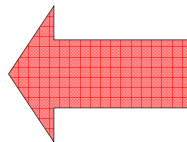
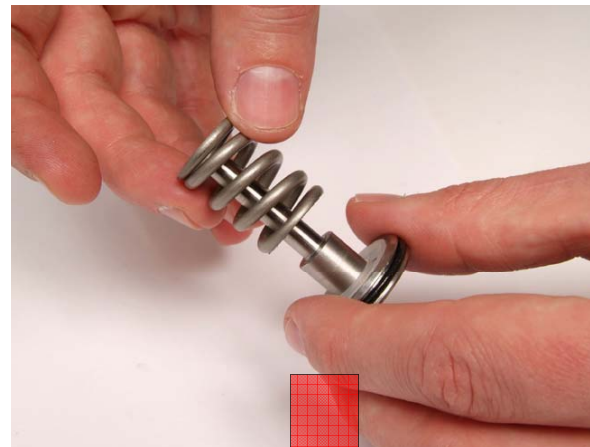
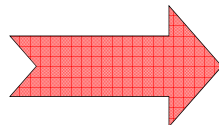
1st stage AC10



Particular of the cap with piston, setting spring and the rest



**1st stage AC10:
disassembling phases**



- Remove, one after the other, the whole piston, setting spring, safety bush and, using a pointed tool, the piston's OR.



**1st stage AC10:
disassembling phases**

- Insert the threaded bar in one of the low-pressure ports on the revolving part. Tighten the bar in a vice and remove the screw using a 0,23" (6 mm). Allen wrench, as shown in the picture.

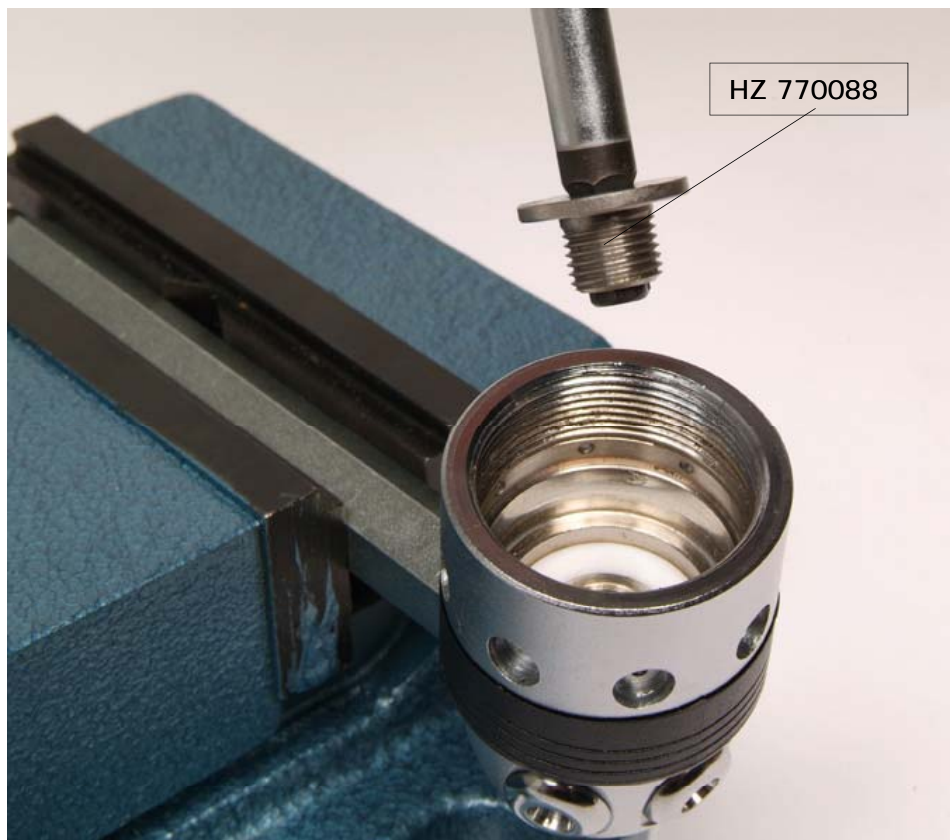




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Regulators repair and maintenance

1st stage AC10: disassembling phases

- Remove the screw from the revolving part.

