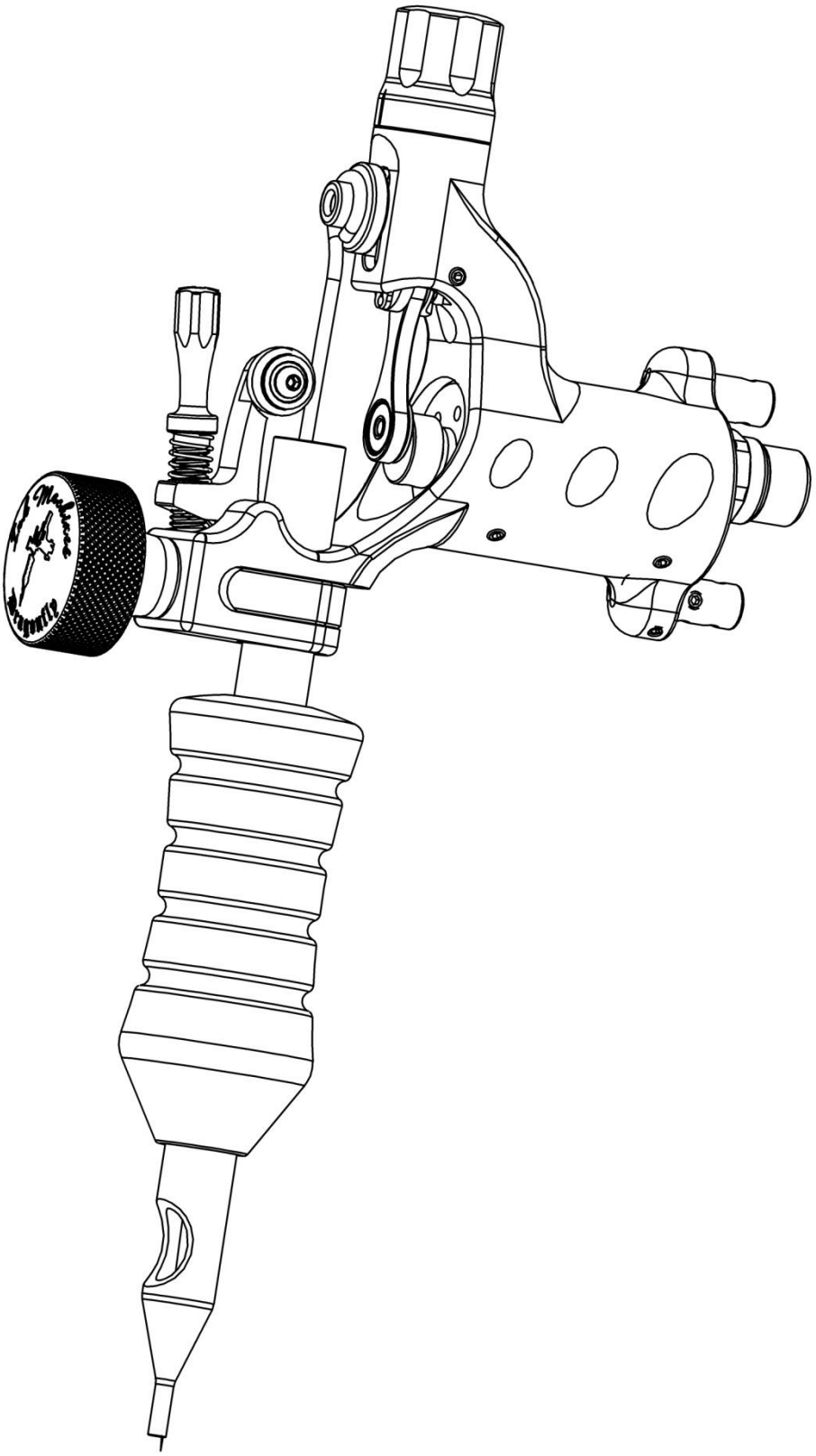
Manual for the Dragonfly tattoo machine



Introduction

We are proud to present the Dragonfly tattoo machine. Designed with the tattoo artist in focus and manufactured with the highest quality materials and components available.

