

DryFire Version 5 User Guide

User Guide Version 5.1 issued 1st January, 2021.

Please see the web site for the latest version and for more documentation that may help you:

<https://wordcraft.com/support>

Safety

You are personally responsible for your own safety and the safety of others around you.

Wordcraft International cannot be held responsible if you ignore these warnings.

- Ensure your gun is **unloaded** before using it with DryFire - **double check semi-automatics**.
- Just as at the shooting ground, **never** point a gun at anyone.
- Keep batteries and other small parts way from young children.
- Avoid explosions and fire by never recharging batteries unless they say "Rechargeable".
- Use a cable protector to ensure you don't trip over trailing mains or USB cables.
- To prevent damage to your eyes, and the eyes of others, **never** look into a laser and **never** point it at anyone.



Translation



1. Download this PDF document to your PC.
2. Visit the Google translate page:
<https://translate.google.com/?sl=auto&tl=en&op=docs>
3. Select the language you require.
4. Locate this PDF document on your PC.
5. Click on "**Translate**".
6. The text will be translated but you will need this English PDF for the illustrations.

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1 What's in the box

Check you have the following items and contact us if anything is missing.

1.1 DryFire

- Simulator with two heads.
- Power supply with mains cable.

The DryFire power supply generates 5V to power the simulator. Most homes have lots of different power supplies lying around – **using the wrong one will damage the simulator.**

The two heads on the simulator will nod up and down when the USB cable is connected to a PC and the power supply is connected to the simulator and switched on at the mains.

If this doesn't happen it probably means that the wrong power supply has been used at some time. Please follow this link for a test procedure.

https://wordcraft.com/dryfire/help/df_sim_test

- Universal Gun Assembly (UGA) and barrel clamp.
- Trigger switch and cable.
- USB cable.

1.2 Swing

- USB cable
- No power supply is required for Swing because it has an internal battery which is being charged continuously over the USB port. The battery provides the energy for the two servo motors moving the laser spot.

Important note about Swing battery

Swing uses a 16340 Lithium Ion (Li Ion) battery.

Li Ion batteries can be permanently damaged if they are over charged (>4.2V) or undercharged (<2.5V).

The Swing PCB contains a circuit to prevent over or undercharging.

However, if Swing is used until it stops working, and is then put away without recharging, there is the possibility that, over time, the voltage will fall too low - resulting in damage. If this happens the battery must be replaced.

So:

- Always charge the Swing battery via the USB socket – from a PC/Laptop or wall charger.
- Always recharge Swing after use – the green LED will come on when the battery is fully charged.
- Remove the battery if Swing is to be left unused for a long time, Undo the four screws to remove the base and take out the battery.
- **Be very careful when replacing the battery** - a large "+" symbol on the PCB shows where the positive end of the battery should go.

2 Installation

2.1 Preparing your room

2.1.1 Lighting

DryFire detects a pulse of infrared (IR) light fired from the Universal Gun Assembly (UGA) so you require a room with subdued lighting and with no direct sunlight or artificial light falling on the wall/screen or being reflected from it.

You will probably want a darker room if you are using the projection add-on - so you can see the screen better.

Be careful with targets taken beyond your normal break zone - the cameras may be seeing light to the sides and you may get false shots. Check for reflected light from doors or windows, reduce overall lighting and try again. If all else fails, you can reduce the sensitivity of the cameras.

2.1.2 Measurements

To present accurate targets DryFire needs to know two things:

- where the simulator is (distance from wall and height above floor).
- where your eyes are (distance from wall and eye height when you are in your shooting stance).

The reference point for measurements is the centre of the circular indentation on the top surface of the simulator's metal case



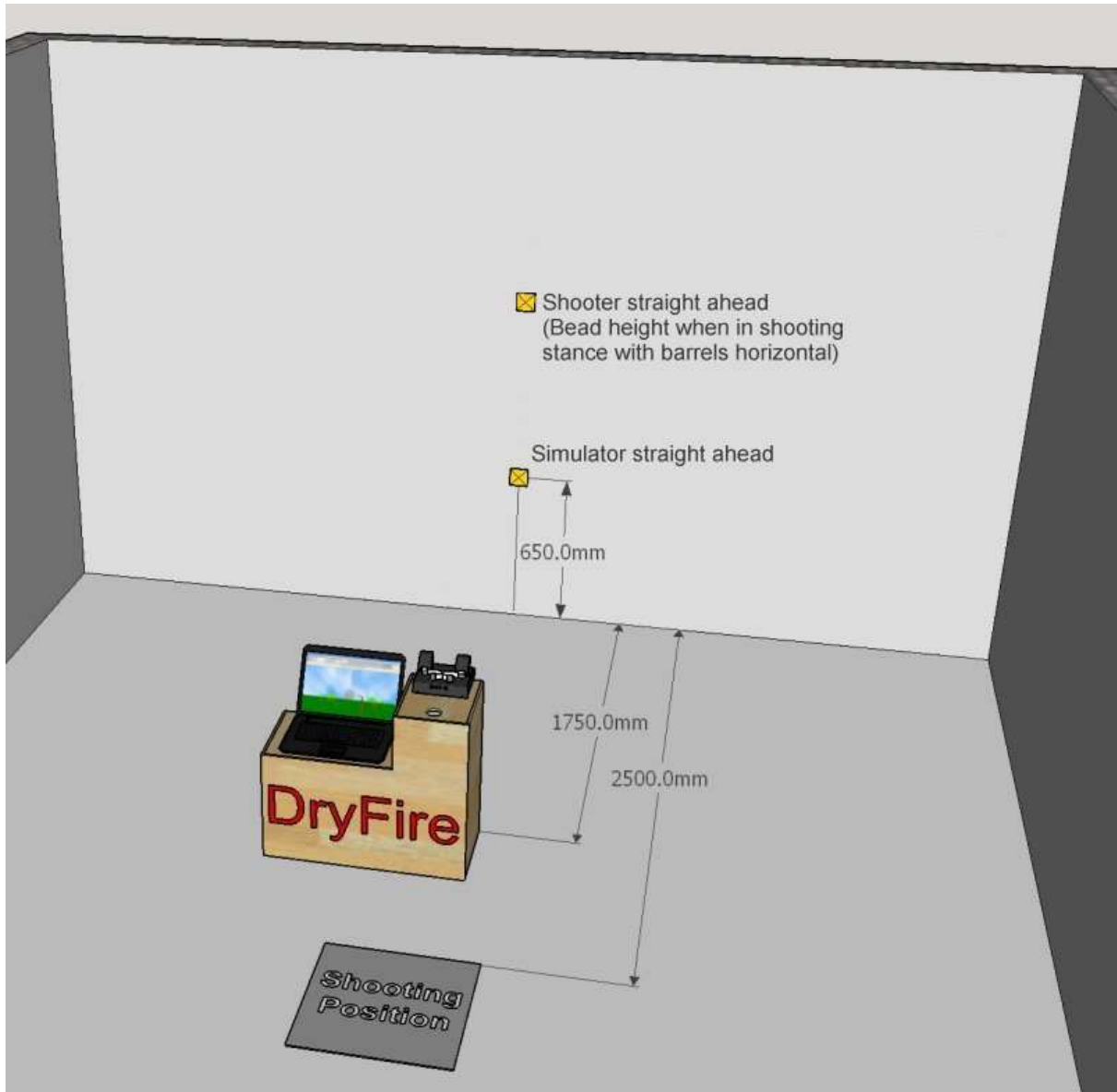
The drawing below has the simulator mounted on the DryFire shooting stand:

<https://wordcraft.com/dryfire/articles/cabinet>

The drawing shows:

- simulator to wall: 1.75m,
- simulator from floor: 0.65m,
- shooter from wall: 2.50m,

- the lower Post-it note marking the simulator straight ahead position - directly in front of, and at the same height as, the simulator,
- the upper Post-it note marking the shooter straight ahead position - directly in front of, and at the same height as **the shooters eye's when in the shooting stance**.
- This is an example only - your measurements will probably be different.



Take great care with "shooter straight ahead".

- DryFire calculates everything from the viewpoint of your eyes when in the shooting stance.
- This is not the same as your physical height and not the same as your eye height when standing up.
- Imagine a shooter 1.83m (6') tall.
- When in the shooting stance, with the barrels perfectly level, the bead points to a location 1.52m (5') from the floor. That is the shooter straight ahead height for the Post-it note.

The spreadsheet below shows suitable measurements for use with DryFire. The ceiling, slope, left wall and right wall values are rarely used.

	A	B	C	D	E	F	G	H
1	DryFire setup measurements							
2								
3	DryFire always operates internally in metres. Values may be entered and displayed in inches							
4								
5		Metric (metres)				Imperial (inches_)		
6		Minimum	Example	Maximum		Minimum	Example	Maximum
7								
8	Simulator to wall/screen	1.50	1.75	2.00		59.1	68.9	78.7
9	Simulator from floor	0.50	0.80	1.00		19.7	31.5	39.4
10	Shooter to wall	2.00	2.50	3.00		78.7	98.4	118.1
11								
12	Ceiling height	2.00	2.40	4.00		78.7	94.5	157.5
13	Slope start	0.50	1.50	2.00		19.7	59.1	78.7
14	Slope in	0.25	1.00	3.00		9.8	39.4	118.1
15	Left side wall	1.50	2.00	3.00		59.1	78.7	118.1
16	Right side wall	1.50	2.00	3.00		59.1	78.7	118.1

2.2 Detailed preparation

- Prepare two Post-It notes (see the drawing above) by drawing diagonal lines to mark their centres.
- The DryFire simulator should face the centre of the wall/screen and be **absolutely parallel with it**.
- The reference point for DryFire measurements is the centre of the indented circle on the top of the simulator's metal case.
- The simulator should be between 1.5m and 2.0m from the wall/screen.
- The simulator should be between 0.5m and 1.0m from the floor.

The optional **DryFire Shooting Stand** is ideal for this - the simulator will be 0.65m from the floor.

- Put a Post-It note on the wall/screen directly in front of the simulator and at the same height - this is the "simulator straight ahead" position. Measure the distance from the wall/screen and the height from the floor.
- Measure how far the left and right walls are from the simulator.
- Measure the ceiling height.
- If the wall has a slope, measure how far up from the floor it starts and how far the top extends into the room.
- Decide your shooting position and measure the distance from the wall/screen.
- Stand in your shooting position, adopt a shooting position pointing straight ahead with your gun barrel horizontal. (Get someone to put a spirit level on your barrel to ensure it is horizontal.) Use a Post-It note to mark the position your are pointing at on the wall/screen. This is the "shooter straight ahead" position
- If your shooting position is not directly behind the simulator measure how far it is to the right (entered as a positive value, e.g. 0.60m) or left (entered as a negative value, e.g. -0.60m) of the simulator straight ahead position.
- Write down all your measurements before running the software. Keep the list safe for future reference

2.3 Gun assembly setup

The gun assembly has two parts: a trigger switch and a Universal Gun Assembly (UGA).

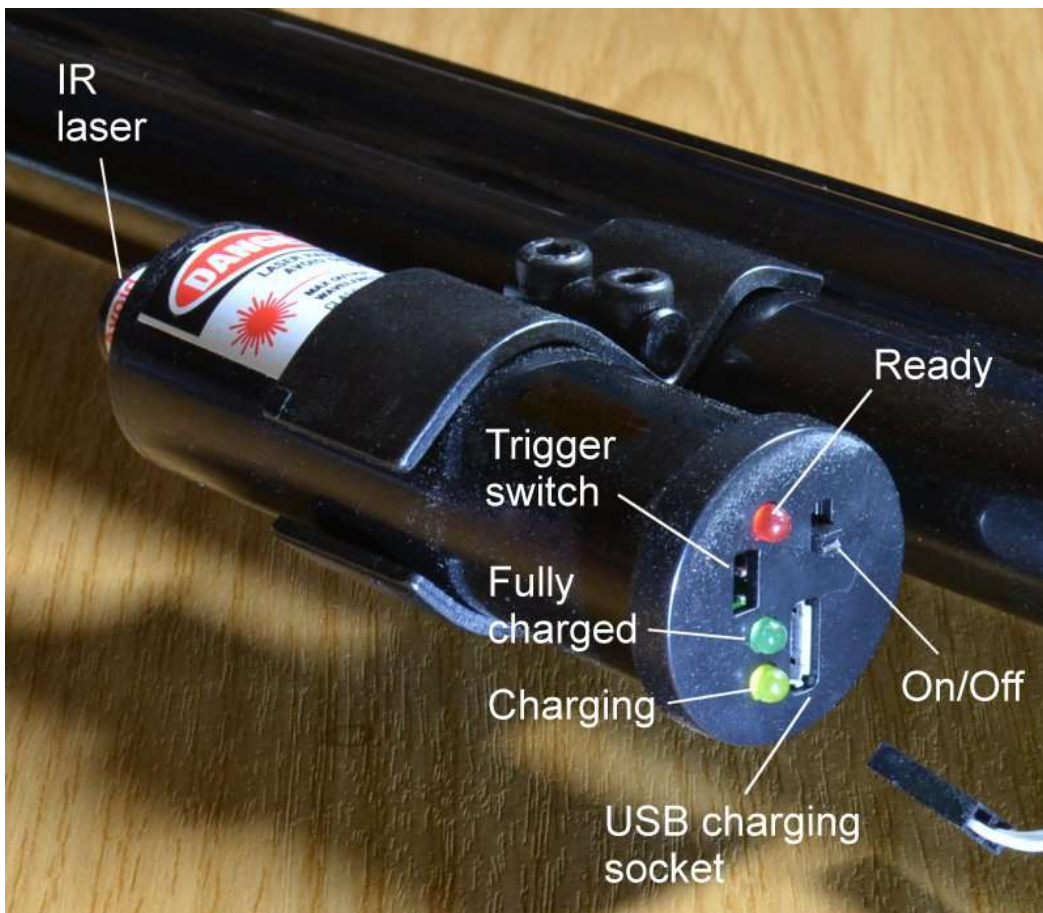
2.3.1 Trigger switch fitting



Wrap the trigger switch round the trigger as tightly as possible and wrap the excess cable round the trigger guard. Fit the switch so the rubber tail is out of the way of your trigger finger – this it will be different for left and right handed shooters.

Some people have fitted the switch the other way round so it is activated when pressed against the back of the trigger guard. There is no "right" or "wrong" way as long as it works!

2.3.2 UGA Safety



The Universal Gun Assembly (UGA) sends out a short pulse of low power infrared (IR) laser light when you press the trigger. IR is invisible to the human eye but can still be dangerous so **never** look directly into the laser and **never** point it at anyone

2.3.3 UGA battery charging

The UGA contains a rechargeable battery which may be charged from any USB port or USB charger.

The UGA requires charging before first use. A yellow "charging" LED will illuminate when charging and a green LED will illuminate when fully charged.

It is worth periodically charging the UGA until the green LED is illuminated even if it is still functioning correctly. Strange things can happen on low charge, e.g. you may be able to carry out muzzle alignment but DryFire may not report shots when you fire at targets.

2.3.4 UGA fitting and use



- Clamp the UGA under your barrel, close to the end of the forestock.
- Plug the trigger switch cable into the socket on the back of the UGA.
- Secure the excess cable out of the way.
- Switch on the UGA - the red LED will flash.
- Press the trigger switch, the red LED should flash each time you do this.
- The red LED will continue to flash periodically to show the UGA is switched on.
- **Switch off the UGA after use.**
- Recharge the UGA from a USB port or USB charger.

The UGA comes ready for normal "press to shoot" mode, see the **Advanced UGA setup** section for "release to shoot" mode.

2.4 Software installation

Click the link below to watch a video covering DryFire installation and first use:

<https://vimeo.com/495157095>

- Take all necessary safety precautions.
- Do not connect your simulator to your PC at this stage.
- Download the latest DryFire software. **We recommend scanning the download at this stage.**

<https://wordcraft.com/support>

- Run and install the DryFire software - click to go ahead on any warnings.
- Connect the simulator to power and to a USB port – the simulators heads will nod.

The DryFire power supply generates 5V to power the simulator. Most homes have lots of different power supplies lying around – **using the wrong one will damage the simulator.**

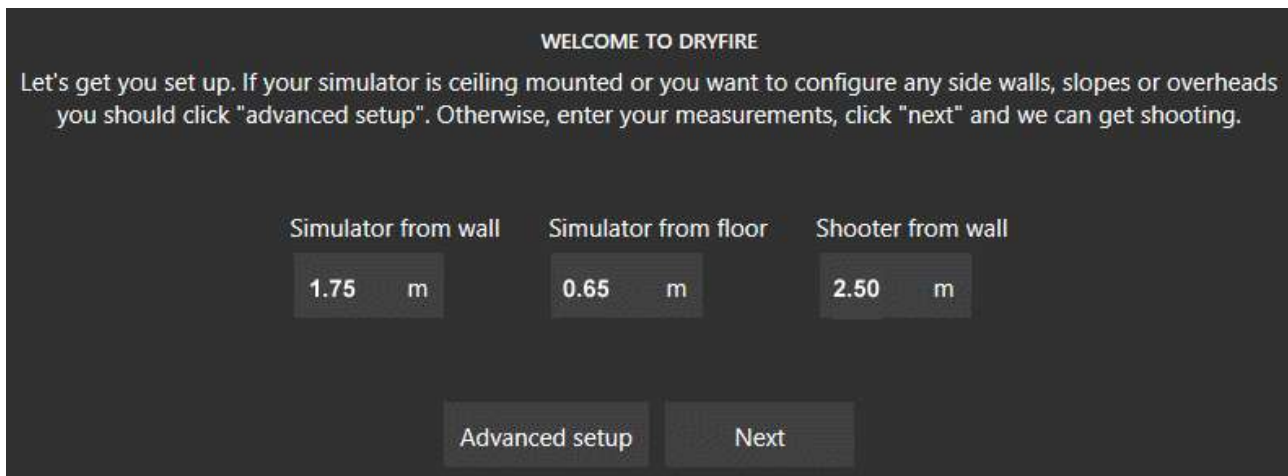
The two heads on the simulator will nod up and down when the USB cable is connected to a PC and the power supply is connected to the simulator and switched on at the mains.

If this doesn't happen it probably means that the wrong power supply has been used at some time. Please follow this link for a test procedure.

https://wordcraft.com/dryfire/help/df_sim_test

- When DryFire connects to the simulator it will ask you to enter these measurements:
 - simulator to wall,
 - simulator height,
 - shooter to wall.
- After entering the measurements click on "Next" - **do not click on "Advanced"**.

By default the software will run as soon as installation is complete. If not you will have to run it so you can enter setup measurements. In Windows 10 you will find DryFire 5 in the startup menu after clicking on the Windows logo key - bottom left of the screen.



Keep it simple

For your first few laser targets we recommend you:

- enter only simulator from wall/screen, simulator from floor and shooter from wall/screen,
- don't use the "Advanced setup" option at this stage,
- don't enter shooter or gun data - use the system defaults,
- select a straightforward simulation, such as "Trap", "DTL", for your first few targets.

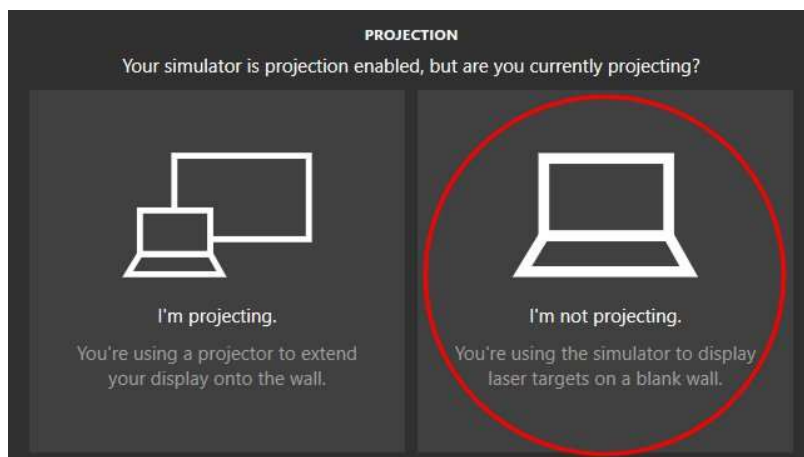
You can come back later and enter more measurements and settings when you are familiar with how the system works. Select "Settings", "Calibration", "Full calibration", "Calibrate", "Advanced setup").

Very important: start with laser targets

If you purchased DryFire with the projection add-on, or purchased the add-on separately, the screen shown below may appear - if so, select "**I'm not projecting**". Don't worry if this screen does not appear.

It is important to get laser targets working correctly **before** you set up projection.

Follow the procedure below for muzzle alignment then try a few laser targets to become familiar with the system before setting up projection.



2.5 Muzzle alignment

You should carry out muzzle alignment at the start of every shooting session.

- Click the link below to download a video showing setup. Watch 36 seconds in to see the steps involved in alignment.

<https://vimeo.com/495157095>

- Check your PC speakers are switched on and working - or you won't hear the "bangs".
- Check the UGA is switched on - the LED will flash slowly.
- **Step 1:** you will be asked to shoot at your straight ahead position marked by the upper Post-it note.

Stand at your normal shooting location, take up your normal shooting stance, use the bead to aim at the centre of the Post-it note and press the trigger - you will hear a "bang".

The laser dot **is not visible** during this first step but the camera head is looking for the location of your first shot.

- **Step 2:** a laser dot will now appear, Check your measurements (simulator to wall, simulator height, shooter to wall) if the laser dot is more than 150mm from the centre of your Post-it note.

Aim at the dot (bead on the laser dot) and press the trigger - you will hear another "bang".

- **Step 3:** another laser dot will now appear - aim at it (bead on the laser dot) and press the trigger - you will hear a confirmation tone (not a "bang") indicating that everything is now ready.

- **Important note**

It is perfectly normal for the laser dots not to appear exactly at the centre of the Post-it note - this is all part of the calibration procedure.

Something is wrong if you hear an "Uh, uh" sound instead of a musical tone at the end of alignment. This may be because:

- your simulator to wall distance (1.5m to 2.0m) is incorrect,
- your simulator height (0.5m to 1.0m) is incorrect,
- your simulator is not parallel with the wall,
- something is loose on the simulator.

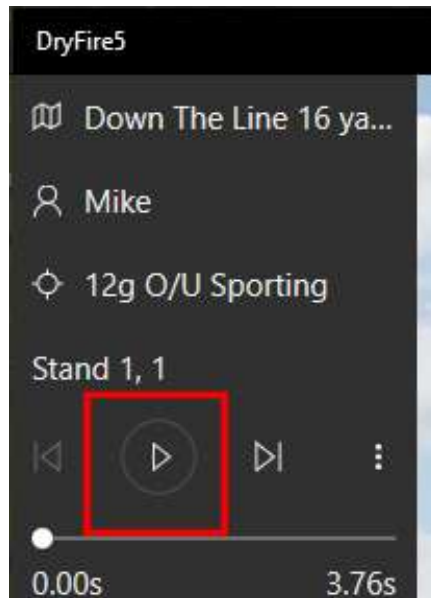
Work carefully through the whole setup procedure again and double check each measurement as you go. Remember: DryFire "thinks" in metric units so it might be best to enter measurements in metres.

