

BEHIND THE MACHINE

By Krit Upra

The History of Tattoo Machine

The tattoo machine was dated back to 1876 when it was patented under the title “stencil-pens” in Newark, New Jersey. As this may bring lots of you surprise, the tattoo machine was originally invented by Thomas Alba Edison. The purpose behind this patented pen was to use a duplicating device, which was later modified by Samuel O’Reilly after discovering that the machine had capability to be modified and introduced a newly re-minded Stencil-Pens which allows for ink to be injected into the skin of the user.

The first machine to ever made was created with a single coil machine which later is covered into the electromagnets style that is being used in the modern society. The original patented pen was modified from a doorbell which was assembled into a brass box. Later to be introduced with another modification by Alfred Charles South which set the design step for modern tattoo machines.



Classification of Tattoo Machine:

Rotary tattoo machine : Traditional machine style dating back to 1978, using electric motor to drive the needles.

Coil tattoo machine : The most common type of machine, using electromagnetic circuit to move the groupings of needles.

Liner tattoo machine : The machine lays ink into the skin in one single pass to create a line. using short contact circuit approximately 1.5mm–2mm, which allows the machine to cycle faster.

Shader tattoo machine : This machine uses a bigger contact gap than a liner approximately 2mm–3.5mm allowing for the circuit to work at a slower rater. The machine allows the user to sculpt lines better with this equipment.

Pneumatic tattoo machine : pneumatic tattoo machine is machine completely powered by an air compressor. The machines use pressurized air to power the tattoo machine and drive the needles up and down, this helps decrease the weight of the tattoo machine significantly.





Tattoo Needles

Tattoo needles are identified with codes similar to “1204RL”. The code name refers to different aspect of the needles, the diameter, needle counts and even the grouping and types of format for the specific needles.

The leading number of the needle codes refers to the diameter of the needle. For instant 1204RL refers to a needle that is a #12, or a .35mm diameter needle. A #12 needle is considered a larger diameter in the range of needles and is most commonly use along with a #10 or a 0.30mm needle which is the size that most artist work with when creating lining work. The diameter of the needle’s actually dipicts the ink flow, and the smaller or more narrow the diameter i the easier it is to controll the ink flowing ouf of the needle, which is why artist tends to work with a smaller needle size for line work.

The next two digits refer to the needles in the grouping. In this case “04” which means in the #12 needle there are 4 #12 needles grouped together, which the specfic form they take is refered to by the last two characters “RL”. RL in this case stands for Round Liner, meaning the needles best fir to use in scenaro where linning of work that are placed in circles is needed to be done.

