

# Flamethrower Shooting Gallery Operations Manual



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## Glossary

|         |  |
|---------|--|
| Asst RM | Assistant Range Master                   |
| ESD     | Emergency Services Department            |
| FO      | Fuel Operator                            |
| GC      | Gate Captain (aka "Captain of the Gate") |
| GK      | Gatekeeper                               |
| RM      | Range Master                             |
| RSO     | Range Safety Officer                     |

## Range Rules

1. OBEY ALL RANGE SAFETY OFFICER's ORDERS
2. YOU MUST NOT BE DRUNK OR STUPID
3. WE DECIDE THE MEANING OF DRUNK OR STUPID
4. NO LOOSE LONG HAIR
5. ALL BAGGAGE STAYS AT THE GATE
6. NO CLOTHING THAT COULD MELT
7. NO SMOKING UNLESS YOU ARE ON FIRE
8. IN CASE OF DISPUTE SEE RULE NO. 1

## Four Rules of Flamethrower Safety

1. Never point a Flamethrower at anything you are not willing to destroy.
2. A Flamethrower is always loaded, unless personally verified by you.
3. Always be aware of your target, and what is behind it.
4. Never touch the trigger unless actually engaging a target.

## General Safety Procedures

*In case of any event ...*  
**NOTIFY the Rangemaster**

### **IN THE CASE OF A MINOR EVENT...**

*(spill under 2 ft in diameter and less than a quart; propane leak without a puncture or severed line; fire which poses no threat to persons or property)*

| <b>MINOR</b>      | <b>LIQUID FUEL SPILL</b>  | <b>PROPANE LEAK</b>  | <b>FIRE</b>  |
|-------------------|---|--|--|
| <b>ISOLATE</b>    | Stop the leak.<br>Move people and flammable materials at least 5 feet from spill.<br>Locate nearest extinguisher, | Stop the leak.<br>Locate nearest upstream valve and shut it off. | Move people and flammables at least 5 feet away.<br>Locate nearest extinguisher. |
| <b>EXTINGUISH</b> | n/a   | n/a  | Allow fire to burn itself out, or use extinguisher if it is in danger of growing |
| <b>OVERHAUL</b>   | Allow the liquid to evaporate.  | n/a  | Shovel any debris into 5 gallon open container.                                  |

### **IN THE CASE OF A MAJOR EVENT...**

*(spill over 2ft in diameter or more than a quart; punctured or severed propane line; fire which poses a threat to persons or property)*

| <b>MAJOR</b>      | <b>LIQUID FUEL SPILL</b>   | <b>PROPANE LEAK</b>  | <b>FIRE</b>  |
|-------------------|--|--|--|
| <b>ISOLATE</b>    | Team up with partner.<br>One person picks up extinguisher and the other evacuates 25' radius.<br>Stop any leaks. |  |  |
| <b>EXTINGUISH</b> | Shovel gravel if nessecary to contain spill area.  | Shut off nearest upstream valve, contact ESD if no valve is accessible | Extinguish people and property. If you cannot extinguish fire, contact ESD and attempt to contain. |
| <b>OVERHAUL</b>   | Allow the liquid to evaporate.   | n/a  | Shovel any debris into 5 gallon open container.  |

## Operating Procedures

When operations at the Flamethrower Shooting Gallery commence, RM announces: *“The Range is going hot!”* When the range is hot, everyone in the Gallery MUST put on splash-proof eye protection and gloves.

### *Fuel Operations*

The Flamethrowers use 1-litre fuel bottles which are filled before the range opens and kept in a ready-supply area in secondary containment. Full bottles are brought to the shooting table for loading, and empties are set aside for refilling.

### Filling the Fuel Bottles

Filling of fuel bottles only happens when the range is "cold" - no open flames, and only crew inside the perimeter.