To carry out muzzle alignment at the start of every session select "Settings", "Calibration", "Alignment", "Align current shooter".

2.6 Your first target

When you are presented with the DryFire screen:

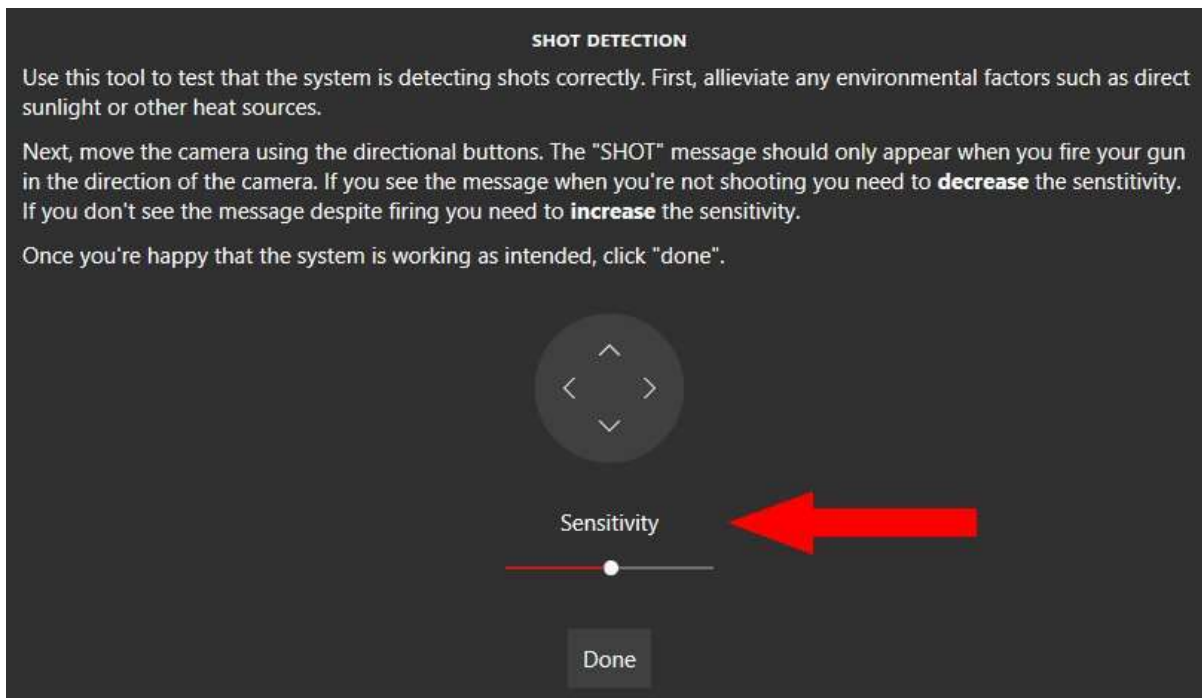
- Click on "Simulation" (top left), select "Trap", then "DTL" then "Start".
- Click on the triangular play symbol - this will change to a green microphone symbol.



- The software will "beep" when it is listening for you to call "Pull".
- Take up your normal shooting position with gun mounted and a hold position close to the first Post-it note .
- Call "Pull", acquire the laser target, swing through and fire.
- Congratulations - you have taken your first DryFire target.
- Don't worry if you missed – wait for the "beep" and call "Pull" a few times to see where the target starts and where you would like to hit it. Make a note of your ideal hold point then try again. Don't forget lead!

2.7 Camera setup

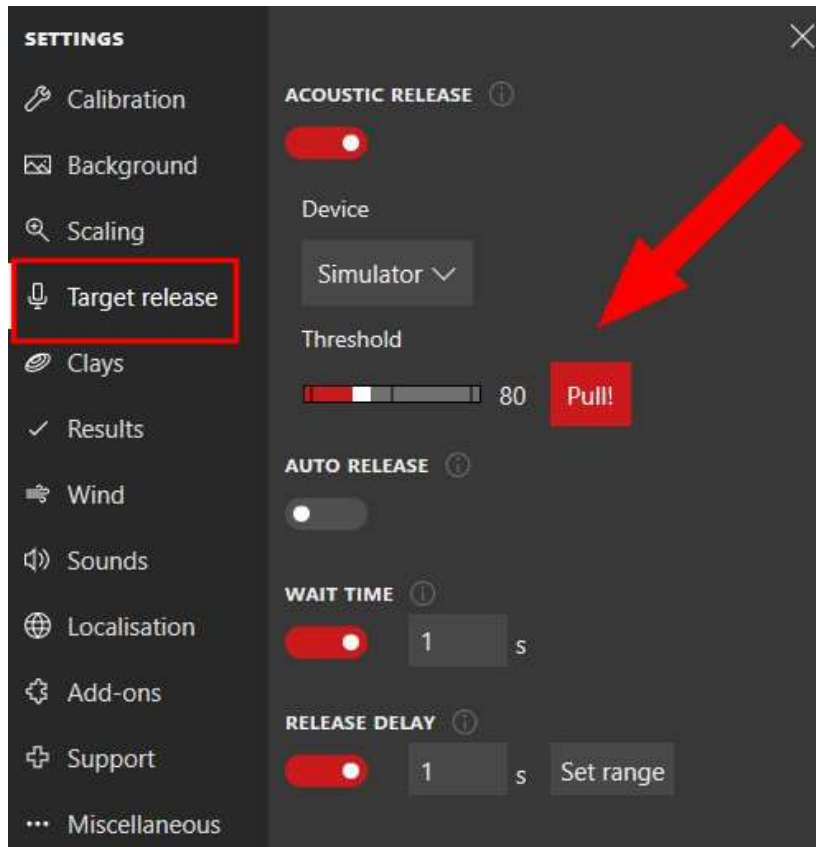
Do this only if your shots are not detected or the system is seeing stray shots.



- Make sure no direct light reaches the wall/screen Check windows, doors, ceiling lights and wall lights - and possible reflections.
- From "Settings" select "Calibration" then "Adjust shot detection".
- Use the compass rose to move the camera head around and try shooting at the area it is pointing to. You should see the "SHOT" message if the system detects your shot.
- If your shot isn't detected, drag the white spot slightly to the right to increase the camera sensitivity then try again.
- You must find the maximum sensitivity without the system seeing background light.
- If you can't get the right setting there will almost certainly be stray light reaching the wall or screen.

2.8 Microphone setup

Do this **only** if your targets are not being released when you call "Pull".



- From "Settings" select "Target release".
- Change the "Threshold" setting and call "Pull" - the word "Pull" will be shown in red next to the threshold value if the system hears your call.
- Continue adjusting the threshold until your call is heard.

During normal use:

- The system starts listening after you have selected a simulation and after you have clicked on the triangular "Play" symbol on the control bar (top left).
- The system will beep, and the symbol will change to a green microphone, when the system is ready.
- After shooting at each target you should **wait for the beep** before calling for the next.

3 Projection add-on setup

Wordcraft does not supply projectors so you will need your projector's manual available while setting up DryFire to use with it.

- DryFire will **not** work with a projector unless you have installed the Projection add-on.
- Without the add-on things **will not work correctly** - you will see both laser and projected targets on the projection screen and they will not line up with one another.
- If you purchased your DryFire system with the Projection add-on it will be enabled already.
- If you purchased the Projection add-on separately your invoice will contain a key to enable the function.
- With the DryFire software running, select "Settings", "Add ons", enter the key in the "Apply key" field and click on "Apply".

3.1 Laser targets first

It is very important to get laser targets working **before** setting up for projection.

Follow the step-by-step procedure below then, if everything is working and you have purchased the projection option, you can carry out the projection setup procedure.

3.2 Quick setup

3.2.1 Before setup

- Ensure you have DryFire working with laser targets **before** you start to set up for projection.
- Ensure your projector meets the requirements for DryFire.
<https://wordcraft.com/dryfire/about/typical-setup>
- Ensure the projector's aspect ratio is set to "**Native**" or "**Auto**" and that any "**Image shift**" or "**Zoom**" features are set to zero.
- Ensure your projector is working with your PC in "**extended mode**". (See below).

With hundreds of different projectors Wordcraft cannot help to get your projector working with your PC/laptop. Check the projector manual or speak to your supplier if you have problems.

Ensure the image generated:

- is truly rectangular - a spirit level comes in handy here,
- fits within the boundaries of the screen - nothing off the top, bottom or sides,
- is not distorted - check for keystoneing,
- is not cropped in any way - **this is critically important.**

Check all your measurements in "Settings", "Calibration", "Full calibration". Double check "simulator to wall/screen", "simulator from floor" and "shooter from wall". If you have entered any other measurements select "Advanced setup" and check them again.

Warning: entering a simulator height of "700" in metric mode will make DryFire think it is 700 metres above the floor! DryFire operates in metres so this should be 0.70m.

Note: you don't have to enter any measurements relating to the size of your screen or the projected image. Other values are established during the three step procedure described below.

3.2.2 Setup

- Select "Settings", "Calibration", "Full calibration", "Advanced setup" then "Next".
- Select "**I'm projecting**".
- Carry out the three step alignment procedure as described in the on-screen instructions:
 - Use your mouse with the movement pad on the screen to align a projected cross hair to a laser dot,
 - Measure the length of a projected vertical line in **millimetres (mm)**,
 - Use your mouse with the movement pad on the screen to move a laser dot to the tip of each of four projected arrows as it is displayed. Your projector is **cropping the image** if you can't see the arrow tips.

3.3 Extended mode

PC/laptops can work with projectors in two "modes":

- "**Duplicated mode**": the image projected is the same as the one on the PC/laptop.
- "**Extended mode**": the projected image will be entirely separate from the one on the PC/laptop

You must use "extended mode" for DryFire.

The extended mode procedure for Apple Mac is described here:

<https://tinyurl.com/y9z4bq9b>

The extended mode procedure for Windows 10 is described here:

<https://tinyurl.com/y9b5ffzf>

The simplest setup for Windows 10, with your projector is plugged into your PC and has power on, is:

- Press the Windows Logo key plus the "P" key.
- Click on "Extend". You'll see everything across both screens, and you can drag items between the two.

3.3.1 An easy check for extended or duplicated mode

If the projector is set up correctly the PC display should **not** be the same as the projected display.

DryFire's left-hand sidebar, with the "Settings" button in the bottom, must appear **only** on the PC screen when the DryFire software is running with the normal simulation background displayed.

Things are wrong if you see the "Settings" button on the projected display.

3.3.2 Two displays but one mouse cursor

There is only one mouse cursor shared between the two displays - and you will probably lose it sometimes.

Keep moving the mouse left and right until the cursor appears on the screen you wish to access - it may be hiding in a corner or at the top or bottom of the screen.

Hint: a bigger cursor may help so on Windows 10 click on the Windows logo key (bottom left), then "Settings" (the gear icon), then "Ease of access", then "Cursor and pointer" (from the sidebar), then "Change pointer size".

3.4 Wrong image size

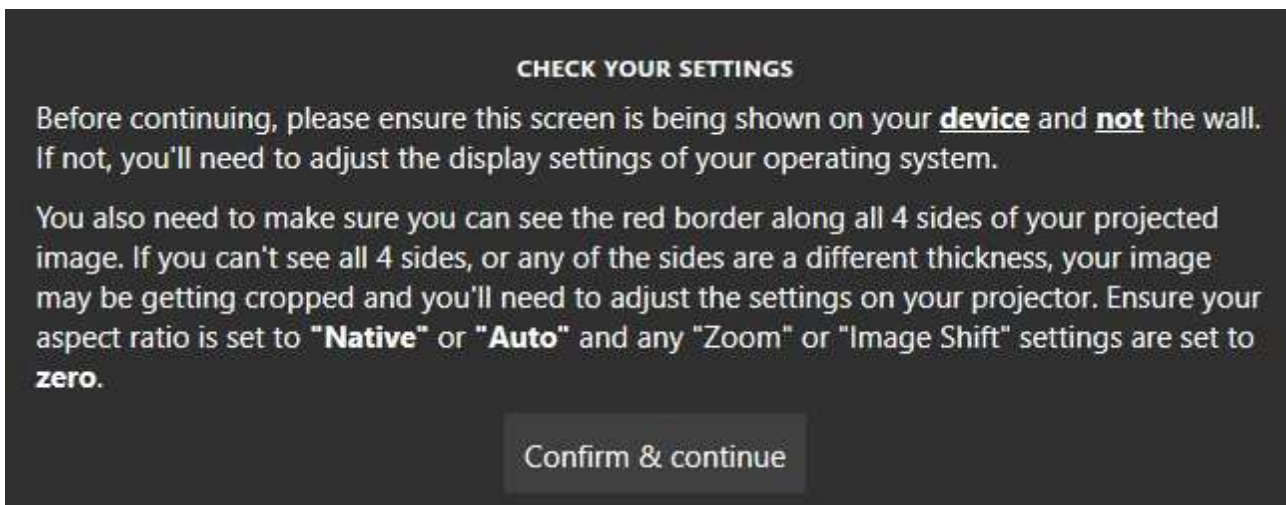
You must set up your projector so:

- the whole PC extended display image is visible and not cropped in any way,
- the projected image fits within the screen area - and does not go beyond it.

3.4.1 Checking for cropping

Follow this procedure if, during projection setup, the tips of the four arrows are not shown on the projection screen.

With the DryFire software running and your projector working, select "Settings", "Support", "Advanced", "More options", "Check projector settings" then "Open check page".



- You are using "duplicated mode" if the PC screen and the projected image are the same. You **must** use "extended mode". (See above.)
- The image is being cropped if you do not see a red border on all four sides..

Cropping **must** be corrected before carrying out the DryFire projection setup. Check your projector's manual or speak to your projector supplier..

Ensure the projector's aspect ratio is set to "Native" or "Auto" and that any "Image shift" or "Zoom" features are set to zero.

The Internet has many articles on the general use of projectors, for example: here, here and here. For more articles do a browser search for "**pc projector cropping and scaling**".

3.5 Illustration of the procedure

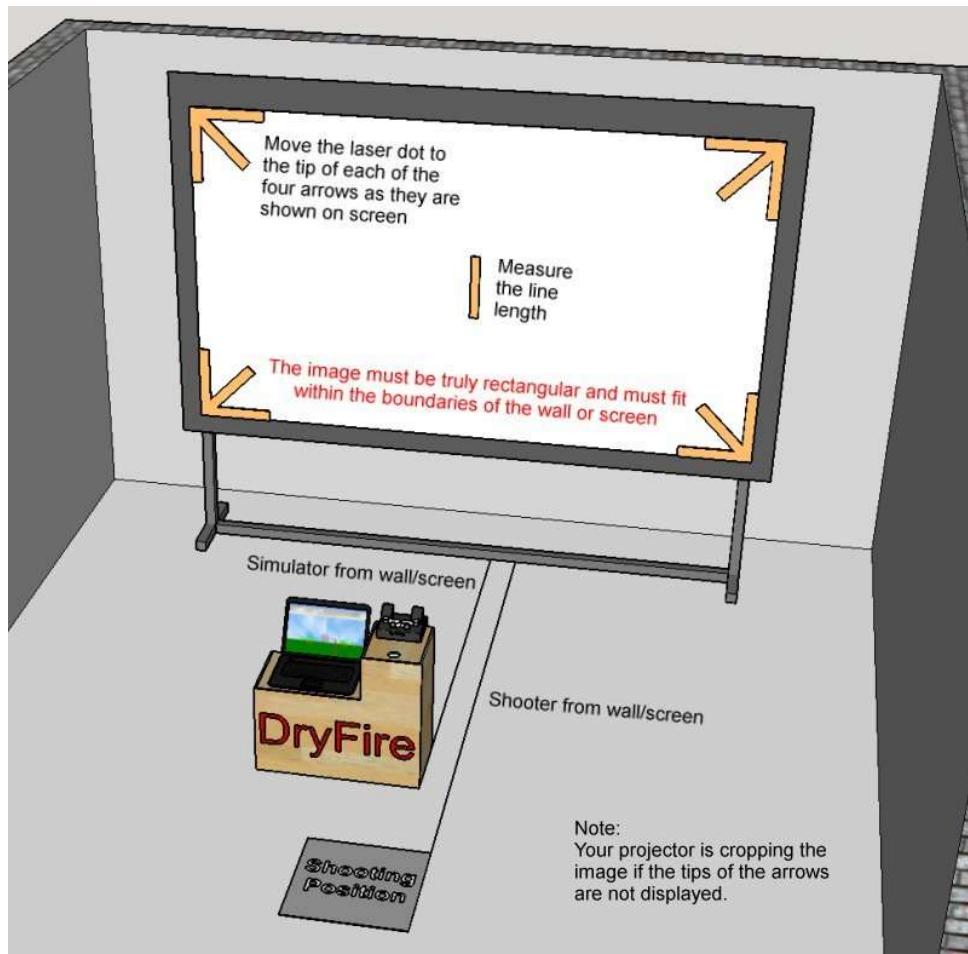
The drawing below shows:

- The projected image within the boundaries of the screen or wall. Please see photos here:
- <https://wordcraft.com/dryfire/about/typical-setup#examples>
- The "Simulator from wall/screen" distance.
- The "Shooter from wall/screen" distance.
- The vertical line projected on to the screen - this must be measured when requested.

- Each of the four arrows that will be projected in the corners of the **projected image** - the laser dot must be moved to the tip of each one as it is shown.

Important:

See the note above about "Cropped images" if you can't see the tips of the arrows on the wall/screen.



3.6 Setup procedure in detail

- A red laser dot will appear close to the centre of the screen along with a projected image of a cross-hair cursor. Use your mouse or touchpad to move the projected cursor so its centre is over the dot, then click left.
Note: you will need to move the cursor from your main screen on to the projection screen, which will usually be to the right of your main screen, but may be above, below or to the left.
- Next you will see a vertical white bar projected in the centre of the image. Measure its length in **millimetres (mm)** and enter the value on the PC screen. The measurement should be accurate **to the nearest millimetre**.
- The software will project four large arrows pointing to the corners of the projected image - starting with the top left hand corner - and the simulator will display a laser dot close to the tip of each arrow in turn. (See above if you can't get all four arrows visible.)

If the laser dot is **more than 150mm** from the tip of the arrow, it suggests that one of the measurements ("simulator from wall/screen", "simulator height", "shooter from wall/screen") is wrong, so restart the calibration process.

- The PC screen will show a pad to control the location of the laser dot using up/down/left/right buttons for you to click on with your mouse or touchpad. Move the laser dot so it is as close as possible to the tip of the arrow then click on "Next".

Important note: the procedure **must** be followed for each arrow.

- Once this is done you can go through the muzzle alignment process, select targets and start shooting.

3.7 Report of problem with Windows 10 and extended mode

We received the following from a DryFire user in South Africa who was having problems with his projector. Unfortunately Wordcraft cannot help with Windows problems but we are really pleased it got sorted out in the end - and we now have an enthusiastic DryFire user!

- Resolution was set to 1080 for both screens but the computer was saving the projector and laptop resolutions differently. Windows failed to save settings entered into the extended screen options.
- My computer guy reinstalled Windows and changed some advanced settings which had caused the extended screen to switch back to duplicate screen as soon as I opened any program including DryFire.
- The refresh speed on the laptop was at an odd setting which was causing delays between the projector and the laptop. Now sorted.
- Needless to say, once it was working I shot until I couldn't lift the gun any more!
- I am so impressed with this system I hope it never breaks as I now using it every day.
- More importantly, I am going blind in my right eye which was dominant. Within 4 days I have taught myself to shoot left-handed with 90 percent scores on most trap setups.

4 Swing setup

Swing uses a laser to show the trajectory of targets - it is **not** designed for use with a PC data projector.

4.1 Before installation

For safety reasons the battery inside Swing is not fully charged before shipping. Ensure Swing is switched off (switch towards the USB socket) and plug it into a USB port or USB charger.

The yellow LED will come on to indicate charging and the green LED will come on when the battery is fully charged. You don't have to wait for it to be fully charged before continuing with setup - 20 minutes will probably be sufficient.

Decide where you will locate Swing facing the centre of the wall. You can use a tripod or any horizontal surface - naturally we recommend using the DryFire Shooting Stand.

Swing should be between 1.5m and 2.0m from the wall and between 0.5m and 1.0m from the floor.

If you are using a horizontal surface mark the point where the centre of the front of Swing will be located.

The photo below shows a yellow stick-on dot marking the centre of the front of DryFire Shooting Stand - but a pencil mark would do just as well.



The mark helps you place Swing in exactly the same position each time you use it.

The reference point for measurements is the middle of the top edge of Swing's metal base - on the side facing the wall.



You will need four (4) Post-it notes with diagonal lines drawn on them to mark their centres.

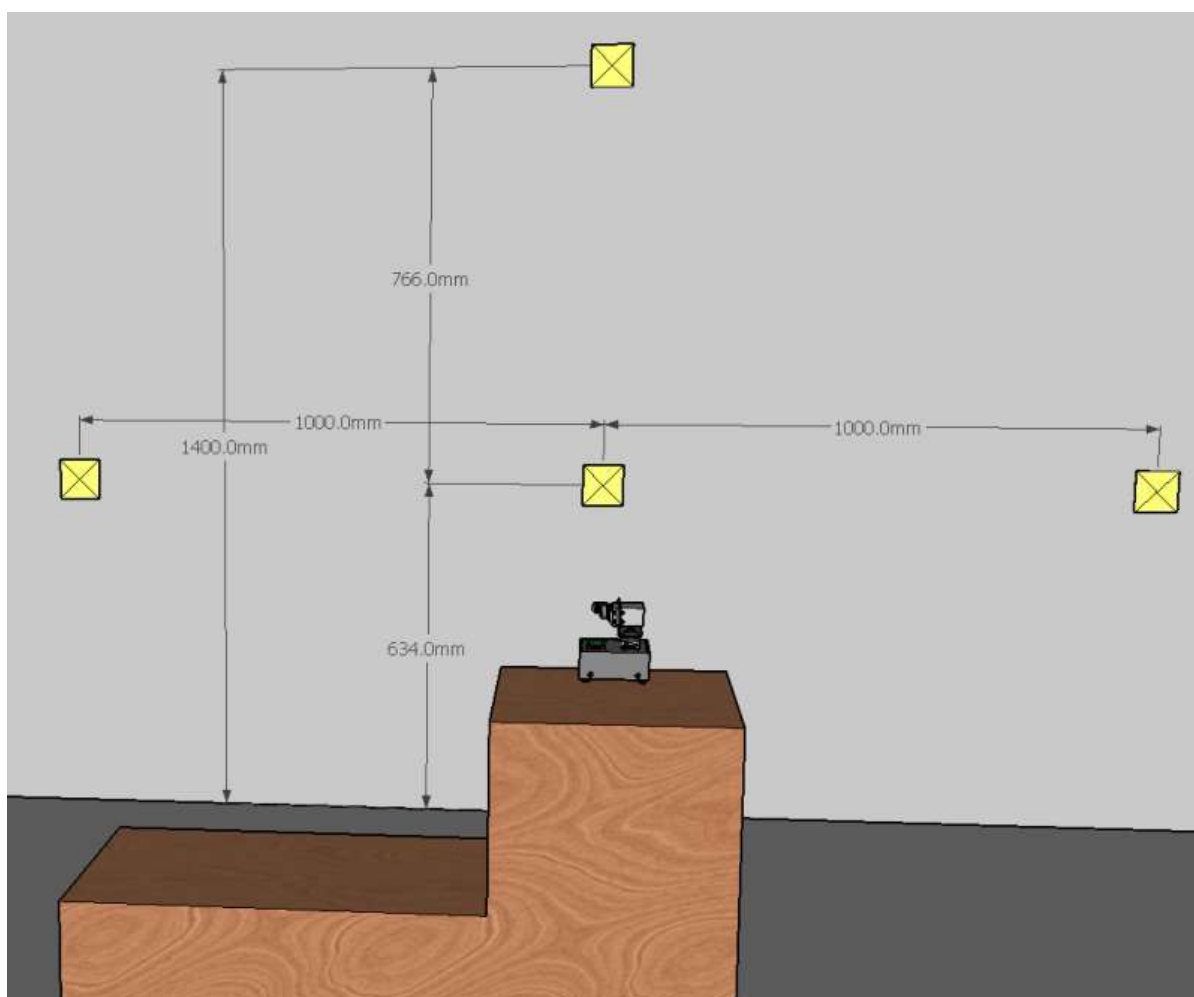
Place one Post-it note on the wall **directly** ahead of the reference point with its centre at exactly the same height as the top of the metal base.

