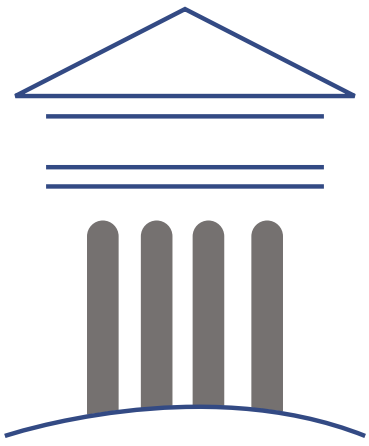
Stock Fitting and Metal Work Lab (#) Lab: 2160

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Introduction

This kit covers a variety of subjects. The equipment and tools in this kit are used by gunsmiths on almost a daily basis to perform many of the most common jobs.

Always remember that safe firearm handling is of the utmost importance. As a professional, you are responsible for making gun safety the first rule in your shop. Also, be sure that your customer knows these rules. **FIREARM SAFETY IS EVERYONE'S RESPONSIBILITY.**

Kit Contents

The tools you received are shown in Figure 1. The part numbers and descriptions appear to the left of the figure. Use this picture to identify the parts and to check the materials that you received against the parts list to make sure that your kit is complete. If any part is obviously defective or has been damaged during shipment, please return the damaged part to the Sonoran Desert Institute for replacement. Also, notify Sonoran Desert Institute if any part is missing from your kit.



***Figure 1:** Lab kit*

** Please note that from time-to-time tools for the lab lessons may be unavailable. Should this occur, we will substitute an appropriate kit that will meet the objective of this lesson. Based on market availability, the exact manufacturers of these pieces vary from time to time. We strive to provide quality tools to our students to use as they gain the knowledge of the Gunsmithing industry. Our students realize that they will be responsible for purchasing additional tools for their businesses.*

Brownells Pull and Drop Gauge

In the most basic terms, a rifle stock is an attachment, usually made of wood, which provides a comfortable means of holding the barrel, receiver, and action. If designed and installed correctly, a stock helps absorb the recoil. It also provides shooting accuracy if properly bedded. It must also conform to certain basic principles to provide strength, comfort, and ease of handling for the shooter.

When selecting a particular gunstock design, you should be familiar with these terms: *drop at heel, drop at comb, pitch,* and *length of pull.*

Drop at Heel. This is the measurement of the slope (drop) from the line of sight to the top of the buttstock (at heel) as shown in Figure 2. Some drop is necessary to bring the sight to eye level. When measuring the drop, be sure to measure from the top of the stock as shown, not the barrel channel.

Drop at Comb. This measurement is similar to drop at heel except the measurement is taken at the top of the buttstock at the comb as shown in Figure 3 on next page.

Pitch. Pitch is established by the angle at which the butt is cut and is determined by measuring the angle from the heel of the comb to the toe of the stock, as shown in Figure 4. One simple method of measuring pitch is to set the gun butt on the floor with the top of the receiver touching the wall. Pitch is the distance between the muzzle and the wall. It is expressed as inches.

Length of Pull. Trigger pull is the distance from the trigger to the butt of the stock, as shown in Figure 5. The pull on most American firearms is about 14 inches. However, a person taller than 6' will usually require a longer pull, while shorter adults and children will require a shorter pull. A gun with the proper trigger pull comes up to the shoulder easily and snugs solidly against the shoulder without hanging up on the armpit or on clothing, while the finger hooks easily around the trigger.

There are no hard and fast rules for fitting a gunstock to the shooter because each individual is different in stature and shooting style. Consequently, "proper" measurements vary for each person. In many cases, only a slight modification of one or more of the above factors will improve a shooter's ability.

The tool that simplifies most required gunstock measurements is the Brownells Pull and Drop Gauge, as shown in Figure 6. This enables you to measure the pull and drop of any gunstock accurately, easily, and quickly.

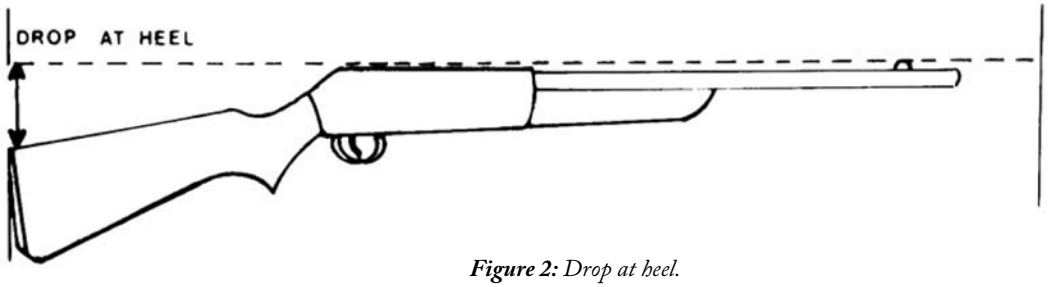


Figure 2: *Drop at heel.*

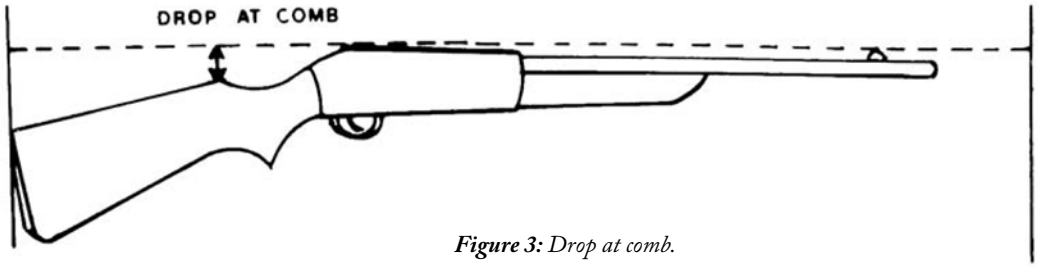


Figure 3: *Drop at comb.*

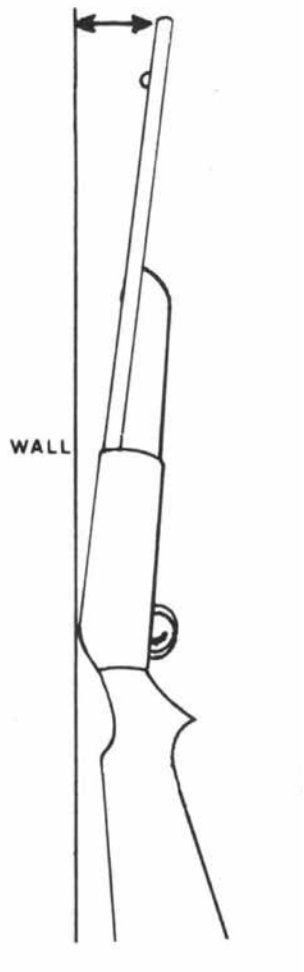


Figure 4: *Method of determining pitch.*

To adjust the gunstock, first set the length of trigger pull. The pull should be long enough so that the recoil does not jam the shooter's nose into the thumb of the trigger hand, but it must be short enough so the gun can be smoothly and comfortably put into shooting position. A stock that is too short will increase the felt recoil of the gun. If the stock is too long, it will force the butt of the stock into the muscles of the arm.

