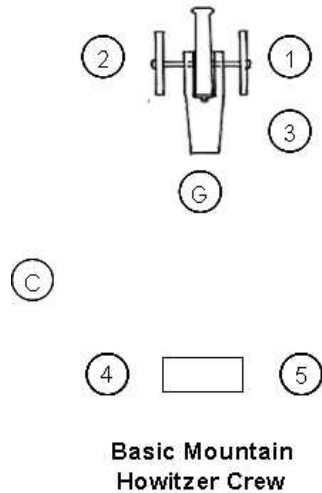


Mountain Howitzer Posts and Duties



- **Number 1** uses a sponge/rammer, a large ash staff with a wool-covered sponge head at one end, to be wet for cleaning and cooling the bore, and a rammer head at the other for ramming and seating the charge.
- **Number 2** uses a worm, a large ash staff with a two twisted metal hooks at one end, to be used to remove the remains of fired ammunition, or mis-fired ammunition, and exchanges positions with Number 5.
- **Number 3** wears a leather primer pouch attached to a belt, and holds the lanyard, a length of cord tied to a wooden handle, with a hook at the free end.
- **Gunner** has a pouch with the priming wire or vent pick, which is a pointed iron rod with a loop at the opposite end, and a vent brush, used to clean the vent and avoid fouling. The Gunner also carries a Finger Stall worn on the second finger of the left hand which is used to seal the vent during cleaning and loading, and wears a knee guard for kneeling.
- **Number 4** works together at the chest and has tools for preparing the ammunition.
- **Number 5** carries the ammunition between Number 4 and Number 2, and exchanges positions with Number 2.

When preparing to take their positions, the gun crew lines up behind the limber, facing the cannon, in the following formation:

6	4	2	G
7	5	3	1

When the Gunner gives the order: CANNONEERS, TAKE ACCOUTREMENTS!, Number 4 issues the following implements from the equipment box:

1. Number 1 – a pair of gloves
2. Number 2 – a pair of gloves and a haversack
3. Number 3 – the primer pouch, containing friction primers, and the lanyard
4. Gunner – a finger stall, a knee guard, and the priming wire
5. Number 5 – a pair of gloves and a haversack

When the Gunner gives the order: CANNONEERS, POST!, the gun crew moves forward to the positions in the diagram and stands at attention.

When the Gunner gives the order: CANNONEERS, TAKE IMPLEMENTS!, Number 3 assists Number 1 to take out the sponge and Number 2 to take out the worm.

When the Gunner gives the order: **CANNONEERS, SECURE THE PIECE!**, the Number 3 helps Number 1 & 2 return their implements to the carrying hooks on the bottom of the carriage and the rest of the cannon crew returns their implements to the equipment box. The gun crew then returns to their previous positions (posts or limber formations). When the Gunner gives the order: **CANNONEERS, FALL BACK ON THE LIMBER!**, the gun crew returns to their formation behind the limber. If no order has been given to Secure The Piece, Number 1 & 2 will bring their implements with them to the limber.

If the Mountain Howitzer is manned by a reduced crew, the following are the differences in the duties of each post:

- Two Cannoneers: The Gunner commands, tends the vent, aims, pricks the charge, primes the vent, and fires the cannon. Number 1 sponges and worms, serves the ammunition, and loads.
- Three Cannoneers: The Gunner commands, tends the vent, aims, pricks the charge, primes the vent, and fires the cannon. Number 1 sponges and rams. Number 2 worms, serves the ammunition, and loads.
- Four Cannoneers: The Gunner commands, tends the vent, aims, and pricks the charge. Number 1 sponges and rams. Number 2 worms, serves the ammunition, and loads. Number 3 primes the vent and fires the cannon.
- Five Cannoneers: The Gunner commands, tends the vent, aims, and pricks the charge. Number 1 sponges and rams. Number 2 worms and loads. Number 3 primes the vent and fires the cannon. Number 4 serves the ammunition to Number 2, occasionally alternating positions with him.
- Six Cannoneers: The Gunner commands, tends the vent, aims, and pricks the charge. Number 1 sponges and rams. Number 2 worms and loads. Number 3 primes the vent and fires the cannon. Number 4 remains with the ammunition. Number 5 alternates with Number 2.

Mountain Howitzer Drill

This Mountain Howitzer Drill, which is based on the 1851 drill for Mountain Artillery, is for use with cannons using Pack or Prairie Carriages. The most common cannon used for Mountain Service is the 12 pounder Howitzer, which is generally transported by mules. The carriage is disassembled for transporting the cannon from place to place – the barrel and shafts on one mule, the rest of the carriage on another mule, and the ammunition chest on a third mule. The cannon is considered to be “in battery” when the shafts are detached and the cannon is in the proper position in which to be fired.

