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A Treatise on the Use and Maintenance of the  
**British India Pattern  
Infantry Musket**

*- or -*

*Brown Bess - How To Keep Her Sweet*

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## **Introduction**

The following notes relate mostly to the India Pattern Brown Bess, and its use in the Napoleonic period.

The loading procedure upon which the notes are based is the *pan first, barrel second* method.

The principles outlined apply just as well to other patterns of Napoleonic flintlock musket and flintlocks from other historical periods.

Please note that this set of guidance notes is not intended as a drill manual, merely a guide to the principles of firing and caring for the Brown Bess. The law and the policies and procedures of your unit take precedence in all cases.

The section on firing stance is based on modern live firing advice (specifically shotguns). Whilst the physical principles of live firing hold true for “pretend” live firing, historic drills may require a slightly different stance.

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## How She Works

Like all muskets, the Brown Bess is made up of three main parts – lock, stock and barrel.

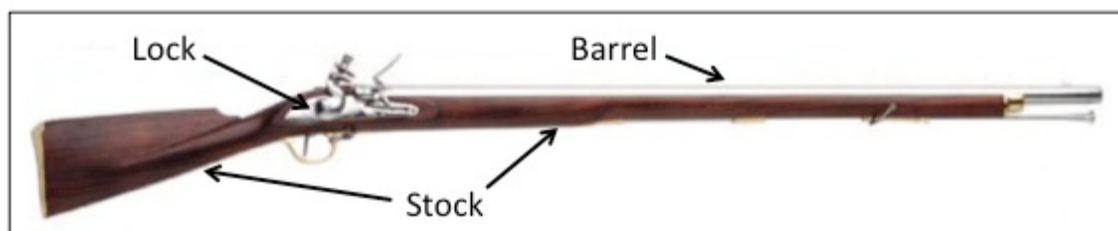


Figure 1

*Figure 1:-*

- Lock – the bits that make it go bang when you pull the trigger
- Barrel – the long metal tube from which the big bang doth spew forth
- Stock – the wooden bit

The stock and barrel are straightforward enough, but the lock is more complicated and requires some explanation ...

Refer to the diagrams on the following pages.

*Figure 2 (page 4):-*

Pulling back the hammer (A), to full cock, turns the tumbler (G) the end of which forces the mainspring closed under tension (F). The tip of the sear (H) is kept in contact with the edge of the tumbler by the sear spring (I) and catches in a notch on the edge of the tumbler. This holds the hammer at full cock with the mainspring under tension. Pulling the trigger lifts the trigger release lever (J) which releases the tip of the sear from the notch in the tumbler. This allows the mainspring to spring back open, which forces the tumbler back to its starting position and consequently forces the hammer and flint (B) forwards to strike the frizzen (C). The frizzen spring (D) puts pressure on the frizzen which keeps it closed over the pan (E), this stops it flapping about and keeps the powder in, but also ensures that the frizzen resists the strike of the flint enough to ensure sparks are created.

*Figure 3 (page 5):-*

Around the edge of the tumbler are three notches. Each notch is engaged by the sear at one of the three cocking positions of the hammer, un-cocked, half cock and full cock. The notch described above engages the sear tip when the hammer is at full cock, it is an open notch, which allows the sear tip to be released from it when the trigger is pulled. The notch which engages when the hammer is at half cock is a closed notch, which prevents the sear tip being released from it if the trigger is pulled – half cock is essentially a safety catch. The un-cocked notch is just a buffer that stops the travel of the tumbler and hammer.

