



Cressi-sub
Regulators repair and maintenance

1st stage MC7



**MC7 INT HZ 800097
MC7 DIN 200 bar HZ 800096
MC7 DIN 300 bar HZ 800095**



WARNING!

- This manual is intended for use by expert technicians who have already received training in equipment repairs and maintenance from Cressi-sub.
- This manual is intended for use by expert technicians who have already received training in equipment repairs and maintenance from 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.



WARNING!

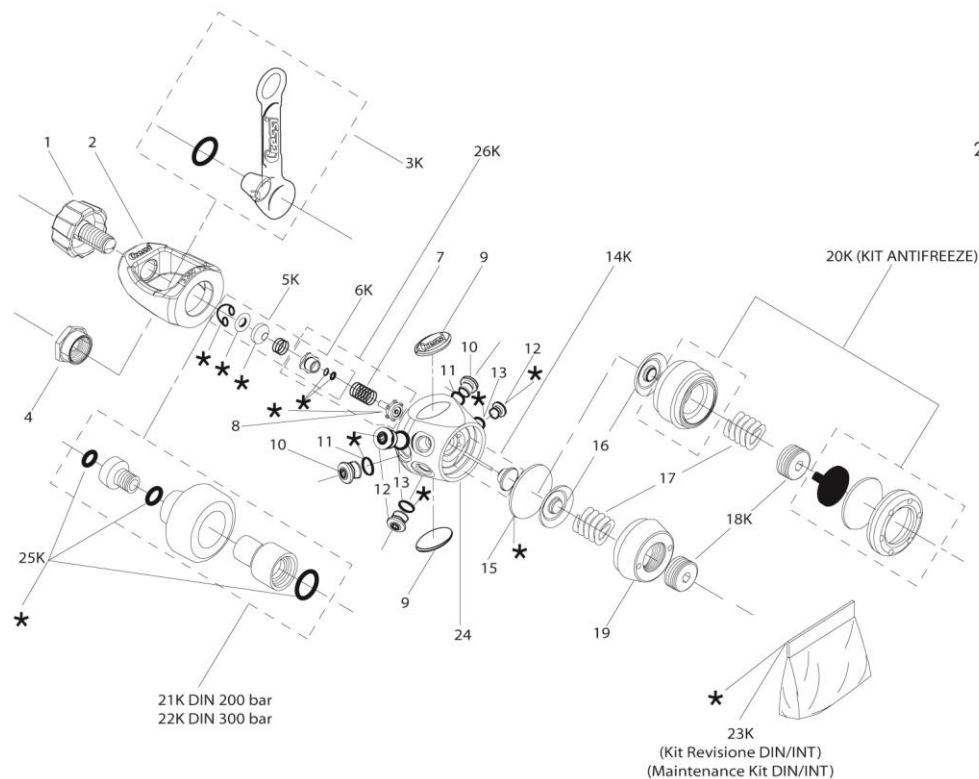
- All operations must be done strictly in the order provided in this document. Failure to do so could cause the equipment to function poorly, or worse, result in an accident.
- To prevent any assembly errors when performing maintenance and/or repairs, we recommend using **all** the replacement parts 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 information referring to the most update equipment available. Cressi Sub reserves the right to make changes at any time.



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Regulators repair and maintenance

1st stage MC7: exploded diagram



POS. CODICE / CODE

1	HZ 730027
2	HZ 770080
3K	HZ 800090
4	HZ 800089
5K	HZ 800088
6K	HZ 800087
7	HZ 800086
8	HZ 800085
9	HZ 800084
10	HZ 730127
11	HZ 730132
12	HZ 730106
13	HZ 730108
14K	HZ 800083
15	HZ 800082
16	HZ 800081
17	HZ 800080
18K	HZ 800079
19	HZ 800078
20K	HZ 800050
(kit Antifreeze)	
21K	HZ 800076
(kit DIN 200 bar)	
22K	HZ 800075
(kit DIN 300 bar)	
23K	HZ 800074 INT *
(kit Revisione/Maintenance Kit)	
23K	HZ 800071 DIN 200 bar *
(kit Revisione/Maintenance Kit)	
23K	HZ 800070 DIN 300 bar *
(kit Revisione/Maintenance Kit)	
24	HZ 800073
25K	HZ 800072
(kit OR DIN 200-300 bar)	

1° Stadio a Membrana Bilanciata MC7 / Balanced Diaphragm 1st Stage MC7

Ed./Issue	MC7/B
03/05	N° Tav./Rev.

MC7 INT 1ST STAGES HZ 800074 ANNUAL REPLACEMENT KIT CHART (Real Size)

MC7 DIN 1ST STAGES HZ 810070/1 ANNUAL REPLACEMENT KIT CHART (Real Size)



- Kit MC7 Int Yearly maintenance - Cod. N° HZ800074**



(Real Size) MC7 INT 1st STAGE (HZ 800074) ANNUAL REPLACEMENT KIT CHART

O-RING Reference Table



SPARE PARTS Reference Table

1 Diaphragm HZ 800082	1 Back-Up Ring HZ 800087	1 Sintered Filter HZ 800088
1 Teflon Washer HZ 800088	1 Circlip HZ 800088	1 HP Valve HZ 800085

[Go back to](#)

- 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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Regulators repair and maintenance

1st stage MC7

- **Kit MC7 DIN (200 – 300 bar)**
Yearly maintenance - Cod. N° HZ800070/1



(Real Size) MC7 DIN 1st STAGE (HZ 810070/1) ANNUAL REPLACEMENT KIT CHART

O-RING Reference Table					
					
HZ 800076/5	HZ 800076/5	HZ 800076/5	HZ 730132	HZ 730108	HZ 800087
SPARE PARTS Reference Table					
1 Diaphragm HZ 800082	1 Back-Up Ring HZ 800087	1 Sintered Filter HZ 800088	1 Teflon Washer HZ 800088	1 Seeger HZ 800085	1 HP Valve HZ 800085

[Go back to](#)

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

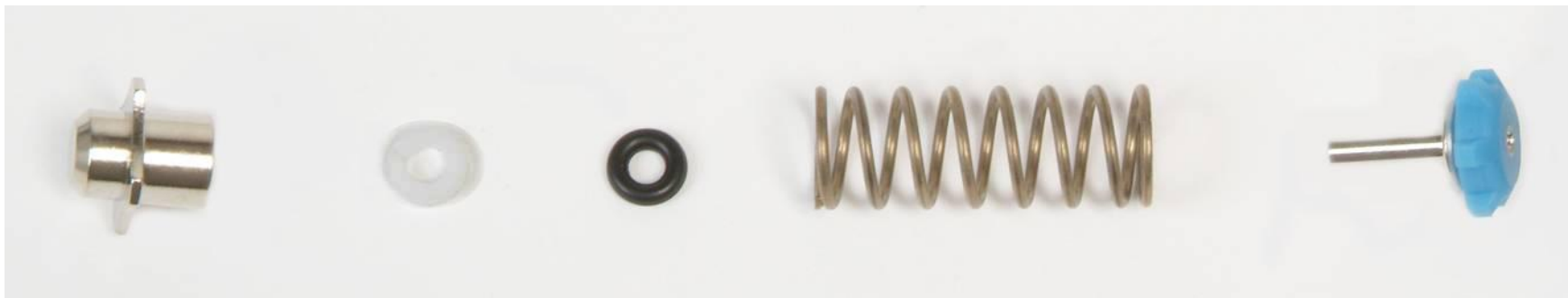
• ***Note: we recommend to carry out a complete maintenance of your regulator once a year or more in case of a particularly intensive use.***



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Regulators repair and maintenance

1st stage MC7

KIT 26K – HZ 800069: new HP full valve replacing the old version.





• **Yearly 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 in a section of this document on page 10.
- 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.



• **Yearly 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 spare parts**



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Regulators repair and maintenance

1° stage MC7 Special tools

Codice HZ 710010
1st Stage setting
pressure gauge



Codice HZ 709001
MC7 seal closing
disk tool



Codice HZ 709008
Threaded bar to
tighten the
regulator in the vice



Codice HZ 709007
Allen key 4 mm



Codice HZ 709006
Allen key 6 mm



Codice HZ 709012
Yoke nut socket
and wrench



Codice HZ 709018
Removig yoke tool



Codice HZ 709016
Tool to remove the nozzle



Codice HZ 709002
Antifreeze spanner



Codice HZ 709011
Spring push tool



Codice HZ 709004
Extraction point tool



Codice HZ 709005
Circlip pliers

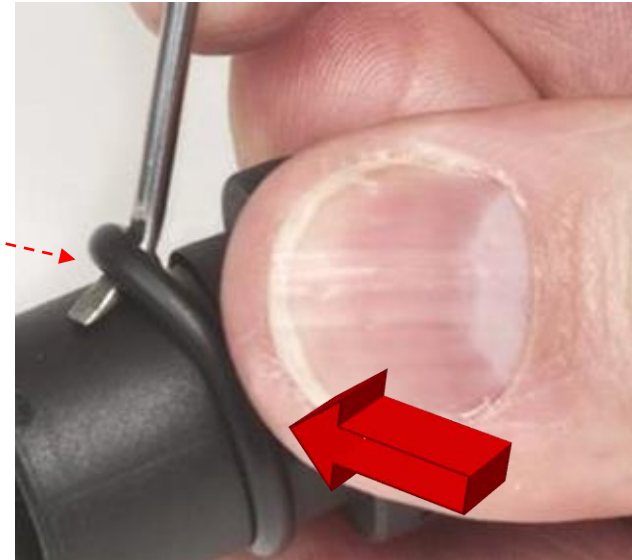
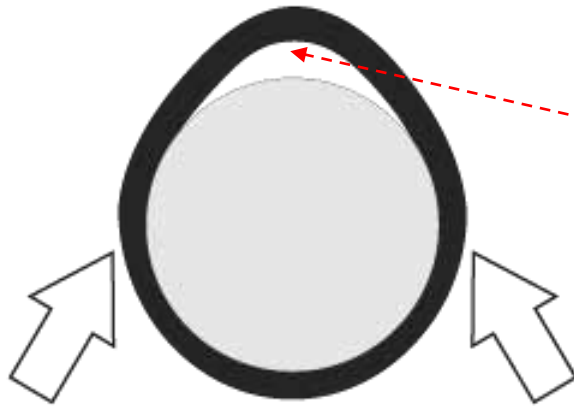


Dynamometric wrench
(unavailable)





**1st stage MC7:
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***



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Regulators repair and maintenance

