EZ-ANNEAL ™

Introduction:

Thank you for purchasing EZ-ANNEAL. Precision annealing of brass rifle cartridges using induction has never been so easy. Simply adjust the cartridge height, select the proper anneal time, and you are ready to start feeding your favorite brass right away...

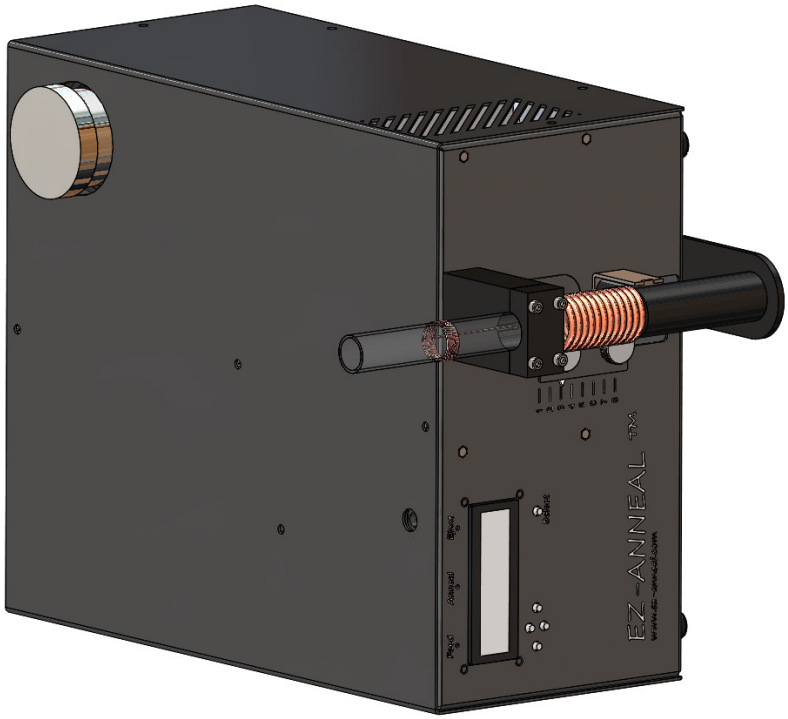
Warning:

NEVER attempt to anneal Loaded or Primed Cartridges ! All brass cartridges should be unloaded, cleaned and de-primed before you attempt to anneal them. ***Never run the annealer with the cover removed, Dangerous Voltages are present inside...*** Additionally, operation with the cover removed will cause overheating of the induction circuitry. While the induction coil itself is fluid cooled, transistors and capacitors are forced air cooled and require the cover to be in place in order to duct the air from the radiator out through the induction circuit.

Unpacking:

After unpacking and before turning the unit on:

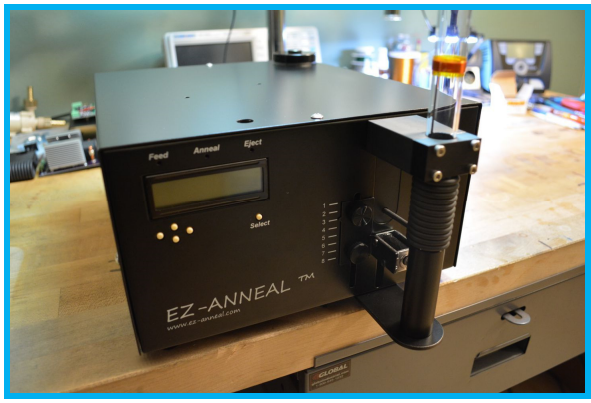
To ensure that air bubbles have not entered the coolant pump intake housing during shipping, rotate the unit onto its side as shown below. Let the unit rest in this position for a couple of minutes so that any air bubbles that may have entered the pump assembly may return to the reservoir.



Getting Started:

1. Place the unit on a flat work surface in a well ventilated area away from flammable materials. Position the front edge of the annealer even with the front of the work surface, with the drop tube protruding over the front edge.
2. Place a catch tray (preferably metal) under the front of the work surface so that it will catch the brass as it is ejected. We prefer a wooden bench with a metal drawer. Plastic trays should only be used if you intend to drop the annealed brass into water.