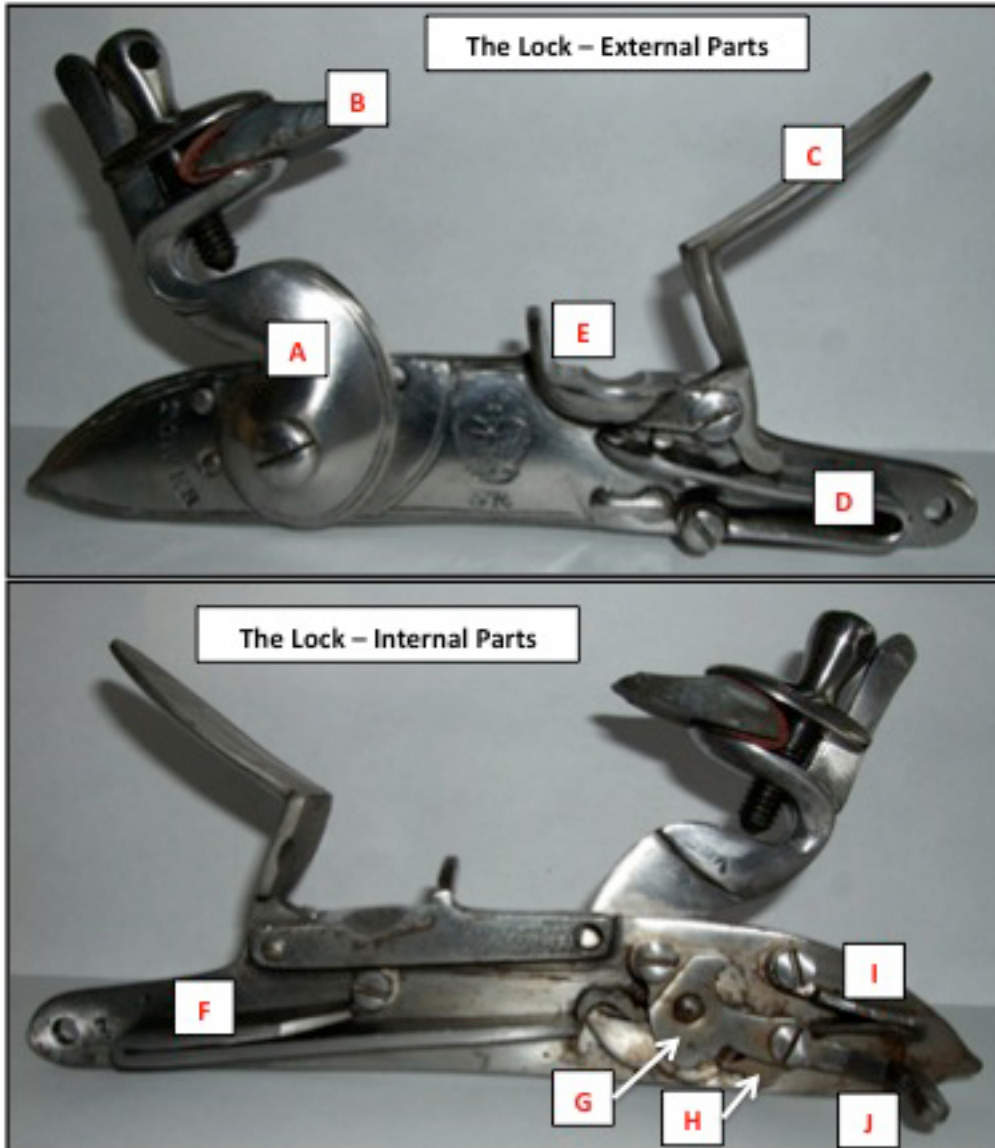


Figure 2

- A = Hammer
- B = Flint
- C = Frizzen
- D = Frizzen spring
- E = Pan
  
- F = Mainspring
- G = Tumbler
- H = Sear
- I = Sear spring
- J = Trigger release

