 <b>TOOLS NO. 01</b>	CS10-19-C-001-E	A
		Made by: pelrom	Date: 15.04.04

## ASULAB 3366 glue

The Asulab 3366 glue is a twin-compound epoxy resin that produces a slightly flexible joint, making it easier to glue crystals.

This glue was specially developed in order to allow components glued with it to be disassembled after being immersed in boiling water with a detergent additive.

### MIXING RATIO

- Resin 80% (4 drops)
- Hardener 20% (1 drop)
- Longevity of the mixture, approximately 45 minutes.

### APPLICATION



- (Detailed instructions delivered with the product)
- Mix the two compounds well.
- On clean surfaces, apply the quantity needed using a syringe or other applicator.
- Hold the parts together.
- Polymerise for 4 hours at 60°C.
- Remove the excess glue.

### PRESENTATION

- Supplied in syringes filled with the correct dose.  
(1 large syringe of resin, 1 small syringe of hardener).

### NOTES

- Do not swallow.
- If the glue comes into contact with the eyes, rinse the eyes thoroughly.

	 <b>TOOLS NO. 02</b>	CS10-19-C-002-E	A
		Made by: pelrom	Date: 15.04.04

## Rotor of calibres

**1108 / 1109 / 1110 / 1111 / 1140 / 1141**

**Rotor ref.: XXXX/1026 / Tool ref.: 502 S03 SET**

### Problem

Problems with the rotor usually lead to it being replaced pointlessly. In most cases a replacement of the ball bearing would be sufficient.

### Analysis

The use of standard tools could result in damage to the rotor or the ball bearing.

### Solution

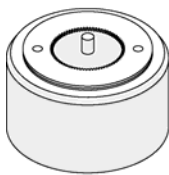
A special tool has been developed to allow the ball bearing to be removed without difficulty. This tool consists of a **support for rotor** and a **key** for turning and removing the spring clip of the rotor.

Both components are available under the following reference: **Ref. 502 S03 SET**

### Figure 1

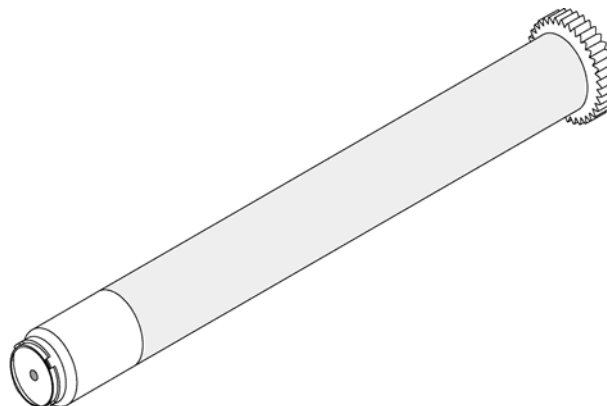
#### Support for rotor

Ref. 502 100 0371



#### Key

Ref. 502 200 0351



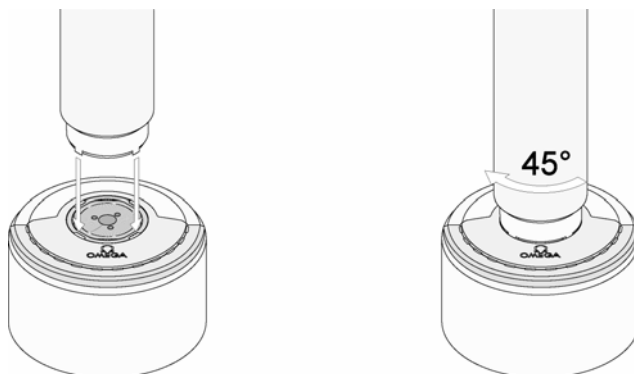
## HOW TO REPLACE THE BALL BEARING

### Procedure

#### 1. Removing the ball bearing

- 1.1 Place the rotor on the support for rotor
- 1.2 Insert the 4 fingers of the key into the openings of the spring clip and turn approximately  $45^\circ$  to the left or to the right. The ball bearing and spring clip can now be removed without difficulty.

Figure 2

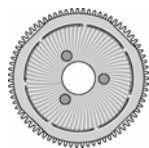


#### 2. Fitting the ball bearing

- 2.1 Put the ball bearing on the support for rotor
- 2.2 Place the rotor on top of it
- 2.3 Place the spring clip on the ball bearing and turn the spring clip, using the key, approximately  $45^\circ$  to the left or to the right. The spring clip must be in the position shown in figure 4.

Figure 3

Ball-bearing  
Ref. 1110/1479





Spring clip for rotor  
Ref. 1110/1451



Figure 4

Rotor with ball bearing and spring clip  
Ref. XXXX/1026



	 <b>TOOLS NO. 3</b>	CS09-19-C-003-E A	
		Made by: pelrom	Date: 05.03.2004

## Universal tool for removing turning bezels Reference 510 0049

### Problem

Turning bezels can only be removed using a special tool.

### Analysis

The case or the bezel could be damaged if the bezel is removed using conventional tools.

### Solution

In order to remove the bezel without difficulty and without damaging, a new tool has been developed.

With this tool, all turning bezels in the current Omega collection can be disassembled.

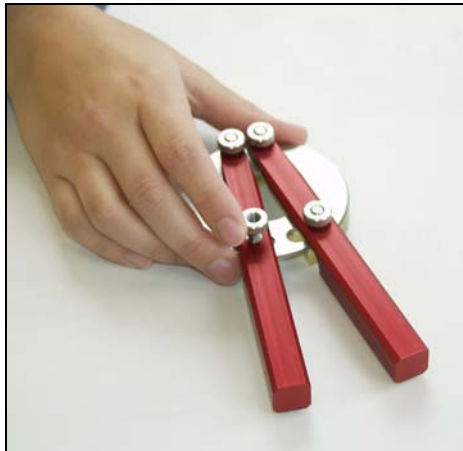
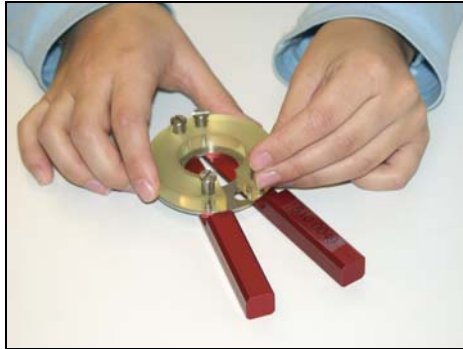
If the case cannot be held correctly with the hands, the new case holder (to open the case back) can be used as an aid.

### RECOMMENDED TOOLS

<p><b>Pliers for turning bezels</b></p>		<p>Complete Set Ref. 510 0049</p>
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## OPERATING INSTRUCTION

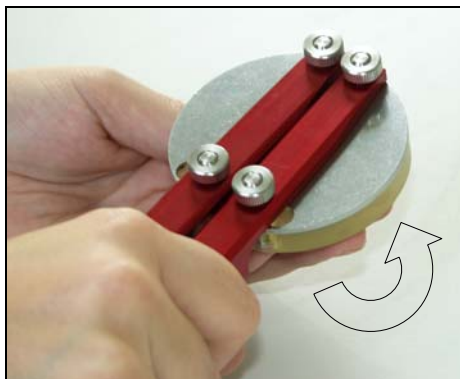
Figure 1 - 3



### Fitting the extraction ring

Assemble the corresponding extraction ring on the pliers.

