



## Operating Instructions



**RM 90**

**Watch Cleaning Machine**

• english •

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## 1 General

The present Operating Instructions are part of the delivered equipment. They must be ready for use at any time and remain with the unit in case of resale.

Carefully read the Operating Instructions before use of the unit and operate the electrical appliance according to the instructions.

We reserve the right to carry out technical modifications on the unit due to advanced development.

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## 2 Important safety warnings

### Read before initial operation!

#### Intended use

The watch cleaning machine RM 90 has been designed for the cleaning of mechanical watch works, both assembled and disassembled. Always follow the instructions concerning cleaning procedure and cleaning chemicals as given in **Chapter 4 "Operation"**.

#### Check for damages

Check unit and mains cable for transport damages. In case of visible damages do not put the unit into operation.

#### Mains connection

For safety reasons, the present unit must be connected to a correctly grounded socket only. The technical details indicated on the nameplate must correspond with the available mains connection details, in particular those of the mains voltage and current connected value.

#### Placement

Place the unit at a dry and sufficiently ventilated workplace. Keep the workplace, housing and operating elements dry. Protect the unit from entering humidity!

#### Prevention of electrical accidents

The unit must be opened by authorized specialized personnel only.

For purposes of maintenance and care of the unit, in case of suspected humidity inside the unit or in case of malfunctions and after operation pull the mains plug.

#### Cleaning liquid

Risk of fire and explosion! The manufacturer, refuse all warranty claims for damage due to the use of corrosive cleaning chemicals or flammable and explosive rinsing media such as petroleum ether, benzine, Toluol, etc.:

Liquids see Chapters 4.7 and 4.8.

### 3

## Initial Preparation

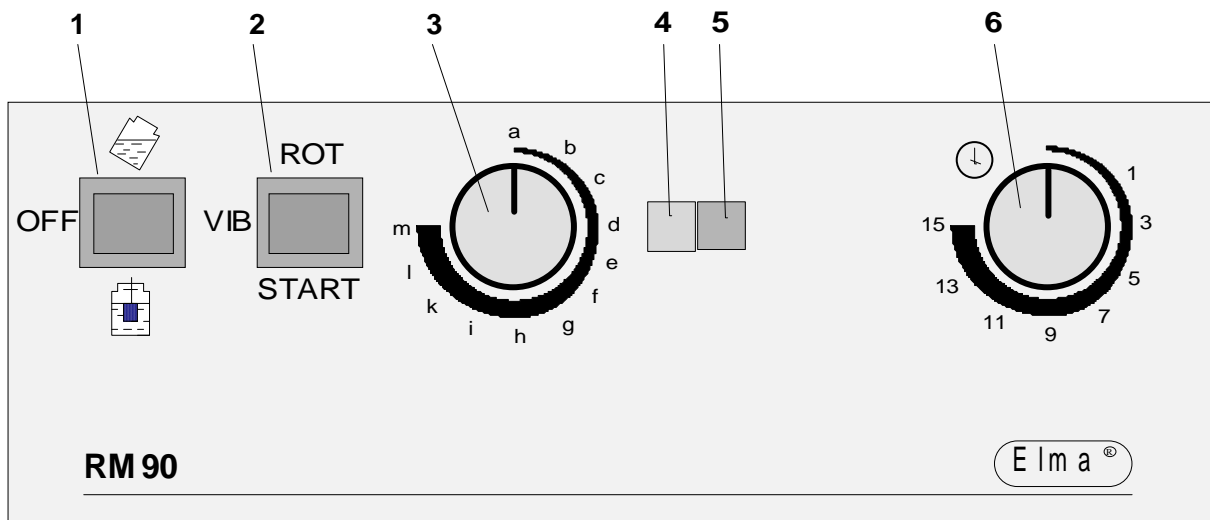
Carry out the following steps before taking the machine into operation:

1. Remove the two foamed plastic strips between the centre column and the metal screen.
2. Remove the plastic protective cover from the centre column (zip fastener / snap fastener).  
**Important:** Lubricate the centre column to secure smooth lifting.
3. Put back unhinged and tape-fixed lifting rod.
4. Remove the tape strips from the glass covers.
5. Put in the back plate and fasten it with screws.
6. When preparing the machine for operation, ensure to tighten all fastening screws on baskets and holders to prevent pieces from being hurled out and damaged.



The machine is equipped with a safety switch at the plexi-glass pane, which does not allow the machine to be put into operation with open pane. If you find that the machine can be operated with open pane, please return the machine to the manufacturer for repair immediately. Otherwise operation of the machine presents a serious risk.

## 4 Operation



### 4.1 How to fill the glass beakers and replace the liquids

Remove the watch work holder from the basket support; pull down the plexi-glass pane; push up the switch (1) to the tilted glass symbol. Switch down the start button (2) for approx. 1 second, the turning disk with the beakers is turned by 90 degrees and the basket support stops at the end position above the first beaker. The beaker can now be taken out, filled and replaced in the machine. For replacement of the other beakers, switch down the start button again for 1 second each, so that the basket support above each beaker and above the heating duct is placed in end position.