The Mountain Howitzer By Detail Drill is designed to teach the 6-person mountain howitzer crew the specific loading and firing exercises step-by-step. In most artillery manuals, the By Detail drill is presented so the individual artillerist will know what to do for each of the By Detail instructions. This manual presents the By Detail drill so that the entire gun crew will

know what to do for each of the By Detail instructions. This is simply a reordering of the drill information, but it presents it in a way that is easier to teach and easier to learn as a group.

The commands for By Detail are as follows:

LOAD BY DETAIL – LOAD; Two, Three, Four; SPONGE, Two, Three, Four; RAM, Two, Three; READY; FIRE; SERVICE; Two, Three, Four; SPONGE, Two, Three; CEASE FIRE

Mountain Howitzer By Detail Artillery Drill (By Command)

CANNONEERS, POST

Number 1 – stands on the right side about one yard outside the wheel, in line with the axletree, holding the sponge about the middle of the staff in his right hand, and trailing it at an angle of 45 degrees, sponge head up.

Number 2 – stands on the left side about one yard outside the wheel, in line with the axletree, holding the worm about the middle of the staff in his left hand, and trailing it at an angle of 45 degrees, worm end up.

Number 3 – stands in line with the knob of the cascable, covering Number 1.

Gunner – stands at the end of the trail.

Number 4 & 5 – stand on the left and right side of the ammunition chest.

Chief of the Piece – stands outside of the trail and near the left cannoneer.

LOAD BY DETAIL

Number 1 – turns to the left to face the wheel and Number 2, and brings the sponge straight up with the right arm close to his side.

Number 2 – faces to the right to face the wheel and Number 1, and brings the worm straight up with the left arm close to his side.

Number 3 – turns to the left to face the vent.

LOAD

Number 1 – side steps to his right to bring his body just in front of the wheel.

Number 2 – side steps to his left to bring his body just in front of the wheel.

Number 5 – retrieves a charge from Number 4 and places it in his haversack.

Number 3 – takes a friction primer from the pouch, places it in the left hand, passes the hook of the lanyard through the eye of the friction primer continuing to hold the hook between the thumb and forefinger.

Gunner – plants left foot opposite to the knob of the Cascable, places the right knee upon the ground near and on the left of the trail, inserts and removes the vent prick to ensure the vent is clear of debris, returns the vent brush or prick to the pouch, places the finger stall over the vent with the second finger of the left hand and places the thumb on the base of the breech, and shouts “VENT CLOSED” to signal that the tube is ready for worming.

Number 4 – opens the limber chest, removes the correct powder charge, gives it to Number 5, and closes the limber chest. Number 4 keeps the limber chest closed and secure.

Two

Number 1 – tilts the sponge to the left and grasps it with both hands, holding it at about a 45 degree angle, forming a cross with Number 2’s worm across the front of the tube.

Number 2 – tilts the worm to the right and grasps it with both hands, holding it at about a 45 degree angle, forming a cross with Number 1’s sponge across the front of the tube.

Three

Number 1 –lowers the sponge into the sponge bucket below the tube, removes the sponge from the bucket, swings his left foot forward without moving the right foot and swings the sponge to the right, spins the shaft with his left hand to remove the excess water, swings his left foot backwards, and brings the sponge horizontal with the piece, just outside and to the right of the muzzle.

Number 2 – places the worm next to the muzzle with his hands towards the ends of the staff, left hand on top and right hand on bottom, inserts the worm into the muzzle, forces the worm home with the left hand, gives a minimum of two turns to the staff in the direction of the worm’s gaining twist, draws out the worm, listening carefully to make sure that any debris is caught in the worm and is being extracted, grabs the staff near the worm on the bottom with the right hand, straightens up and brings the worm close to the body, shouts, “CLEAR” to signal that the tube is free from debris. Worming continues until the tube is free from debris. The worm is never inserted until the Gunner yells, “VENT CLOSED.”

Four

Number 1 – turns to the left and faces the tube, inserts the sponge head into the muzzle immediately after Number 2 removes the worm and shouts “CLEAR,” and forces the sponge all the way down the tube.

Number 2 – rests the worm head on the axle, turns clockwise until facing away from the wheel, both hands up at shoulder height to signal that he is ready to accept the powder charge from Number 5 keeping his body is behind the muzzle.

