Operating Manual

english

Elmasolvex RM

Watch / small parts cleaning machine

Art. No. 104 6460

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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.
We reserve the right to carry out technical modifications on the unit due to advanced development.
An operating manual cannot take account of every conceivable use. An operating manual cannot take account of every possible use. Contact your dealer or the manufacturer for further information or in the event of problems which are not covered or not sufficiently covered in this operating manual.

2 Important safety instructions

Strictly observe the following before start-up

Read through this manual carefully before use and only use this cleaning machine in accordance with the instructions included here. In addition to the instructions in this operating manual, also observe the country-specific safety regulations.

Exclusion of liability

The manufacturer shall not accept any liability in the event of injuries to persons, damage to the machine or product to be cleaned which has been caused by improper use contrary to the instructions in this operating manual.

The owner shall be responsible for the instruction of the operating personnel.

2.1 Notes for using this manual

2.1.1 Information signs / symbols in the manual / on the machine

This symbol warns about the risk of injury from electricity.

This symbol warns about the risk of injury from flammable media.

This symbol warns that a potentially explosive atmosphere can occur in the indicated area.

This symbol warns about injuries from hot surfaces and liquids.

This symbol provides a general warning about the risk of injury.

This symbol prohibits the use of any kind of ignition source in this area.

This symbol indicates that no loads (objects) are permitted to be placed on the surfaces.

This symbol indicates a risk of property damage.

This symbol indicates supplementary information.

2.1.2 Signal words in this manual

Danger The "danger" signal word warns about severe injuries with risk of fatal injury.

Warning The "warning" signal word warns about severe injuries.

Caution The "caution" signal word warns about slight to medium injuries.

Attention The "attention" signal word warns about property damage.

2.2 Safety instructions for use of the machine

First, strictly make yourself familiar with the safety instructions before start-up.

A summary of the safety instructions can be found here. These are shown again in this operating manual before the respective handling instructions.

User The machine must only be operated by trained personnel in accordance with this operating manual.

Intended use This watch cleaning machine is exclusively intended for cleaning mechanical precision parts such as dismantled and not dismantled watch movements using solvent and aqueous solution-based cleaning and rinsing media (*see Chapter 7*).

The flammable media used must also satisfy the conditions of flashpoint >= 23 °C and ignition temperature >= 200 °C. Flammable liquids can be used as cleaning and rinsing media under compliance with the indicated conditions.

Air change in installation area In the case of intended use of flammable solvent-based media, 4 air changes[1)] per hour and per cleaning machine using technical ventilation measures must be guaranteed for the explosion-safe operation of the cleaning machine(s).

[1)] must be realised by correctly designed technical ventilation installed on the building side (e.g. suitable exhaust air blower into the open air).

Ambient conditions It is not permitted to operate the machine in an environment with potentially explosive atmosphere of flammable gases, vapours or dusts.

Exhaust air equipment of the cleaning machine Suitable exhaust air equipment can optionally be connected to the provided connections for it on the rear side of the cleaning machine (see *Chap. 4.2*) to prevent unpleasant odours.

The outlets on the cleaning machine and the outlets for any connected exhaust air equipment must be freely accessible for the purpose of air circulation.

Fan inlets in the case	The fan inlets in the case must be freely accessible.
Ambient temperature	The permitted ambient temperature is + 5 to 30 °C.
Inspection for damage	Examine the machine and mains power cable for transport damage. Do not start up the machine in the event of detected damage.
Mains power connection	For safety reasons, the machine must only be connected to a grounded socket in accordance with the regulations. The technical details of the nameplate must match the available connection conditions, particularly the mains voltage and the current connection value.
Prevention of electrical accidents	Keep the installation area, case and controls dry. Protect against ingress of moisture. Unplug the mains plug during filling, maintenance and care of the machine, suspicion that liquid has penetrated, operating faults and after use. The machine must only be opened by qualified electricians.
Disconnect machine from the mains in the event of faults	Always unplug the mains plug in the event of machine malfunctions.
Media (cleaning / rinsing solutions)	Only permitted media (*see Chapter 7*) must be used in this cleaning machine.
Media tank	The cleaning machine must only be operated using the original media tank included in the scope of delivery with the correct filling (see *Chapter 3.11*). The cleaning machine must not continue to be operated in the event of damaged media tanks (glass breakage).
Fire and explosion hazard	Ignitable solvent vapours can escape in the case of improper operation and during replacement of the cleaning and rinsing media. Smoking and open ignition sources in the machine surroundings, particularly in the immediate vicinity of the zone marked with the appropriate danger symbol are therefore prohibited. The mains plug must be unplugged immediately in the event of escaped / spilled solvents. Solvent residues must be removed using a dry and non-abrasive cloth. Do not store any solvent container in the immediate surroundings of the cleaning machine (minimum clearance 3 m). Maximum one day solvent requirement is permitted to be kept in the same room.
Moving and rotating parts	Risk of injury! Moving and rotating parts during the program execution. Do not reach into the cleaning basket / movement holder and its action range during program execution.
Hot surfaces	Depending on the operating time of the cleaning machine, surfaces, particularly the drying chamber, can become very hot (max. approx. 65 °C). The corresponding surfaces are marked with the warning stickers intended for them.
Cleaning basket movement holder	Only the Elma cleaning basket or Elma movement holder is permitted to be used to prevent damage to the cleaning machine and product to be cleaned.

The loading of the cleaning basket with parts to be cleaned is permitted to be max. 60 grams.
Ensure even balanced loading of the cleaning basket for fast rotations around the axis of the cleaning basket.
Pay attention when inserting the cleaning basket that it is attached correctly.
In the case of critical loading, reduce the centrifuge speed to prevent unbalance and strong oscillations.

Do not deposit any objects

Do not place any objects on the surfaces of the cleaning machine. These can fall down due to the vibrations during operation of the cleaning machine.

Parameter settings

The operator is responsible for the correct parameter setting. The manufacturer shall not accept any liability in the event of damage to the items to be cleaned or to the machine.

Switch off machine after the end of the work

Switch off the machine at the main switch after the end of the work.

3 Product description

The Elmasolvex RM cleaning machine is a completely automatic cleaning machine for cleaning watch movements and other mechanical precision parts with aqueous solution and solvent based cleaning and rinsing media.

Solvent cleaning for media with flashpoint >= 23 °C,

e.g.: elma WF pro – 3x elma suprol pro – drying.

Semi-aqueous combination process:

e.g. elma 1:9 – deionised water – 2x elma suprol pro – drying.

With innovative product characteristics, the Elmasolvex RM cleaning machine provides a high standard of cleanliness with certified compliance with the EU regulations for machine and explosion safety for cleaning with flammable solvents (see *Declaration of conformity, Chapter 3.5*).

3.1 How it works

In accordance with the 2 freely definable cleaning programs, the moving swing arm with the cleaning basket / movement holder attached to it first actuates the 4 media tanks (cleaning and rinsing). The media tanks are closed with a folding cover.
The folding cover is opened automatically as soon as the cleaning basket / movement holder actuates the respective media tank.
A centrifugal process is performed in the media tank before the transport to the next program step.

For the spinning cycle, the program automatically switches to the Rotation mode (with automatic rotation change).

After the thorough hot air drying in the drying chamber, the cleaning basket / movement holder is moved back to the starting position.

3.2 Product Features

- Solvent-based, water-free 4-stage cleaning and rinsing, also with flammable solvents for intended operation in accordance with the relevant EU safety regulations. Safety concept tested by TÜV Rheinland
- Cleaning and 3 x rinsing
- Microprocessor-controlled electronics
- Gentle drying with hot air fan, supported if necessary by previous spinning up to 1200 rpm
- 2 predefined standard cleaning programs
- Individual adjustment of the cleaning programs by the user is possible
- Reliable extraction of the solvent vapours via exhaust air connections to the open air
- Suitable for solvents with flashpoint >= 23 °C and ignition temperature >= 200 °C

3.3 Scope of delivery

1. Elmasolvex RM watch cleaning machine
2. 4 Media tanks with cover
3. Detachable mains cable
4. Operating manual

3.4 Optional accessories

- Elma cleaning basket including 3 basket inserts
- Miniature basket
- Movement holder for dismantled watch movements and PCBs

3.5 CE conformity

This small parts cleaning machine fulfils the CE marking criteria in relation to the Machinery Directive 2006/42/EC, the EMC Directive 2004/108/EC and the ATEX Directive 94/9/EC.

EU-Konformitätserklärung
***Declaration of conformity* / Déclaration de conformité CE**
Dichiarazione di conformità CE / Confirmacion CE

Wir / We / Nous / Noi / Nosotros:

Elma Schmidbauer GmbH
Gottlieb-Daimler-Str. 17
78224 Singen / Hohentwiel
Deutschland / Germany / Allemagne / Germania / Alemania

erklären in alleiniger Verantwortung, daß das Produkt
declare under our sole responsibility that the product / déclarons sous notre seule responsabilité que le produit
dichiariamo sotto la nostra unica responsabilità che il prodotto / declaramos bajo la responsabilidad única que el producto

Bezeichnung	(Uhren-)Kleinteile-Reinigungsmaschine
Typ */ type / tipo:*	Elmasolvex RM (1xxxxx056 – 1xxxxx127)

auf das sich diese Erklärung bezieht, mit den Bestimmungen der folgenden EG-Richtlinie(n) und Norm(en) oder normativen Dokument(en) übereinstimmt:
to which this declaration relates, is in conformity with the provisions of following EC-Directive(s) and standard(s) or normative document(s):
auquel se réfère cette déclaration, est conforme aux dispositions de la (des) directive(s) CE et à la (aux) norme(s) ou document(s) normatif(s) suivants:
a cui si riferisce la presente dichiarazione, è conforme alle disposizioni della/e seguente/i direttiva/e e norma/e CE o al/ai seguente/i documento/i dispositivo/i:
al que se refiere la presente declaración cumple con las disposiciones de la(s) siguientes directiva(s) comunitaria(s) y norma(s) o con lo(s) documento(s) normativo(s):