**Figure 4 - 7**



### **Removing the bezel**



Place the extraction ring over the circumference of the bezel and then close the pliers.

Turn the pliers in the direction of rotation of the bezel and pull down at the same time until the bezel is released.

Open the pliers and release the bezel.

### **Fitting the bezel**

Place the bezel manually. Check that the bezel rotates correctly.

	 <b>TOOLS NO. 04</b>	CS10-19-C-004-E	A
		Made by: pelrom	Date: 15.04.04

## Tools for calibres with the Etachron system

### KEYS FOR ETACHRON SYSTEM

#### Problem

When removing the balance-spring stud, the balance-spring may be damaged. The same problem may arise when adjusting the regulator pins.

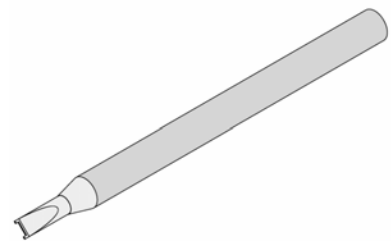
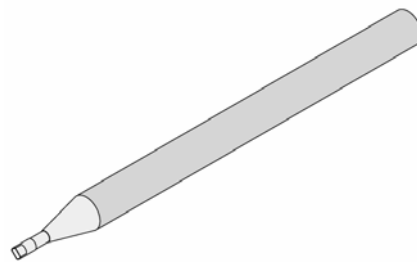
#### Solution

Several tools have been developed in order to remove the balance-spring stud and to adjust the regulator pins without difficulty.

**Figure 1**

**Adjustment key**  
Ref. 502 200 0061

**Extraction key**  
Ref. 502 200 0062

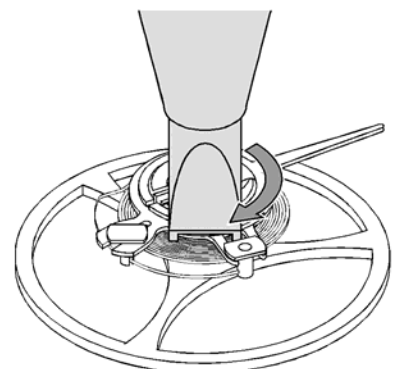
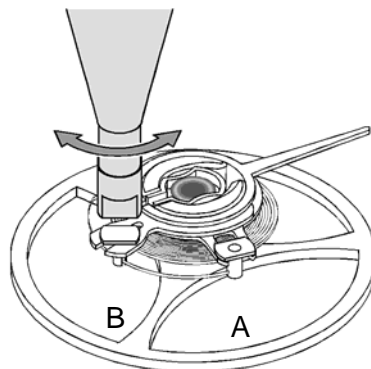


#### Utilisation

For adjusting the balance-spring stud (A) and regulator pins (B).

For removing the balance-spring stud

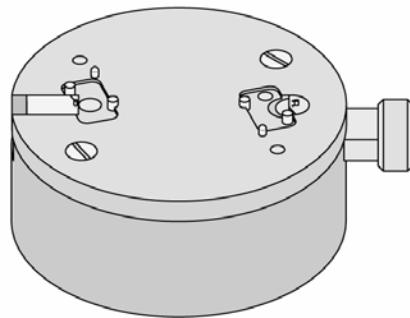
**Figure 2**



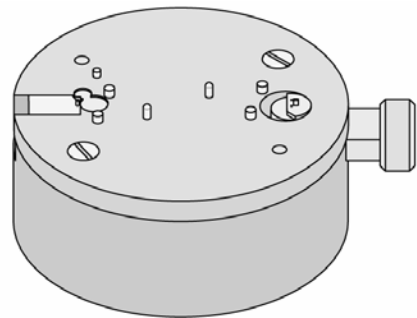
## HOLDERS FOR ETACHRON SYSTEM

Figure 3

**Fitting**  
Ref. 502 100 0311



**Fitting**  
Ref. 502 100 0312



**Use**

For removing and assembling the balance-spring stud of calibres 1110, 1120, 1140 and their derivatives.

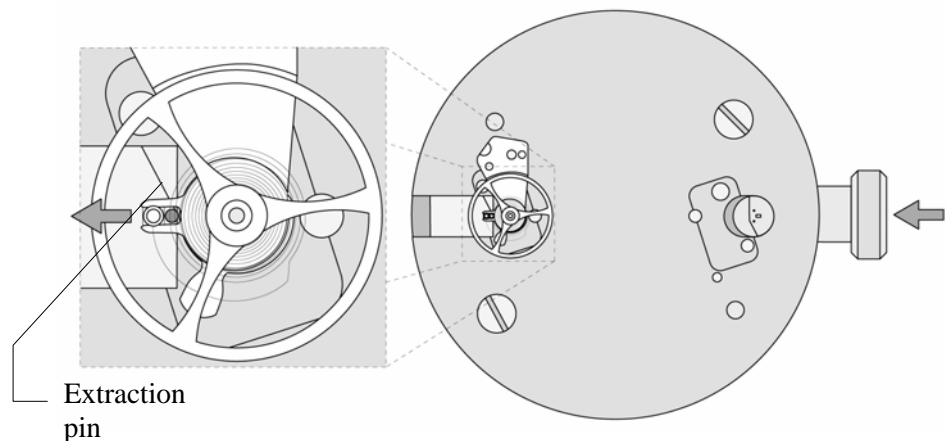
For removing and assembling the balance-spring stud of calibre 1150 and derivatives.

### Procedure

#### 1. Removing the balance-spring stud

- 1.1 Place the complete balance-cock (with balance and balance-spring) into the left opening. The precise position is determined by the guide pins.
- 1.2 Check the correct position of the stud holder in relation to the extraction pin (see figure 4).
- 1.3 Push the side button to extract the balance-spring stud.

Figure 4





## HOLDERS FOR ETACHRON SYSTEM

### Procedure

#### 2. Fitting the balance-spring stud

- 2.1 Place the complete balance-cock (with balance and balance-spring) into the right-side opening. The precise position is determined by the guide pins.
- 2.2 Place the balance-spring stud on the assembly block between the plug and the stud holder (see figure 5).
- 2.3 Push the side button to press the balance-spring stud into the stud holder (see figure 6).