Up to 12 fuel bottles can be filled at a time using our custom made fueling rig:



The filling procedure is:

1. Place the fueling rig in a secondary containment tub.
2. Remove the top half of the fueling rig and set aside.
3. Place up to 12 empty bottles in the bottom half of the rig.
4. Carefully slide the top half of the rig on to the bottom half.
5. Position a funnel in each of the cylinders that have a fuel bottle (up to 12) in the top half, making sure the bottom tip of the funnel is inside the fuel bottle below.
6. Firmly seat the rubber stopper in each funnel. The wire handle should be standing straight up.
7. Fill the funnels all the way to the top.
8. Gently dislodge the stoppers by moving the wire handle on each stopper to the edge of funnel, and twisting gently.
9. After all funnels have drained into the fuel bottles remove the top half of the rig and set aside.
10. Screw caps into all the filled fuel bottles. Check that each bottle does not leak when turned upside down over the containment area.
11. Set the filled bottles in the ready-supply area secondary containment.

### **Supplying Fuel for Loading**

While the shooting gallery is in operation full fuel bottles need to be brought up to the shooting table for the RSOs to load the flamethrowers. Caps and the empty bottles are collected and set aside for refilling later. The process goes like this:

1. Fuel Operators bring full fuel bottles to the shooting table, one for each flamethrower.
2. Each RSO gets one full bottle for loading.
3. Caps and empties are collected. Caps go into a bucket, empty bottles into crates for filling later.

### ***Loading the Flamethrowers***

(NB: This process has changed for 2009 compared to 2008, as the flamethrowers now rest on steel mount-points, so a second person is no longer required for loading/unloading.)

1. Verify that the flamethrower is unloaded and the fuel bottle has been removed. (See UNLOADING THE FLAMETHROWERS procedure.)
2. FO brings 4 full fuel bottles to the range table.
3. Each flamethrower is loaded by one RSO.
  - a. check that all valves – safety, compressed propellant gas, propane – on the flamethrower are closed.
  - b. Make sure the compression nut (above the bottle) is screwed all the way up towards the top of the flamethrower.
  - c. Open a filled fuel bottle and give the bottle cap to the FO who will put it in the empties bucket.

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- d. Keeping the fuel bottle upright, lower it down through the refueling hole in the table, just far enough to bring it up onto the dip tube.
  - e. Keep your dominant hand under the fuel bottle and use your other hand to guide it onto the threads. Using your dominant hand, gently rotate the fuel bottle clockwise until it's just touching the O-Ring or gets hand tight. Above all: DON'T FORCE IT. (Some of the bottles will get tight before they make it all the way to the O-Ring.)
  - f. Turn the compression nut, driving it down, compressing the O-Ring. This should be tightened VERY FUCKING TIGHT.
4. RM (or Asst RM) checks each fuel bottle visually to ensure that it is correctly threaded and physically check the tightness of the compression nut.

(Step 5 is only necessary in the first round ... )

5. RM (or Asst RM)
  - a. Checks that all valves are closed.
  - b. Connects propane lines.
  - c. Connects compressed gas.

## **Selecting Shooters**

The gate is managed by the Gate Captain (GC), with the assistance of one or more Gatekeepers (GK), collectively referred to as the Gate Crew.

To ensure the safe and fun use of the range by participants, selection of shooters falls to the Gate Crew.

- The selection of shooters is *not* a fair process.
- There is no line.
- The Gate Crew needs to carefully choose each shooter.
- No one has the “right” to shoot, regardless of who they are, or who they know.

Most of the people that the Gate Crew engages will not be among the 80 or so lucky individuals who will get to participate on a given night.

The main challenge for the Gate Crew is to be able to say ‘no’ to many possible participants, while keeping it fun and safe.

The Gate Crew's job is to look for participants who:

- are very interested
- will follow instructions
- are sane and sober
- will pay attention and ‘be present’ while on the range

If there are doubts about safety, or any participant’s willingness to follow directions the Gate Crew must not allow the participant(s) into the range.

