# VULCANO - USER MANUAL

# ANNEALING CARTRIDGES CASES - "VULCANO"

***You can download fully operating instruction and WARNINGS in :*** www.shooting-tech.com , ***or ask it to seller***

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## EQUIPMENT

*"Vulcano" is made to induction annealing for brass cartridge cases. The machine "Vulcano" is supplied with the following components listed below:*

- N.1 *APPARATUS*
- N.1 *SHELL HOLDER*
- N.1 *COIL PROTECTION BUSH*
- N.1 *SPACER SET*
- N.1 *Wire Cable with EMI filter*
- N.1 *USER MANUAL*


## ASSEMBLY

*Remove packaging protection; keep original packaging in order to reuse in case of shipment to the seller.*
*Connect the main power cable with EMI filter to the power supply.*


**TECHNIQUE ENGINEERING di Arturo Busin & C snc** P. I./ C.F./ **Reg. Imp. 03122570249 REA 300945 (VI) - SHOOTING TECHNOLOGY**
**Via Marco Corner 2/4, 36016 Thiene (VI) ITALY tel. +39 (0)445 576528 Fax. +39(0)445 500224 www.technique-engineering.it**

# VULCANO - USER MANUAL

## OPERATING

*It is forbidden to anneal complete cartridges: DANGER! Do not use shellholders metal made DANGER OF BURNS AND DAMAGE!*

***For more informations :*** https://shooting-tech.com/

Put Main switch in ON position (light on) – OFF when you stop with the annealing operation

The Knob "time" is to set time of annealing induction ( in position nr. 8 maximum annealing time is 4 seconds)
The Knob " magnetic filed" is to set the density of the magnetic lines force of the field.

Power button is to start anneling induction with the knobs settings; the "working " led light is on when the machine is working and turns offby itself when it is done.

"Alarm" light is on only for higher temperature of functioning ( the machine will stop by itself to protect inner parts) and will be ready when the inner temperature of the machine will be correct.


Time and magnetic field setting for optimal annealing performance depends from many factors of the shell:

manufacturer, size ,dimensions, brass alloy.

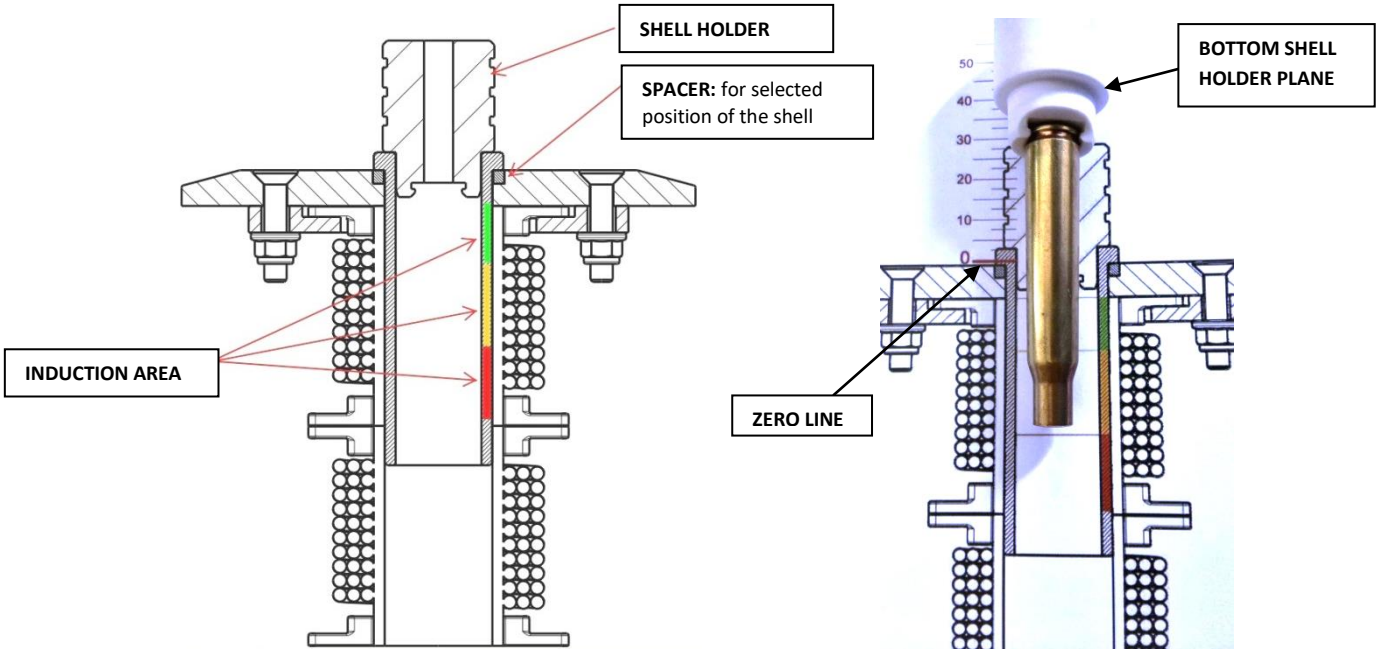
User has to try and find by itself after some tests the optimal annealing result for all types of shell cases

## SHELL POSITION

User has to set the correct working position of the shell , where there are the lines of the magnetic field that anneal the brass.

