FLAIM

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FLAIM Trainer™

User Manual

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1. Overview

Welcome to the FLAIM community. Thank you for your purchase of the FLAIM Trainer™ virtual reality training system.

This manual should get you on your way in no time. It is designed for trainers with minimal understanding of virtual reality. The FLAIM Trainer system is not designed to replace hot fire training, but instead allows experiential learning through a number of practical scenarios developed to improve dynamic thinking, risk assessment, radio messaging, muscle memory, hose handling technique and nozzle control. Our system is designed so you can train people at all levels in your organisation from novice through to experienced firefighters. Giving you the ability to train and develop their skillset in a safe environment with immersive, repeatable and realistic fire scenarios.

The FLAIM Trainer can also be used to train the public in the dangers of fire and allow them to appreciate the work that you do.

FLAIM Trainer provides firefighters the capacity to train situations and scenarios that are:

- inherently unsafe and difficult to reproduce;
- no longer possible due to environmental, community and regulatory constraints;
- incur significant training cost in time, people and assets.

FLAIM Trainer places firefighters in the most realistic training scenario available by utilising several customised elements:

- **Head Mounted Display:** Breathing apparatus (SCBA) kit incorporates a head mounted virtual reality (VR) display.
- **Nozzle:** Hose-line system provides realistic jet or nozzle reaction force.
- **Heat Suit:** Heat Suit with heat generation components.

Once again, thank you for your support.

The FLAIM Systems Team

Train more, learn more, prepare better.

2. What's in the box?

This section covers the FLAIM Trainer system and what to expect when you open the box. It also lists the individual parts included and explains what they do.

Figure 1: The FLAIM Trainer system

Figure 2: Standard packaging for the FLAIM Trainer system

Figure 3: Standard packaging of support components

Figure 4: Standard packaging of the SCBA, VR headset and half facemask

Figure 5: Standard packaging of the hose reel

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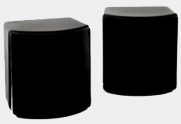
FS-FT2-SK Support Kit

Equipment	QTY	Picked	Stocktake	Image
FS-HR-V2 Hose Reel	1	☐	☐	
External Power Supply for Hose Reel	1	☐	☐	
Nozzle/Branch	1	☐	☐	
Milwaukee Battery Adaptor	2	☐	☐	
M12™Milwaukee Compact Charger & Power Source	2	☐	☐	
HDMI Receiver	1	☐	☐	
Lighthouses (Base Stations)	2	☐	☐	
VIVE Controller	1	☐	☐	
HDMI Extension Cable	1	☐	☐	

Equipment	QTY	Picked	Stocktake	Image
USB 2.0 Port Hub	1	☐	☐	
Base Station Battery to Base Station Cables	2	☐	☐	
Tripod Swivel Mounts	2	☐	☐	
Lighthouse Wall Mounts	1	☐	☐	
HDMI Cable	1	☐	☐	
Keyboard	1	☐	☐	
Rope	1	☐	☐	
HDMI F-VGA Adaptor	1	☐	☐	
HDMI F-F Adaptor	1	☐	☐	

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FS-FT-BA SCBA

Equipment	QTY	Picked	Stocktake	Image
FS-BA-V2 SCBA and VR Headset	1	☐	☐	
FS-HS Heat Suit	1	☐	☐	
Half face SCBA mask and lung demand valve	1	☐	☐	
Tripods	2	☐	☐	

FS-FT Battery Support Kit

Equipment	QTY	Picked	Stocktake	Image
M12™ 4.0Ah REDLITHIUM-ION™ Battery Pack - M12B4	2	☐	☐	
M18™ REDLITHIUM-ION™ High Output Battery Pack - Country Specific	2	☐	☐	
M18™ & M12™ Rapid Charger - M12-18FC	1	☐	☐	
Instructor iPad	1	☐	☐	
iPad charging Cable	1	☐	☐	
Micro USB to USB Cable	2	☐	☐	
4-Port USB Rapid Travel Charger	1	☐	☐	
HTC VIVE Tracker Puck	1	☐	☐	
IEC Power Cable - Country Specific	1	☐	☐	

3. Quick Start Guide

This section covers the basic setup, use and running of the FLAIM Trainer system.

3.1 Hardware Setup

The hardware consists of a number of support components that must be installed before training can commence. This section covers the placement and installation of all tracking hardware and instructor television (or projector) monitoring equipment.

