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**User Guide and Tattoo Machine  
Maintenance  
I Max Tattoo Machines**





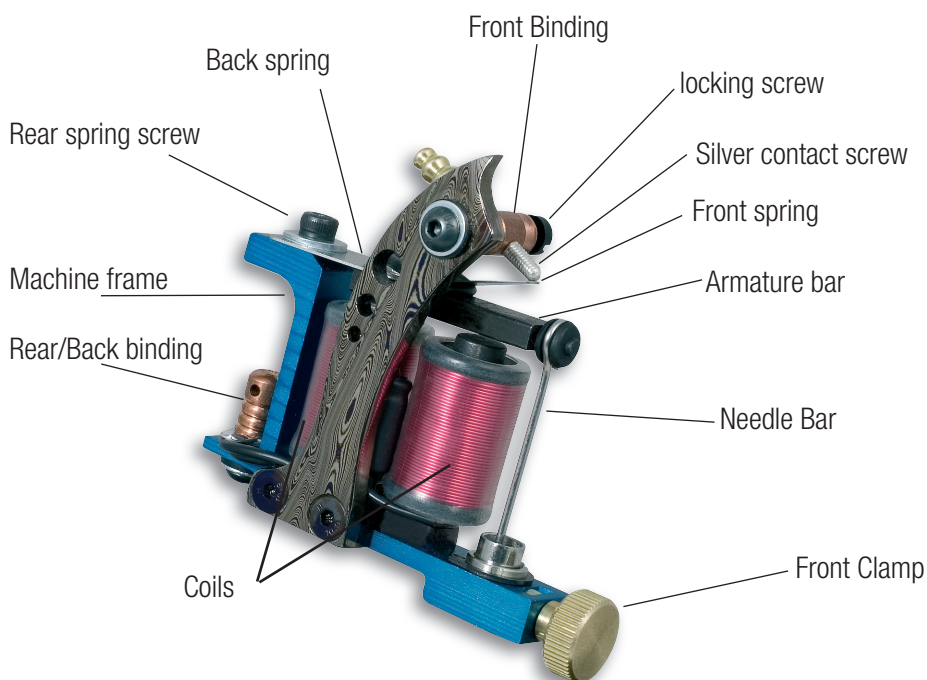
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# 1 Introduction

Tattoo Machines may differ from each other in appearance but all work on the same principle. They perform the same function, driving a needle up and down very quickly, perforating the skin and depositing ink as the operator steers it along while leaving a trail behind. The machine must be connected to a power source, a full electrical circuit runs through it. Now the two coils (or in the case of rotary the engine) become magnetized and attract the armature bar down to it. When the armature bar moves down, the needle also moves down. When this happens, the contact points separate from each other, causing an interruption in the electrical circuit. As soon as this happens, the machine is stopped, the coils become unmagnetized and the armature bar springs back up. Also the needle goes back up. When it springs back up, the contact points touch each other and make a circuit again. The process is repeated. This all occurs very quickly, too fast for the eye to follow. You only hear a buzzing, as the circuits separate and contact again.

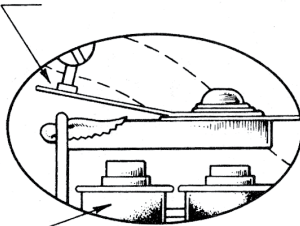




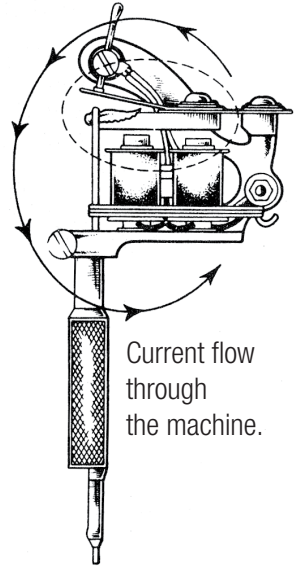
## 2 Operating a Tattoo Machine

### How to work a Tattoo Machine

- ① The machine is turned on. The contact points touch each other and make a circuit.