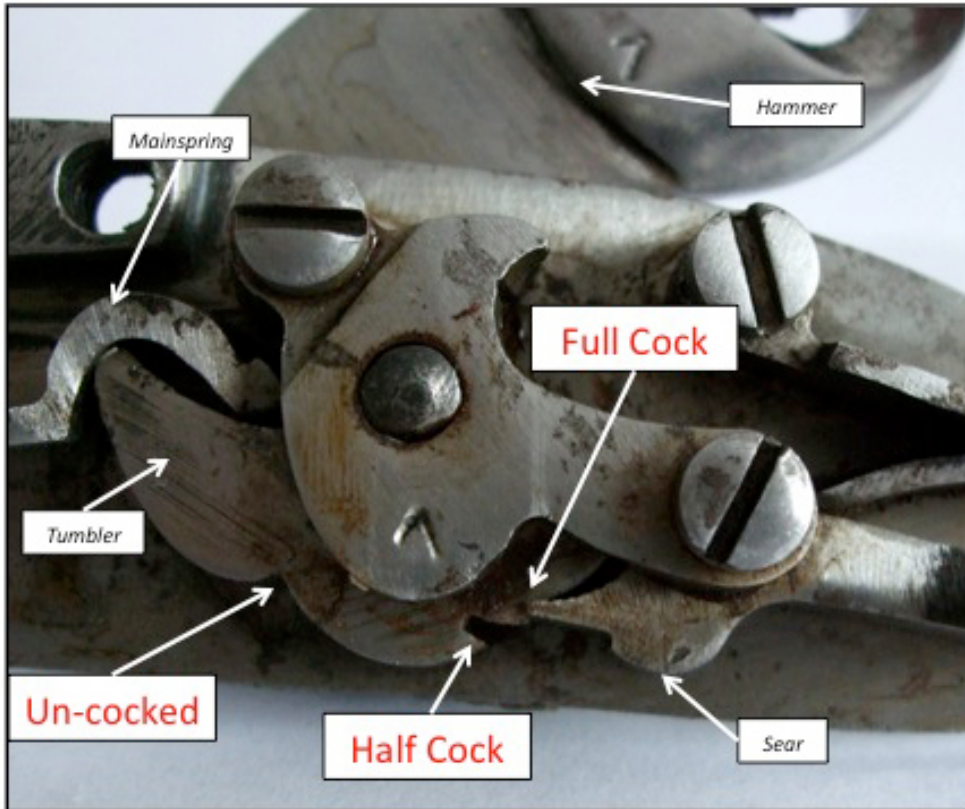


Figure 3

## **Load**

- 1) Start with the lock un-cocked (i.e., forward) and the frizzen open (as if just fired).
- 2) Half cock the hammer. Half cock is the equivalent of a safety catch – it also gets the hammer out of the way of the frizzen and pan so you can prime.
- 3) Pour your priming charge into the pan. The priming charge is a pinch of powder poured from one of your pre-prepared paper cartridges, the remaining powder from the cartridge will be the main charge for the same shot.
  - a. Use just enough gunpowder to fill the pan level with the top – do not heap it up – heaping it up prevents the frizzen closing tightly over the pan, which means that your priming charge will fall out, during the loading and firing process, resulting in a misfire. Overfilling the pan can also mean an unnecessarily large priming explosion, which the man to your right won't thank you for!
  - b. If necessary use your pricker/brush to remove any burnt powder scuzz from the underside of the frizzen (i.e., the bit that closes over the pan, rather than the bit the flint strikes). A build up of scuzz here will have the same effect as point a. above.
- 4) Close the frizzen over the pan.
  - a. The frizzen spring on a Bess or other musket of a similar period should be more than adequate to hold the frizzen closed over the pan during the loading and firing process. If your frizzen will not close snugly over the pan check points a. and b. in step 3) above.
- 5) Cast your musket about.
- 6) Pour the main charge into the barrel.
- 7) Place your wadding into the muzzle of the barrel, taking care to keep your thumb or fingers to either side of the muzzle opening.
- 8) Withdraw your ramrod from its hoops beneath the barrel.
- 9) Insert the fat end of the ramrod into the muzzle opening and ram home your wadding and powder with the traditional “three goodly thrusts”. When ramming home, take care to hold the ramrod with thumb and forefinger and not put your palm or fist over the end of the ramrod protruding from the muzzle opening.
- 10) Remove ramrod from the barrel and return it to its hoops. Again taking care not to put your palm over the muzzle opening.
- 11) Your musket is now loaded, half cocked and ready to fire.

## **Fire**

12) Bring your musket to a position (as per your unit's drill) that tells the block commander that you are loaded and ready to fire. Await further instruction.

NOTE: At this point you must satisfy yourself that your ramrod is safely in its hoops and not in the barrel – the safe handling and firing of your weapon is your responsibility and nobody else's.

13) When given the command, pull your hammer to full cock, ensuring that your trigger finger is outside of the trigger guard and not touching the trigger.

14) When given the command, present your musket and aim at the target – see the section on Firing Stance.

15) When given the command, pull the trigger.

NOTE: Only pull the trigger if you are satisfied it is safe to do so. The safe handling and firing of your weapon is your responsibility and nobody else's. If you are not satisfied it is safe for you to fire, you must not fire, instead you must assume a safe posture and notify the block commander immediately.

16) When the trigger is pulled, the flint strikes the frizzen and does two things ...

- a. the friction of the impact detaches tiny chips of super-hot steel from the face of the frizzen (the sparks).
- b. the force of the impact propels the frizzen forwards, thus exposing the powder filled pan beneath.

17) The sparks from the frizzen fall into the priming charge and cause it to explode.

18) The priming charge explosion communicates via the touchhole with the main charge inside the barrel.

19) The main charge inside the barrel explodes.

20) The main explosion takes the most direct route of escape – out of the open end of the barrel, propelling anything in its way (a forgotten ramrod for example), or, burning them up (the wadding).

### **After firing ...**

If you were holding your gun properly, with your cheek on the stock and your eye looking straight along the top of the barrel, you may not have seen the main charge explode from the far end of the barrel. It is also unlikely that you will have felt a kick into your shoulder – as there shouldn't have been anything other than wadding in the barrel for the forces to recoil against. If firing in a volley with other guns, it is also

unlikely that you will have distinctly heard your own shot go off. This can make it difficult to be sure your main charge has gone off.