Figure 5

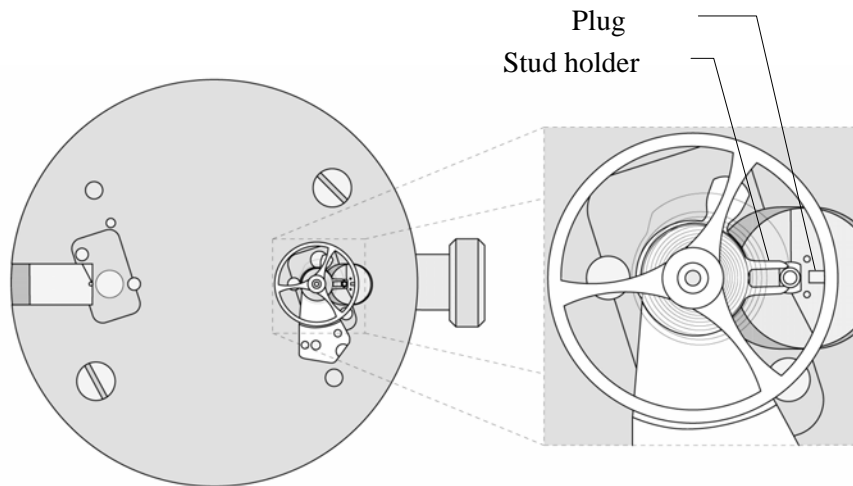
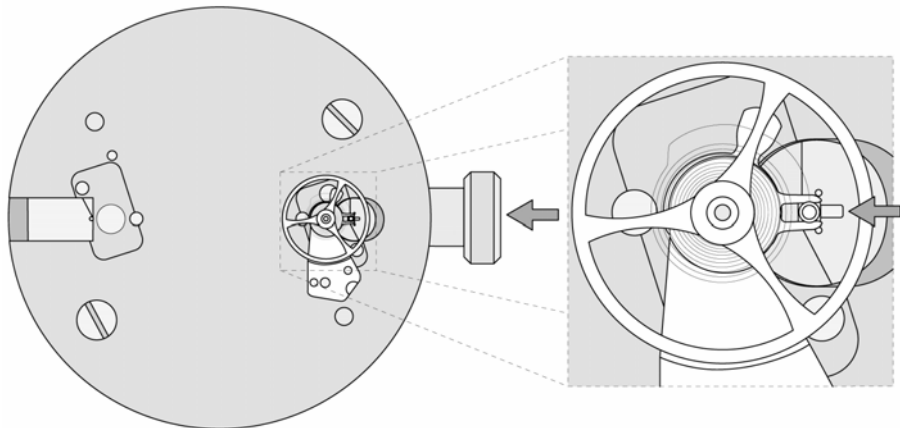




Figure 6



	 <b>TOOLS NO. 05</b>	CS10-19-C-005-E	A
		Made by: pelrom	Date: 15.04.04

## Various Omega models

### ANTI-REFLECTIVE TREATMENT OF SAPPHIRE CRYSTALS

#### Problem

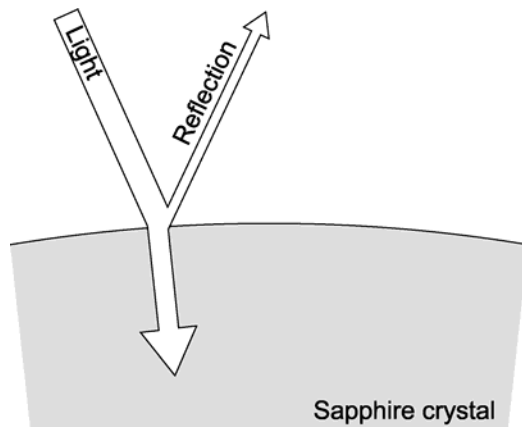
For some time now sapphire crystals treated as anti-reflective on both sides are being used for aesthetic reasons. The anti-reflective treatment on the outside may sometimes be damaged.

#### Analysis

- The basic products used for this anti-reflective treatment are magnesium fluoride and silicon fluoride. A coating of these materials is projected onto the surface of the crystal by evaporation in a vacuum at 350 degrees Celsius.
- The anti-reflective coating is not as hard as the sapphire crystal and can be damaged by outside influences. However, it resists organic solvents (water, benzene, alcohol, etc.).

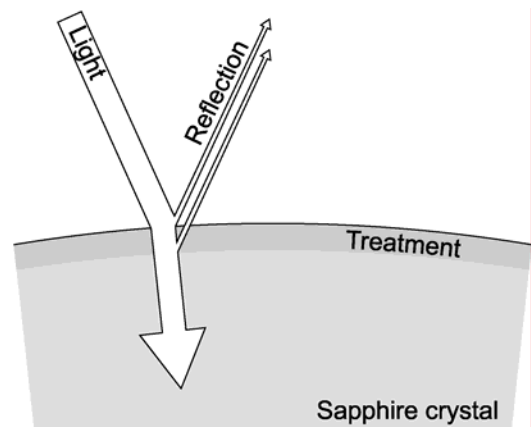
**Figure 1**

**Without treatment  
(strong reflection)**



**Figure 2**

**With treatment  
(weak reflection)**



## **CS solution**

- Sapphire crystals treated as anti-reflective on both sides are being used in current production on Constellation, Speedmaster Automatic and Multifunction models.
- If a customer does not wish to have the anti-reflective treatment on the outside face of the crystal, it can be removed using a polishing machine. The coating comes off easily when rubbed with a cotton disc. We recommend removing the crystal beforehand.

## **Exchange**

- Crystals with a damaged anti-reflective coating can be reconditioned. The old anti-reflective coating is removed chemically and replaced by a new coating.
- If a customer wishes to replace a crystal with damaged anti-reflective treatment on both sides, this can be done under the following conditions:

**Crystals with anti-reflective treatment on both sides are exchanged at a special price if the crystals are returned to the OMEGA Spare Parts Department individually wrapped, with the reference clearly indicated and providing that they are not damaged and can therefore be reused.**

## **Fixing the crystal**

- When fixing a crystal with anti-reflective treatment on both sides, care must be taken to touch it only on the cylindrical part. Marks on the anti-reflective coating are difficult to remove.
- Moreover, a support adapted to the shape of the crystal (largest diameter possible) should be used. The edges of the support must not be too sharp.
- A kit (Ref. 502 T99 KIT) has been specially developed for fitting crystals for the Constellation line. It contains holders for both the cases and the crystals.

## **Cleaning**



- The anti-reflective coatings are highly static. If an anti-reflective crystal is cleaned with an ordinary cloth (e.g. Selvit), the coating may be damaged.
- We have developed a blue microfibre cloth (ref. 502 500 0009) for cleaning these crystals.
- For resistant stains, sterol, ethanol 96% or other liquids that evaporate rapidly can be used.

## RECOMMENDED TOOLS

### Tools 99 KIT



Crystal holders for the  
Constellation Line  
Ref. 502 T99 KIT

	 <b>TOOLS NO. 06</b>	CS10-19-C-006-E	A
		Made by: pelrom	Date: 15.04.04

## Rotor of calibres

**1120 / 1128 / 1221 / 2500 / 2627 / 2628**

**Rotor ref.: XXXX/2201006**

**Tool ref.: 502 S09 SET**

### Problem

Problems with the rotor usually lead to it being replaced pointlessly. In most cases a replacement of the ball bearing would be sufficient.

### Analysis

The use of standard tools could result in damage to the rotor or the ball bearing.

### Solution

A special tool has been developed to allow the ball bearing to be removed without difficulty. This tool consists of a **support for rotor** and a **key** for turning and removing the spring clip of the rotor.

