



**investarm s.r.l.**

## **Rifle Kit Instruction Manual**

### **Recommended Tools and Supplies:**

We recommend having these products on hand to begin building your kit. These items will make for a significantly easier assembly process and improve the overall fit and finish of your kit.

1. Wood Files (various sizes and shapes)
2. Wood Carving tools such as chisels or Dremel tools
3. Vise
4. Cordless Drill
5. Sandpaper (150, 180, & 220)
6. Emery Cloth
7. Fine Grade Steel Wool
8. Barrel Finishing Kit (Birchwood Casey)
9. Wood Putty
10. Stock Finishing Kit such as a stain and polyurethane
11. Safety Goggles
12. Latex Gloves

### **Step 1:**

After removing the rifle kit from the packaging, take inventory and ensure that all of the parts are included. The easiest way to do this is to check off each item and quantity then place them into a closable container. If any of the parts are missing, please contact investarm customer service to reorder the missing part.

## **Step2:**

Once all of the parts are accounted for, you can begin the dry fitting process. This process is crucial will greatly improve the overall fit and finish of your kit.

## **General Assembly Instructions:**

1. **Fitting:** All metal parts should be placed into their respective cut-outs in the stock and should fit snugly. Remove wood sparingly and only as needed with your wood carving tools. Take this part very slowly as it is better to remove too little wood than to take off too much. You can always take a little bit more off, but you can't add wood to your kit.
2. **Wood Screws:** to facilitate assembly and to avoid cracking the stock, mark and drill small pilot holes into the wood before inserting Wood Screws.
3. **Metal Screws:** turn Screws into and out of their threaded holes several times to burnish the threads and ensure a smooth fit.

## **Dry Fitting**

### **Sear Engagement:**

Before inserting the lock assembly into its cut-out slot, verify that the lock is in proper working order and that the sear engages correctly. Visually inspect the back of the lock plate and ensure that the sear does not have any burrs or defects that will prevent it from functioning properly. Using your thumb, pull the hammer back to half-cock position. Watch the sear to make sure that it falls correctly into the notch. After the sear is found to be properly seated, place the hammer in full cock position and check to make sure that it engages into the 2nd position on the sear. Repeat several times to make sure the lock assembly and sear engagement are in proper working order. Once completed, proceed to the next step.

## **Lock Assembly:**

1. Start with the lock assembly. Press firmly into the pre-cut section of the stock. Place the back end first, followed by the front of the lock assembly. The whole assembly should have a snug fit, but not so tight that it must be forced in. If significant force is required, note the areas where wood removal is needed. In the event that the lock is loose, you will need to add spacers in the gaps to ensure a proper fit. Wood putty can be used to fill in the holes, but not to hold the lock assembly in place.
2. Position the Ramrod Retaining Spring into the Stock so that the end of the spring which has the loop-hole is positioned towards the muzzle & the curve is downwards towards the ramrod channel.
3. Once the lock assembly is in place, visually verify that the screw holes line up. If holes are not perfectly aligned, enlarge one or both stock holes with a round file or drill to permit alignment. Screws should be snug against the barrel.
4. Install the front lock plate screw & washer through the hole in the stock, passing it through the loophole in the ramrod retaining spring and into the corresponding hole in the lock plate.
5. Install the second lock plate screw & washer.

Note: You can use a pencil to mark all of the areas where additional fitting is required. Once all excess wood is removed and the holes are aligned, proceed to the next step.

## **Barrel Assembly & Trigger Assembly Installation:**

1. Test that the tang screw turns smoothly within its corresponding threaded hole in the trigger plate by turning it in and out several times to burnish the threads.
2. Test that the trigger moves freely within the trigger guard. If not, move it back & forth a few times to free up any binding. Pushing the trigger sideways in its housing will also help loosen its movement.
3. Place the Trigger assembly into its cut-out slot. Here again, you want a snug fit but not so tight that significant force is required to put it into place.
  - a. If forcing occurs note the areas that need to be where the wood needs to be filed or removed.