Adjusting the length of the stock is one of the most commonly requested modifications. It is also necessary when a recoil pad is installed. Many noncompetitive shooters want the length of pull changed. Manufacturers make their gunstocks to average dimensions. Unfortunately, there are very few average-sized shooters.

The first step is to measure the shooter from the trigger finger to the elbow of the shooting arm, with the hand in a normal shooting position. To determine the normal shooting position, have your customer hold the rifle stock or a stock blank as if they were going to shoot. With this hand position in mind, place the trigger finger in the hole at the end of the pull and



Figure 6: *Brownells pull and drop gauge.*

drop gauge. Place the sliding bar in the elbow joint and read the measurement from the scale, as shown in Figure 7, on the next page. Measure the customer's rifle or shotgun from the center of the trigger to the center of the butt of the stock. To simplify this measurement, place your finger through the hole in the gauge and hold your finger on the trigger of the gun, as shown in Figure 8 on the next page. ***Be sure that the gun is not loaded and the action is open.***

If the stock is too short, you need to add a spacer or recoil pad to the butt of the stock. Spacers can be used between the buttplate and the stock. Rubber spacers are available in $^{11}/_{6}$" and ¼" sizes. Brownells offers a ¼" wood spacer. This spacer is available in several kinds of wood.

Recoil pads are available in a wide variety of styles and sizes from ½" to 1½". A small selection of pads is shown in Figure 9, on next page. Used in combination with a spacer, they can be

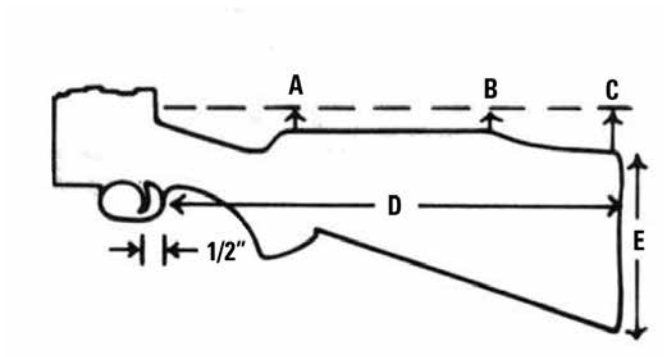


Figure 5: *Length of pull (measurement D).*



***Figure 7**: Measuring the shooter.*

used to add almost any length to a gunstock. If a recoil pad or spacer is used, you have to contour it to conform to the shape of the gunstock.

If the stock is too long, and the gun is not equipped with a recoil pad, you need to remove some of the wood at the butt of the stock. To do this, remove the buttplate and cut the stock the required amount using a coping saw. For small adjustments, use a wood rasp to remove the excess wood. Be sure the cut follows the lines of the original butt. Replace the buttplate and sand the plate to conform with the new butt end of the stock.

If the stock is too long, and the customer wants a recoil pad installed, be sure to include the thickness of the pad in the amount of wood removed. For example, suppose the stock is ½" too long and the customer wants a 1" recoil pad installed. You need to cut 1½" from the stock in order to obtain a correct fit. In this case, the cut is straight rather than following the contours of the stock. Also, be sure to maintain the pitch of the stock as shown in Figure 10 on page 8.

Sling Swivel Installation

Another common request is for the gunsmith to install a sling on a rifle or shotgun. A sling provides an easy means of carrying the gun. Also, when used properly, a sling provides a steadier hold on the firearm, therefore increasing accuracy.

The swivel is the part that holds the sling to the gun. There are many different types of swivels available. One of the swivels has to be attached to the gunstock. Often, both swivels need to be attached to the stock, which means holes must be drilled in the stock.

The B-Square Sling Swivel Installation Tool simplifies this procedure. First, it locates the hole in the correct position in the center of the gunstock. Second, it provides a drill guide so the hole is at the correct angle in the stock. Also provided are the correct drill bits for swivel installation, a drill for pilot holes, and a count bore for countersinking the holes.

If you are going to install both swivels in the stock, remove the barrel and action from the stock. If you are going to install only the rear swivel in the stock, you do not need to disassemble the gun. To obtain the correct swivels, refer to the catalog from your supplier. Look up the make and model of the firearm and order the corresponding swivel set.



***Figure 8**: Measuring the length of pull*

KICK-EEZ RECOIL PADS

The only recoil pad on the market today constructed from space age Visco Elastic Polymer-Sorbothane®. This recoil pad reduces recoil shock (kick) so dramatically that flinching and next day soreness will be virtually eliminated.

SOLID COMFORT SERIES



301-10-L Series

5.75 in. long, 2.03 in. wide, 1.00 in. thick.

Item No.	Color	Sugg. Retail
301-10-L-B	Black	$31.80
301-10-L-R	Red	31.80

301-8-L Series

5.75 in. long, 2.03 in. wide, .8 in. thick.

Item No.	Color	Sugg. Retail
301-8-L-B	Black	*NEW* $31.80
301-8-L-R	Red	*NEW* 31.80

301-6-L Series

5.75 in. long, 2.03 in. wide, .6 in. thick.

Item No.	Color	Sugg. Retail
301-6-L-B	Black	*NEW* $31.80
301-6-L-R	Red	*NEW* 31.80

302-10-M Series

5.33 in. long, 1.93 in. wide, 1.00 in. thick.

Item No.	Color	Sugg. Retail
302-10-M-B	Black	$31.80
302-10-M-R	Red	31.80

302-8-M Series

5.33 in. long, 1.93 in. wide, .8 in. thick.