Richtlinie: *directive / direttiva / directiva:*	2006 / 42 / EG *(EC / CE)* - Maschinenrichtlinie *machinery / machines / macchine / máquinas*
- harmonized standards:*	*EN ISO 12100; EN ISO 13849-1; EN 1127-1 Abschnitte 1-5; 6.1-6.4; 7*
Richtlinie: *directive / direttiva / directiva:*	2014 / 30 / EU *(EC / CE)* – EMV-Richtlinie *EMC / CEM*
- harmonized standards:*	*EN 61326-1*
Richtlinie: *directive / direttiva / directiva:*	2011 / 65 / EU *(EC / CE)* – RoHS-Richtlinie *RoHS*

Für die **Explosionssicherheit** kamen folgende Normen zur Anwendung, die folgende Einschränkungen erfordern: / The **safety against explosion** is based on the following standards requiring the following restrictions::
- harmonized Standards*: EN 60079-0; EN 13463-1: T3 (solvents with ignition temp. >=200°C only); EN 13463-5; EN 1127-1 Sections 1-5,6.1-6.4, 7: For solvents with flashpoint >=23°C only
- non-harmonized Standards*:EN 60079-10-1; Technical ventilation >= 4 air exchanges/h per device required fort he installation room

Zusätzlich gegeben / Additionally tested: **Sicherheitskonzept in Anlehnung an / safety concept according to / concept de sécurité en référance à: 2014 / *34 / EU - ATEX-Richtlinie / ATEX directive***

Die Dokumentation wurde bei der benannten Stelle 0035 **(TÜV Rheinland)** unter der Nummer **557/Ex-Ab 2020/13** hinterlegt.

* Der verwendete Normenstand entspricht dem Stand der Ausfertigung der Konformitätserklärung.

Name und Anschrift der Person, die bevollmächtigt ist, die relevanten technischen Unterlagen zusammenzustellen:
Name and address of the person authorised to compile the relevant technical documentation:
Nom et adresse de la personne autorisée pour l'inventaire des documents techniques:
Nome e indirizzo della persona autorizzata a costituire la documentazione tecnica pertinente:
Nombre y dirección de la persona autorizada para recopilar la documentación relevante:

Michaela Beinroth
Gottlieb-Daimler-Str. 17, 78224 Singen
www.elma-ultrasonic.com

Singen, den 26.10.2016

COO Thomas G. Neher
Geschäftsführer / Chief Operations Officer

3.6 Technical Data

Mechanics	
Machine external dimensions W/D/H (mm)	515 / 542 / 650
Weight including media tanks (kg)	28.0
Hot air dryer connection (DN)	75
Chamber extractor connection	R 1"

Electronics	
Mains voltage variant (V~ / Hz)	230 / 50
Mains voltage variant (V~ / Hz)	115 / 60
Mains voltage variant (V~ / Hz)	100 / 50 / 60
Max. total power consumption (W)	260
Power consumption in standby (W)	5
Speed in cleaning position (rpm) Rotation mode (adjustable)	up to 800
Rotation direction change in cleaning position (sec.) oscillation mode (adjustable)	0.05 – 1.0
Speed in spinning position (rpm) (adjustable)	up to 1200
Permissible ambient temperature (°C)	5 - 30

Cleaning basket accessories	
Individual basket internal dimensions D/H (approx. mm)	64 / 12
Number of individual baskets in the basket holder (pcs.)	3
Max. complete loading weight (approx. g)	60

Movement holder accessories	
Load quantity (movements / PCBs)	6
Max. complete loading weight (approx. g)	60
Max. movements / PCBs diameter (mm)	< 28
Max. movements / PCBs thickness (mm)	< 8

3.7 Front side of the cleaning machine

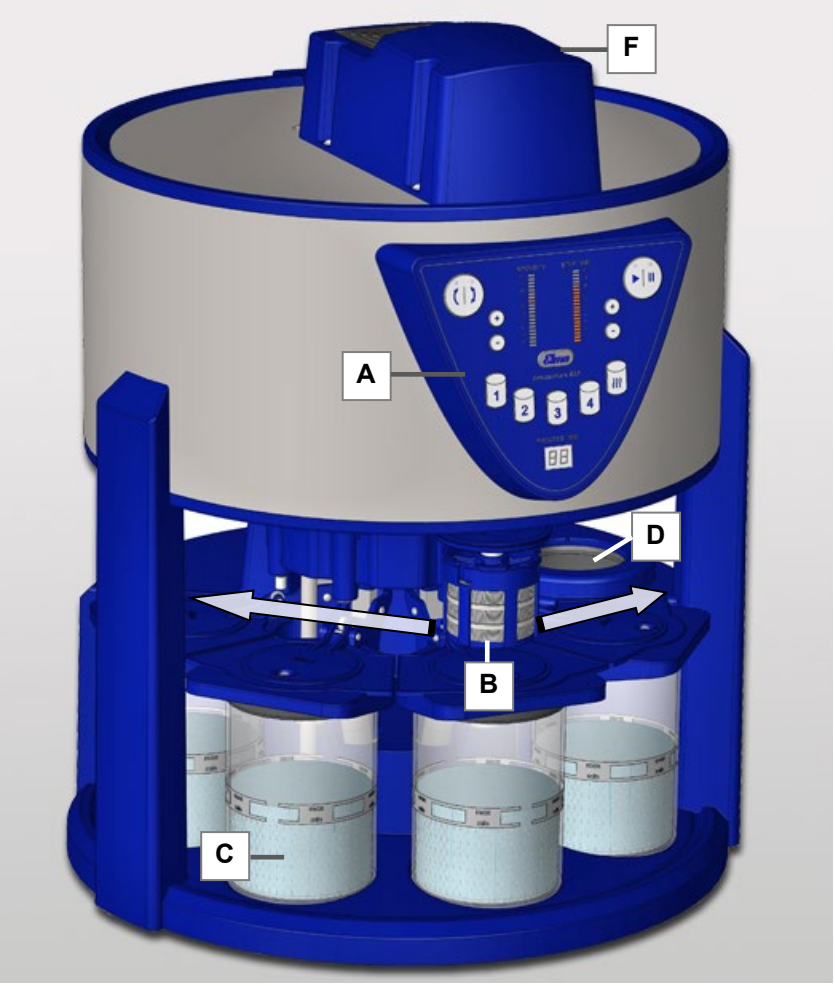

Fig. 3.7. View of front side

A **Operating panel with LED bar display** (for description, see *Chapter 3.10.*).

B **Cleaning basket** (for description, see *Chapter 6.2*).

The cleaning basket / movement holder is moved by the drive unit (swivel arm with drive shaft) during the program execution to the various positions of the media tank and the drying chamber (arrow directions).

C **Media tank** with level mark, wave breaker and rubber seal (for description, *see Chapter 3.11*).

D **Drying chamber** with hot air fan

F **Hood** with fan

3.8 Media tank cover and folding cover

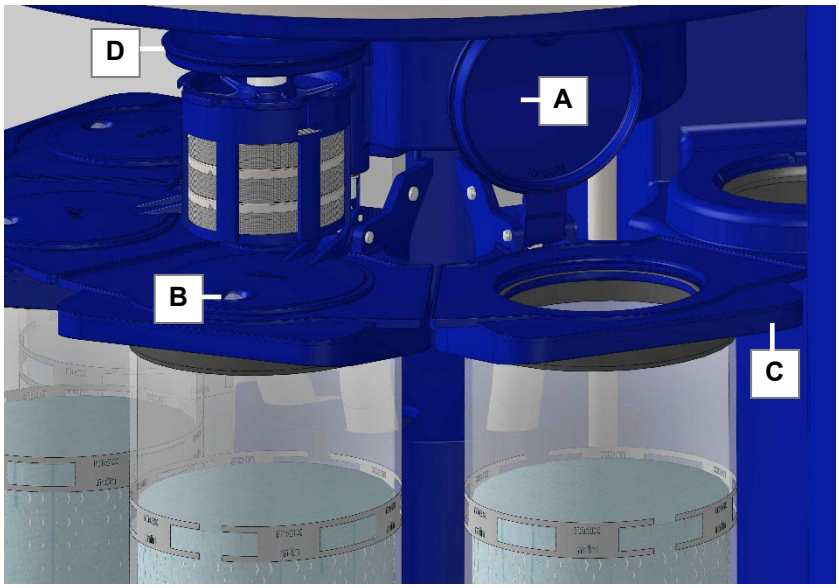

Fig. 3.8. Media tank cover and folding cover

A **Folding cover for sealing the media tank.**
The folding cover is opened and closed automatically during the program execution:

The folding cover is opened as soon as the cleaning basket / movement holder actuates the media tank. The folding cover is closed after the cleaning basket / movement holder has been moved out of the media tank.

The folding cover can be freely moved manually.

B **Buffer made of plastic** defines the end stop in the folding cover opened position.

C **Cover of the media tank** with integrated extractor for solvent vapours. The cover can be moved up manually to remove the media tank.

D **Sliding lid** above the mounting of the cleaning basket / movement holder for sealing the media tank when cleaning basket / movement holder is replaced.