1st stage MC7: evolution of the models



Rev. 1: Produced up to 2003
(Body finish Glazed)

Rev. 2: Produced since 2003
(Body finish Polished)

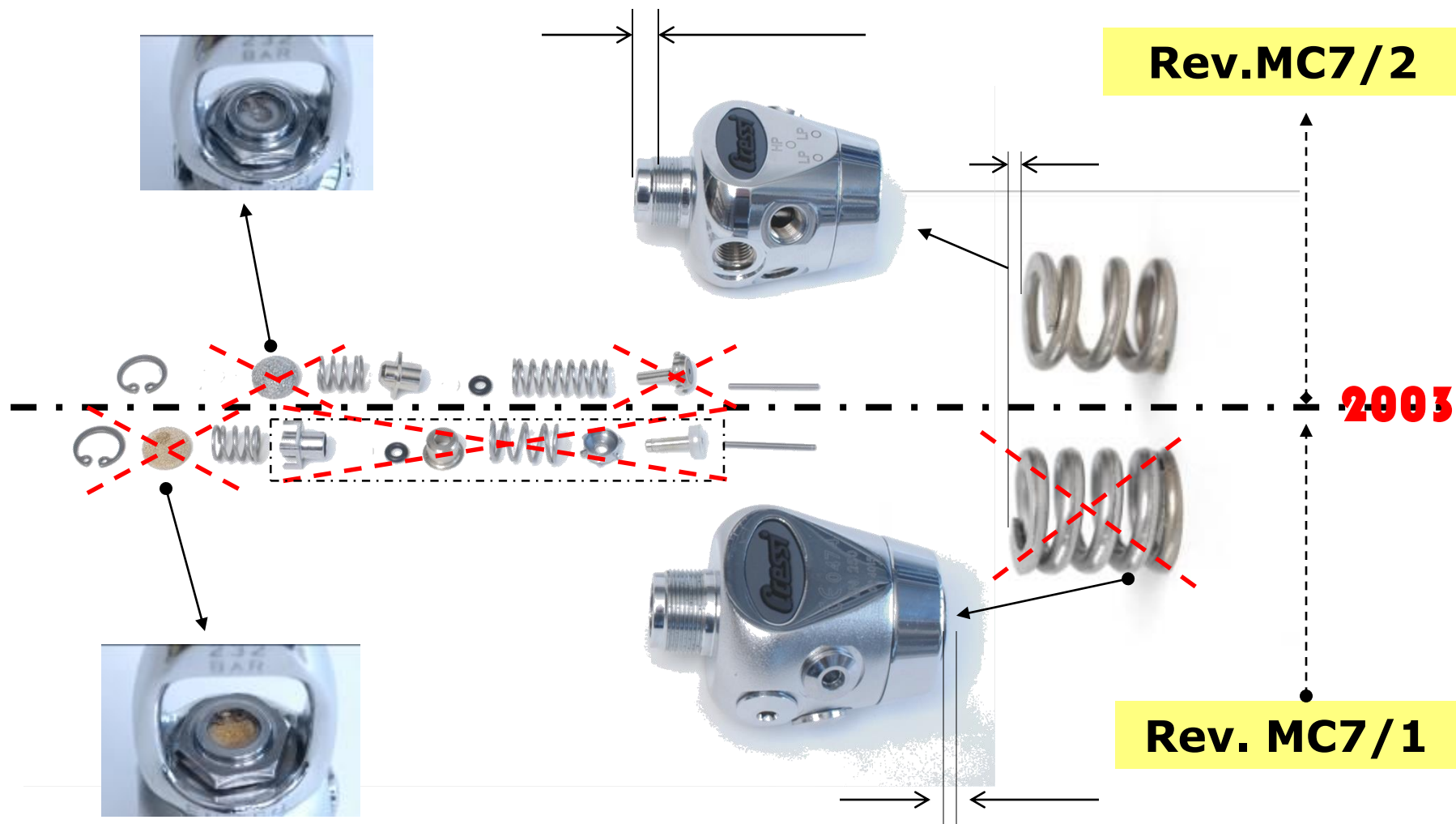


Rev. 3 (4): Produced since 2007
(present production replacing the previous ones)



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Regulators repair and maintenance

1st stage MC7: evolution of the models





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**1st stage MC7:
evolution of the models**

Rev.MC7/3(4)
(present production)



2007



Rev.MC7/2



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**1st stage MC7:
HP valve compatibility**

Rev.MC7/3(4)
(present production)

6K = HZ 800087

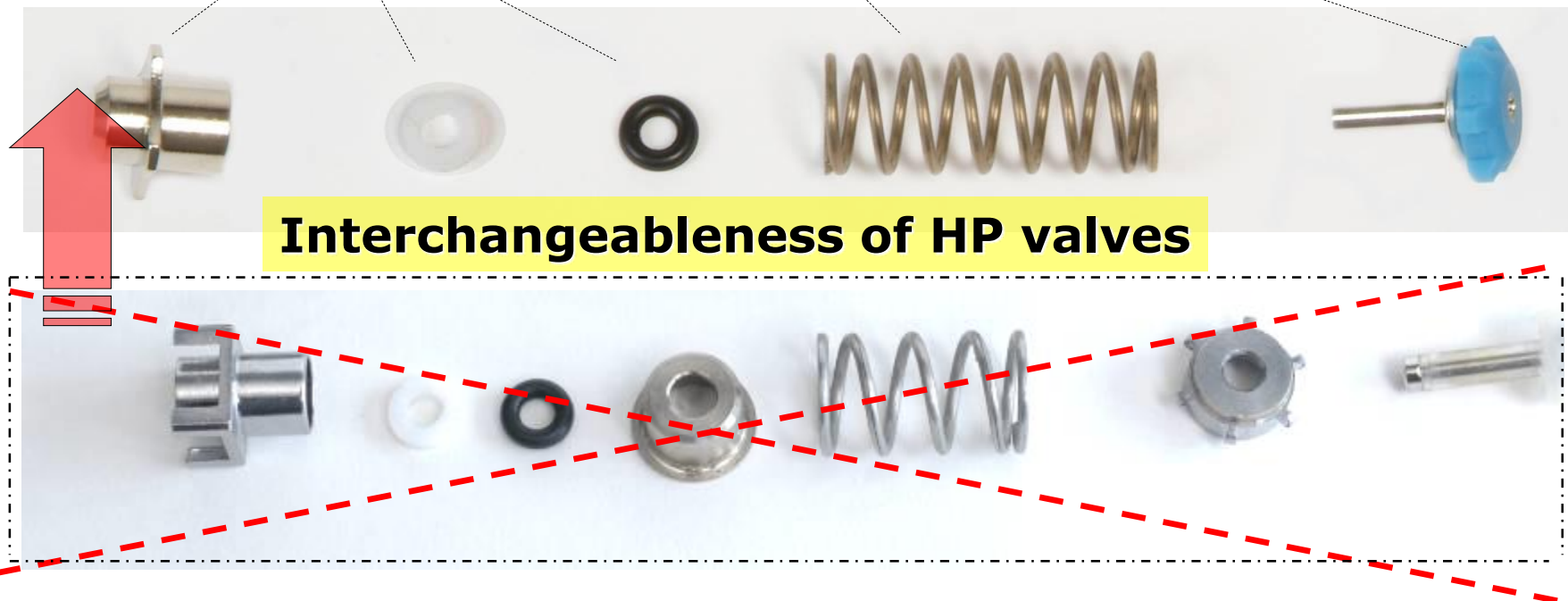
26K
HZ800069

HZ 800086

HZ 800085

Interchangeableness of HP valves

MC7 Rev./1: production up to 2003





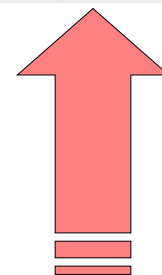
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**1st stage MC7:
HP valve compatibility**

Rev.MC7/3(4) present production



Interchangeableness of HP valves



Rev.MC7/2



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1st stage MC7: HP valve compatibility

INTERCAMBIABILITÀ VALVOLE HP MC7 - MC7 HP VALVES INTER-CHANGEABILITY

⚠ **ATTENZIONE** la valvola A, presente sui modelli MC7 prodotti fino al 2003 (aventi finitura del corpo SATINATA come fig. 1) è **fuori produzione!** Pertanto, durante la manutenzione ordinaria di questo modello, occorre sostituire tutti i componenti della valvola A con tutti quelli che compongono la valvola B di attuale produzione (cod. 26K=HZ 800069). I modelli MC7 dotati di valvola B si riconoscono per la finitura del corpo LUCIDA (come fig.2).

⚠ **WARNING** The A valve on MC 7 models (produced until 2003 - showing satin finished body, as in image 1) is **off production!** By ordinary maintenance of this model, you have therefore to replace every component of the A valve with all those composing the B valve being produced at present (code 26K=HZ 800069). MC7 models equipped with the B valve have got polished body (as in image 2).

⚠ **ATTENTION** la soupape A, présente sur les modèles MC7 réalisés jusqu'en 2003, (avec finition du corps SATINÉE, comme dans fig. 1) est **hors production!** Par conséquent, pendant l'entretien ordinaire de ce modèle, il faut remplacer tous les composants de la soupape A par tous ceux qui constituent la soupape B actuellement en production (code 26K=HZ 800069). On peut aisément reconnaître les modèles MC7 équipés de soupape B, grâce à la finition du corps BRILLANTE (comme dans fig.2).

⚠ **ACHTUNG** In die vor 2003 produzierten MC7-Modelle (mit MATTER Gehäuseoberfläche, wie in Abb. 1 gezeigt) ist das Ventil A eingebaut, das inzwischen **nicht mehr hergestellt wird!** Aus diesem Grund müssen bei der ordentlichen Wartung dieses Modells alle Komponenten des Ventils A komplett durch die Komponenten des aktuell verwendeten Ventils B ersetzt werden (Art. Nr. 26K=HZ 800069). Die MC7-Modelle mit eingebautem Ventil B sind an der GLATTEN Gehäuseoberfläche erkennbar (siehe Abb. 2).

⚠ **ATENCIÓN** la válvula A, presente en los modelos MC7 producidos hasta 2003, y con el acabado del cuerpo SATINADO como en la fig. 1, ya **no está en producción!** Por lo tanto, durante el mantenimiento ordinario de este modelo, hay que sustituir todos los componentes de la válvula A con todos los que componen la válvula B actualmente en producción (cód. 26K=HZ 800069). Los modelos MC7 dotados con válvula B se reconocen por el acabado del cuerpo BRILLANTE (como en la fig.2).