Item No.	Color	Sugg. Retail
302-8-M-B	Black	$31.80
302-8-M-R	Red	31.80

303-6-S-Series

5.30 in. long, 1.68 in. wide, .6 in. thick.

Item No.	Color	Sugg. Retail
303-6-S-B	Black	$30.20
303-6-S-R	Red	30.20

MAGNUM VENTILATED SERIES



501-L-125 Series

5.75 in. long, 2.03 in. wide, 1.25 in. thick.

Item No.	Color	Sugg. Retail
501-L-125-B	Black	$33.50

502-M-125 Series

5.33 in. long, 1.93 in. wide, 1.25 in. thick.

Item No.	Color	Sugg. Retail
502-M-125-B	Black	$33.50

KICK-EEZ RECOIL PADS

TRAP RECOIL PADS



401-10-L Series

5.75 in. long, 2.03 in. wide, 1.00 in. thick.

Item No.	Color	Sugg. Retail
401-10-L-B	Black	$33.50

402-10-M Series

5.33 in. long, 1.93 in. wide, 1.00 in. thick.

Item No.	Color	Sugg. Retail
402-10-M-B	Black	$33.50

MORGAN RECOIL PADS



For Shotguns and Rifles

A scientific and durable pad of simple construction, made of high grade aluminum and rubber, which combines lightness with strength and with ample recoil element to absorb the kick.

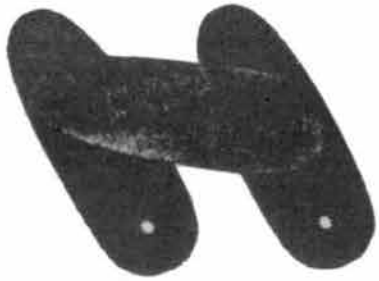
Can be adjusted for the amount of drop, pitch and amount of recoil desired by the shooter, in a fraction of a minute, with positive adjustments that stay put.

Includes butt and intermediate plates, recoil rubber and adjusting nuts.

Item No.	Style	Sugg. Retail
4MO	Curved	$25.90
5	Straight	25.90

PACHMAYR RECOIL PADS

STOCK SPACERS



For use with Pachmayr recoil pads.

Item No.	Size, in.	Wt., oz.	Sugg. Retail
Black and White Hard Rubber			
BWD-60	5½×2×¼	2	$2.40
Solid Black Hard Rubber			
BSD-20	5½×2×¼	2	2.20
Pure White Pliable Rubber			
WPS	5½×2×1/4	1	1.80

PACHMAYR RECOIL PADS

TRIPLE MAGNUM

The ultimate recoil pad. Experts tell us it is superior to any recoil device now available. Designed to distribute the recoil force over the entire pad surface. Patented sponge inserts in each end absorb recoil energy and counteract the tendency of the gun butt to jump downward when fired. White-Line base.

A support post is supplied with every Triple Magnum Pad to keep the gun weight off the pad when storing the gun on its butt end.



Approximate Sizes

Size	Lgth., in.	Width, in.	Thick., in.
Small	5.15	1.85	1.50
Medium	5.40	1.95	1.50
Large	5.70	2.05	1.50

Field Model 990F

Has open bottom, internal tapered ribbing and layered lattice case. For rifles and shotguns. Screen face.

Item No.	Size	Sugg. Retail
Screen Face, White-Line Base Black Color		
F990-S-SN-BL	Small	$44.90
F990-M-SN-BL	Medium	44.90
F990-L-SN-BL	Large	44.90

Skeet Model 990S

All the features of the Field Model, but in special skeet configuration. For fast shouldering and pointing. Leather face.

Item No.	Size	Sugg. Retail
Leather Face, White-Line Base Black Color		
S990-S-LE-BL	Small	$44.90
S990-M-LE-BL	Medium	44.90
S990-L-LE-BL	Large	44.90



Trap Model 660

All the features of the 990, but in trapshooters configuration. The face of the pad is shaped to fit the contour of the shoulder. Has the Mulitiple "X" core design. White-Line base.

Approximate Sizes

Size	Lgth., in.	Width, in.	Thick., in.
Medium	5.50	1.95	1.20
Large	5.70	2.05	1.20

Item No.	Size	Sugg. Retail
Pigeon Face, White-Line Base Black Color		
T660-M-P-BL	Medium	$44.90
T660-L-P-BL	Large	44.90
Screen Face, White-Line Base Black Color		
T660-M-SN-BL	Medium	44.90
T660-L-SN-BL	Large	44.90