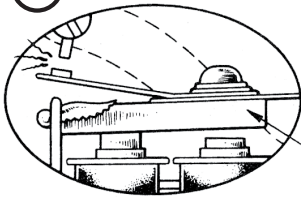


The coils become magnetized.



Current flow  
through  
the machine.

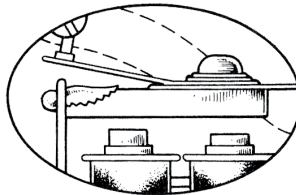
②



The armature bar is drawn toward the magnet.  
Also the needle moves downward.  
Now the contact points separate from each other, causing an interruption in the electrical circuit.

③

When the circuit is interrupted, the needle goes back up.



When the armature bar springs back up, the contact points touch each other and make a circuit again.

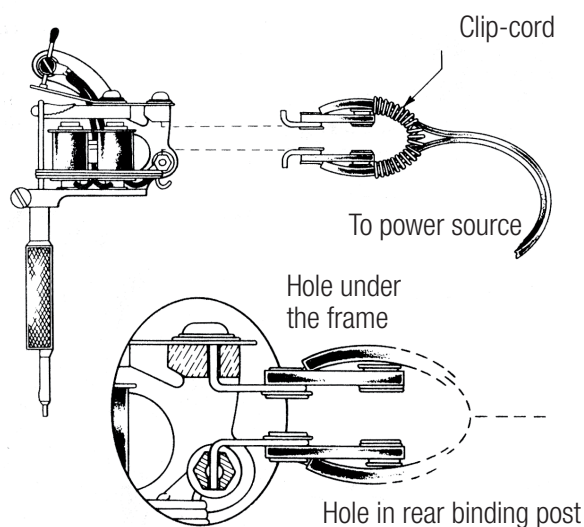


## 3 Tattoo Machine and Power Supply

### Clip cord connection

The electrical link between the machine and the power supply is the clip cord. One end has two phone jacks for the Power Unit and the other a spring clip connection device. One hook from the clip cord slips into the hole located in the rear underside top part of the frame, the other hook goes into the hole located in the rear binding post.