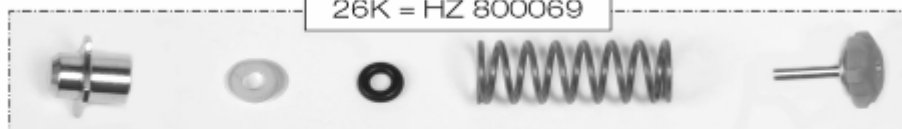


fig. 1



fig. 2

26K = HZ 800069





**1st stage MC7:
disassembling phases**

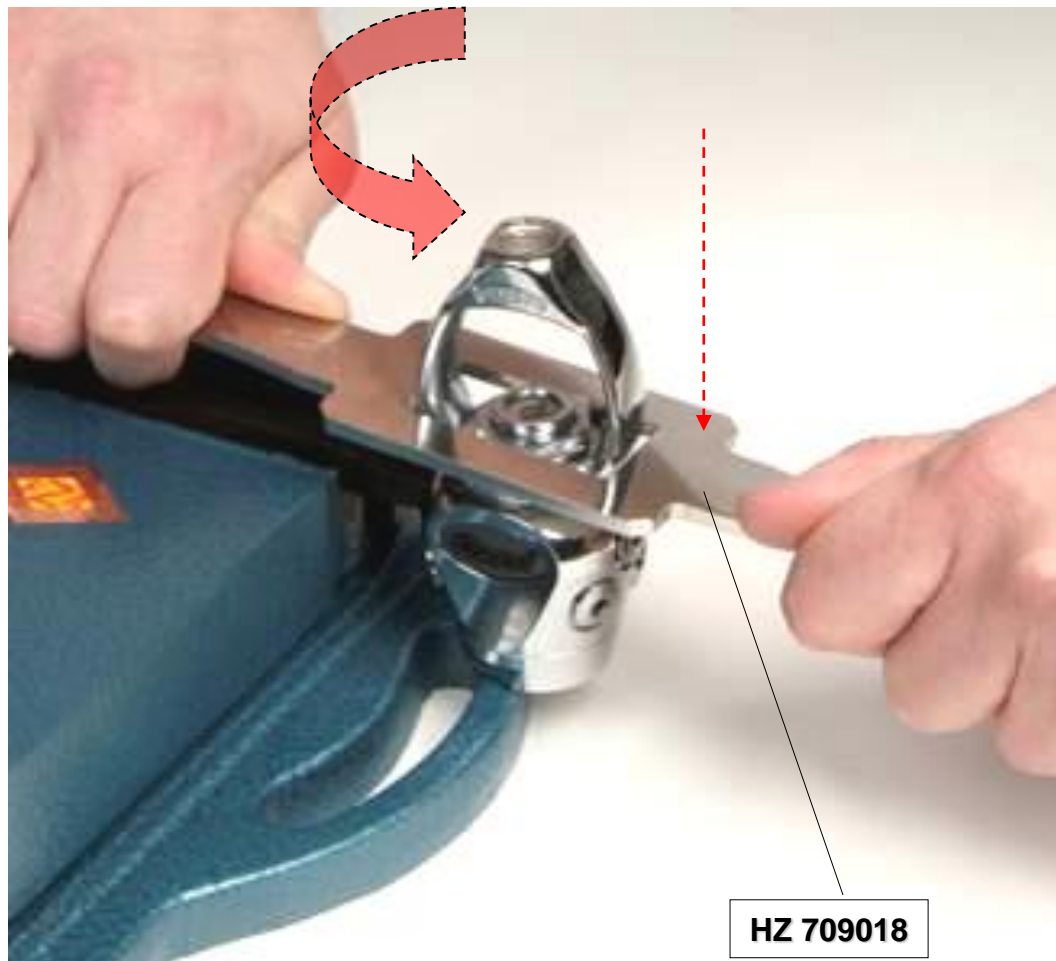
- Use the special spanner to disassemble the bracket, as shown in the picture.
- Note: the present procedure is to be carried out only on models relating to Rev. 2 and 3 (4) which are supplied with the new bracket, as shown in the picture.





**1st stage MC7:
disassembling phases**

- As to the previous version, insert the special threaded tool in one of the **regulator's ports** to disassemble the bracket. Tighten the bar in a vice and unscrew the nut using a big adjustable spanner.





**1st stage MC7:
disassembling phases**



HZ 770080

HZ 800089

- Remove the clamp locking nut and the 1st stage clamp.



**1st stage MC7:
disassembling phases**

- Use the special tool to push the filter, while removing the filter seal Seeger with the special pliers.
- Pay special attention unless the filter, pushed by the underlying spring, gets into your eyes.





**1st stage MC7:
disassembling phases**

- Remove the circlip, the separating washer and the conic filter and draw out fully the 1st stage valve.





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1st stage MC7

MC7 Rev. 2 – 3 and 4 (present): after carrying out the correct setting of the 1st stage, the setting screw will lie almost level with the regulator.

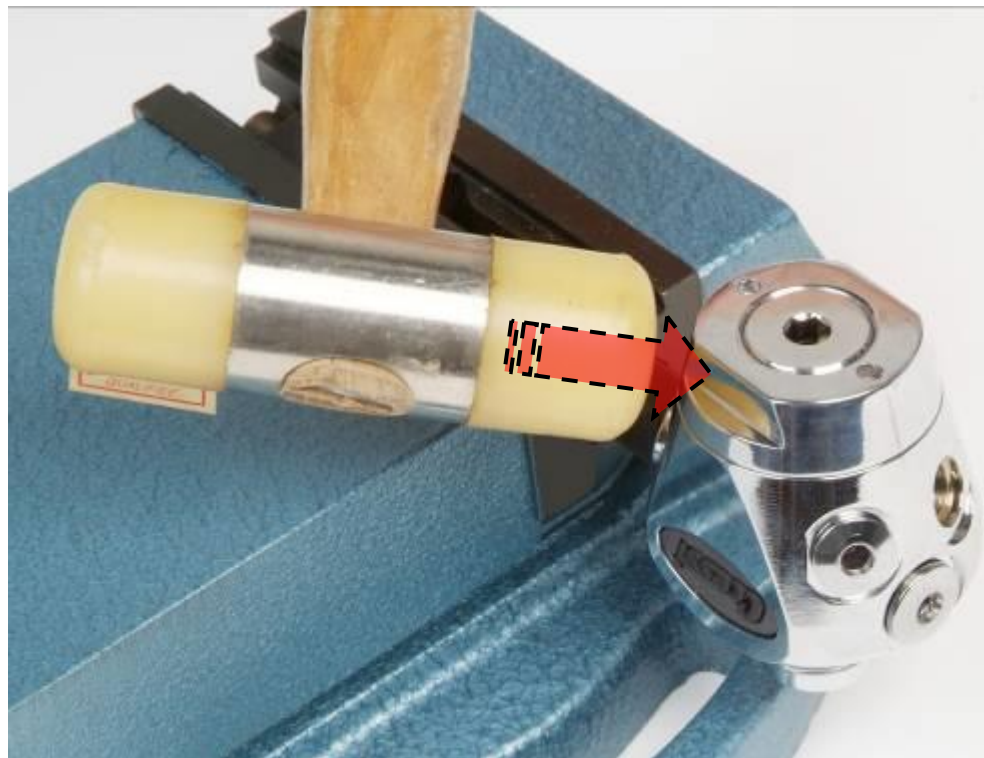


MC7 Rev 1: after carrying out the correct setting of the 1st stage, the setting screw will slightly jut out from the regulator's body.



**1st stage MC7:
disassembling phases**

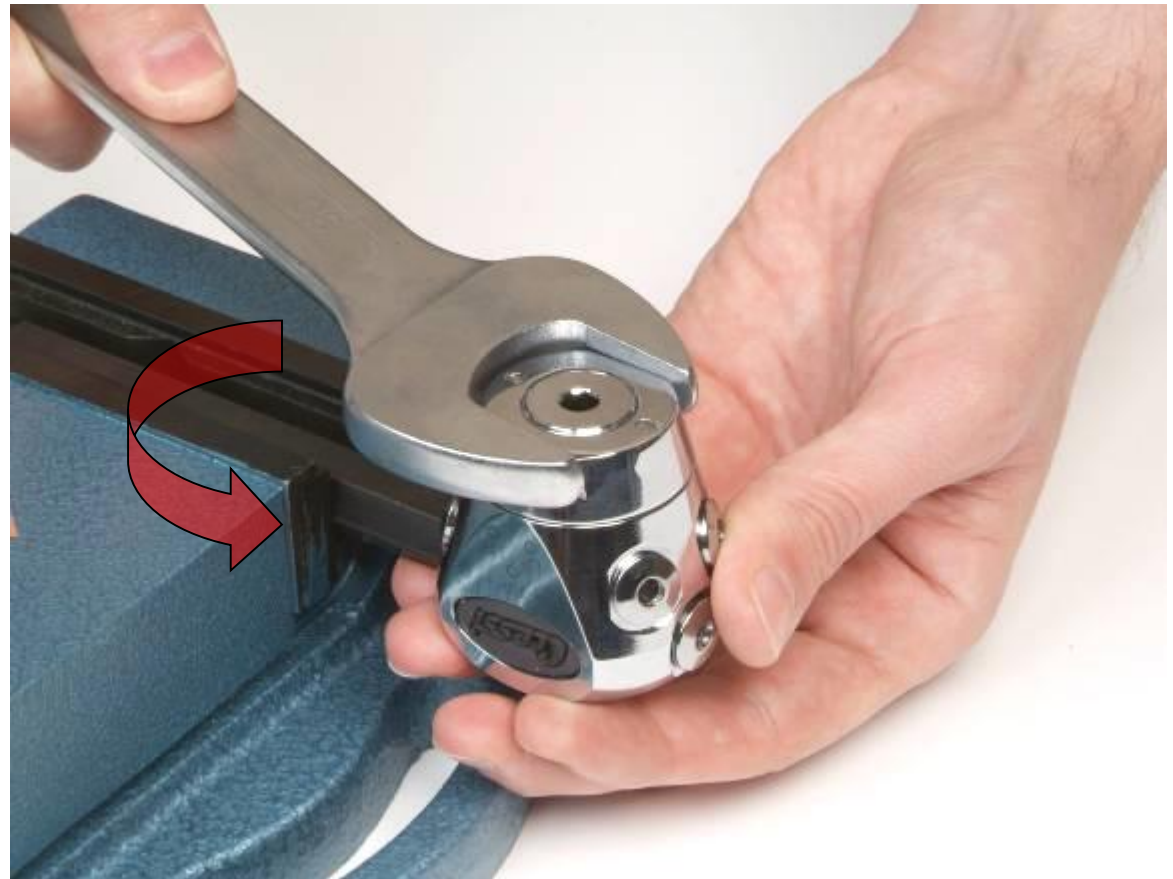
- In case the regulator has been long used underwater and shows concretions, it may be useful beating softly with a synthetic hammer all along the closing perimeter of the 1st stage closing disk, in order to free the threads from the concretions.