Both components are available under the following reference: **Ref. 502 S09 SET.**

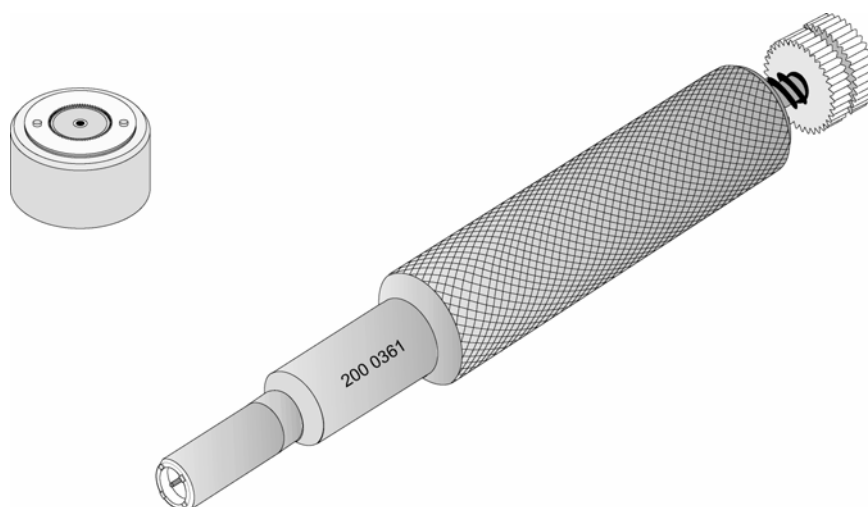
### Figure 1

**Support for rotor**

**Ref. 502 100 0381**

**Key**

**Ref. 502 200 0361**



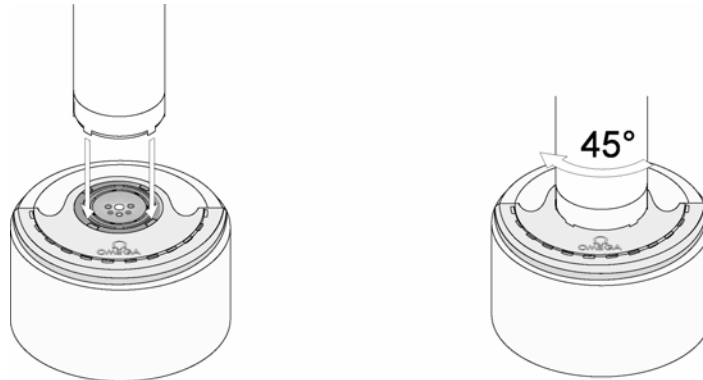
## HOW TO REPLACE THE BALL BEARING

### Procedure

#### 1. Removing the ball bearing

- 1.1 Place the rotor on the support for rotor
- 1.2 Insert the 4 fingers of the key into the openings of the spring clip and turn approximately 45° to the left or to the right. The ball bearing and spring clip can now be removed without difficulty.

Figure 2



### Procedure

#### 2. Fitting the ball bearing

- 2.1 Put the ball bearing on the support for rotor
- 2.2 Place the rotor on top of it
- 2.3 Place the spring clip on the ball bearing and turn the spring clip, using the key, approximately 45° to the left or to the right. The spring clip must be in the position shown in figure 4.

Figure 3

**Ball-bearing**  
Ref. 1120/22040



**Spring clip for rotor**  
Ref. 1120/22042

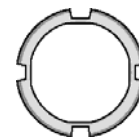




Figure 4

**Rotor with ball bearing and spring clip**  
Ref. XXXX/2201006



	 <b>TOOLS NO. 7</b>	CS09-19-C-007-E	A
		Fait par: pelrom	Date: 05.03.2004

## Checking the Co-Axial escapement functions Tools / Ref. 506 0002, 506 0004

### SUBJECT

In movements equipped with a traditional lever escapement, the escapement functions can easily be checked. However, on movements with a Co-Axial escapement, the escapement functions cannot be checked using conventional tools due to the complexity of the escapement design.

It is, however, very important that the **escapement functions are checked after each intervention** on the movement, in order to guarantee the correct functioning. Therefore, two tools with similar functions have been developed which allow the Co-Axial escapement functions to be checked on Omega Co-Axial calibers.

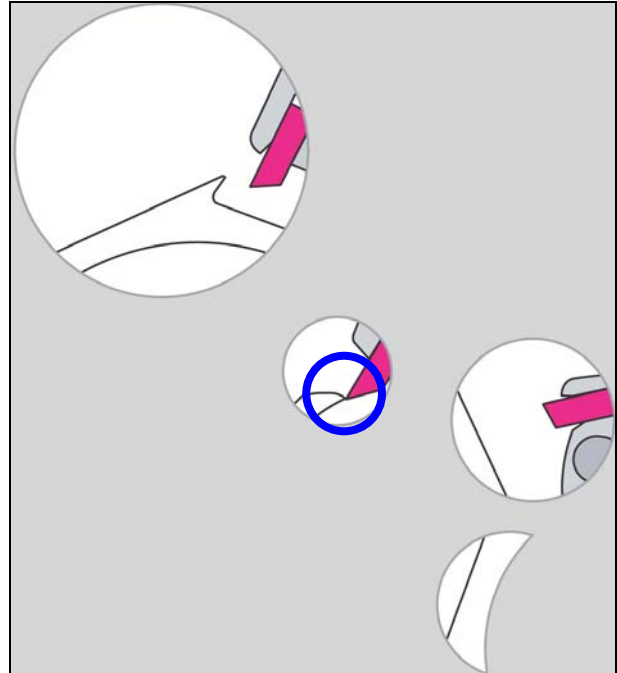
#### Use of the tools

The tools must be used **together with a microscope**. The handling is as follows:

1. Dial and hands as well as all parts of additional functions (calendar, GMT etc.) have to be removed to assure a good view of the movement.
2. After that the movement has to be fitted on the tool (movement side down).
3. With the plastic ring, the movement is fixed to the tool.
4. The rubber wheel, placed in the inner side of the tool, is in direct contact with the balance rim and can be guided by the grey handle. With the microscope, the following control criteria can be checked by carefully turning the handle for- and backwards.  
Important: Always complete the full escapement functions !
5. If the rubber wheel should not touch the balance rim, the distance can be adjusted by turning the black eccentric wheel (unscrew first the blocking screw on the bottom of the tool).

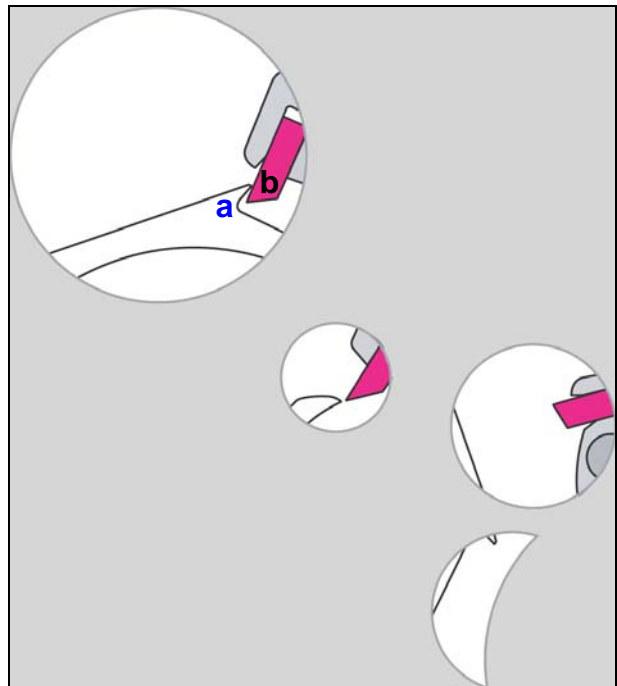
## CHECK NO. 1

**Situation:** The tooth of the escape wheel pinion, at the end of the impulse, is going to leave the impulse pallet (see circle).