Spacers are to use in order to find correct shell position into warm protection coil

Below the position of the shell in work area : the scheme is to show how the induction annealing works




The **INDUCTION AREA** are three:

- GREEN ----------> Low induction power
- **YELLOW** --------> Medium induction power - **THIS IS THE RIGHT AREA TO DO THE NECK CARTRIDGE CASE ANNEALING**
- RED ----------> Strong induction power

**Please print the scheme in the next page. It shows you how to use spacer .**

**TO USE THE RIGHT SPACERS, READ THE DIMENSION BETWEEN THE ZERO LINE AND THE BOTTOM SHELL HODER PLANE** (see the picture…..for example in this case the dimension is 35 mm. You can use more spacer together)

To use this page, please print it in scale 1:1, without use the '*Adjust to Fit*' print option

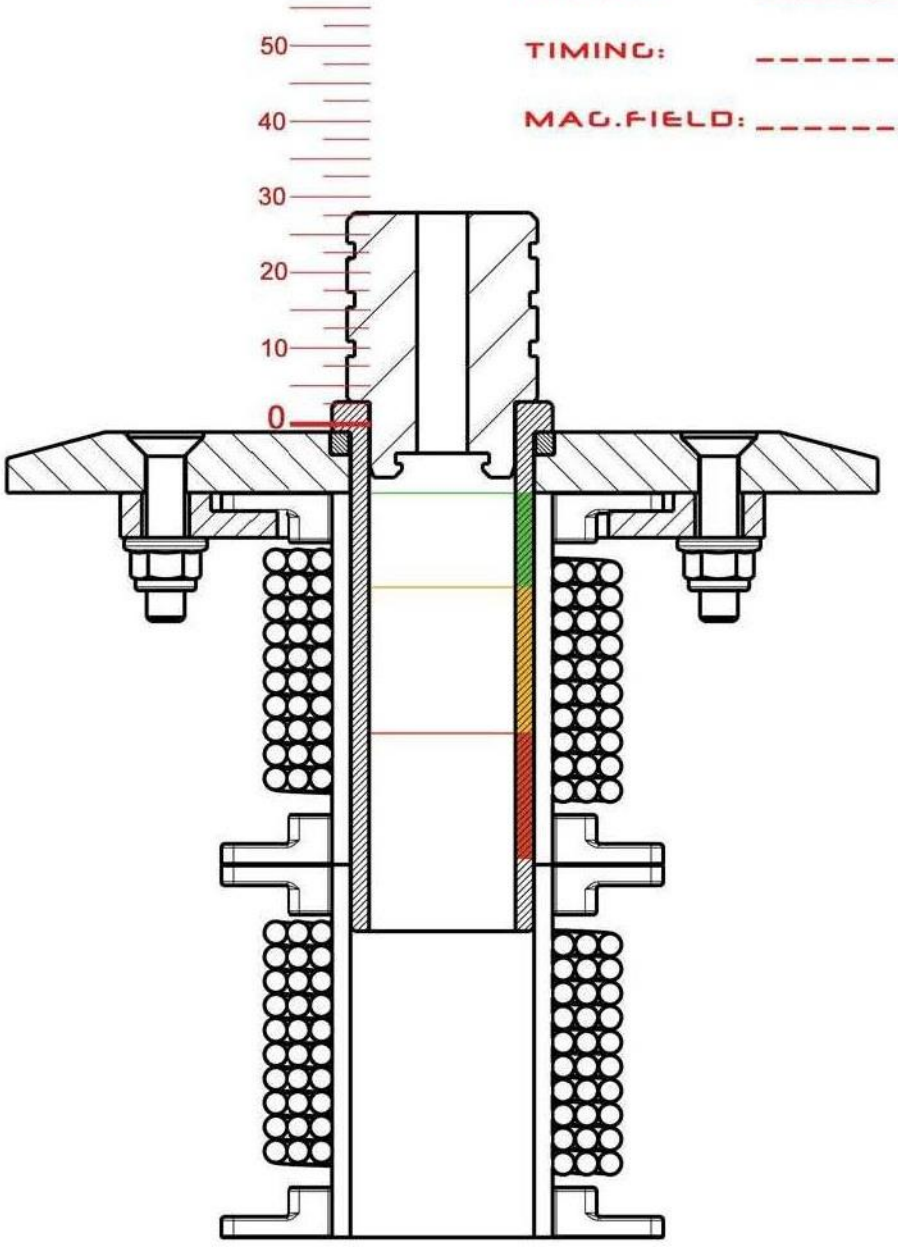
# VULCANO

CARTRIDGE CASE: _____

BRAND: _____

TIMING: _____

MAG.FIELD: _____




CARTRIDGE CASE POSITION FOR INDUCTION ANNEALING

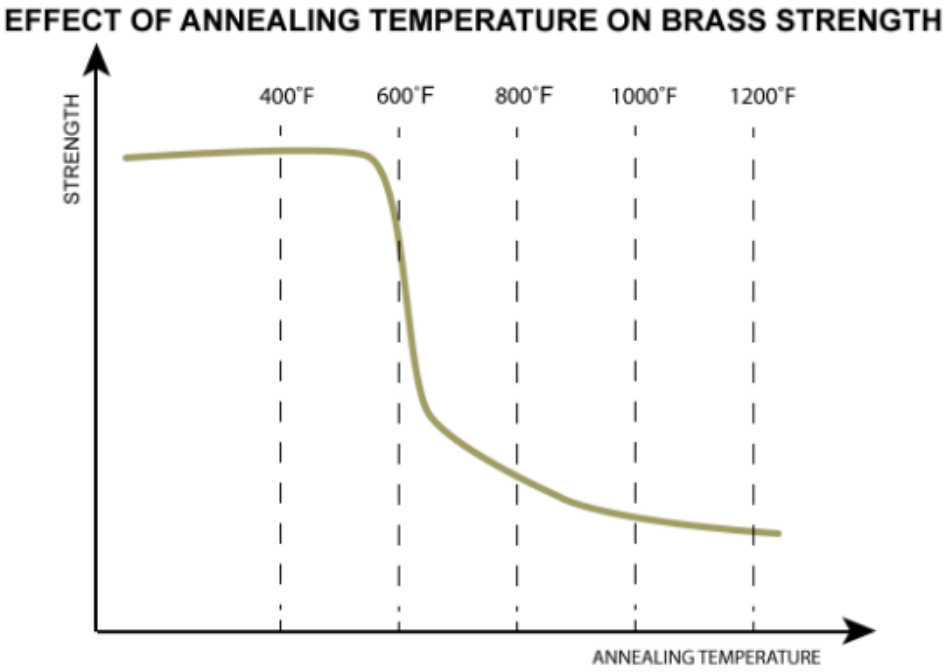
## ANNEALING PROCESS

The brass annealing increases the metal's ductility — a technical term for "stretchability" or "softness".

If heat is applied to a work hardened area of brass, the energy of that heat will cause the grain size of the metal to grow. As this happens, the material loses strength (it gets softer) and regains it's tolerance for stretching without breaking. It's a fully reversible process

When brass is bent, hammered, or shaped (plastic deformations), it becomes harder and more brittle. This is what it happens to a cartridge case when the neck is formed. The annealing process restores the ductility of the case by reducing internal stresses in the brass, making it easier to stretch under pressure rather than crack.

The annealing process depends on the material, the temperature applied, and the time that temperature has to act on the metal. For cartridge brass, the transformation is rapid, robust, and occurs at approximately 650-700 degrees Fahrenheit. If you apply a higher temperature, the brass will get even softer, but not dramatically so.