Gate Crew must pay attention to their gut feelings, and never be pressured into allowing someone into the range.

If any member of the Gate Crew feels they need help then they are to consult with the GC, RM, and/or Asst RM.

Methods of selection vary with the individual, but generally the Gate Crew should enjoy talking to and making eye contact with people. The process of choosing shooters requires engaging the public and possibly re-engaging those who might work before making a decision. It is important to remember that it can be hard to determine if an individual might be under the influence of a substance that may have “come on” during the time they are waiting to shoot, so the Gate Crew must keep an eye on those waiting to shoot and re-engage them periodically to assess if they are still a viable and safe participant.



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Generally, the Gate Crew should not allow a group of participants, who show up together, to shoot together. Exceptions to this will be based on the Gate Crew's assessment of each possible participant and their group dynamic. Groups of friends are more likely to be distracted by their friends' antics and may not pay the necessary attention to their own actions, which could cause safety issues.

### **Guest Passes**

When the Gate Crew is screening the public for possible shooters, they should first seek those who hold a "guest pass." The entire FSG crew will have been given "guest passes" to give away during the event. These "guest passes" only allow the guest to be considered ahead of others and do not guarantee that an individual will shoot. All the rules still apply (e.g. not drunk, no clothing that can melt, etc.) If there is any question about safety or the validity of a "guest pass," the Gate Crew should consult with the GC, RM, and/or Asst RM.

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The guest passes are stamped on the back with a validation stamp and look these examples:



## **Shooter Preparation**

1. The range entrance should be gated, and have a gated vestibule (for holding the next group), and an exit. There should be a convenient place to hold the waiver clipboard (if used), and a place for storage of shooter's baggage.
2. GKs (Gatekeepers) are responsible for getting groups of shooters, and managing the crowd, by making announcements like:
  - a. *"There is no line. Come talk to me (or to the barker if there are multiple GKs with divided responsibilities) if you want to shoot."*
  - b. *"The best place to watch is over at the sides of the range"*
  - c. *"Please read the rules. Especially #2."*
  - d. *"Now read rule #3."*
3. GKs check shooter candidates:
  - a. Not drunk or stupid.
  - b. Not wearing anything which will melt. Remove or cover it.
  - c. Age (no specific age limit on the playa, but children must accompanied by an adult. GK discretion about what constitutes "children.")
  - d. Hair will not get in the way
4. Once a group is released to the RSOs, the next group of four shooters are let into the vestibule.
5. The GK responsible for prep will double-check against the list in #3 above.
6. The GK will tell the shooters, *"Everything we do is for your safety, and to ensure that you have a great time. Have you read the rules?"*
7. The GK will tell the shooters, *"Once the range is ready, and the flamethrowers have been refueled, I will let you through to meet your Range Safety Officers. They will get you goggles and gloves, and you must keep them on at all times until you have been told that you may remove them. Do not remove your goggles until you have been instructed to do so. (People tend to take them off the moment they stop shooting.) The RSOs will give you instructions on how to shoot. Do you understand?"* Look for confirmation.
8. When the previous set of shooters has finished, the GK will make sure that they have returned gloves and goggles, get them their clothing and gear, and point them to the exit.
9. When the RM says, *"Shooters, get yourself a Range Safety Officer,"* the GK will open the gate and point the shooters toward the RSOs.

## **Course of Fire**

1. RM or Asst RM sets Nitrogen manifold pressure to 40 psi.
2. RM command: *"Do we have 4 Range Officers with trigger wires?"*  
Each RSO holds up a trigger wire.
3. RM command: *"Do we have 4 Shooters?"*  
Each RSO raises a hand.