The Dragonfly is a state of the art rotary based tattoo machine with features that gives it several advantages compared to other tattoo machines. The adjustable suspension system allows the needles hitting force to be adjusted, the low noise, the light weight, the needlebar retainer and the ability to accept most standard grips, tubes, needles and power supplies with RCA or clipcord are some of the features and improvements incorporated in to the design without compromising the function or ergonomics. All of these things and more put together in one package makes the Dragonfly the most complete tattoo machine ever made.

The Dragonfly have been tested and developed for over three years 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 well being, 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. Check out www.Inkmachines.com for more info and news.

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.

Maintenance instructions

Moving parts exposed to friction needs lubrication!

Use the **oil** ㊻ 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 and push the **piston assembly** ㊵ down to the bottom of its stroke by pushing on the **needlebar pin** ⑥ and lube with a small amount of oil in the corners between the piston and the housing. Put the cap back in place.
3. Apply oil just above the needlebar pin in the oval hole.
4. Apply oil on the **bearings** ㉚ of the **needlebar retainer** ㊹ and roll the bearings a few times back and forward to let the oil run into the bearings.
5. Run the machine between 9-12 volts for about a minute and clean it when done.

Service

Tools and spare parts are available on www.inkmachines.com in the spare parts section if you want to do service work yourself. You can also send machines to our service technicians for a full service. For more information go to www.inkmachines.com

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 have been applied to the machine.
2. Machine or any of its components have been autoclaved or cleaned in a ultrasonic cleaner.
3. Components have been damaged by misuse or carelessness.
4. Components have been manipulated.

Getting started

1. Disconnect the machine from the power supply.
2. Attach a new quality rubber nipple or grommet to the **needlebar pin ⑥.** The nipple or grommet should have a tight fit with the needlebar loop.
3. Open the retainer to make clearance for the needlebar and tube by adjusting the **retainer screw ㊺**.
4. Bend the needlebar to a slight arc shape to compensate the pressure from the needlebar 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 needlebar loop to the nipple.
7. Move the **needlebar pin ⑥** and the attached needlebar down to the bottom of its stroke by pressing the needlebar pin downwards, if the needlebar pin won't move down push the **excentric bearing ⑨** 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 **needlebar retainer ㊹** by turning the **retainer screw ㊺** until the **retainer o-rings ㉛** makes contact with the needlebar. Don't tighten more than necessary to keep the needle stable in the tip. If the needlebar don't align properly with the retainer o-rings, adjust / bend the needlebar so that it aligns.
10. Connect the machine to a power supply (max 14 volts DC) either with a RCA cable to the **RCA contact ⑫** or a clipcord to the **clipcord binding posts ⑩⑪**, if you choose to use a clipcord make sure to connect positive to + and negative to – marked on the machine next to the bindingposts.
11. Run the machine between 9-12 volts depending on needle size and friction, fine adjust the **needlebar retainer ㊹** 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 by feeling the **needlebar pin ⑥** and nipple with your finger and by turning the **cap ③** to get the desired hitting, clockwise = harder, counter clockwise = softer. When the cap is turned clockwise to the bottom the **needlebar pin ⑥** will be locked with the **piston ㉑**. This position will give the hardest hitting and shortest stroke. When the cap is turned counter clockwise the stroke will be increasingly softer / longer until the limit is reached. When the limit is reached the **adjustment screw ⑱** 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 too far and the cap should come off during this operation, screw down the adjustment screw two turns and reattach the cap by pushing it until it clicks into place.
13. Encapsulate the machine and cord with plastic bags and wrappings for tattoo equipment.

Troubleshooting guide

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

Symphtom	Possible cause	Possible Solution
The **motor** ㊷ does not start when the power is on but the **excenter** ⑧ can be turned around (normally) by hand. (Electrical fault)	None or to low input voltage.	Increase voltage (max 14 volts).
	Bad cable or power supply.	Make sure the power supply delivers the right current. Consult manual if necessary. Check clipcord or RCA cable. Replace if necessary.
	Bad connection.	Make sure the contactscrews are not loose, tighten the following: **contactscrew motor negative (-) ⑯** **contactscrew bindingpost negative (-) ⑮** **contactscrew cord positive (+) ⑰**.
	Bad connection between the **RCA contact** ⑫ and the motor.	Loosen the **RCA nut** ⑬ and unscrew the **RCA contact** ⑫. Remove possible oxide by sanding the tip of the contact that engages with the contact plate of the motor. Clean the contact plate (visible trough 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.
	Short circuit between **housing** ① and **clipcord bindingpost positive (+) ⑪.** The clipcord bindingpost positive is electrically isolated from	Remove the **clipcord bindingpost positive (+) ⑪** and the sleeve. Replace if necessary.