In the sketch below the top of Swing's metal base is 634mm (0.634m) from the floor so the centre of the Post-it note is also 634mm from the floor.

Place a Post-it note **exactly** 1m to the left of the first one and another 1m to its right - both at **exactly** the same height.

Stand in the position where you intend to shoot from, take up a shooting stance and point your shotgun directly in front of you - your shotgun should be absolutely horizontal - get someone to check it with a spirit level on your gun barrel.

Use the final Post-it note to mark exactly where your gun is pointing, In the sketch below the gun was pointing directly above Swing and 1400mm (1.4m) from the floor.



4.2 Installation and calibration

Connect Swing to your PC/laptop using the USB cable. Your PC/laptop will probably "beep" to indicate a USB device has been plugged in and Swing's yellow "charging" or green "fully charged" LED will come on.

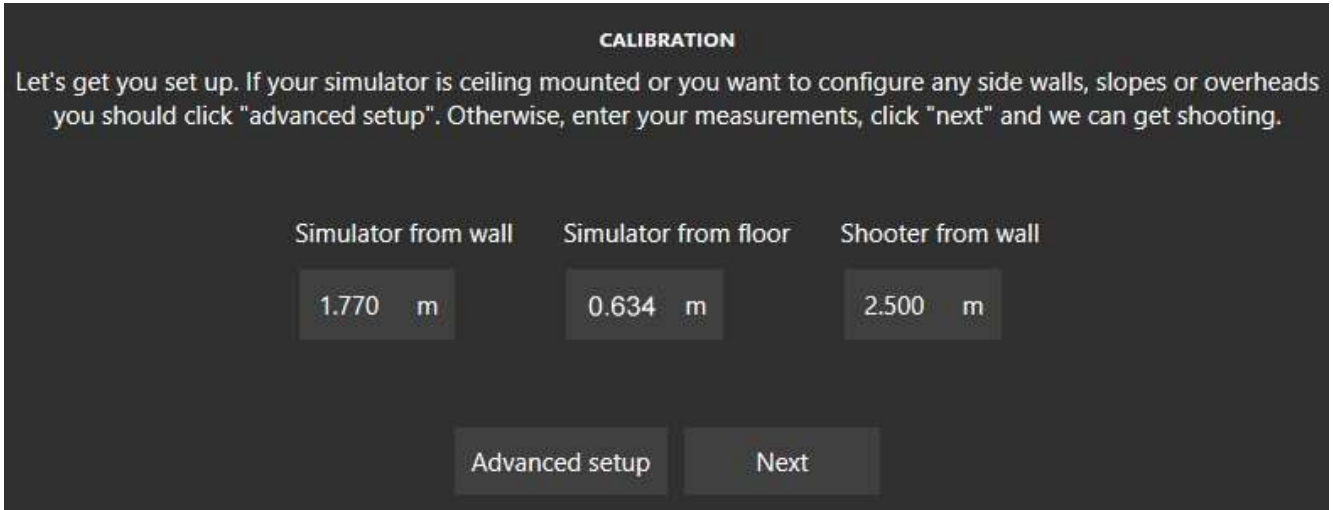
Switch Swing on. The red LED will flash and after a few seconds it will go into demo mode.

You may now download, install and run the DryFire version 5 software.

If there has been a change to the firmware inside Swing since your unit was manufactured you will be given the option to update it. Please select this option if offered.

The software will detect Swing and go straight into Calibration mode.

Enter the measurements required below.

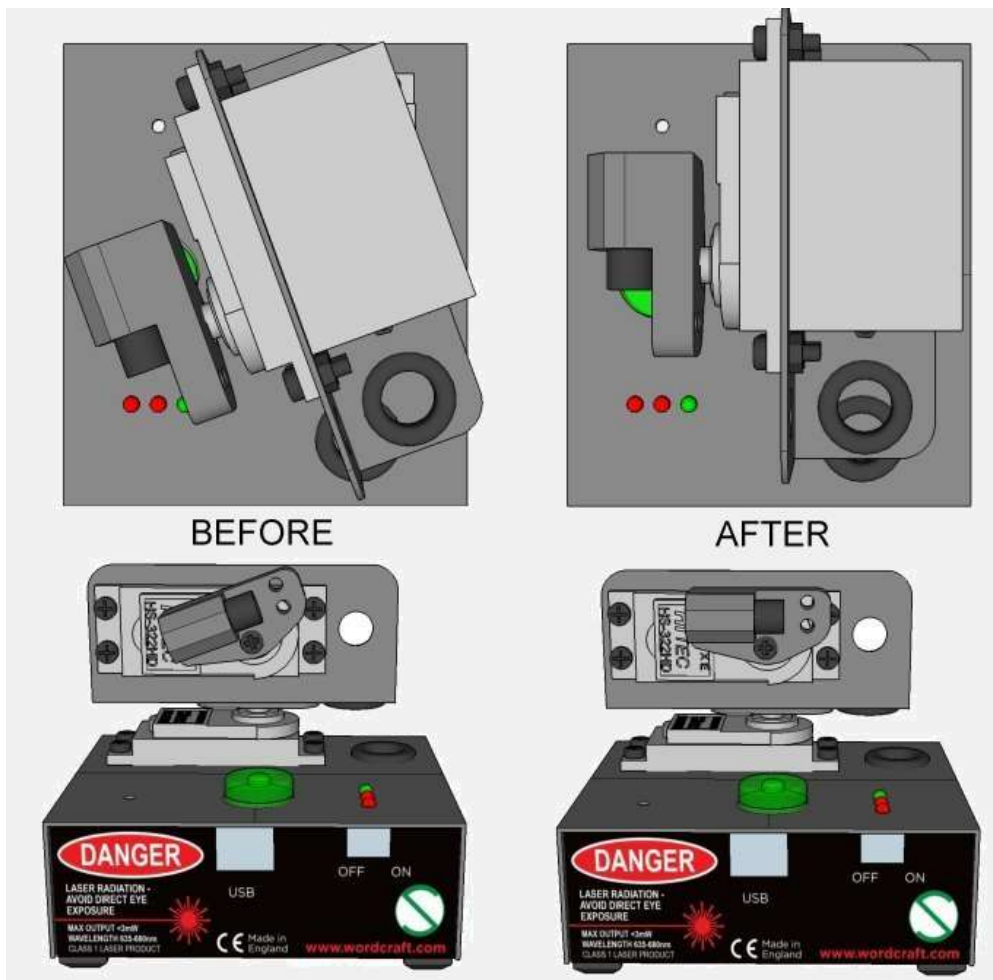


4.3 Setting the home position

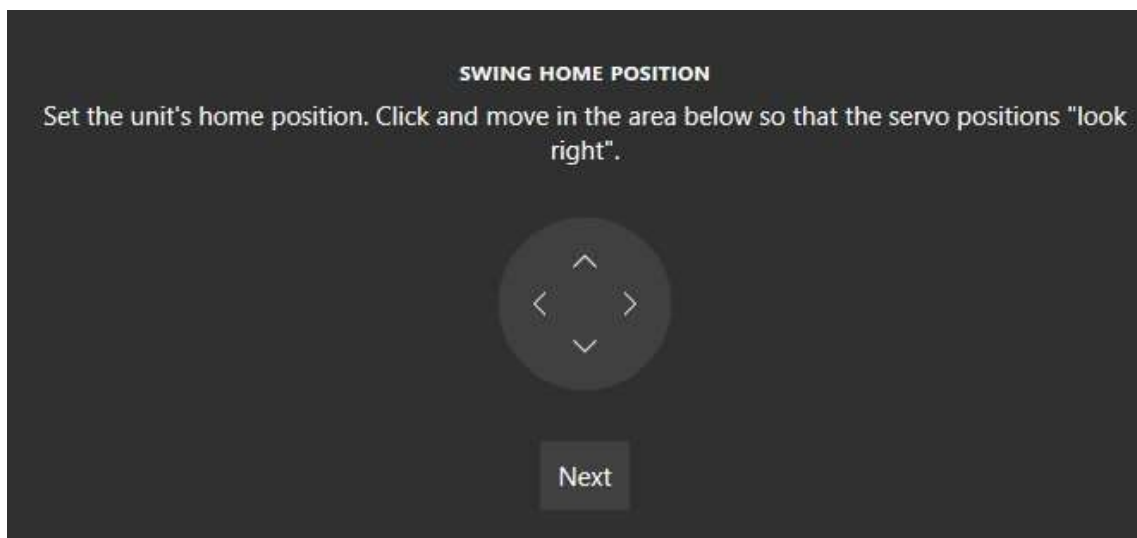
You will probably have noticed that the bracket holding the vertical axis servo motor and the mount for the laser are not lined up properly - they don't "look" right.

This slight misalignment from straight ahead and horizontal is caused by the way the bracket fits on the splines of the horizontal motor and the laser mount fits on the splines of the vertical motor.

Our first task is to take out this misalignment.



Use the movement pad shown on the screen to move things left/right/up/down until they look right - just as in the "before" and "after" sketches shown above. You may find it easiest to hold Swing on one hand while using the other hand to make adjustments with the movement pad.



As long as it looks OK, it will be OK - so don't go overboard with spirit levels and what-have-you - doing it by eye will be fine. The setting you have defined is Swing's "home" position.

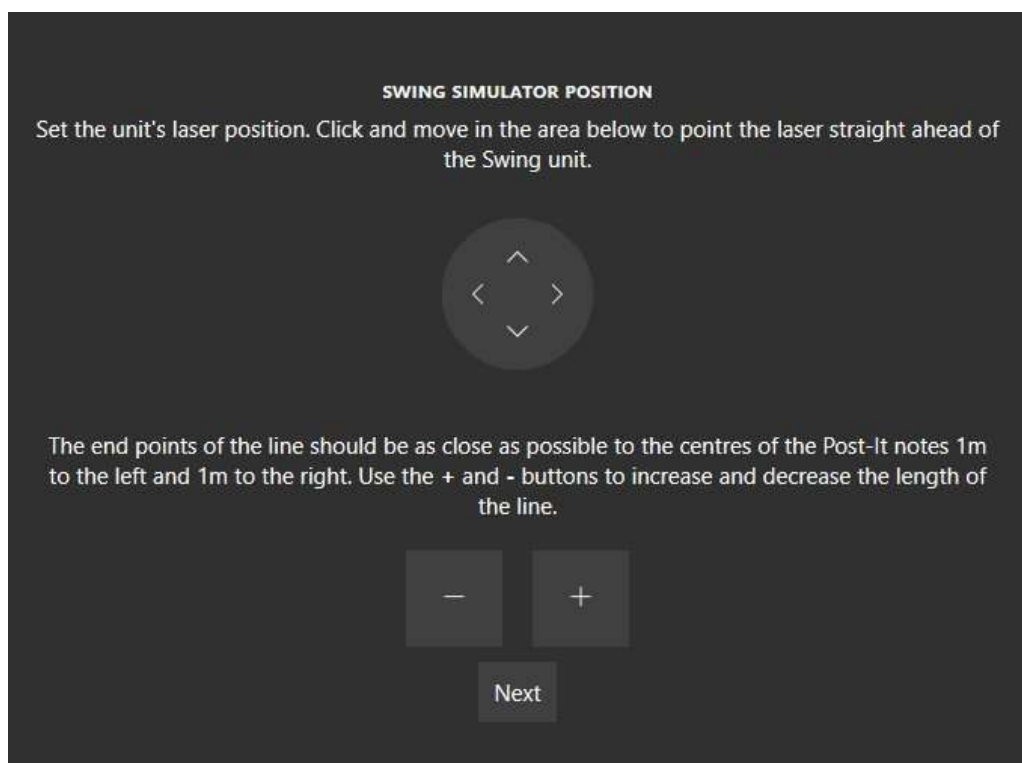
Put Swing back in its normal position facing the wall and click "Next" when done.

4.4 Setting the laser ahead position

Swing will display a horizontal line on the wall pausing briefly at the ends and in the centre.

Use the up/down arrows to move the line up/down so it passes through the centre of the Post-it note directly ahead of Swing.

Use the left/right arrows to get the centre point of the line as close as possible to the middle of the Post-it note directly ahead of Swing. Don't worry if the laser is not exactly on the centre - "as close as possible" is what we are after.



Click on the "-" and "+" pads to reduce or increase the length of the line so the end points are as close as possible to the centres of left and right Post-it notes.

This should not change the centre point of the line which should still be close to the centre of the Post-it note directly ahead of Swing.

Swing must be parallel with the wall for the line to be accurate so you may have to rotate the unit slightly to get the laser to touch the centre of all three Post-it notes.

Click "Next" when done.

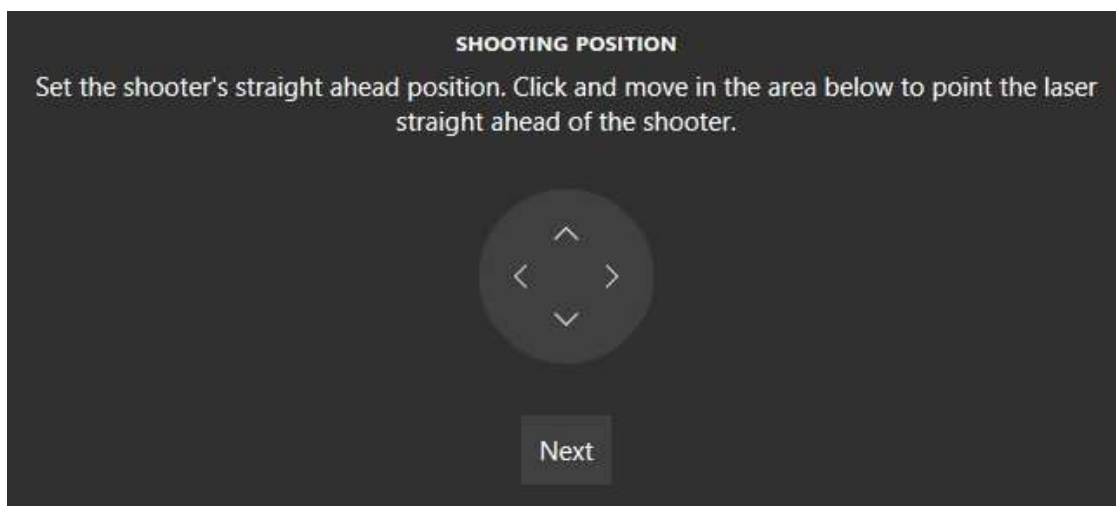
4.4.1 Swing to wall distance

The procedure above will probably change the simulator to wall distance you entered at the beginning.

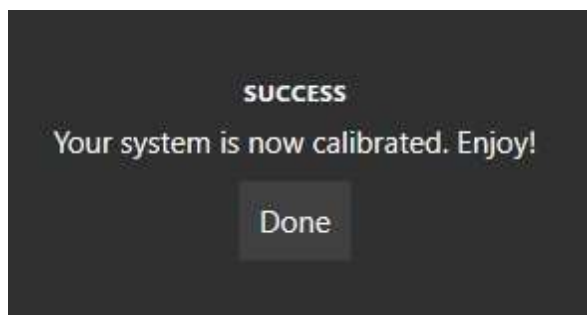
Since the left and right Post-it notes are 2m apart, and the software now knows the angle required to move the laser dot from one to the other, it can use simple trigonometry to recalculate the distance - so don't worry if the next time you run calibration the simulator to wall distance is different.

4.5 Setting the shooter position

Use the movement pad to move the laser dot to the centre of the Post-it note you used to mark where your gun was pointing. Click "Next" when done.



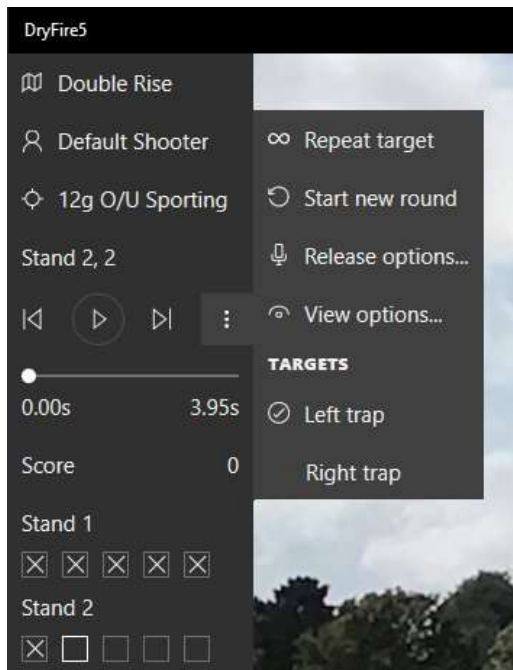
That's it, you have calibrated your Swing. You can do it again at any time by selecting "Calibration" from the "Settings" menu.



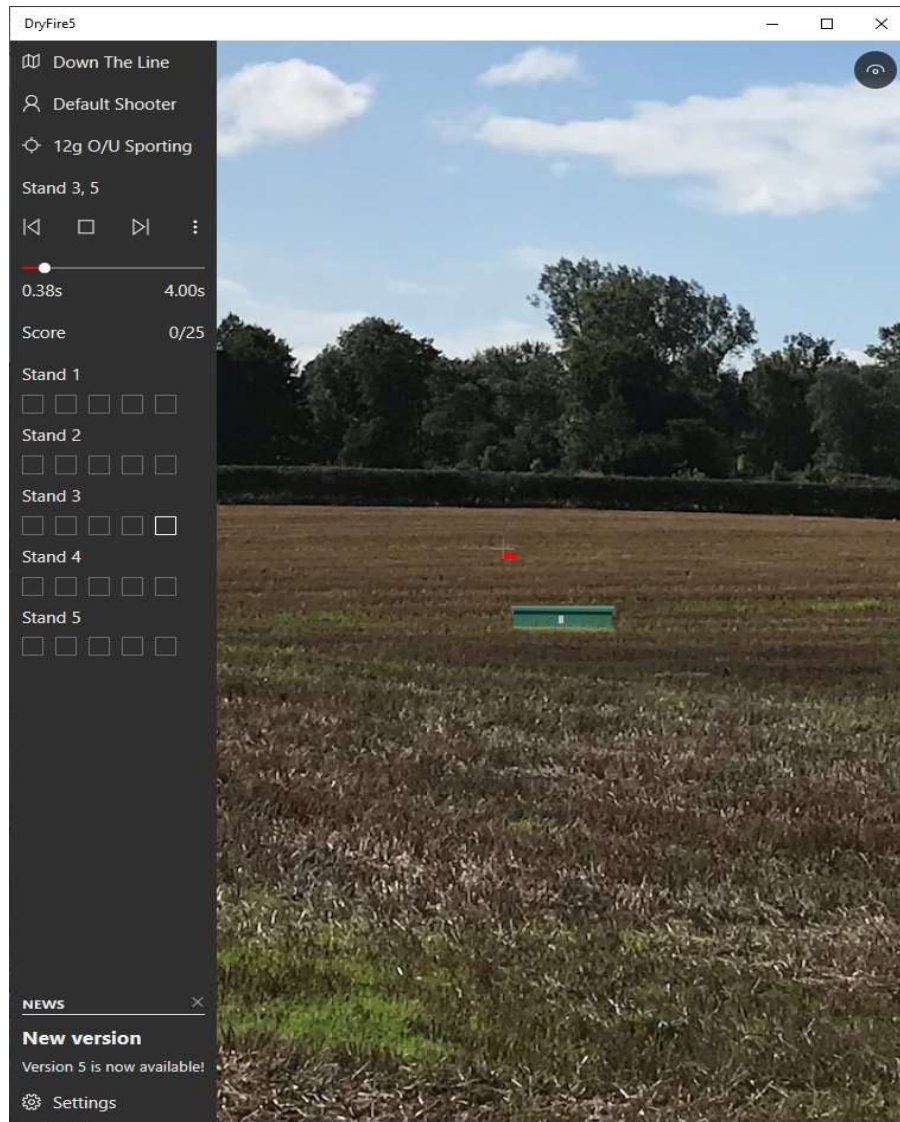
4.6 Target selection

Swing displays single targets but, for doubles, you can select the left or right trap from the ellipsis menu (three vertical dots close to top left of display).

Swing doesn't detect shots or show results but it steps through the targets in a simulation and marks each one with an "X" to show where you are.



5 Screen layout

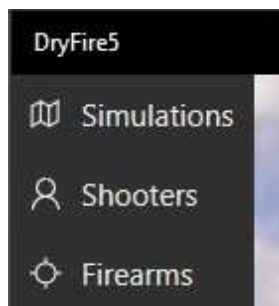


In the example above the "Down The Line" simulation has been selected and the fifth target from Stand 3 has been released. The clay can be seen travelling up and to the left with a small cross above and in front of it marking the required lead.

The horizontal bar, on the left, towards the top, shows the clay was 0.38 seconds into its 4.00 second flight when this image was grabbed.

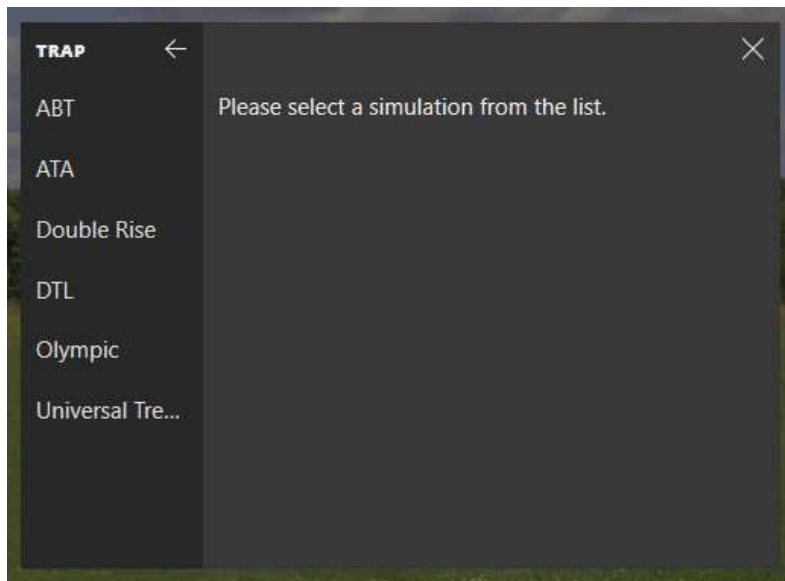
The left side of the screen contains menus, details of the current simulation, score card etc. while the remainder of the screen shows the current target.

