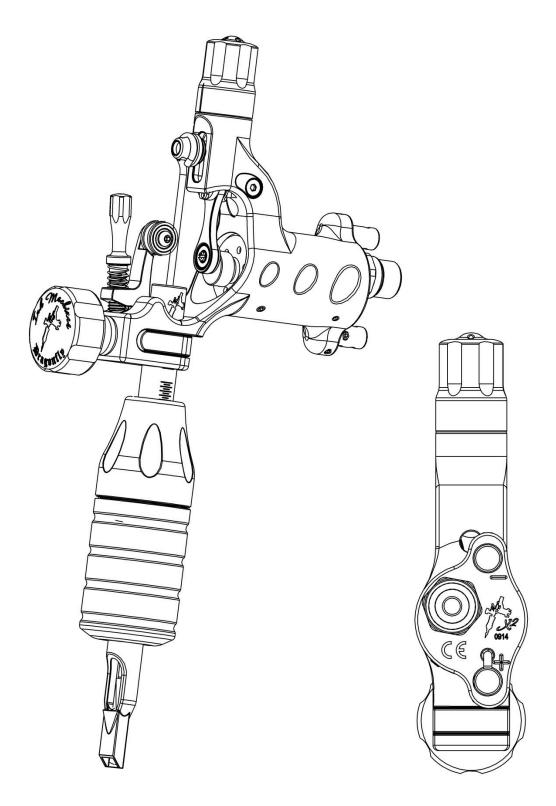


# Manual for **Pragonfly** 12 tattoo machine rev.1



Manufacturer:

InkMachines Sweden AB

BOX 8025

350 08 VÄXJÖ, Sweden

CE



#### Introduction

We are proud to present the evolution of the Dragonfly machine. The  $\mathcal{L}$  model is the sum of our experience from building machines during the years and has led to several improvements. Manufactured with the highest quality materials and components available.

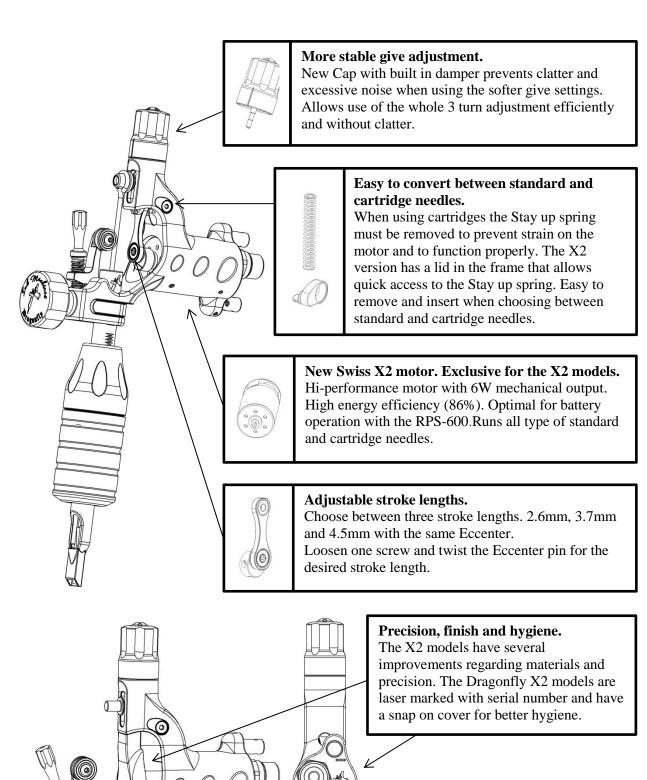
The Dragonfly have been tested and developed by engineers and several professional tattoo artists which means that you can look forward to the reliable and satisfactory performance of the Dragonfly for years to come.

You should expect a return on your investment in the form of you and your customers wellbeing, enabling you to perform better and ultimately improving your business.

To ensure safety and obtain maximum service life from the machine it is essential that users read and understand this manual. Go to <a href="https://www.inkmachines.com">www.inkmachines.com</a> for more info and news.



# X2 Improvements





### **Safety**

The Dragonfly is designed and developed solely for tattooing of humans by professional tattoo artists. Do not under any circumstances use for other purposes.

InkMachines only provide products for professional tattoo artists and may only be used by professionals with knowledge about diseases and how to maintain a clean working environment and sterile equipment. Work safe!

Always use sterile tubes, grips, tips and needles.

Always use rubber gloves.

Use plastic bags and wraps for tattoo equipment around the machine and the power cord.

Always keep your machines clean! Before and after every use you should: remove any oil or dirt and wipe the machine clean with alcohol or equivalent disinfectant.

The manufacturer does not have responsibility for any kind of material damage, person damage or infection caused by negligence or misuse of the machine or the components attached to the machine.

The manufacturer does not have responsibility for contamination or infection of humans or animals.



#### **Service**

Tools and spare parts are available on <a href="www.inkmachines.com">www.inkmachines.com</a> in the spare parts section if you want to do service work yourself. To properly make service work on your own you will need the **Precision tool kit ®**. You can also send machines to our service technicians for a full service. You can also send machines to our service technicians for a full service. For more information go to <a href="www.inkmachines.com">www.inkmachines.com</a>

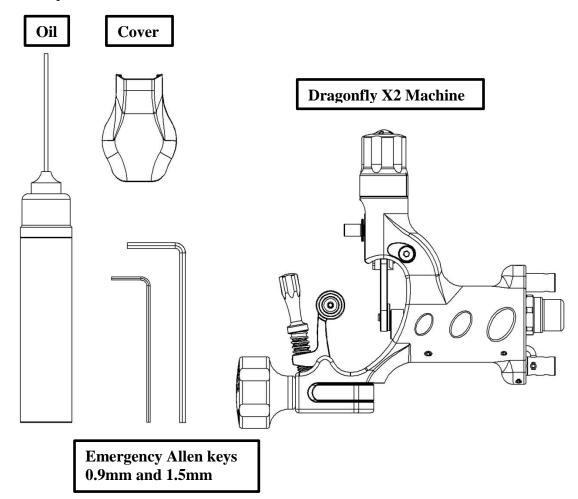
# Warranty

This product includes a 12 month warranty from the date of purchase. The warranty applies to factory faults and not to wear of any components caused by normal or abnormal use.