3.2 Tracking hardware

Tracking is achieved using the VIVE lighthouse system from HTC. A pair of trackers are installed that define the maximum training space allowable for the user to train in. At present the system supports a training area of 6 x 6m ~(20 x 20ft) or a total distance between the two trackers not greater than about 7m (23ft).

This training area should be cleared of all furniture, not contain large mirrors or highly reflective surfaces and should not be in direct sunlight. The tracking system used by FLAIM Trainer relies on Infrared Light (IR) and tracking performance can be degraded in certain conditions.

Each tracker is assembled as per the following figures.

As shown in **Figure 7**, the tracking system is plugged into the power receptacle. Once assembled, the system can be placed into position at diagonal corners of the training space and powered on (by connecting the battery to the system).

Figure 6: Tracking System

Figure 7: Tracking system showing plug locations

Please ensure that there is at least one red light (out of a possible 4) on the power adaptor before beginning a scenario.

The trackers should be placed at diagonal corners of the training space at a height of ~2m (6ft). The sensor face should be angled down at an approximately 30-degree angle as shown in **Figure 9.**

Note

When installed and powered on, both trackers should show a power led on the front window.

Figure 8: Typical configuration of training area

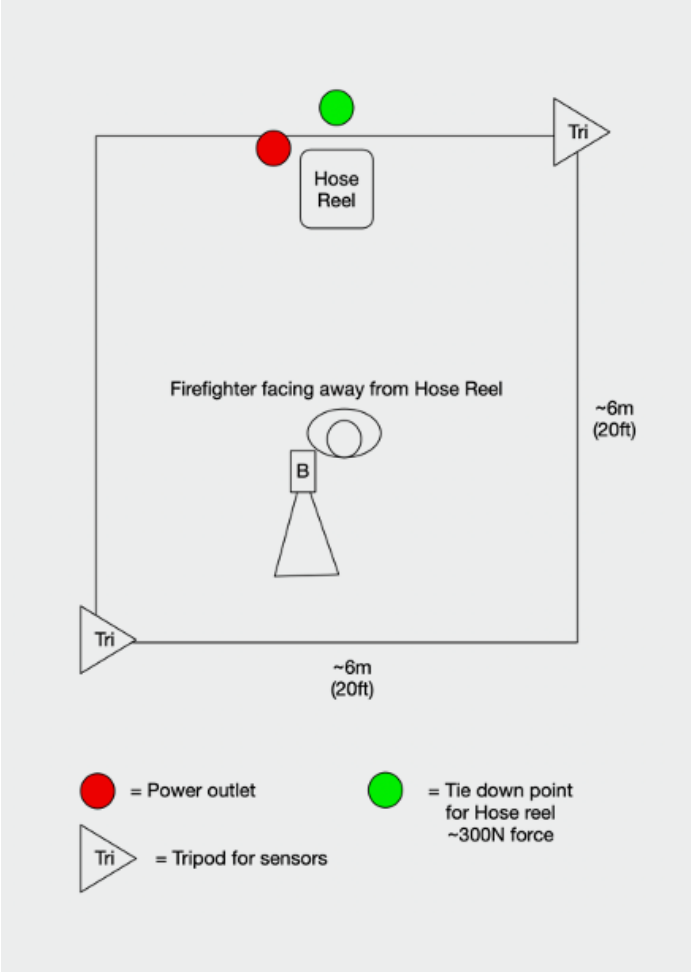


Figure 9: Trackers installed on tripods angled at ~30 degrees

3.3 Instructor viewing hardware

In addition to the tracking hardware, the instructor viewing hardware must also be installed. This hardware receives the signal transmitted by the FLAIM Trainer SCBA so that the instructor and/or fellow trainees can view live footage from the training environment. This hardware is crucial for first time setup of the tracking environment.

The instructor viewing hardware consists of a HDMI receiver that connects to a television/projector (not supplied) via a supplied HDMI cable **(Figure 10)**.

Power is supplied to the HDMI receiver from the included USB Power supply or by plugging the attached micro USB lead into the USB port on most newer televisions and projectors.

The system is a commercial unit and has been trialled with a number of televisions and projectors with great success. Some systems cannot supply enough power from their in-built USB port and it is suggested to use the included power supply in this instance.

When powered, the receiver power light will glow blue.