When DryFire is first loaded the top left of the screen allows selection of simulations, shooters and firearms.

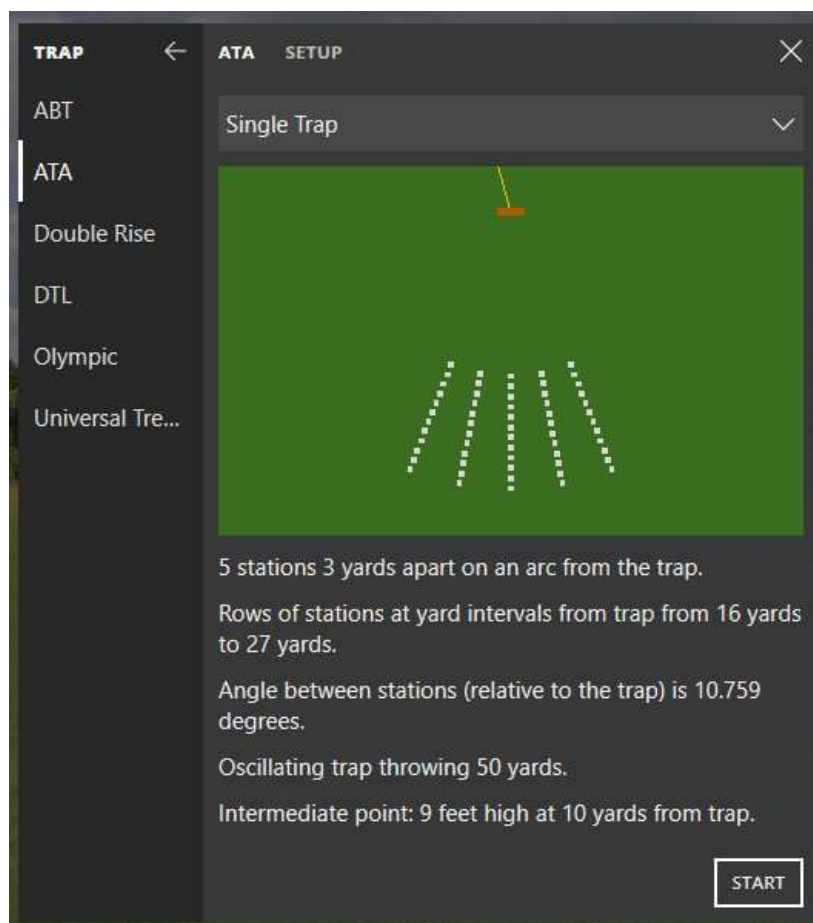


6 Selecting a simulation

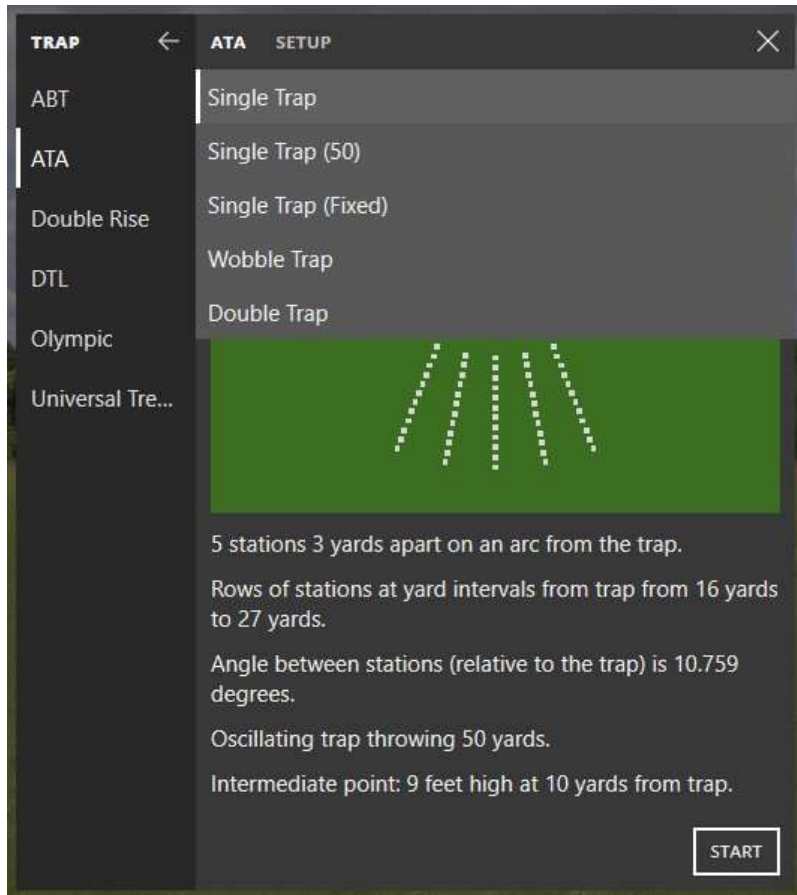
Selecting "Simulations" from the top left of the screen brings up a list of available simulations.



Select "Trap" to bring up a list of the trap layouts available.



In some cases, like the American Amateur Trap Association (ATA) layouts shown here, there may be different sub-categories to choose from.



In the example below we have selected "Skeet", "English Skeet", "Standard".
Clicking "Start" will select the simulation.



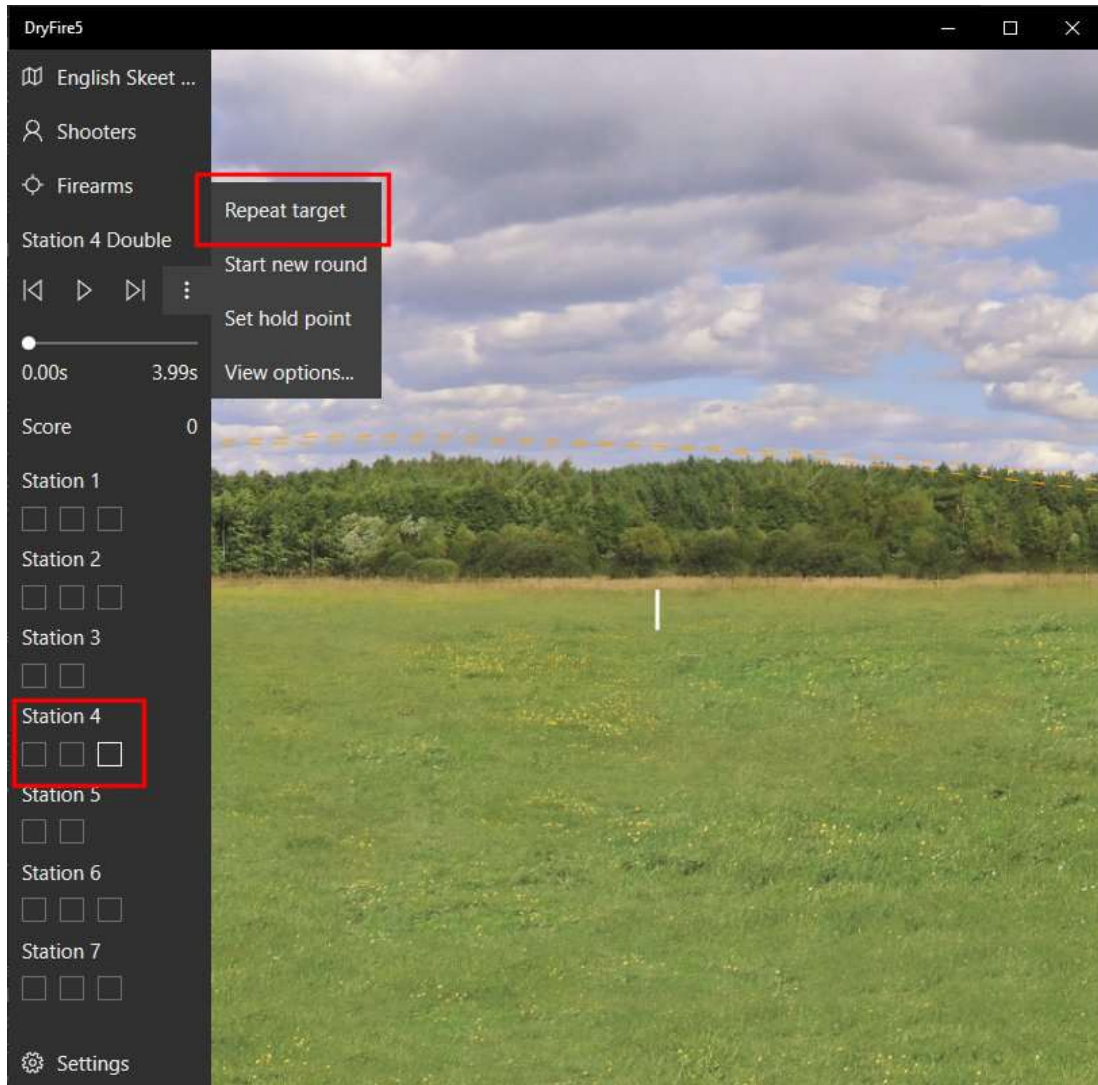
7 Releasing targets

Having selected the English Skeet layout we are now ready to practise a complete round or to select an individual target for repetitive practice.

The three dots in the control bar bring up a context sensitive menu providing additional options depending on which simulation is selected.

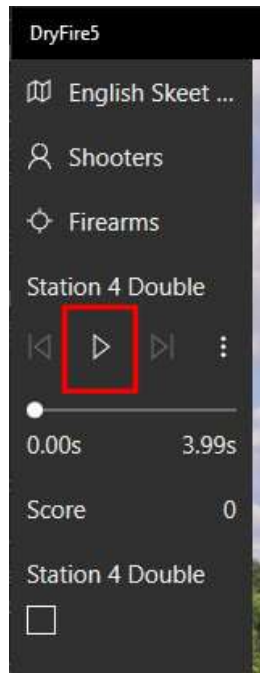
In the example below "Station 4 Double" has been selected (by clicking on the third square next to "Station 4" on the score card) and we are offered four options after clicking on the three dots - the top one being "Repeat target" which would provide repetitive practice on this target.

DryFire is designed to help you with the hard ones so the repetitive target function is highly recommended.



Selecting "Repeat target" shrinks the list of targets to just this one - "Station 4 Double".

The control bar (below the target name) now offers us the single "play" button - we are ready to start!



Clicking "play" will display a microphone indicating that DryFire is ready for you to call "Pull" - so, take up your shooting position and try it.

7.1 More information about targets

In the example below, the "Sporting", "Ground Traps" simulation has been selected. The target chosen is simultaneous double with a rising teal and crosser to the right - both from a trap in front of the shooter.

The slider has been used to show the positions of the clays, and the aiming points (red crosses), 1.14 seconds into time of flight. The information boxes show the lead required and other details.

The rising teal is almost at the top of its travel and is moving very slowly so no lead is required. The crosser is moving at 16.37m/s to the right so 1.14m of lead ahead is required - plus a very slight amount above

The screenshot shows the DryFire5 software interface. On the left is a sidebar with a dark background containing menu items: 'Ground Traps', 'Shooters', 'Firearms', and 'Settings'. Below these are target lists for '3: 1+2 simultaneous double, 3', '1: Springing teal', '2: Crosser to right', '3: 1+2 simultaneous double', '4: 1+2 on-report double', '5: Crosser to left', and '6: 1+5 simultaneous'. A slider is positioned at 1.14s, with a maximum of 5.06s. The score is 0. The main window shows a 3D simulation of a trap in a field with a forest in the background. Two targets are visible: a rising teal (Target 1) and a crosser to the right (Target 2). Red crosses indicate aiming points. Two data boxes at the bottom provide the following information:

Target	Required Lead	Ahead	Above	Range	Time	Travelled	Speed
Target 1	0.00m	0.00m	0.00m	27.11m	1.14s	7.39m	2.04m/s
Target 2	1.14m	0.07m	0.07m	42.28m	1.14s	23.29m	16.37m/s

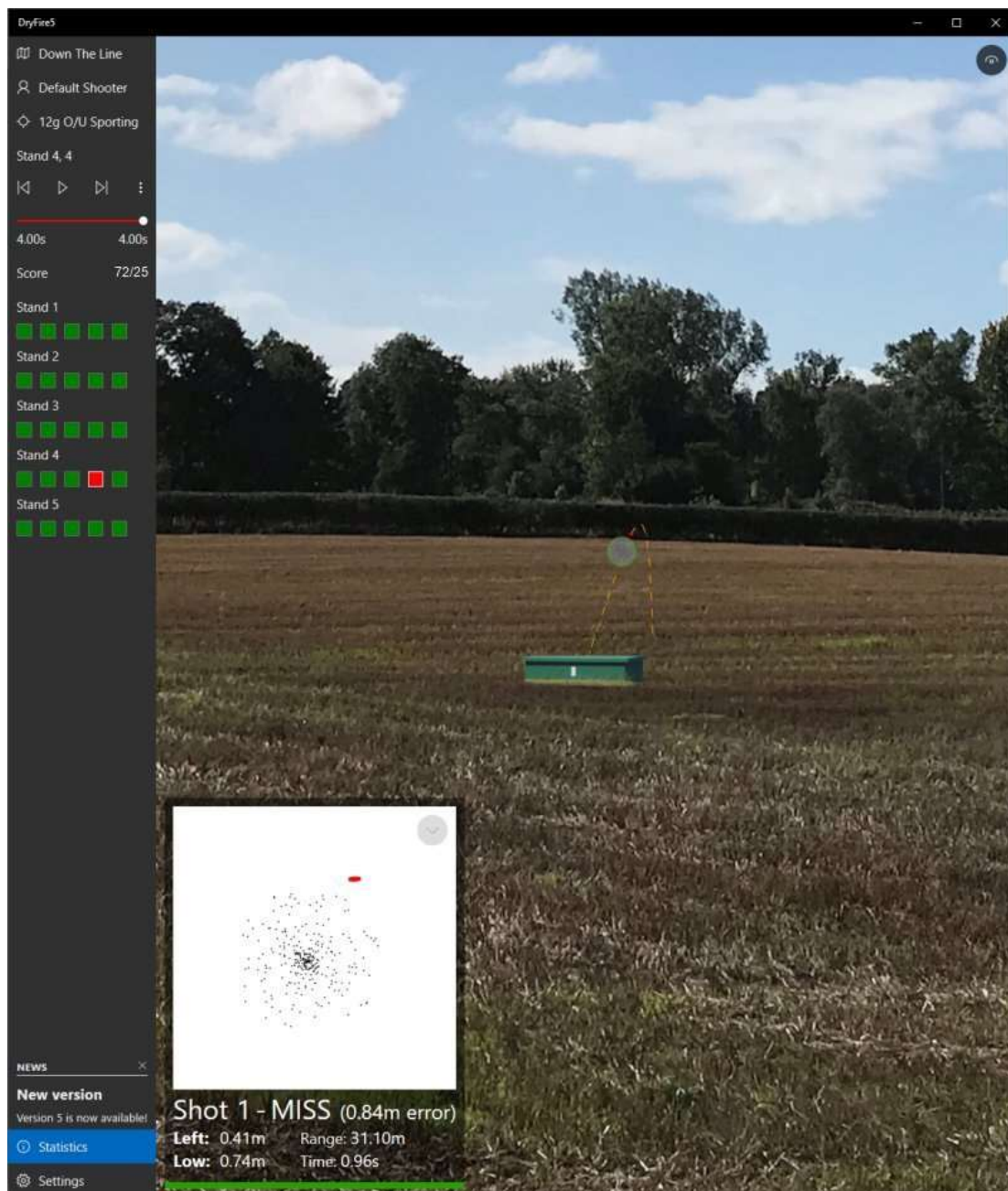
8 Results and feedback

The image below shows the result of shooting a round of "Down The Line". The score card shows 25 shots were taken and the score was 24/25 or 72/25 in DTL terms (3 points for a hit with the first shot in DTL) - the fourth target on stand 4 was missed!

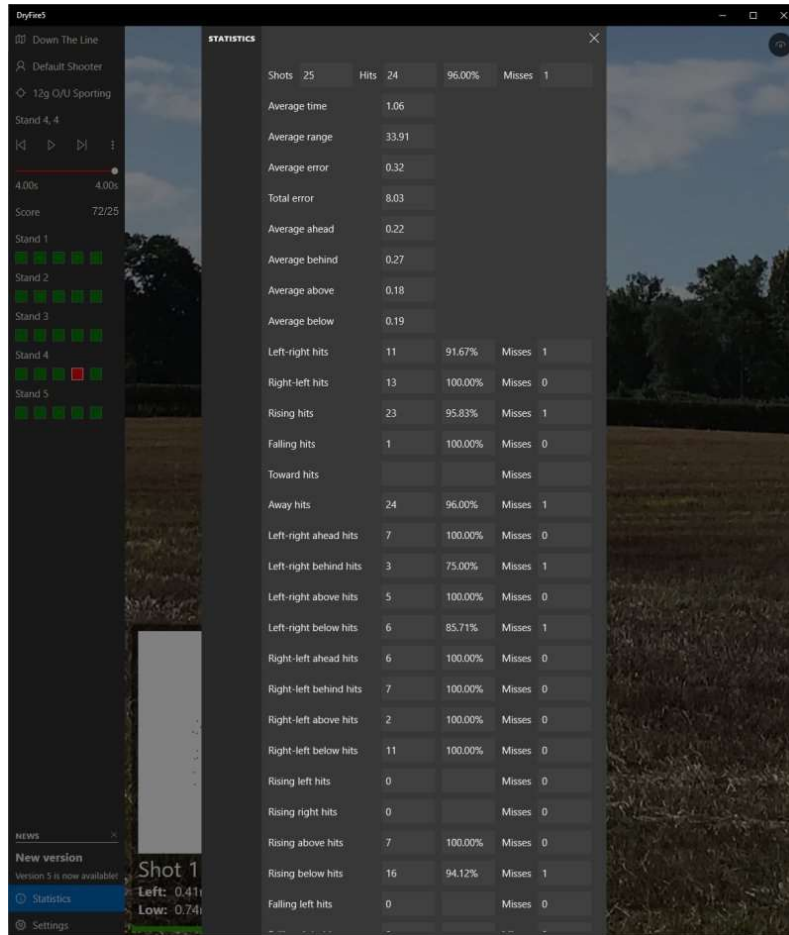
Clicking on any target on the score card brings up a replay - in this case we can see that the shot was below and to the left of the clay

The main view shows the trajectory of the clay and the shot pattern in relation to it.

The close up at the bottom of the screen shows the shot pattern in relation to the clay - 0.41m to the left and 0.74m below. The shot was taken 0.96 seconds after calling "Pull" and the shot pattern had travelled 31.1m when it reached its closest point to the clay. The centre of the shot pattern was 0.84m from the centre of the clay at it's closest point - this is the "error" or "aiming error".



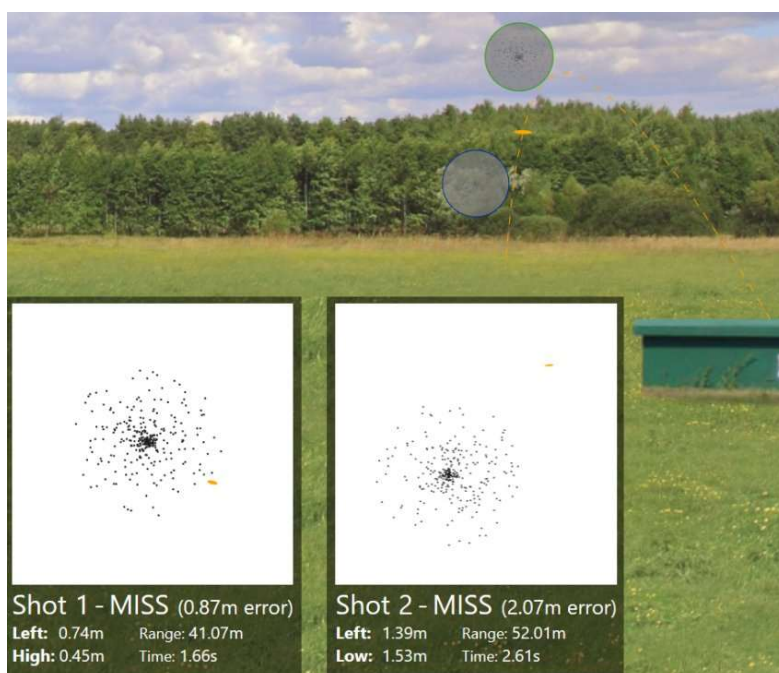
If you have the Report Generator add-on you'll be shown a "Statistics" banner in the bottom left of your screen when finishing a round. Clicking this banner brings up the sort of detail that really serious shooters will be interested in.



The example below shows a different background and two shots taken at the same target.

The first shot was high and to the left - as shown in the left hand result box. Note the green line at the bottom of the box - this matches the border of the circular image of the shot pattern shown in relation to the clay's trajectory which is displayed as a dashed yellow line.

The second shot, with the blue border, was very low and to the left - it was also taken very late with the clay over 52m from the trap.



9 Shooters

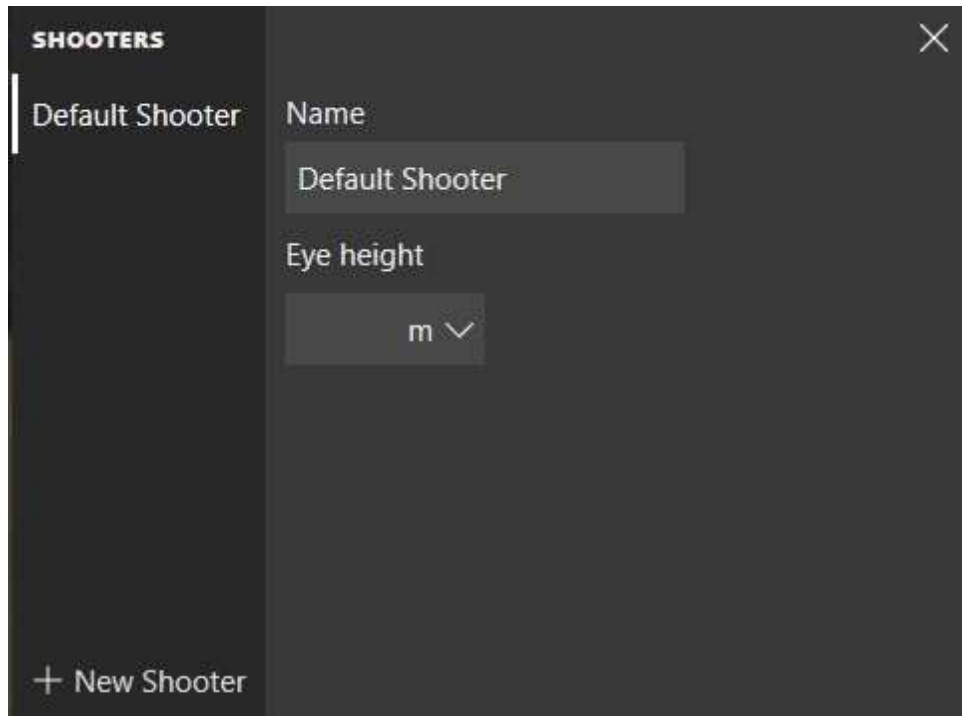
Selecting "**Shooters**" from the top left of the screen allows you to set up details for each shooter.