3. Next set the proper height for the cartridge you are annealing. **See Appendix B, "Cartridge Height Setting" on page 11.** Loosen the two thumb screws that lock the solenoid slider in place, and set the "Pointer" on the left side of the slider so that is corresponds with the correct number as outlined in Appendix B. As a general rule, all rifle brass should be positioned so that the case "shoulder" is positioned at the mid-point of the induction coil. (See images in Appendix B) Once the solenoid slider is correctly positioned and the thumb screws are finger tight, sight down through the Pyrex drop tube from above and ensure that the solenoid plunger is centered. If required, gently rotate the lower Delrin Cylinder back and forth so the plunger is centered. This prevents binding.



4. Plug the unit in and switch on the power. The display will indicate a welcome message followed by the processor firmware version. After the firmware version is displayed, the system will activate the solenoid ejector in order to clear any unwanted cartridges from the drop tube.

5. Next the system will prompt you to press the Select Button. The Select button is located at the right side of the LCD Display. Button presses should be quick and deliberate. **Avoid holding the select button in, or you may jump through the next menu inadvertently.** A simple tap is all that's required.

6. After pressing Select, you will enter the “Set Anneal Time” Menu. Using the four buttons on the left hand side of the LCD display, set the required anneal time in milliseconds (ms). Use the Right / Left buttons to choose the decimal you wish to adjust, and the Up / Down buttons to change the value. Once you have set the value to the required anneal time (in milliseconds), press the Select button again to exit the screen. If you made a change to the anneal time, the new value will be written to eeprom. The next time you switch the unit on, it will recall your last anneal time setting from memory. NOTE: Starting Anneal Times can be found in Appendix A:

7. After exiting the Set Anneal Time menu, you will be prompted to choose Manual or Automatic operation. With 1.4.69 and later firmware, the default selection will be Manual Mode, indicated by a blinking cursor at top right, next to MANUAL. Use the Up / Down buttons to choose which operating mode you want, then press the Select button to exit the screen. If you chose manual mode, the system will look like the following image... Note the “M” to the right of the EZ-ANNEAL logo. This indicates Manual Mode. If you had selected AUTO then the display would show “A” in this area and it would be trying to feed cases via the case feeder. At the top right of the display the Cartridge Count is displayed. The maximum cartridge count is 9999 due to space limitations on the display. (If you anneal more than 10,000 in a single session we really want to hear about it ☺) At the bottom left the anneal time is displayed in ms. In Manual Mode the READY indication informs the user that the system is ready for a case drop. In the Auto Mode the LCD will indicate FEED at the lower right and the feeder will be energized.

Manual Mode: Auto Mode:

Manual Mode Details:

Manual Mode requires that the operator drop each case by hand. The “READY” indication in the lower right hand side of the screen tells the operator that the machine is ready for a case drop. The set anneal time will be displayed at the lower left of the display. Ensure that this number is set correctly before dropping a case, or be prepared to manually eject the case and stop the annealing process using the procedure described below...

Using Manual Mode to determine a Starting Anneal Time...

Firmware Version 1.4.69 and later allows the user to abort the annealing process and eject the brass during the anneal cycle in Manual Mode. The purpose of this is to visualize and time the annealing cycle when dealing with unknown brass that you have not already determined a correct anneal time setting for. Using this method, the exact time the annealer was active prior to the abort is shown on the LCD display for the user’s reference.

To use this process, first follow steps 1 through 7 above. Set the anneal time to something really long (which would normally melt or destroy your brass), like 8000ms or eight seconds.

Exit the anneal time menu and select the Manual Mode.

Do this indoors in a dark room. Turn off all lights so the room is very dim.

Be ready to Abort the Anneal Cycle, using the "Select Button" at the right side of the LCD.

Drop your brass with the base down and the neck up, and watch from the top of the Pyrex tube. When the neck of the brass starts to turn a dull orange color (while viewed in the dark), press the Select Button.

The anneal process will be aborted and your brass ejected. The exact anneal time your brass was subjected to will be displayed on the LCD. Write down the time shown on the display.