The warranty is void if:

- 1. Input Voltage above 14 volts has been applied to the machine.
- 2. Machine or any of its components have been autoclaved or cleaned in an ultrasonic cleaner.
- 3. Components have been damaged by misuse or carelessness.
- 4. Components have been manipulated.

### **Delivery content**

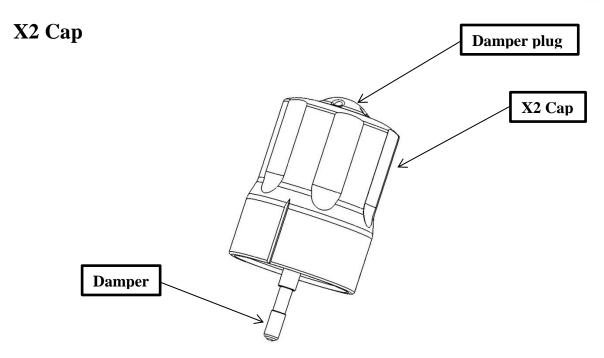




#### **Getting started**

- 1. Disconnect the machine from the power supply.
- 2. Attach a new quality rubber nipple or grommet to the **Needle bar pin** ⑤. The nipple or grommet should have a tight fit with the Needle bar pin when attached.
- 3. Open the retainer to make clearance for the needle bar and tube by adjusting the **Retainer screw (5)**.
- 4. Bend the needlebar to a slight arc shape or make a bend just at the soldering to compensate the pressure from the needle bar retainer. This enables the needles to work straighter, prevent it from wobbling and making it more stable in the tip.
- 5. Insert the needle carefully into the tube without damaging the needle tips.
- 6. Insert the tube / needle assembly trough the **Tube vice clamp ⑤** and tighten the vice lightly. Attach the needle bar loop to the nipple.
- 7. Move the **Needle bar pin**  and the attached needle bar down to the bottom of its stroke by pressing the needle bar pin downwards, if the needle bar pin won't move down push the **Eccentric bearing** to the side at the same time.
- 8. Inspect and adjust the protrusion and alignment of the needle and tip by moving the grip and tube to the desired location. Tighten the tube vice firmly when done **④**.
- 9. Adjust the **Needle bar retainer** by turning the **Retainer screw** until the **Retainer o-rings** makes contact with the needle bar. Don't tighten more than necessary to keep the needle stable in the tip. If the needle bar don't align properly with the retainer o-rings, adjust / bend the needle bar so that it aligns.
- 10. Connect the machine to a power supply ( max 13 volts DC ) either with a RCA cable to the **RCA contact** ② or a clip cord to the **Clip cord binding posts** ③ ①, if you choose to use a clip cord make sure to connect positive to + and negative to marked on the machine next to the binding posts. The motor should turn clockwise when looking at the front.
- 11. Run the machine between 8.5-10 volts depending on needle size and friction, fine adjust the **Needle bar retainer** until the needle feels stable in the tip and make sure that everything runs smoothly without excessive friction or noise.
- 12. Run the machine and adjust the needle suspension (give) by feeling the **Needle bar pin** ② and nipple with your finger and by turning the **Cap** ③③ to get the desired hitting, clockwise = harder, counter clockwise = softer. When the cap is turned clockwise to the bottom the **Needle bar pin** ③ will be locked with the **Piston** ②. This position will give the hardest hitting. When the cap is turned counter clockwise the stroke will be increasingly softer until the limit is reached. When the limit is reached ( about 3.5 turns from the bottom) the **Adjustment screw** ③ will make contact with the cap from the inside and produce noise, turn the cap clockwise until the adjustment screw clears the cap and the noise stops. If you turn the cap beyond 3.5 turns from the bottom position and the cap should come off, screw down the adjustment screw two turns and reattach the cap by pushing it while moving it in a circular motion until it clicks into place.
- 13. Encapsulate the machine and cord with plastic bags and wrappings for tattoo equipment.
- 14. Typical start values would be around 8-10 volts for shading and filling. 8.5-10.5 volts for lining. The adjustment is normally set to soft for shading and medium to hard for filling (packing color) and lining. These are just start values and are very much individual. You may find other values to suit you better depending on your technique, equipment etc.

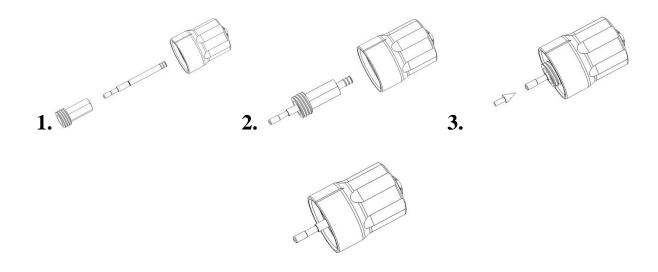




The new X2 cap has a built in Damper that prevents clatter and noise when the give adjustment is used.

**Note:** The Damper makes the machine slightly louder when running without needles or when the adjustment is set to the hardest setting. When the machine is set up with needles and soft give setting are used the clatter and noise will be greatly reduced compared to running without it.

