

Giraud Cartridge Case Annealer

Patent Pending



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WARNING

Not for use with loaded ammunition or primed cartridge cases.

Do not leave this machine running unattended with an open flame.

Unpacking and Setting Up

When the package containing your new annealing machine arrives, please open and inspect the contents to make sure everything is there and nothing has been damaged. **If there is damage to the contents, please contact Giraud Tool Company, Inc. at your earliest convenience to determine the extent of damage and suitable remedy.** Each machine should be packed with the base unit assembled, minus the torch assembly and feeder chute. The torch assembly should be complete and wrapped up and tucked inside the base unit. It consists of the actual propane torch head, mounting bracket assembly, 19" long LPG rated hose, and 1 pound disposable propane bottle valve assembly. The feeder chute is comprised of three individual parts, the trapezoidal shaped flat back sheet, and the two formed angle guide rails with hardware.

To install the torch assembly to the base unit, remove the on ¼" hex head bolt with a 7/16" wrench, from the lower portion of the base unit face. Then position the torch support bracket over the hole the hex bolt was removed from and reinstall the hex head bolt with the torch pointing at the junction of the sliding trolley and the positioning rails. Fine adjustment of the torch can be made when cartridge cases are present. Next, screw a 1 pound disposable propane bottle to the valve assembly on the opposite end of the rubber hose and make sure there is no hissing, smell or other signs of leakage when tightened. If so, please remove the bottle from the valve assembly, clean all threads and mating surfaces and try to reinstall the bottle again. If it still leaks, make sure the knurled knob on the valve is fully closed. If this does not correct the problem, please remove the propane bottle from the torch and contact us for additional help. **DO NOT LEAVE A LEAKING PROPANE BOTTLE ATTACHED TO THE MACHINE FOR ANY REASON.**

To secure the propane bottle to the base unit, use the U-shaped sheet metal strap. Pass the T-shaped end of the strap through the T-shaped cutout in the left side panel closest to the face plate. The position the propane bottle inside the U-shaped strap and carefully squeeze the other end of the strap through the second T-shaped cutout, compressing the foam on the inside surface of the left side panel and U-shaped strap. When the second T-shaped end of the strap can be pushed through the T-shaped cutout closest to the rear of the machine, release pressure on the strap and let the foam cushion hold the bottle in place.

To install the feeder chute, remove the two button head screws from each formed angle guide rail and position the angles with the trapezoidal flat back plate and reinstall the screws loosely. The trapezoidal back plate is packed on the outside of the cardboard insert for the base unit. Remove the top four screws shown from the face plate of the base unit and position the feeder chute guide rail lower "legs" over the holes in the face plate and reinstall the screws. Align the feeder chute assembly to be even over the base unit

and not twisted or overlapping the face plate edge. Tighten the eight screws to secure the feeder chute assembly to the base unit.

Taking a Test Drive

At this point the unit can be plugged into a standard 120V AC wall outlet and check for function of the feeder mechanism. Make sure the power switch is positioned OFF before plugging into the wall outlet. Turn the power switch ON and position the variable speed control knob at the middle of the range. The unit may not begin to move immediately when the switch is turned ON, it may take a couple seconds to power up the speed controller. When the unit does start moving, you should see the colored feeder wheel begin to spin clockwise and the trolley plate should begin to move to the left, up an inclined plane. When the trolley plate has fully cleared the slots in the lower vertical guide rails, it will automatically fall back to the right, stopping in the far right position for a moment, then begin to travel again back to the left to repeat the process.

If the trolley plate does not return to the far right position smoothly and fully, look for any points where the trolley plate may be dragging. If the plate is dragging on any point of the slots in the lower vertical guide rails, carefully bend the trolley plate and supporting C-shape until there is no more contact or interference. These parts are thin gage aluminum and can easily be bent by hand the small distance needed in the event of any interference. The heat from the torch can cause the C-shaped spacer to change dimensions during initial operation by stress relieving it. If the trolley is touching the slot in the face plate, loosen the three screws holding the trolley assembly to the face plate and reposition without interference.