SPONGE

Number 1 – looks at the vent to ensure it is closed, turns the sponge two turns to the left with both hands, turns the sponge two turns to the right with both hands, making sure that the sponge is all the way in. For best results the sponge should be pulled halfway out and rammed back in several times and turned left and right several times to ensure all embers are extinguished. If air is heard escaping from the vent, Number 1 yells, “STOP VENT.” Sponging continues until there is no air escaping from the vent.

Number 3 – adjusts the thumb stall (if “STOP VENT” is shouted) to maintain the air vacuum within the tube.

Two

Number 1 – draws out the sponge, holding the top of the staff with the right hand, grabs the bottom of the staff near the sponge head with his left hand, and places the sponge against the muzzle. There should be a ringing or thumping sound when removing the sponge is the vent is properly closed.

Number 5 – moves next to the Gunner, opens the pouch to presents the powder charge to the Gunner, moves forward to Number 2 and takes over the Number 2 position.

Gunner – inspects the powder charge in Number 5’s pouch to ensure that it is a proper charge, and waves Number 5 forward to deliver the powder charge to Number 2.

Number 2 – Takes over the Number 5 position and returns to the limber chest.

Three

Number 1 – turns the sponge by throwing the sponge head up with the left hand, rotating the staff with the right hand so the right hand is on the bottom with the thumb facing away from the muzzle and catching the top of the staff with the left hand, placing the rammer to the bottom of the muzzle, and tapping the muzzle two times to signal the Gunner that he is ready to ram the charge.

Number 2 – extracts the charge with the right hand, cups the charge with both hands close to the chest, turns counter-clockwise to face the tube, guides the charge along the bottom of the tube and carefully sets the charge just inside the muzzle, retrieves the worm in his left hand, and faces Number 1.

Four

Number 1 – inserts the rammer head only into the muzzle as soon as Number 2 has inserted the charge. He nods off Number 2, releases his left hand from the staff and joins it to the right hand.

Number 2 – returns to POST position. The worm is placed on the left toe and the left arm is extended forward.

RAM

Number 1 – throws his left hand over the piece, rams the charge home with his right hand, thumb pointing away from the muzzle, by leaning to the left and almost throwing the rammer down the tube while dropping the right hand. The charge is seated by carefully taking the staff by the right hand, thumb pointed out, withdrawing it slightly, and ramming the charge firmly but lightly only once, dropping the right hand below the muzzle as soon as the rammer hits home.

Two

Number 1 – jerks the rammer out with his right hand, thumb pointing away from the muzzle, allowing it to slide through the hand as far as the middle of the staff, grabs the staff with the left hand close to the rammer head, thumb pointing away from the muzzle, removes the

rammer, stands straight with the rammer straight up, sponge head up, in the right hand with the right arm close to the body.

Three

Number 1 – takes one step back and one step towards the trail, holding the rammer in the left hand to return to POST position.

Gunner – raises the vent prick with the right hand to signal that the piece is loaded.

READY

Number 1 – bends toward the trail, covers right ear with right hand, and keeps eyes on the muzzle, to detect a possible misfire, and on the field of fire to ensure there is no one in the field of fire.

Number 2 – bends toward the trail, covers left ear with left hand, and keeps eyes on the muzzle, to detect a possible misfire, and on the field of fire to ensure there is no one in the field of fire.

Number 3 – steps forward to the right, ensuring that no part of his body is in a straight line with the wheels, inserts the primer into the vent, moves to the rear and the left to remove the slack in the lanyard and to get clear of the wheels, holds the lanyard in his right hand, surveys the field of fire, waves off the Gunner, and surveys the field.

Gunner – holds the vent prick between the index finger and the thumb of the right hand making sure that no part of his hand is directly above the vent prick or inside the vent prick ring, inserts and removes the vent prick to puncture the powder charge, returns the vent prick to the pouch. After Number 3 inserts the friction primer into the vent, holds the lanyard for Number 3 against the left rear of the tube with his right hand open flat, palm down, until Number 3 has walked out the slack and signalled the Gunner to step outside the wheel to prepare to FIRE. If the Gunner cannot prick the powder charge due to its position within the tube, Number 1 may need to Reseat the Charge (carefully ram it home one more time). If the Gunner still cannot prick the powder charge, the charge must be treated as a misfire (see Mountain Howitzer Misfire Drill section).

FIRE

Number 1 – if the gun fired correctly, Number 1 automatically turns to the left to face the wheel and Number 2, and brings the sponge straight up with the right arm close to his side.

Number 2 – if the gun fired correctly, Number 2 automatically faces to the right to face the wheel and Number 1, and brings the worm straight up with the left arm close to his side.