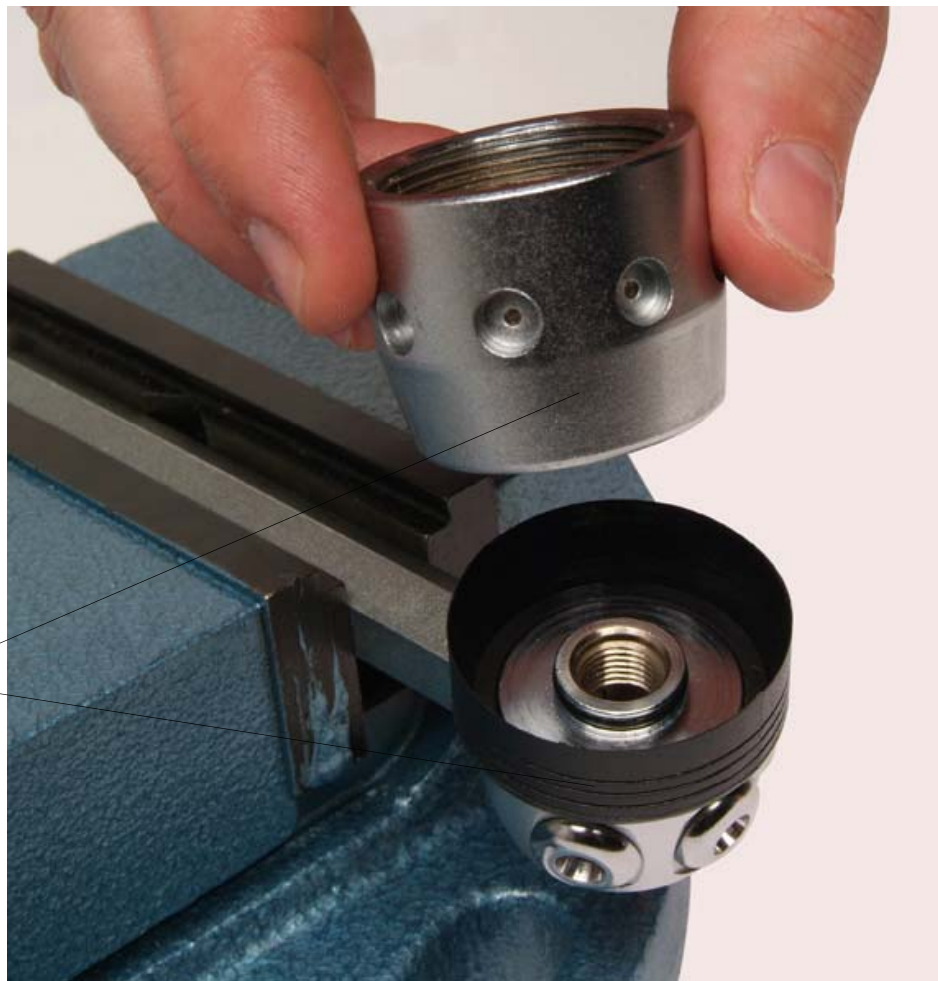




**1st stage AC10:
disassembling phases**

- Remove the 1st stage cap.

7K HZ=770089





**1st stage AC10:
disassembling phases**

- Remove the plastic bush of the 1st stage cap.



7K HZ=770089



**1st stage AC10:
disassembling phases**

- Use a pointed tool to remove the anti-friction washer, making sure of not scratching the internal walls.



HZ 770087



**1st stage AC10:
disassembling phases**

- Remove the 1st stage revolving part' s OR.



HZ 700095



**1st stage AC10:
disassembling phases**

- Use a screwdriver of at least 0,08 x 0,51" (2x13 mm) to remove the ring that keeps the OR on the piston shaft.





**1st stage AC10:
disassembling phases**



- Remove the piston' s anti-extrusion washer and OR out of their seats inside the regulator.



**1st stage AC10:
disassembling phases**

- Remove the ring under the 1st stage spring.



HZ 735132



**1st stage AC10:
disassembling phases**

- Use a 0,23" (6 mm). Allen wrench to remove the metal setting ring of the 1° stage.



HZ 770081



**1st stage AC10:
disassembling phases**

- Remove the 1st stage safety bush.



HZ 770082



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Regulators repair and maintenance

1st stage AC10: disassembling phases

- Remove the three setting arms, as shown in the picture.



HZ 735131



**1st stage AC10:
disassembling phases**



- Use a 0,23" (6 mm) Allen wrench to unscrew and remove the whole HP pad holder. Should the operation be particularly difficult, due to a long use in salt water, try and hit slightly the pad holder with a small plastic mallet.



**1st stage AC10:
disassembling phases**

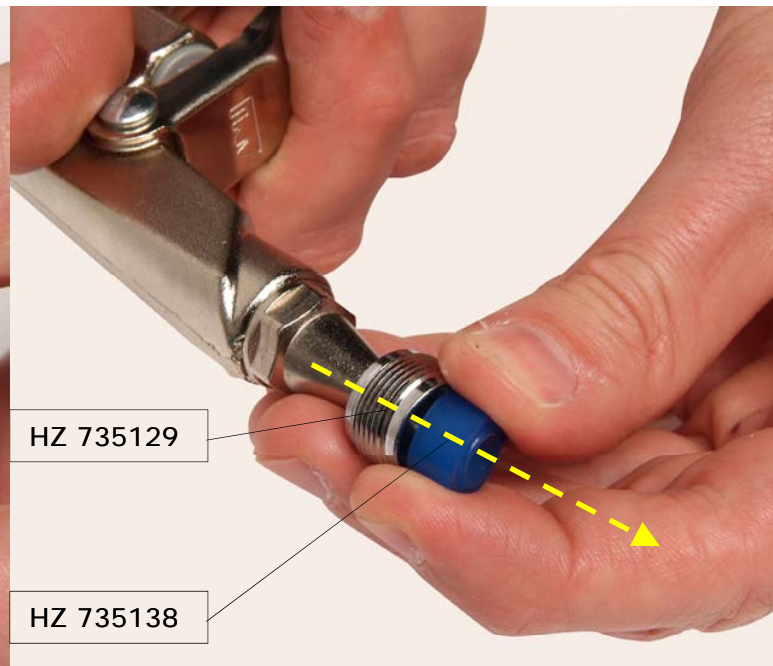
- Remove the OR under the 1st stage HP pad holder.

HZ 735128





**1st stage AC10:
disassembling phases**



- Remove the HP pad out of its holder using high-pressure air. Place the end of a high-pressure air gun on the back of the pad holder and gently open the tap. Always protect yourself during this operation.
- **WARNING:** do not stay along the pad's exit path, since the high-pressure might get it fly out at a very high speed!