**1st stage MC7:
disassembling phases**

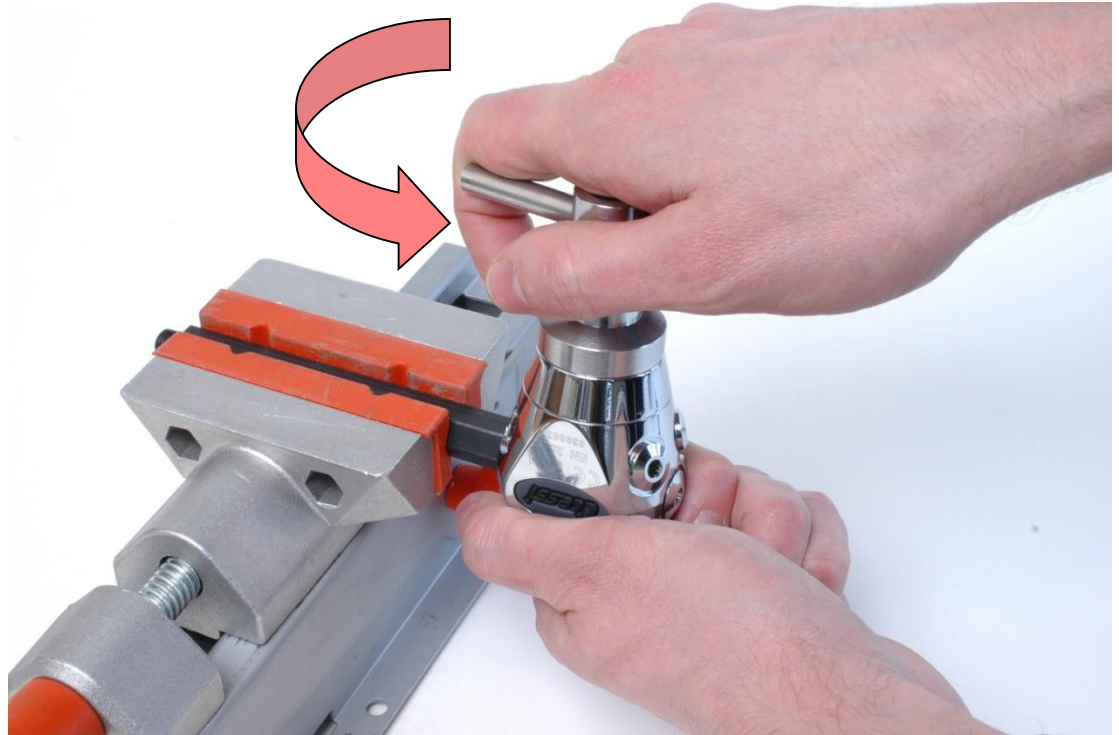
- After screwing the special threaded tool in one of the 1st **stage' s ports**, tighten the threaded bar in a vice and remove the closing disk by means of a **1,18" (30 mm)** hexagonal spanner.

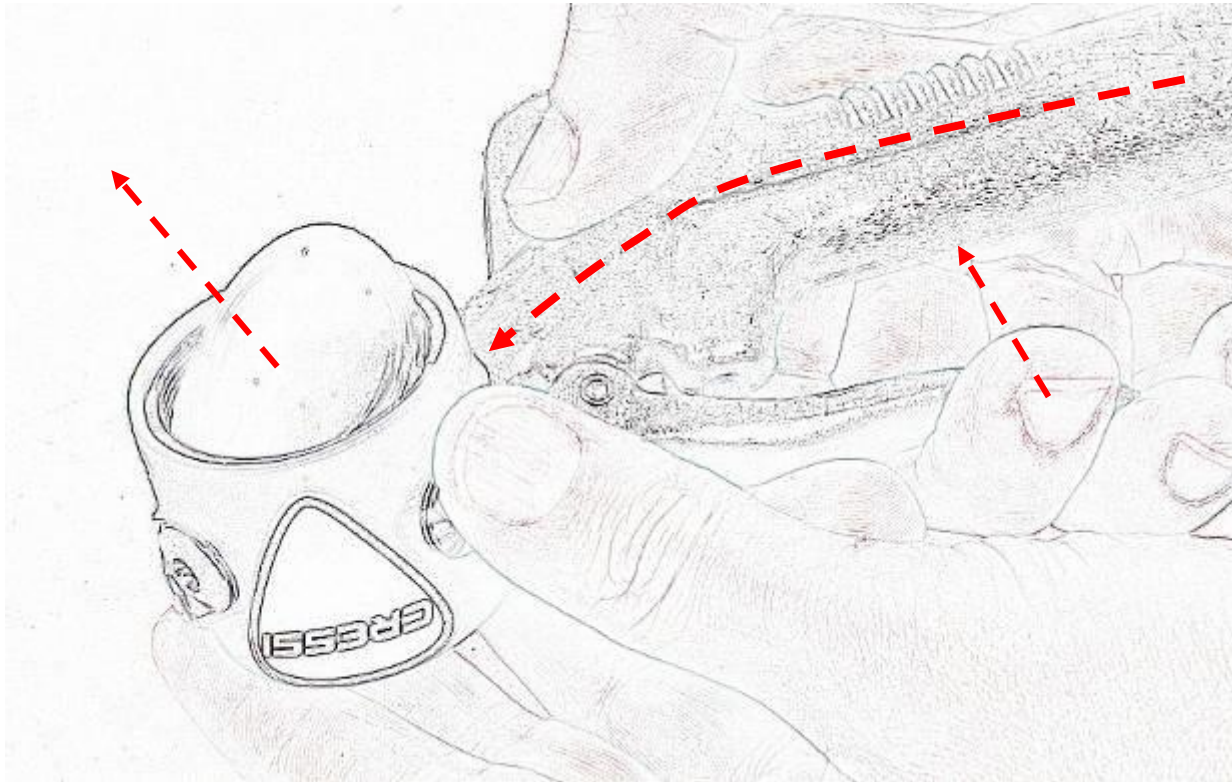




**1st stage MC7:
disassembling phases**

- As to removing the closing disk of previous version (Rev 1 and 2), first screw the special threaded tool in one **of the 1st stage's** ports, tighten it in a vice and use the special tool to remove it, as shown in the picture.





- You can also remove the diaphragm out of its seat, by letting in low pressurized water through a **3/8" LP port**.



1st stage MC7

Adjusting screw

Setting spring

Closing seal disk

Pin pusher + pin

HZ 800080

HZ 800078

HZ 800083

18K
HZ800079

Spring-guide plate

HZ 800081

Seal

HZ 800082

1st stage body

HZ 800073

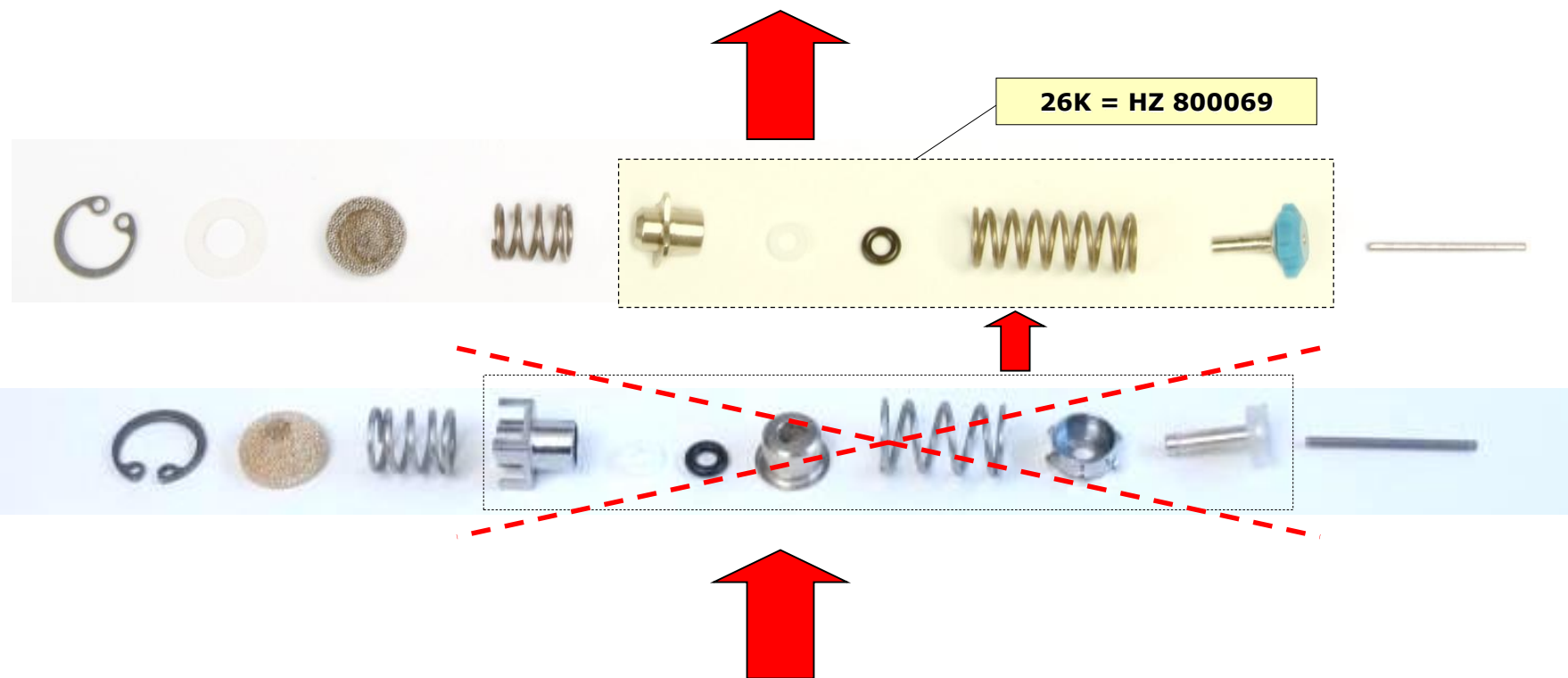
Spring planing



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Regulators repair and maintenance

1st stage MC7

HP valve: actual manufacturing



HP valve: previous manufacturing (MC7 Rev 1<2003)

Note: both **complete** valves are interchangeable.