Number 3 – pulls the lanyard firmly toward his body or behind his body. If the gun fired correctly, Number 3 automatically turns to the left to face the vent.

Gunner – if the gun fired correctly, the Gunner returns to POST position.

SERVICE

Number 1 –side steps to his right to bring his body just in front of the wheel.

Number 2 – side steps to his left to bring his body just in front of the wheel.

Gunner – plants left foot opposite to the knob of the Cascable, places the right knee upon the ground near and on the left of the trail, inserts and removes the vent prick to ensure the vent is clear of debris, returns the vent brush or prick to the pouch, places the finger stall over the vent with the second finger of the left hand and places the thumb on the base of the breech, and shouts “VENT CLOSED” to signal that the tube is ready for worming.

Two

Number 1 – tilts the sponge to the left and grasps it with both hands, holding it at about a 45 degree angle, forming a cross with Number 2’s worm across the front of the tube.

Number 2 – tilts the worm to the right and grasps it with both hands, holding it at about a 45 degree angle, forming a cross with Number 1’s sponge across the front of the tube.

Three

Number 1 –lowers the sponge into the sponge bucket below the tube, removes the sponge from the bucket, swings his left foot forward without moving the right foot and swings the sponge to the right, spins the shaft with his left hand to remove the excess water, swings his left foot backwards, and brings the sponge horizontal with the piece, just outside and to the right of the muzzle.

Number 2 – places the worm next to the muzzle with his hands towards the ends of the staff, left hand on top and right hand on bottom, inserts the worm into the muzzle, forces the worm home with the left hand, gives a minimum of two turns to the staff in the direction of the worm’s gaining twist, draws out the worm, listening carefully to make sure that any debris is caught in the worm and is being extracted, grabs the staff near the worm on the bottom with the right hand, straightens up and brings the worm close to the body, shouts, “CLEAR” to signal that the tube is free from debris. Worming continues until the tube is free from debris. The worm is never inserted until the Gunner yells, “VENT CLOSED.”

Four

Number 1 – turns to the left and faces the tube, inserts the sponge head into the muzzle immediately after Number 2 removes the worm and shouts “CLEAR,” and forces the sponge all the way down the tube.

Number 2 – stands facing Number 1.

SPONGE

Number 1 – looks at the vent to ensure it is closed, turns the sponge two turns to the left with both hands, turns the sponge two turns to the right with both hands, making sure that the sponge is all the way in. For best results the sponge should be pulled halfway out and rammed back in several times and turned left and right several times to ensure all embers are extinguished. If air is heard escaping from the vent, Number 1 yells, “STOP VENT.” Sponging continues until there is no air escaping from the vent.

Gunner – adjusts the thumb stall (if “STOP VENT” is shouted) to maintain the air vacuum within the tube.

Two

Number 1 – draws out the sponge, holding the top of the staff with the right hand, grabs the bottom of the staff near the sponge head with his left hand, and places the sponge against the muzzle. There should be a ringing or thumping sound when removing the sponge is the vent is properly closed.

Three

Number 1 – return to POST position. The rammer is placed on the right toe and the right arm is extended forward.

Number 2 – return to POST position. The worm is placed on the left toe and the left arm is extended forward.

Gunner – returns to POST position.

CEASE FIRE

When this command is issued by the Gunner or other commanding officer, the cannon crew returns to POST positions and awaits further orders. If the cannon has just been fired, the cannon is serviced first. If the cannon is loaded, but not yet fired, Number 1 places the rammer on the right wheel to signal that the cannon is loaded.

Any member of the gun crew is not only allowed, but is required to shout “CEASE FIRE!” if the field of fire is not clear or if there is another potential safety problem. It is the responsibility of each member of the gun crew to act as a Safety Officer.

If the CEASE FIRE command is not given, the gun crew repeats the LOAD; Two, Three, Four; SPONGE, Two, Three, Four; READY; FIRE; SERVICE, Two, Three, Four; SPONGE, Two, Three until the CEASE FIRE command is given.

Once the gun crew understands and can demonstrate the By Detail drill proficiently, the gun crew should practice the drill without detail.

The commands without Detail are as follows:

LOAD; READY; FIRE; SERVICE; CEASE FIRE

For the purposes of drilling, the Instructor typically takes the role of the Gunner and issues all commands. When drilling Gunners, the Instructor takes the role of Chief of the Section or another commanding officer.