- b. Ensure that the top bar of the trigger does not touch any wood.
  - c. If too loose, note areas where wood putty is needed.
  - d. After inspecting the trigger assembly fit, make sure that it is properly aligned with the barrel tang hole. If the holes are not perfectly aligned, enlarge the hole on the trigger assembly slightly with a round file or drill bit.
  - e. Once all the excess areas have been removed and the holes are aligned, proceed to the next point
4. Test that the wedge transverses from the right side of the stock and exits the cut out on the left side then remove the wedge.
  5. Install the ramrod thimble/rib sling swivel assembly to the underside of the barrel with the two thimbles/barrel rib screws.

**Set the stock and components off to the side. We are going to move onto the barrel at this time. For the next step you will need the barrel assembly, barrel tenon, and nipple.**

6. First, we insert the breech plug into the barrel. The breech plug should fit quite snugly and should align with the barrel on all sides. Ensure that the breech hook is angled upward.
7. Next, we want to attach the barrel tenon to the barrel assembly. This is done by inserting the tenon into its slot on the barrel. Using a rubber mallet or small hammer, gently tap in place until tenon is evenly centered on the barrel.
8. Once this is complete take the nipple and thread into the bolster also known as a clean out screw. Finger tighten. At this time you can also screw the bolster screw into its designated spot. Using a straight slot screwdriver, tighten till snug. Or, if you have a flintlock, insert the touch-hole-liner and tighten with a screwdriver until snug. In either case, coat the threads with nipple grease for easy removal.
9. Once all of these parts are installed we want to fit the barrel into the stock. To properly fit the barrel to the stock, place the barrel into the barrel tang and gently set it into stock. Make sure that the barrel is all the way back into the tang slot. You need to visually inspect to make sure that the bolster lines up with the hammer (or touch-hole-liner with the pan) and that when the hammer falls it hits the cap squarely. You must also pay close attention that there is a very slight gap between the bolster and the locking plate.

10. Take the barrel tang and insert it into its cut-out area. This part should go into place rather easily. Visually inspect to make sure that the holes are correctly aligned.
  - a. File the tang or breech hook surfaces sparingly and only if needed to obtain a smooth, flush, and snug fit.
  - b. These parts should require a moderate amount of force to join them together.
  - c. If holes are not perfectly aligned, enlarge them slightly with a round file or drill bit to permit alignment.

Since this hole attaches the tang to the trigger assembly, we will install that next. Once all the problem areas have been removed and holes aligned, proceed to the next step.

11. Next, you want to make sure that the barrel tenon lines up correctly through its hole. To do this, insert the barrel wedge from right to left and gently tap into place. **Note:** the barrel tenon should fit snugly. If the fit is too tight, sparingly file the dovetail portion of the tenon with a triangular file to reduce it slightly. If the tenon is too loose, using a hammer and a punch, indent the surface at the base of the dovetail with the punch so as to raise the edges around the punch indentations. An additional method of tightening is to install the tenon and tap the angular edges of the dovetail with a hammer and punch so as to capture the tenon.
  - a. If the tenon is blocking part of the wedge hole, you will need to either spread the tenon or use a mettle file to take away excess metal to allow a proper fit.
  - b. To tighten the fit you can place the wedge in a vice and bend by gently tapping with a hammer in the direction it needs to go.
  - c. To loosen fit, flatten the wedge.
  - d. To help ease this process, screw the stock plate into place on the left side of the stock. This will help to ensure proper alignment.
  - e. Once you are sure of the alignment, you can pull the wedge back out, slide the right side plate onto the wedge, and reinsert it into the hole.

**Note:** It will be necessary to remove the tenon in order to completely coat the dovetail and tenon surfaces with bluing or browning solutions. The final fitting will happen after coloring.

12. Set the hammer in the half-cock position. The barrel bolster should be positioned concentrically into its cut-out in the lock plate and the lock plate should be snug against the barrel.
13. Insert the tang screw through the hole in the corresponding tang and pass it through the stock and into its corresponding hole in the trigger assembly.
14. At this point, the hammer should be positioned so that it will fall squarely onto the nipple. If it does not, one or more of the following steps may be taken.
  - a. Remove wood from the bottom of the lock recess, until the lock is flush with the barrel.
  - b. Remove wood as needed from under and behind the barrel channel, including the tang area.
  - c. Check that the lock plate and lock plate screws are snugly fitted into the stock and the lock is properly positioned in its cut-out.
  - d. If proper alignment is not obtained with the previous steps, the hammer may be set slightly by removing it from the lock, heating it, and bending it carefully to obtain the correct alignment.
15. Using the two rear sights screws attach the rear sight base (with the incline sloping upward towards the breech) to the corresponding screw holes on the top of the barrel.
16. Install the front sight into the dovetail but out on the top front of the barrel by tapping gently.