Figure 10: Instructor viewing hardware

3.4 The SCBA set

The SCBA set is a self-contained virtual reality computer with built-in head mounted display.

The system is powered by a high-capacity lithium power tool battery installed within the cylinder. The main system battery is installed by clipping the battery into the lower half of the SCBA cylinder.

Figure 11: SCBA Main battery installation

Figure 12: Battery connected and secured

3.5 Hose reel

The hose reel system provides nozzle reaction force to the user but also contains the wireless syncing hardware to enable the system to operate.

The hose reel requires a power connection **(Figure 13)** and is supplied with a country specific IEC lead (standard computer lead). If operating correctly, a system power light will show under the 'Hose Rewind' button above the power connection **(Figure 14)**.

The hose reel also requires a solid connection to an immovable object to provide force feedback to the trainee. The supplied line can be used to lash to an object generally in excess of 25kg (50lb).

Figure 13: Connect the hose reel to a standard power socket

Figure 14: Hose rewind and system power

3.6 The Nozzle

Now that the SCBA set, tracking hardware, hose reel and instructor monitoring have been configured. It's time to connect a tracking puck to the nozzle. The tracking puck is magnetically attached to the front of the nozzle and keyed into place firmly. Once attached, the puck is turned on by briefly depressing the power button for one second **(Figure 15)**.

Figure 15: Nozzle face showing batteries installed and tracking puck

Figure 16: When installed, the puck should look like this

Note

Important this button is not held down or double pressed or the puck will need to be re-paired (refer section 14.1).

The batteries in the nozzle (2 x AAA) should last a month or more of continuous use. Please remove the tracking puck when not in use and store separately as this will optimise battery life. These two batteries are the only user replaceable batteries in the FLAIM Trainer and should be recycled appropriately.

The tracking puck also contains an internal battery. This is charged by plugging a USB cable into the charging port on the base of the puck. See the charging section of this manual.

3.7 Half facemask

The half facemask is used to capture respiration information from the user as well as to overlay the sounds of breathing through a standard positive pressure SCBA. Simply connect the facemask to the connector on the right-hand shoulder strap of the SCBA and adjust the straps on the face prior to putting on the VR headset. Metrics are reset on each scenario launch and can be viewed in the 'Monitor' tab on the iPad user interface.

3.8 Heat suit

Heat suits are supplied pre-paired to SCBA sets. Heat suits are worn over a t-shirt or similar and are designed to be worn underneath the firefighter's standard personal protective clothing.

To turn on the heat suit, simply connect the supplied power cable to the magnetic connector on the top of the SCBA cylinder. The suit will automatically power on and connect to the SCBA. In the software on the iPad, 'Heat On' must be selected for the suit to generate heat.

The suit will automatically regulate heat zones - proportional to the position and orientation of the firefighter to the fire in the virtual scenario. Not all scenarios generate the signals required for the heat suit to operate. Contact FLAIM Systems for a list of heated scenarios or to add functionality.

3.9 Armband heartrate monitor

The armband heartrate monitor is used to capture biometric data from the user. Simply push the power button for two seconds until the lights flash. The heartrate monitor will turn on and automatically pair with the iPad.

4. Turning the system on

Congratulations! The system hardware is now assembled and you're ready to begin using the system.

The order of turning on the system is not absolutely critical; however, it is best to follow the below steps to ensure fault finding is easier if you experience problems.

For guidance, refer to the following figures for the locations of all power buttons and switches.

Step 1.

Turn on/ensure the hose reel power supply is on and the power light is green.

Figure 17: Step 1. Power to hose reel

Step 2.

Connect the tracker batteries, ensuring that there is sufficient charge.

Figure 18: Step 2. Connect two trackers

Step 3.

Turn on/ensure the HDMI receiver is connected (making sure the power-light is blue).

Figure 19: Step 3. Ensure HDMI receiver is powered

Step 4.

Turn on the SCBA backpack (short press to power button).

Figure 20: Step 4. Power on SCBA Backpack - short press- short press

Note

Reminder -Single press only for waking tracker. A double press may put the puck into pairing mode and requires re-pairing to the system (see adding hardware in section 14.1).

Step 5.

Turn on the nozzle puck (single press of power button).

Figure 21: Step 5. Short press to power on nozzle puck

Step 6.

Wake up/turn on the iPad.