***Figure 9**: A small sample of recoil pads that are available.*

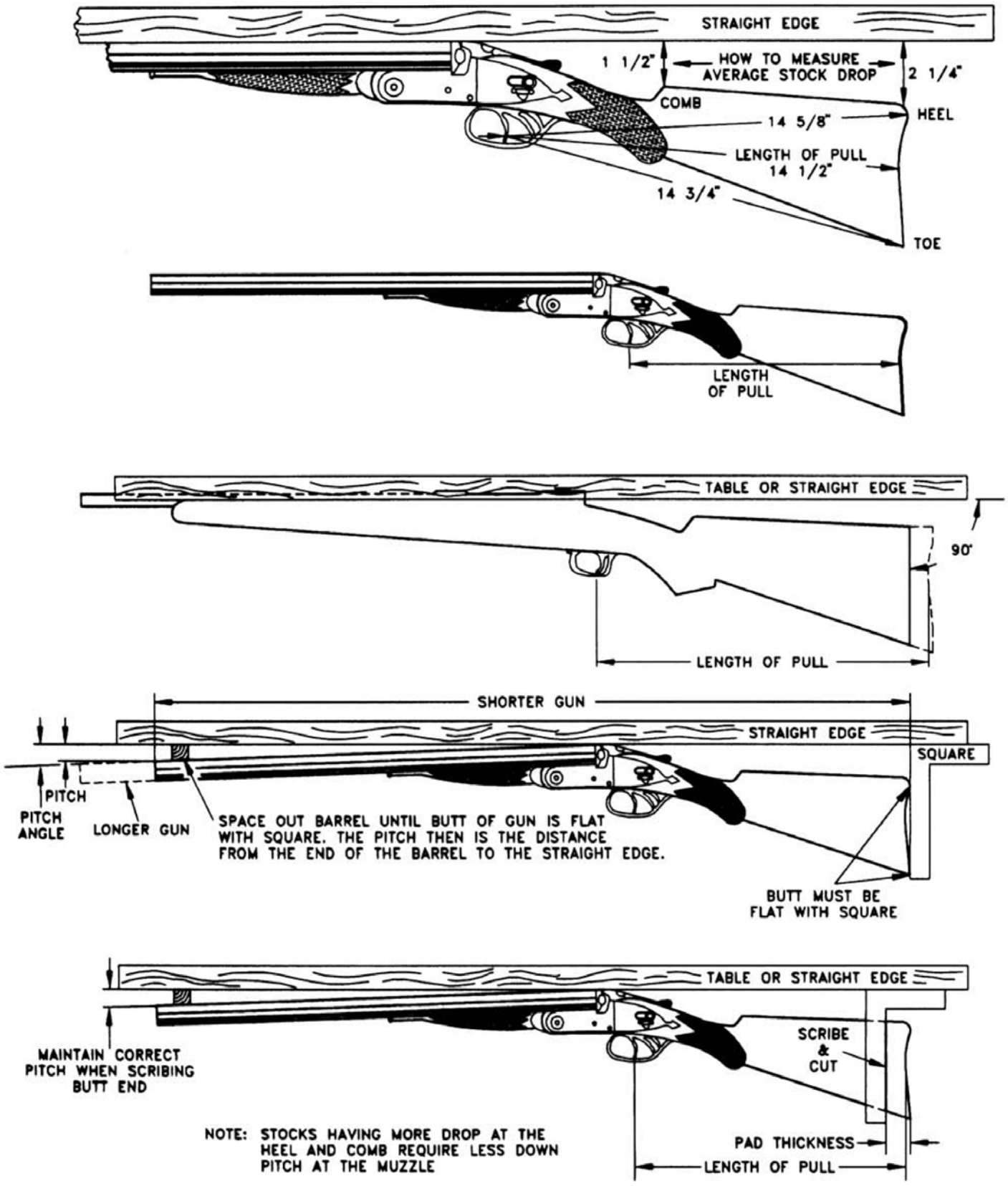


***Figure 10**: Retain the correct pitch when installing a recoil pad.*

To install the rear swivel, secure the stock in a padded vise. Position the stock so the barrel channel is facing down.

Place the swivel jig on the butt end of the stock so the end of the jig is flush with the end of the stock and the pilot bushing is away from the butt, as shown in Figure 11. Secure the jig to the stock with a rubber band.

Next, using the $^{5}/_{32}$" drill bit provided, drill a hole approximately 1" deep in the stock. The drill should pass through the pilot in the jig. Remove the drill bit from the drill and remove the jig from the stock.

Now, with the short $^{7}/_{32}$" drill, counterbore the hole that you just drilled. This will allow you to install the swivel without splitting the stock. Dip the swivel screw in linseed oil and screw the swivel into the hole. Use a drift punch or a drill as a wrench. Do not use the swivel as a wrench since it may bend. The linseed oil seals the cut wood surface inside the hole.

To install the front swivel, turn the stock over so the barrel channel faces up. Position the jig so the end of the jig aligns with the end of the stock. The "V" of the jig should be facing into the barrel channel and the pilot bushing should be toward the receiver area of the stock, as shown in Figure 12. Again, secure the jig to the stock with a rubber band.

Drill a pilot hole with the $^{5}/_{32}$" drill. As before, place the drill in the bushing. However, when drilling the fore-end drill the hole all the way through the stock. When the hole is drilled, remove the jig from the stock.

Replace the $^{5}/_{32}$" drill with the #10 drill. Notice that the #10 drill has a counterbore attachment. Before using this drill, be sure that the counterbore is tightened to the shank of the drill. An Allen wrench is provided to tighten the set screw, as shown in Figure 13.

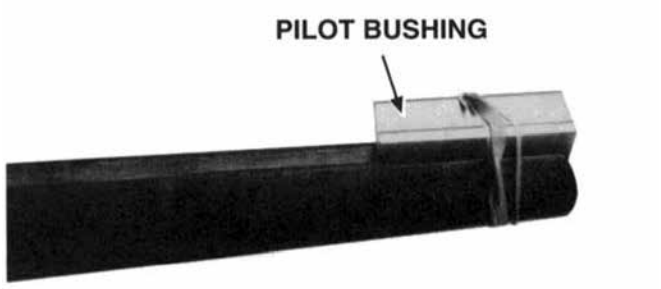


***Figure 12**: To locate the hole for the front swivel, the jib is placed in the barrel channel.*

With the counterbore tightened to the drill, drill the $^{5}/_{32}$" hole in the fore-end. Again, drill this hole from the barrel channel. Lower the bit until the stop on the counterbore contacts the wood. This procedure enlarges the hole so the swivel screw can be installed without splitting the stock, but also provides a countersunk hole of the nut.

To install the front swivel, coat the hole with linseed oil to seal the hole. Then install the swivel screw. Coat the threads of the nut with a small amount of Loctite and tighten the nut onto the swivel screw. It is important to make the front swivel as permanent as possible.

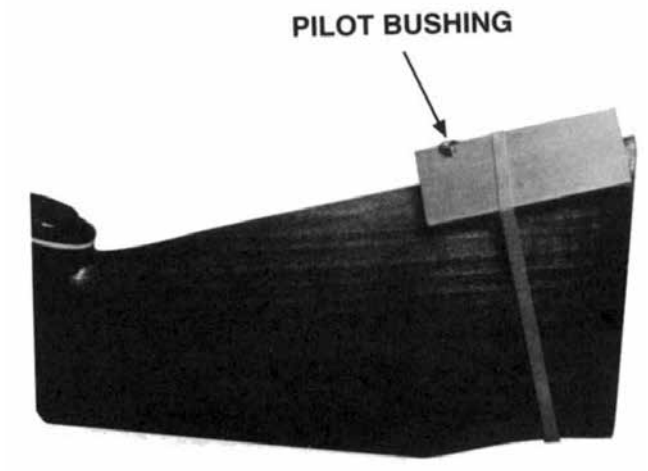


***Figure 11**: Align the jib with the butt of the stock, pilot bushing is away from the butt.*

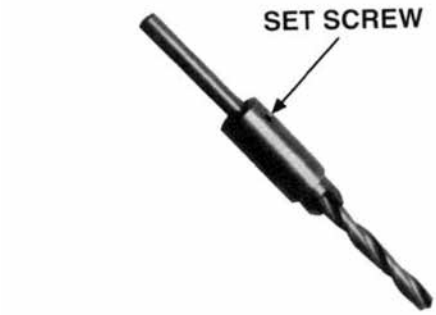


***Figure 13:** Set screw in the counterbore.*

Files

A gunsmith uses a file more than any other tool, with the exception of a screwdriver. In this kit you received a set of 12 needle files. These files will handle much of the work a gunsmith performs. They are designed for medium cuts in a small area.