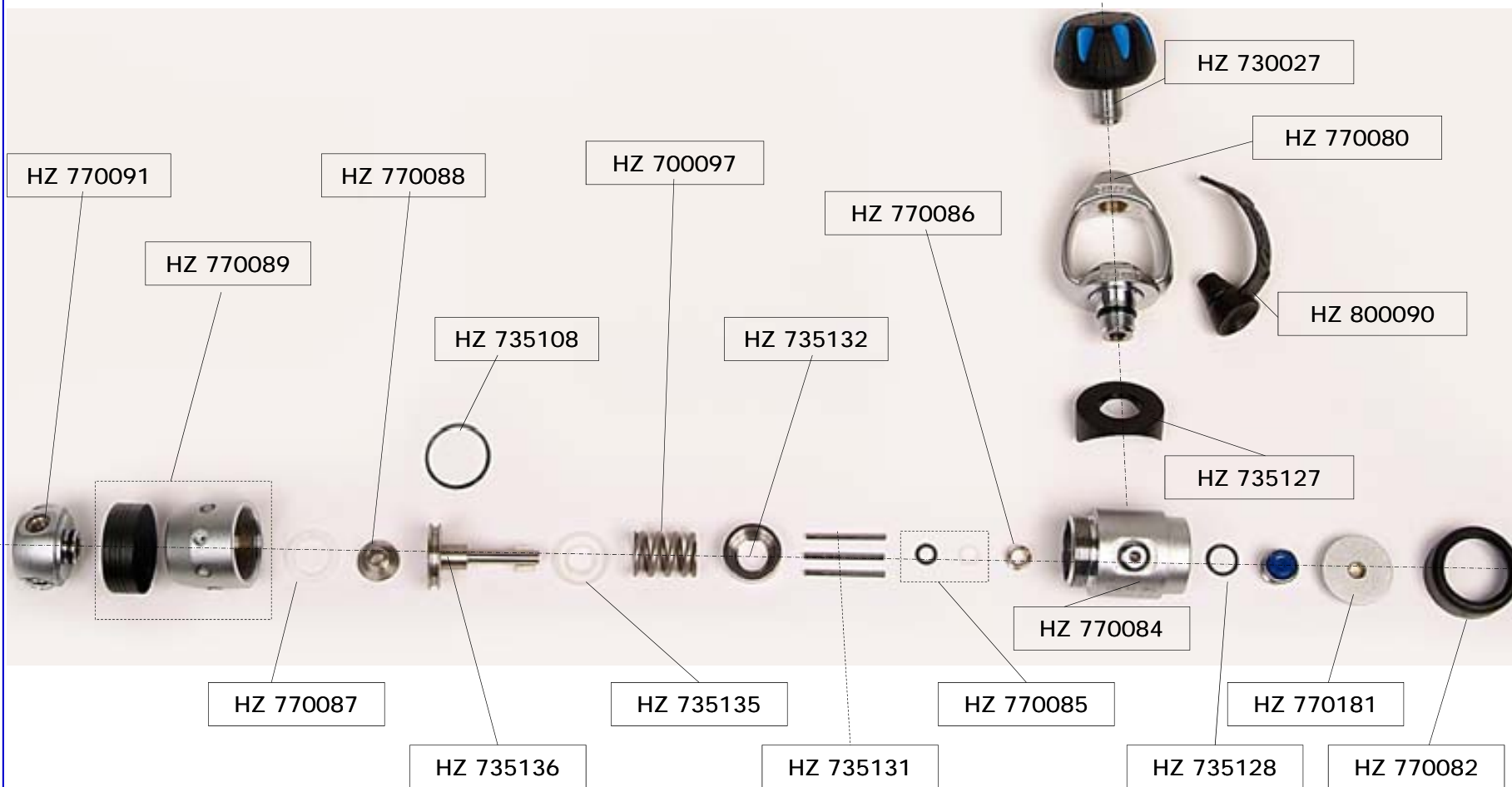
**1st stage AC10:
disassembling phases**



- You may also remove the HP pad as follows: screw the pad holder in its seat upside down, as shown in the picture, and place the regulator on a tank's tap. Gently open the tap, and the air will push out the pad automatically.
- **WARNING:** do not stay along the pad's exit path, since the high-pressure might get it fly out at a very high speed!



1st stage AC10





Regulators repair and maintenance

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1st stage AC10: assembling phases

- Insert the dynamic seal in its seat.



HZ 700095



**1st stage AC10:
assembling phases**

- Insert the cap's plastic bush, as shown in the picture.

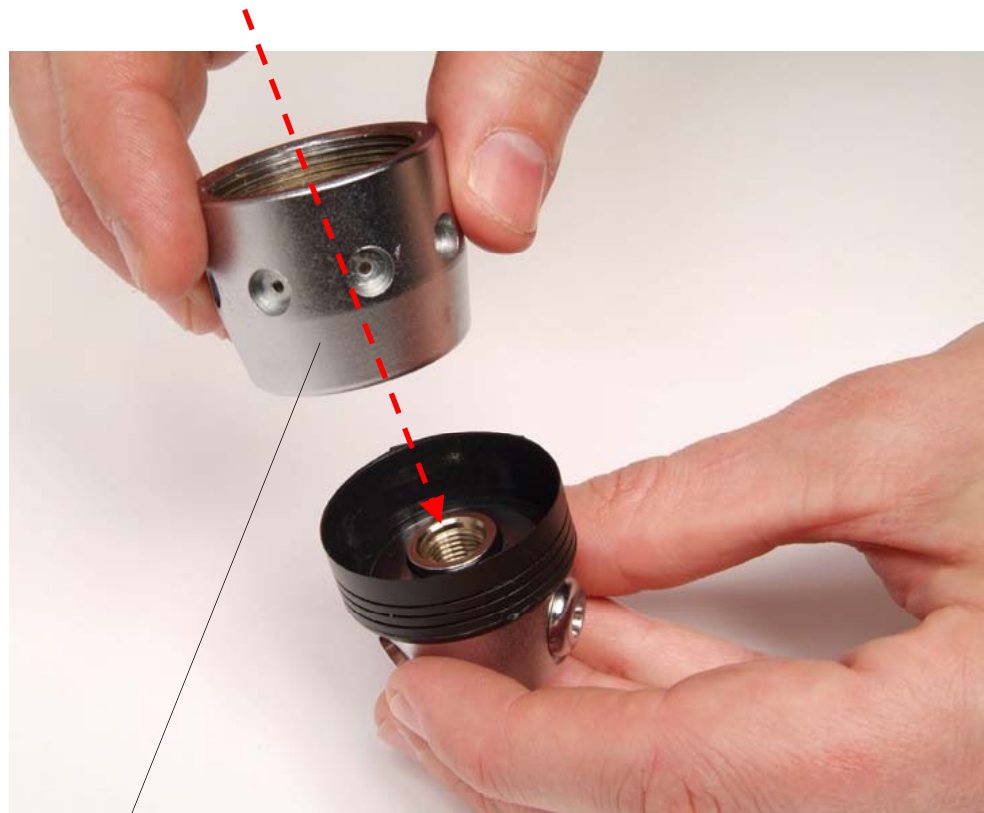


7K HZ 770089



**1st stage AC10:
assembling phases**

- Insert the cap on the revolving part, as shown in the picture



7K HZ 770089



**1st stage AC10:
assembling phases**

- Insert the anti-friction washer in its seat inside the cap, as shown in the picture



HZ 770087



**1st stage AC10:
assembling phases**

- Insert the screw in the revolving part and turn it: it will be correctly tightened later.