Liquids see Chapters 4.7 and 4.8.



Risk of fire and explosion!

The manufacturer, refuse all warranty claims for damage due to the use of corrosive cleaning chemicals or flammable and explosive rinsing media such as petroleum ether, benzine, Toluol, etc

Liquids see Chapters 4.7 and 4.8.

## 4.2 **Cleaning of assembled watch works by counter-current procedure**

Take the watch work holder off the basket support; clamp the watch works in the work holders and fasten the watch work holder to the basket support of the machine. With this cleaning procedure, the right-handed/left-handed rotation of the cleaning motor alternates constantly at very short intervals of 1/15 second up to 1/2 second at control position (3) a-c.



Note: With this procedure, watch works with a diameter of up to 28 mm can be cleaned.

**Control positions** Operating mode switch (2): **VIB** position  
Intensity control (3): a-c position

## 4.3 **Cleaning of disassembled watch works in the basket**

Basket order no.: 3000101101

Remove the inserts from the basket, place the watch work pieces in the sections of the inserts and fasten the basket with inserts at the basket support of the machine. Select the rotating speed of the cleaning basket by means of the intensity control switch (3) after operating start in the first cleaning bath so that the basket support does not suck air bubbles into the liquid, as this will diminish the cleaning effect considerably and will cause the forming of foam with alkaline cleaning solutions. The cleaning motor with the basket support fixed to the motor shaft changes the sense of rotation at intervals of 5 seconds.

**Control positions** Operating mode switch (2): **ROT** position  
Intensity control (3): control speed between a-k

## 4.4 **Cleaning of assembled watches in vibration basket**

Order no.: 3460000001 VK/1 for 3 watches or  
3460000002 VK/2 for 6 watches

Remove the basket support from the shaft by loosening the headless screw. Fix the vibration basket to the free shaft end. Take the work holder from the vibration basket, charge it with watch works and reinsert it. For cleaning with vibration basket, there are two available programmes:

<b>ROTATION</b>	The vibration basket changes sense of rotation every 5 seconds
<b>Control positions</b>	Operating mode switch (2): <b>ROT</b> position Intensity control (3): m position (full motor speed)
<b>VIBRATION</b>	The change of sense of rotation of the vibration basket is variable between 1/2 second up to a maximum of 6 seconds.
<b>Control positions</b>	Operating mode switch (2): <b>VIB</b> position Intensity control (3): c-m position

## 4.5 Interrupt

The switch (1) can be used as interrupting switch. In medium position, between the two glass symbols, the switch interrupts the current supply to the machine and the automatic cleaning process of the machine can be interrupted at any stage.

## 4.6 Start-up of the machine

Turn the intensity control (3) to the left as far as it will go (minimum of the range of intensity). The marking on the control switch now points to the letter (a). Now press the start button (2) down for approx. 1 second; the automatic operation of the machine is started, the yellow control lamp (4) is turned on. As soon as the basket or work holder is immersed in the liquid of the first bath, select the required cleaning programme at the operating mode switch (2) and the intensity control (3). For information on the programming by means of the two switches (2) and (3) and the different cleaning procedures please see **Chapters 4.2 to 4.4**, or the list of settings on the front of the machine. After each new start check the setting of the operation mode switch (2) and the intensity control (3). The programmed cleaning, rinsing and heating periods are 2.5 minutes each, the intermediate spinning period is 30 seconds. The cleaning period in the first beaker can be extended by max. 15 minutes by means of the timer (6). As soon as the basket or the work holder has finished the cleaning bath and the two rinsing baths, the drying process is started. During this process the red control lamp (5) is turned on in addition to the yellow control lamp. When the heating process is finished, the basket is lifted above the heating duct and the machine automatically switches off; both the yellow (4) and the red (5) control lamp are turned out. The heating for the drying of the watch works is controlled thermostatically. The drying temperature is set at approx. 50 °C. Now the basket or the watch work holder can be taken out of the machine, the cleaning process is finished.



Risk of burning!

Parts of the cleaning basket and the cleaned items can be very hot after the cleaning process has been finished. Allow sufficient cooling time.

Do not reach in the heating tube.

## 4.7

### Cleaning of assembled and disassembled watch works in Elma cleaning machines

For the cleaning of mechanical watch works in **Elma cleaning machines** you can use Elma cleaning chemicals, both **aqueous** and **non-aqueous**.

The cleaning of **assembled** watch works is completely **water-free**.

**Disassembled** watch works are first cleaned in an aqueous cleaning liquid, then rinsed and finally dried with the specially designed water displacing liquid **Suprol Spezial**.

**Table 1** Cleaning chemicals suitable for use in Elma cleaning machines Standard, Super-Elite, RM80 and RM90:

	<b>Water-free - assembled watch works</b>	<b>Aqueous - disassembled watch works</b>
<b>1. Beaker</b>  Cleaning	<b>cleaning solution</b>  <b>elma reinigungslösung wf</b> * water-free intensive cleaning * CKW-free	<b>cleaning concentrate</b>  <b>elma reinigungs-konzentrat 1:9</b> * aqueous/highly efficient concentrate * strong brightening effect
<b>2. Beaker</b>  1. Rinsing	<b>Suprol Spezial</b>  * water-free high-purity rinsing	<b>Distilled or deionised water</b>
<b>3. Beaker</b>  2. Rinsing	<b>Unimix</b>  * final rinsing including relubrication (If relubrication is not required, carry out 2. rinsing process with Suprol Spezial.)	<b>Suprol Spezial</b>  * water displacing  * quick-drying (Suprol floats on the surface in the beaker and can be decanted easily.)