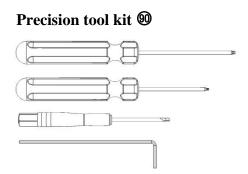
The Damper has a service life of approximately 1500 hours. The machine can be operated without the Damper if the give adjustment is not required. To remove the Damper from the cap use a pliers and grab the tip of the Damper to pull it out from the Damper plug. Don't grab the shaft of the Damper as it can be damaged. To insert the Damper use the adjustment screw as a guide to locate the hole in the Damper plug. Apply pressure to the damper to insert it firmly.



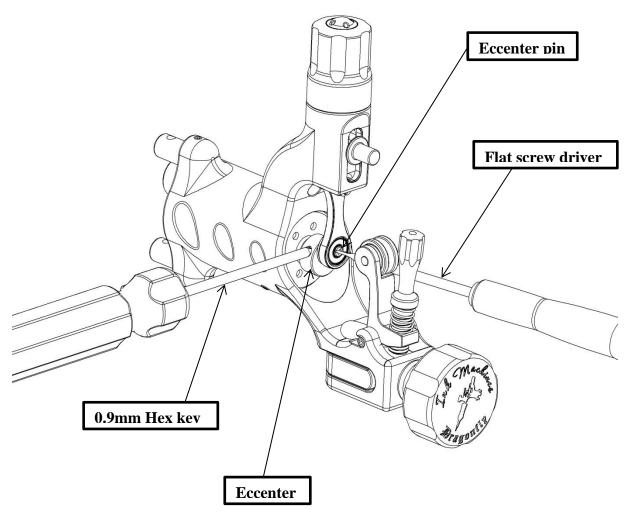


# Adjusting the stroke length

The Dragonfly X2 Eccenter can be adjusted between 3 different fixed stroke lengths simply by loosening one screw and twisting the Eccenter pin 90 or 180 degrees for the desired stroke. The stroke lengths are 2.6mm, 3.7mm (standard) and 4.5mm. To properly change the stroke length and make service work on your own you will need the **Precision tool kit**  normally delivered with the 3.7mm stroke as standard.

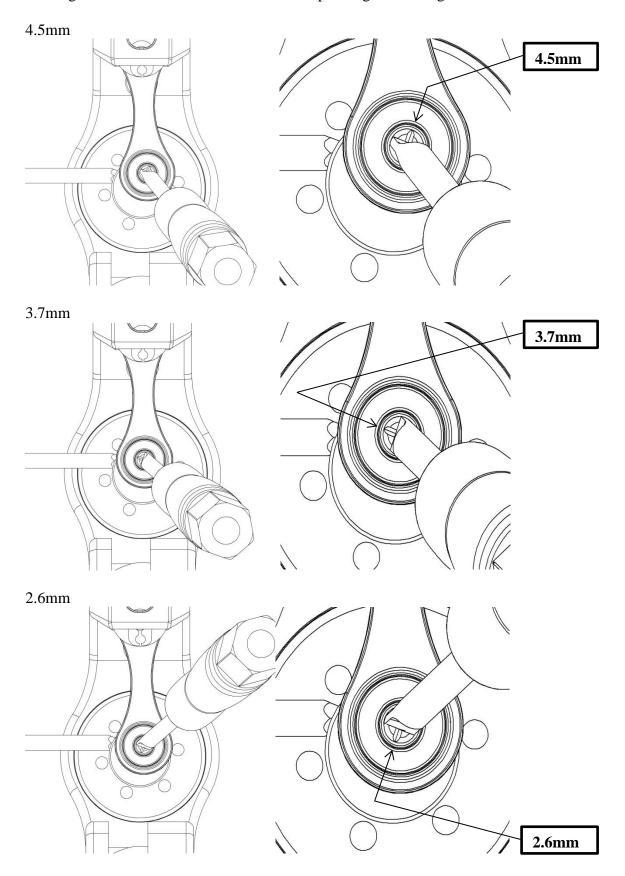


The Eccenter pin has a groove in the front end to accept the flat screw driver from the tool kit. You will also need the smallest hex key in the tool kit to loosen the screw that holds the Eccenter pin.



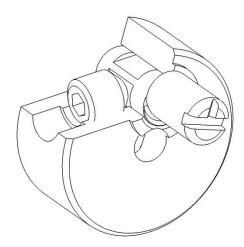


Loosen the screw from the side of the Eccenter **8** min 2 turns. Twist the Eccenter pin 90 or 180 degrees to the desired location and corresponding stroke length.



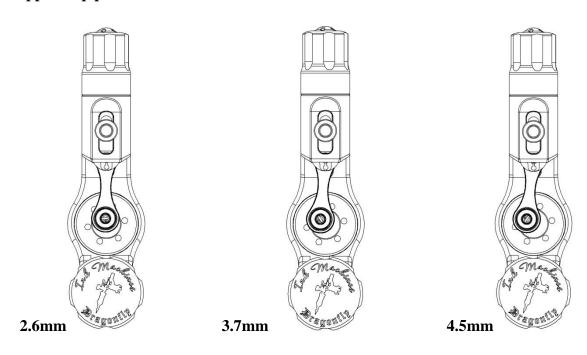


When the stroke has been selected and the pin is in the correct position tighten the screw just a bit. Twist the screw driver and the Eccentric pin back and forth to make sure that the screw seats on a flat part of the Eccenter pin. There is one flat part for each stroke position as you can see on the cut through section of the Eccenter below. Do not over tighten the screw.



**Note:** the Dragonfly machine naturally stops in the upper position with needles retracted in the tip when the **Stay up spring** is present. The X2 version is slightly different than the previous Dragonfly. When set with short stroke there is no difference, the stroke goes all the way up when the motor is not running. For the standard 3.7mm the stroke stops 0.5mm before the top position and the long stroke 4.5mm stops 0.9mm from the top position when the motor is not running. This is due the damper in the cap. When the motor is running the stroke will pass this position and take advantage of the whole stroke length. This should be accounted for when setting up the needle in the tip. The pictures below shows the upper positions with different stroke length settings.