After that, tooth **a** falls into locking position at entry pallet **b**.

**Check:** All 8 teeth of the escape wheel **must fall directly on the locking face** of the pallet and **none of them must miss it !**

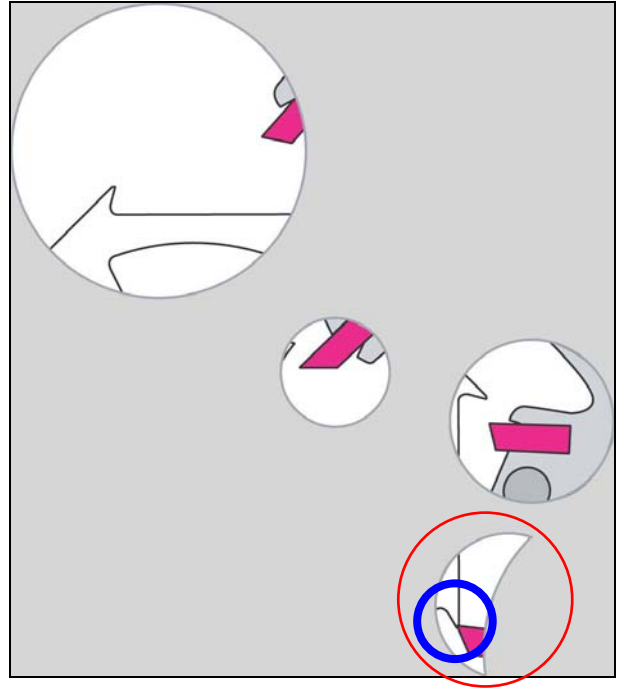




## CHECK NO. 2

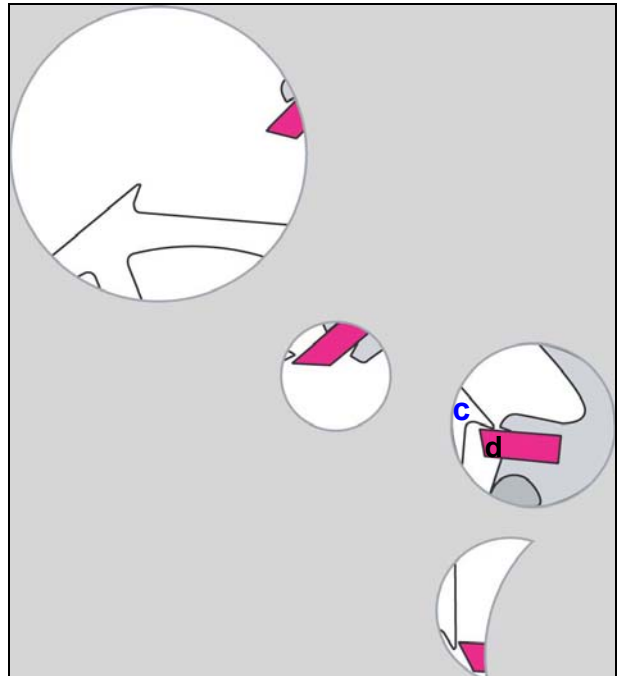
Note: The half-moon opening in the mainplate (see thin red circle below) is only available on the latest Co-Axial caliber versions. Nevertheless, this check can also be carried out without the half-moon opening.

**Situation:** The tooth of the escape wheel, at the end of the impulse, is going to leave the impulse pallet (see blue circle).



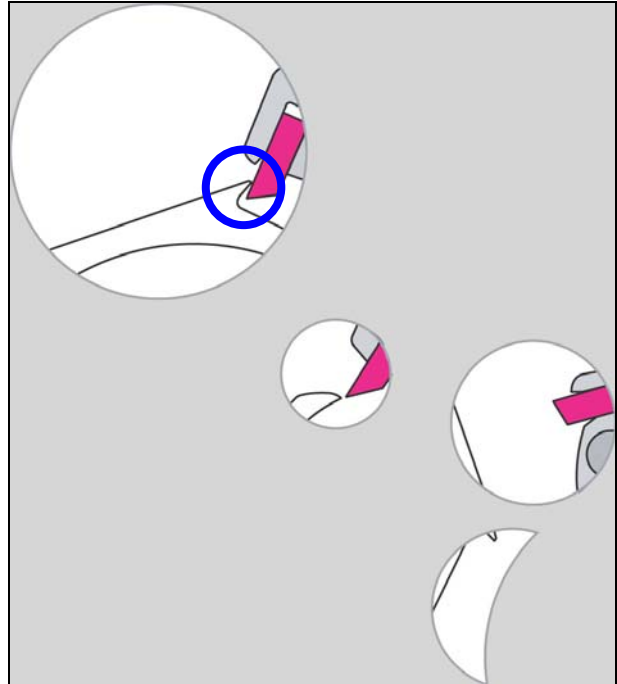
After that, tooth **c** falls into locking position at exit pallet **d**.

**Check:** All 8 teeth of the escape wheel **must fall directly on the locking face** of the pallet and **none of them must miss it !**



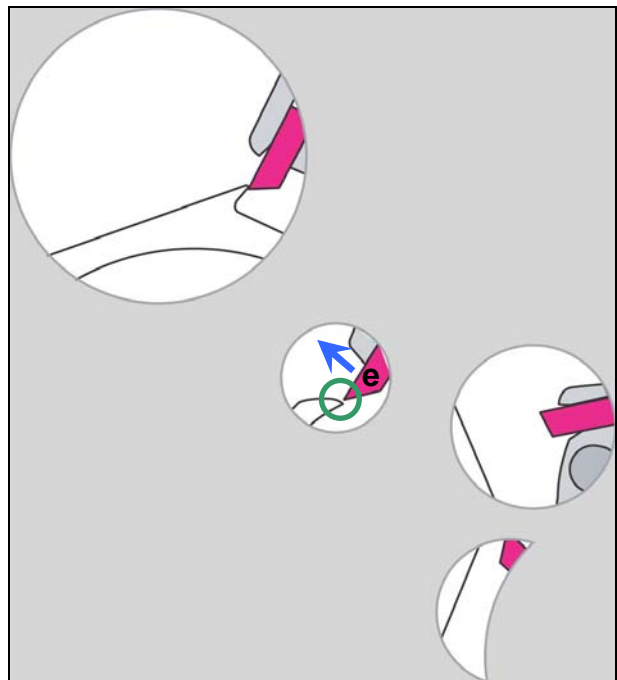
## CHECK NO. 3

**Situation:** The tooth of the escape wheel is locked at the entry pallet (see circle).



After unlocking, the impulse pallet **e** moves in direction of the blue arrow.