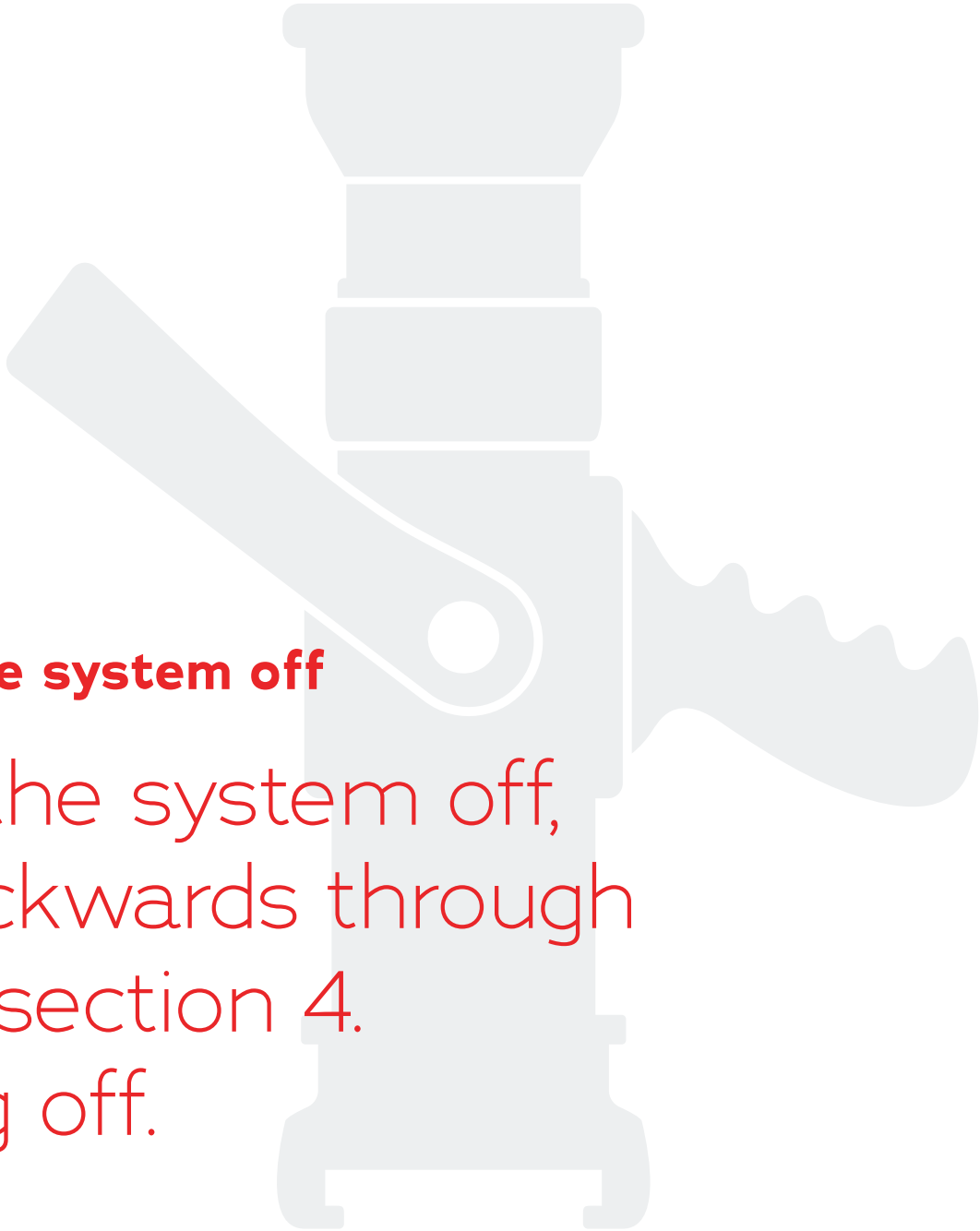
Figure 22: Step 6. Power on or wake iPad.

Step 7.

Connect the heat suit to the SCBA set via magnetic connector.

Note

If when waking up the tablet the instructor software is still shown, please close and re-open the software by double clicking the home button and swiping up to close the currently running program or by relaunching the application from the home screen. This is also required when re-starting the SCBA system.



5. Turning the system off

To turn the system off, work backwards through steps in section 4. Powering off.