#### Upper stop positions

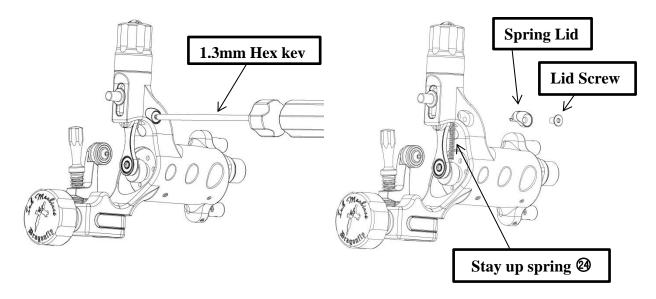




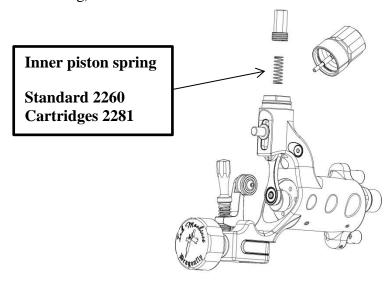
### **Converting to cartridges**

The Dragonfly X2 is fully compatible with cartridges and is easier to convert than the previous model. When using cartridges the **Stay up spring** a must be removed to prevent strain on the motor and to function properly. The X2 version has a lid in the frame that allows quick access to the Stay up spring. To properly convert we recommend the **Precision tool kit**.

Remove the Stay up spring by removing the Lid on the side of the frame. After removing the Stay up spring, put the lid and screw back in place. If you wish to use standard needles again put the stay up spring back. Use the short end of the 1.5mm Allen key to push and hold it in place. Put the lid back in position and keep some pressure on the lid while pulling the Allen key out. The stay up spring should engage so that it rests on the lid.



To take advantage of the give function when using cartridges the Inner piston spring should be replaced. If the give function is not required just adjust the give to the bottom position (hardest setting).



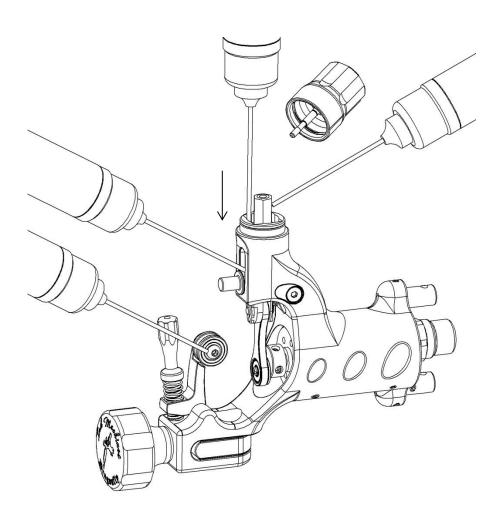


#### **Maintenance instructions**

Moving parts exposed to friction needs lubrication!

Use the **oil** 69 that were supplied with the machine and follow these steps to lubricate every 100 hours of use. Only use the oil provided with the machine, other oils may reduce lifetime of the machine and / or clog.

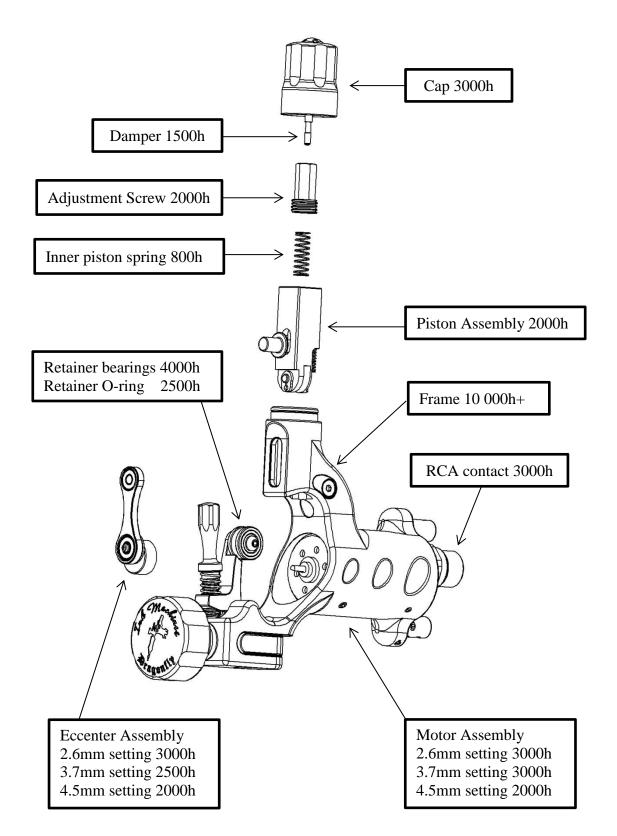
- 1. Remove grip and needle.
- 2. Remove the Cap ③ B and push the Piston assembly ④ down to the bottom of its stroke by pushing on the Needle bar pin ⑥ and lube in the corners between the piston and the Frame ①. And lube the hexagon of the Adjustment screw. Put the cap back in place by pushing and moving it in a circular motion.
- 3. Apply oil just above the needle bar pin in the oval hole.
- 4. Apply oil on the **Bearings 30** of the **Needle bar retainer 40** and roll the bearings a few times back and forward to let the oil run into the bearings.
- 5. Run the machine between 9-11 volts for about a minute and clean it when done.





# Wear components and replacement interval

Components estimated life in operating hours during normal use and given that maintenance instructions have been followed.