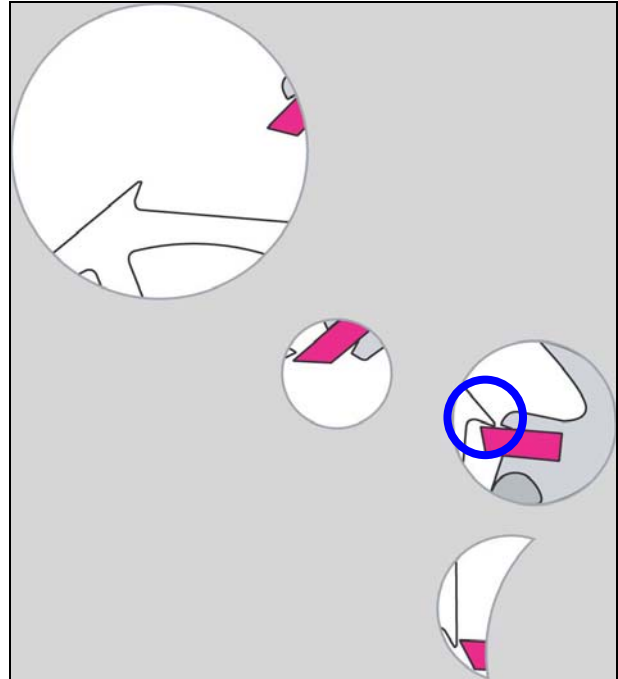
**Check:** The tip of the impulse pallet **e** **must pass** all 8 teeth of the pinion (see green circle) **without touching!**



## CHECK NO. 4

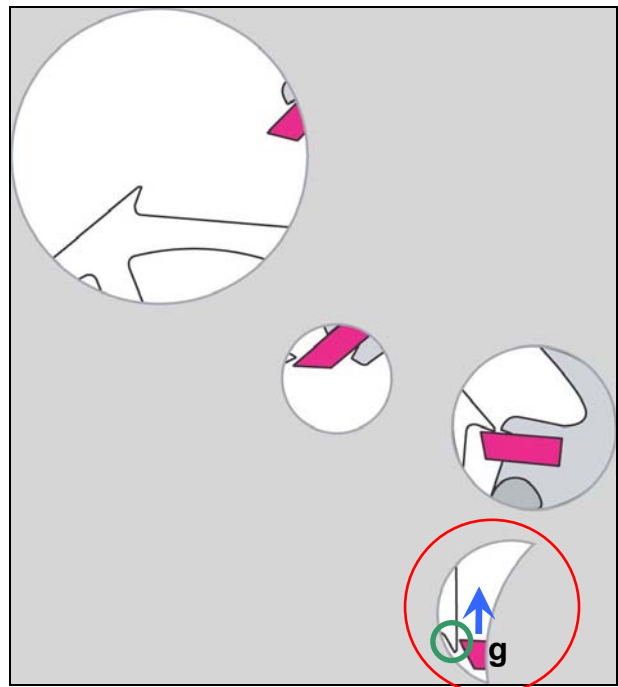
Note: The half-moon opening in the main plate (see thin red circle below) is only available on the latest Co-Axial caliber versions. Unfortunately, this check cannot be carried out on the older versions.

**Situation:** The tooth of the escape wheel is locked at the exit pallet (see circle).



Before unlocking, the impulse pallet **g** moves in direction of the blue arrow.

**Check:** The tip of the impulse pallet **g** **must pass** all 8 teeth of the escape wheel (see green circle) **without touching !**








## INTERVENTION ON ESCAPEMENT

On movements equipped with the traditional lever escapement, the escapement functions can be modified, by changing the position of the pallet jewels. In the Co-Axial escapement, **it is not allowed to change the position of the pallet jewels.**

Malfunctions of the Co-Axial escapement can only be fixed, by **replacing the concerned parts** i.e. Co-axial wheel, lever etc.

## RECOMMENDED TOOL

<b>Tools</b>		<p><b>Ref. 506 0002</b>                  Tool for Co-Axial escapement function controls  <b>Calibers 2500, 2627, 2628, 2202, 2300, 2610</b></p>
		<p><b>Ref. 506 0004</b>                  Tool for Co-Axial escapement function controls  <b>Calibers 3313, 3603, 3612</b></p>
<b>Equipment for checking</b>		<p><b>Ref. 505 900 0810</b>                  Microscope with integrated light                  Zoom: 8-32</p>

		<b>TOOLS NO. 08</b>		CS09-19-C-008-E	A
		Made by: pelrom	Date: 15.04.04		

## Extractors to remove screwed tubes (SET) Ref. 510 0051

### DESCRIPTION

A SET of three extractors and a hand-wrench is available. These extractors are used to extract Seamaster and Speedmaster X-33 crown tubes, Speedmaster X-33 pusher tubes, Seamaster helium valve tubes and also De Ville Co-Axial crown tubes.

The SET ref. 510 0051 contains:

- Extractor N° 1, X-33 pusher tubes Ref. 515 0003
- Extractor N° 2, Seamaster, X-33 and De Ville Co-Axial crown tubes Ref. 515 0004
- Extractor N° 3, Seamaster helium valve tubes Ref. 515 0005
- Hand-wrench for extractors Ref. 515 0006


### Important

These extractors are only used to extract screwed-in tubes and not soldered tubes.



### REPLACEMENT PROCEDURE

#### Procedure

1. Take the extractor in the hand-wrench.
2. Insert the extractor inside the screwed tube. Force the extractor while turning anti-clockwise. With the help of the extractor, pull out the screwed tube in the direction of its rotation, then screw it out.
3. Once separated from the middle of the watch-case, to release the screwed tube from the extractor, simply block the body firmly with pliers and turn the extractor clockwise.
4. Remove the titanium gasket. This titanium gasket can be released with a small screwdriver by pressing from the inside of its seating.
5. Clean the residues of glue in the hole with a tap.
6. The burrs and the remaining glue inside the middle of the watch-case can be cleaned with a milling-cutter.
7. Fit a new titanium gasket on the new screwed tube. Cover the thread of the new screwed tube with a film of glue (Loctite 243) and screw it with a specific key in the middle of the watch-case. Allow to dry for 24 hours.

<b>Case</b>	 A photograph of a mechanical extractor set. It consists of a central grey handle with a black grip, and several long, thin metal rods of varying lengths and diameters, some with different tip shapes, arranged around the handle.	Extractor Set Ref. 510 0051
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8.

	 <b>TOOLS NO. 09</b>	CS09-19-C-009-E	A
		Made by: pelrom	Date: 15.04.04

## Constellation Tools 95

### Ref. 502 T95 KIT

#### MAINTENANCE AND MEASURES TO BE TAKEN

##### Recommended tools

- Bergeon 5500 staking tool
- OMEGA 9070 case opener
- “Constellation 95” toolbox

##### Contents of the “Constellation 95” toolbox

Whole kit available under ref. 502-T95.KIT

“A” removing supports

“B” Claw extractors

“C” Positioning stakes

“D” Bezel holders

“E” Adapters for Bergeon 5500 staking tool (Ref. 502-T95.5500A)

##### Application

Ref.	“A”	“B”	“C”	“D”
368.1201	3240	3241	3242	3243
396.1201	3244	3245	3246	3247
766/796.1201	3248	3249	3250	3251
795.1201	3252	3253	3254	3255
795.1203	3256	3257	3258	3259

Additional orders:

502-T95.XXXX (example: 502-T95.3240)

## MOVEMENT

### Opening the back

Use the OMEGA 9070 case opener

### Closing the back

Use the Bergeon 5500 staking tool

Holding the case : Bezel holders “D”

Fitting the back : Standard flat stake

## BEZEL

### Removing (see Figure 1)

Only if necessary: for replacement, satin-finishing or positioning

Use the Bergeon 5500 staking tool

Holding the case : Support “A”

Removing the case : Claw extractors “B”

### Fitting (see Figure 2)

Manual operation

- Place the case middle on the positioning stakes “C” and adjust it using the crown/stem.
- Put the 2 claws on the bezel and place the assembled pieces carefully on the case middle.
- Align the bezel with the marks on the positioning stakes “C” using the bezel’s numerals I and V.