Note:

- You will need the Friends Pack or Troop Pack if you want to have more than one shooter using DryFire at the same time.
- You will need the Competition add-on if you want DryFire to record scores for multiple shooters.

See the store for more details:

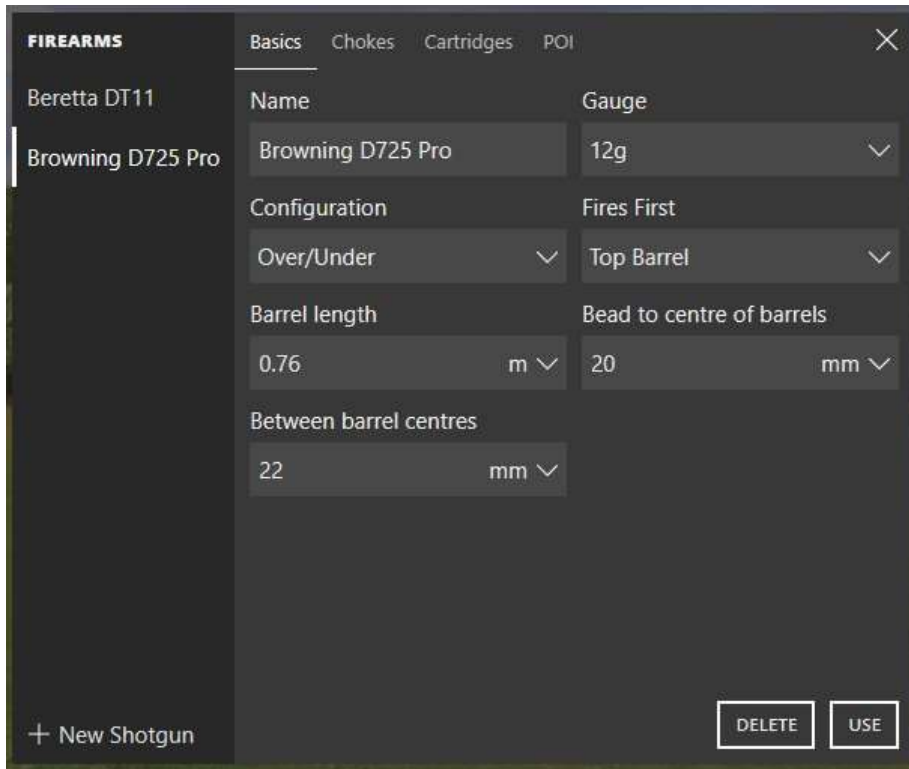
<https://wordcraft.com/store>



10 Firearms

Selecting "**Firearms**" from the top left of the screen allows you to set up details for each gun you will be using.

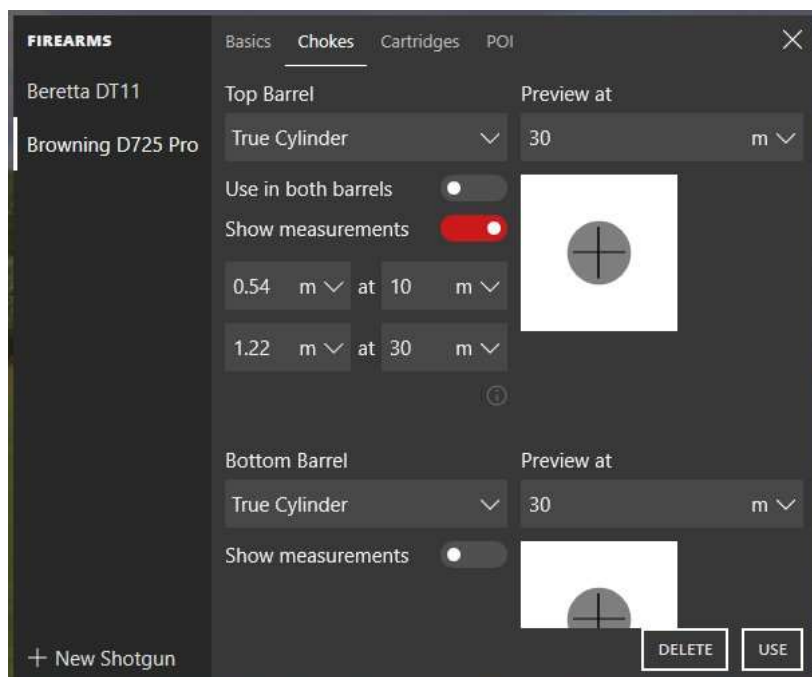
The "**Basics**" tab allows you to change basic details, including the name, from the first screen or you can click on "+ New Shotgun" to create a new gun.



The "**Chokes**" tab allows you to have the same or different chokes in each barrel.

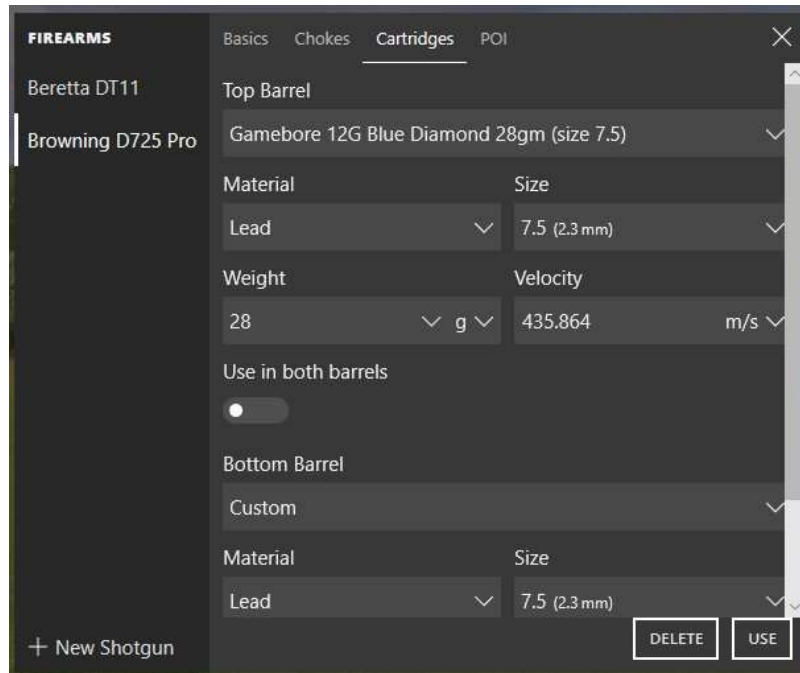
Chokes may be selected by name or you can create a custom choke - but you will need to know the spread (diameter) produced by the choke at two different distances. This can be done using a Pattern Plate if one is available at your shooting ground.

The preview shows the diameter of the shot pattern at a specific distance - 30m by default.



The "**Cartridges**" tab allows you to have the same or different cartridges in each barrel.

Cartridges may be selected from the list provided with DryFire or you can create a custom cartridge by entering a name, material, size, weight and muzzle velocity - this information should be on the cartridge box.



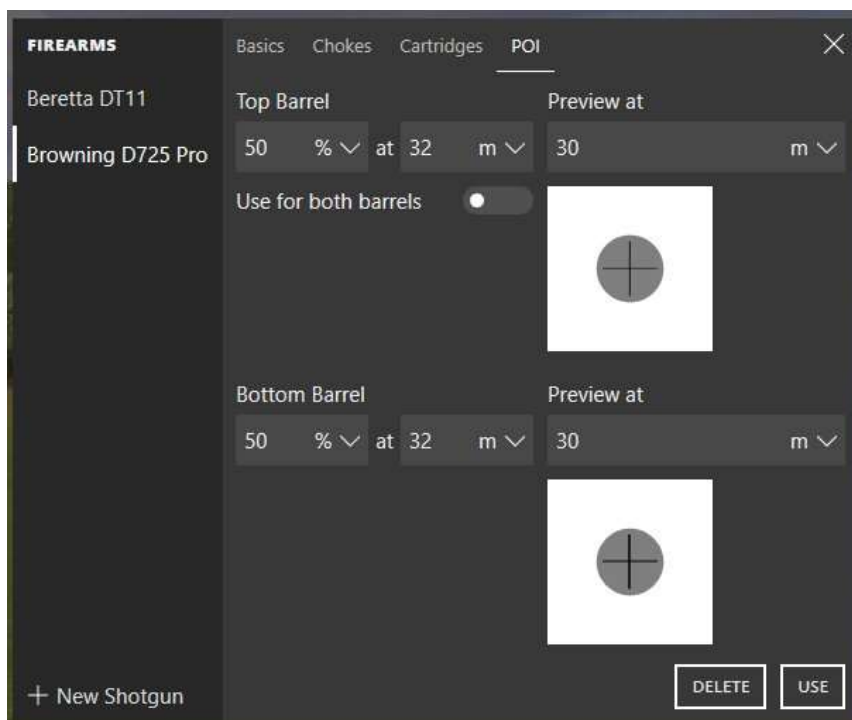
The "**POI**" tab allows you to define the Point Of Impact for your gun.

Skeet guns tend to shoot "flat" - 50% of the pellets go above the point of aim, 50% below.

Trap guns tend to shoot high because you are chasing a rising clay - 60%, 70%, 80% or even 90% of the pellets will go above the point of aim.

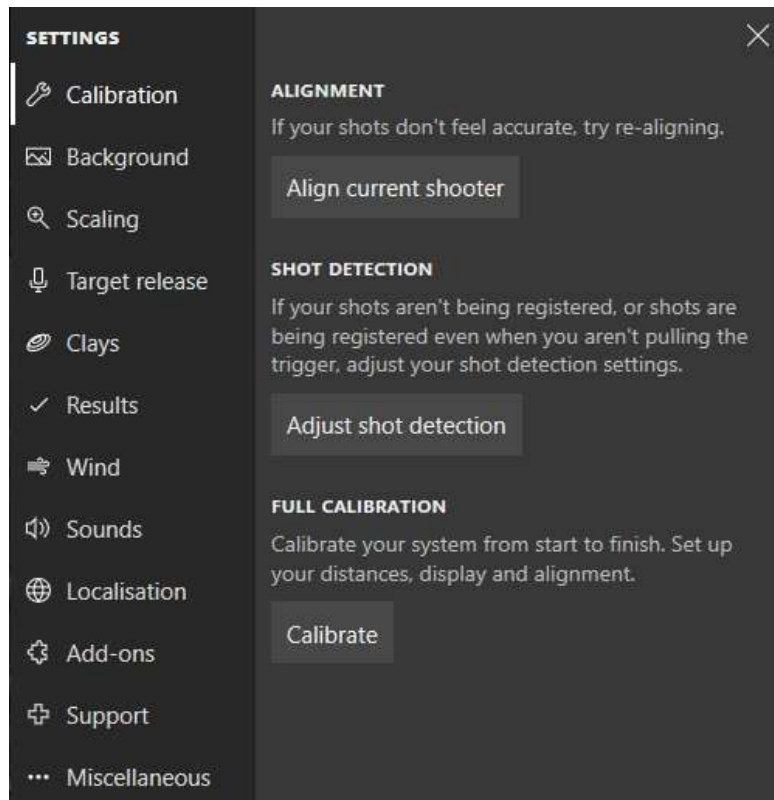
You can check your POI in the real world using a Pattern Plate if one is available at your shooting ground. Put a marker (Post-It note) at the centre of the Pattern Plate, step back a known distance (32m is DryFire's default), aim directly at the marker and shoot. Estimate what percentage of pellets went above the marker.

POI is normally the same for both barrels - but it doesn't have to be - check with the Pattern Plate.



11 Settings

Select "Settings" from the bottom left of the screen to configure how the software functions.



11.1 Calibration

- Click on "**Alignment**" then "**Align current shooter**" and follow the alignment procedure above.
- Click on "**Shot detection**" then "**Adjust shot detection**" if your shots are not being seen or the system is reporting random shots.

Make sure no direct light reaches the wall/screen Check windows, doors, ceiling lights and wall lights - and possible reflections.

Use the compass rose to move the camera head around and try shooting at the area it is pointing to. You should see the "SHOT" message if the system detects your shot.

If your shot isn't detected, drag the white spot slightly to the right to increase the camera sensitivity then try again.

You must find the maximum sensitivity without the system seeing background light.

If you can't get the right setting there will almost certainly be stray light reaching the wall or screen.

- Click on "**Full Calibration**" then "**Calibrate**" to set up and check all measurements and to do muzzle alignment.

11.2 Background

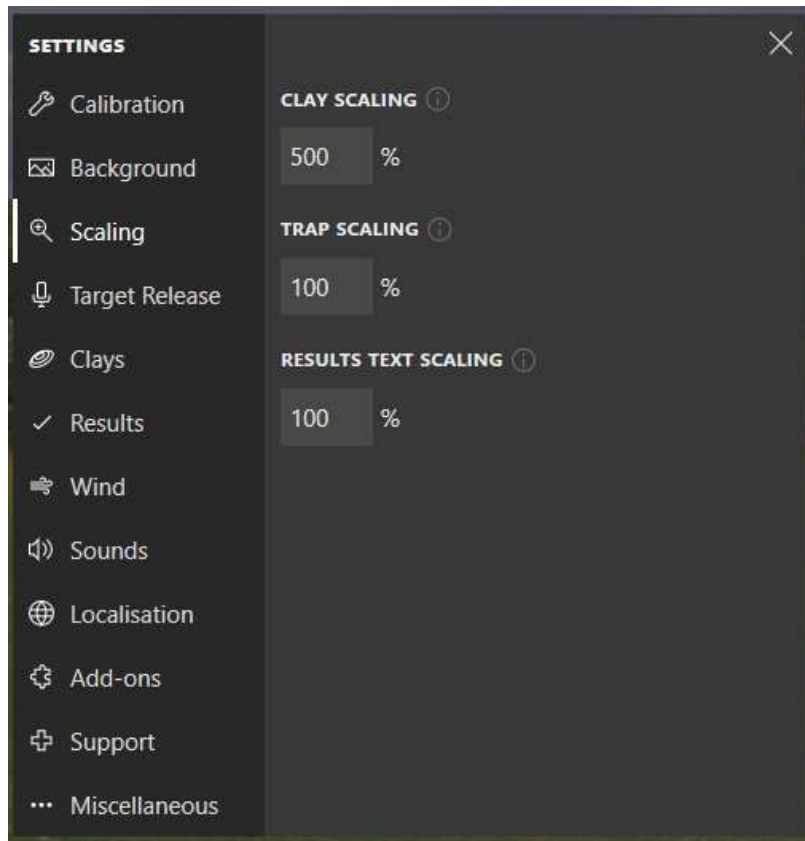
Select a background from the list provided.

11.3 Scaling

Things can look very small on the screen, particularly clays!

Scaling things up makes them easier to see but it doesn't change the accuracy of the system - clays aren't really bigger (unfortunately!), they just look bigger on the screen!

Increase "Results text scaling" (say, 250%) when using laser targets if your PC screen is some distance from your shooting position - this will make it much easier to see the result of each shot.



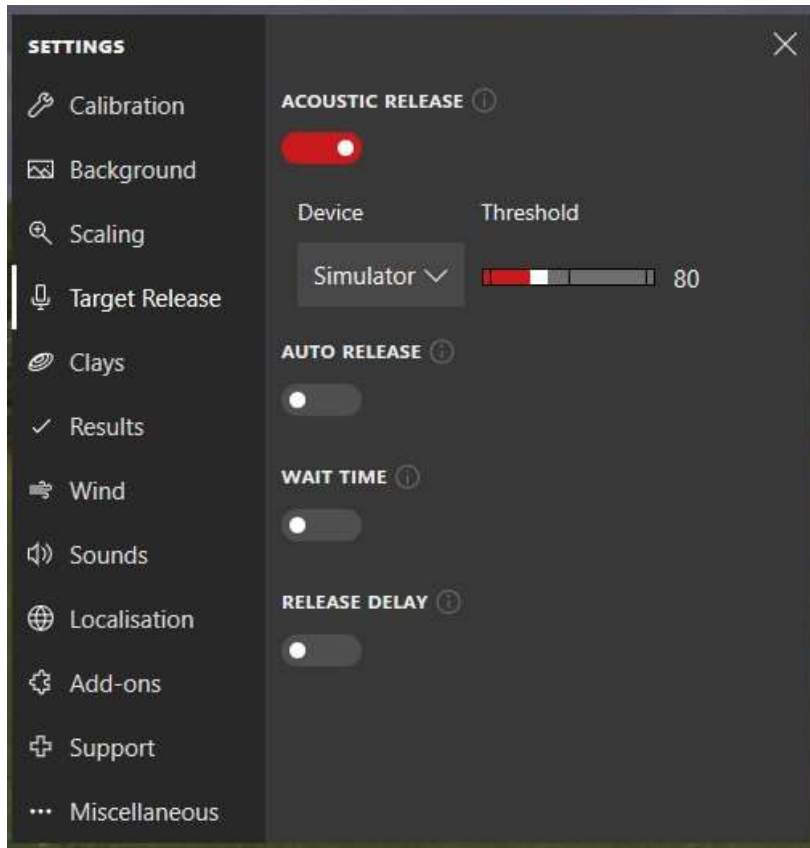
11.4 Target release

The normal method of release is acoustic (calling "Pull") using the microphone in the simulator or in a PC/laptop. Call "Pull" as you adjust the threshold - the system will respond to show it has heard you by showing "PULL" in a red box.

When not using the acoustic release, select "**Auto release**" and the number of seconds the system should wait (after showing the results of the previous shot) before releasing the next target.

You can create a "**Wait time**" - forcing you to dismount and relax for a few seconds between targets.

DryFire can generate a short random "**Release delay**" after calling "Pull" to simulate a human buttoner. Note: some simulations will impose a random delay anyway - because that's what's in the rule book!



11.5 Clays

You can change the screen colour of the clay and it's scaling - the on-screen size, not the real world size! Changing speed makes things interesting but can lead to strange results since going faster will improve your reaction times but the amount of lead required is not changed

The "View" option allows you to select different types of clay and to see the very complex data that defines them. It is this data that enables DryFire to accurately reproduce the paths followed by clays in the real world.

11.5.1 Note about clay speed

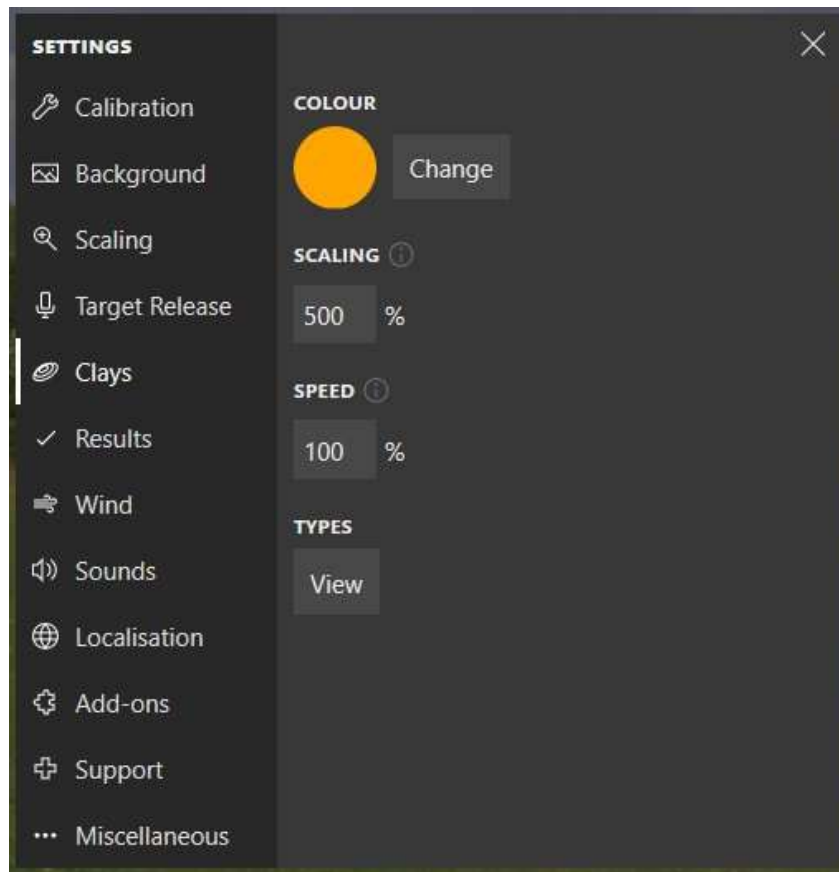
The ability to speed up or slow down a clay was added at the request of DryFire users but it is not as simple as it looks.

The real world speed of a clay is determined by the spring tension on a trap.

In DryFire the spring tension is defined in the simulation file according the rule books - this cannot be changed.

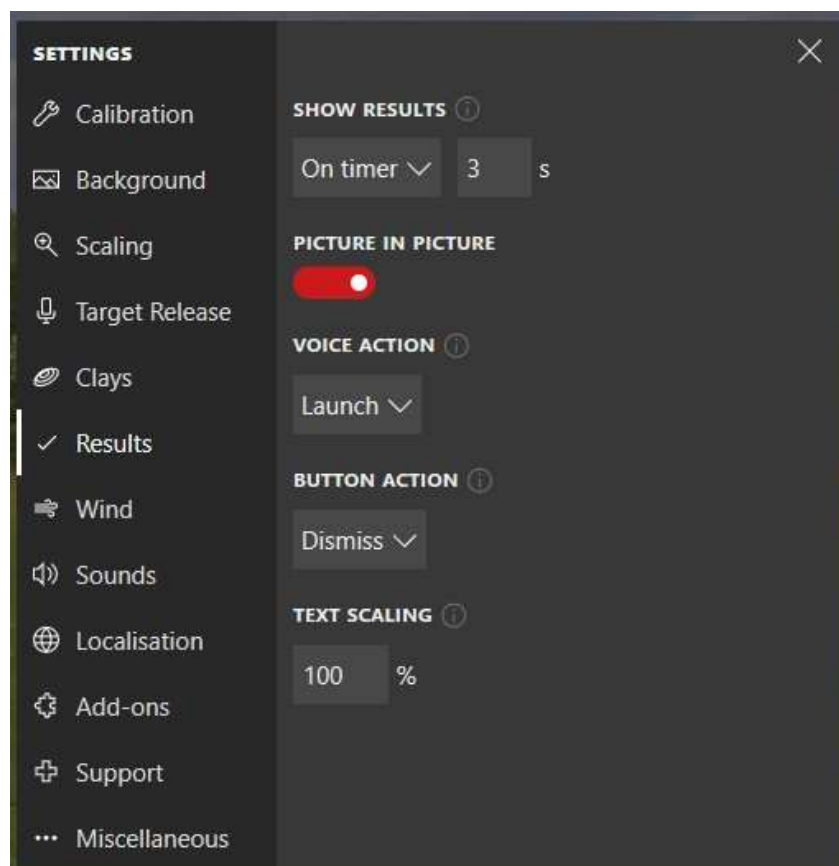
Changing the speed in this screen is like a slow motion or fast motion function - it doesn't change the spring tension. The clay will appear to be going slower or faster but things like the lead required do not change.