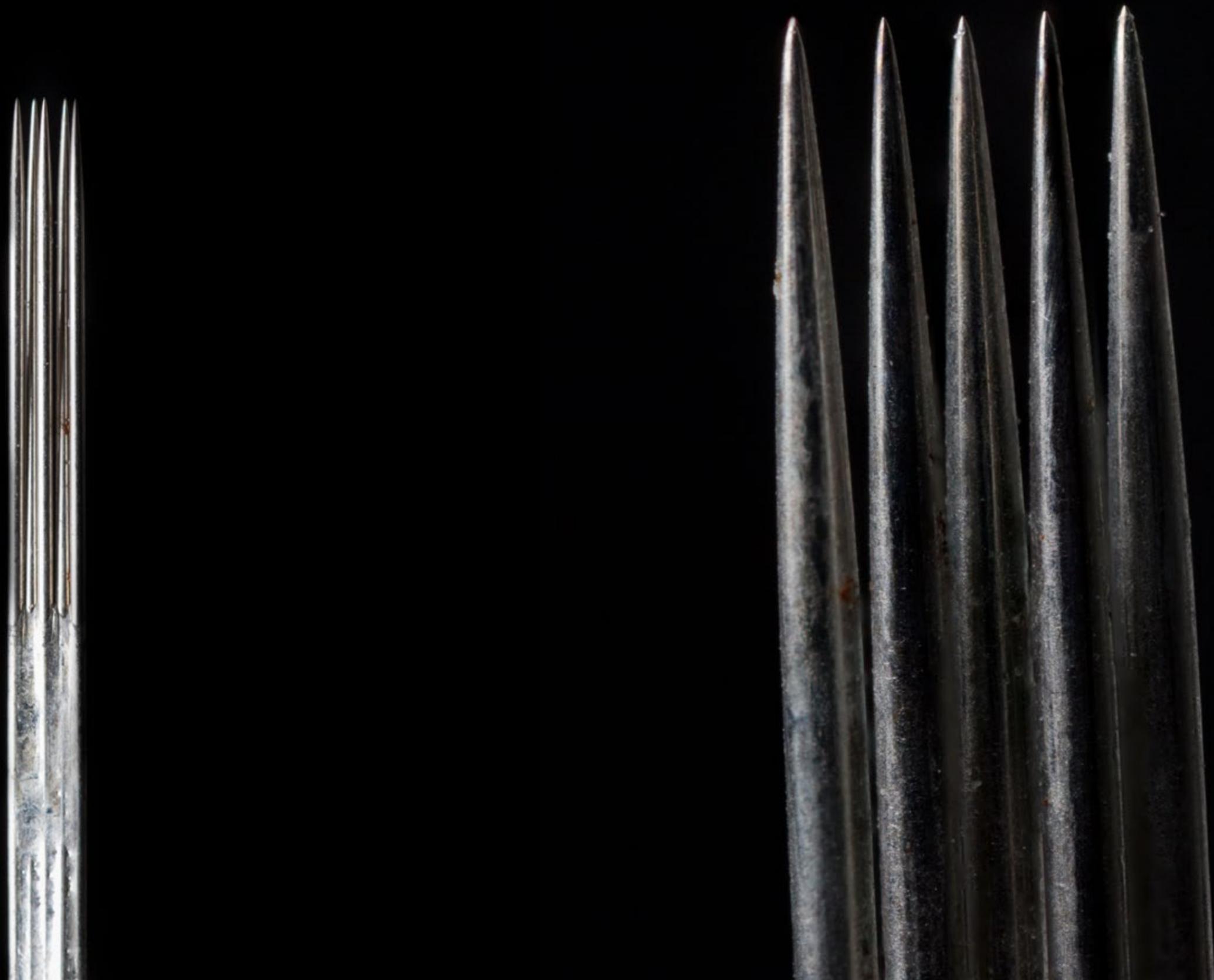
Types of Needles

- Round Linear
- Round Shader
- Super Tight Linear
- Flats
- Magnums
- Bugpins

1005RL - ROUND LINEAR



1205RS - ROUND SHADE





The pigments on the other hand are visible light reflection compounds which unlike dyes pigments provides color without the need of a chemical reaction. During the past 20 years, there has been a major shift in the use of pigments. Substituting mineral-based to a more organic base, consisting of Azo compound*. The use of additives such as surfactants, binding agent, and even preservatives are used to keep and maintain these pigments to avoid any growth of microorganism.

*Azo Compound:

IUPAC defines azo compounds as derivatives of diazene (diimide), $\text{HN}=\text{NH}$, wherein both hydrogens are substituted with hydrocarbyl groups.

The INK

Tattoos are made by injecting ink into your skin using needles mentioned above. When the needle punctures your skin, causing wound. The body reaction response is to send macrophages, closing up the wound by swallowing up the foreign substance which in this case is our tattoo pigments. Since the pigments particles are too large for the macrophages to destroy, the ink gets stuck in the dermis which allows for it to permanently stay in your skin.

The question that is raised however, is what are these pigments that we are injecting ourselves with. The ink is a solution composed of a colorant and a carrier, the fluid (carrier) is used as a vehicle transporting the colorant to its location. Typically contains glycerin, water, isopropyl.

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Resources:

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