### Detail of rear frame

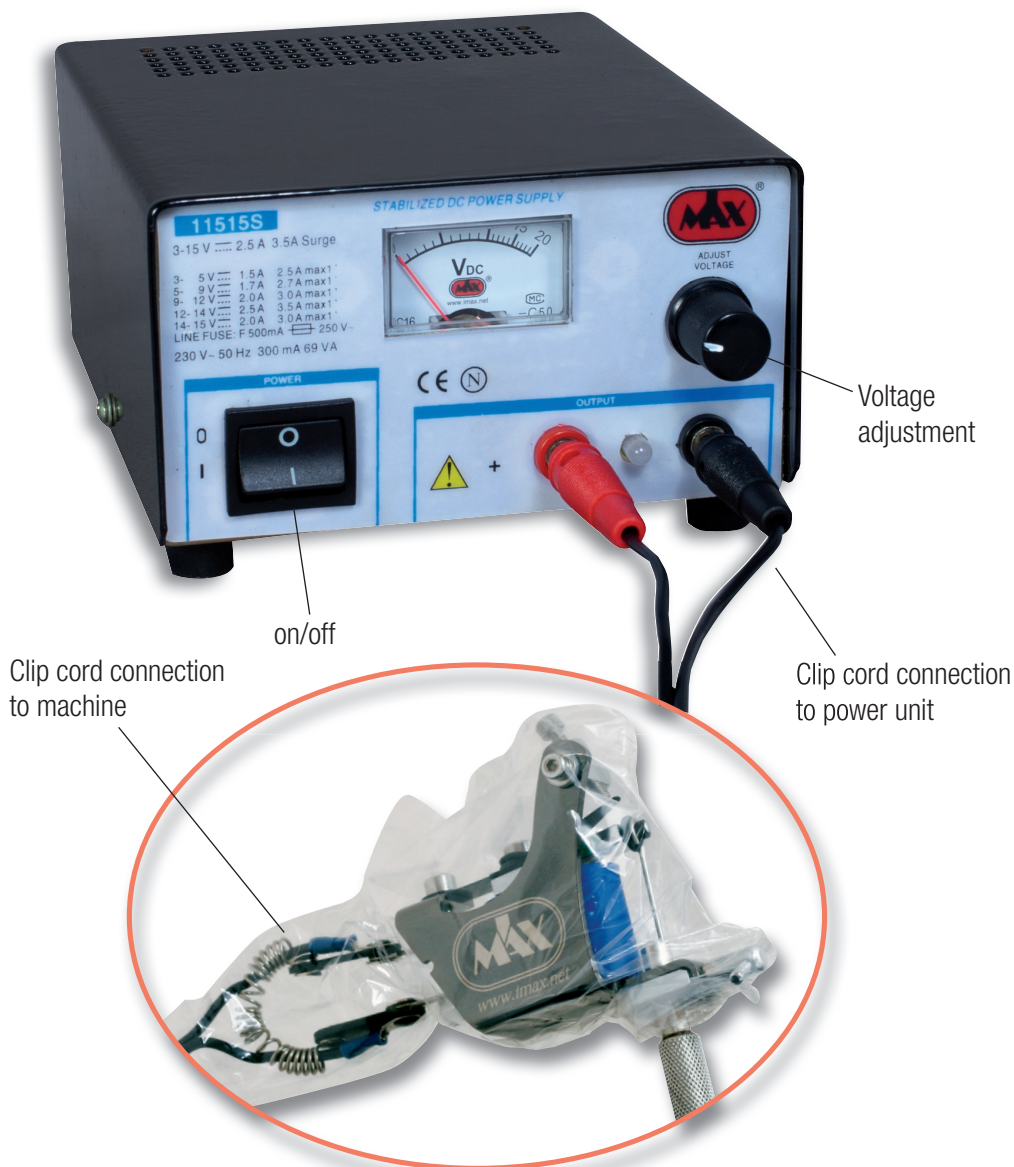


Tattoo Machines work with DC Power Unit.