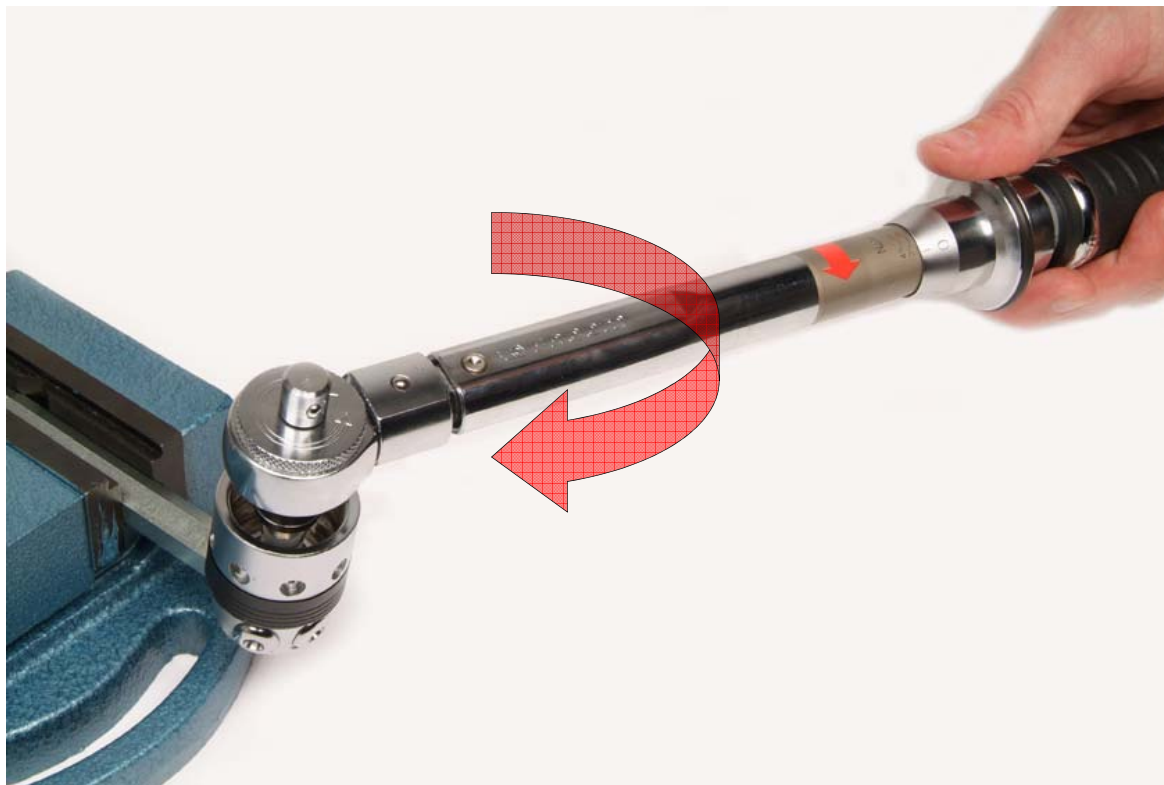


HZ 770088



**1st stage AC10:
assembling phases**

- After screwing the special threaded bar in one of the LP ports of the regulator, tighten the screw of the revolving part with a dynamometric wrench supplied with a 0,23" (6 mm) hexagonal insert. Apply about 10 N x m





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Regulators repair and maintenance

1st stage AC10: assembling phases



- Insert the seal between the piston shaft and the 1st stage body and place it correctly inside its seat, using the special tool, as shown in the picture.



**1st stage AC10:
assembling phases**

- Insert the anti-extrusion bush on the body' s OR, as shown in the picture.



HZ 770085



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Regulators repair and maintenance

1st stage AC10: assembling phases



- Screw the ring on the OR down to the end of the thread, using a screwdriver of 0,08 x 0,51" (2 x 13 mm) at least.



**1st stage AC10:
assembling phases**

- Insert the spring holder ring in its seat inside the 1st stage body, as shown in the picture: its flat part turns towards the setting adjustment arms.



HZ 735132



**1st stage AC10:
assembling phases**

- Replace and grease the 1st stage piston head's seal.



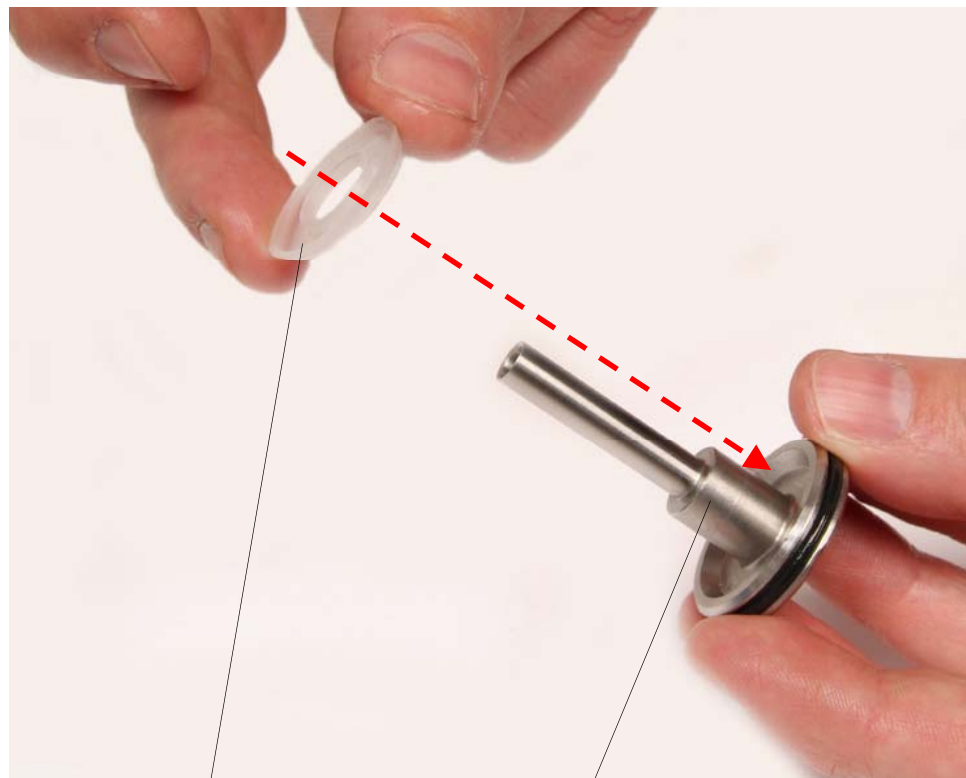
HZ 735108

HZ 735136



**1st stage AC10:
assembling phases**

- Insert the piston safety bush in its seat, as shown in the picture.