## **Brass to Wood Assembly:**

**\*\*Keep in mind that when attaching brass to wood you can file either the wood or the brass. Always be careful to file sparingly and check for proper fit often.**

### 17. Trigger guard

- a. Press the rear of the trigger guard into the stock. Then press the front into inlets. The front of the guard should fit snugly and some pressure is required to obtain this fit.
- b. If necessary, the stock inlet for the rear of the guard may be lengthened slightly.
- c. Insert Trigger guard screws.

### 18. Nose Cap

- a. With the barrel attached to the stock, place the nose cap on the stock. If the cap does not fit properly, remove wood sparingly and in small quantities until the nose cap fits snugly.
- b. Insert and tighten two screws.

### 19. Butt Plate

- a. Center butt plate on stock so that it either butts to or overlaps the wood. Contours of the plate and stock should match as closely as possible.
- b. Carefully attach two wood screws to hold in place.
- c. File away excess brass before sanding the stock.

### 20. Patchbox

- a. Press the patchbox into the stock and remove wood as necessary with a file or small chisel. Remember to remove wood sparingly.
- b. Insert and tighten two patchbox screws.

21. As with the barrel tenon, the final fitting of sights should be done only after bluing or browning the barrel.

Now that the gun is completely together and dry fit, you need to check for functionality. Be sure to visually inspect the entire gun and components. Some common problems that can result are listed below with the solution.

- **Hammer won't cock back completely:**
  - Remove the lock from the stock, visually inspect inletting for “dark”, “oily”, or “rub” marks. They will most likely be along the bottom of the inletting for the lock opening. If these are spotted, use a small chisel, file, or Dremel tool to remove excess wood. Make sure to take out small amounts and check the fit and function of the lock. Continue to remove wood until the lock operates properly.
- **Lockplate sits out too far**
  - If the lock sits out too far, shave small amounts away from the inletting. Continue until the lock sits properly in the inletting.
- **Lock Plate sits in too far**
  - If the lock sits in too far, use wood or plastic shims to set proper spacing. Make sure these shims don't interfere with any moving parts on the lock plate. Wood putty is not recommended to use as a shim because it can shift or compress.

Once everything fits properly and functions as it is supposed to, disassemble the rifle and place parts back into a sealable container.

## **Final Fitting**

Now that all of the parts have been dry-fitted, the next step is to prepare the stock and barrel for their final finishes. Remember, this is where diligence pays off. Proceed slowly and be critical of your work and you will be pleased with the result.

### **Stock**

1. Using progressively finer wood rasp and sandpaper, bring wood and metal surfaces flush with each other. File together to achieve a smooth transition between the surfaces. Proceed carefully, deliberately, and slowly.



2. Once all surfaces are flush, use an orbital sander and hand sanding block to continue to smooth imperfections on the stock.
3. To achieve the best stock finish we recommend 220 grit sandpaper or better
4. Remove or tape over metal parts before staining the stock
5. Once all sanding is complete, stain with your choice of stain and color. Follow directions on the can for best results.
6. Once the stain dries completely apply an even coat of polyurethane for added protection

### **Barrel**

1. Polish bare steel parts with varying grits of emery cloth, each one finer than the previous. Finish with fine steel wool.
2. Brown or blue steel parts with chemicals available in most gun shops. We recommend the bluing or browning kit available from Birchwood Casey.

### **Brass**

1. Polish Brass and bare steel parts with different grits of emery cloth, each one finer than the previous. Finish with fine-grade steel wool.

Once all blueing and staining are complete, reassemble the rifle using the same steps you did during the dry fitting process. Make sure all parts fit properly and screws are properly tightened down. Be sure to read your owner's manual before firing your rifle for the first time. This manual is designed to teach you proper techniques, loads, and safety practices.