	the housing with a plastic sleeve. If the sleeve fails short circuit will occur.	
	The **motor** ㊷ is defect.	Use the disassemble and assemble instructions as reference.
The machine won´t run but the **motor** ㊷ appears to be struggling when power is applied.	The **excenter** ⑧ is slipping on the motor shaft.	Tighten the allen screw in the **excenter** ⑧. Use the assemble instructions no. 1.
	The **excenter bearing** ⑨ is worn out.	Replace the **Excenter assembly** ㊶. Use the disassemble instructions no. 1 & 5-6 & 8 and assemble instructions no. 1 & 5-9.
	The **connecting pin** ㉓ is loose and making contact with the housing.	Refit the **connecting pin** ㉓ and **Circlip** ㉕. Use the assemble instructions no. 5–6.
	The **spring stop screw** ㊻ is too far in and touching the **piston** ㉑.	Adjust the **spring stop screw** ㊻ to the bottom and loosen until it clears the **piston** ㉑.
	The **stay up spring** ㉔ is broken.	Replace. Use the disassemble instructions no. 1-6 and assemble instructions no. 3 & 5-9.
	The **piston** ㉑ is clogged.	Lubricate or remove the **piston** ㉑ and clean / lubricate. Use the disassemble instructions no. 1-6 and assemble instructions no. 3 & 5-9.
	The **adjustment screw** ⑱ is to far up and makes contact with the **cap** ③.	Turn cap clockwise.
Machine looses power and / or speed varies.	Friction between **housing** ① and **piston** ㉑.	Lubricate according to maintenance instructions.

	The **needlebar pin** ⑥ has moved and makes contact with the housing.	Relocate and tighten the **needlebar pin** ⑥. Use the assemble instructions no. 8.
	Needlebar retainer bearings ㉚ worn or clogged.	Clean and lubricate or replace ㉚.
	Needlebar retainer ㊹ to hard set against needlebar.	Readjust needlebar retainer.
	Excenter bearing ⑨ defect.	Replace **excenter assembly** ㊶. Use the disassemble instructions no. 4-6 and assemble instructions no. 1 & 5-6.
	The **motor** ㊷ is defect.	Use the disassemble and assemble instructions as reference.
The needle suspension is jammed or hangs up.	The machine or **pistons** ㊼ are new. The suspension needs break in.	Lubricate and run the machine for a few minutes while holding the **needlebar pin** ⑥ with your fingers and let the inner piston break in.
	The **needlebar pin** ⑥ is loose.	Use the assemble instructions no. 8.
	The **inner piston** ⑳ is clogged.	Remove the **inner piston** ⑳. Use the disassemble instructions no. 1-3. Clean and re-lubricate. Use the assemble instructions no. 7-9.
The **needlebar pin** ⑥ is wobbling and / or feels to loose.	The **needlebar pin** ⑥ is loose.	Use the assemble instructions no. 8.
	The **inner piston spring** ⑲ is defect.	Replace.

	Too much play between the **piston** ㉑ and the **inner piston** ⑳. (worn out).	Replace **pistons** ㊼ or **complete piston assembly** ㊵. Use the disassemble instructions no. 1-6 and assemble instructions no. 3 & 5-9.
The **needlebar pin** ⑥ suspension is out of sync with the **piston** ㉑ movement.	The **inner piston** ⑳ needs lubrication. The **inner piston spring** ⑲ is defect or fatigue.	Lubricate. Replace. Use the disassemble instructions no. 1.