HZ 735135

HZ 735136



**1st stage AC10:
assembling phases**

- Insert the setting spring, as shown in the picture.



HZ 700097



Regulators repair and maintenance

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1st stage AC10: assembling phases

- Insert the ogival tool in the piston's end, as shown in the picture



HZ 739002



**1st stage AC10:
assembling phases**

- Insert the ogival tool on the piston's end and insert the latter in its seat: do exactly as shown in the picture, in order not to cut the piston shaft seal inside the regulator's body.





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Regulators repair and maintenance

1st stage AC10: assembling phases



- After inserting the whole piston, remove the ogival tool from the opposite side.



**1st stage AC10:
assembling phases**

- After slightly greasing the adjustment arms, insert them in their seats.



HZ 735131



**1st stage AC10:
assembling phases**

- Insert the pad holder's seal in its seat inside the regulator's body.



HZ 735128

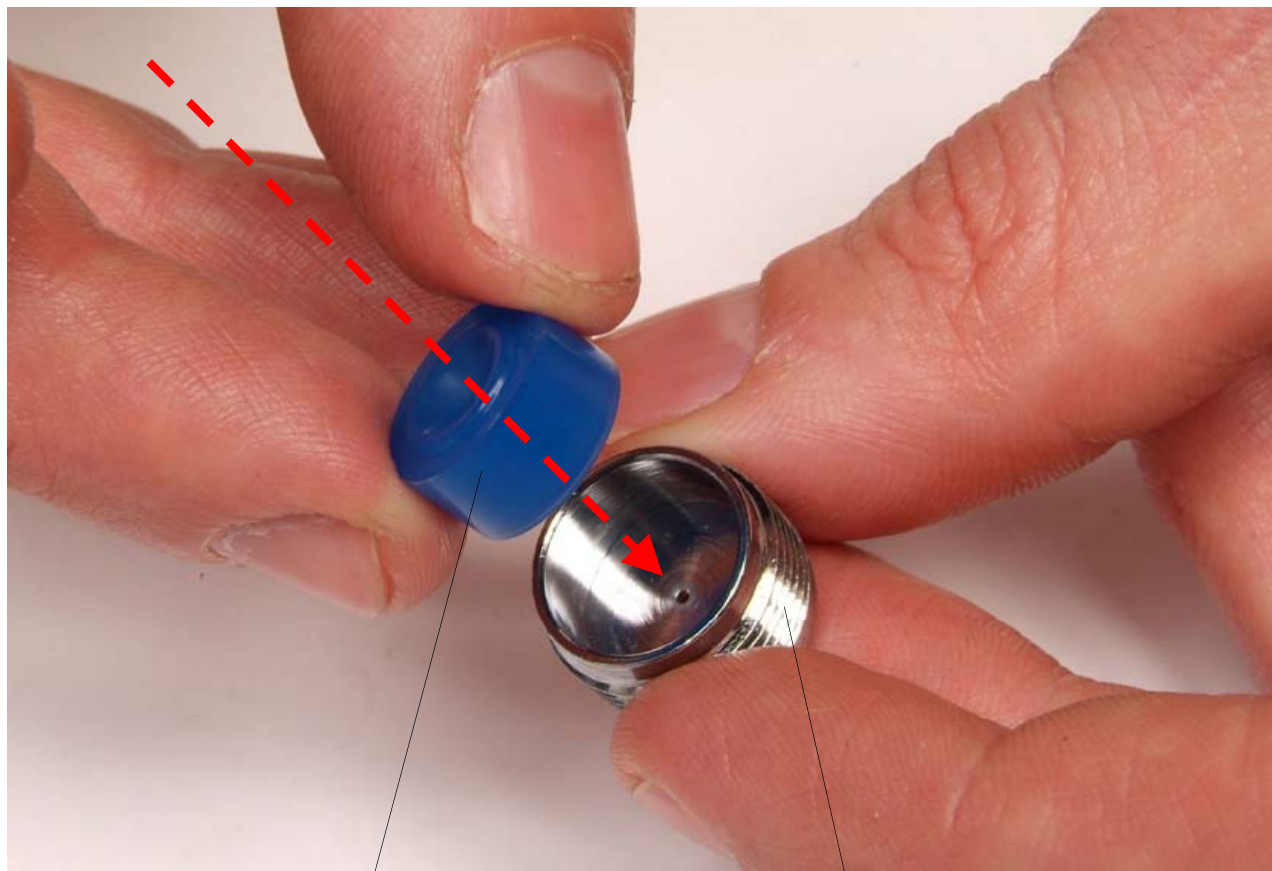


Regulators repair and maintenance

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1st stage AC10: assembling phases

- Replace the 1st stage HP pad, inserting it in its seat according to the right direction, as shown in the picture.



HZ 735138

HZ 735129



**1st stage AC10:
assembling phases**



- Screw the 1st stage pad holder in its threaded seat, as shown in the picture.



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Regulators repair and maintenance

1st stage AC10: assembling phases

- Insert the safety bush in its seat, as shown in the picture.



HZ 770082



1st stage AC10: assembling phases

- After slightly greasing its thread, screw the setting adjustment ring in the threaded seat, using a 0,23" (6 mm) Allen wrench. The 1st stage will be correctly set later.



HZ 770081



**1st stage AC10:
assembling phases**

- Screw the body including the assembled piston in the cap, as shown in the picture.