None of the 12 files are alike. On some of the files, only a close inspection will reveal the difference. For example, there are two flat files with squared ends. The difference between these files is that one has four cutting sides and the other only has three cutting sides and one safe side. The *safe side* has no teeth, as shown in Figure 14.

The use of a file was explained in your lesson and in an earlier kit; therefore, we will only review it now. Files are used to remove metal. Due to the design of the file teeth, only a small amount of metal is removed with each stroke. This makes the file ideal for the final shaping of gun parts.

In choosing a file for a job, you must consider the cut you are going to make as well as the surrounding surface. If you need to change the locking lug of a Colt .45 auto barrel from the one shown in Figure 15(A) to the one shown in Figure 15(B), you need to choose a file that will make a flat, level cut on the lug, but that won't affect the barrel. In this case, you can use the flat file with the safe side. The safe side is held against the barrel.

On the other hand, to remove the burr on the back of the sear, shown in Figure 16, you can use any of the flat files since the file does not come in contact with any other surface. However, when performing this procedure take care not to change the contour of the sear.

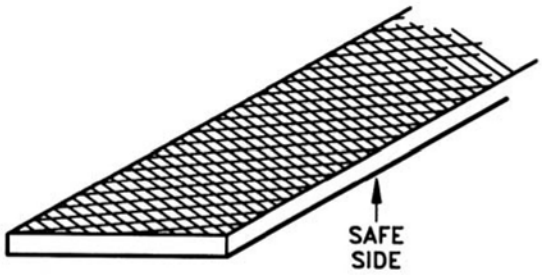


***Figure 14**: One of the spare files has one safe side.*

Honing Stones

As a gunsmith, you will run across several types of stones: artificial, Washita, Arkansas, and India. The Washita, Arkansas, and India stones are natural and can be very expensive in large sizes. Natural stones are available in several colors. Generally, the color of the stone indicates the coarseness and cut of the stone. Dark stones are coarse and white stones are fine. Another consideration is the hardness of the stone; a soft stone is coarser than a hard stone.

The stone that you received in this kit is a medium- hard India stone. This triangular shaped stone can be used for honing, sharpening, and polishing in hard-to-reach places. Because it is triangular, it can be used to hone and sharpen all surfaces except circular ones.

Always use honing stones with oil. The oil helps prevent the pores of the stone from becoming clogged with the metal particles the files remove from the object. The oil also helps to cool the surface being honed.

A new stone should be soaked overnight in a pan filled with 30 weight motor oil. Remove it from the pan, wipe it clean, and return it to the shipping tube. Before you use the stone, put a few drops of oil on it. After honing, wipe off the stone and return it to the tube.

Honing stones can be used for a number of different tasks. First, they are used to smooth filing marks. Although this stone is a medium cut, it is still finer than the files, and will smooth the filed area. This procedure is called *final fitting*. The stone can be used to remove small amounts of metal. Finally, a stone is used to dress, smooth, and sharpen the sear to improve the trigger pull.

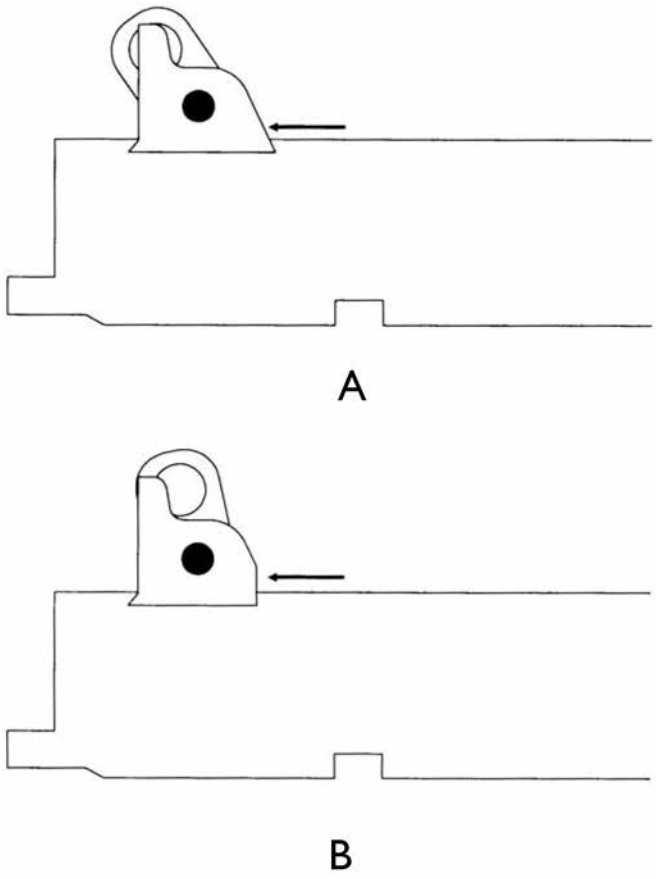


***Figure 15**: Changing (A) the barrel lug of a 1911 Colt .45 requires the use of a (B) file with a safe side.*

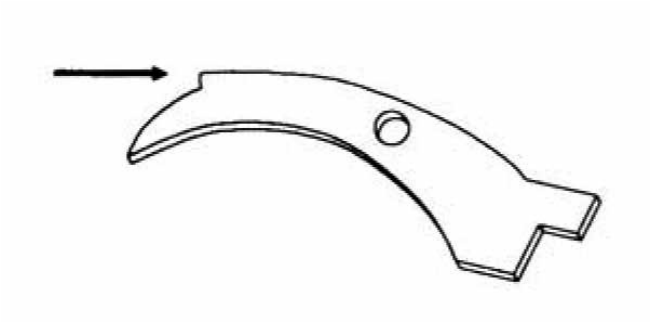


***Figure 16**: A burr on the sear of a Colt .45.*

Use a honing stone as you would a file, but be aware that a stone cuts in both directions. When honing, be sure to hold the stone flat against the surface. It is advisable to hone or file diagonally across the surface, as shown in Figure 17. This will assure that the surface is kept at the original angle.