The machine is ready for another drop, even though the display continues to show the last anneal time. (Note that using select to abort the anneal process will not increment the case count)

Drop another case and repeat the process. Remember you Must press the select button to stop the anneal process, otherwise it will continue for the full set anneal time and bad things will happen to both your brass and possibly the machine.

Write down the displayed time for each event and continue until you have enough data to calculate a good starting average. (around 10 cases)

Now simply press select while in the idle mode and the system will return to the setup menu. Enter your new averaged anneal time in milliseconds, and again move into the manual mode.

Drop your brass and allow the machine to run the full cycle and eject it for you in the normal manner. Brass that runs full duration of the set anneal time will be logged in the case count.

You can now fine tune the process using Tempilaq and gradually increase or decrease the anneal time until optimized. Once you are satisfied with the time setting for a certain brass, be sure to record the data in a log for future use.

Auto Mode Details:

If Auto Mode is selected, the system assumes you already have the correct anneal time set, and have the feeder installed and plugged in. The feeder will start immediately upon entering the Auto Mode...

Pressing the Select Button during the Feed-Cycle will result in a Pause of the feeder/hopper. Press Select again to Un-Pause and continue feeding.

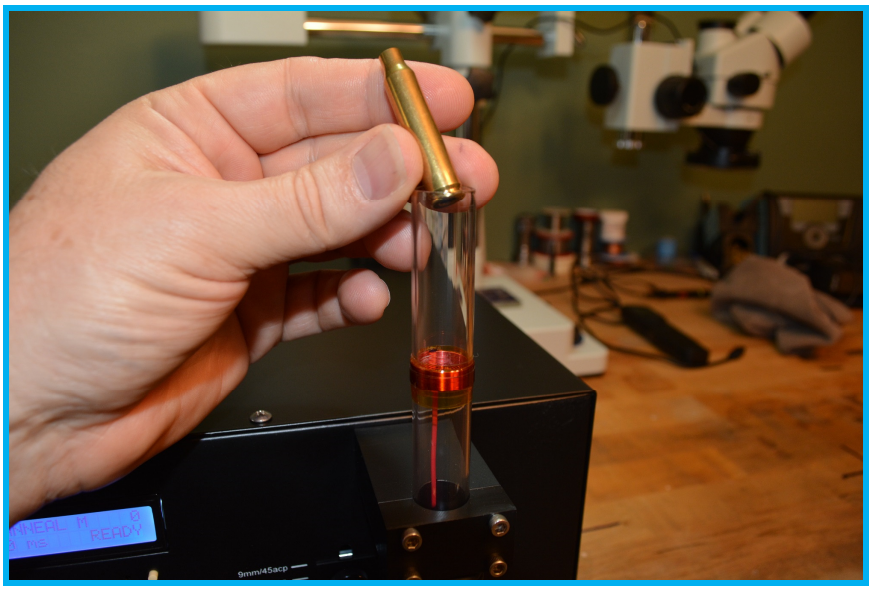
Pressing the Select Button during the Anneal Process will result in a system Abort.

Pressing Select during the actual Anneal Cycle will instantly Stop Annealing, Eject the Brass, and take you back to the Setup Menu after briefly displaying an ABORT Message.

If you Abort the operation at any time during Auto Mode, take care to watch for the ejected brass and separate it from the rest since it will have been ejected early.

If a case drop does not occur in 15 seconds, a “FEEDER TIMEOUT” message will be displayed and the feeder will be stopped. Simply press Select to restart the feeder again. Each time a case drop is detected, the 15 second timeout period is reset. 15 seconds is usually enough time for a case to drop, even if all slots are initially empty. If the feeder wheel gets jammed and the motor stalls, the system will detect this overcurrent condition and turn off power to the feeder. A “FEEDER JAM” message will be displayed. Simply clear the jam and press Select to continue.