So, be careful when speeding up or slowing down clays using this function - you could learn bad habits because the amount of lead will look wrong.



11.6 Results

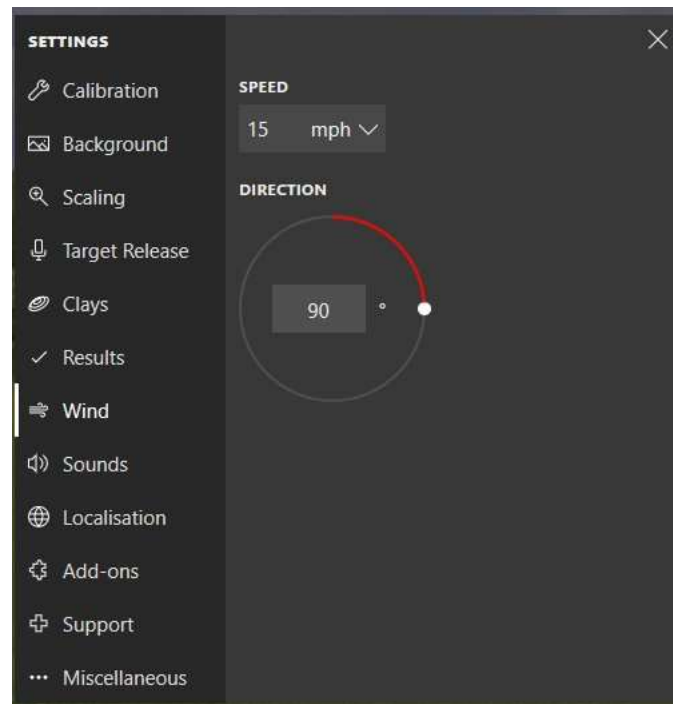
For a complete description click, on the small circle containing an "i" next to each option



11.7 Wind

DryFire will generate gusts of wind from zero up to the speed specified and from the direction specified.

Set the direction by dragging the white dot on the slider or by entering a value directly - in degrees. Zero would be wind coming from the North, 180 would be from the south.

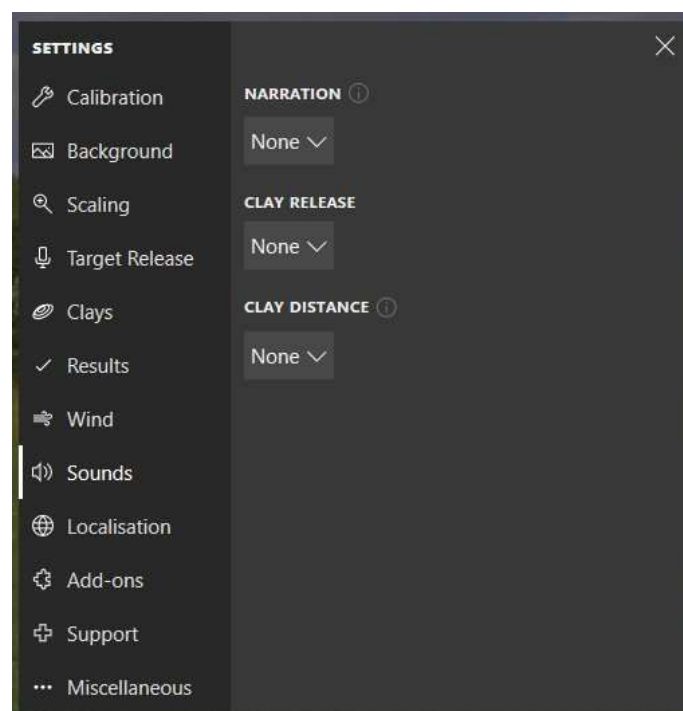


11.8 Sounds

You can select what level of helpful voice messages DryFire should provide through your PC/laptop speaker.

It can also simulate the sound made by the trap when the clay is released.

An echo sound can be played when the clay reaches a certain distance - perhaps the distance at which the energy from the pellets would be insufficient to break it.



11.9 Localisation

Select language and measurement system: Metric (metres) or Imperial (inches).

11.10 Add-ons

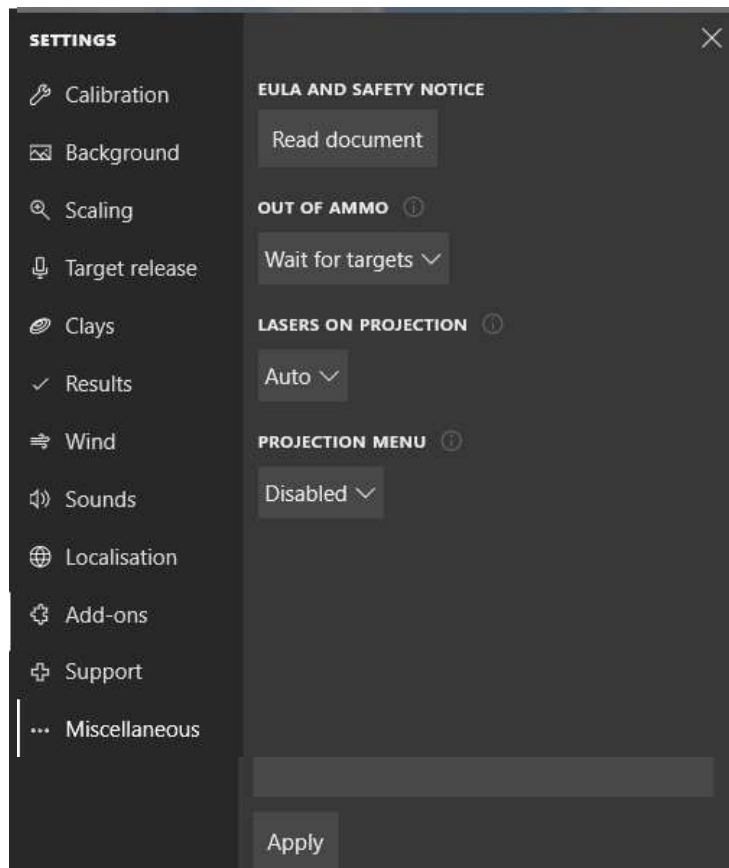
This displays a list of optional software add-ons enabled in your copy of DryFire.

It also allows you to enter the "key" provided by Wordcraft when you purchase an add-on.

See the next chapter about installing add-ons

11.11 Miscellaneous:

- **"Out of ammo"** means you have fired both barrels and at least one target is still moving.
- You can **"Wait for targets"** to reach the ground, **"Skip"** straight to seeing the results of your shots, or set a **"Timer"** before showing the results. The timer starts from when you took your last shot.
- **"Lasers on projection"** defines when laser targets should be used with the projection add-on. **"Auto"** lets DryFire decide so it uses lasers for targets that won't fit within the projection area.
- **"Projection menu"** enables or disables a menu on the projection screen.



12 Installing add-ons

Add-ons may be purchased from the store: <https://wordcraft.com/store>

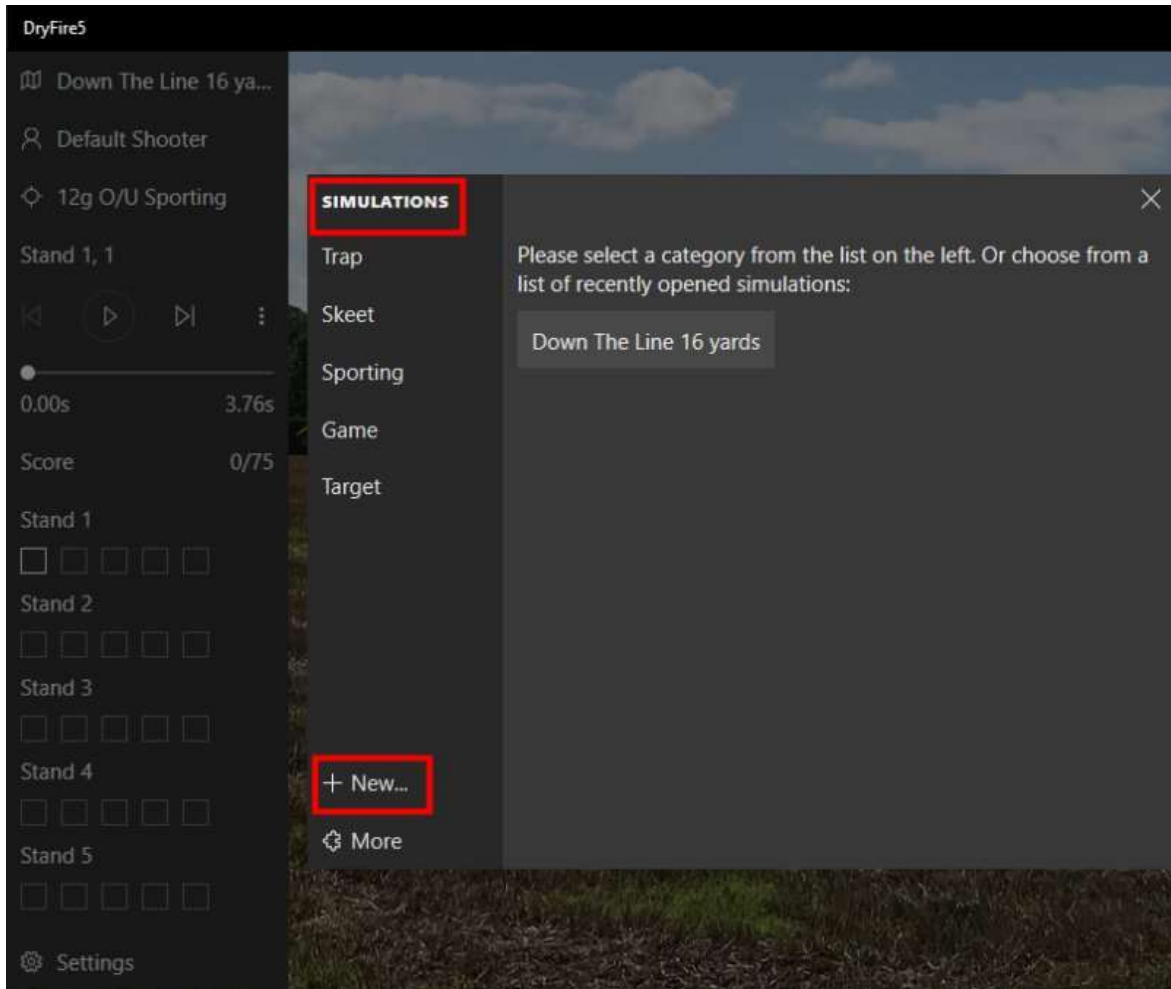
- After purchasing an add-on your invoice will include a token or key looking like this:

ABC123-DEF456-GHI789-JKL012

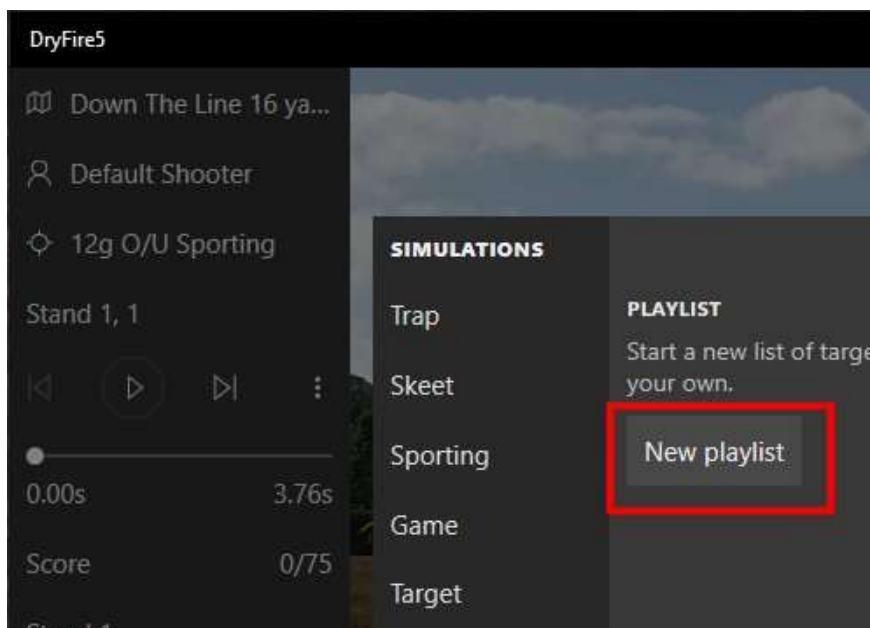
- Keys are stored in the simulator so ensure it is switched on and connected to a USB port - the heads will nod when connected.
- Run the DryFire software.
- Select "Settings" then "Add-ons" and find the field labelled "Apply key".
- Enter the key provided with your invoice and click on "Apply".
- A tick will appear when the key has been applied.
- You now have access to all the features of the new add-on.
- A full list of the add-ons you have purchased is shown above the "Apply key" field.

13 Designer add-on

After adding Designer to your system a new choice, "+ New", will appear in the bottom left corner of the simulation selection box.

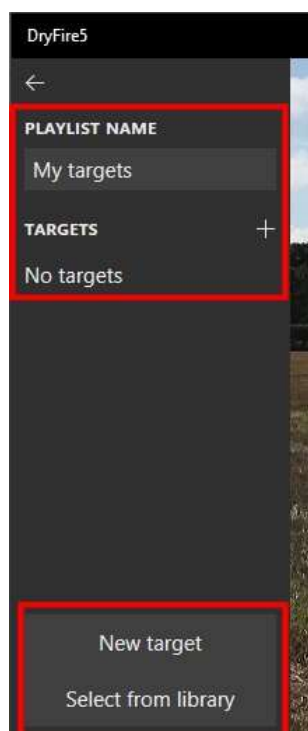


Click and select an existing playlist or "New playlist" to start a new one. A "playlist" is simply a list of targets you create yourself - like a "layout".#



Give your playlist a name ("My targets" in the example below) then select either "Select from library" or "New target".

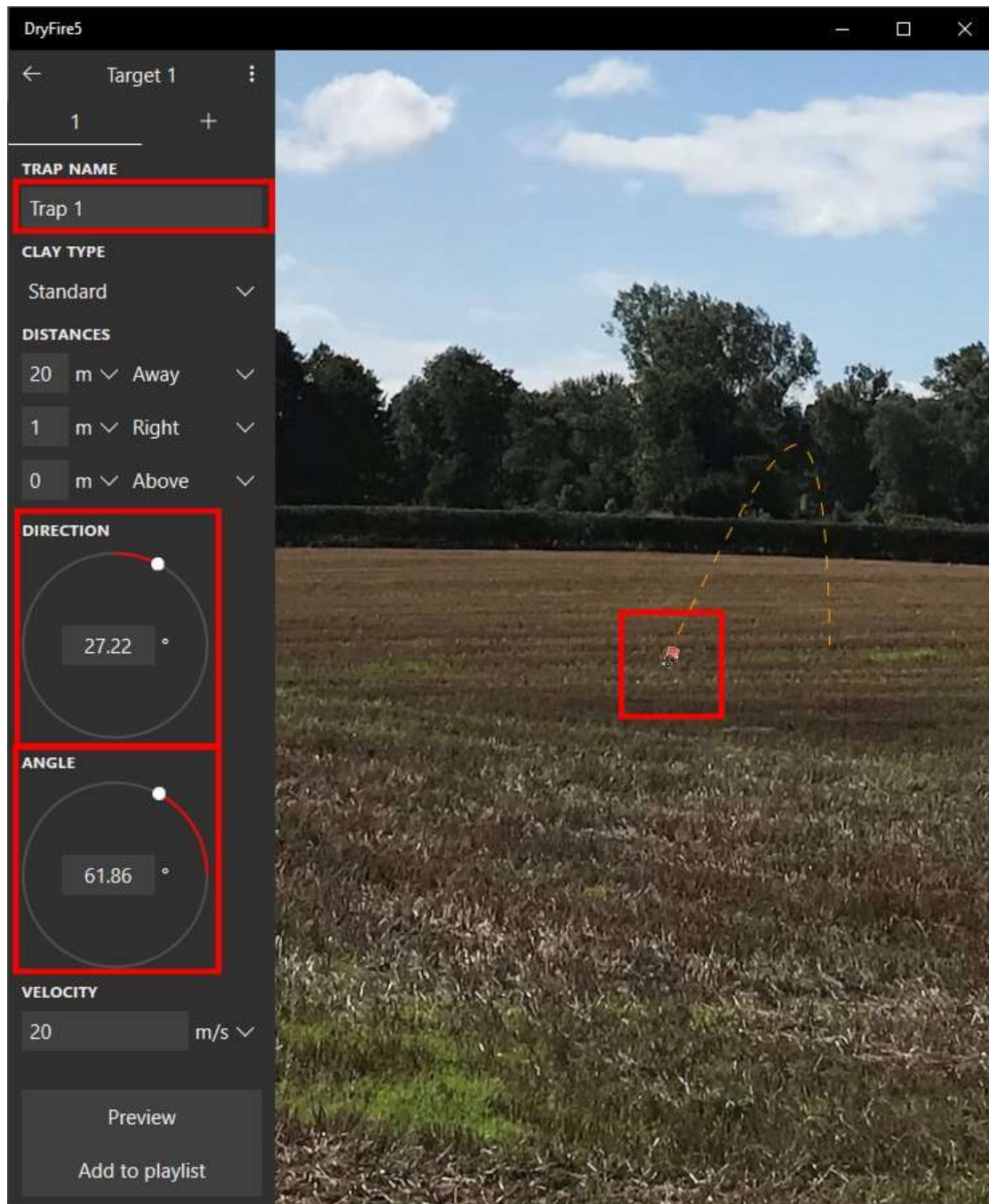
"Select from library" allows you to select any target from any of the simulations provided with DryFire.



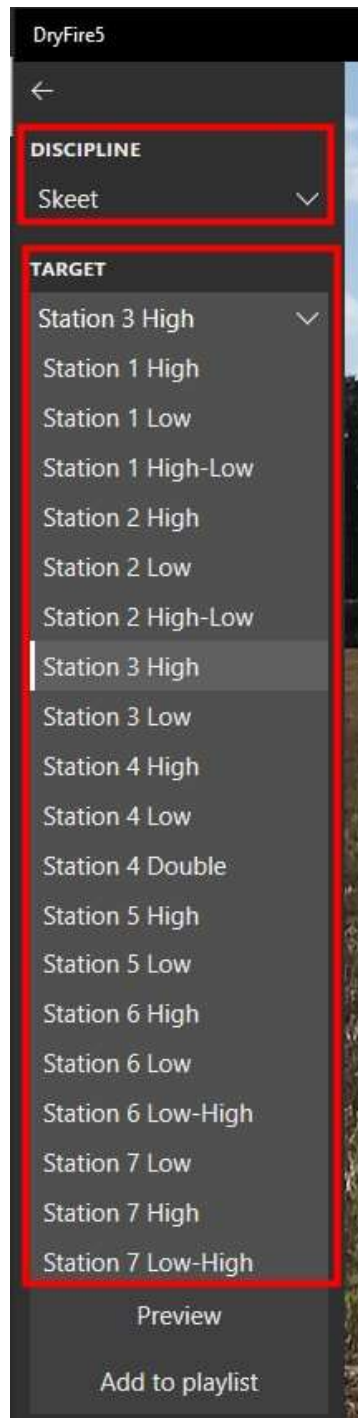
"New target" allows you to create, and name, a new singles or doubles target. You will see a preview as you edit any of the settings for the target.

In the example below:

- The target is called "Trap 1"
- The clay type is "Standard"
- The trap is 1m to the right of the straight ahead position and 0m above the shooter's position. Increasing the "Above" value will put the trap on a "tower".
- The horizontal direction of release is 27.22 degrees to the right of straight ahead. Adjustment was done by dragging the white dot and looking at the preview.
- The vertical angle of release is 61.86 degrees - again, adjusted with the white dot.
- the clay will be released at 20 m/s.



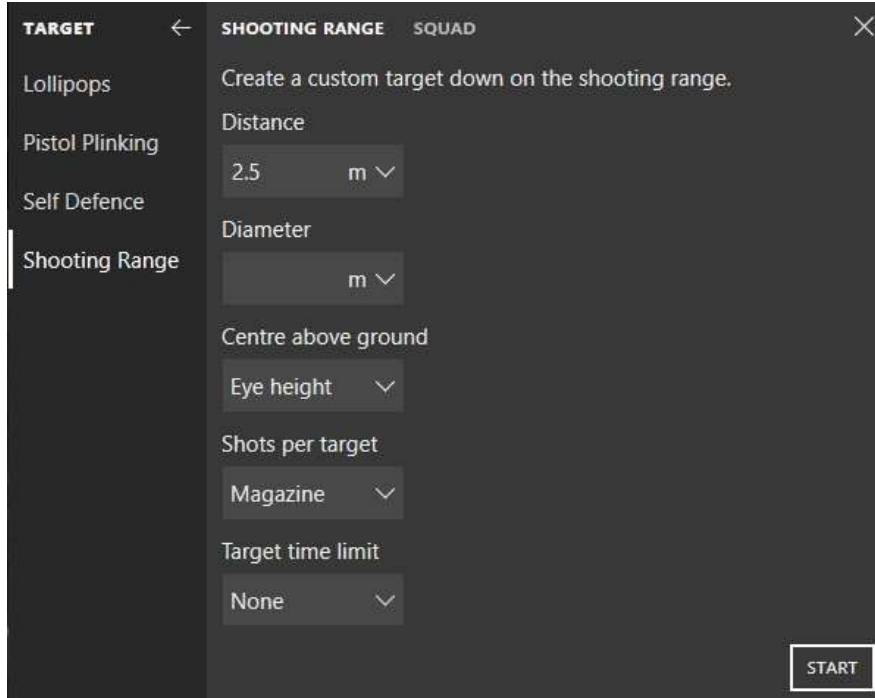
"Select from library" allows you to select targets from any existing DryFire simulation - skeet in the example below. Give your selected target a name.



14 Rifle & Pistol add-on

After adding Rifle & Pistol to your system a new choice, "Target", will appear in bottom left corner of the simulation selection box.

You can select one of the predefined target simulations or "Custom," which allows you to create a standard "bullseye" target of any size at any distance.



15 Competition add-on

The optional Competition add-on enables you to shoot against others as part of a squad.

15.1 Squads, multiple users and multiple guns

DryFire is designed for use by a single shooter but the **Friends and Troop packs** allow you to add multiples of 5 or 20 shooters to your system. See the store for more details.