## 3 Tattoo Machine and Power Supply

### Power unit connection

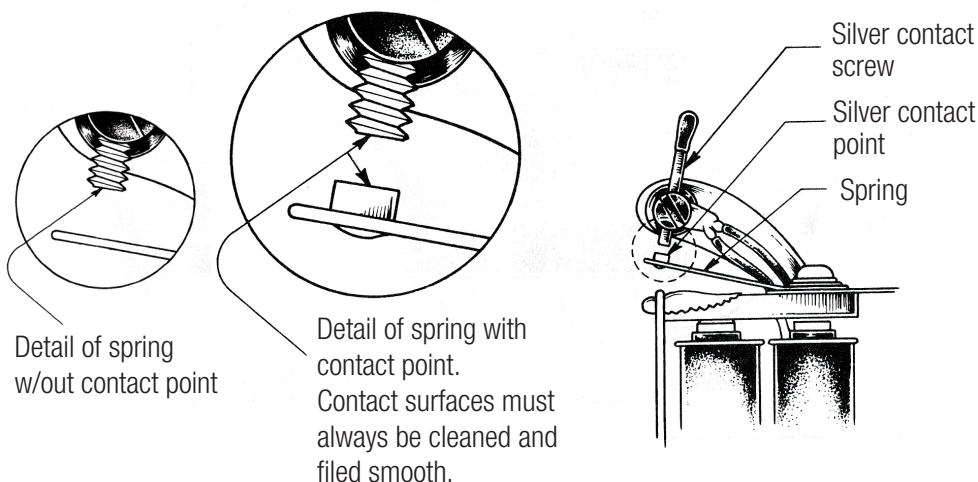




## 4 Setting Machines

It's very important to keep your equipment running smoothly. You have to learn all aspects of the machines and how to tune them. Always check the contact screws and springs, with or w/out contact point, keep them in good shape so they will make good contact. Before setting points make sure that they are clean and smooth. Otherwise use a point file to flatten surfaces but be careful not to remove more material than necessary. If they can't be filed back into shape, replace them. Emery cloth or burnishing file are very effective in cleaning up both the points and the contact screw. Use a gentle touch on the procedure, otherwise you will go through a lot more contact points than necessary. Always remember to file also the contact screw. Every now and then spray the contact points with cleaning liquid.

### Contact points of tattoo machine



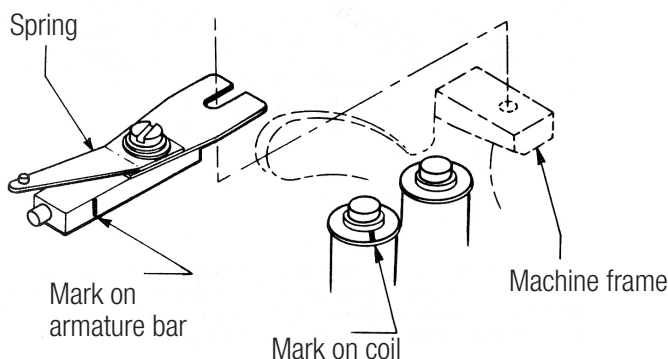


## 4 Setting Machines

After a while, the front spring and rear spring that hold the bar to the frame will deteriorate and must be replaced. If your coloring is getting sketchy, it could be weak springs, they won't have enough bounce to penetrate the skin anymore. Before removing the armature bar put a mark on the side and on front coil (see drawing).

After making your repairs make sure both marks line up when replacing the armature bar. This is very important because the armature bar is located above the front coil and has to go back in the exact same place. To replace the springs, remove needle and bands, loosen the screw on the front binding post and unscrew the contact screw 4 or 5 turns. Remove the rear screw from the frame of the machine and remove the entire assembly consisting of the rear spring, the armature bar and the front spring.

### Marking bar and coil



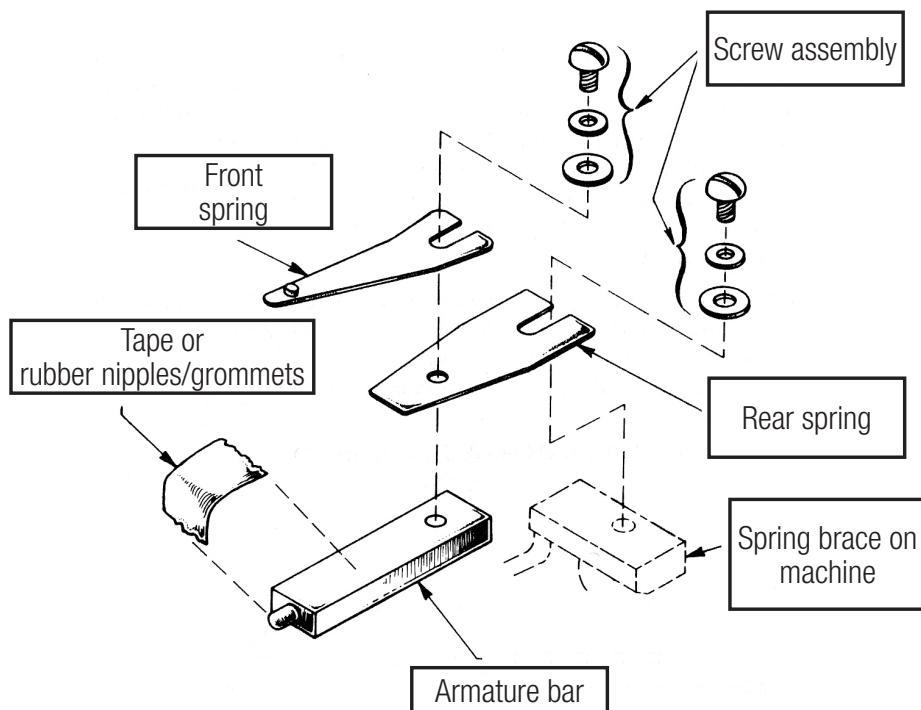




## 4 Setting Machines

Install the front spring above the rear spring (see diagram).