# **Troubleshooting guide**

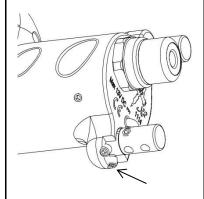
If you experience problems with the machine you can consult the troubleshooting guide or contact us for service at Inkmachines.com

Symptom	Possible cause	Possible Solution
The Motor @® does not start when the power is on but the Eccenter ® can be turned around (normally) by hand. (Electrical fault)	None or to low input voltage.	Increase voltage (max 13 volts).
	Bad cable or power supply.	Make sure the power supply delivers the right current. Consult manual if necessary. Check clip cord or RCA cable. Replace if necessary.
	Bad connection.	Make sure the contact screws are not loose, tighten the following:
		Contact screw motor negative (-) ® Contact screw binding post negative (-) ®
	Tighten gently	Contact screw cord positive (+) ⑦.
	Bad connection between the RCA contact ② and the	Loosen the RCA nut <sup>(1)</sup> and unscrew the RCA contact <sup>(1)</sup> . Remove possible
	motor.	oxide by sanding the tip of the contact that engages with the contact plate of
		the motor. Clean the contact plate (visible through the threaded hole) with alcohol on a cotton bud. Turn the RCA contact until the tip touches the contact plate gently. Tighten the nut gently also.
	Tighten gently	



Short circuit between Frame ① and Clip cord binding post positive (+) ①. The clip cord binding post positive is electrically isolated from the Frame ① with a plastic sleeve. If the sleeve fails short circuit will occur.

Remove the **Clip cord binding post positive** (+) ① and the sleeve. Replace if necessary.



Use the disassemble and assemble instructions as reference or contact InkMachines for service.

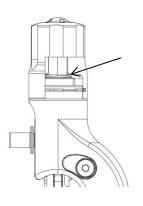
The **Motor @** is defect.

The **piston** ② is clogged.

Lubricate or remove the **piston ②** and clean / lubricate. Use the disassemble instructions no. 1-6 and assemble instructions no. 3 & 5-9.

The adjustment screw ® is to far up and makes contact with the cap ③®.

Turn cap clockwise.





Machine loses power and / or speed varies.	Friction between frame ① and piston ②.	Lubricate according to maintenance instructions.	
	The <b>Needle bar pin ®</b> has moved and makes contact with the <b>frame ①</b> .	Relocate and tighten the <b>Needle bar pin ⑤</b> . Use the assemble instructions no. 8.	
	Needle bar retainer bearings ® worn or clogged.	Clean and lubricate or replace <b>10</b> .	
	Needle bar retainer @ to hard set against needle bar.	Re-adjust. Just enough pressure to keep the needle stable should be applied.	
	Eccenter bearing (9) defect.	Replace <b>Eccenter assembly ®</b> . Use the disassemble instructions no. 4-6 and assemble instructions no. 1 & 5-6.	
	The Stay up spring is broken @	Replace.	
	The <b>motor @®</b> is defect.	Use the disassemble and assemble instructions as reference or contact InkMachines for service.	



The needle suspension (give) is The machine or **pistons** are Lubricate and run the machine for a few jammed or hangs up. new. The suspension needs minutes while holding the Needle bar break in. pin 6 with your fingers and let the inner piston break in. The **Needle bar pin**  is Use the assemble instructions no. 8. loose. The **Inner piston 2** is Remove the **Inner piston ②**. Use the disassemble instructions no. 1-3. Clean clogged. and re-lubricate. Use the assemble instructions no. 7-9. The **Needle bar pin**  is The **Needle bar pin**  is Use the assemble instructions no. 8. wobbling and / or feels to loose. loose. (A certain side to side play is normal). The Inner piston spring ® Replace. Or stretch. is defect. Too much play between the Replace Piston assembly @. Piston @ and the Inner Use the disassemble instructions no. 1-6 piston @. (worn out ). and assemble instructions no. 3 & 5-9.



The <b>Needle bar pin ®</b> suspension (give) is out of sync with the <b>piston ®</b> movement.	The <b>Inner piston @</b> needs lubrication.	Lubricate.
	The <b>Inner piston spring </b> (9) is defect or fatigue.	Replace. Use the disassemble instructions no. 1. Or stretch the existing spring.
The <b>Motor @®</b> loses power in a certain angle but will start when helped.	The <b>Motor @®</b> is defect.	Use the disassemble and assemble instructions as reference or contact InkMachines for service.
The needle stops in random position and not in its upper position like it should.	The Stay up spring ② is broken.	Replace.
The Cap ③® pops off or unscrews itself during tattooing.	The hexagon of the Adjustment screw 19 is damaged and pivots inside without the cap following.	Remove the Cap and replace the Adjustment screw ®



The spring inside the **Cap** Replace the Cap 3® **3**® is to weak and won't keep the cap from turning by normal vibrations. Replace the O-ring or put a drop of oil The Machine runs with a The needle bar retainer O-"wobbling" sound or uneven in the groove between the O-ring and ring is not round. sound. the needle bar. The Needle bar retainer The Retainer screw spring Replace the **Retainer screw spring 29** assembly @ vibrates loose **23** is too weak. Or stretch it. during tattooing.

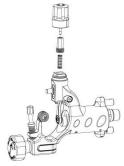


Ink is creeping up the needle bar.	The pigment is thick. Thicker pigments tend to climb easier than thin pigments.	Dilute the pigment.
	The needle has a long resting area (distance) in the tip.	Bend the needle at the solder so that only the tip of the needle rests against the tip or as little as possible.
	A certain frequency (speed) makes it worse.	Change the voltage up or down.
	The needle has a tight fit in the tip.	Try different needle and tip combinations.
	Needle bar retainer @ to hard set against needle bar.	Re-adjust. Just enough pressure to keep the needle stable should be applied.