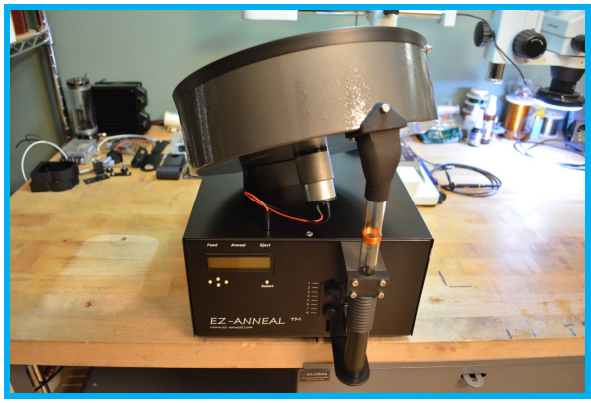
8. Drop the cartridges as shown below, with the base down and the neck up. The cartridge will be detected as it drops through the upper detection coil and you will see a momentary “DETECT” on the LCD screen before it starts annealing. 150ms after a case drop detection, the induction unit will be switched on for the set anneal time, and then switched off when complete. After the brass is annealed, the solenoid will eject the brass into your catch pan.

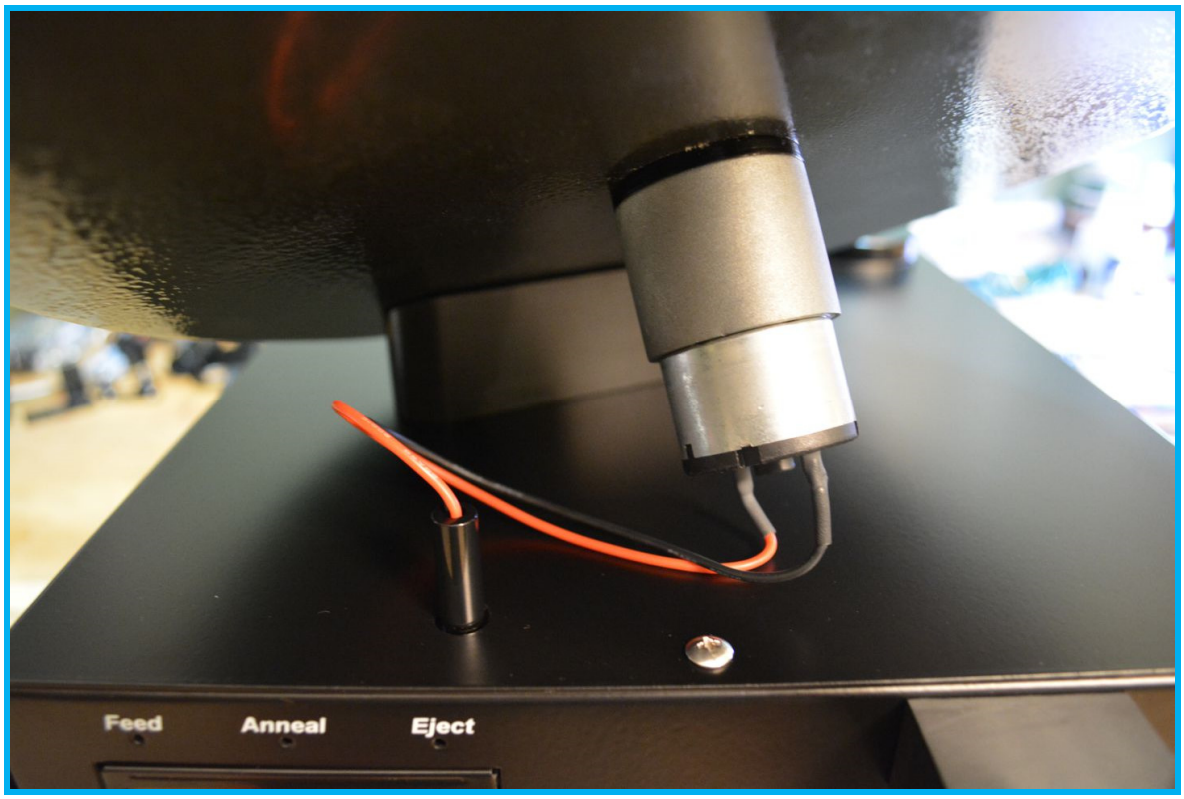


9. Inspect the brass as you start with small batches. To adjust the anneal time while in the Manual Mode, simply press the Select Button. You will be taken to the following screen where you may choose “Adjust Time” or “Reset Program”. Use the Up / Down buttons to make a selection and then press Select. If you choose “Adjust Time” you can make changes to the anneal time and exit in Manual or Auto mode while maintaining your case drop count. If you choose “Reset Program” you will go through the same process but your case count will be zeroed out...