3.9 Rear side of the cleaning machine

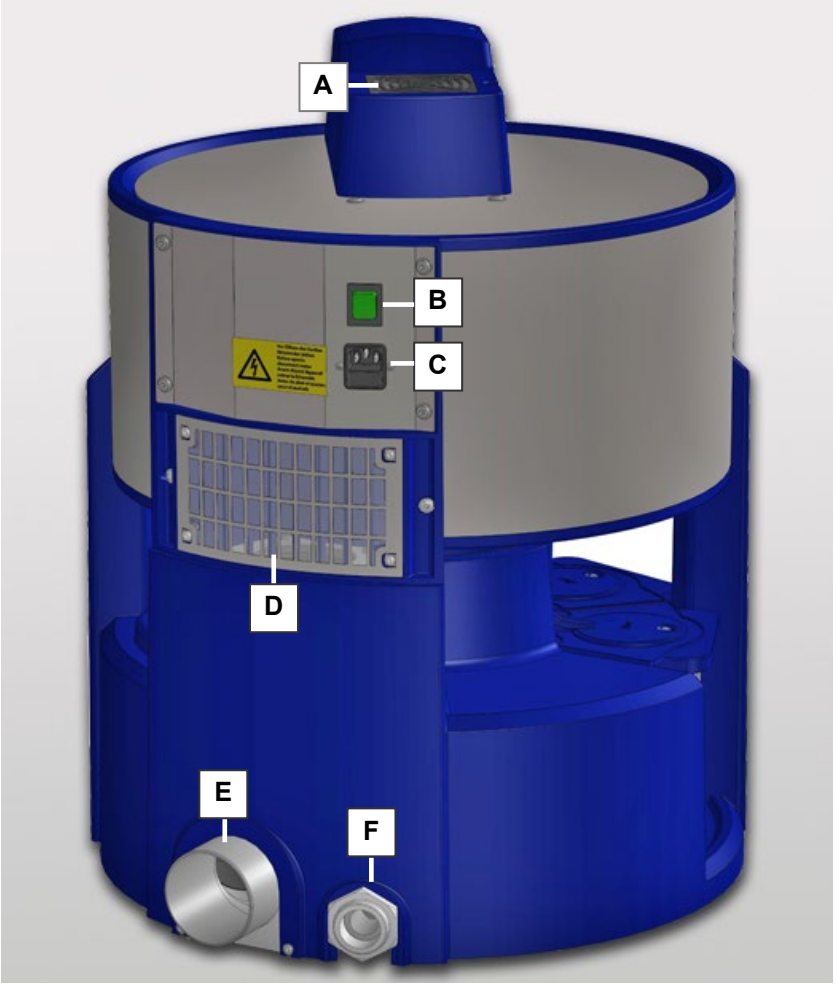

Fig. 3.9. Rear view

A **Suction opening for ventilation of the cleaning machine. Attention!** The fan grill must not be covered in order to guarantee free air circulation.

B **Main switch**, illuminated, for switching the cleaning machine on and off.

C **Mains power connection for mains cable** (scope of delivery), slide-in unit for device fuse.

D **Suction opening with filter mat** for hot air fan of the drying chamber (relevant for maintenance – for description, *see Chapter 8.3.2*).

E **Exhaust air pipe of the drying chamber (**Ø 75 mm), for connecting an exhaust air pipe (no finned tube - max. 3 m length).

F **Exhaust air connection for extraction of solvent vapours from the cover of the media tank** (1" with internal thread) for an external extraction equipment.

3.10 Functions of the control panel

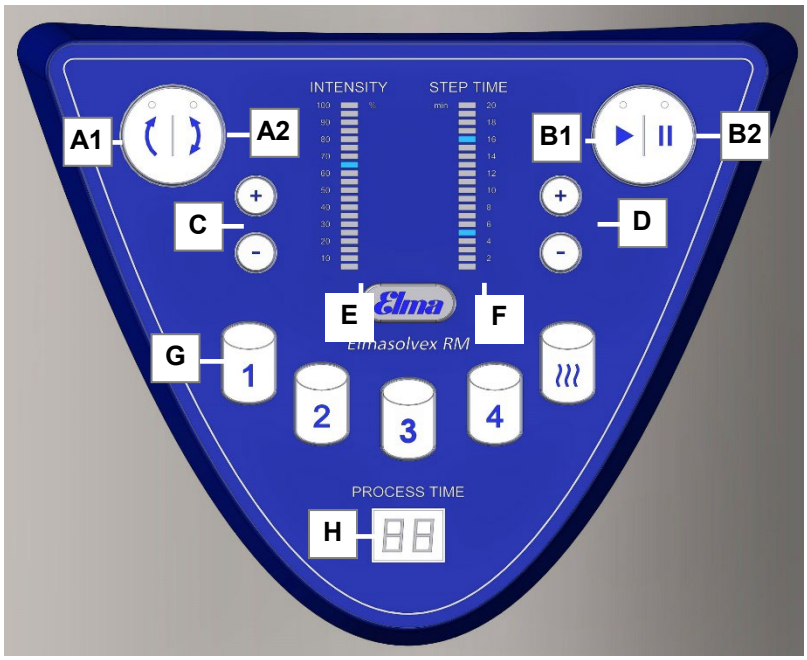

Fig. 3.10. View of control panel

A1 **Operating button for cleaning program in operating mode *Rotation*** ↺: The cleaning basket / movement holder is only moved in one direction. The speed can be changed using the +/- buttons (C). Automatic Rotation direction

A2 **Operating button for cleaning program in operating mode *Oscillation*** ⤳: The cleaning basket / movement holder is moved in both directions alternately. The deflection per rotation direction can be changed using the +/- buttons (C). (0,05 sec. – 1,0 sec.).

B1 **Operating button *Start*** ▶ for starting the program execution.

B2 **Operating button *Pause*** **II** for interrupting the program execution. If the operating button *Pause* **II** is kept pressed > 5 sec., the program execution is cancelled.

C **Operating buttons for changing the rotation and oscillation speed.** The selected intensity (%) is indicated in the LED bar display *INTENSITY* (E).

D **Operating buttons for changing the duration per program step.** The selected duration (minutes) is indicated in the LED bar display *STEP TIME* (F).

E **LED bar display *INTENSITY*** for indication of the rotation or oscillation speed (5% - 100%; Only adjustable up to max. 50% in the drying chamber" or "Can only be set up to max. 50% in the drying chamber).

F **LED bar display *STEP TIME*** for showing the selected and remaining running time of the individual program steps (1 min – 20 min). The processing time of the respective actuated media tank or the drying chamber is displayed continuously illuminated. During operation, the remaining processing time of the respective program step is indicated by flashing LEDs.

G **Operating button (for selection, e.g. for modification of the parameters) and indication of the activated media tank and drying chamber.** The indicator (G) is shown illuminated if the specified time for any processing step is greater than zero. The respective media tank or drying chamber in operation flashes.

H **Display of the remaining program time** (cleaning / rinsing / drying) in minutes. Seconds are displayed starting from 1 minute of remaining time.

3.11 Media tank

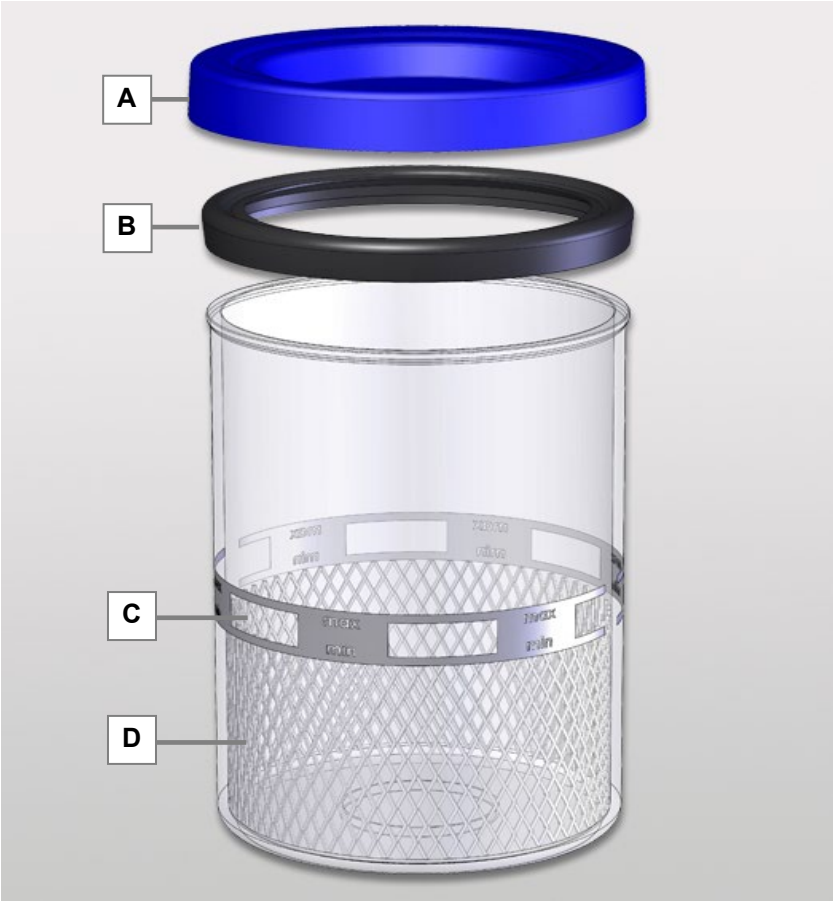

Fig. 3.11. Complete media tank

A **Plastic lid** for sealing when the media tank is not inserted in the cleaning machine.

B **Rubber ring** as edge protection and for sealing.

C **Fill level marking** the fill level of the medium should be between *min*. and *max*. in the inspection window.

D **"Wave breaker"** for prevention of foaming of the medium and for more intensive cleaning action due to more effective counter flow effect of the medium.
Attention! Must not be removed to protect the glass against objects.

4 Before the initial commissioning

4.1 Unpacking and installing the cleaning machine

Packaging

Keep the packaging for possible service or maintenance purposes.

Any disposal must be made in accordance with the applicable disposal regulations.

Inspection for transport damage

Inspect the cleaning machine for possible transport damage before the first start-up. The cleaning machine must not be put into operation in the case of recognizable damage. Contact your supplier and the carrier.

Installation surface

Place the cleaning machine for operation on a stable, level, dry base which is resistant to the cleaning liquid.

Removing transport locks

Remove the foam transport locks between the media tanks and the top part of the cleaning machine and keep these if necessary.

Remove the black profile rubber ring around the top sheet metal cover of the machine

DANGER

Danger of electric shock due to ingress of liquid!

Protect the cleaning machine against the ingress of moisture.

The interior of the cleaning machine is protected against dripping moisture from outside (IP class 20).

However, keep the installation surface and the case dry to prevent electrical accidents and damage to the cleaning machine.

Ambient conditions

Provide sufficient ventilation at the location of the cleaning machine.
In the case of intended use of flammable solvent-based media, 4 air changes[1)] per hour and per cleaning machine using technical ventilation measures must be guaranteed for the explosion-safe operation of the cleaning machine(s).

[1)] must be realized by correctly designed technical ventilation installed on the building side (e.g. suitable exhaust air blower into the open air).