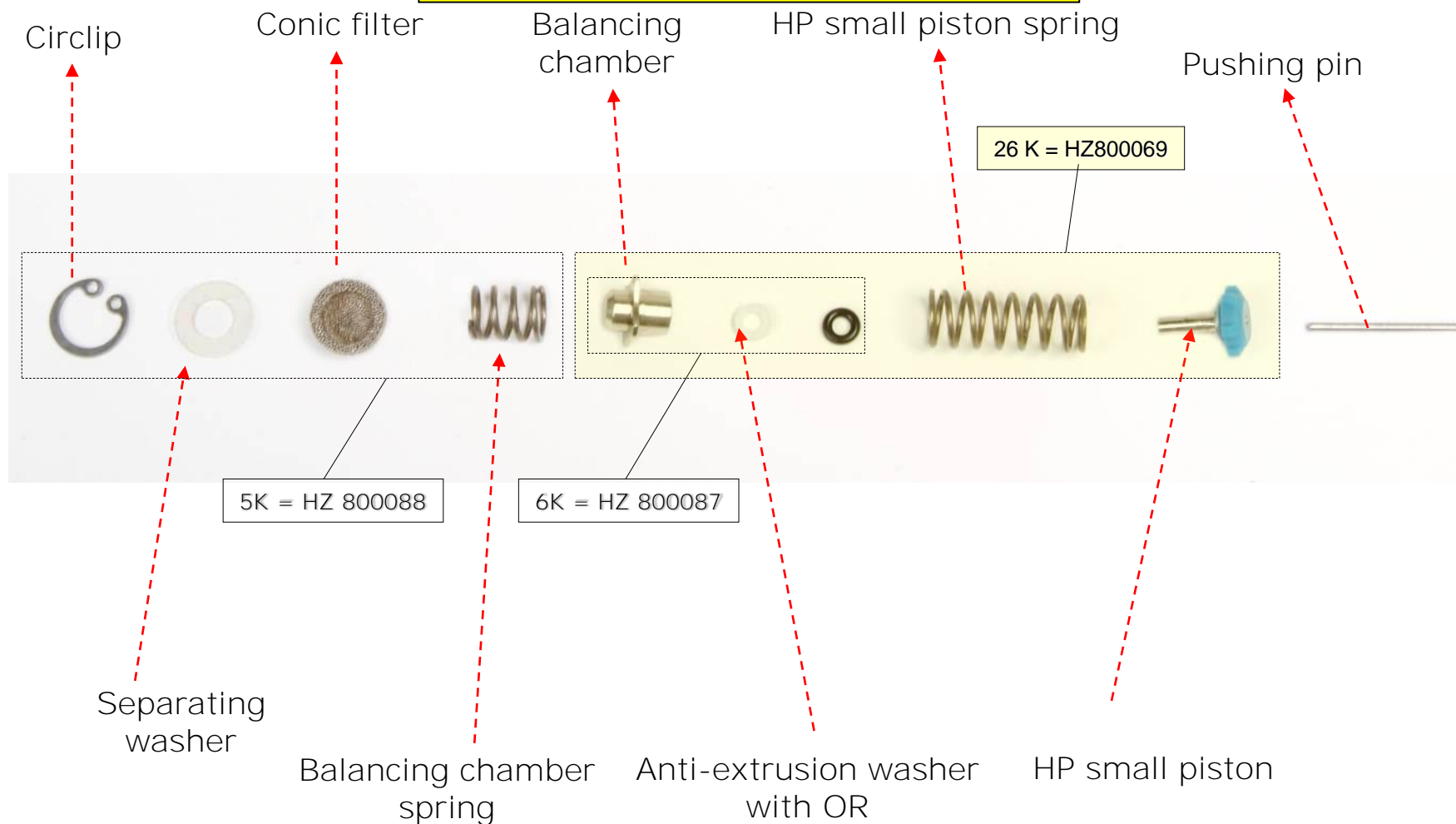


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Regulators repair and maintenance

1st stage MC7

HP valve: actual manufacturing





**1°st stage MC7:
assembling phases**

- Use a tool to insert the anti-extrusion ring in the balancing chamber.

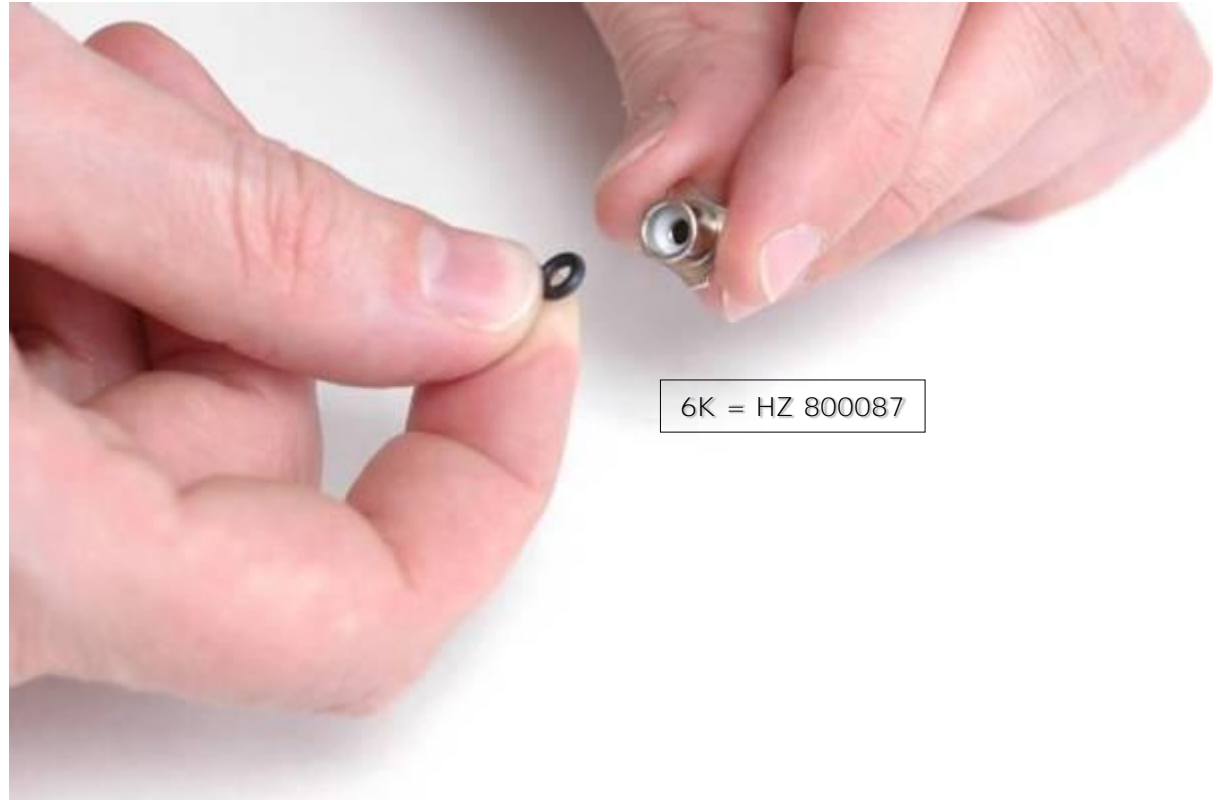




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1°st stage MC7: assembling phases

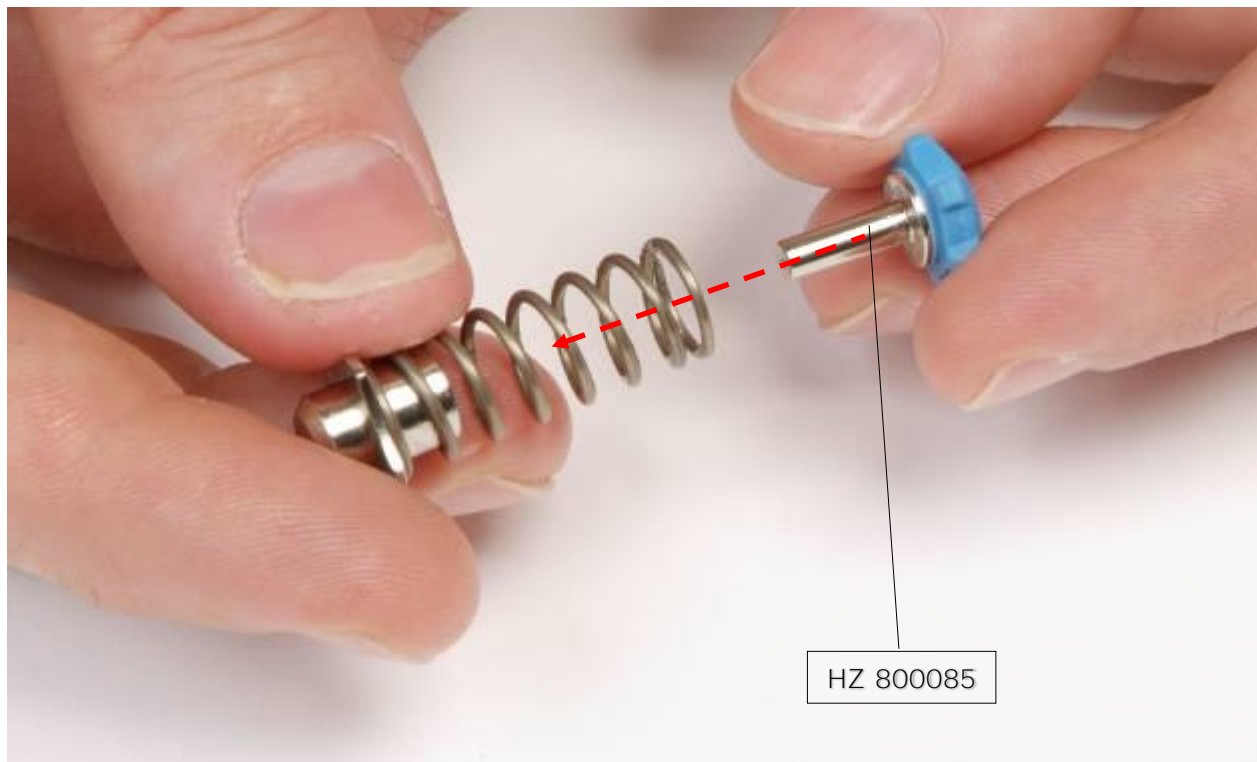
- Insert the OR in the balancing chamber, after carefully greasing it.
- Note: careful greasing is essential for the correct working of the HP valve





**1°st stage MC7:
assembling phases**

- Insert the small piston spring in the balancing chamber and the HP small piston inside the latter, as shown in the picture.
- Note:
Please make sure the opening passing through the HP piston is NOT clogged by any foreign body.