Mounting the Case Feeder:

Mount the case feeder by simply sliding its Delrin upper drop tube down over the Pyrex drop tube and allowing the feeder base to rest on top of the machine cover. On the bottom of the feeder base, there are two small protrusions that align with holes in the machine cover. Ensure that these lock into place so the unit cannot move from side to side. Lastly, plug the feeder into its receptacle just behind the LCD.





Proper Annealing:

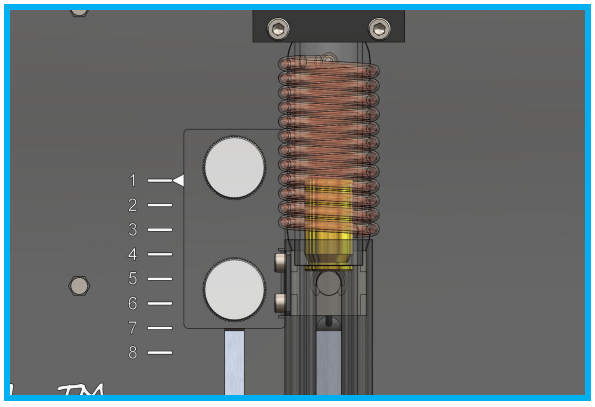
1. Always sort your brass by headstamp. Anneal times vary from manufacturer to manufacturer due to differences in wall thickness and brass alloy. Work up anneal times in the manual mode using samples of your different brass headstamps. Keep these in a log for future use. See the recommended starting times for select headstamps in Appendix A below...
2. Don't over-anneal. We recommend that you acquire a bottle of 750° Tempilaq and use it on the case neck to achieve the desired temperature. In the event you do not have Tempilaq available, the following method will get you in the ballpark. Turn the lights down very dim so it is almost dark in the room. Drop a case and view from above while it anneals so that you can see the top of the case mouth. Adjust the anneal time so that as the operation completes you just start to see a faint orange glow appear on the case mouth before the case is ejected. Note that this must be done in a dark room. Brass begins to show an orange glow in darkness at around 750°. If you anneal until the brass appears orange under normal lighting conditions, then you are over-annealing your brass. Use Tempilaq to finalize your adjustments. A representation of properly annealed brass is shown below.

Appendix A: Starting Anneal Times

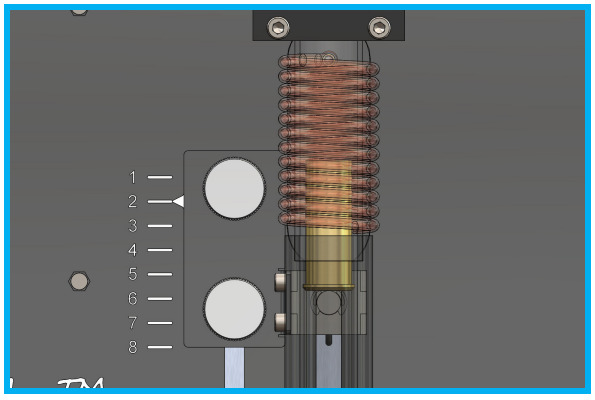
.223 / 5.56 Nato	
LC Brass	3000ms
RP Brass	3200ms
PMC Brass	3200ms
FC Brass	3400ms
S&B Brass	5000ms
.308 / 7.62 Nato	
Winchester Brass	3000ms
FC Brass	4300ms
.45 ACP	2200ms