Honing will leave some stone marks on the surface of the part. Remove these marks by polishing the surface with an emery cloth. Use this procedure any time stoning marks are visible. This polishing also smoothes the honed surface area.

Trigger Pull Gauge

The trigger pull gauge that you received in this kit is a simple instrument to use. It measures the trigger release point accurately from 0 to 72 ounces (4.5 lbs.). It can be used on rifles, shotguns, and handguns.

The gauge comes in two pieces. To assemble the gauge, insert the small hook in the steel rod into the "S" hook connected to the bottom of the scale, as shown in Figure 18. To use the gauge, place the long hook on the curve of the trigger of the firearm, as shown in Figure 19.

Make absolutely certain that the gun is not loaded or cocked. Then, pull the ring on the top of the gauge. Note the reading on the scale when the hammer falls. This is the trigger release point and is measured in ounces and grams. As stated in your lessons, normal trigger pull should be 2½-4 pounds (40-64 oz.).

Adjusting The Trigger Pull

To lighten a bolt-action rifle trigger pull and eliminate creep and drag, use a honing stone to polish the contact surfaces of the sear and the cocking piece, as shown in Figure 20. This polishing should be done very sparingly, trying the trigger for feel after every few strokes of the stone. Do not attempt to change the angle too much at this stage. Simply polish the contact points so that they slide evenly over each other.

The next step is to make this slide shorter by filing or honing the top of the sear, as shown in Figure 21. Again, go slowly, and reassemble and try the parts frequently. You can always take off more metal, but it is hard to put it back on. Be sure that the contact surfaces of the sear remain smooth.

It is also necessary, in some cases, to lighten the tension of the sear spring slightly, which is usually a coil spring. To lighten the sear spring, cut off one coil at a time until the right tension is felt, as shown in Figure 22. In rare cases, this spring will be too light and will have to be strengthened. To do so, use a pair of pliers and a vise to stretch or lengthen the spring.

With any trigger work, you must test the entire trigger and safety mechanism several times to make certain that the rifle will not fire accidentally when the butt hits the floor. Do not pound the rifle butt against a hard object, just a few light taps will do, and of course make sure the gun is not loaded. **Never load a gun with live ammunition while it is being repaired or tested in this manner.** You can use dummy ammunition or snap caps to protect the firing pins.

Some military triggers utilize two fulcrums (humps) at the top of the trigger, like the one shown in Figure 22. The forward hump is responsible for the first-stage creep as it pivots against the underside of the receiver, creating a drag. The main purpose of the forward hump is to slow down the cocking piece let-off, and lets the shooter know that firing is just a hump away. Creep on this type of trigger can be eliminated by grinding off the forward hump. In doing so, the trigger sear rises slightly higher against the cocking piece sear and provides a little more bearing surface. This usually corrects the problem of a rifle accidentally firing when the bolt is closed.

Once the forward hump is removed, the creep will disappear, but the trigger pull will be harder since the bearing weight is increased. This problem can be corrected by using a soft Arkansas stone to slightly round the rear hump. Again, do this operation gradually, with many trials during the process. If too much metal is removed at this point, the rifle may fire on closing the bolt. With this slight alteration, plus a final polishing of all bearing surfaces, the trigger pull should be reduced to the proper limits. Again, when you complete the alteration, thoroughly test the gun (unloaded) to ensure that an accidental discharge will not happen.

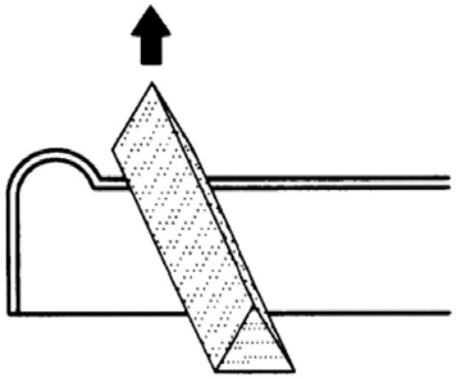


***Figure 17**: Hold the stone at an angle to the work. Push the stone in the direction of the arrow.*



***Figure 18**: The assembled trigger pull gauge that is part of your kit.*

SINGLE-STAGE TRIGGERS

Now let's look at the plain single-stage trigger found on many single-shot shotguns and rifles with an exposed hammer, like the Winchester Model 94 and Marlin Model 336. When squeezed, the trigger remains entirely stationary until it releases the hammer or firing pin, then it gives way, suddenly discharging the rifle. Many of these triggers come from the factory with a very hard pull of up to eight pounds. Some of these triggers also have a drag or creep. The perfect trigger squeeze is one that does not move at all until it releases the hammer or cocking piece.

A plain trigger is shown in Figure 23. It shows the trigger, the hammer, the half cock, and the full cock notches in the hammer. In this case, the trigger and sear are combined, but in some guns the trigger and sear consist of separate pieces.

First examine the surfaces of the sear and hammer notches to determine the angle at which they meet. If the pull is heavy, the mating surfaces will probably come into contact like the



***Figure 19**: This photo shows a digital trigger pull gauge. Be sure that the notch of the hook, as shown above, is on the curve of the trigger of the firearm.*

dotted line in Figure 23(A). The sear may be too deep in the notch, requiring much lifting before it disengages.

Remove the hammer and sear from the action and use your honing stone to hone the two contact surfaces so that the angle of contact changes to that shown by the dotted line in Figure 23(B). When honing, check the fit frequently to ensure the mating surfaces will fit together exactly when reassembled. The honing also must be done straight. Be sure not to hone more in the middle than on the sides.

Go slowly, and assemble the parts often to test the weight of the trigger pull by the trigger scale. Watch the scale as the pull is applied, and notice the maximum figure on the trigger pull gauge just before the trigger gives way. As you get down to within a pound or so of the desired pull be extremely careful, three or four more strokes of the honing stone may be all that is required. Be careful not to change the angle to that shown in Figure 23(C). This will create a dangerous condition where the gun can discharge with little or no pressure on the trigger.