The following additional requirements must be met for safe operation of this cleaning machine:

- Permitted ambient temperature in operation: + 5 - + 30 °C
- Permitted relative humidity in operation: max. 80 %
- The surroundings must not have high dust levels

DANGER

Fire and explosion hazard!

Ignitable vapours of the cleaning and rinsing media can escape in the case of improper operation without exhaust air tube unit and when changing the cleaning liquids.

Smoking and open ignition sources are prohibited in the machine surroundings.

Do not store any solvent container in the immediate surroundings of the cleaning machine (minimum clearance 3 m). Maximum one day solvent requirement is permitted to be kept in the same room.

4.2 Connecting exhaust air equipment (optional) for solvent vapours

The optional exhaust air equipment described below can be attached to the two ventilation openings (*Fig. 3.9.E/F*, drying chamber exhaust air pipe and media tank extraction connection) to prevent unpleasant odours.

Also observe the local health and safety regulations concerning unpleasant odours from solvents at the workplace.

DANGER

Attention! Explosion hazard / deflagration in the immediate area of the ventilation outlets of the cleaning machine and / or the outlets of any connected exhaust air equipment.

Keep all kinds of ignition sources away from the immediate danger zone.

Prevent ignition sparks from electrostatic discharge!

Drying chamber exhaust air pipe

Option 1:

An appropriate pipe (Ø 75 mm / max. 3 m length) for venting, ideally with access to the open air, must be attached to the exhaust air pipe of the drying chamber (*Fig. 3.9.E*). Passive ventilation (no backpressure) is intended due to the discharging air flow.

Attention! A finned tube is not suitable as dangerous concentration of condensate can deposit in the fins.

Option 2:

Connection to an available extractor on the building side (flow rate limit 30 m³/h).

ATTENTION

Danger of damage to the machine. The end of the exhaust air tube must be freely accessible in a ventilated area and must not be immersed in water.

Media tank extraction connection

Explosion-protected extraction equipment must be connected to the extraction connection for the media tank (*Fig. 3.9.F.*), e.g. Connection to an available extractor on the building side.

4.3 Filling media tank

There are 4 media tanks for the cleaning and rinsing media located in the bottom area of the cleaning machine.

Fill the media tanks with the cleaning and rinsing media intended for them (see *Chapter 7*).

Positions of the media tanks

The individual media tanks must be filled with cleaning or rinsing solution according to the position in the cleaning machine (*Fig. 4.3.1.*).

Media tank in position #1: **Cleaning medium**

Media tank in position #2: **Rinsing medium**

Media tank in position #3: **Rinsing medium**

Media tank in position #4: **Rinsing medium**

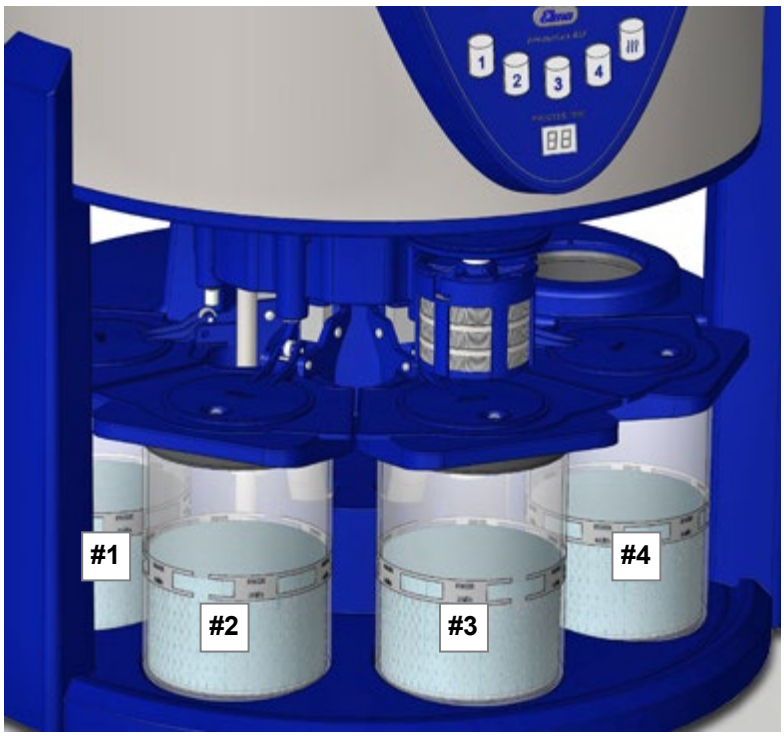

Fig. 4.3.1. View of the positions of the media tanks

Only use permitted operating materials.

Only permitted materials must be used for safety reasons and to prevent machine damage.

The media tanks must only be removed when the cleaning machine is switched off for safety reasons.

Observe the instructions for recommended operating materials and restrictions for operating materials (see *Chapter 7*).

DANGER

Fire and explosion hazard!

When handling flammable materials, observe the applicable safety regulations according to the safety data sheet of the respective solvent.

Keep all kinds of ignition sources away.

Prevent ignition sparks from electrostatic discharge. Discharge possible electrostatic charges (body charge) before you handle flammable materials by touching any grounded equipment: e.g. water tap, metal surface of the case of the cleaning machine or use ESD protection equipment (ESD armband).

If liquid escapes while replacing the media tank, this must only be removed using a dry cloth (to prevent electrostatic charging).

Procedure

It is best to fill the media tanks in sequence. Start with the media tank #1 (*Fig. 4.3.1.#1*):

Removing media tank

Raise the cover of the media tank to be filled (*Fig. 4.3.2.A.*) up until the media tank can easily be removed from its position in the cleaning machine.

Due to the mechanics, the folding cover is automatically opened somewhat in doing so.

Filling media tank

Fill the media tank with the appropriate media up to the marking (*Fig. 3.11.C*). Further information for selection of the suitable cleaning and rinsing solution can be found in Chapter 7.

Inserting media tank

Raise the cover of the removed media tank again and place the filled media tank in the corresponding position (*Fig. 4.3.2.*C). Pay attention to the correct positioning of the media tank: the underside of the cover must seal tightly with the rubber ring on the edge of the media tank.

ATTENTION

The fill level of the medium must be within the marking for proper operation of the cleaning machine and optimum cleaning result
(*Fig. 3.11.C*).

Too low fill level (below the Min marking) causes unsatisfactory cleaning results.

Overfilling (above the Max marking) results in the liquid sloshing out of the media tank.

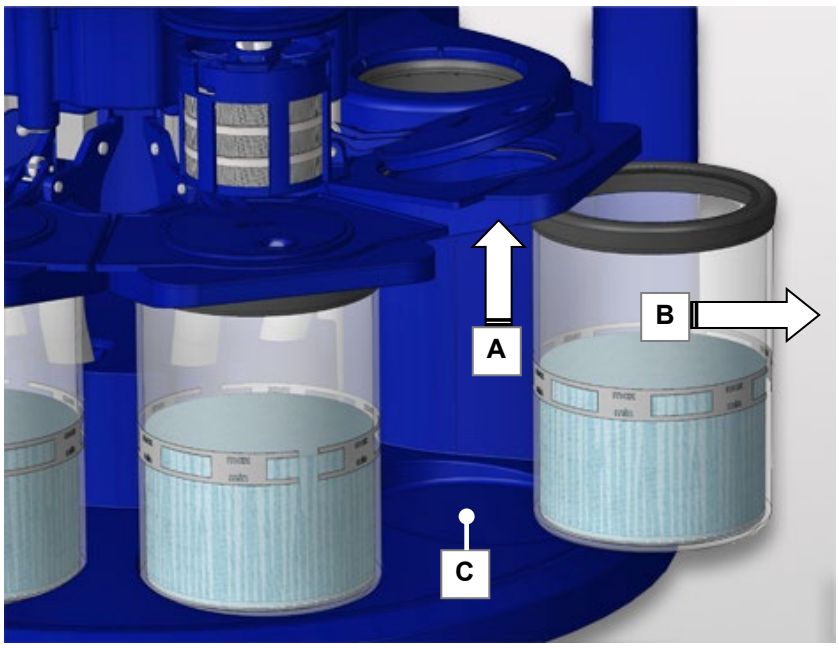

Fig. 4.3.2. Removing media tank

5 Initial commissioning

5.1 Connecting cleaning machine to mains power supply

Required grid conditions

The connection conditions must match the information on the nameplate.

Connecting mains cable

Connect the mains cable (included in scope of delivery).

The cleaning machine must only be connected to a grounded power socket.

The mains plug must only be connected to an easily accessible power socket as it is considered as a disconnector!

5.2 Switching on cleaning machine

Switching on main switch

Switch on the cleaning machine at the main switch (*Fig. 3.9.B*).

The main switch lights.

The internal fan is started (fan noise audible).

Initialisation required

The cleaning machine must be initialised during the initial commissioning. The cleaning programs cannot be started until after this process.

The LED in the operating button *Start* ▶ flashes.

Starting initialisation

Press the operating button *Start* ▶.

The cleaning machine moves the cleaning basket over the drying chamber and lowers it into the drying chamber.

Afterwards, the cleaning basket is moved back to the starting position (above media tank #3).

The cleaning machine is now ready for operation.

The factory settings are shown lit in the control panel.

6 Daily cleaning operation

6.1 Checking fill levels of the media tanks

Check the fill levels of the media tanks and fill these up to the required fill level if necessary

(*Fig. 3.11*).

6.2 Loading cleaning basket (optional)

The cleaning basket is intended for cleaning dismantled watch movements and precision parts.

ATTENTION

Note the following instructions before operation of the cleaning basket in order to prevent damage to the product to be cleaned and cleaning machine.

Only use the original Elma cleaning basket.

The maximum load weight of the cleaning basket with cleaning parts is 60 grams.

The cleaning basket is connected to the cleaning machine by the basket holder (*Fig. 6.2.1.C*) using bayonet connection over the mounting (*Fig. 6.2.1.A*).

Removing cleaning basket

Hold the mounting (*Fig. 6.2.1.A*) firmly with one hand and first press the cleaning basket slightly upwards (*Fig. 6.2.1.-1*) and then turn it anticlockwise (*Fig. 6.2.1.-2*) out of the locking elements (*Fig. 6.2.1.B*).