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4. RM command: *“Shooters, get yourself a Range Safety Officer!”*  
GKs let in the shooters who are immediately equipped by their RSOs with goggles and gloves.
5. RSOs make sure their shooters read, understood, and are in full compliance with the range safety rules.
6. RSOs escort their shooters to the safety line.
7. EDUCATING THE SHOOTERS
  - a. At the Safety Line, RSOs explain the course of fire:

*“You are going to be brought up to the shooting table, you will be shown how to operate the flamethrowers, and then you will be brought back behind the safety line while we light the pilot lights. If anything comes out of the flamethrower except at the nozzle end, I will tell you, ‘Stop. Let go of the flamethrower. Step behind the Safety Line.’ Do you understand?”*
  - b. Bring the shooter to the Shooting Table. Show the shooter how to pressurize the flamethrower and how to operate the fuel trigger, stressing the use of using many short bursts. Have the shooter actually operate the fuel trigger several times so they can feel what “several short bursts” feels like. Ask them if they have any questions. Remind the shooter ...

*“If anything comes out of the flamethrower except at the nozzle end, I will tell you, ‘Stop. Let go of the flamethrower. Step behind the Safety Line.’”*
8. After educating their shooters, the RSOs and shooters step behind the safety line.
9. When all RSOs and shooters are behind the safety line ...  
RM announces: *“The shooters are educated. We will light the pilot lights.”*
10. Asst RM opens the nitrogen and propane manifold valves.
11. Asst RM goes down the line opening the pilot light valves while the RM – starting downwind and proceeding upwind – lights each pilot light, turning the safety off and announcing each one as it’s lit ...  
RM announces: *“First safety is off. Second ... Third ... Fourth and final safety is off.”*
12. RM announces: *“Pilot lights are lit. The Range is hot!”*
13. RM command: *“Bring your shooters up to the line.”*
14. RM command: *“Without touching the trigger wire, pressure-test your flamethrower.”*  
RSOs or shooters squeeze the pressure valve, bringing the pressure up to 40 psi (or a little over), and lets go. Watch to see that the needle does not drop, which would indicate a leak. If there’s a leak, try tightening the seal on the fuel bottle, or contact the RM. If the needle doesn’t move after a few seconds, the RSO raises their arm and tells the shooter to re-squeeze the pressure valve and keep it squeezed.
15. RM announces: *“We have one ... two ... three ... four pressurized flamethrowers.”*

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16. RM announces: *“The Line is pressurized!”*  
Asst RM turns off the overhead table lights.
17. RM command: *“You may commence firing!”*  
RSOs hook the trigger wire on and hand it to the shooter. RSO is responsible for watching for any malfunctions of the flamethrowers during the firing.
18. If appropriate, the RSO should remind the shooter to use short bursts while firing.
19. Each RSO, when their shooter is finished, says: *“You’re done. Let go of the flamethrower and step behind the safety line.”*  
RSO takes the trigger wire off the flamethrower and follows the shooter back behind the safety line.
20. After all shooters are behind the safety line ...  
RM announces: *“Let’s hear it for our shooters!!” (Applause and cheers)*
21. Asst RM shuts off the nitrogen and propane manifold valves (same valves as in step #10), and goes down the line shutting off the individual pilot light valves.
22. RSOs retrieve goggles and gloves from their shooters and escort them to the gate.
23. GKs escort the shooters out of the Gallery, double-checking to ensure that no one is leaving with our gloves or goggles, and that they take their baggage.
24. After the shooters have left, the RSOs come back to the table and, using the trigger wire and squeezing the pressure valve, dump the pressure out of the flamethrowers. The RM and Asst RM put all the safeties on.

### ***Unloading the Flamethrowers***

1. Check the pressure gauge and verify that it reads zero.
2. Back off the compression nut.
3. Slowly unscrew the fuel bottle until it disengages from the threads, draw the bottle down off the dip tube, and remove it.
4. Give the bottle to the FO, who will put it in the empties bucket.
5. Repeat previous steps for each flamethrower.

If we are reloading, then go back to LOADING THE FLAMETHROWERS.

If we are finished or taking a break, RM says: *“Range is clear.”*