You will know whether your priming charge has gone off, because the frizzen will be in the open position and the pan will be empty. If this is the case then it is probable that your main charge has gone off also. If your priming charge has not gone off then you have a misfire and must follow your unit's safety rules to clear it or make it safe.

Assuming your priming charge has gone off, one way to establish if your main charge has gone off is to look at the touch-hole (peer over the barrel – don't eyeball it from above). If there is a curl of smoke coming out of it, then your main charge has gone off. If there is not, move the end of the gun – the movement of air this causes in the barrel is usually enough to expel a curl of smoke from the touch-hole.



## **Misfires**

Misfires come in several forms, the possible causes and remedies of which are described below.

In all cases your unit's safety procedures must be followed.

There is absolutely no need to become anxious in a misfire situation. Stay calm. Follow the safety procedures you have been trained in and ensure the block commander is aware of your situation. Don't rush the job to get back into the firing line – your safety and that of others is far more important than missing a few shots.

If all else fails and you suffer a mind blank, simply use your common sense – ensure that the muzzle and pan of your musket are both pointed away from everyone (including yourself and the public), keep your hands clear of the trigger and lock and call on the block commander for guidance.

### **Flint and frizzen not sparking**

If your priming charge has not gone off, it is probable that your flint is knackered or fouled and is not producing a spark from the frizzen.

When firing it is advisable to regularly check your flint and frizzen and remove burnt powder residue and grease from their faces, edges and undersides to prevent fouling. Always carry a pricker, brush and oily rag so that you can keep your lock clean.

The main cause of a misfire is a flint that has outlived its usefulness. Firstly check that the flint is seated properly in the jaws of the hammer and adjust and tighten as necessary. If the flint is seated properly and still not sparking, then your flint is probably blunt. The useful life of a flint can be extended by knapping the flint. This involves using a flint knapping tool, or other suitable implement, to break small flakes from the blunt edge and create a new sharp edge.

If the flint has shattered or is un-knappable and has definitely had it, then it is time to replace it with a new one. It should be possible to do this without leaving the ranks, but always observe your unit's procedures.

You should always carry the items below:-

- Spare flints.
- Spare flint leathers (lead is an alternative, but avoid felt or other fabric as it is a moisture trap and will cause rust).
- A steel rod to tighten the jaws of the hammer using the hole through the screw head (a suitably sized Allen key is ideal).
- A flint knapping tool.
  
- A turnscrew can be useful but is not a necessity. A turnscrew is a screwdriver – ideally a gunsmith's turnscrew, or a short wooden handled screwdriver of appropriate size for the screw head on your hammer.

Flints are notoriously fickle little b\*stards and no advice given here can ever ensure that the damn thing will work first time. Having been dug out of the ground and then tw\*tted into shape with another stone they are all different: they will sit in the jaws differently, strike the frizzen differently, and wear differently. Trial and error is the only way you will get to know how best to fit flints to your own musket. Ask your mates how they do theirs and just persevere!

TOP TIP: From an 1802 military handbook "the most transparent and free from veins are esteemed the best flints".

If your gun simply will not produce a spark, one way of clearing it is to use a piece of burning match (only if the procedures of your unit allow it). If you do need to do this, be careful to dunk the match in the pan in such a way that your face is not over the pan and your hand is not in the path of the pan explosion – take advice beforehand, or get someone experienced to do it for you, if you are in any doubt.

### **Flash-in-the-pan**

Occasionally you may experience a flash-in-the-pan – where the flint is sparking and the priming charge goes off, but something prevents the pan explosion communicating with the main charge.

Depending on your unit's misfire procedure, you should clean the touch-hole with a pricker, re-prime and fire again at the next opportunity.

If it still won't go there may be reason to believe that it had actually fired in the first place. The block commander *may* advise you to put your ramrod down the barrel – the extent of its protrusion from the end of the barrel will be a very good indicator as to whether there is still a charge in the barrel. This test must be carried out in a safe area and not in the block.

If there is a charge in the barrel and the flint is sparking well, but it still won't fire then the last resort will be to douse your gun – pour water down the barrel to soak the powder and thus make it safe (all firers must carry their own supply of water for this eventuality). If you do have to douse your gun, it will require a proper strip down and clean as soon as possible, as water, soggy powder and steel locks aren't the best of friends.

### **Hang-fire**

A hang-fire is where the explosion of the priming charge doesn't set the main charge off immediately, but sets something smouldering which sets the main charge off after a delay.