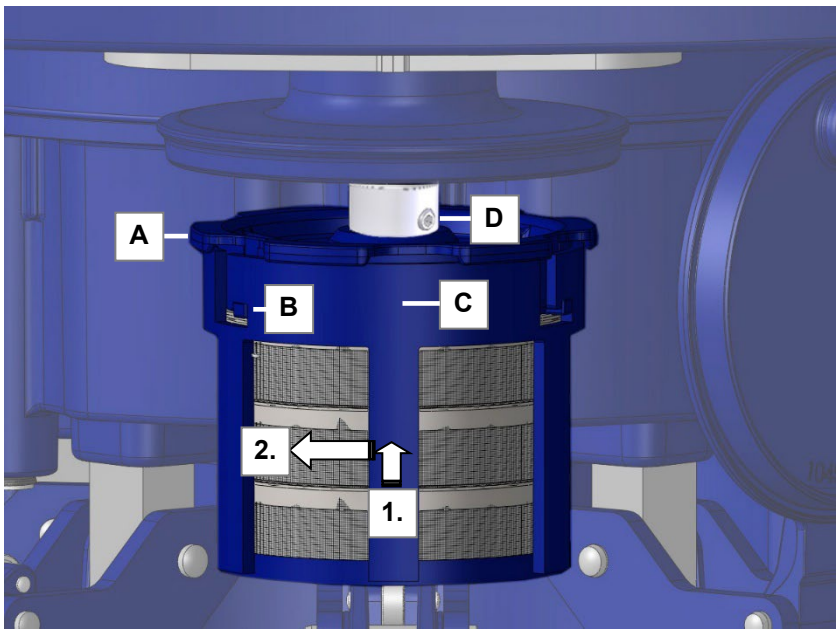

Fig. 6.2.1. Cleaning basket attached

A **Mounting** for cleaning basket and movement holder.

During removal of the cleaning basket, the mounting remains screwed to the drive shaft using a grub screw (Fig. *6.2.1.D*).

B **Locking mechanism** is a part of the mounting. The cleaning basket engages in the recesses provided for this in the locking mechanism (bayonet connection).

C **Basket holder** is used for holding the basket inserts.

D **Grub screw** for fastening the mounting to the drive shaft. Correct fastening must be checked regularly (see *Chapter Maintenance 8.2.1.*).

Removing basket inserts

Now remove the individual basket inserts for loading from the basket holder.

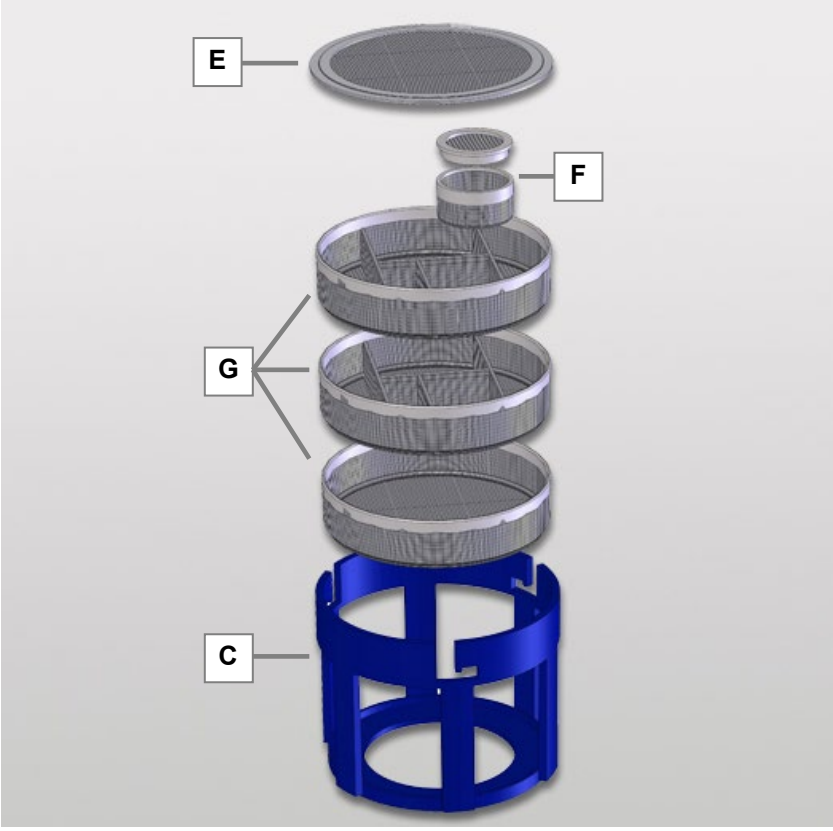

Fig. 6.2.2. Basket holder with basket inserts

Loading basket inserts

The basket inserts (*Fig. 6.2.2.G*) and the optional miniature basket (*Fig. 6.2.2.F*) are designed differently for accommodation of the various watch parts. Pay attention during the loading that sensitive parts are placed with appropriate care in the suitable basket co*mpartments.* Heavier parts should be placed in the upper basket to reduce unbalance

Loading cleaning basket

Stack the loaded basket inserts back into the basket holder (*Fig. 6.2.2.C*).

ATTENTION

All basket inserts must strictly be placed in the basket holder to be able to securely attach the cleaning basket to the mounting again. In doing so, it is not important whether all basket inserts are loaded.

Always place the sieve lid (*Fig. 6.2.2.E*) in the top position!

Fastening cleaning basket in the mounting

Now fasten the cleaning basket in the mounting of the cleaning machine again (*Fig. 6.2.1.A*).

Ensure that the cleaning basket is correctly locked in the locking mechanism (*Fig. 6.2.1.B*).

Ensure that the holder is correctly screwed to the drive shafts (*Fig. 6.2.1.D*).

6.3 Loading movement holder (optional)

The movement holder is intended for cleaning dismantled watch movements and PCBs.

ATTENTION

Note the following instructions before operation of the movement holder in order to prevent damage to the product to be cleaned and cleaning machine.

Only use the original Elma movement holder.

The movement holder (*Fig. 6.3.1.C*) is connected to the cleaning machine using bayonet connection at the mounting (*Fig. 6.3.1.A*).

Removing movement holder

Hold the mounting (*Fig. 6.3.1.A*) firmly with one hand, first press the movement holder slightly upwards and then turn it anticlockwise out of the locking elements (Fig. 6.3.1.B).

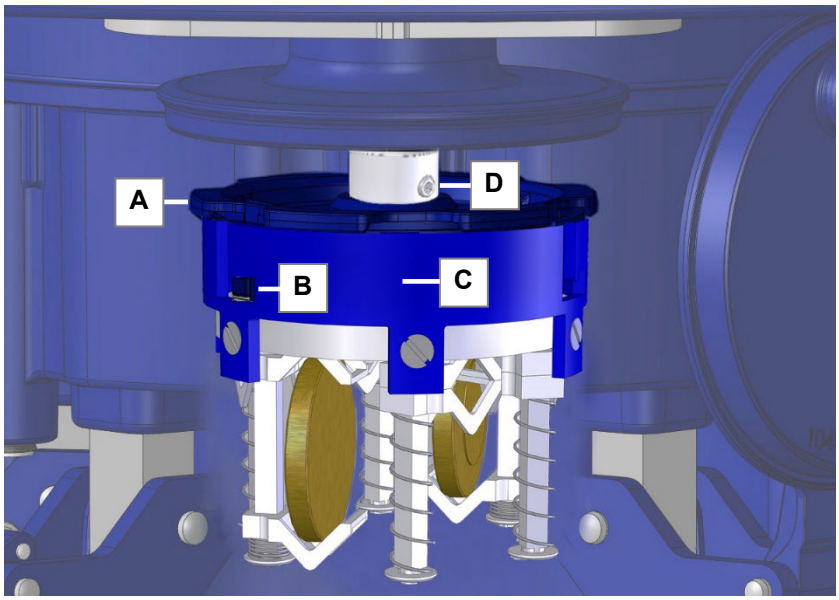

Fig. 6.3.1. Movement holder attached

A **Mounting** for cleaning basket and movement holder.
During removal of the movement holder, the mounting remains screwed to the drive shaft using a grub screw (Fig. *6.3.1.D*).

B **Locking mechanism** is a part of the mounting. The movement holder engages in the recesses provided for this in the locking mechanism (bayonet connection).

C **Movement holder**

D **Grub screw** for fastening the mounting to the drive shaft. Correct fastening must be checked regularly (see *Chapter Maintenance 8.2.1*).

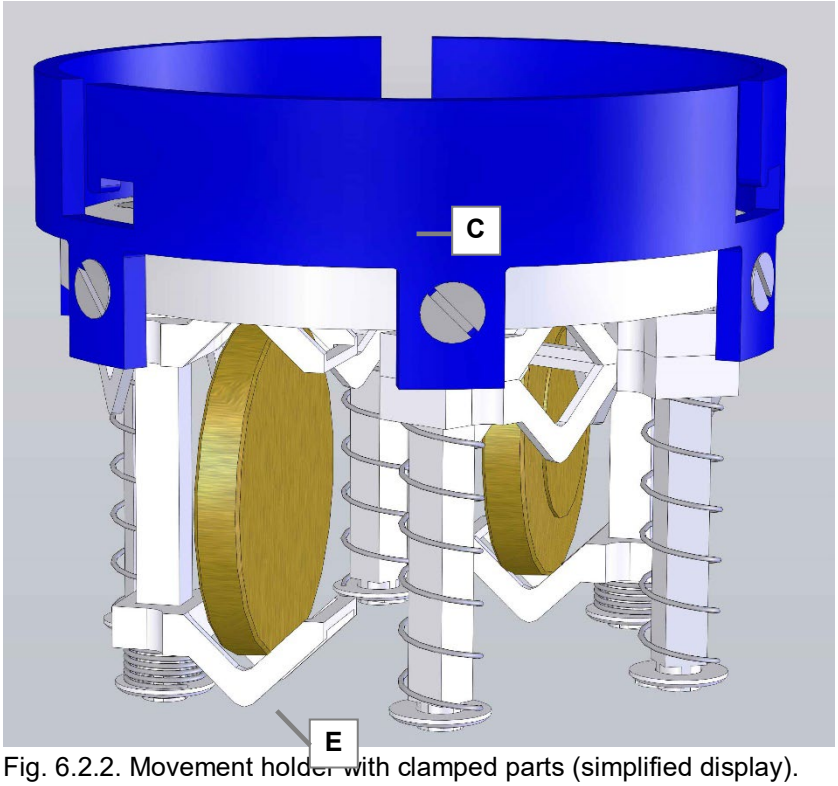

Fig. 6.2.2. Movement holder with clamped parts (simplified display).