### **Disassemble instructions**

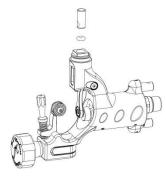
1. Remove the **Cap ③®** by pulling it off. Unscrew the **Adjustment screw ®** and take out the **Inner piston spring ⑨**.



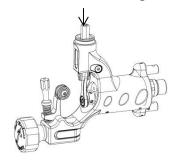
2. Use the matching **Allen key** to loosen the **Piston screw** in the **Inner piston** 2. Take out the **Needle bar pin** 6.



3. Push out the **Inner piston** ② and pull out the **Noise damper O-ring** ② from the bottom of the **Piston** ③.

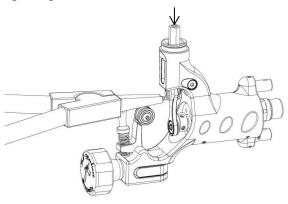


4. Refit only the **Adjustment screw ®** a few turns and push the **Piston assembly ®** down to the bottom position by pushing on the top of the adjustment screw.

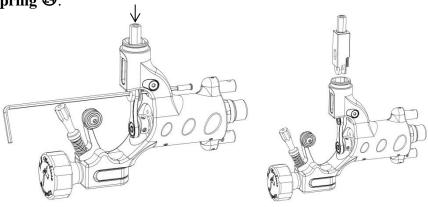




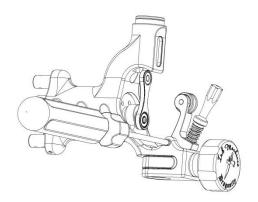
5. While holding the **Piston assembly 1** in the bottom position, remove the **Circlip 2** from the **connecting pin 2** with a **Circlip pliers 5**. Don't open the circlip more than it exactly needs to clear the connecting pin or it will overstretch and become useless. Use a **Circlip pliers 5** with an adjustable stop screw that prevents the circlip from opening too much.



6. Use a 1,5mm pin or the far end of an **Allen key 1** to push out the **Connecting pin 2** out and through the hole in the **Frame 1**. Pull out the **Piston 2** and the **Stay up spring 3**.

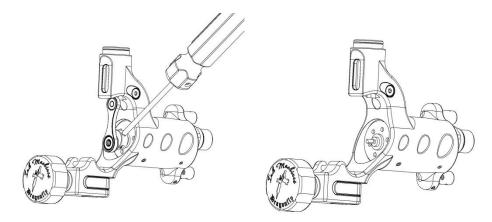


7. Remove the **Needle bar retainer assembly**  by unscrewing the **Retainer fix. Screw** and pulling it out.

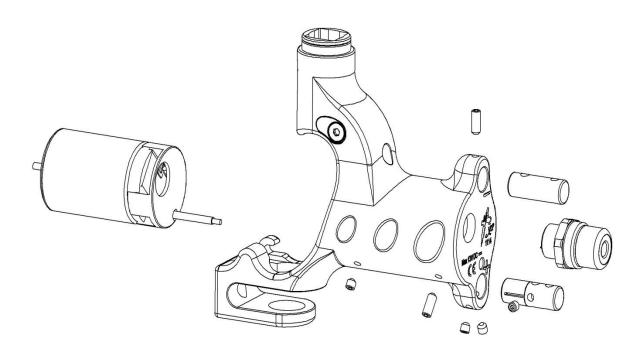




8. Loosen the Allen screw in the **Eccenter ®** that holds the motor shaft. Pull out the **Eccenter assembly ®** from the motor shaft.



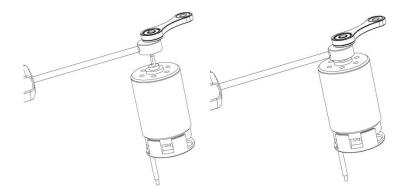
- 9. Loosen the **Contact screw cord positive** (+) ① and pull out the cord end. Loosen the **Motor fixing screws** ② and **Contact screw motor negative** (-) ③ and pull / push out the **Motor assembly** ②③.
- 10. Remove the **RCA contact** ②.
- 11. Remove the **Clip cord binding post positive** (+) ① by loosening the two Allen screws in the **Frame** ① holding it and pulling it out.



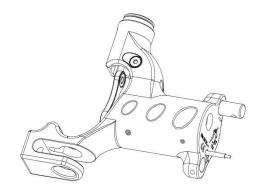


### **Assemble instructions**

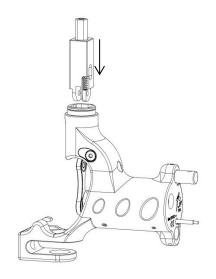
1. Mount the **Eccenter assembly** ① ③ on the motor shaft and lock the Allen screw in the **Eccenter** ③ to the motor shaft. Make sure that the screw that engages with the motor shaft ends on the flat part of the motor shaft.



2. Insert the **Motor assembly (19)** B into the **Frame (1)** while aligning the motor cord to the corresponding hole at the back of the **Frame (1)**.

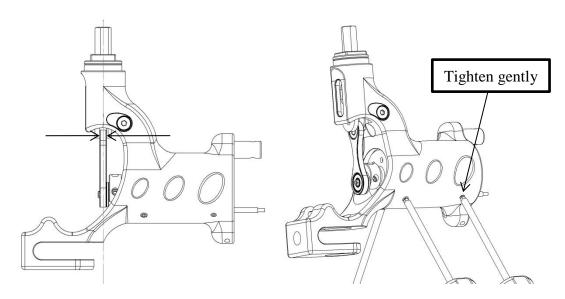


3. Lubricate and insert the **Piston ②** with the **Stay up spring ②** and the **Adjustment screw ③** into the **Frame ①**. Make sure the stay up spring aligns with the **Lid ⑤**.