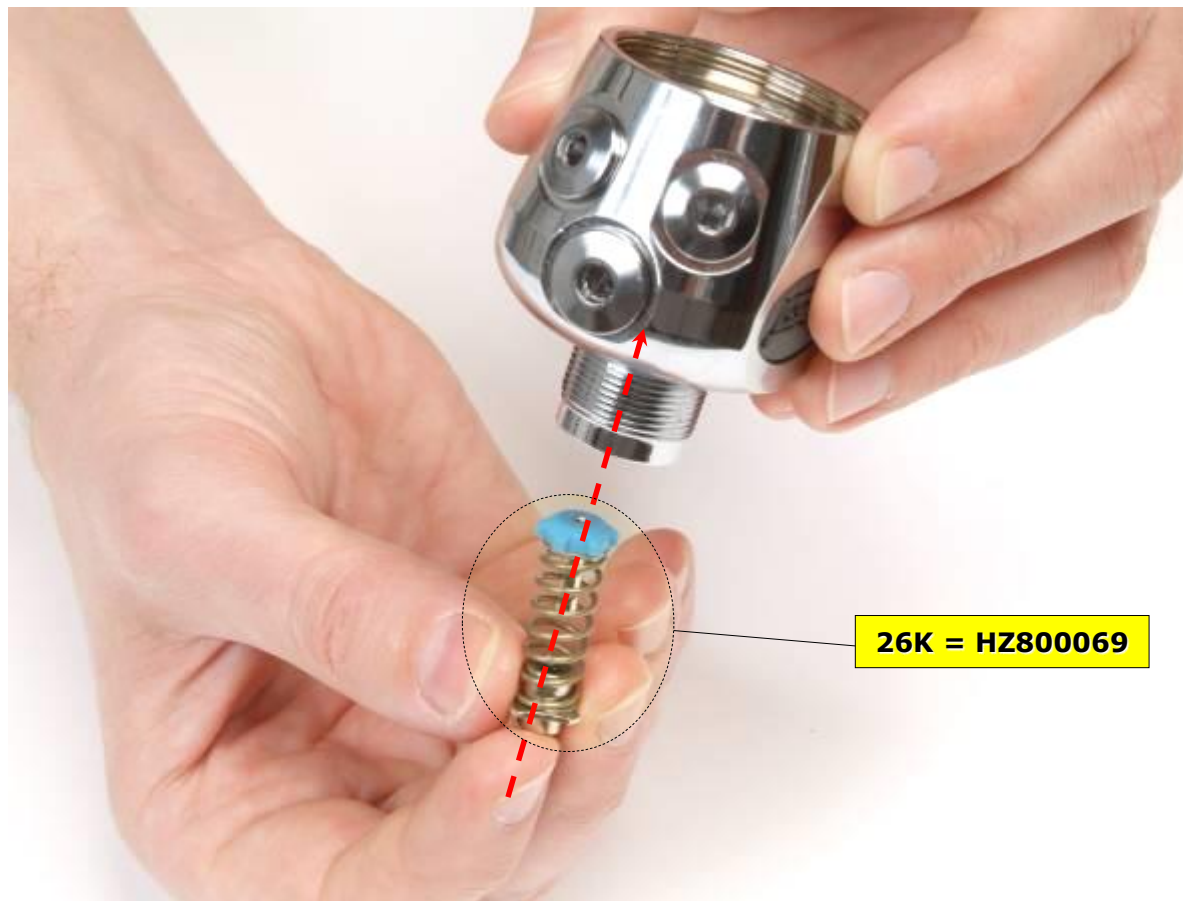




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1°st stage MC7: assembling phases

- Insert the assembled HP valve in the **first stage's** body as shown in the picture.





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1°st stage MC7: assembling phases

- Insert the balancing chamber spring, the conic filter and the separating washer.





1°st stage MC7: assembling phases

- Insert the sealing Seeger, by pushing the conical filter with a **blunt** plastic tool.
- The Seeger must be placed correctly in its seat inside the body.
- Pay special attention unless the filter, pushed by the underlying spring, gets into your eyes.





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1°st stage MC7: assembling phases

- After inserting the HP valve equipped with circlip and filter, turn the body and insert the pushing pin in its housing



14K = HZ 800083



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1°st stage MC7: assembling phases

- Insert the pin pusher and make sure, by slightly pressing it, the mechanism works perfectly.



14K = HZ 800083



**1°st stage MC7:
assembling phases**

- Insert the seal in its housing inside the body, making sure it is correctly placed in it.





**1 st stage MC7:
assembling phases**

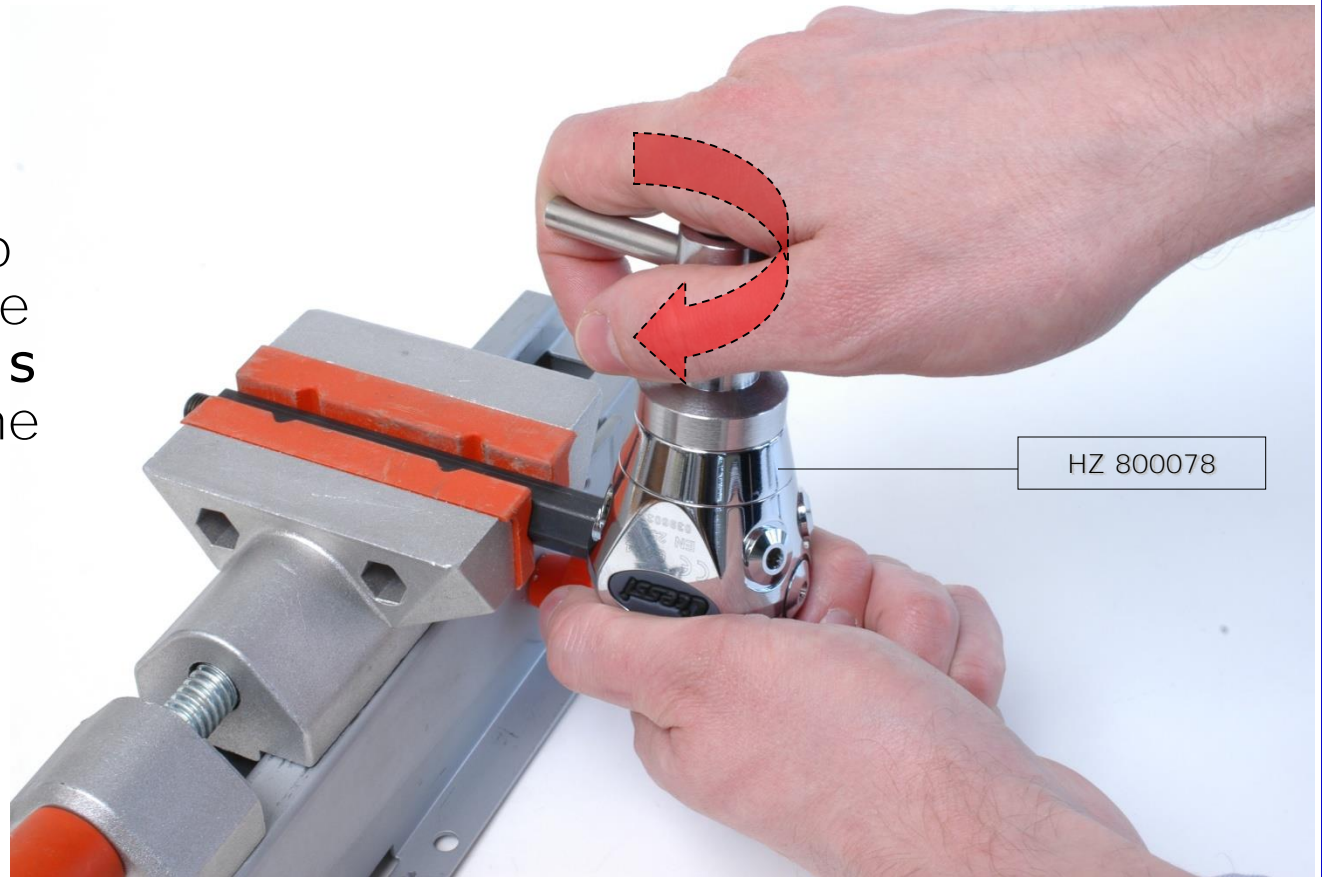


- Screw the seal closing disk up to the end of the 1st stage body's thread, and tighten it using a dynamometric wrench supplied with 1,18" (30 mm) hexagonal insert. Apply 30 N x m.



**1°st stage MC7:
assembling phases**

- You may screw the seal closing disk of previous versions (MC7 Rev 1 and 2) up to the end of the **1st stage body's** thread, using the special tool.