Using the Bergeon 5500 staking tool

Holding the case : Oriented using positioning stakes “C”

Fitting the bezel : Bezel holders “D”

### Remarks

The bezel can also be removed and fitted with the movement encased and the back closed. The numerals on the dial can be used as orientation marks for positioning the bezel.

Fitting the bezel using the Bergeon 5500 staking tool

Holding the watch : Support “A”

Fitting the bezel : Bezel holders “D”



# REMOVING THE BEZEL

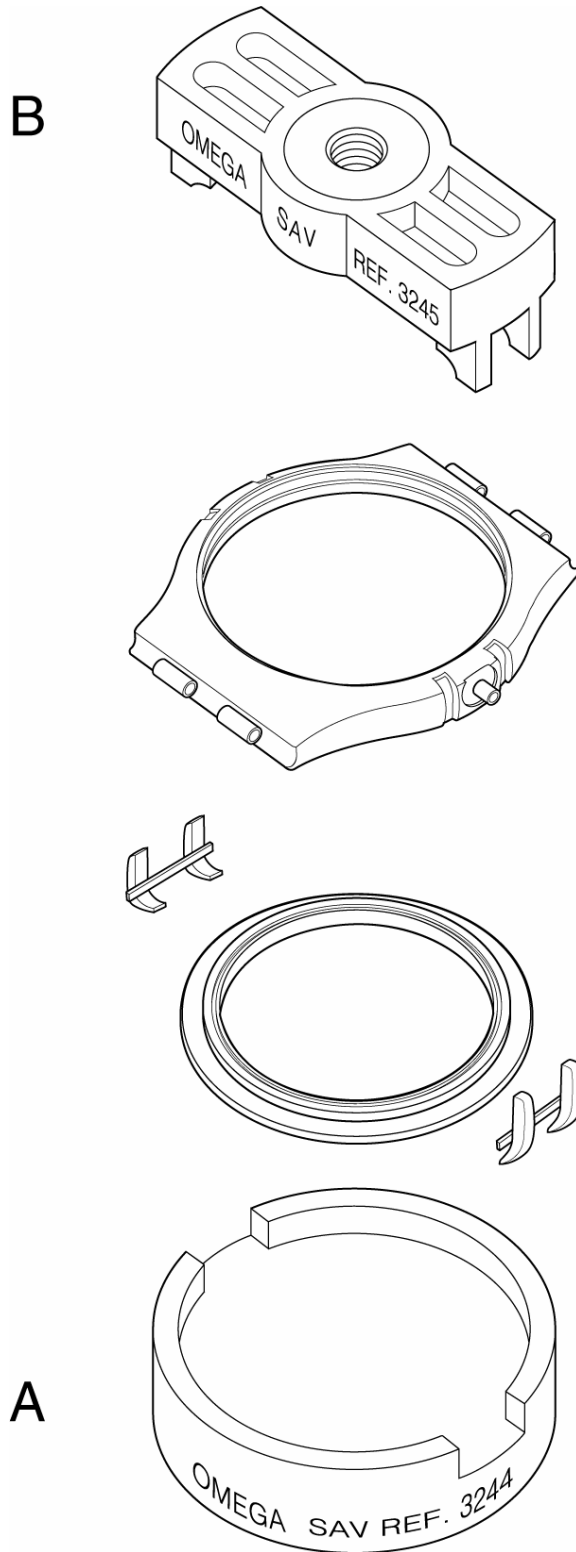


Figure 1

## FITTING THE BEZEL

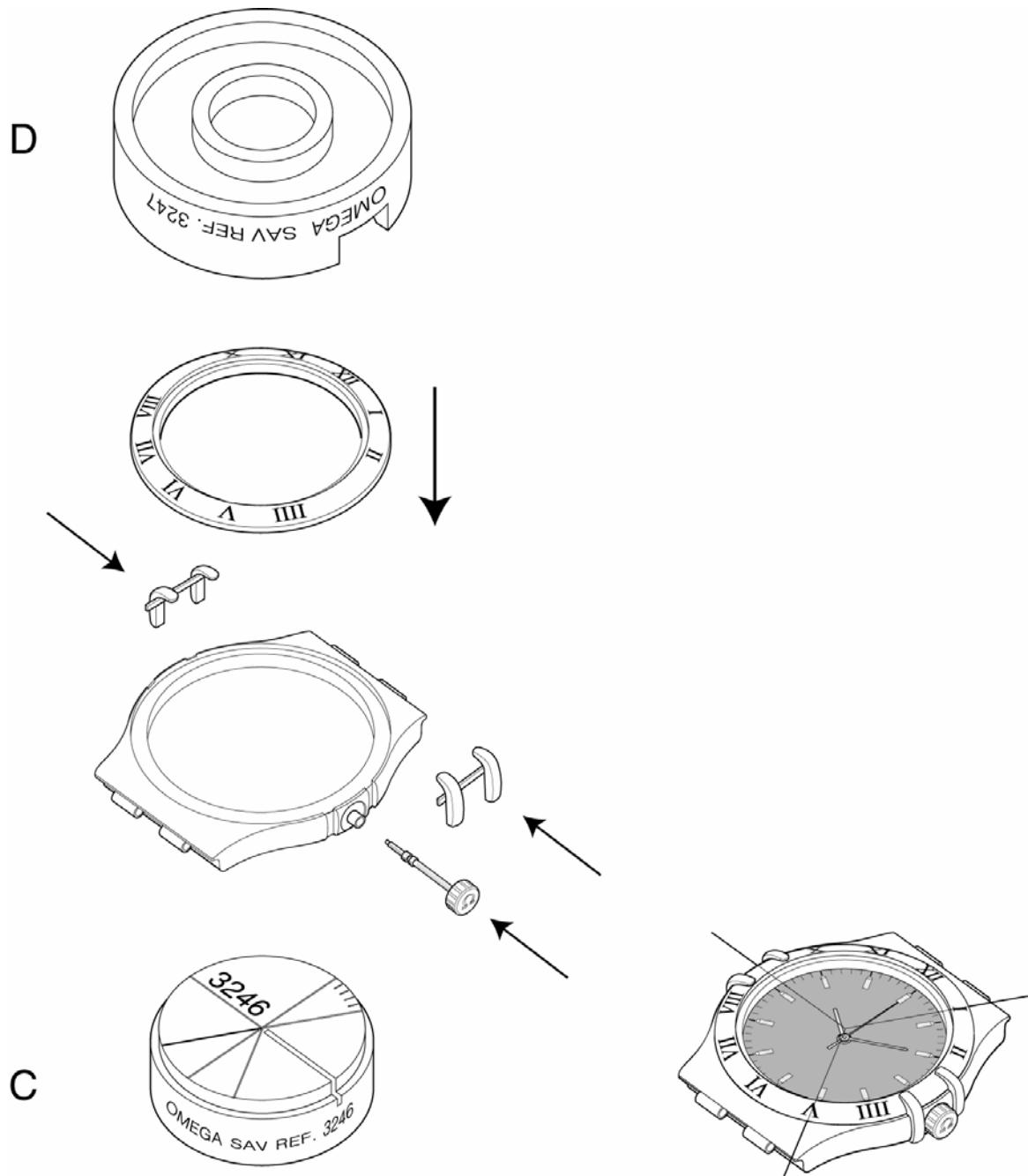






Figure 2

## RECOMMENDED TOOLS

<b>Constellation Kit</b>		Complete Constellation 95 Kit Ref. 502 T95 KIT
<b>Bergeon staking tool</b>		Bergeon 5500 A staking tool Ref. 505 100 0011
<b>Case opener</b>		Case opener Ref. 502 400 9070