Loading retaining clips

Pull the retaining clips (*Fig. 6.2.2.E*) apart and clamp the movement or PCB.

ATTENTION

Note the following instructions (and in *Chapter 3.6 Technical Data*) before loading the movement holder in order to prevent damage to the product to be cleaned and cleaning machine:

The maximum load weight of the movement holder with cleaning parts is 60 grams.

Also note the maximum capacity of the retaining clips.

Pay attention to even loading to avoid unbalance and vibrations.

Also secure difficult to clamp parts with, for example, a suitable rubber band.

Fastening movement holder in the mounting

Now fasten the movement holder in the mounting of the cleaning machine again (*Fig. 6.3.1.A*).

Ensure that the movement holder is correctly locked in the locking mechanism (*Fig. 6.3.1.B*).

Ensure that the holder is correctly screwed to the drive shafts (*Fig. 6.2.1.D*).

6.4 Switching on cleaning machine

Switching on main switch

Switch on the cleaning machine at the main switch (*Fig. 3.9.B*).

The internal fan is started (fan noise audible).

The LED in the operating button of the activated operating mode lights. The activated media tanks / drying chamber and the total program time (*PROCESS TIME*) in minutes are displayed.

If the cleaning basket has previously been manually moved out of the starting position (above media tank #3), positioning is requested automatically for the initialisation:

If the LED in the *Start* button flashes after switching on the cleaning machine at the main switch, initialisation must be performed.

Press the button *Start* ▶to start the initialization

(see Chapter *5.2*).

6.5 Selecting cleaning program

Two predefined cleaning programs are already stored at the factory (for parameters, see *Chapter 6.5.1*).
Press the required operating button.

Rotation

Recommended for operation with the cleaning basket.

If the cleaning program should be executed in the *Rotation* operating mode, press the corresponding operating button ☾.

Oscillation

Recommended for operation with the movement holder.

If the cleaning program should be executed in the *Oscillation* operating mode, press the corresponding operating button ☽.

The cleaning programs can be adapted to your own requirements at any time (see *Chapter 6.6*).

6.5.1 Cleaning programs default parameters

The parameters stored at the factory can be found in this overview.

Attention! The parameters listed above are recommended for operation with cleaning basket. For operation with movement holder reduce the parameters, particularly with regard to the centrifugal forces that are to be expected depending on the loading weight. The operator is responsible for the correct parameter setting. The manufacturer shall not accept any

liability in the event of damage to the items to be cleaned or to the machine.

Media tank #1	Parameters	Rotation	Oscillation
Cleaning	Intensity	30%	30%
	Step Time	5 min	5 min
Spinning	Intensity	86%	95%
	Step Time	2 min	2 min

Media tank #2	Parameters	Rotation	Oscillation
Cleaning	Intensity	20%	15%
	Step Time	3 min	3 min
Spinning	Intensity	80%	70%
	Step Time	2 min	2 min

Media tank #3	Parameters	Rotation	Oscillation
Cleaning	Intensity	20%	20%
	Step Time	3 min	3 min
Spinning	Intensity	95%	70%
	Step Time	2 min	2 min

Media tank #4	Parameters	Rotation	Oscillation
Cleaning	Intensity	20%	15%
	Step Time	3 min	3 min
Spinning	Intensity	90%	70%
	Step Time	2 min	2 min

Drying chamber	Parameters	Rotation	Oscillation
Drying	Intensity	50%	50%
	Step Time	7 min	7 min

6.6 Adapting cleaning program

The stored cleaning programs can be modified manually at any time and as a result adapted to individual requirements.

Modifications of the program parameters made during the standstill of the cleaning machine (cleaning basket / movement holder in starting position) are saved.

Modifications of the program parameters made during operation of the cleaning machine are only effective for the currently performed program process.

Media tank procedure

Proceed as follows to adjust the cleaning and rinsing parameters in the media tanks:

Selecting cleaning program

Press the Rotation or Oscillation button to select the cleaning program to be modified.

Selecting media tank and cleaning / spinning position

Press the operating button of the media tank which the adjustment should be made for (e.g. 1). Select either the cleaning or spinning position by the duration of keeping the button pressed:

- Cleaning / rinsing position: press and hold button for a short time (< 1 sec.).
- Spinning position: press and hold button for a long time (> 4 sec.).

Changing parameters

Press the + / - buttons of the *INTENSITY* (speed; Only adjustable up to max. 50% in the drying chamber" or "Can only be set up to max. 50% in the drying chamber) and/or *STEP TIME* (duration) buttons to change the settings.

The specified parameters are adopted.

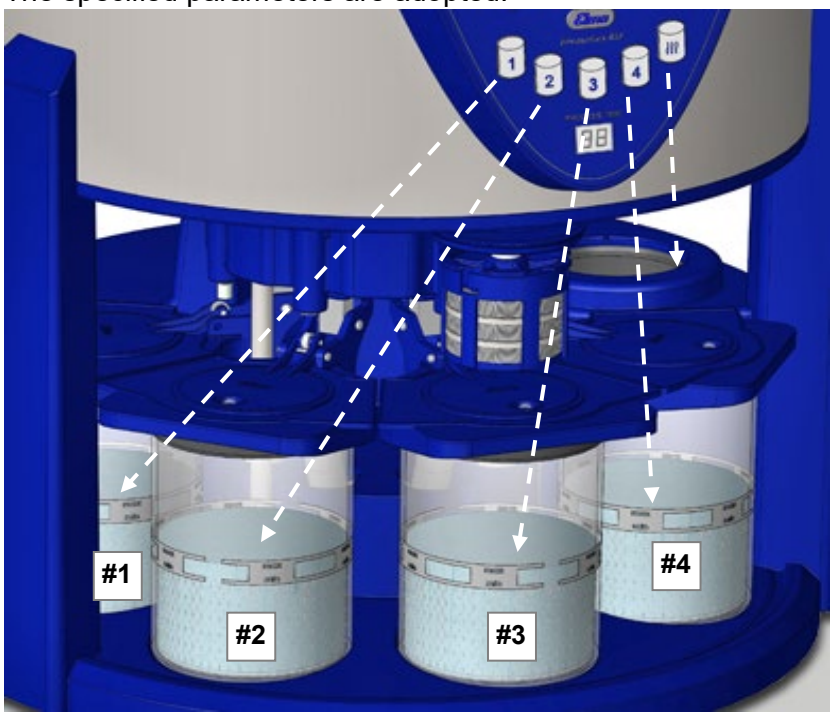

Fig. 6.6. Assignment of media tank / drying chamber operating buttons

ATTENTION

In the case of too high-speed during rotation direction change, there is the danger that movements / PCBs can slip out of the retaining clips!

When using the movement holder in the oscillation operating mode, it is therefore recommended to set the speed (*INTENSITY*) below the default settings (see *Chap. 6.5.1*).

If a program step in the program execution should be omitted (skipped):
Set the value for *STEP TIME* to "0".

If no movement of the cleaning basket / movement holder should be performed during the cleaning / rinsing step of the spinning or the drying:
Set the value for *INTENSITY* to "0".

It is also possible in the cleaning programs to assign different operating modes oscillation or rotation for individual media tanks:
Press the corresponding operating button ☾ or ☽ while the respective media tank is selected.

Further procedure

You can now adjust other settings for other media tanks or exit the programming mode.

Options for further procedure:

- For changing the spinning time of the same media tank:
  Press and hold the operating button for a long time (> 4 sec.).
- For changing the parameters of other media tanks or the drying chamber:
  Press and hold the operating button of the media tank concerned for a short or long time (< 1 or > 4 sec.) or of the drying chamber for a short time
  (< 1 sec.) (only one setting position is possible here).
- Exit programming mode:
  Do not press any operating button – after 6 seconds without any button being pressed, the display returns to the overview display.

Drying chamber procedure

Proceed in the same way as for the media tanks. The difference from the media tanks is that there is no spinning position in the drying chamber.

The drying time should not be set too short
(not < 4 min.).

6.7 Starting cleaning program

ATTENTION

Only start the cleaning program if all media tanks are correctly filled and placed at the positions intended for them.

Procedure

Start the selected cleaning program by pressing the operating button *Start* ▶.

The cleaning machine now runs through the various media tanks and finally the drying chamber.

A spinning process is performed after moving out of the medium before the cleaning basket / movement holder is moved to the next position.

The spinning speed and the spinning time can also be individually adjusted.

For the spinning cycle, the program automatically switches to the Rotation mode (with automatic rotation change).

CAUTION

Risk of injury! Moving and (fast) rotating parts during the program execution:

Horizontal and vertical transport movement of the swivel arm with cleaning basket / movement holder.

Rotating cleaning basket / movement holder.

Never reach into the cleaning basket / movement holder and its action range during the program execution.

Do not grasp the sliding cover (*Fig. 3.8.E.*)!

6.8 End of the cleaning program

After the last program step (drying chamber), the cleaning basket / movement holder is automatically moved back to the starting position (above media tank #3).

Removing cleaning basket / movement holder

You can now remove the cleaning basket / movement holder from the mounting (see *Chapter 6.2/6.3*).

CAUTION

Depending on the retention time in the drying chamber, the cleaning basket / movement holder can still be hot immediately after the program end.

Let the cleaning basket / movement holder cool down for a few minutes in the end position or use suitable gloves for holding it.

As a cooling down phase is performed in the drying chamber after the hot air drying, the cleaning basket / movement holder is already cooled down slightly.