Changing Posts

From time to time, it is important from each member of the gun crew to change positions so that any cannoneer can serve at any position when needed. The commands to change positions are as follows:

CHANGE POSTS, MARCH

When the command CHANGE POSTS is given, the cannoneers face about, take off their implements, and place them on the piece or the ammunition chest. When the command MARCH is given, all cannoneers step off and take the post and equipment of the cannoneer in his front as follows:

1. Number 2 passes around the muzzle and takes the Number 1 position
2. Number 1 moves back to take the Number 3 position
3. Number 3 moves back to the limber chest and takes the Number 4 position
4. Number 4 moves to the other side of the limber chest and takes the Number 5 position
5. Number 5 moves forward and takes the Gunner position
6. The Gunner moves forward and takes the Number 2 Position

Mountain Howitzer Misfire Drill

There are a number of reasons a cannon may misfire: the Gunner may not have broken open the powder charge with the vent prick, the primer may be bad, the charge may have rolled away from the vent, etc. If the cannon fails to go off, the Gunner will give the command:

FAILED PRIMER – DO NOT ADVANCE!

Number 1 – places the rammer on the wheel to signal that the cannon is loaded and is not to be approached.

Number 2 – takes three large steps backwards, sets down the worm on the ground in front of him, and raises both hands to the chest level, facing out.

Number 5 – secures the pliers and other primer removal implements from the limber, places them in his pouch, gives them to Number 2, and then stands with Number 2.

The remaining members of the gun crew remain in their READY positions.

When at least 3-5 minutes have elapsed from the time the gun has stopped smoking, the Gunner will give the command:

STRIKE THE PRIMER!

Number 2 – backs to the piece with the pliers in the left hand, reaches back to remove anything remaining in the vent, and then hands the pliers back to Number 5.

Number 5 – takes the pliers from Number 2 and returns to the ammunition chest.

Gunner – hands Number 2 the vent prick.

Number 2 – takes the vent prick the same way the pliers were taken, holds the prick between the index finger and the thumb making sure that no part of his hand is directly above the prick or inside the prick ring, inserts the prick into vent and re-pricks the powder charge, and gives the vent prick back to the Gunner.

Gunner – takes back the vent prick and returns to READY position.

Number 3 – steps forward with his back to the piece and hands Number 2 the lanyard with another primer attached.

Number 2 – inserts the primer and holds the lanyard against the rear and left of the tube while Number 3 removes the slack in the lanyard.

Number 3 – removes the slack in the lanyard and signals with a nod to Number 2 that he may withdraw.

Number 2 – upon receiving the nod from Number 3, retrieves the worm, and returns to the READY position.

Number 1 – takes down the rammer from the wheel, and returns to the READY position.

Gunner – ensures everyone is in their READY position before giving the command to FIRE the cannon again.

Number 3 – pulls the lanyard to fire the gun again.

If the cannon fires, the cannon is serviced normally. If the cannon fails to fire, the above procedure shall be followed again to extract the primer. However, rather than attempt another firing, the vent shall be flooded with water to put out any spark left by the primer, and then the muzzle shall be flooded with water. The Gunner will give the order:

FLOOD THE TUBE!

All members of the gun crew not directly involved should fall in behind the limber.

Number 5 – brings forward a large syringe to Number 2.

Number 2 – injects at least 10 syringe loads into the vent.

Number 2 – uses the sponge bucket to flood the muzzle.

After the powder charge has had time to be sufficiently soaked, the command is given:

REMOVE THE CHARGE!

Number 1&2 – raise the trail handspike, pointing the muzzle down. If this does not work, then the charge needs to be wormed.

Number 2 – worms the charge out and submerges it in the water bucket. After several minutes, Number 2 takes the powder charge out of the water, walks it forward of the cannon a safe distance, and, using the worm, breaks it open.

The United States National Park Service also recommends using a CO2 fire extinguisher, rather than water, to handle rendering a misfired charge inert in the tube. The CO2 is injected into the tube via the vent. This deprives the charge of the oxygen needed to ignite, and in many cases will actually cause the misfired charge to exit the tube due to the pressure introduced by the CO2 fire extinguisher. All members of the gun crew should take positions well away from the cannon carriage when the CO2 is released into the vent.

There is a slight chance of a static spark being created by the movement in the tube of the misfired charge in the CO2 environment, but the risk is substantially less than what Number 2 faces during the Misfire Drill. If the misfired charge is rolled according to the standards outlined in this manual (see Section 8), the risk is minimal and any spark created by the CO2 should not be able to ignite the powder. As with all misfires, extreme caution should be used to prevent injury should the powder accidentally ignite.

Once the misfired charge has been removed from the tube, either by being forced out from the CO2 or by the means described in the Misfire Drill, the misfired charge needs to be handled according to the Misfire Drill (submerged and broken open – see above).