Appendix B: Cartridge Height Setting

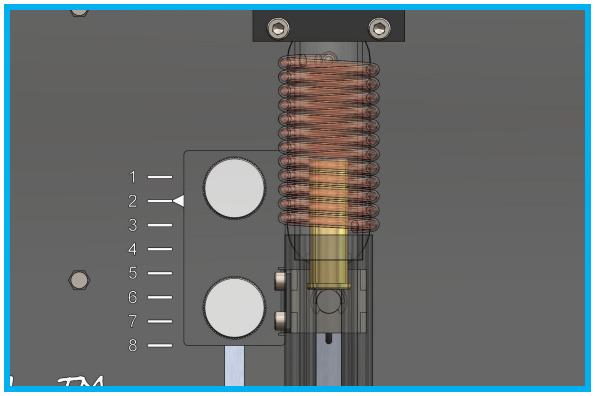
Cartridge:	Height Setting:
45 ACP	1
44 Mag	2
357 Mag	2
38 SP	2
223 / 5.56x45	2.5
308 / 7.62x51	3
30/06	4.5
300 WM	4.5



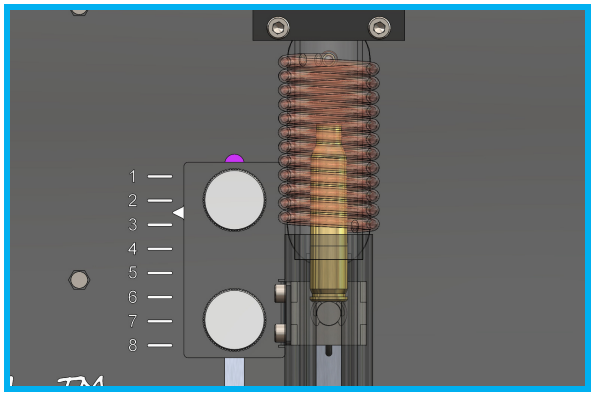
45 ACP Setting



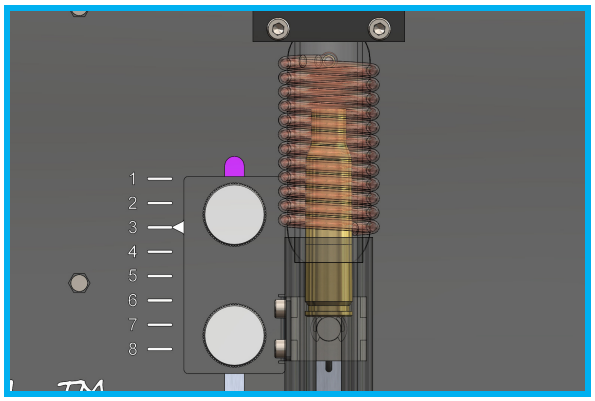
44 Magnum Setting



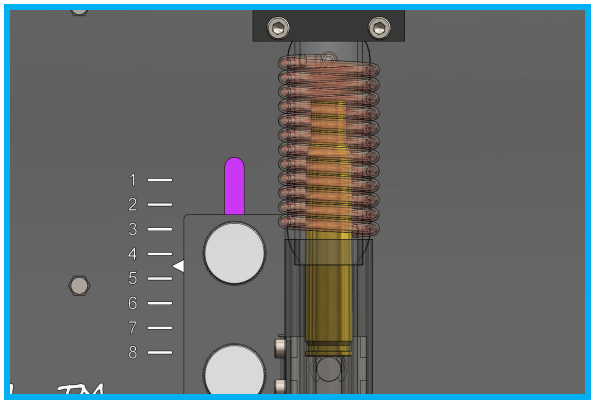
357 Magnum / 38 Special Setting



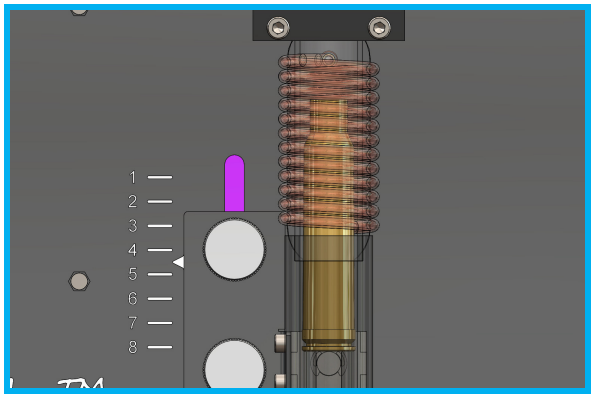
223 / 5.56x45 Setting



308 / 7.62x51 Setting



30-06 Springfield / 270 Winchester Setting



300 Winchester Magnum Setting