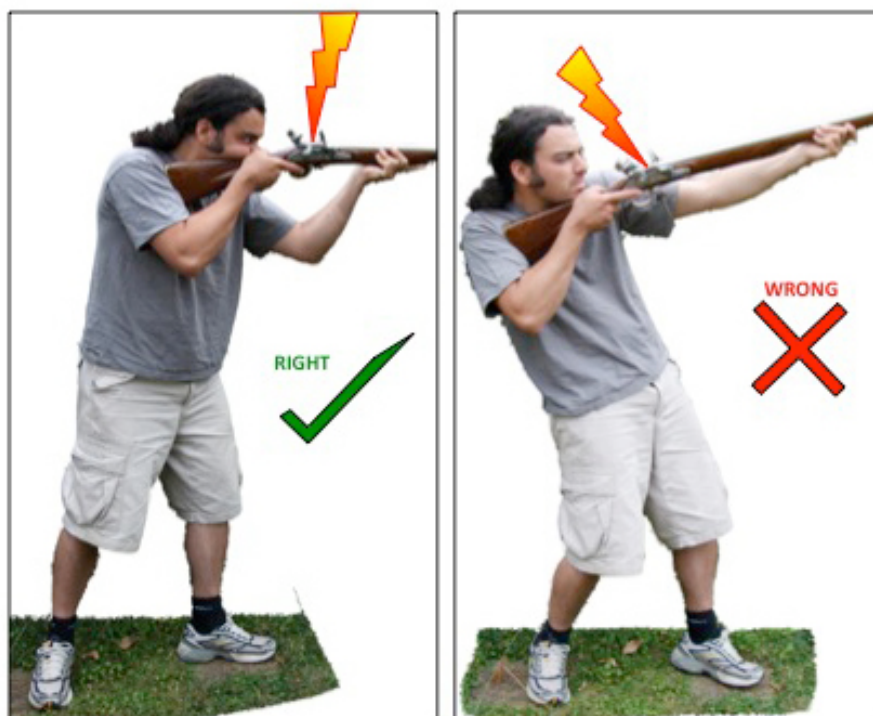
Hang-fires are not very common, but they do happen and it is important that all types of misfire are treated as potential hang-fires.

## Firing Stance and Aim

Poor stance and posture will result in discomfort, tiredness and lack of balance - it will make the scary things about muskets scarier and make the experience less enjoyable for you. It also looks crap. The steps detailed and illustrated below will help you to achieve the correct stance.

### Stance

Figure 4:-



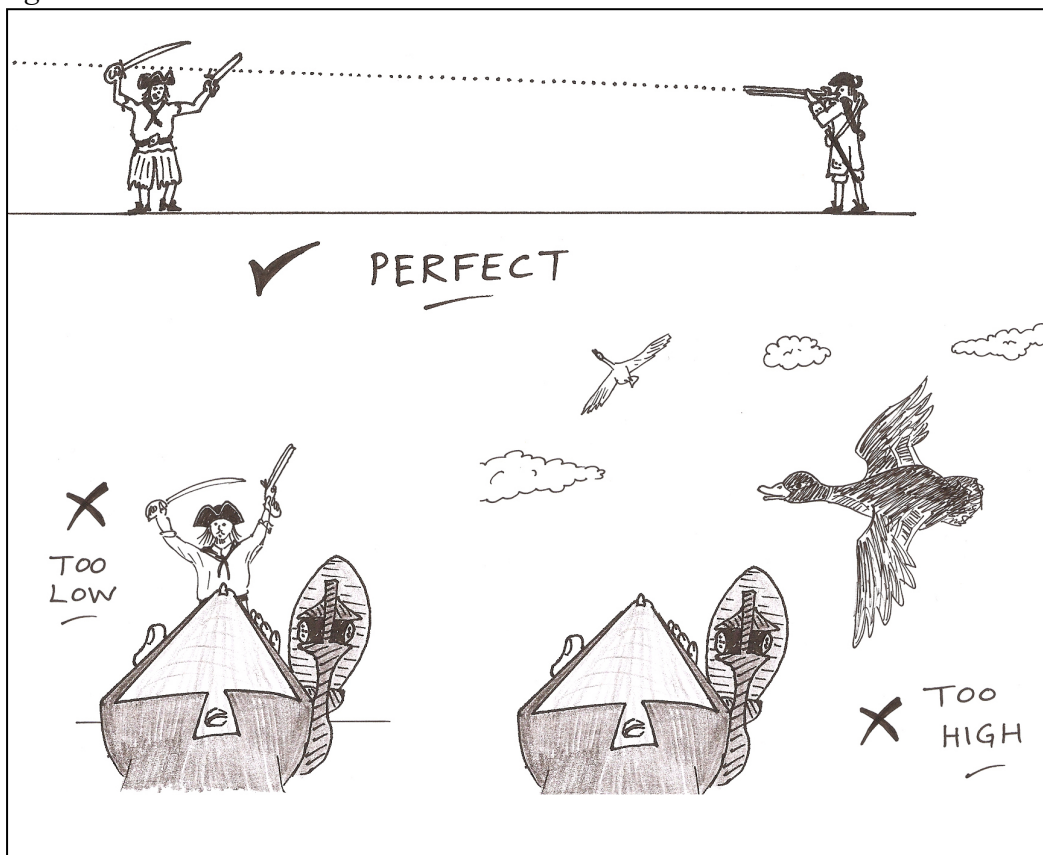
- Step forward with your left foot – so that it becomes your front foot. Don't step too far forward – switch off any other stance you've learnt – particularly 17<sup>th</sup> century drills that often have a very wide stance (a hang-over from the use of a musket rest).
- Slightly bend your front leg – but not too much, as to do so would mean that the full weight of you and your extended musket are going through a bent knee, which is quite a strain and will result in your becoming unbalanced.
- Get your weight over your front foot – you want approximately two thirds of your weight over your front foot. If you had your weight on your back foot and fired a lead ball from a musket, you would end up on your arse, having shot the ball high over the heads of your enemy.
- Don't over extend your left arm – a straight arm hasn't the strength to support the barrel (particularly with bayonet fixed) and will result in your becoming unbalanced and tired. Your left elbow needs to be at a maximum of about 90