Regulators repair and maintenance

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1st stage AC10: assembling phases

- After screwing the special threaded bar in one of the 1st stage HP ports, tighten the bar in a vice and screw the regulator's tap using the special spanner.
- ***Note: we advise to cover the tool edge with adhesive tape, in order not to damage the regulator chrome plating***





**1st stage AC10:
assembling phases**

- Grease and insert the nut's seal, as shown in the picture.



HZ 735126

HZ 700088

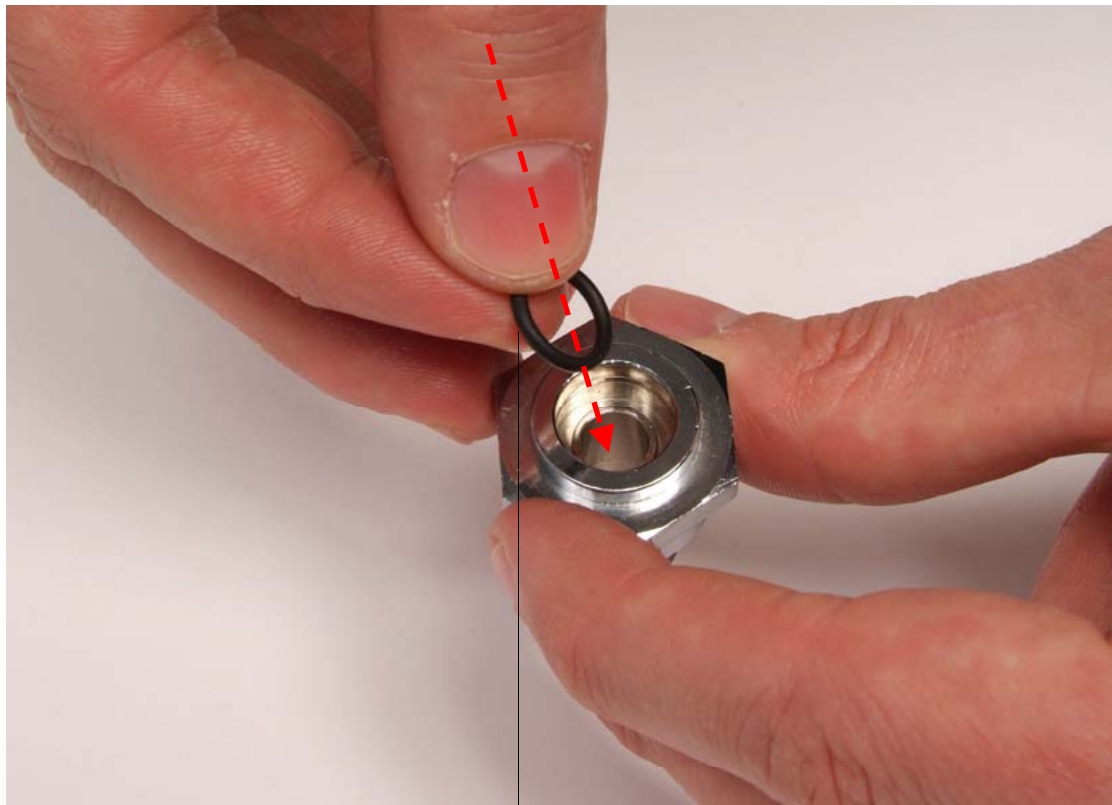


Regulators repair and maintenance

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1st stage AC10: assembling phases

- Grease and insert the sintered conical filter's seal, as shown in the picture.



HZ 730114



**1st stage AC10:
assembling phases**

- Insert the sintered conical filter in its seat, as shown in the picture.



30K HZ730188



**1st stage AC10:
assembling phases**



30K HZ 730188



- Using thin pliers, insert the sintered filter' s inox clip in its seat, as shown in the picture.



1st stage AC10: assembling phases

After inserting the threaded bar in one of the regulator's HP ports, tighten the bar in a vice and assemble the bracket, slightly screwing the nut. The correct dynamometric tightening will be carried out later.





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Regulators repair and maintenance

1st stage AC10: assembling phases

- Place the bracket and screw its nut using a dynamometric wrench and applying about 30 – 40 N x m

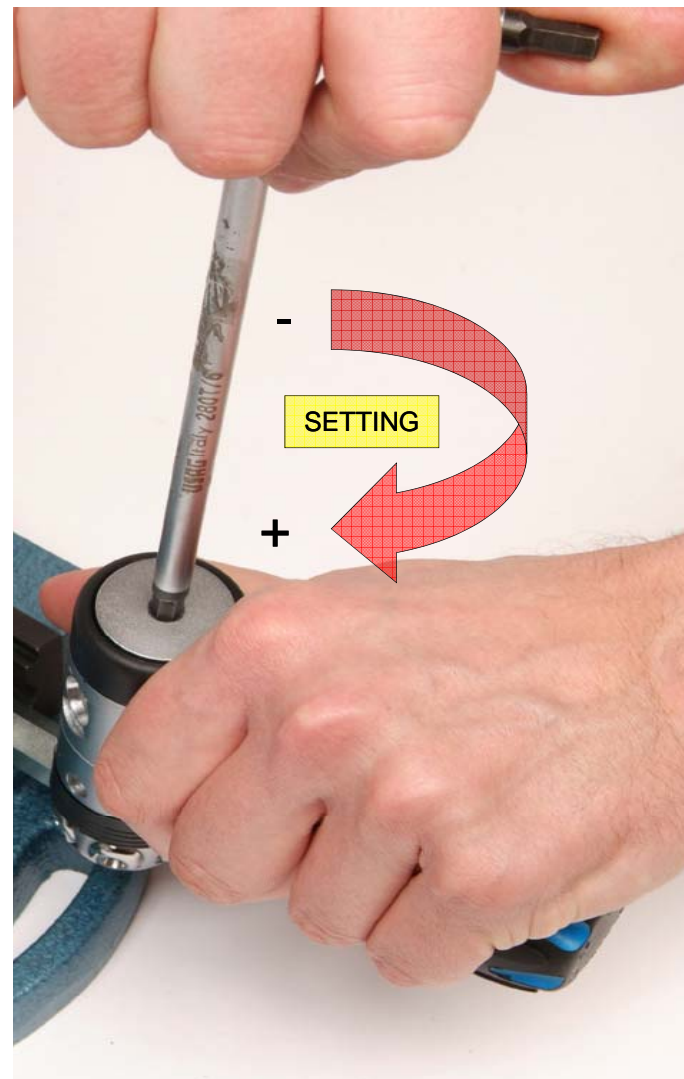




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Regulators repair and maintenance