### Spring Assembly





## 4 Setting Machines

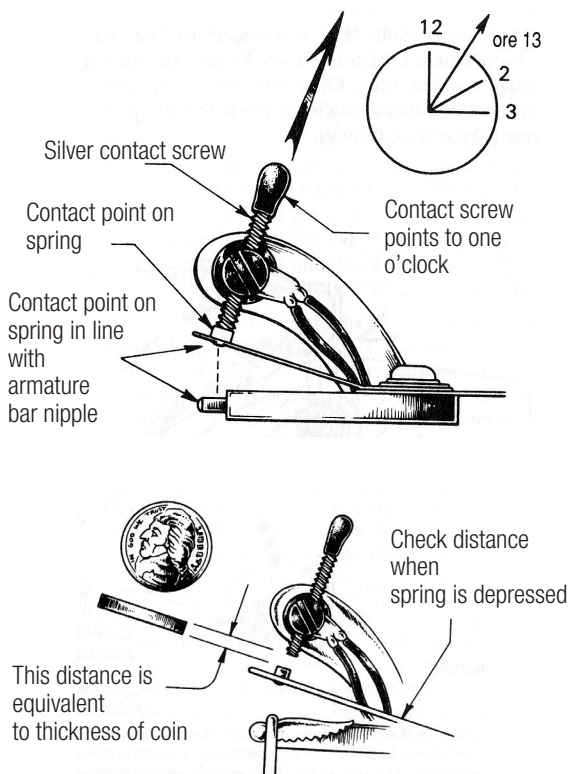
Connect the cable to your machine and turn it on. Holding the frame of the machine steady in your left hand, turn the contact screw slowly clockwise until it touches the point of the front spring or the front spring in the case of spring w/out contact point.

### Contact Point Alignment

Keeping the pedal pushed down, slowly turn the contact screw down to meet the contact point. Your machine will start to run when the contacts get close enough together to make a circuit.

As a general rule is that the gap between the machine shaver points when depressing the armature bar, is the same thickness of 10 cents of euro or an american nickel. The distance between the contact points on the liner should be about the thickness of 5 cents of euro or an american dime. This distance will change slightly with each machine and with the shape the springs are in.

If these are weak you can compensate by turning down the contact screw a bit, but not too much. This distance should be measured with the machine off and the armature bar held in the down position. In the case of a machine with heavy-duty coils, this distance can be doubled.

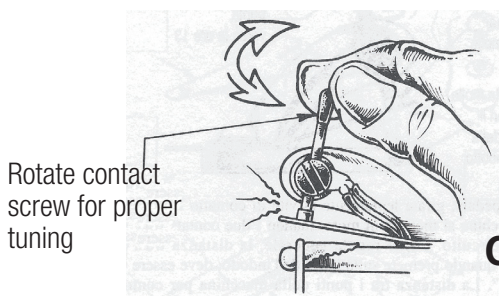


### Contact Point Gap



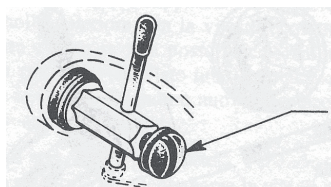
## 4 Setting Machines

Listen carefully to the buzz of your machine. You might have to tune the contact screw until you get the right sound. If you turn the screw slowly, you will be able to hear the ideal setting, it will have plenty of power and a long enough stroke to allow the armature bar to move 2 – 3 mm up and down.