Note

All of the individual battery powered components will automatically turn themselves off when their battery level is depleted to protect the batteries. If the system does not turn on, shows a low battery indicator or does not function as expected. Please follow the battery charging steps in section 9.

6. Using the iPad

6.1 Starting the application

The instructor tablet is an Apple iPad. The iPad is the main interface for controlling all aspects of the simulation after initial hardware setup.

Once awake or turned on, the iPad screen should look like **Figure 23**.

If the iPad shows anything else, it's best to double tap the home button and close any open applications by swiping the active application up.

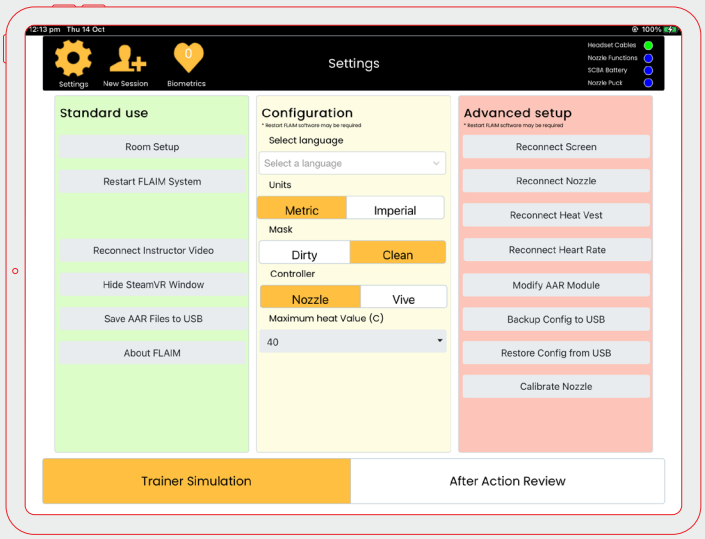
See **https://youtu.be/OpTAM3Cgs-I** for a video of the process if unfamiliar with the Apple iOS.

Once the home screen is shown and the SCBA system is powered on (after 30+ seconds) the instructor software can be launched by pressing on either FLAIM Trainer button on the screen.

When launched, the FLAIM Trainer Instructor station currently look like **Figure 24**.

Figure 23: Instructor iPad home screen

Figure 24: FLAIM Trainer instructor software



6.2 Settings

When launching the FLAIM Trainer app on the iPad for the first time it should take you to the Settings screen. You can also tap the Settings button.

Allows a user to:

1. **Restart the Nozzle:** useful for when the nozzle is unresponsive or not connected. This button can be pressed any time and the nozzle connector will usually connect within 10 seconds.
2. **Room Setup:** used to configure a new room space on first start up in a new location (see below)
3. **HideVR:** used to hide the standard SteamVR window.

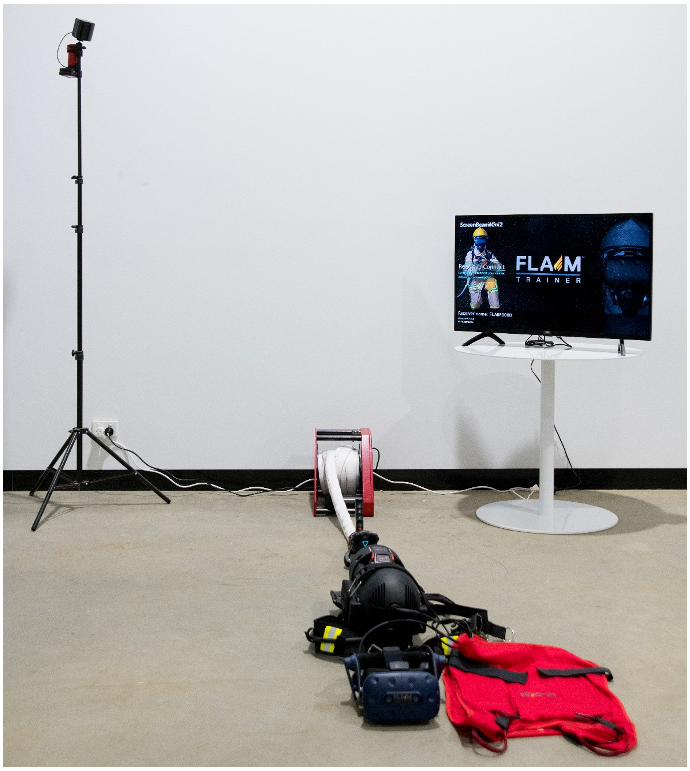
6.3 Room Setup

The following section shows an operator how to calibrate the system to the environment for the first time. This setup needs to be run when the system is first installed in a new location or the trackers have been moved for any reason.