The above chart uses data for a 1 hour annealing time.
Temperatures required to anneal more quickly will be slightly higher (716-752° F).

To find the temperature of the shell after annealing operation , use the TEMPILAQ Indicating Coating.
For example add the Tempilaq in the shell as show below:

1) To have 380-400° C (716 -752° F) in the neck
2) To check the temperature in all the length
3) To check the temperature below the neck

How do you tell how hot the brass is? You can use a temperature indicator like Tempilaq. Tempilaq is a special sort of "paint" that is designed to melt at a very specific temperature. Get some and use it. Use some 450° F Tempilaq on the case body to make sure it does not overheat, and use some 700° F Tempilaq on the neck to make sure it reaches the required temperature.

**Operating:**

**Tempilaq 399 °C -754 F°**

**To check:**

**Tempilaq 253 °C-488 F°**

**To check:**

**Tempilaq 218 °C -425 F°**

After induction operation:

1

**Tempilaq 399 °C -754 F°**

**Tempilaq 253 °C-488 F°**

**Tempilaq 218 °C -425 F°**

## GENERAL WARNINGS:

***BEFORE USE READ INSTRUCTIONS AND KEEP THEM WITH CARE;***

***KEEP AWAY CHILDREN AND PACE MAKER BEARERS;***

***DO NOT USE THE MACHINE IN PUBLIC AREAS AND IN DOMESTIC ENVIRONMENTS***

***DO NOT USE THE MACHINE FOR ANY DIFFERENT USE;-DANGER ! DURING OPERATION DO NOT INSERT IN INDUCTION AREA HOLE METAL OBJECTS AND FINGERS WITH METAL RINGS.***

***TO USE THE MACHINE, WEAR SAFETY PROTECTIONS EXPECIALLY FOR EYES, HANDS AND HEAD.***

***MACHINE EQUIPPED WITH ELECTRIC COMPONENTS , DO NOT REMOVE PROTECTIONS AND COVERS! RISK OF DAMAGES DUE TO THE LARGE FORCE OF MAGNETIC FIELD AND THE POWER OF ELECTRICITY !***

***AVOID THAT LIQUIDS CAN GET INSIDE THE MACHINE.***

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***WITHOUT WRITTEN PERMISSION IT IS NOT ALLOWED TO REPRODUCE THE MACHINE AND DO MODIFICATIONS ,TO MAKE PARTS OF IT OR SPARE PARTS AND TO DO MAINTENANCE OR REPAIR***