1st stage AC10: assembling phases

- Setting phase:
please refer to
next slide





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Regulators repair and maintenance

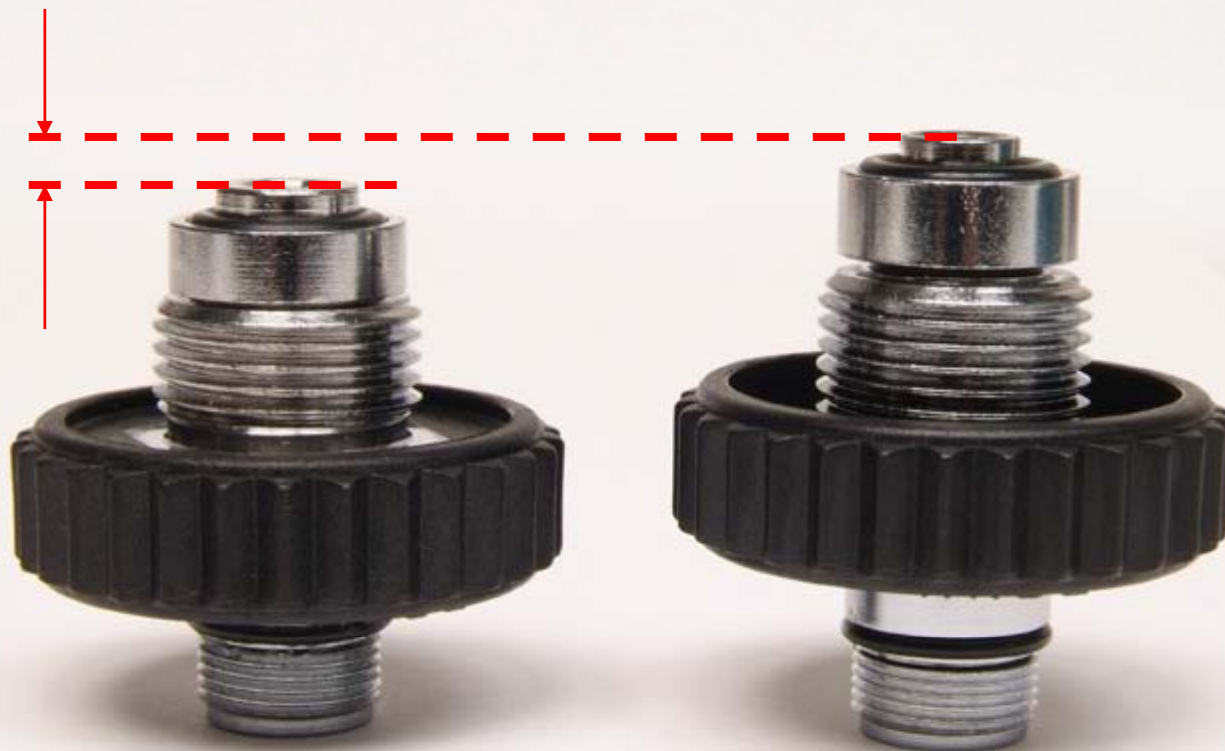
Setting of 1st stage AC10

- Assemble the pressure gauge on one of the LP ports of the 1st stage
- Place the whole regulator (1st+ 2nd stage) on a 200 bar pressurized tank or on an equally pressurized test-bed.
- Slowly open the air tap while pressing the 2nd stage air discharge button. Repeat some times.
- Check the pressure on the gauge. The 1st stage AC10 is correctly set at a pressure between 9.8 and 10 bar. Should the value be different, close the air tap and discharge the regulator. Insert a 0,23" (6 mm) Allen wrench in the setting screw and *screw clockwise* in order to increase the 1st stage intermediate pressure. When screwing anticlockwise, the pressure will decrease.
- Note: remember to unload the regulator before setting the intermediate pressure, in order to avoid incorrect readings of the gauge.
- Check the intermediate pressure is quickly reached and remains so, without increasing, after pressing the 2nd stage discharge button several times.



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Regulators repair and maintenance

1st stage AC10 DIN



Kit DIN 200 bar

33K = HZ 735162

Kit DIN 300 bar

34K = HZ 735163



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Regulators repair and maintenance

1st stage AC10 DIN

Whole kit DIN 1st stage AC10

Blocking screw

Ring

Body adapter



Note: the OR of the DIN kit are the same for both
200 bar and 300 bar versions

35K = HZ 735197



1st stage AC10 DIN

- After greasing the DIN adapter's OR, insert in its seat.





1st stage AC10 DIN

- Screw the DIN adapter on the 1st stage plastic saddle. The correct dynamometric tightening will be carried out later.





1st stage AC10 DIN

Using a threaded bar, tighten the 1st stage body in a vice and assemble the DIN adapter using a dynamometric wrench, applying 30 – 40 N x m.





1st stage AC10 DIN

- Insert the DIN steer connection's ring on its adapter.





1st stage AC10 DIN

- Insert the DIN sintered conical filter in its seat, as shown in the picture.
- Note: the DIN sintered conical filter is different from the one contained in the bracket nut.





1st stage AC10 DIN



- After greasing them, insert the DIN connection' s OR inside their seats, as shown in the picture.