For a room setup to be successful, the SCBA should be placed in the room as defined by the two tracers with the VR headset facing the 12 o'clock position with the hose reel at the 6 o'clock as shown in **Figure 25**.

Figure 25 shows the base of one of the tracker tripods. In this room, tracker 2 is at the bottom right of picture (out of frame).

Figure 25: Basic room setup configuration. The position and orientation of the SCBA set is not important, just that the headset is facing to the front of the room when the hose reel is behind you



Step 1.

The TV or projector should be showing an image such as shown in Figure 26.

Figure 26: Room Setup Step 1

Step 2.

On the instructor iPad, press 'Room Setup' (button 1 in Figure 24). This will launch the VR room setup utility as shown in Figure 27. From here you will need the mouse included in the box to progress through the steps below. This is the only time you will use the mouse in general operation of the FLAIM Trainer. Click 'Standing only' for general operation.

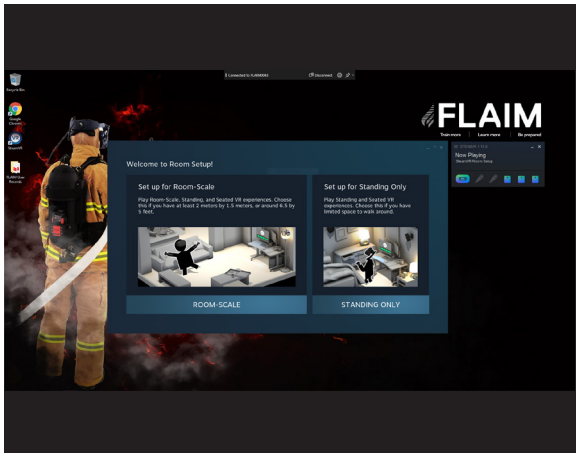


Figure 27: Room Setup Step 2

Step 3.

When the screen looks like Figure 28 you can click 'NEXT' with the mouse.

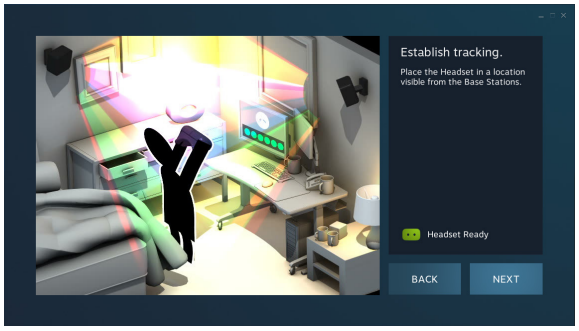


Figure 28: Room Setup Step 3

Step 4.

When the screen looks like Figure 29 you can click 'Calibrate Center' with the mouse.

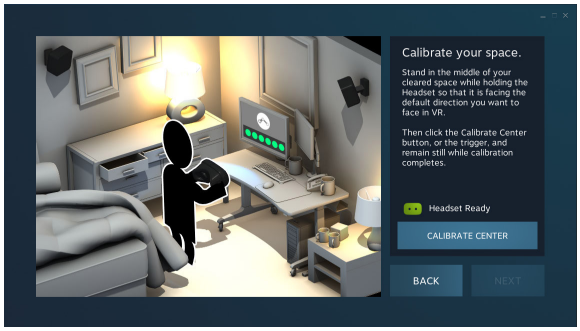


Figure 29: Room Setup Step 4

Step 5.

When the screen looks like Figure 30 you can click 'NEXT' with the mouse.