### Contact Tuning

When you get used to the sound of your machine, you will be able to keep it adjusted at optimum efficiency just by hearing it. When the sound is right (it begins to purr), take your foot off the pedal and tighten the set screw to lock the contact screw in that position. Push the footswitch again and make sure it doesn't need any further adjustment.



### Contact setting

After you insert the needle, the tube and rubber bands, you may have to readjust the distance between the contacts slightly to compensate the additional weight. In this case, loosen the set screw and push down the pedal, at the same time turn the contact screw down a tiny bit more, listening always to the sound of the machine.



## 4 Setting Machines

If you are going along and the machine stops working suddenly, first check to see if it's your machine or your power supply. To do this, try your other machine and see if it works. If it depends from the machine try to readjust the contact screw, in that case loosen the set screw and pushing down the pedal turn the contact screw, always listening to the sound of your machine to find the right adjustment. If the machine won't run at all, it is either a short or an open in your circuit. First of all check if the contact screw and front spring are clean. If there is something caught between them, it will break the circuit. Always remember about the coils. If the machine won't run or hasn't power enough this could be due to the coils or the capacitor, in this case you can replace them.

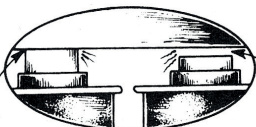
If the machine quits you all at once check for any loose or broken wires. Also look for any bare wires in contact with the frame. Remember that due to the constant vibration of the machine, you have to constantly readjust it. Daily maintenance is the key. Keep your machine clean and while tattooing cover it with a special PE machine cover.

If you are having trouble with ink splattering out of your tube tip, there could be several reasons for it. A slight ink splattering is normal. Sometimes it is due to ink overloading. There is more splattering using diamond tips than round tips. Some machines with lighter frames can splatter more than others. Check the tube tips for wear, change them if necessary. You should have no splattering if a machine is properly tuned and used. Make sure that the needle is fully inserted into the tube, the needle should rest on the bottom side of the tube tip. After, make sure the open side of the needle bar loop is to your left when it is attached to the armature bar. Also make sure that the needle bar does not hit the side of the tube as it goes up and down. And the rubber bands shall be in good shape and pull evenly. Make also sure your points are properly set. Check your springs and replace them if necessary.



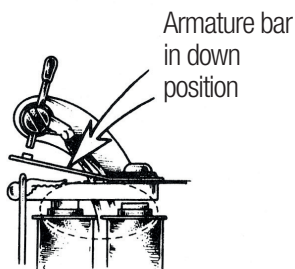
## 4 Setting Machines

### COIL CORE SURFACES



When armature bar is depressed, it does not touch the rear coil core.

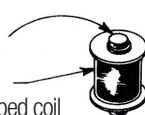
Front coil core does touch the armature bar



Armature bar in down position

Coil core

Tape wrapped coil



PE Machine cover

PE Clip cord cover

During the tattoo process always cover the machine and clip cord with appropriate PE protection. For proper operation and sanitary reasons always keep your tattoo machine perfectly clean.

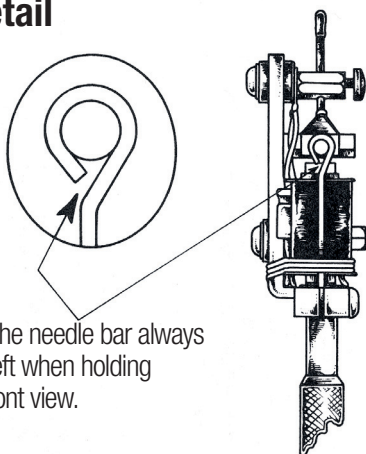


## 5 Setting Tubes

### Assembly Instructions

Use sterile equipment only. Slowly insert needle into tube. Be very careful not to touch anything with the tip of the needle, including inside tube walls or edges. Insert the tube (with bar inside) into the frame hole and finger tighten the locking screw. When inserting the tube into the frame, make sure that the open section of the tube is always facing squarely forward, never to the rear or side part of the machine. When you tighten the needle bar to the armature bar, the open end of the loop stays to the left as shown in the picture. In this way the needles will move forwarding on the bottom tip of the tube (slot), thus remaining stable.