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1st stage MC7

Comparison of the setting springs in present and **previous Rev.**



Present production (Rev 2 - 3) (4)
Setting almost level

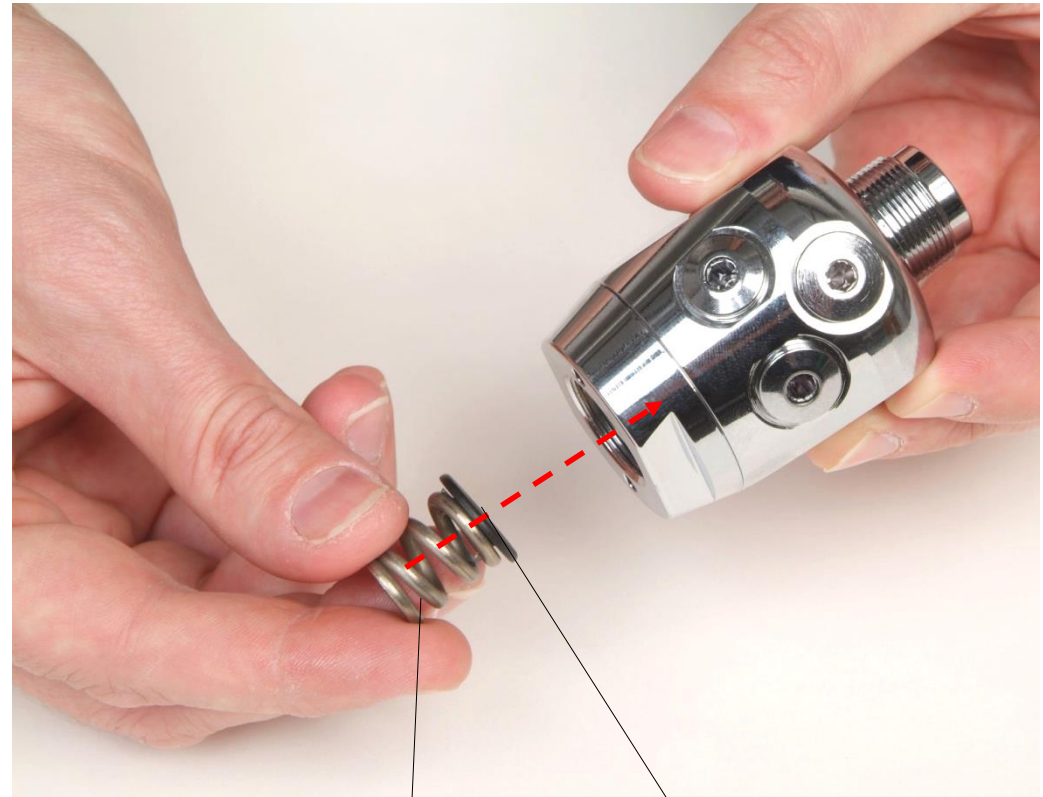


Previous production (Rev 1 < 2003)



**1°st stage MC7:
assembling phases**

- Insert the spring-guide plate in the spring itself and assemble the whole in the 1st stage as in the picture.



HZ 800080

HZ 800081



**1°st stage MC7:
assembling phases**

- Insert the spring planing in the 1st stage adjusting screw.



18K = HZ 800079



**1°st stage MC7:
assembling phases**

- Screw (not too tightly) the adjusting screw in the threaded housing of the seal closing disk, using a **0,23" (6 mm)** allen key, waiting for the 1st stage correct setting.





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Riparazione e Manutenzione Erogatori

Setting 1°st stage MC7

- Setting procedures of MC7 1st stage, referring to the picture on page 47:
- Place the pressure gauge on a BP port of the 1st stage
- Place the whole regulator (1st + 2nd stage) on a 200 bar pressurized tank or on an equally pressurized test-bed
- *Note: although the regulator is hyper-balanced (that is, the intermediate pressure increases as the tank pressure decreases) we recommend to set the 1st stage at 200 bar, in order to check correctly the working of the regulator itself. The intermediate pressure will slightly increase as the tank pressure decreases (+ 0,6 bar every 50 bar of the tank).*
- Slowly open the air tap while pressing the 2nd stage air discharge button. Repeat some times.



Setting 1°st stage MC7

- Check the pressure on the manometer. The correct setting of the MC7 is between 9.2 and 9.6 bar. Should it be different, close the air-**tap and discharge the regulator. Insert a 0,23"** (6 mm) allen key in the adjusting screw and ***screw clockwise***, in order to let the 1st stage intermediate pressure increase. By screwing anticlockwise, the pressure will decrease.
- Note: always remember to discharge the regulator before setting the intermediate pressure, in order to avoid incorrect data on the gauge.
- Check the intermediate pressure is quickly reached and does not increase, after pressing the 2nd stage discharge button several times.



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Setting 1°st stage MC7





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Regulators repair and maintenance

**1°st stage MC7:
assembling phases**

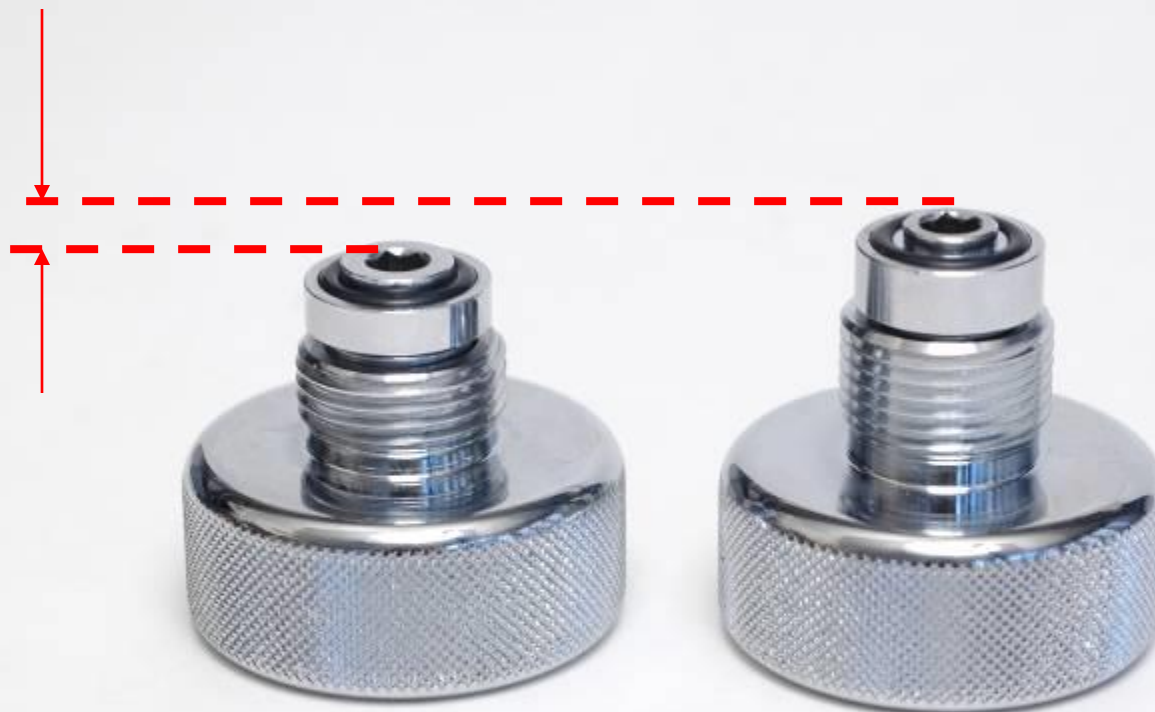


Clamp closing with dynamometric spanner: 30 N x m couple



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1st stage MC7 DIN



Kit DIN 200 bar

21K = HZ 800076

Kit DIN 300 bar

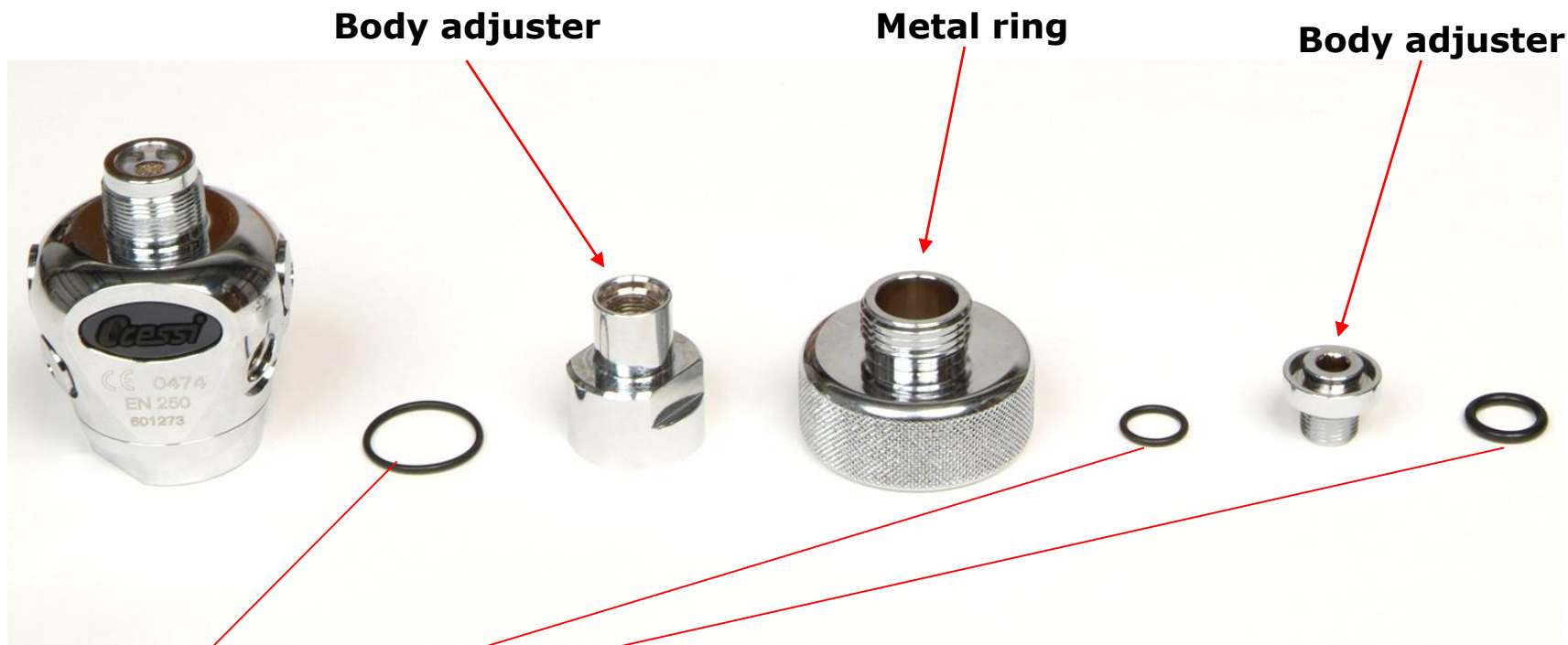
22K = HZ 800075



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1st stage MC7 DIN

Tools of the DIN 1st stage MC7 kit



Note: the DIN kit's OR are the same both in the 200 bar and in the 300 bar version.

25K = HZ 800072



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1st stage MC7 DIN

- Insert the body
DIN adjuster's
OR in its housing,
after lubricating
it.





1st stage MC7 DIN

- Screw the DIN adjuster on the 1st stage's body as shown in the picture.





1st stage MC7 DIN

- Using the threaded bar, clamp the 1st stage's body in a vice. Close the DIN body adjuster using a 0,86" (22 mm) torque wrench set to 30 Nm.





1st stage MC7 DIN

- Using the threaded bar, clamp the **1st stage's body** in a vice. Close the DIN body adjuster using a **0,23" (6 mm)** torque wrench set to 30 Nm.
- *Same procedure is applied to all previous models as well (Rev. 1, 2 e 3).*





1st stage MC7 DIN

- Insert the DIN connection's knurled metal ring in the latter's body adjuster.