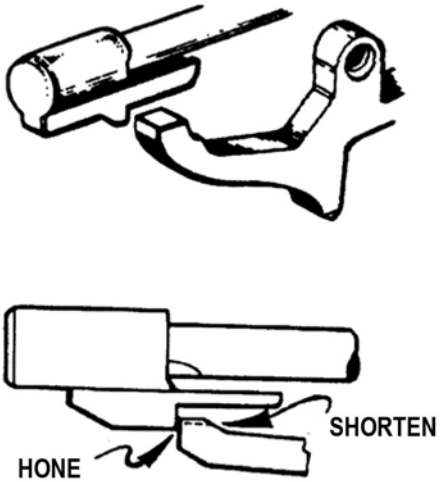


***Figure 21**: Areas of a simple trigger mechanism (sear and cocking piece) to adjust for smoother trigger pull.*

HANDGUN TRIGGERS

Early handgun triggers were similar to the plain triggers used on most shotguns and hammer-type rifles. The instructions given for the plain triggers also apply to the handgun triggers. The instructions, of course, apply only to single-action revolvers.

The amount of trigger pull required for double-action revolvers used in the double-action mode depends a great deal on the strength of the mainspring and its tension on the hammer. Brownells, Inc. offers several spring kits for various handguns and any of them will improve the trigger pull and the hammer slap.

Semi-automatic pistols such as the Colt .45, Browning. Star, Savage, and others can have their trigger pull improved by honing. Care must be taken in this area when altering the trigger. If a very delicate trigger pull is obtained, jarring the action may cause the hammer to follow the slide, resulting in an automatic-firing weapon which is dangerous and illegal.

Trigger sears and hammers on semi-automatic pistols are honed in a way similar to the firing mechanism on shotguns and exposed hammer rifles. After the adjustment is made, test the pistol by cocking the hammer and, with the finger off the trigger and the grip safety compressed, drawing back the slide, allowing it to slam forward several times as violently as possible. If the hammer follows the slide (fails to stay cocked), the pull is obviously too light.

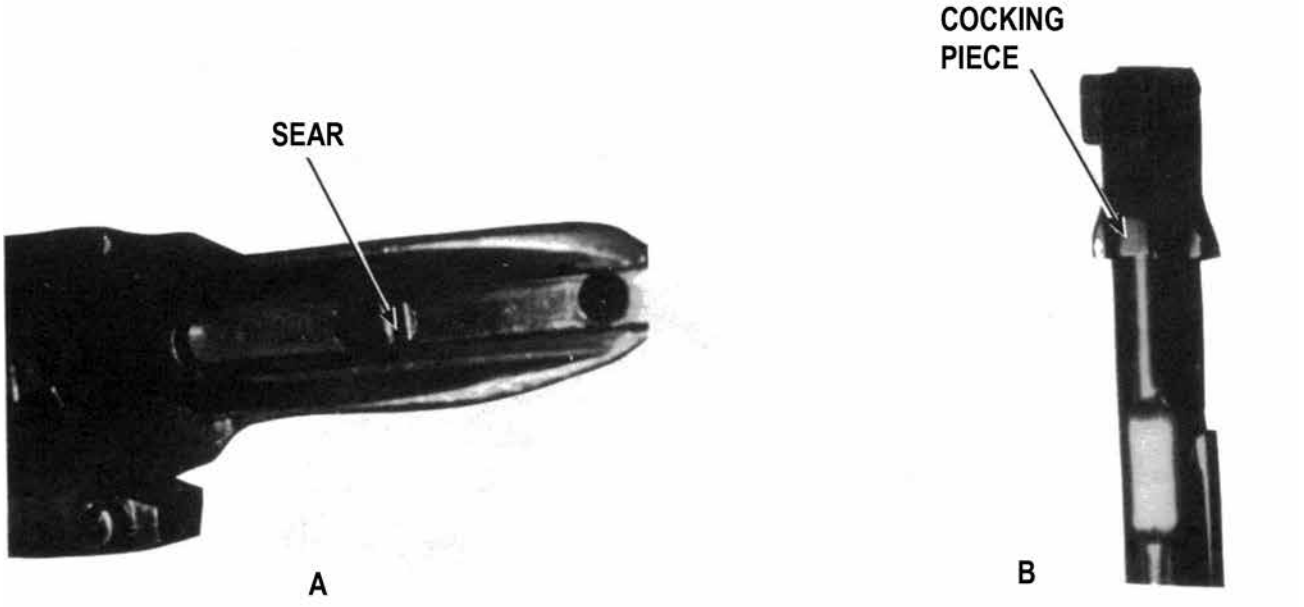


***Figure 20**: Polish the contact points between (A) the sear and (B) the cocking piece.*

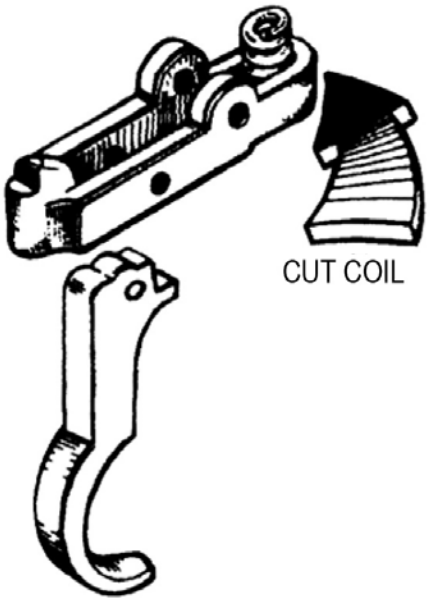


***Figure 22**: Most sear springs on older military rifles may be lightened by merely cutting off a coil or two.*

A light pull sometimes can be corrected by bending the sear spring to increase the tension. In most cases, it is best to order a new hammer and sear and start over. For this reason, take great care in honing these parts of the semi-automatic pistol.

Semi-automatic pistols that do not have an exposed hammer usually have a sear, which engages a shoulder or notch in the plunger or firing pin. Most of these weapons have a heavy pull, which in some constructions cannot be overcome. In other types, a heavy pull can be improved by carefully honing the contact surfaces so they slide evenly and smoothly. It is best not to change the depth of contact or the angle of the surfaces, because in many semi-automatic pistols, especially of foreign make, the safety only prevents the trigger from being pulled. However, the safety will not prevent the sear from jarring out of engagement with the firing pin if the gun is dropped. When these pistols are loaded they are always cocked, and altering the sear or firing pin might make it extremely dangerous to carry the pistol loaded. Therefore, it is good practice never to load a round into the chamber of a semi-automatic pistol until the gun is ready to be fired. Slide the magazine into place in the grip, but do not chamber a round. When firing is complete, unload the pistol, and make sure no rounds remain in the chamber.