#### Detail



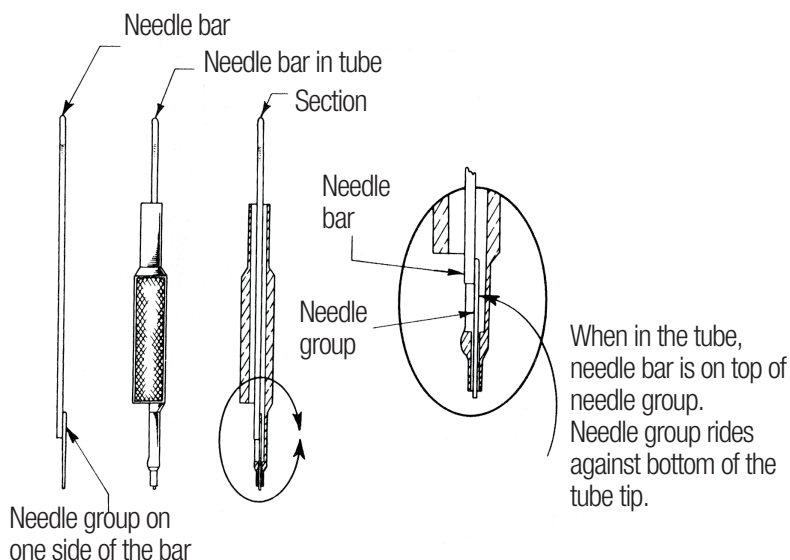
Open end of the needle bar always faces to the left when holding machine in front view.





## 5 Setting Tubes

Now that the machine has been set up, the tube has to be assembled, this will set the length of the needle coming out from the tip tube. Push the armature bar down against the coils and adjust the tube up or down to allow the needle to exit the tip of the tube about 2-4mm when the armature bar is lowered. Lock the tube on the frame by tightening the locking screw and place two rubber bands over the needle bar to provide the right tension. Now the machine is basically put together, turn on the power supply and check that the needles move correctly. Good tattooing can only be done if the needles move right way in vertical sense. Sometimes they wobble and quiver sideways. In this case we have a remedy. We must act on the tension of the rubber bands, by changing their position. It can sometimes be useful to slightly reduce the voltage and center better needle bar inside the tube.

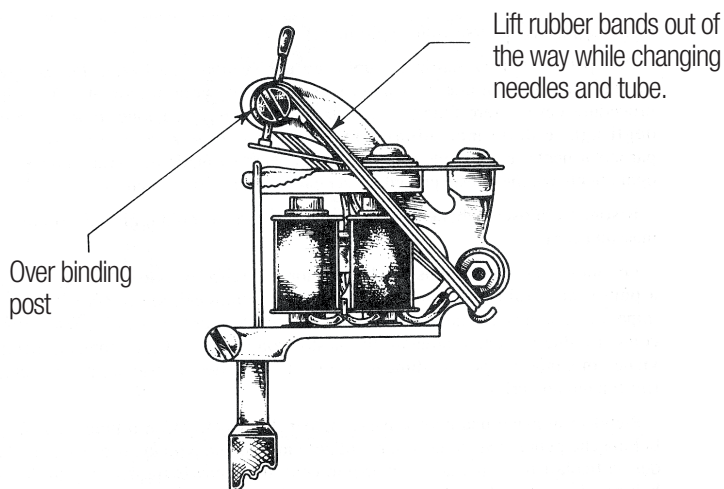




## 5 Setting Tubes

### Disassembly Instructions

Now the needles and tubes disassembly will be discussed. Loosen the locking screw located where the tube meets the frame and remove rubber bands from the needle bar.