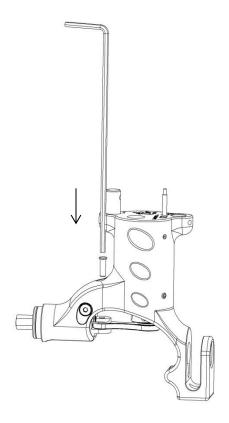




4. Align the **Connecting rod** ② with the groove in the **Piston** ②. Position the **Motor assembly** ② ③ in or out so that the connecting rod lines up with the center of the groove in the piston. It's important that there is no tension between the components. Tighten the **Motor fixing screws** ④ and **Contact screw motor negative** (-) ⑤.

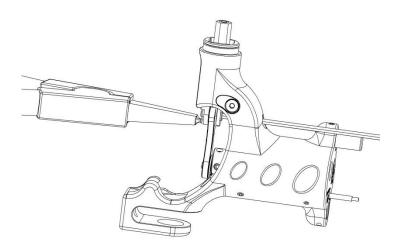


5. Push the **Piston** ② down and insert the **Connecting pin** ③ through the hole in the neck of the **Frame** ①. Align the hole in the piston with the hole in the upper bearing of the **Connecting rod** ②. Push the **Connecting pin** ③ trough and to its bottom location with the far end of an **Allen key** ⑤.

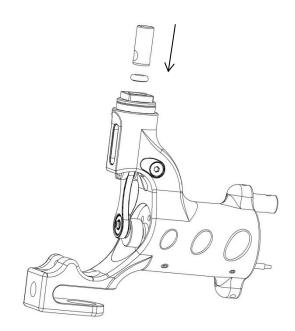




6. While holding the **Piston** ② at its bottom location keep pressure on the head of the **Connecting pin** ③ with the far end of an **Allen key** ⑤. Install the **Circlip** ⑤ using a **Circlip pliers** ⑤.

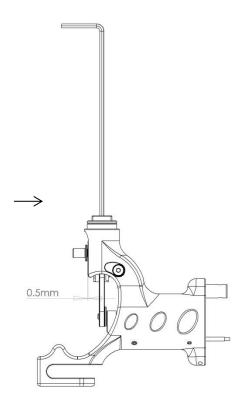


7. Install the **Noise damper O-ring** ②, push it to the bottom of the hole in the **Piston** ② and make sure it lies firmly in the bottom. Align the **Inner piston** ② with the **piston screw** ② pointing up and the **Needle bar pin** ⑤ hole pointing in the direction of the groove in the **Frame** ①. Push it down to the **Noise damper O-ring** ②.

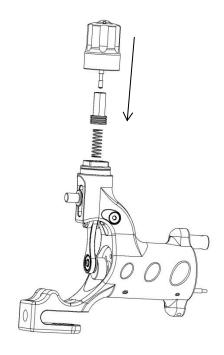




8. Insert the **Needle bar pin (6)** trough the groove of the **Frame (1)** and through the hole of the **Inner piston (2)**. The distance between the sleeve of the needle bar pin and the **Frame (1)** should be aprox 0,5mm. Tighten the needle bar pin with the **Allen key (9)** from the top.

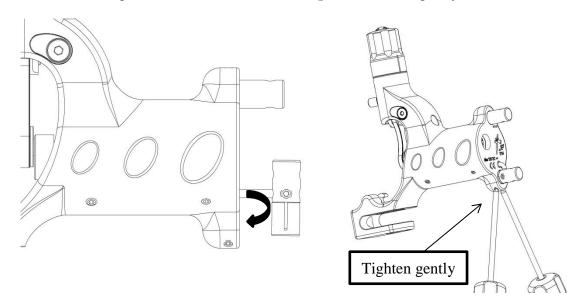


9. Insert the **Inner piston spring** (19), screw in the **Adjustment screw** (19) all the way down. Align and push the **Cap** (3) (18) in to place. Move the **Cap** (3) (18) in a circular motion while pushing to make it snap in to place.

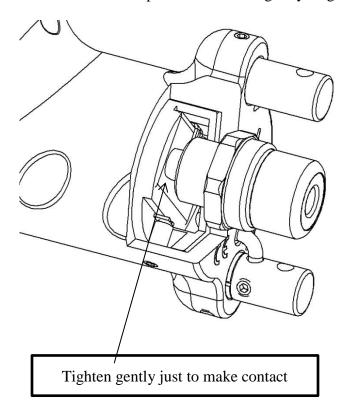




10. Put the cord end of the motor cord in the hole of the **Clip cord binding post positive** (+) ① and push it in to the **Frame** ①. Tighten the two fixing screws in the **Frame** ① that holds it. Tighten the **Contact screw cord positive** (+) ② gently.

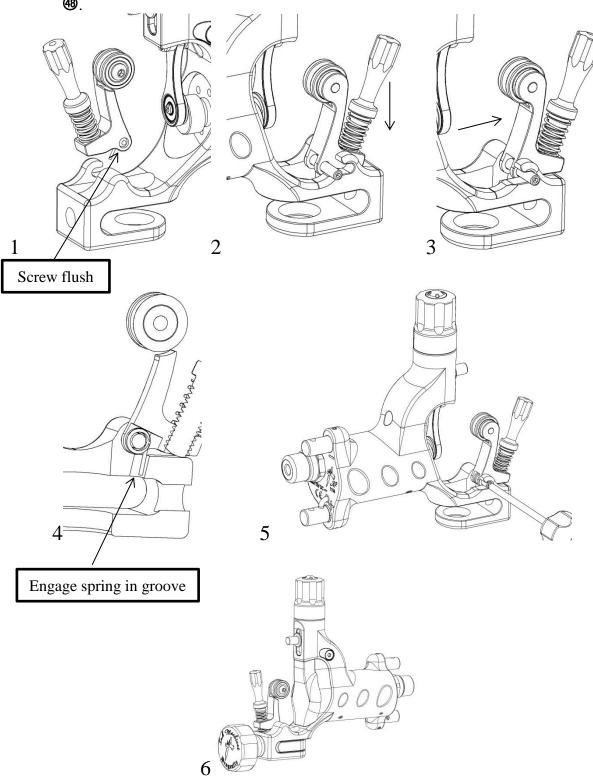


11. Install the **RCA contact ②** and **RCA nut ③** by turning the RCA contact until the tip touches the contact plate of the motor gently. Tighten the RCA nut gently.