degrees. The stock of most muskets narrows just ahead of the lock, providing a convenient and comfortable grip for your left hand.

- Pull the butt of the gun snugly up into your right shoulder, no need to pull it in with white knuckles, just snug. If you had the gun low down in your shoulder it would bring the angle of the pan explosion nearer to your face and set you up for a fright.
- Bring your head all the way down onto the stock – your right cheek bone should sit along the top edge of the stock. This will mean that you are looking along the length of the top of the barrel, rather than looking down onto the pan.
- Correctly positioning your head ensures that your face is well out of the line of the pan explosion, which goes upwards and out to the right. Having your face down low means that the hammer and the stock are between your face and the explosion. If you have your head up like a meerkat you'll get the debris and scary stuff in the face – which is why you see so many pictures of musketeers wincing, pulling their face away to one side, or closing their eyes tight – all of which look rubbish in a professional soldier! Having your head up will also result in your becoming unbalanced. With your head positioned correctly your eye is in the perfect position to aim correctly ...

## Aim

Figure 5:-



- Select a target and aim just above their head. Literally just above their head – imagine your barrel is really, really long and you are resting the underside of it on top of their hat.
- If you can see your selected target poking up above the end of your barrel, then you are aiming too low and need to elevate.
- If you can only see clouds around the end of your barrel, then you are duck shooting and need to aim a bit flatter.
- NOTE: in Europe different rules may apply and you may be asked to aim at the feet of the enemy.

## Care of Brown Bess

Black powder is hygroscopic, meaning that it absorbs water from the atmosphere\*. The residue of burnt powder is also corrosive. This is a recipe for trouble when combined with a steel lock and barrel – so cleaning is super important to maintain an effective weapon.

\* This is why some powder seems to be dirtier and greasier than others – it has more to do with humidity and weather conditions, than it does the composition of specific powders.

Unlike a matchlock, a flintlock requires TLC. Field cleaning your Bess after every battle is strongly recommended, as is a full strip down after every event.

People develop their own cleaning regime over time. A suggested kit list and a guide to basic field cleaning/post-event strip down is included below as a starting point.

A good cleaning kit will require the following items (items in italics are the basic field cleaning kit):-

- *Cleaning cloth and/or kitchen towel*
- *Cleaning rods, plus ...*
  - *Jag attachment*
  - *Wool mop attachment*
  - *Wire brush attachment*
  - Worm attachment (for extracting doused powder and wadding)
- *Stiff toothbrush, or small wire brush*
- Cocktail sticks/match sticks
- *Turnscrew*
- *Steel rod or Allen key (for hammer jaws)*
- *Gun oil*
- Black powder solvent
- *Funnel*
- Sturdy gloves
- Autosol
- *Wet and dry paper/wire wool – nothing too coarse – you're after gentle polishing abrasion, not surface removal*
- Philosopher's stone – these are like rocking horse sh1t but well worth the hunt (try McFarthingbowls, they call them “polishing blocks”, but what do they know?!)
- Pliers
- Mainspring clamp (regular removal of the mainspring is not recommended – advice should be sought from a gunsmith or NCO beforehand)

You may have noticed that the thin end of your ramrod has a screw thread on it. This was so the soldier could attach various cleaning attachments to it for cleaning the barrel. However, the thread is male and would require female attachments, which don't seem to be available these days (hence the need for separate cleaning rods). Those of an engineering bent may wish to make themselves male/female adaptors, which would remove the need for separate cleaning rods.