The trolley should not need additional lubrication if stored and used in clean dry environments. If the need for lubrication is warranted, use dry powdered graphite to lubricate the sliding surfaces of the trolley assembly. **Do not use spray or liquid lubricants** that will attract dust, dirt, or other debris and dry out, leaving contaminants inside the trolley assembly, or pose a potential danger around the open flame of the torch assembly. Powdered graphite can be found in handy squeeze tubes at most hardware stores and home centers as a lubricant for key locks.

At this point the user may wish to experiment with the speed control knob on the right side panel near the power switch. Twisting the knob counter clockwise will slow down the speed of the feeder wheel rotation and trolley, twisting the knob clockwise will speed up the travel. Typical annealing operations will require the cartridge cases to be positioned in the torch flame for between 6 and 9 seconds. Detailed time recommendations will be provided further in the instructions. The machine should be configured with the feeder wheels and trolley plate for your cartridge case size choice as it comes out of the box.

These feeder wheels and trolley plates are removable and available in different sizes to match most cartridge case sizes from .17 Remington thru .50BMG. A table showing specific combinations and color codes for the parts is shown later in the manual.

Take ten or twenty alike empty cartridge cases of the desired size and place them on top of the feeder wheel between the feeder chute guide rails, positioned with the case rim closest to the back plate. Turn the machine ON and observe the operation of the mechanism without the torch flame. Each case should eventually fall into a slot on the feeder wheel and travel around to fall out from the feeder wheel and land on the trolley flat plate. As the trolley flat plate moves to the left, the cartridge case, held in place by the two vertical guide rails, spins in relationship to the movement of the trolley flat plate. This spinning is what gives an even anneal to each cartridge case with a single torch. When the trolley flat plate has moved to the far left end of its travel, the cartridge case will fall through the vertical guide rails and out of the machine. At this point the user can decide what type of container will be used to hold the finished cartridge cases.

The easiest way to catch the completed cases is to position the machine near the edge of a table or bench top, so that the cartridge cases can fall out of the machine and into a box, pan, or bucket positioned under the machine. Since there are so many different theories and opinions about annealing, we make no claim or judgment about the necessity of water quenching or air quenching the finished cartridge cases. The user should decide from themselves how to catch and cool the cases in a manner consistent with their preference.

Setting the Torch

Now that the machine is fully assembled, positioned for use, and operating properly mechanically, we can address the lighting, setting and position of the torch. With the unit turned OFF, place a single cartridge case on the trolley flat plate with the rim against the face plate. This is the position the cartridge case gets presented to the flame for annealing. Now, standing on the right side of the machine, look over the case neck of the cartridge case towards the tip of the propane torch. Make whatever necessary position adjustments are needed to place the case neck along the center axis of the torch, so that the flame from the torch will be pointed directly at the full case neck of the cartridge case on the trolley. Make sure the yellow colored torch holder is positioned as close to the face plate of the machine as possible, without interfering with the travel of the trolley assembly. This will keep the torch pointed parallel to the face plate of the machine or pointed slightly away from the face plate as much as possible. Some shorter cases will need the torch pointed back towards the face plate, but no more than 5 or 10 degrees. Do not point the torch directly at the machine or damage will result.

Using IR thermometers and temperature sensitive paints, we have determined the following torch parameters suitable for annealing cartridge cases. Individual users may alter these recommendations to suit their personal preferences. **NEVER LEAVE THIS MACHINE RUNNING UNATTENDED WITH THE FLAME ON. DO NOT USE THIS MACHINE WITH LOADED AMMUNITION OR PRIMED CARTRIDGE CASES.**

For .223 thru .30-06 sized cases, the propane torch should be set so that the inner blue flame is approximately $\frac{1}{2}$ " long. When set at this dimension, the propane bottle valve will barely be open. The tip of the inner blue flame should be approximately $\frac{1}{4}$ " from the case neck, this equates to the outer edge of the torch nozzle being approximately $\frac{3}{4}$ " from the cartridge case. For .223 sized cases, 6-1/2 seconds duration in the flame will heat the case neck enough to anneal the cartridge case and change the state of 750°F Tempilaq temperature sensitive paint applied to the inside of the case neck without changing state of 425°F Tempilaq temperature sensitive paint applied halfway down the body of the case. This signifies the proper temperature has been reached to anneal the cartridge case neck without raising the temperature of the case body enough to cause damaged to the case head. For .308/.30-06 sized cases, the dwell time in the torch flame should be increased to 8 seconds, due to the larger mass of material.