Remove the needle bar from the armature bar. Work out the tube with the needle in it. When the tube is free of machine, lift out the needle and place it in a Sharps container. Once again, when handling needle bars, use caution at all times. If using disposable tubes replace them in a Sharps container, while if using stainless steel tubes clean and sterilize them as per current regulations. Remember that the disposed material is hazardous waste and has to be disposed as per current regulations.





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## ATTESTATION OF TESTING N. 189393

**Place and date of issue:** Bellaria, 05/11/2004

**Customer:** IMAX INTERNATIONAL S.r.l. - Via Emilia, 41 - 47838 RICCIONE (RN)

**Date testing requested:** 04/10/2004

**Number and date of commission:** 26862, 06/10/2004

**Date sample received:** 06/10/2004

**Date testing carried out:** from 06/10/2004 up to 29/10/2004

**Purpose of testing:** Electromagnetic compatibility in according the directives 89/336/EEC and 72/23/EEC on “Coil Machine Tattoo IMAX with footswitch, clip cord and power supply unit”

**Place of testing:** Istituto Giordano S.p.A. - Blocco 9 - Via del Lavoro, 3 - 47814 Bellaria (RN)

**Origin of sample:** The Customer

**Identification of sample:** n. 2004/1887

**Commercial name of the sample or name given to the sample for the purposes of this test.**

The sample under test is named: "Coil Machine Tattoo IMAX with footswitch, clip cord and power supply unit"

### Standards under reference.

Testing was carried out as follows:

- Low Voltage Directive 72/23/EEC
- CEI EN 60335-1:2003 "Safety of household and similar electrical appliances. Part 1 : General requirements";
- CEI 62-39:1998-2 "Electrical equipment for aesthetic use. General requirements for the safety";
- Electromagnetic compatibility in compliance with Directive 89/336/EEC.
- EN 55014-1:2000 + A1:2001 + A2:2002 "Electromagnetic compatibility – Requirements for household appliances, electric tools and similar apparatus – Part 1: Emission";
- EN 55014-2:1997 + A1:2001 "Electromagnetic compatibility – Requirements for household appliances, electric tools and similar apparatus – Part 2: Immunity".

### Test results.

It is hereby declared that the sample as described above, has been tested and it is in compliance with the required standards.

*For all other information regarding test apparatus, test methods, test results and full details of the entire, please refer to Test Report No. 188262 and No. 188263 issued by Istituto Giordano S.p.A. on 29/10/2004.*

Test Technician (Dott. Fiorenzo De Lucia) Manager of Electromagnetic Compatibility and Low Voltage Laboratories (Dott. Fiorenzo De Lucia)

Chairman or  
Managing Director

**Dott. Ing. Vincenzo Iommi**

Comp. AV  
Revis.

This attestation of testing is made up of 1 sheets.

Sheet  
No. 1 of 1

**RICONOSCIMENTI UFFICIALI:**

- [illegible]

#### ASSOCIAZIONI ASSOCIATIVE:

- AIA: Associazione Italiana di Acustica.
- AICAP: Associazione Italiana Condizionamento dell'Aria Riscaldamento Raffreddamento.
- AIDC: Associazione Italiana per la Qualità.
- AIEA: Associazione Italiana Energia Pura non Distruttiva.
- ALIP: Associazioni Lavoratori Italiani Fuoco.
- ALF: Associazione Lavoratori di Forno Independent.
- ASHRAE: American Society of Heating, Refrigerating and Air-Conditioning Engineers Inc.
- ASSINDUSTRIA: Associazione degli industriali di Rimini.
- ASTM: American Society for Testing and Materials.
- ATA: Associazione Tecnica Italiana dei Gas.
- CTE: Collegamento Tecnico e Industriale Edilizia.
- CTI: Comitato Termotecnico Italiano.
- ESMAR: European Association of Research Managers and Architects.
- EARTO: European Association of Research and Technology Organisation.
- EGOLF: European Group of Official Laboratories for Fire Testing.
- EN: Ente Nazionale Italiano di Unificazione.

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**User Guide and Tattoo Machine  
Maintenance  
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