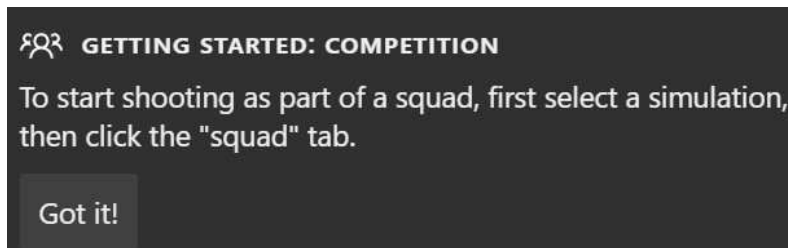
<https://wordcraft.com/store>

Obviously you will need at least a **Friends Pack** before you can set up a squad for a competition.

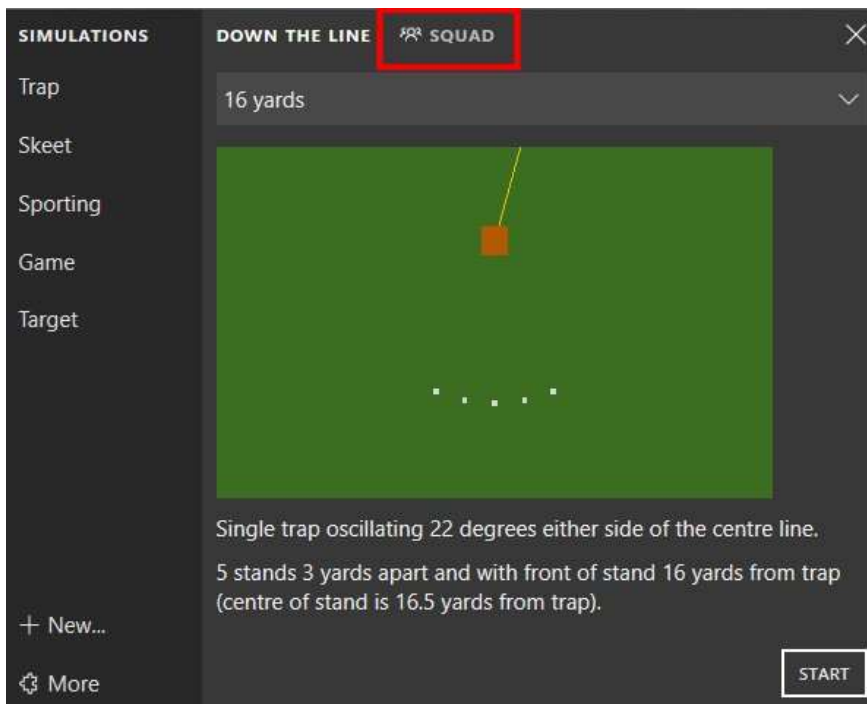
Members of the squad may share the same gun (each shooter will have to carry out muzzle alignment before shooting) or each may use their own gun - which will require its own **Universal Gun Assembly**.

15.2 Getting started

A hint will appear when you select "Simulations" after the Competition add-on is installed.



Click on the "Squad" tab after selecting a simulation.

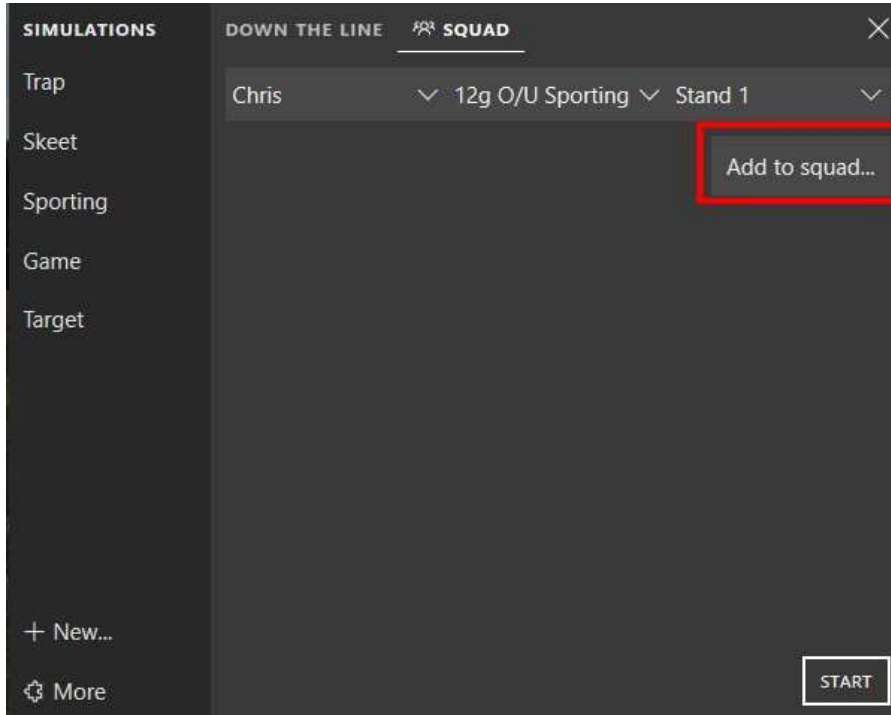


If you don't already have a squad set up you will see the current shooter listed along with three pull down lists:

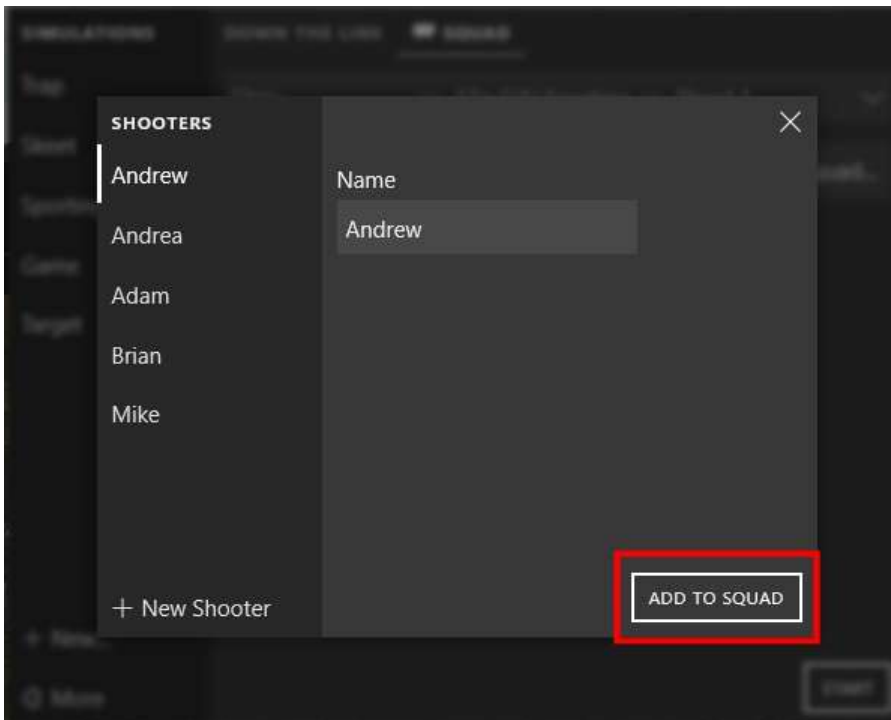
- Shooter name.
- Gun being used.

- The stand on which this shooter will start.

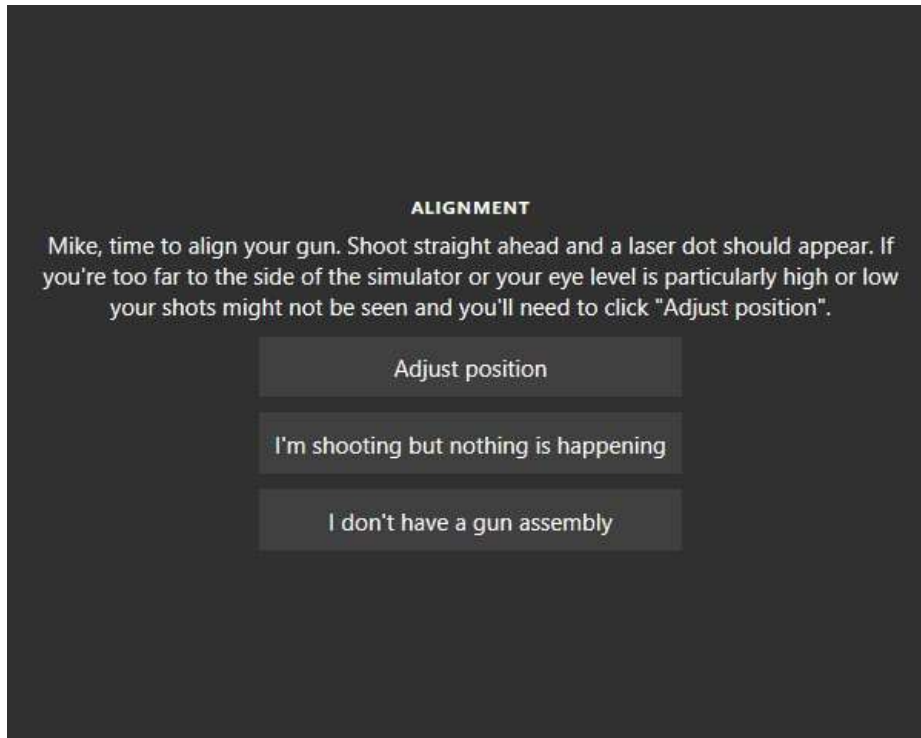
To add another shooter to the squad click on "Add to squad".



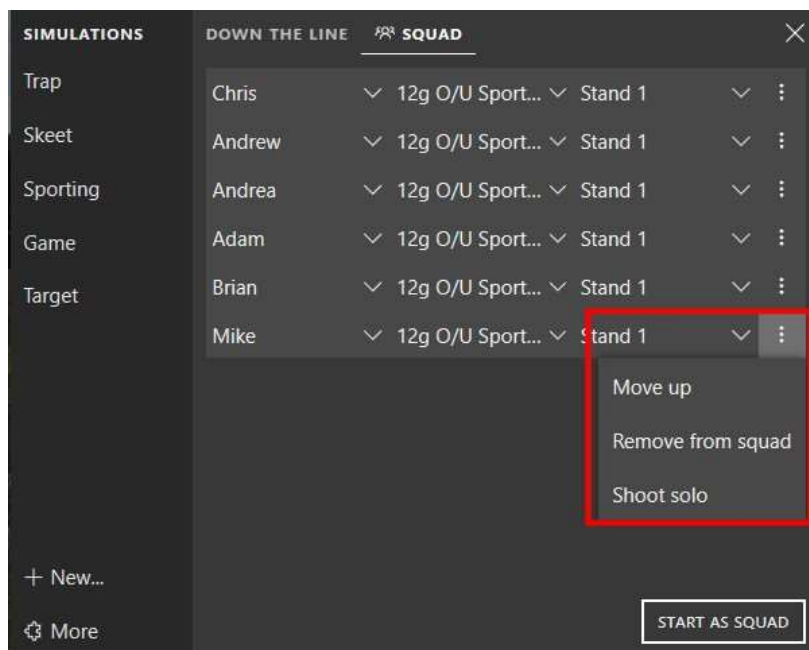
You will now see a list of other shooters who can be added to the squad by clicking on "Add to squad".



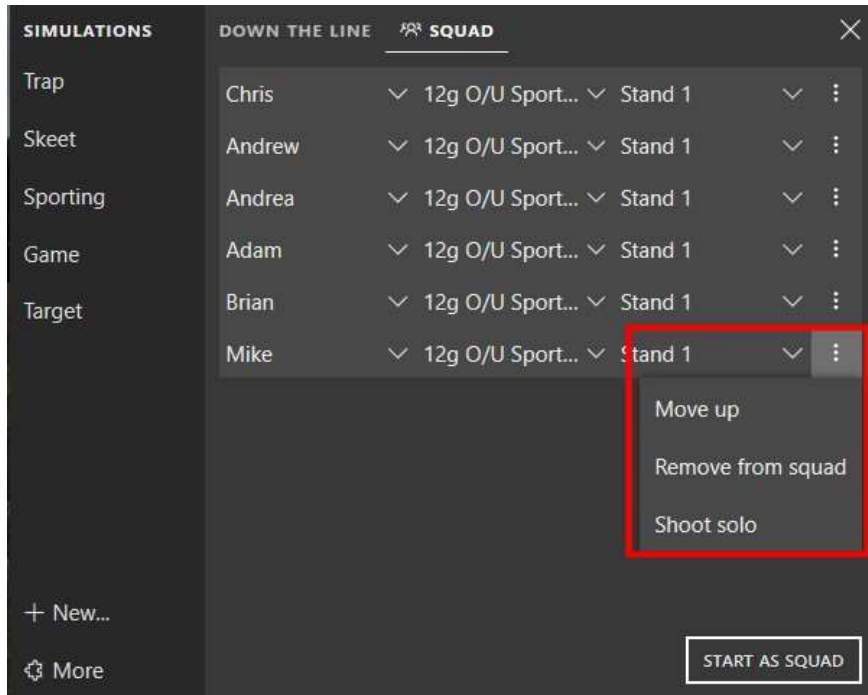
If the selected shooter has not shot before they will be given a chance to align their gun. Follow the normal muzzle alignment procedure and continue as normal.



Click on the three vertical dots to change the squad order, delete a shooter or decide that one shooter is going to shoot alone.



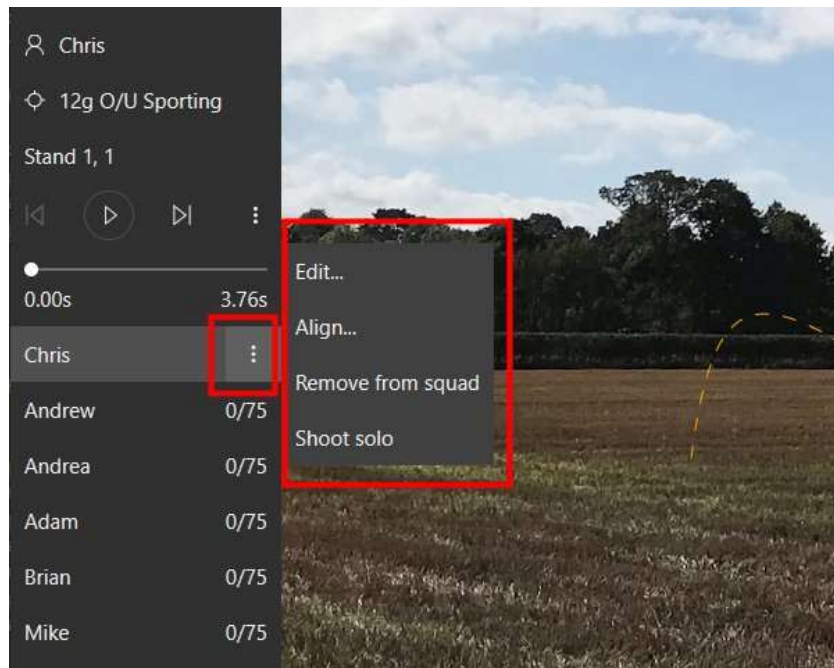
Click "Start as squad" when your squad is complete.



When shooting as a squad the standard sidebar changes slightly to show you each shooter and their scores, with the current shooter being highlighted with a different background colour.



Move your mouse over an individual shooter and click on the three vertical dots to display a menu of options. When you started shooting you can use this menu to look at an individual's scorecard..



In addition to the scorecard shown on the PC/laptop screen, the projection add-on will also display the current shooter's score in the top left corner and, at the end of a round, it will display the results for the whole squad.

16 Gun Motion add-on

Gun motion tracks and displays the path of your gun barrel from just before you call "Pull" until just after you fire your shot(s). This makes it ideal for checking the smoothness of your gun motion and for ensuring that you follow through and don't stop the gun after the shot(s).

16.1 Important note

The Gun Motion add-on works with the plastic cylindrical/tubular version of the DryFire Universal Gun Assembly (UGA) with an "Avoid exposure" sticker on the laser.

It does not work with the older, metal version.

Please contact us if you have the older version of the UGA.

16.2 Requirements

You need:

- The latest version of the DryFire software.
- Bluetooth must be enabled on your smartphone/tablet.
- Access to wifi. Your PC and your smartphone/tablet must be connected to same wifi router.
- The Gun Motion add-on - purchased and installed.
- The free Gun Motion app installed on an Apple or Android smartphone/tablet.

You will require Apple iOS 12.4 or later or Android 6.0 or later.

For Apple:

<https://apps.apple.com/nz/app/dryfire-gunmotion/id893116995>

For Android:

<https://play.google.com/store/apps/details?id=com.wordcraft.dryfire5gunmotion>

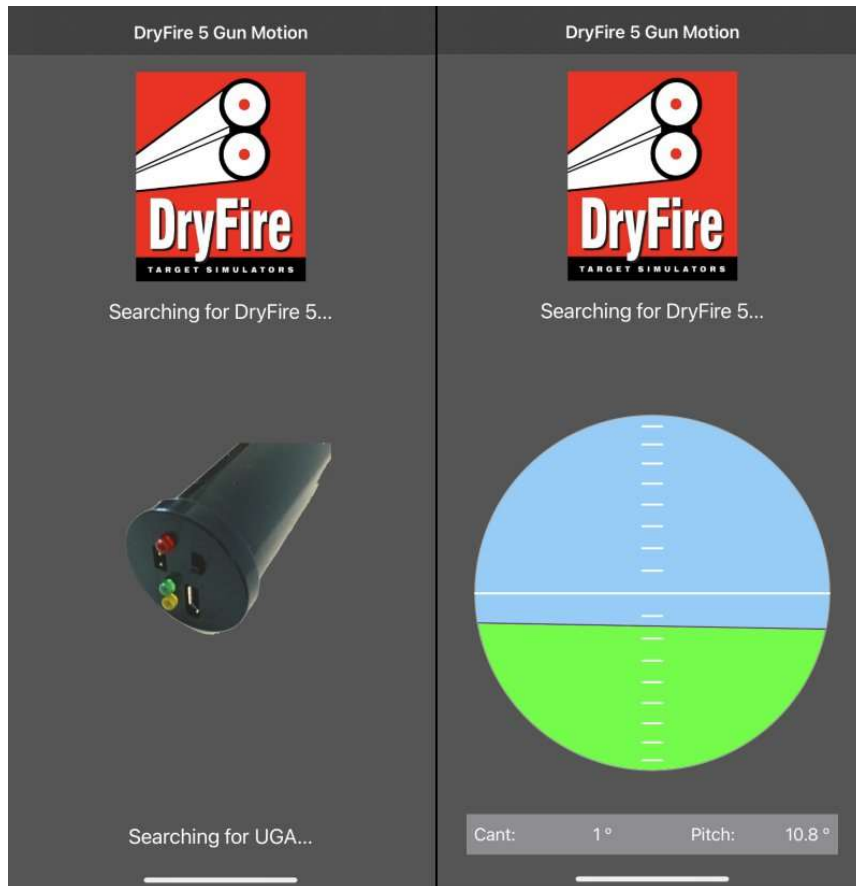
Important

Your smartphone/tablet must have been manufactured **after the beginning of 2017** to ensure that its Bluetooth hardware will work with DryFire Gun Motion.

16.3 Using Gun Motion

Please do things in the following order:

- Check your PC and smartphone/tablet are connected to wifi and that Bluetooth is enabled on your smartphone/tablet.
- Ensure your Universal Gun Assembly (UGA) is fully charged, mounted and switched off.
- Run the DryFire software on your PC.
- Run the Gun Motion app on your smartphone/tablet.
- Switch on the UGA.
- Within a few seconds the smartphone/tablet app will connect to the UGA via Bluetooth.



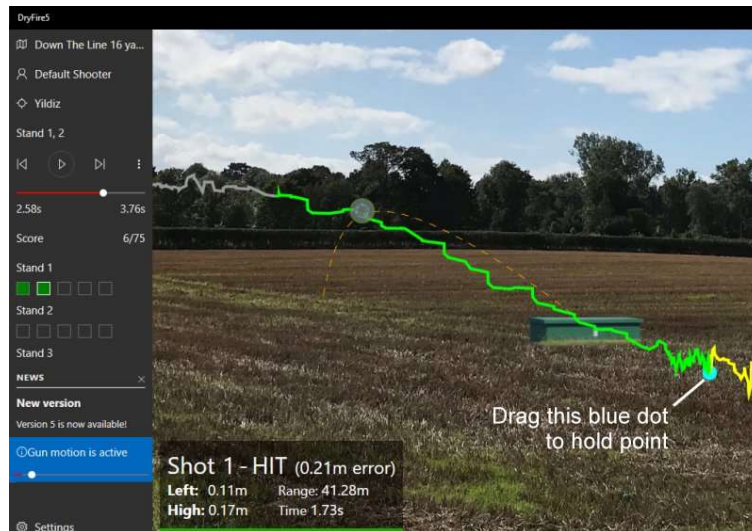
- During use the app will show how your gun is pointing - cant (roll) and pitch (up/down).
- Next the app will connect to the DryFire software via wifi and the bottom left of the PC screen will show that gun motion as active.



- Your smartphone/tablet will display a cant indicator so put it safely to one side so you can keep an eye on it. Gun motion data will appear after you take a shot - on your PC screen or projection screen if you are using the Projection add-on.
- The app may also be used to set up parameters within the UGA - see the main User Guide for more details.
- You may now carry out muzzle alignment before selecting a layout/target as normal.
- Make a mental note of your hold point before each shot - the point your gun is pointing at when you call "Pull" - you will need this later.
- Call "Pull" and shoot as normal.

16.4 Post-shot analysis

After taking your shot the gun motion tracks will be displayed:



- The yellow track shows gun movement before you called pull. the green track shows movement before you fired and the grey track shows movement after firing.
- Below the "Gun motion is active" message you will see a slider.



- Use your mouse or tracker pad to drag the slider so the blue dot is at your hold point. The blue dot represents the point your gun was pointing at when you called "Pull".
- The gun motion data for each target is stored along with the hit/miss data. You can display any target by simply clicking on it in the score card.



17 Report Generator add-on

DryFire records every shot you take and Report Generator analyses this data to show how your performance has changed over time.

17.1 Requirements

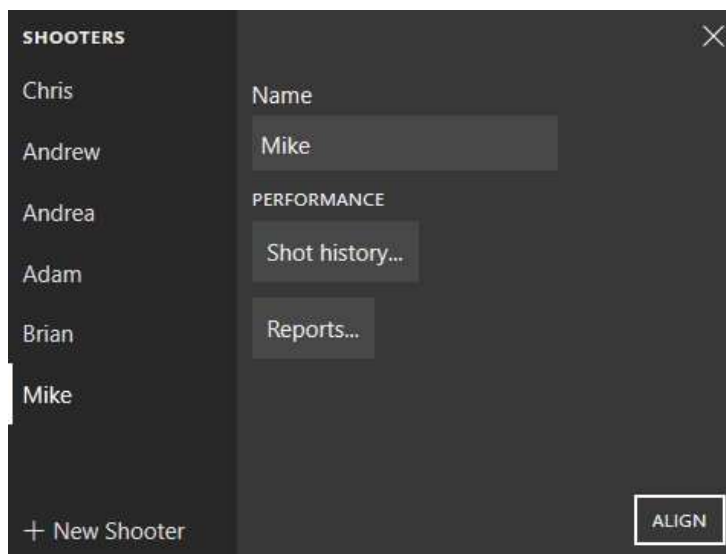
You need:

- The latest version of the DryFire software from <https://wordcraft.com/support>
- The Report Generator add-on - purchased and installed from <https://wordcraft.com/store>

17.2 Using Report Generator

You must shoot at least one full round of targets before the report option becomes available.