6.9 Interrupting / cancelling cleaning program

CAUTION

Risk of injury from rotating cleaning basket / movement holder!

Never reach into the rotating cleaning basket / movement holder!

If required, cancel the cleaning program using the procedure described in this chapter.

Interruption of the cleaning program

If the cleaning program has to be interrupted for any reason, press the operating button *Pause* **II**. If you would like to continue using the cleaning program, press the operating button *Start* ▶.

Cancellation of the cleaning program

If you want to definitely abort the cleaning program, you have the selection option of immediate or controlled cancellation of the cleaning program.

Immediate cancellation

1. Press the operating button Pause **II**.
2. Press and hold the operating button Pause **II** > 5 sec.

The cleaning basket / movement holder is moved to the (drain) position above the currently actuated media tank. The cleaning basket / movement holder remains in the drain position when the folding cover is opened.

After sufficient draining, press the Pause button **II** again to move the cleaning basket / movement holder to the starting position (above media tank #3).

Controlled cancellation

1. Press the operating button Pause **II**.
2. Keep the operating button Media Tank 4 (Fig. 3.10.G.4) pressed and also press Start ▶

The cleaning basket / movement holder still runs through the spinning step, the last rinsing step (media tank #4) and the drying chamber.

7 Media (cleaning / rinsing solutions)

GEFAHR

Fire and explosion hazard!

Observe the applicable safety regulations for handling flammable media (safety data sheet)!

Do not store any solvent container in the immediate surroundings of the cleaning machine (minimum clearance 3 m). Maximum one day solvent requirement is permitted to be kept in the same room.

ATTENTION

Only media in vapour and liquid form which are compatible with the materials used in this cleaning machine of the cleaning baskets, the seals and the media tanks come into consideration for any application.

Media-contacting surfaces in the machine

The materials of the parts coming into contact with the media are specified below:

3. Media tank: borosilicate glass
4. Media tank cover: PP
5. Folding cover, extraction edge: POM
6. Grille in the media tank: stainless steel 1.4301
7. Case, base plate: PU painted

Observe the information concerning this in the safety data sheet of the medium / solvent.

Safety instructions

Also observe the safety instructions (e.g. goggles, gloves, risk and safety statements) specified by the manufacturer or supplier for handling the cleaning and rinsing media used.

In the case of doubt, contact the manufacturer or supplier.

Exclusion of liability

All damage caused by non-observance of the limitations specified in *Chapter 7* is excluded from the liability for defects of the manufacturer.

7.1 Recommended media

Elma provides suitable solvent and aqueous based cleaning and rinsing media and solvent-based relubrication media for final relubrication from its own development and manufacture. Ask your dealer about these.

7.1.1 Solvent-based (water-free) media

for cleaning

"elma wf pro"

Water-free, solvent-based cleaning step for mechanical watches. Cold cleaner for removal of residues of resinified oils and for brightening (deoxidisation) of non-ferrous metal and stainless-steel surfaces.

for rinsing

"elma suprol pro"

Residue-free solvent-based rinsing solution in watch cleaning machines after previous water-free cleaning step.

Also water-repellent after aqueous cleaning (e.g. with "elma cleaning concentrate 1:9" or "elma chronoclean") and aqueous rinsing (e.g. with distilled water).

for lubrication

"elma unimix"

Lubricant solution for relubrication of water-free cleaned and rinsed watches and precision parts.

ATTENTION

The machine is always suitable for cleaning and rinsing media which are based on aliphatic C9-C11 hydrocarbons and alkoxy compounds meeting the flashpoint limitation FP >= 23 °C and have an ignition temperature >= 200 °C.

The upper limit of the boiling range of rinsing media should not exceed 170 °C for successful drying (only use volatile rinsing media).

7.1.2 Aqueous media (cleaning concentrates)

for cleaning

"elma RED 1:9"

Aqueous cleaning step for dismantled watches in the rotation and oscillation process. Resinified residues and traces of rust are removed. Alloys containing brass and copper and precious metal alloys are brightened.

Other aqueous cleaning concentrates for precision parts and assemblies can be found in the cleaner range on the manufacturer's website (*see Chapter 12*).

7.2 Limitations for media

7.2.1 Flammable, solvent-based media

DANGER

Among the most flammable, solvent-based media, those with a flashpoint greater than or equal (>=) to 23 °C and an ignition temperature greater than or equal (>=) to 200 °C are permitted in the machine. Therefore, note the flashpoint and ignition temperature specifications in the safety data sheet of your intended cleaning and rinsing media.

7.2.2 Non-flammable, solvent-based media

ATTENTION

In the case of intended permanent use with fluorinated, non-flammable solvents (e.g. epilamisation), seals made of the fluoroplastic elastomers FPM, FFPM may have to be replaced previously (see above materials).

Use with chlorinated or brominated solvents is not recommended; these require checking on request in advance and possibly the replacement of additional seals.

7.2.3 Aqueous based media

This cleaning machine is not designed for foaming cleaning media. It has only limited suitable drying for rinsing water wetted parts.

Therefore, solvent-based rinsing is recommended as last rinsing step.

There are no other limitations caused by the cleaning machine.

7.2.4 Environmental hazard from media

Environmental compatibility

The solvent-based cleaning and rinsing media based on hydrocarbons are not water-miscible and mostly hazardous for the environment. Also note the markings with warnings and pictograms and the information in the safety data sheet of your intended cleaning and rinsing media. This is applicable to a smaller extent for solvent-based media based on alkoxy compounds.

The environment-related markings mentioned above must also be observed for aqueous based cleaning media, particularly for their disposal.
The instructions for occupational health and safety in the respective data sheets must be observed for all cleaning media.

"elma wf pro" is classified as environmentally hazardous according to R51 and R53 and therefore has an environmental hazard pictogram while "elma suprol pro" and "elma unimix" are only classified with R52 and R53 and therefore do not have any environmental hazard pictogram.

8 Care and maintenance tasks

To be performed by the user.

DANGER

Always unplug the mains plug before care and maintenance work.

Order the required components and consumable materials from your dealer in good time.

8.1 Daily tasks

8.1.1 Removal of passed over materials

Recommended interval As required

Inspection criteria Visually inspect the surfaces of the cleaning machine, particularly the placement surfaces of the media tanks, for entrained material residues.

In the event of larger accumulations of media in a specific area, examine the media tank for glass breakage.

Action Remove the residues with a dry, non-abrasive cleaning cloth.

8.1.2 Fill level check of the media tanks

Recommended interval Before every start of any cleaning program

Inspection criteria Visually inspect whether the fill level of the different media tanks is in the range between the min and max markings (*Fig. 3.11.C*).

Action Adjust the fill level accordingly if required.

CAUTION

Refilling the media tanks must only be carried out when the cleaning machine is switched off.

8.2 Weekly tasks

8.2.1 Check fastening of the mounting

Recommended interval

Weekly

Inspection criteria

Check whether the mounting of the cleaning basket / movement holder (*Fig. 8.2.1.A.*) is correctly fastened to the drive shaft.

Action

If necessary, tighten the fastening screw (Fig. *8.2.1.B.*) using a 2 mm Allen key.

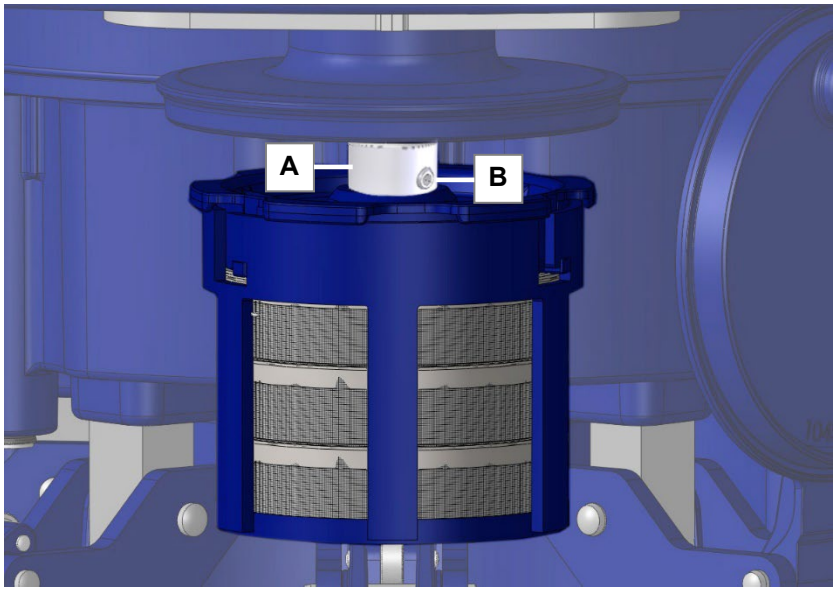

Fig. 8.2.1. Fastening of the mounting

8.3 Continuous tasks

8.3.1 Change of cleaning and rinsing media

Recommended interval

After view (visual inspection of the cleaning and rinsing media in the opened media tanks) and/or in the event of diminishing cleaning result.

Inspection criteria

If the media in the media tank seem to be increasingly contaminated or the watch parts after cleaning no longer appear to be clean, the media must be changed.

Only use permitted operating materials.

Only permitted media (cleaning / rinsing media) are permitted to be used for safety reasons and to prevent machine damage.

Observe the instructions for recommended media and limitations for unsuitable / not permissible media (*Chapter 7*).

DANGER

Fire and explosion hazard!

Observe the applicable safety regulations for handling solvents.

Keep all kinds of ignition sources away.

Prevent ignition sparks from electrostatic discharge. Discharge possible electrostatic charges (body charge) before you handle flammable media by touching any grounded equipment: e.g. water tap, metal surface of the case of the cleaning machine or use ESD protection equipment (ESD armband).

Procedure

Remove the relevant media tank from the cleaning machine.

ATTENTION

The media tank must not be removed during running cleaning programs.

Drain the relevant media tank and clean if necessary.

Checking media tank

Also examine the media tank for possible damage / glass breakage and the seal for correct seating.

Disposal of used media

Used media must be disposed of in accordance with the regulations. No disposal via the sewer system! Dispose of the used media in accordance with the national disposal regulations for the media (see safety data sheet).