## Field Cleaning

- 1) Put a kettle on.
- 2) Remove the lock by unscrewing the two screws on the left side of the stock.
  - a. Put the lock aside.
  - b. Put the screws somewhere sensible (and ensure you can identify which goes in which hole if they are different – e.g., if one has been filed to accommodate the ramrod).
- 3) Squirt a little gun oil onto the toothbrush and give the area around the touch-hole a once over to remove powder residue.
- 4) Put the wire brush attachment onto your assembled cleaning rods and give the barrel a quick scour out. When you've finished up-end it so the flakes of powder kack fall out.
- 5) Rest the butt of the musket on the ground and hold it upright, angled slightly so that the touch-hole points to the floor. Put the funnel in the end.
- 6) Hold the barrel with one hand (wear a sturdy glove if you've got one, otherwise hold it by the stock) and pour the boiling water into the barrel with the other. The water will come out of the touch-hole in a strong stream. Keep pouring until the water runs clear. When it starts to dribble you might want to up-end it so the remaining water comes out of the muzzle and not onto your woodwork.

Avoid getting your woodwork wet as it will swell up and can inhibit the internal movement of the lock parts.

NOTE: the barrel will get very hot and stay hot for quite a while.

- 7) Use kitchen towel to wipe any excess water from your woodwork and the touch-hole area.
- 8) Put the jag attachment on your cleaning rod and fit a piece of kitchen towel or cleaning cloth into it (use enough towel or cloth so that when it wraps around the jag it is fat enough to fill the barrel). Swab out the barrel until it is dry.

TOP TIP: This will be a tight squeeze. When pushing/pulling the cleaning rod in the barrel, be careful not to unscrew the threads holding the cleaning rods and attachments together, otherwise you might unscrew one of them and leave the lot stuck in the barrel – which would be a massive pain in the arse to extract.

- 9) Put the wool mop attachment on your cleaning rod. Squirt some gun oil down the barrel and use the wool mop to spread it around and coat the inner surfaces.
- 10) Run an oily cloth over the outside of the barrel.
- 11) Squirt a little gun oil onto the toothbrush and give the internal and external parts of the lock a good going over to remove powder residue. Wipe it over with cloth to remove excess oil.
- 12) Put the whole musket back together and check it works.
- 13) Withdraw your ramrod and give it a once over with wet and dry (or a philosopher's stone) to remove any rust and finger prints. Give it a wipe with an oily cloth and replace.
- 14) Give the stock a quick once over with a rag and put your gun away somewhere dry and safe in a decent gun bag.
- 15) If you've been firing with your bayonet fixed it will have powder residue on it – remove with an oily cloth or toothbrush and wipe off excess oil.



## Full Strip Down

- 1) Put a kettle on.
- 2) Remove the lock by unscrewing the two screws on the left side of the stock.
  - a. Put the lock aside.
  - b. Put the screws somewhere sensible (and ensure you can identify which goes in which hole if they are different – e.g., if one has been filed to accommodate the ramrod).
- 3) Remove the barrel from the stock. This is done by:-
  - a. unscrewing the large screw at the tail of the barrel where it attaches to the top of the butt.
  - b. removing the three metal pins that hold the barrel on to the stock (there is one near the muzzle, one about half way down and one about halfway between the rear ramrod hoop and the lock).
    - i. these pins can be pushed through with a stout nail of the right size or a narrow punch, they may need a tap from a small hammer.
    - ii. go easy though – you don't want to chip the surrounding woodwork if you can avoid it.
    - iii. remember which one came from which hole – they are slightly different sizes because the stock tapers.
    - iv. there are other pins – but these hold on the ramrod hoops – you can take them off if you're doing a super-OCD-clean, but it's certainly not necessary every time and they are best left alone so they don't work loose.
  - c. unscrewing the front sling hook.
  - d. carefully lift the barrel out of the stock – try to lift it out evenly, rather than pull it out by one end or waggle it, as this might damage the woodwork (particularly the butt end as described at point a. above).
- 4) Squirt a little gun oil onto the toothbrush and give the area around the touch-hole a once over to remove powder residue.
- 5) Put the wire brush attachment onto your assembled cleaning rods and give the barrel a quick scour out. When you've finished up-end it so the flakes of powder kack fall out.
- 6) Plug the touch-hole with a matchstick or a cocktail stick (needs to be a quite snug fit) and put the funnel in the muzzle.
- 7) Pour black powder solvent into the barrel – as per the instructions on the bottle (and wearing gloves).
- 8) Top up the barrel with boiling water (remember the barrel gets very hot).