Click on the current shooter's name to open the shooters' dialog box.



Click on "Shot history" to see a list of rounds you shot on a particular date.

Click on "Reports", enter the selection criteria you are interested in then click on "Update".

REPORTS ✕

Simulation: Down The Line 16 yards Start date: 07/10/2020

Target: All End date: 07/10/2020

Barrel: Both

RESULTS

Down The Line 16 yards		07/10/2020 0:00		
Stand 1, 1	1 Hit	0.630m	+0.613	↑0.145
Stand 1, 2	1 Hit	0.713m	→0.710	↑0.067
Stand 1, 3	1 Hit	0.221m	→0.042	↓0.216
Stand 1, 4	1 Hit	0.154m	+0.135	↑0.075
Stand 1, 5	1 Hit	0.621m	+0.585	↑0.210
Stand 2, 1	1 Hit	0.243m	+0.228	↓0.085
Stand 2, 2	1 Hit	0.268m	→0.222	↓0.149
Stand 2, 3	1 Hit	0.608m	+0.602	↑0.089
Stand 2, 4	1 Hit	0.370m	+0.356	↑0.101
Stand 2, 5	1 Hit	0.415m	+0.337	↑0.243
Stand 3, 1	1 Hit	0.162m	→0.127	↑0.100
Stand 3, 2	1 Hit	0.169m	→0.107	↑0.131
Stand 3, 3	1 N/B	0.791m	→0.649	↑0.452
Stand 3, 4	1 Hit	0.425m	→0.398	↓0.148
Stand 3, 5	1 Hit	0.228m	→0.170	↓0.153

Name: Default Shooter

PERFORMANCE

The "Export" option allows you to save the current report as a .PDF file.

The "Statistics" option brings up a more detailed analysis.

Shots	32	Hits	23	71.88%	Misses	9
Average time	1.71s					
Average range	43.10m					
Average error	0.53m					
Total error	16.92m					
Average ahead	0.12					
Average behind	0.42					
Average above	0.24					
Average below	0.37					
Left-right hits	10	76.92%	Misses	3		
Right-left hits	9	64.29%	Misses	5		
Rising hits	4	80.00%	Misses	1		
Falling hits	19	70.37%	Misses	8		

18 Getting support

18.1 Trouble shooter

.Check the trouble shooter page of the web site to see if your problem is dealt with there:

https://wordcraft.com/trouble_shooter

Please also check the web page dedicated to requesting technical support:

https://wordcraft.com/tech_support

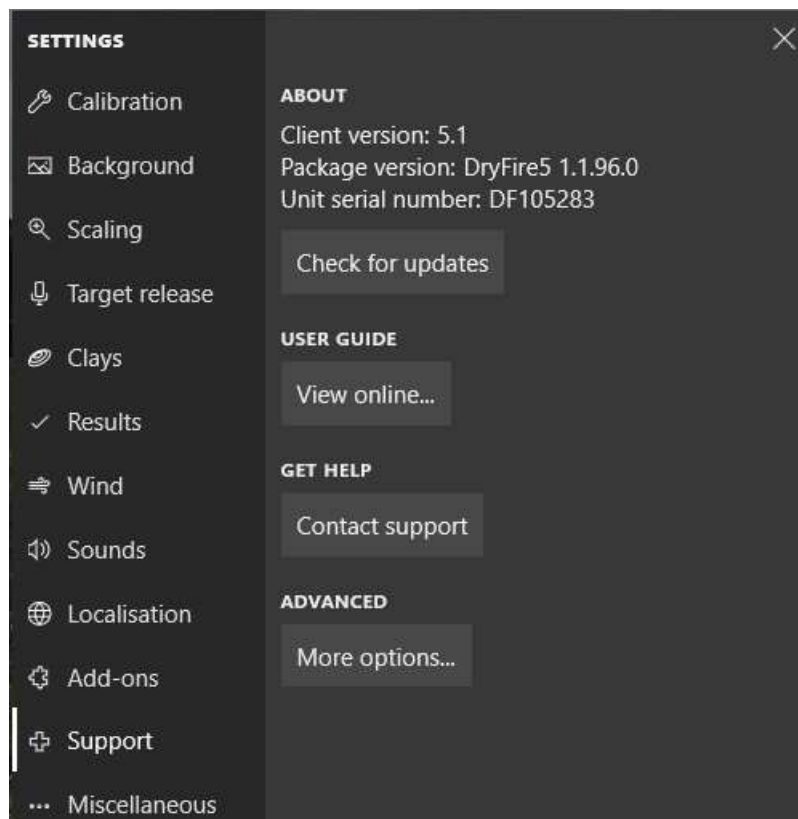
18.2 Sending a support request

DryFire maintains a log of everything it does and everything you do – as well as a list of all current settings.

It is vital that your support request **includes this log** so our support staff can identify the problem and provide a rapid response.

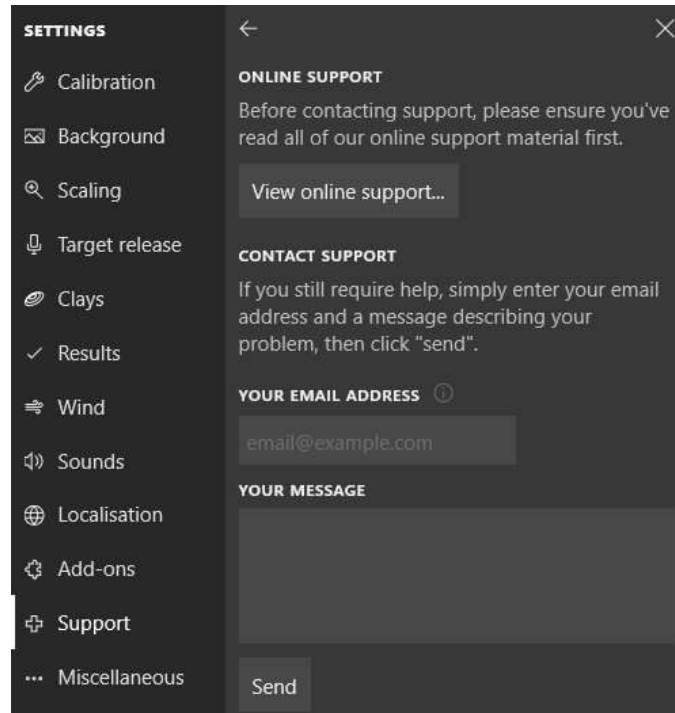
While the DryFire software is running, preferably just after your problem occurs, please click on:

- "Settings",
- "Support"
- "Contact support".



Enter your email address then a brief description of the problem - sufficient for us to reproduce it.

When you click on "Send" your report will be sent to us along with a DryFire log which will help us find out what the problem is. We will respond by email.

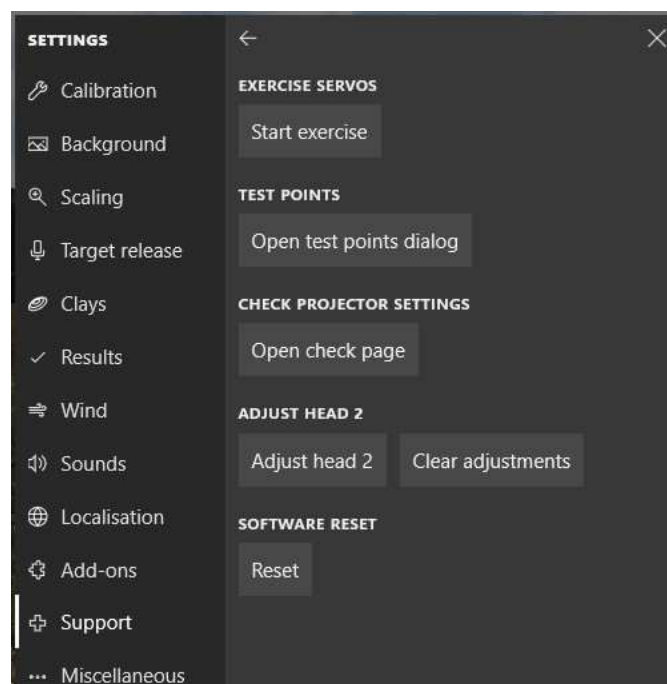


18.3 Advanced support options

More advanced support options are available via "Settings", "Support" "Advanced", "More options".

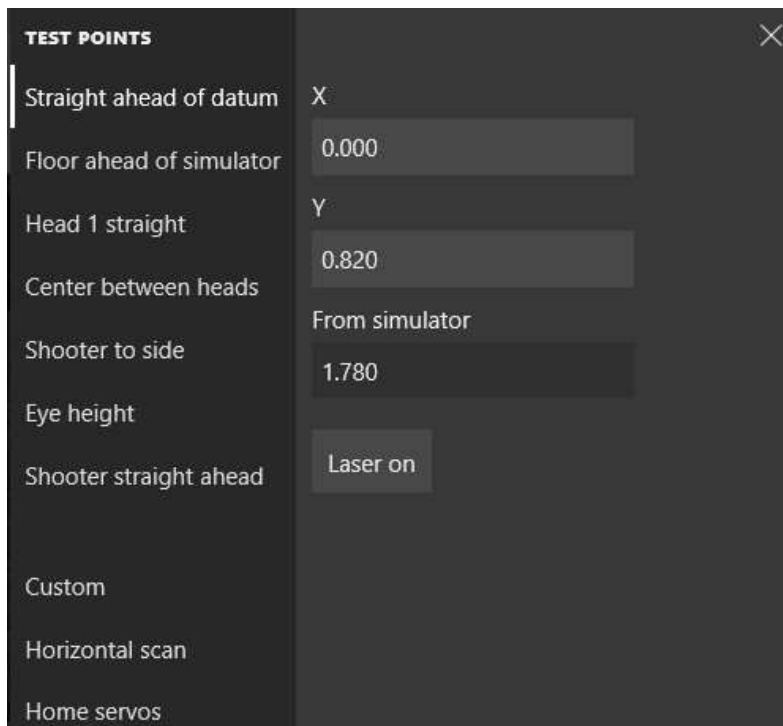
You may be asked by our support department to use the functions shown on the screen below:

- Exercise servos: this will move the servo motors through their length of travel.
- Test points: this allows the lasers to be moved to specific points in front of you (see the next screen).
- Check projector settings: this is used to check your projector is displaying the complete image generated by DryFire (see below).
- Adjust head 2: this allow you to move the laser dot generated by head 2 (the one on the right when facing the wall) to coincide with the one generated by head 1 (see below).



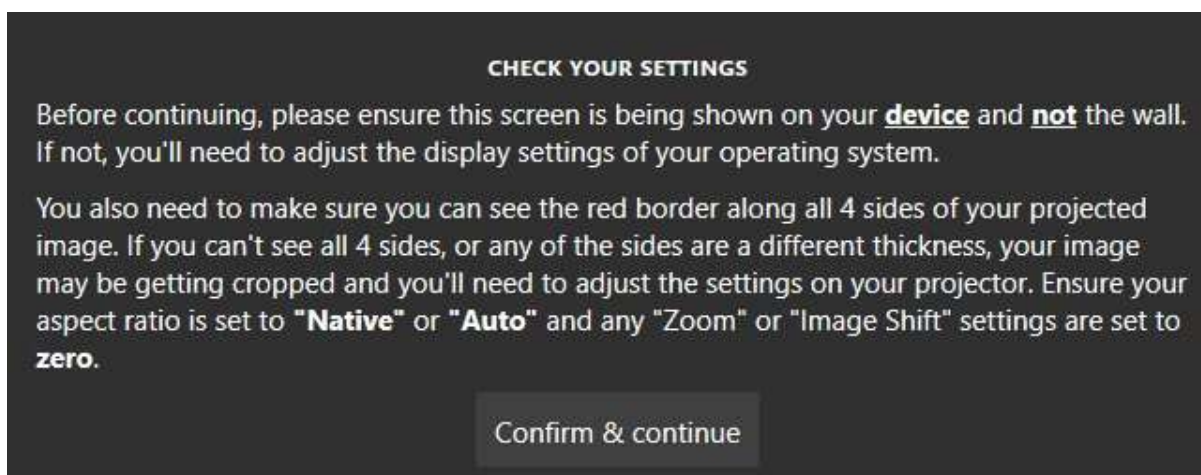
The "Test points" screen allow you to move the lasers to specific points in front of you. The locations should match the measurements you entered for "Simulator to wall", "Simulator from floor" and "Shooter to wall." If things are way out you should check your measurements via the "Setting", "Calibration", "Full calibration" screen.

Don't worry if the two lasers don't always coincide with one another - this is quite normal.

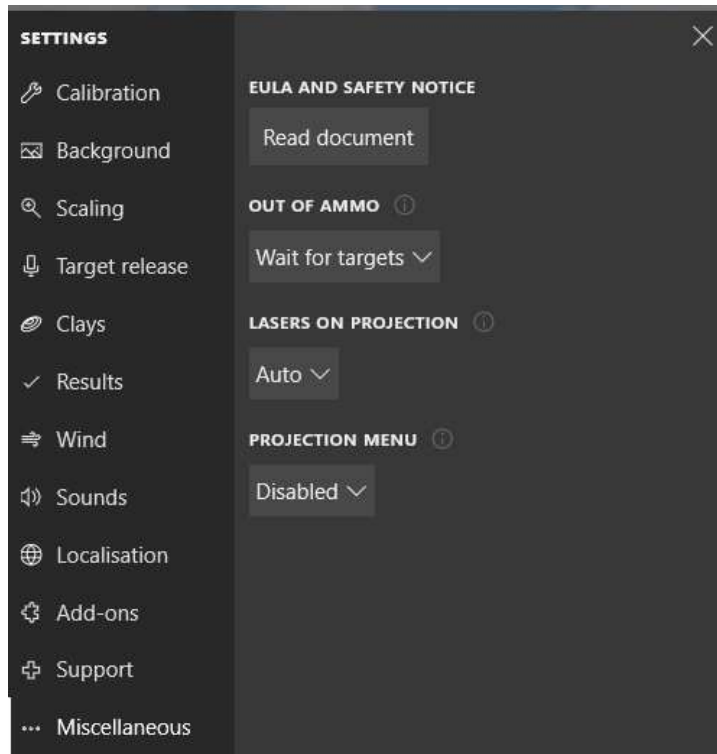


The "Check projector settings" screen allows you to check:

- That you are using "extended mode" with the image on your PC being different from the one projected. You are using "duplicated mode" if they are the same - this won't work.
- That your projector is showing the complete image with no cropping.



The "Adjust head 2" screen allows you use the on-screen movement pad to move the laser dot generated by head 2 to coincide with the one generated by head 1.



19 Advanced room setup

Most people don't need advanced setup at all.

The projection add-on **does not require** advanced setup.

Laser targets and results will not be totally accurate if you have a sloping wall - you need the "slope start" and "slope in" measurements.

The room "ceiling height", "left side wall" and "right side wall" measurements are used by the software to display accurate angular speed when a laser target starts or ends on a side wall or on the ceiling - for example wide crossers or very high incoming/outgoing birds.

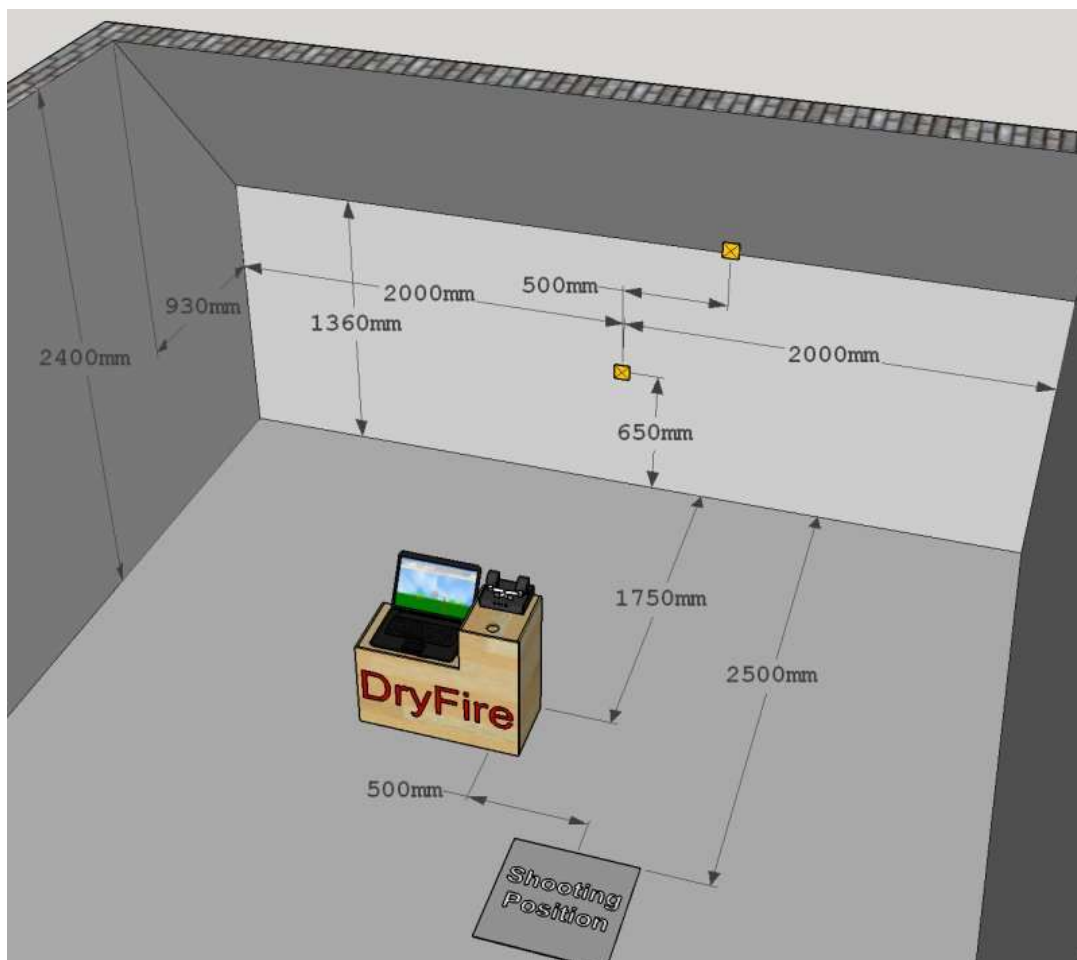
Important note: you don't have to enter anything relating to the screen size because this is established during projection setup after you have laser targets working.

Initially you set up only these distances:

- simulator to wall/screen,
- simulator from floor,
- shooter from wall/screen.

Advanced setup: reached from "Calibration", "Full calibration", "Calibrate"; allows you to enter additional values to tailor the system for the room.

Please look carefully at the drawing below which shows how the measurements relate to the room.



Shooter eye height: don't change this - it is calculated automatically when you carry out muzzle alignment by shooting at the upper Post-it note.

Right of shooter: if you cannot stand directly behind the simulator, measure how far you are to the right or left of it. Enter a positive value if you are to the right or a negative value if you are to the left. (+0.50m in drawing.)

Room ceiling height: the floor to ceiling height. (2.40m in drawing.)

Slope start: the height above the floor where any inward facing slope starts. (1.36m in drawing.)

Slope in: how far the top of the slope extends into the room. (0.93m in drawing.)

Left side wall: the distance from the simulator to the left wall. (2.00m in drawing.) Right side wall: the distance from the simulator to the right wall. (2.00m in drawing.)

Ceiling mounted: click this if your simulator is mounted upside down to the ceiling.

Note: this has nothing to do with a ceiling mounted projector used with the optional projection add-on. DryFire doesn't care where a projector is mounted - as long as it produces a clear rectangular image directly in front of the simulator.

20 Advanced UGA setup

The UGA is normally triggered by the pressing the trigger switch and it normally operates in "press to fire" mode.

Advice: don't change it.

20.1 Configuring the UGA

Should you really need it, the UGA Bluetooth configuration app runs under Apple iOS, Android or Windows 10 and connects to the UGA via Bluetooth.

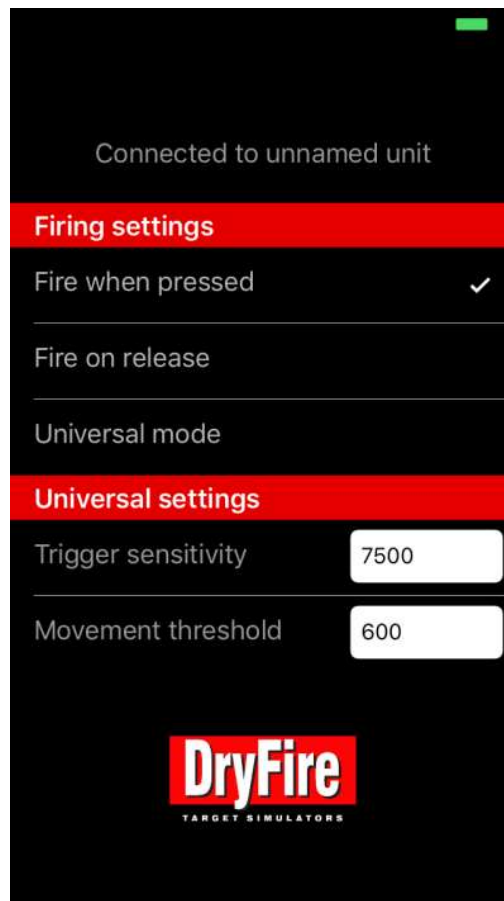
Visit Google play (Android), App Store (Apple iOS) or the Microsoft Windows 10 App Store and search for "DryFire Trigger" then download the app.

Apple: <https://apps.apple.com/za/app/dryfire-trigger-unit/id1291827365>

Android: <https://play.google.com/store/apps/details?id=com.wordcraft.dryfiretrigger>

The app will look slightly different on each "platform" but the functions are the same.

This image is from the Apple iOS version.



- **Fire on press:** the gun "fires" when you press the trigger. This is the way most people shoot.
- **Fire on release:** the gun "fires" when you release the trigger. Also called "set trigger".
- **Universal mode:** the gun "fires" when the UGA detects the vibration caused by the firing pin.
- **Trigger sensitivity:** the lower the value, the more sensitive the system will be to vibrations.
- **Movement threshold:** sets movement sensitivity for the Universal mode.

20.2 Bluetooth problems

Bluetooth can be unreliable so keep the UGA fairly close to your PC or smartphone and to run the app immediately after switching on the UGA.

The UGA "advertises" its presence for one minute after being switched on so the app should detect it. If not, switch off the UGA, close the app, wait 10 seconds, switch on the UGA, run the app.

Not all PCs and laptops running Windows 10 have decent or up-to-date Bluetooth devices inside them so if you have problems we recommend trying the Belkin F8T065BF Bluetooth USB dongle. (By the way: did you know we invented, and named, "dongles"?)

21 Warranty

Our warranty details are on the web site:

<https://wordcraft.com/store/terms>