For .50BMG sized cases, the propane torch should be set so that the inner blue flame is approximately 1" long. The tip of the inner blue flame should be approximately touching the case neck, this equates to the outer edge of the torch nozzle being approximately 1" from the cartridge case. For .50BMG sized cases, 8 seconds duration in the flame will heat the case neck enough to anneal the cartridge case and change the state of 750°F Tempilaq temperature sensitive paint applied to the inside of the case neck without changing state of 425°F Tempilaq temperature sensitive paint applied halfway down the body of the case. This signifies the proper temperature has been reached to anneal the cartridge case neck without raising the temperature of the case body enough to cause damaged to the case head.

Individual users may alter these parameters as they wish, but these setting have been proven to successfully anneal cartridge cases using this machine. The user is cautioned to carefully check any alterations to these values by using Tempilaq paints, IR thermometers, or other suitable measurements before reloading the cases.

We assume no liability for damages incurred due to improper reloading of metallic cartridge cases, cartridge cases damaged from improper annealing practices, or damage incurred due to the use of improperly annealed cartridge cases. This machine is merely a tool to anneal cartridge cases, proper operation and use of the machine is the sole responsibility of the user.

Converting the Machine to a Different Cartridge Size

The relief notches in the feeder wheel disc changes in size according to the size of the cartridge case to be processed. If the feeder wheel disc notch is too large in relation to the cartridge case body, it may cause the feeder mechanism to jam and damage the cartridge case and or machine. There are 5 different size feeder wheel discs and three different trolley flat plates available at this time. They are intended to be used as follows:

Cartridge Case	Feeder Wheel Disc	Trolley Flat Plate Width
.223	Red	Narrow
.308/.30-06	Blue	Narrow
.300WM	Black	Medium
WSM, RUM, RSAUM	Purple	Medium
Lapua and Norma Mags	Purple	Medium
.50 BMG	Green	Wide

To change the feeder wheel discs, remove the single screw on the end of the rotating shaft with a 9/64" allen wrench and slide the yellow spacers off the square shaft, then remove the discs. To install the new disc, place one spacer on the square shaft first, the first disc of the appropriate size, three to five spacer discs, the second disc, and the remaining spacers, and finally the single screw and washer on the end of the shaft. Take care with the red (.223) and green (.50BMG) discs to orient them alike and in the proper rotation. All other discs are dimensionally symmetric.

The number of spacers between the discs can vary according to the length of the case being processed. The longer the case, the more spacers are required between the discs. The intent of the spacers is to place the feeder wheel discs far enough apart that the cartridge case falls out of the feeder wheel mechanism and falls to the trolley as close to horizontal as possible. If the cases fall pointing too far up or too far down, they may bounce off the trolley and cause some cases to fall into the catch basket without being properly annealed. For most .223 thru .30-06 sized cases, 3 spacers between the feeder wheel discs are used. For longer cases, like the Remington Ultra Magnums or Lapua Magnums, 4 spacers may be needed. For .50BMG sized cases, 5 spacers are used between the discs and one additional spacer is added to the shaft closest to the face plate for a total of two spacers between the face plate and the first feeder wheel disc. The user may experiment and find the combination of spacers that fits his needs best for specific cartridge cases not mentioned here, the key result is that cartridge cases falling out of the feeder wheel mechanism should fall straight down to the trolley without tipping up or down.

To change the trolley flat plate, remove the two screws holding the plate to the C-shaped riser and replace the plate with the next appropriate size. Take care that the new plate is not touching the vertical guide rails and slowing down the return movement. If it does touch, loosen the two screws and reposition the plate and check movement again. If necessary, force can be used to twist the plate assembly away from the face plate or alter the height of the flat plate in relationship to the guide rail slots.

The vertical guide rail left side can be moved in or out as the diameter of the case body changes. To move, loosen the two screws holding the left rail and reposition as needed, then tighten the screws. The left hand guide rail should be positioned so that it is approximately 1/16" away from the body of the case when a case is resting on the trolley flat plate. This will keep the case in position relative to the flame while the trolley plate moves under the case.



For any additional parts or questions, please contact us at your convenience using the details below.

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