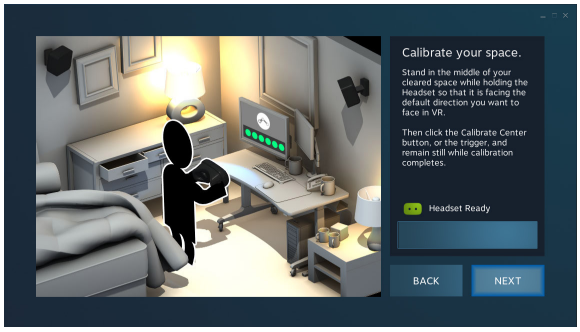
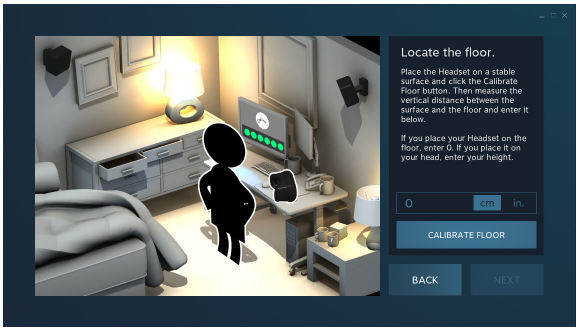


Figure 30: Room Setup Step 5

Step 6.

When the screen looks like Figure 31 you can click 'Calibrate floor' with the mouse. Note that as the headset is on the floor you do not need to enter a height in the field.

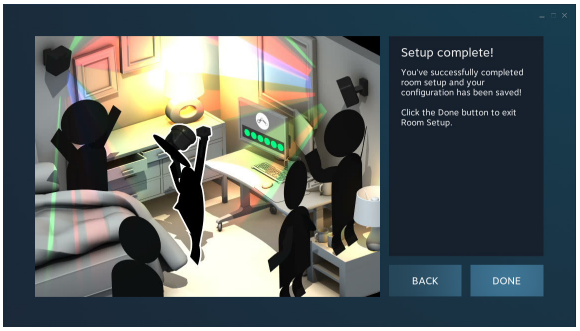
Figure 31: Room Setup Step 6



Step 7.

When the screen looks like Figure 32 you can click 'NEXT' with the mouse.

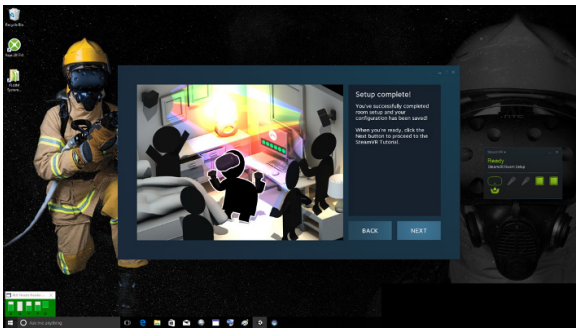
Figure 32: Room Setup Step 7



Step 8.

When the screen looks like Figure 33 you can click 'NEXT' with the mouse. This will automatically close the room setup utility and you're ready to run a scenario!

Figure 33: Room Setup Step 8



Step 9.

Click 'Restart Flaim Systems' on the ipad to get back into main operating mode

Note

If the software alerts that the headset is not visible, please move it briefly to wake it up and try again.

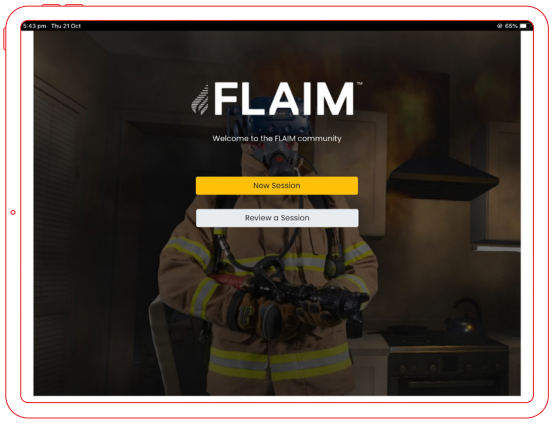
6.4 Configuration

The instructor may configure the Trainer App here and change such settings as the language that scenarios will use, whether to use metric or imperial measurements, whether the mask is dirty or clean, and the maximum heat used with the heat vest.

7. Training Sessions

Running the FLAIM Trainer iPad app should take you to the Welcome screen.

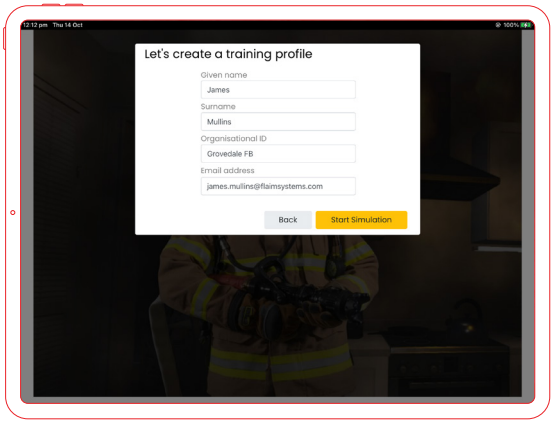
Figure 34: Welcome Screen



7.1 Starting a New Session

Tap on New Session to start a training session with a new trainee. You can also come here by tapping on New Session at any time.