1st stage AC10 DIN

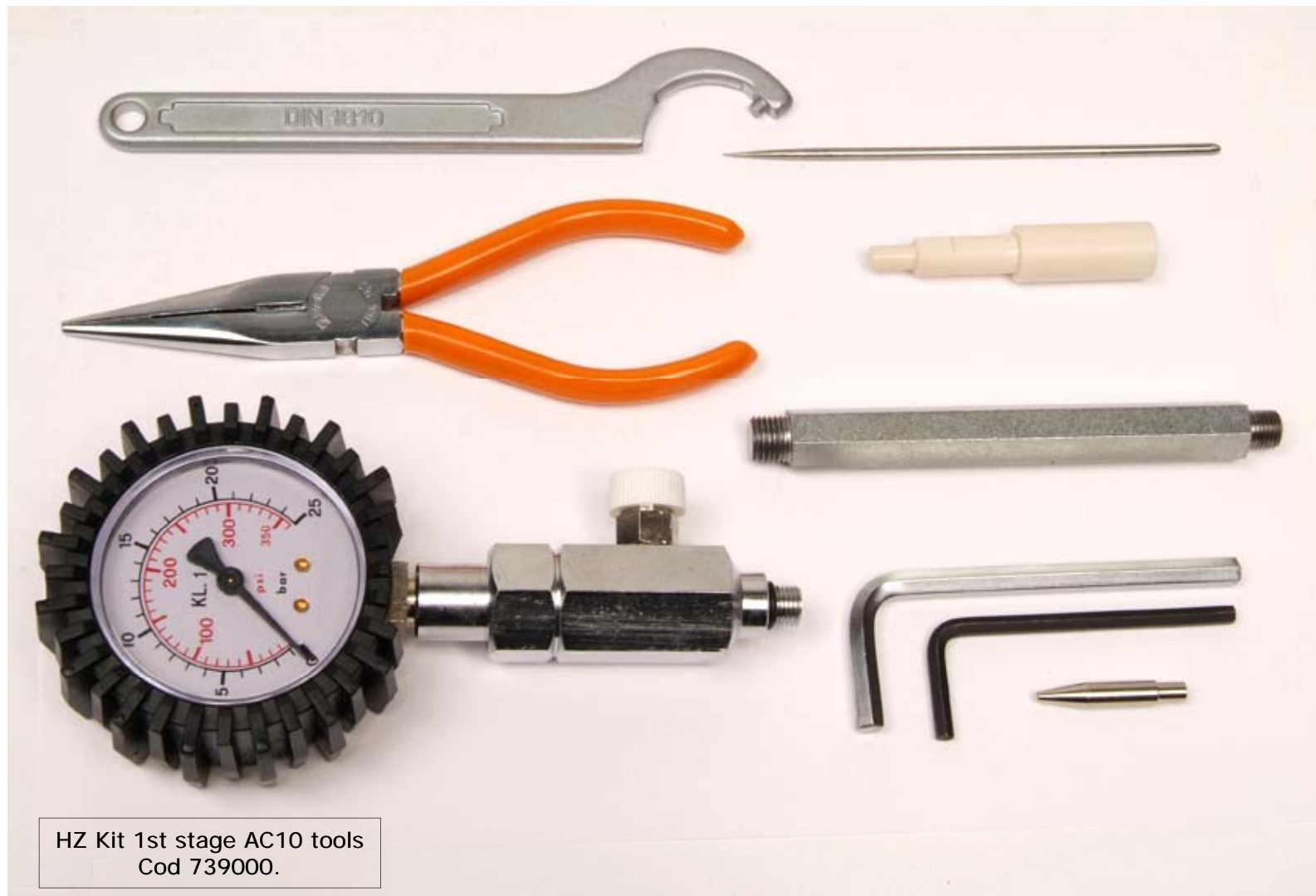
- Screw the DIN connection in the thread of the DIN adapter, using a 0,23" (6 mm) Allen wrench.
- Tighten it using a dynamometric wrench supplied with a 0,23" (6 mm) hexagonal insert and applying 10 N x m





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Regulators repair and maintenance

1st stage AC10: Tools



HZ Kit 1st stage AC10 tools
Cod 739000.



Regulators repair and maintenance

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1st stage AC10: Tools

- Universal tool to remove Cressi Sub bracket
 - Cod. EHY 710010





Regulators repair and maintenance

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1st stage AC10: Tools

- Spanner
- Cod.HZ 739003



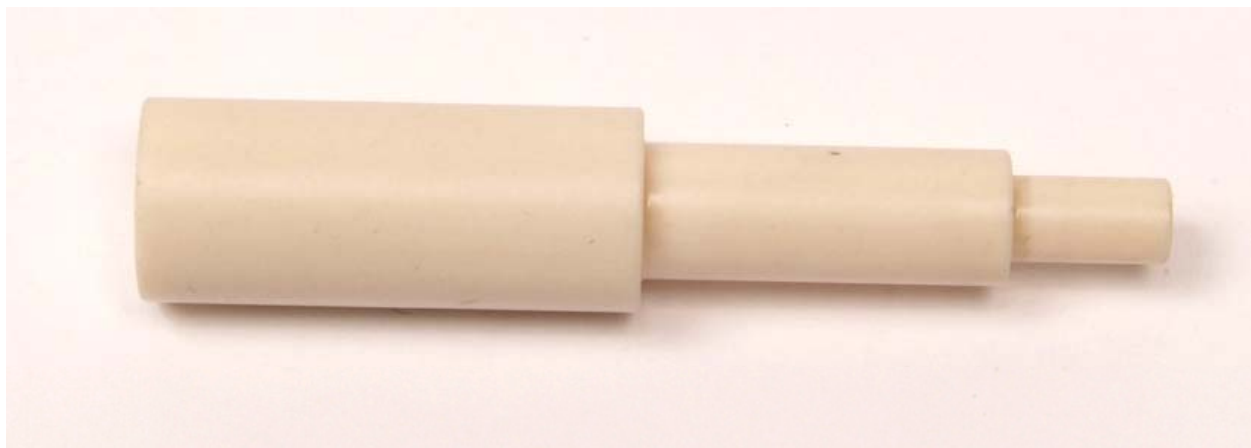


- Ogival tool to insert AC10 piston
 - Cod.HZ 739002





- Tool to insert AC10 body' s OR
 - Cod.HZ 739001





- Threaded bar to tighten the regulator in the vice
 - Cod. HZ 709008





Regulators repair and maintenance

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1st stage AC10: Tools

- 0,23" (6 mm) Allen wrench
- Cod. HZ 709006





Regulators repair and maintenance

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1st stage AC10: Tools

- Pointed tool
- Cod.HZ 709004





Regulators repair and maintenance

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1st stage AC10

- Torque wrench
(Not available)