1st stage MC7 DIN

- Use a 0,23" (6 mm) allen spanner to screw the DIN hand-wheel holder on the relating thread of the DIN body adjuster.
- Close the latter using a 0,23" (6 mm) torque wrench setting of 5 Nm.





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1st stage MC7 DIN

Warning: in case of any difficulty while *disassembling* the equipment, do not use the spanner with any extension, or the detail might be subjected to irreversible damages! In such case we recommend to contact Cressi-sub before disassembling the equipment.





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1st stage MC7 Antifreeze





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1st stage MC7 Antifreeze



8 = HZ 800085

Warning: If your MC7 1st stage is supplied with an antifreeze kit, any time you replace the HP piston of Rev 1 and 2 with the new blue one of Rev 3, please ***always*** replace the white transducer as well with the black one shown in the picture, supplied in the spare parts kit. Such operation, which is ***compulsory*** in case of maintenance of MC7 1st stage with Rev 1 and 2, need not be carried out on the present production (Rev 3) (4), whose assembly and maintenance operations are described in the following parts.



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Regulators repair and maintenance

1st stage MC7 Antifreeze



- Screw the seal closing disk of the Antifreeze kit using a dynamometric wrench supplied with a 1,18" (30mm) hexagonal insert. Apply 30 N x m.



1st stage MC7 Antifreeze

- You may screw the seal closing disk on previous versions (MC7 Rev 1 and 2) up to the end of the 1st stage body's thread, using the special jointed tool.
- **Warning: protect the spanner from any metal contact between the regulator's body and the spanner itself, in order not to damage the regulator's design.**



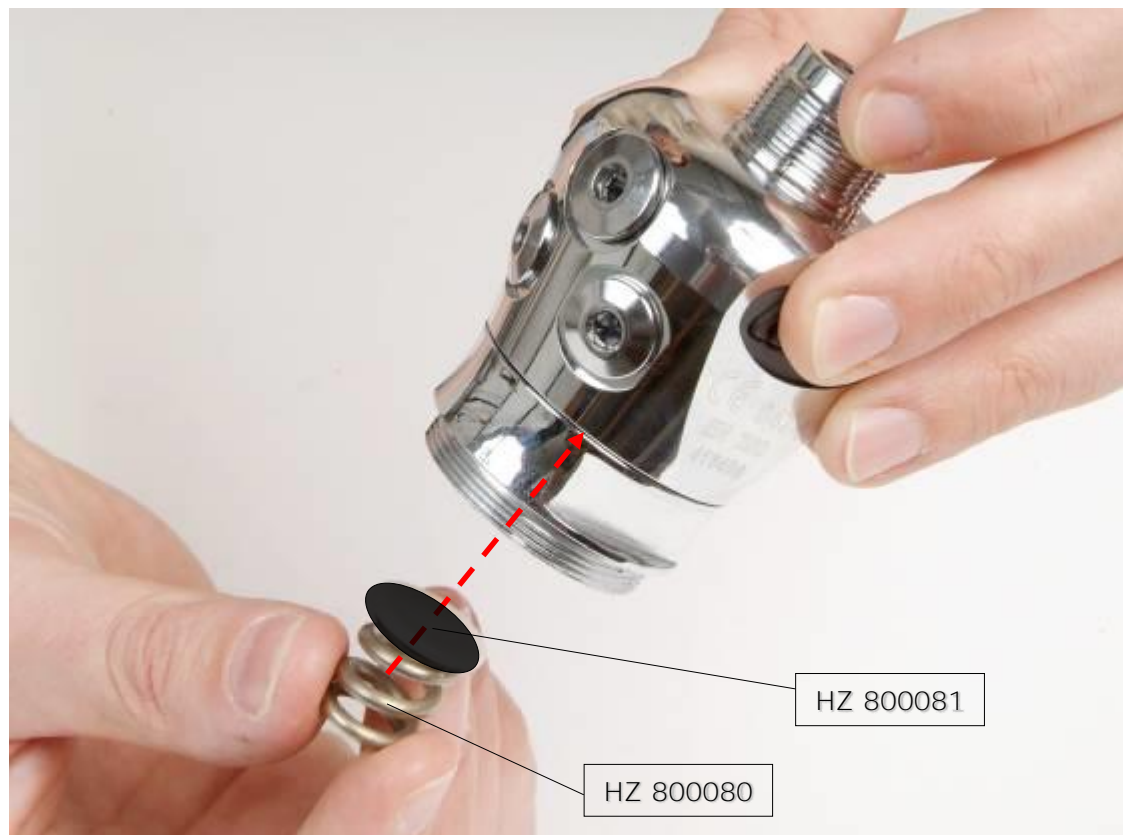
20K = HZ 800050



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1st stage MC7 Antifreeze

- Insert the spring-guide plate in the spring and assemble the whole unit in the 1st stage Antifreeze as shown in the picture





- Turn the setting screw into the seal closing disk' s thread using a 0,23" (6 mm). Allen wrench.
- Carry out the regulator setting.
- ***Note: follow the same setting procedure as for the regulator with no Antifreeze kit above described.***
- ***A correct setting procedure before assembling the Antifreeze kit is essential for the correct working of the regulator.***





1st stage MC7 Antifreeze

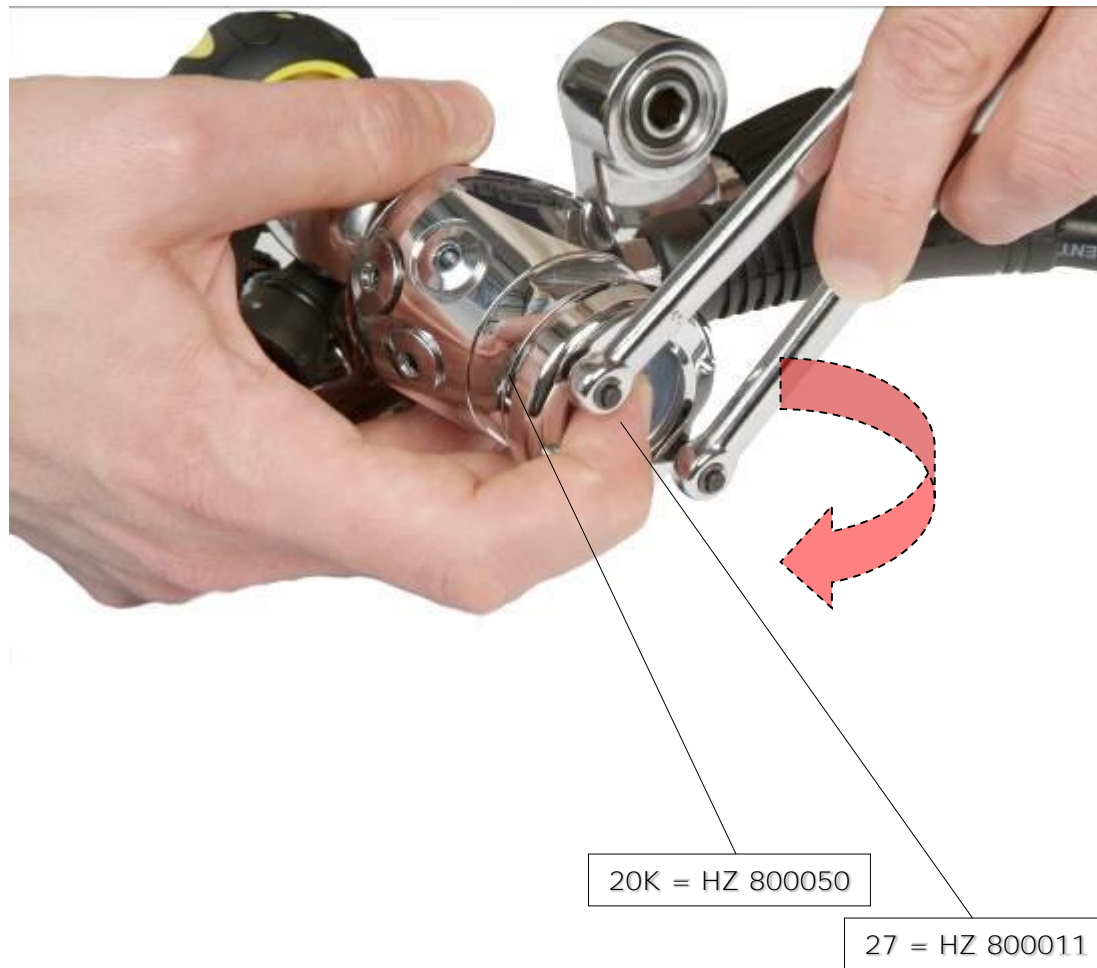
- After setting the 1st stage supplied with the Antifreeze kit correctly, insert the Antifreeze transducer inside the setting screw as shown in the picture.
- Note: the Antifreeze transducer delivered at the moment (Rev.3) (4) is black, and is to be combined exclusively with the blue HP valve.





1st stage MC7 Antifreeze

- After inserting the Antifreeze seal inside the Antifreeze kit dry chamber disk, place the 1st stage on a 200 bar, open the tap on pressurized tank and start turning the disk with a compass wrench, as shown in the picture; in the meanwhile, press the kit seal and discharge the 2nd stage assembled to the Antifreeze MC7 at every slight rotation of the seal disk. This will avoid the formation of an airpocket in the kit dry chamber, which would cause a convexity of the seal.





1st stage MC7: Service records

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Service Record

Client: Record n.º

1st Stage serial number.....

Model: 2nd Stage serial number:

Date of purchase:.....

Stated defect:

Operations performed

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

Checks and adjustments

	a)	b)	c)	d)	e)	f)	Notes
Calibration of first stage IP valve.....							
Adjustment of second stage lever							
Adjustment of Octopus second stage lever							
Inhalation force calibration							
Data check using test bench at different pressures							
Pressure seal check							
Valve functioning and seal check							
Type of operation performed:							

Type of operation performed:

Replacements parts according to the list:

Store this sheet until the next technical operation.

Location, stamp, and date.....

The Technician.....

<input type="checkbox"/>	Warranty	<input type="checkbox"/> YES	<input type="checkbox"/> NO
			Date of the next scheduled maintenance.....

Warranty ☐ YES ☐ NO

Date of the next scheduled maintenance.....

Annual Overhaul	Date of the next scheduled maintenance.....

Special Maintenance

Notes

100

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Regulators repair and maintenance

1st stage MC7: 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