4.8

**Regulations on Elma cleaning chemicals**

Section 15 of the EC safety data sheets in accordance with directive 91/155 EWG

Cleaning chemical	Regulations
<p><b>elma reinigungslösung wf</b></p>	<p><b>Notes concerning product marking</b></p> <p>The chemical is classified as dangerous substance according to EC and German regulations and accordingly marked.</p> <p><b>Marking</b></p> <p><b>Xn Harmful</b></p> <p><b>R phrases</b></p> <p>Flammable</p> <p>Harmful: May cause pulmonary damage when swallowed.</p> <p><b>S phrases</b></p> <p>Keep away from ignition sources --- Do not smoke.</p> <p>Keep out of reach of children.</p> <p>Store at a temperature of 25°C or below.</p> <p>Do not force vomiting when swallowed. Seek medical advice immediately and show packing or label.</p> <p>Keep container sealed.</p>
<p><b>Suprol Spezial</b></p>	<p><b>Notes concerning product marking</b></p> <p>The chemical is classified as dangerous substance according to EC and German regulations and accordingly marked.</p> <p><b>Marking</b></p> <p><b>Xn Harmful</b></p> <p><b>R phrases</b></p> <p>10 Inflammable</p> <p>65 Harmful: May cause pulmonary damage when swallowed.</p>

	<p><b>S phrases</b></p> <p>16 Keep away from ignition sources --- Do not smoke.</p> <p>2 Keep out of reach of children.</p> <p>47 Store at a temperature of 25°C or below.</p> <p>62 Do not force vomiting when swallowed. Seek medical advice immediately and show packing or label.</p> <p>Keep container sealed.</p>
<p><b>Unimix</b></p>	<p><b>Notes concerning product marking</b></p> <p>The chemical is classified as dangerous substance according to EC and German regulations and accordingly marked.</p> <p><b>Marking</b></p> <p><b>Xn Harmful</b></p> <p><b>R phrases</b></p> <p>10 flammable</p> <p>65 harmful: May cause pulmonary damage when swallowed.</p> <p><b>S phrases</b></p> <p>16 Keep away from ignition sources --- Do not smoke.</p> <p>2 Keep out of reach of children.</p> <p>47 Store at a temperature of 25°C or below.</p> <p>Keep container sealed.</p>
<p><b>elma reinigungskonzentrat 1:9</b></p>	<p><b>Notes concerning product marking</b></p> <p>The product must not be marked according to the EC and German regulations on dangerous substances.</p> <p><b>S phrases</b></p> <p>2 Keep out of reach of children.</p> <p>250 For commercial use only.</p> <p>26 When coming into contact with the eyes, immediately rinse with water and seek medical advice.</p> <p>39 wear face mask/goggles.</p> <p>Do not mix with alkalines.</p>

## 5 Maintenance

We recommend to lubricate the guiding bushing of the sliding bracket above the oil bore in the centre of the bushing; lubricate every approx. 3 months; use several drops of a viscous gear oil (SAE 80).

Remove gummy oil residues from the centre column, then re-lubricate.

## 6 Repairs

**Opening by authorized specialized personnel only**

Repair and maintenance works which require the unit to be connected and opened must be carried out by authorized and specialized personnel only.



**NOTE**

Separate the unit from the mains before opening up the housing. The manufacturer cannot be held responsible for any damage caused by unauthorized repair works.

In case of damage please contact the manufacturer or your supplier.

## 7 Technical Data

Mains voltage (as per version) (Vac)	100-120 or 220-240
Mains frequency	50 / 60
Power consumption (W)	115
External measurements w / d / h (mm)	350 / 350 / 640
Weight (Kg)	27,6
Material of housing	Steel sheet painted

### 7.1 CE conformity

The present unit is in compliance with the CE marking criteria.

The declaration of conformity is available from the manufacturer.

## 8 Accessories

Movement holder for 6 movements	300 000 6038
Strainer basket for divided clockworks	300 010 1101

## 9 Putting out of action and waste disposal



The unit can be taken to metal and electronics recycling stations or returned to the manufacturer.

## 10 Manufacturer's contact address

### Elma Hans Schmidbauer GmbH & Co. KG

Kolpingstr. 1-7, D-78224 Singen

Phone +49 (0) 7731 / 882-0

Fax +49 (0) 7731 / 882-266

e-mail: [info@elma-germany.com](mailto:info@elma-germany.com)

Homepage: [www.elma-germany.com](http://www.elma-germany.com)

### Technical support

Phone +49 (0) 7731 / 882-280

Fax +49 (0) 7731 / 882-253

e-mail: [support@elma-germany.com](mailto:support@elma-germany.com)