ADJUSTABLE FACTORY TRIGGERS

Most of the better centerfire rifles manufactured today come with adjustable trigger mechanisms. The Sako trigger assembly, for example, is factory set for perfect sear engagement. The weight of pull and backlash can be adjusted without too much trouble.

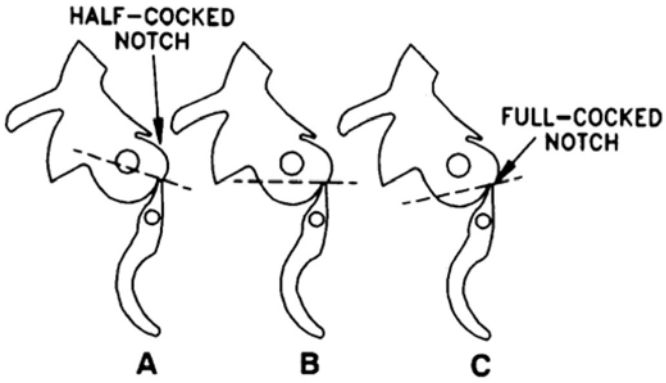


***Figure 23**: To lighten trigger pull, hone the hammer and sear to angle B.*

Figure 24 shows an adjustable trigger on a Winchester Model 52. To adjust these triggers, refer to the manufacturer's procedure, since they all do not adjust in the same fashion. Remember, after all trigger work is complete, check the operation of the trigger and the safety to be sure that both operate properly.

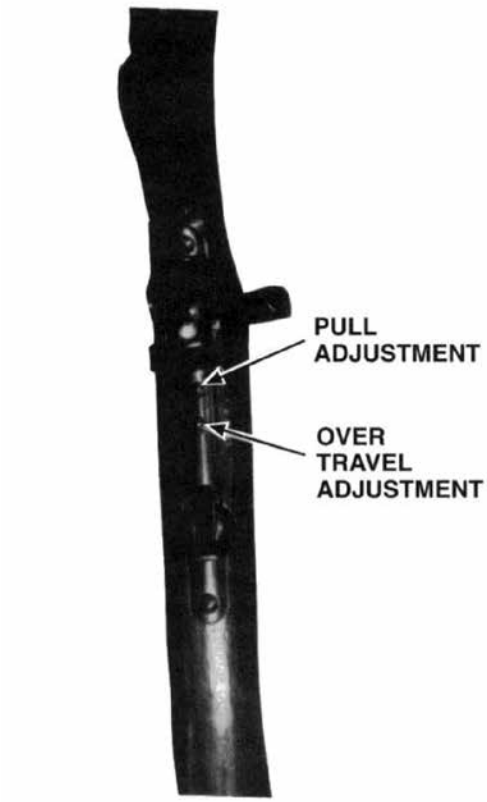
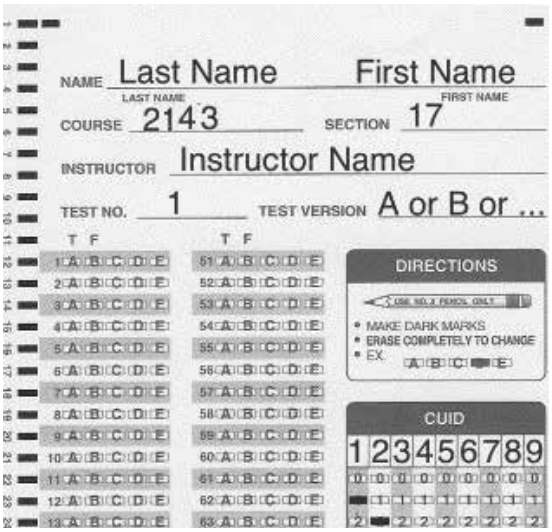


***Figure 24**: Adjustable trigger of a Winchester Model 52. Always check the manufacturer's procedures before adjusting a trigger.*

Lesson Questions

THIS IS LESSON NUMBER 2160.

Make sure you print your name, student number, and lesson number in the space provided on the Lesson Answer Form. Be sure to fill in the circles beneath your student number and lesson number.



REMINDER: A properly completed Lesson Answer Form allows us to evaluate your answers and speed the results and additional study material to you. Do not hold your Lesson Answer Forms to send several at one time. You may run out of study material if you do not send your answers for evaluation promptly.

You may also complete your exam online at www.sdi.edu, click on the *online exams* tab.

1. **When a recoil pad is installed on a rifle or shotgun,**
   a. The stock must be cut 1 inch.
   b. The stock does not need to be cut.
   c. The drop at the heel will need to be changed.
   d. The length of pull will need to be adjusted to the shooter.

2. **Drop at heel is measured from the barrel channel.**
   a. True.
   b. False.

3. **Length of pull is measured from the shooter's**
   a. Shoulder to trigger finger.
   b. Shoulder to wrist.
   c. Shoulder to elbow.
   d. Elbow to trigger finger.

4. **Which of the following should be used for polishing a metal part?**
   a. Grinder.
   b. Files.
   c. Emery cloth.
   d. Honing stones.

5. **To lighten the trigger pull on a bolt-action rifle, the first step is to**
   a. Smooth the contact points of the sear and cocking piece.
   b. Remove the first hump of the trigger.
   c. Cut coils off the trigger spring.
   d. Hone the top of the sear.

6. **Which honing stone is the finest?**
   a. A dark hard stone.
   b. A white hard stone.
   c. A dark soft stone.
   d. A white soft stone.

7. **To lighten the trigger pull of a rifle with an exposed hammer, you would change the angle of the contact between the hammer and sear.**
   a. True.
   b. False.

8. **A good all-around trigger pull is:**
   a. Less than 2 pounds.
   b. Between 2½ and 4 pounds.
   c. Between 4½ and 8 pounds.
   d. Over 8 pounds.

9. **Whenever any trigger work is completed, the operation of the safety must be checked.**

   a. True.

   b. False.

10. **How deep should the hole for the rear swivel be drilled?**

   a. ½ inch.

   b. 1 inch.

   c. 1½ inches.

   d. 2 inches.