Disassemble instructions

1. Remove the **Cap** ③ by pulling it off. Unscrew the **adjustment screw** ⑱ and take out the **inner piston spring** ⑲.
2. Use the matching **allen key** ㊹ to loosen the **piston screw** ㉖ in the **inner piston** ⑳. Take out the **needlebar pin** ⑥.
3. Push out the **inner piston** ⑳ and pull out the **noise damper o-ring** ㉒ from the bottom of the **piston** ㉑.
4. Refit the **adjustment screw** ⑱ a few turns and push the **piston assembly** ㊵ down to the bottom position by pushing on the top of the adjustment screw.
5. While holding the **piston assembly** ㊵ in the bottom position, remove the **circlip** ㉕ from the **connecting pin** ㉓ with a **circlip pliers** ㊺. 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** ㊺ with an adjustable stop screw that prevents the circlip from opening to much.
6. Use a 1,5mm pin or the far end of an **allen key** ㊹ to push out the **connecting pin** ㉓ out and trough the hole in the **housing** ①. Pull out the **piston** ㉑ and the **stay up spring** ㉔.
7. Remove the **needlebar retainer assembly** ㊹ by unscrewing the **retainer fix. Screw** ㊽ and pulling it out.
8. Ioosen the allen screw in the **excenter** ⑧ that holds the motor shaft. Pull out the **excenter assembly** ㊶ from the motor shaft.
9. Loosen the **contact screw cord positive (+)** ⑰ and pull out the cord end. Loosen the **motor fixing screws** ⑭ and **contact screw motor negative (-)** ⑯ and pull / push out the **motor assembly** ㊷.
10. Remove the **RCA contact** ⑫.
11. Remove the **clipcord bindingpost positive (+)** ⑪ by loosening the two allen screws in the housing holding it and pulling it out.