8.3.2 Replacement of the filter mat

Recommended interval

Monthly visual inspection. Replace half-yearly depending on soiling, however annually at the latest.

Inspection criteria

After view (visual inspection of the filter mat from outside) and/or in the event of corresponding error message on the display.

Only use the original filter of the manufacturer to prevent impairment of the machine function:

Order number

Item no. 105 1802

Procedure

Open the 4 Allen screws using a 2.5 mm Allen key. (*Fig, 8.3.2.*).

Remove the fan grille.

Remove the soiled filter mat.

If required, clean the plastic fins on the cleaning machine using a dry cloth.

Attach the new filter mat to the fan grille using the 4 Allen screws.

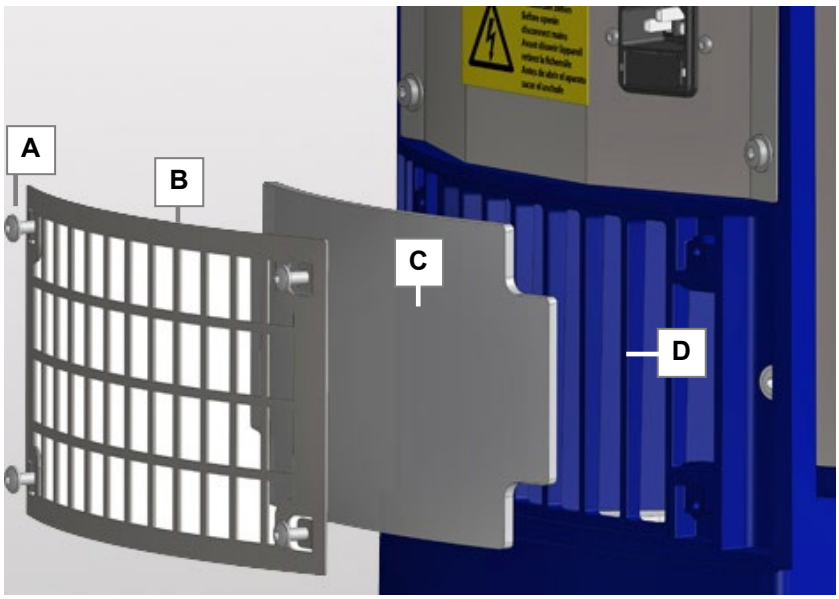

Fig. 8.3.2. Replacing filter mat

Disposal

Dispose of the soiled filter mat in accordance with the local regulations for this.

8.3.3 Cleaning the filter mat in the cover

Recommended interval

Every 3 months.

Procedure

1. Remove fan grille: Lever the fan grille out of the frame of the fan cover, e.g. using a screwdriver at the provided mounting slots, (Fig. 8.3.3.A).
2. Clean the filter mat, e.g. using compressed air.
3. Lock the frame grille with filter mat back into the frame of the fan cover.

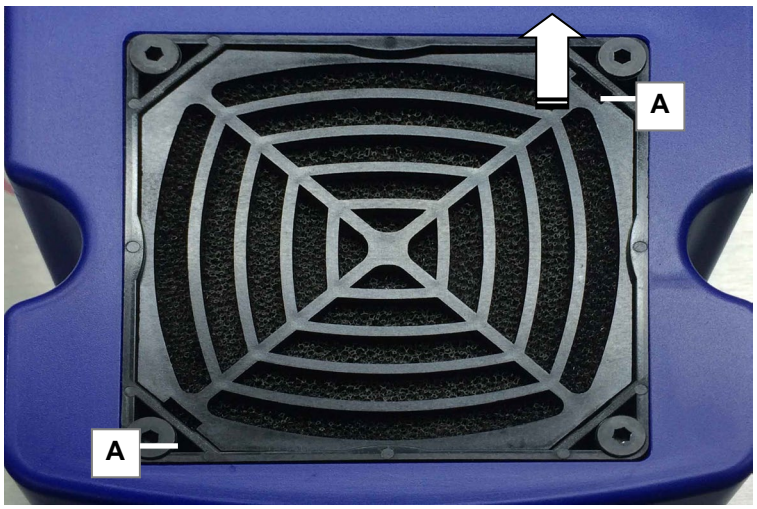

Fig. 8.3.3. Cover with fan grille / mounting slots

9 Maintenance tasks

Must only be performed by authorised service point.

ATTENTION

The manufacturer shall not accept any liability for personal injuries and property damage resulting from maintenance not having been performed.

Maintenance task Check of the overtemperature protection

Interval Every 5 years

Procedure Hand over the cleaning machine to an authorised service point for the purpose of this servicing.

10 Operating faults

Operating faults of the cleaning machine are mainly shown as error messages on the display.
A list of the possible error messages and the relevant procedures for fault clearance can be found in *Chapter 10.1*.
Further possible faults can be found listed in *Chapter 10.2.*
If any fault cannot be rectified using the measures specified in the troubleshooting, contact the dealer or manufacturer immediately.

10.1 Error messages on the display

Certain operating faults of the cleaning machine are shown as error messages in the *PROCESS TIME* (*Fig. 3.10.H.)* display.

Error message	Fault description	Fault clearance
E1	• Failure / blocking of case fan (*Fig. 3.9.A*) • The program is interrupted • Start is not possible until fault is rectified	• Clear blockage (remove foreign bodies) • Replace defective case fan • After rectification of the fault, the request for acknowledgement is also displayed: *Start* operating button flashes • The cleaning program is continued after acknowledgement by pressing the *Start* operating button Contact Service if the fault persists
E2 (also: *Pause* operating button flashes)	• Overtemperature in drying chamber • The program is interrupted • No start is possible until fault is rectified (except moving cleaning basket /	• Pressing the *Pause* button moves the cleaning basket / movement holder out of the drying chamber to the starting position • Check filter mat for soiling; replace if necessary • Check for blockage at dryer fan and clear if necessary • Dryer fan may be defective (no airflow at exhaust air tube (*Fig. 3.9.E*) --> contact Service

	movement holder out of the drying chamber)	• After rectification of the error (also after cooling down after approx. 10 min.), the request for acknowledgement is also displayed: *Start* flashes • The dryer test program is executed after acknowledgement by pressing the *Start* button. • After successful test, the cleaning program is continued (not if cleaning basket / movement holder is already in the starting position). Contact Service if the fault persists
E3	• Internal communication error • The program is interrupted	• Switch off main switch (*Fig. 3.9.B*) and then on again • Press *Start* operating button to continue the cleaning program Contact Service if the fault persists
E4 (also: *Start* operating button flashes)	• Blockage in the area of the action range of the cleaning basket / movement holder in the horizontal movement axis. • The program is interrupted	• Remove blockage in the cleaning basket / movement holder action range. • Attach extraction cover firmly to glass • Check mains voltage; error could be caused by voltage drop (> 10 %) • Press *Start* operating button to acknowledge the fault and continue cleaning program Contact Service if the fault persists
E5 (also: *Start* operating button flashes)	• Blockage in the area of the action range of the cleaning basket / movement holder in the vertical movement axis. • The program is interrupted	• Remove blockage in the action range of the cleaning basket / movement holder. • Check whether cleaning basket / movement holder is in the tank middle; if necessary align in the middle of the media tank at hood (*Fig. 3.9.A*). • Check mains voltage; error could be caused by voltage drop (> 10%) • Press *Start* operating button to acknowledge the fault and continue cleaning program Contact Service if the fault persists
E7 (also: *Start* and *Pause* operating buttons flash)	• Error message is displayed after restarting (if power failure has occurred during running cleaning program)	• Press *Start* operating button to acknowledge the fault and continue cleaning program Contact Service if the fault persists

10.2 Machine faults without indication on the display

Fault	Fault clearance
Cleaning machine cannot be started or stops.	Check the following possibilities: • Disconnect cleaning machine from the mains power supply. Then check fuse(s) (Fig. 3.9.C) for mains cable; replace if necessary • Switch off cleaning machine and restart. Contact Service if the fault persists.

10.2.1 Fault clearance by user

The manufacturer shall accept no liability for damage caused by unauthorised interventions on the cleaning machine.

DANGER

Risk of electric shock from parts carrying mains voltage in the interior of the cleaning machine!

The machine must only be opened by trained, skilled personnel.

Always unplug the mains plug before opening the cleaning machine.

CAUTION

Risk of injury from sharp edges in the cleaning machine and from moving / rotating components.

CAUTION

Risk of injury from hot surfaces!

Surfaces, the drives and heater can still be hot immediately after operation of the cleaning machine.

10.3 Repairs

DANGER

For safety reasons, repairs must only be performed by service centres which have been authorised by the manufacturer.

The manufacturer shall accept no liability for damage caused by unauthorised and incorrect interventions on the cleaning machine.

Opening must only be performed by authorised qualified electricians

DANGER

Risk of electric shock from parts carrying mains voltage in the interior of the cleaning machine!

Always unplug the mains plug before opening the cleaning machine.

The manufacturer shall accept no liability for damage caused by unauthorised interventions on the cleaning machine.

CAUTION

Risk of injury from sharp edges in the cleaning machine and from moving / rotating components.

CAUTION

Risk of injury from hot surfaces!

The surfaces of the hot air case and the PTC heating element can still be very hot (up to approx. 165 °C) immediately after operation of the cleaning machine.

Contact the supplier or manufacturer in the case of cleaning machine faults which cannot be rectified using the instructions for fault clearance in this operating manual.

If any return to a service centre is required:

8. Use the original packaging to prevent transport damage.
9. Enclose as specific as possible description of the fault.

11 Decommissioning and disposal

The machine components can be supplied to electronics and metal recycling for disposal. The manufacturer also accepts old components for disposal.

Dispose of used cleaning and rinsing media in accordance with the applicable national regulations.

12 Manufacturer address / contact address

Elma Schmidbauer GmbH
Gottlieb-Daimler-Str. 17
78224 Singen (Germany)

www.elma-ultrasonic.com

Technical Support

Tel: +49 (0) 77 31 / 882-280

E-Mail: support@elma-ultrasonic.com

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