12. Refit the Needle bar retainer assembly by placing the Retainer spring in the groove of the Needle bar retainer . Push the Retainer fix. screw through the first hole opposite of the retainer bearing side, trough the retainer spring and into the second hole. Leave the retainer fix screws end flush to the needle bar retainer surface on the bearing side. Put the needle bar retainer assembly in the groove of the Frame and slide it back into place. Make sure that the Retainer spring engages correctly with the Frame . Hold it in place while tightening the Retainer fix screw





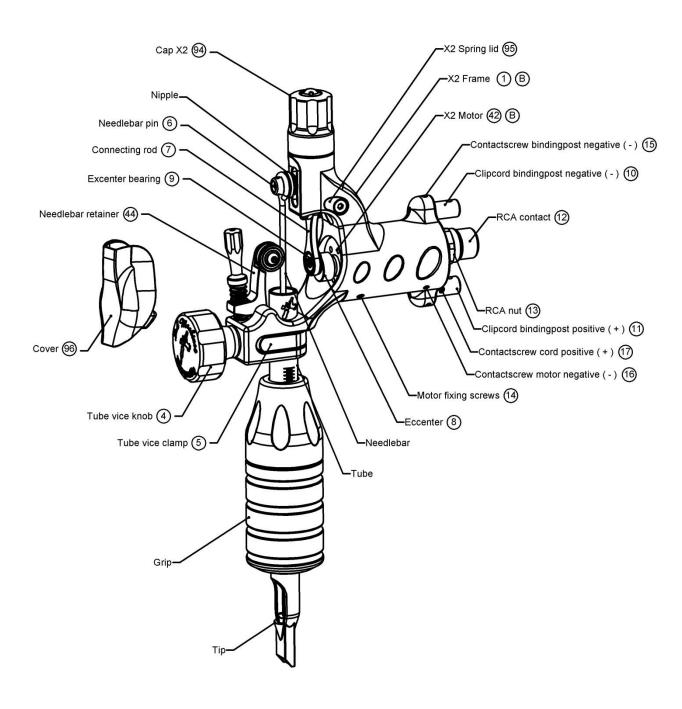
# **Specifications**

Input voltage	0 - 13 volt DC (max. 13 volt DC)
Power connections	RCA or clip cord (max. clip cord end diam Ø1,6 mm)
Rpm range	0 - 8 000 rpm / min
Stitches / sec	0 - 130 / sec
Stroke length	2.6, 3.7 and 4.5 mm Adjustable
Suspension stroke (give)	0 - 2 mm
Max. tube diam Ø	Ø8 mm
Max. needle size	50 magnum
Weight	80 grams
Wireless ready	Yes
Dimensions LxBxH	90 x 21 x 75 mm

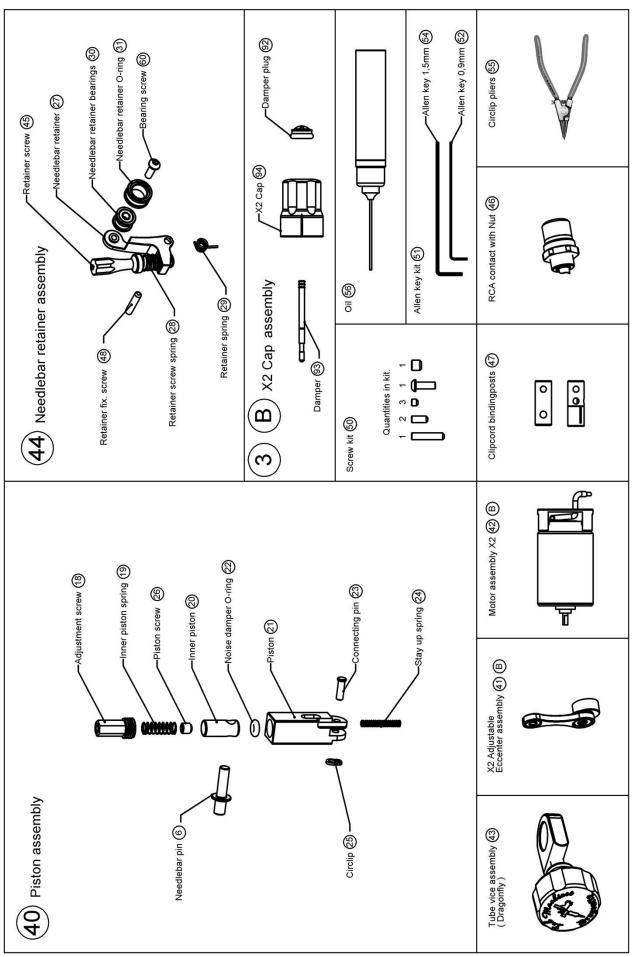


### Part names

Note: Parts without numbers are not included in the purchase.











# **Declaration of Conformity**

#### Manufacturer

InkMachines Sweden AB Box 8025 350 08 Växjö Sweden

#### **Equipment**

Tattoo machine Dragonfly X2 Year of manufacturer 2014

We InkMachines Sweden AB hereby declare that the Dragonfly tattoo machine specified above conforms with the following directives:

#### Machine Directive 2006/42/EC

Växjö	2010-05-07	
Christi	an Johansson	CEO

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