Assemble instructions

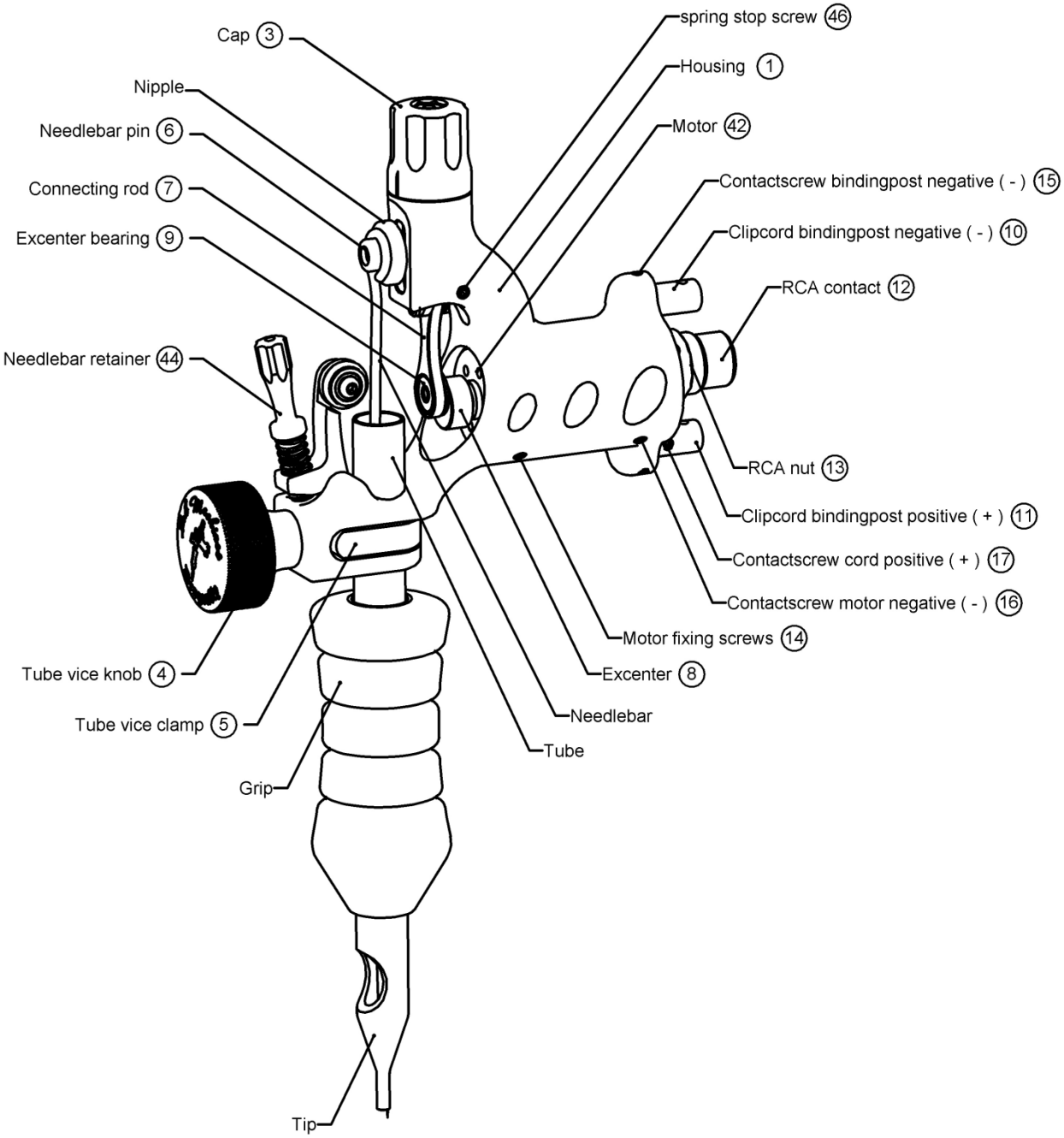
1. Mount the **excenter assembly** ㊶ on the motor shaft and lock the allen screw in the **excenter** ⑧ to the motor shaft. Make sure that the screw that engages with the motor shaft ends on the flat part of the motor shaft.
2. Insert the **motor assembly** ㊷ into the **housing** ① while aligning the motor cord to the corresponding hole at the back of the housing.
3. Lubricate and insert the **Piston** ㉑ with the **stay up spring** ㉔ and the **adjustment screw** ⑱ into the housing. Make sure the stay up spring aligns with the **spring stop screw** ㊻.
4. Align the **connecting rod** ⑦ with the groove in the **piston** ㉑. Position the **motor assembly** ㊷ in or out so that the connecting rod lines up with the center of the groove in the piston. Its important that there is no tension between the components. Tighten the **motor fixing screws** ⑭ and **contact screw motor negative (-)** ⑯.
5. Push the **piston** ㉑ down and insert the **connecting pin** ㉓ trough the hole in the neck of the **housing** ①. Align the hole in the piston with the hole in the upper bearing of the **connecting rod** ⑦. Push the **connecting pin** ㉓ trough and to its bottom location with the far end of a **allen key** ㊹.
6. While holding the **piston** ㉑ at its bottom location keep pressure on the head of the **connecting pin** ㉓ with the far end of an **allen key** ㊹. Install the **circlip** ㉕ using a **circlip pliers** ㊺.
7. Install the **noise damper o-ring** ㉒, push it to the bottom of the hole in the **piston** ㉑ and make sure it lies firmly in the bottom. Align the **inner piston** ⑳ with the **piston screw** ㉖ pointing up and the **needlebar pin** ⑥ hole pointing in the direction of the groove in the **housing** ①. Push it down to the **noise damper o-ring** ㉒.
8. Insert the **needlebar pin** ⑥ trough the groove of the **housing** ① and trough the hole of the **inner piston** ⑳. The distance between the sleeve of the needlebar pin and the housing should be 0,5mm, use a gouge or something equivalent to get the right distance. Tighten the needlebar pin with the **allen key** ㊹ from the top.
9. Insert the **inner piston spring** ⑲, screw in the **adjustment screw** ⑱ a few turns. Align and push the **cap** ③ in place.
10. Put the cord end of the motor cord in the hole of the **clipcord bindingpost positive (+)** ⑪ and push it in to the **housing** ①. Tighten the two fixing screws in the housing that holds it. Tighten the **contact screw cord positive (+)** ⑰ gently.
11. Install the **RCA contact** ⑫ and **RCA nut** ⑬ by turning the RCA contact until the tip touches the contact plate of the motor gently. Tighten the RCA nut gently.
12. Refit the **needlebar retainer assembly** ㊹ by placing the **retainer spring** ㉙ in the groove of the **needlebar retainer** ㉗. Push the **retainer fix. screw** ㊽ trough the first hole opposite of the retainer bearing side, trough the retainer spring and into the second hole. Leave the retainer fix. screw end flush to the needlebar retainer surface on the bearing side. Put the needlebar retainer assembly in the groove of the **housing** ① and slide it back into place. Make sure that the **retainer spring** ㉙ engages correctly with the housing. Hold it in place while tightening the **retainer fix. screw** ㊽.