- 9) Prop the full barrel up somewhere safe (outside) and leave for 5 minutes (or whatever it says on the bottle) to work its magic.
- 10) Put the kettle on again.
- 11) Go back to the barrel (take the freshly boiled kettle with you). Remembering that the barrel is hot and full of nasty chemicals, unplug the touch-hole and allow it to drain – the stuff that comes out is nasty so be very careful where you drain it (i.e., not on the vegetable patch, or the wife's favourite shrub). Rinse the barrel through with boiling water.
- 12) Put the jag attachment on your cleaning rod and fit a piece of kitchen towel or cleaning cloth into it (use enough towel or cloth so that when it wraps around the jag it is fat enough to fill the barrel). Swab out the barrel until it is dry.  
  
TOP TIP: This will be a tight squeeze. When pushing/pulling the cleaning rod in the barrel, be careful not to unscrew the threads holding the cleaning rods and attachments together, otherwise you might unscrew one of them and leave the lot stuck in the barrel – which would be a massive pain in the arse to extract.
- 13) If the barrel still seems dirty, use some solvent on the kitchen towel/cleaning cloth. If it is still dirty, then repeat steps 6 to 12.
- 14) Put the wool mop attachment on your cleaning rod. Squirt some gun oil down the barrel and use the wool mop to spread it around and coat the inner surfaces (decent gun oil should have a moisture inhibitor which will dry out any water left in the barrel).
- 15) Give the outside of the barrel a once over with an oily cloth and remove any rust patches, finger prints or pitting with wet and dry or philosopher's stone.
- 16) Return to the lock and unscrew the frizzen, frizzen spring and the hammer jaws (removing the flint and flint leather). Take care to remember which screws came from where.
- 17) Give the lock and the components you removed a good going over with the toothbrush dipped in a bit of black powder solvent. Remember to move the hammer so you can access the areas covered at half cock and full cock.
- 18) Wipe excess solvent from the lock parts.
- 19) Use wet and dry, or wire wool, or philosopher's stone to remove any rust and finger prints etc from the lock.
- 20) Squirt a little gun oil onto the internal parts of the lock – work the hammer a few times to spread it around. Wipe it over with cloth to remove excess oil.
- 21) Put the lock back together and check it works.

- 22) Withdraw your ramrod and give it a once over with wet and dry (or a Philosopher's stone) to remove any rust and finger prints. Give it a wipe with an oily cloth and replace.
- 23) Before putting the whole musket back together dab Autosol on the barrel and external parts of the lock, spread it around evenly with a cloth and leave it for a minute to dry a bit. Buff it all up with a cloth (Autosol is a very fine abrasive that will polish the surfaces and leave a protective layer).

You may want to use Autosol (or Brasso) on the ram rod and brass fittings as well – it will bring them back to a super blingy shine without much effort.

- 24) Re-assemble the whole musket (remember where the screws all go??).

You may find the frizzen assembly a bit of a fiddle to put back together, this is normal – remain patient, you can do it!

Take care with the barrel pins – you might find that they want to fall straight back out again, if this is the case use two pairs of pliers to put a very slight kink in them, this introduces a bit of tension (the physics sort, not the murder mystery sort) which should be sufficient to hold them in the hole.

If you're putting her away for a while don't bother refitting the flint and flint patch as it is a moisture trap. You may also want to leave the lock assembly wrapped in an oily cloth, rather than fitted.

Don't store your musket with a leather frizzen cover on the frizzen, it is also a moisture trap.

- 25) Give the stock a quick once over with a rag. Look out for any chips and knocks and sand them or polish them as necessary.
- 26) If you've been firing with your bayonet fixed, it will have powder residue on it – remove with an oily cloth or toothbrush and wipe off excess oil. Treat the bayonet with Autosol as described above.

As with all bladed weapons, it is best to store your bayonet out of the scabbard.

- 27) Some form of moisture control device is recommended for use in your gun cabinet.