		<b>TOOLS NO. 10</b>		<b>CS09-19-C-010-E</b>	<b>A</b>

## Constellation set to remove Double Eagle bezels Ref. 510 0126

### DESCRIPTION OF THE SET REF. 510 0126 TO REMOVE THE BEZEL

Set ref. 510 0126 comprises the following:

- Centering support
- Centering pin
- Claw extractor
- Upper tool

#### Centering support

The centering support has the same diameter as the internal diameter of Constellation Double Eagle cases and is fitted with a moveable centering pin located on the flat area. Markers are engraved on the flat area as a guide when fitting the bezel. A side opening along the support enables the centering stem to be inserted so that the case can be centered.

#### Claw extractor

The claw extractor is equipped with 4 supports that press on the rear-side of the claws.

#### Upper tool

The upper tool has a dual-purpose operation: one side presses down on the case middle, leaving sufficient space to allow the bezel to be disassembled, while the conical side presses on the bezel itself when this is being assembled.

## INSTRUCTION FOR DISASSEMBLY

Install the centering support assembled with the claws extractor on the staking tool.



Place the case on the centering support. Centre the case by inserting the stem in the crown tube.



For centering, ensure that the claws are pressed firmly onto the supports of the claw extractor.

Place the upper tool on the case.



Ensure that the correct side of the upper tool is being used. The upper tool must press down on the case middle only.

Drive out the bezel from the case middle.



As the claws are placed on the supports of the claw extractor, only the case middle is freed when the upper tool comes down.

As soon as they have been disassembled, the case middle and bezel can be released.



Disassembled case



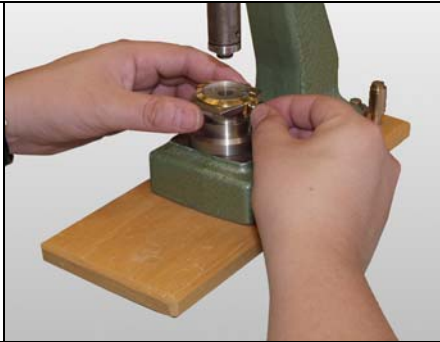
## INSTRUCTION FOR ASSEMBLY

Place the case on the centering support. Center the case by inserting the stem in the crown tube.



The claw extractor is not required for this operation. Use only the centering support.

Place the bezel and the claws on the case middle.



Align the roman numerals I and V of the bezel with the markers on the centering support.

Place the upper tool on the bezel.



Ensure that the correct side of the upper tool is used. The upper tool must press down on the bezel only.

Drive the bezel in.




Once the operation has been completed, check that the bezel is correctly fitted.

## CASE-HOLDER REF. 510 0125



### Information

It is also possible to fit a bezel with its claws on the case using the case-holder and the upper tool. The movement should, however, be fitted first, thereby allowing the bezel to be aligned with the markers on the dial.

## RECOMMENDED TOOLS

<b>Case and bezel</b>		Set to remove the bezel Ref. 510 0126
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		<b>TOOLS NO. 13</b>		CS09-19-C-013-E	A
		Made by: pelrom	Date: 18.05.04		

## Staking tool set and runners for hand-setting Ref. 507 0011

### PRODUCT DESCRIPTION

In order to avoid damaging the hands and to facilitate the task of hand setting, Omega has developed a staking tool set with 8 different runners, ref. 507 0011.

The set can be used for all mechanical and quartz movements in the Omega range. Furthermore, all Omega movement holders can be adapted for use with the staking tool set.

### TOOLS

#### Hand setting



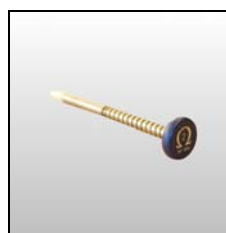
Hand setting tool set  
Ref. 507 0011



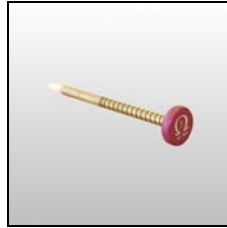
Staking tool with 3 supports  
for runners for hand-setting  
Omega  
Ref. 507 0002



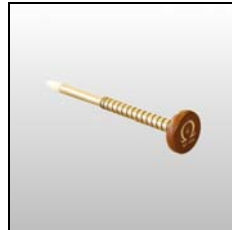
Runner for hand setting  
No. 1 / Black  
Ref. 507 0003



Runner for hand setting  
No. 2 / Blue  
Ref. 507 0004



Runner for hand setting  
No. 3 / Violet  
Ref. 507 0005



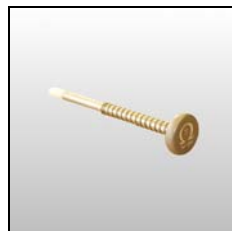
Runner for hand setting  
No. 4 / Brown  
Ref. 507 0006



Runner for hand setting  
No. 5 / Red  
Ref. 507 0007



Runner for hand setting  
No. 6 / Green  
Ref. 507 0008



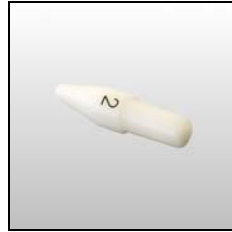
Runner for hand setting  
No. 7 / Grey  
Ref. 507 0009



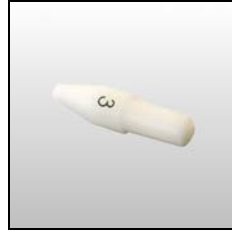
Runner for hand setting  
No. 8 / Yellow  
Ref. 507 0010



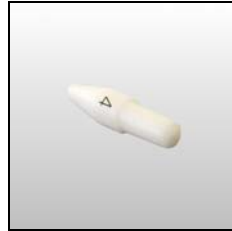
Chuck for runner / No. 1  
(black)  
Ref. 518 0001



Chuck for runner / No. 2  
(blue)  
Ref. 518 0002



Chuck for runner / No. 3  
(violet)  
Ref. 518 0003



Chuck for runner / No. 4  
(brown)  
Ref. 518 0004



Chuck for runner / No. 5  
(red)  
Ref. 518 0005



Chuck for runner / No. 6  
(green)  
Ref. 518 0006



Chuck for runner / No. 7  
(grey)  
Ref. 518 0007



Chuck for runner / No. 8  
(yellow)  
Ref. 518 0008



Rotating stand base for 8  
runners and chucks  
Ref. 519 0001



Decentring plate  
Ref. 519 0002

## HAND SETTING

**For instructions on hand setting, please consult CS Info Tools no 9.**