Specifications

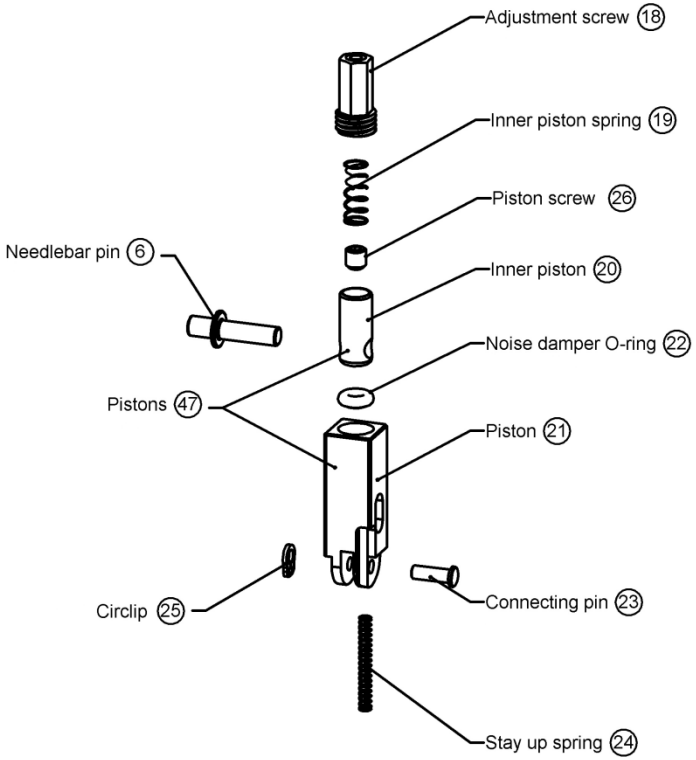
Input voltage	0 - 14 volt DC (max. 14 volt DC)
Power connections	RCA or clipcord (max. clipcord end diam Ø1,6 mm)
Rpm range Stitches / sec	0 - 8 000 rpm / min 0 - 130 / sec
Stroke length	3,7 - 5 mm
Suspension stroke	0 - 2 mm
Max. tube diam Ø	Ø8 mm
Max. needle size	50 magnum
Weight	80 grams
Dimensions LxBxH	90 x 21 x 75 mm

Part names

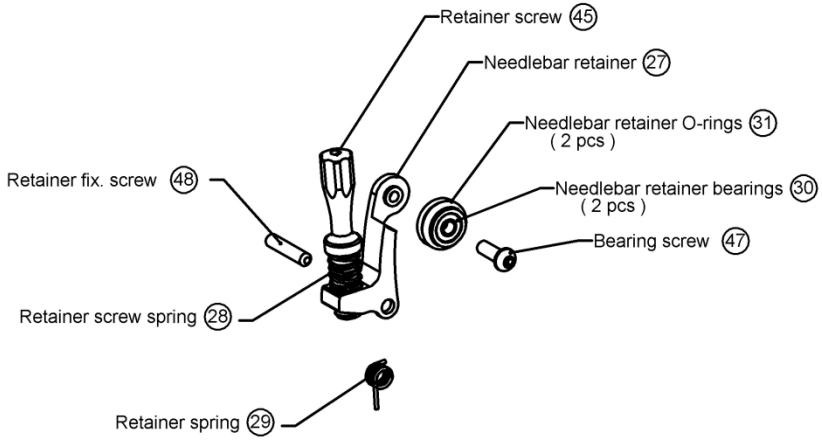
Note: Parts without numbers are not included in the purchase.



40 Piston assembly



44 Needlebar retainer assembly

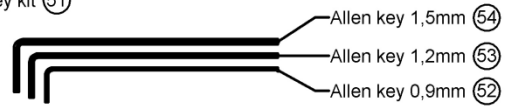


Screw kit 50

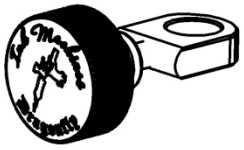
Quantities in kit.

Oil 56

Allen key kit 51

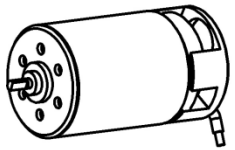


Tube vice assembly 43

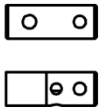


Excenter assembly 41

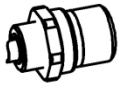
Motor assembly 42



Clipcord bindingposts 47



RCA contact with Nut 46



Circlip pliers 55