Figure 35: Trainee Details Screen

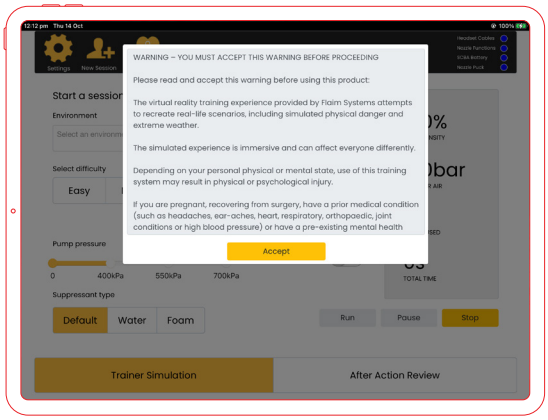


Complete the form with the trainee's details. This includes name, email ID and organisational ID (e.g., Fire Brigade). Tap on Start Simulation when finished.

7.2 Warning

The warning will pop up if this is a new trainee and you should explain it before tapping on Accept to proceed if all is okay.

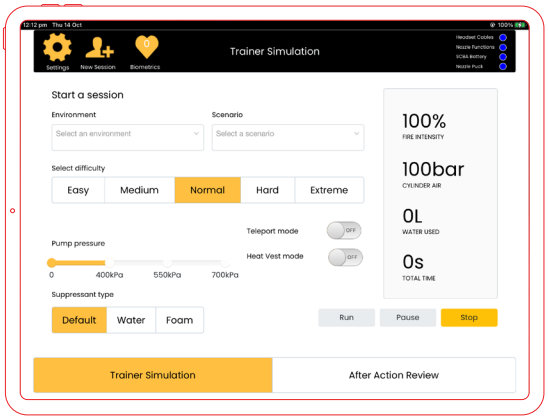
Figure 36: Warning



7.3 Selecting and Launching a Scenario

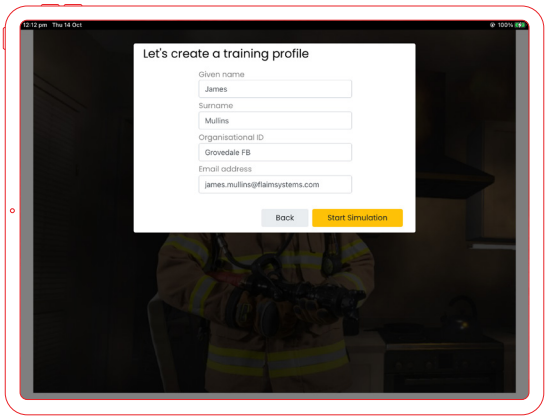
The Trainer Simulation Screen is used to control the trainee's experience. Launching scenarios, enabling heat, and enabling teleport are all controlled within this screen.

Figure 37: Trainer Simulation Screen



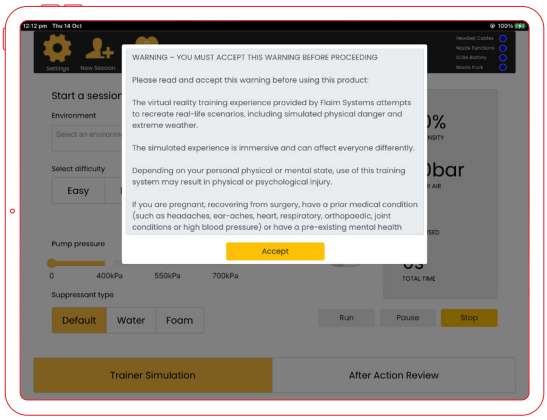
The instructor should first tap on the Environment dropdown menu and select an environment.

Figure 38: Select Environment



This will populate the Scenario dropdown menu with the scenarios available in that environment. Tap on a scenario to select it.

Figure 39: Select Scenario



Then tap on ‘Run’ to launch the selected scenario.

To end the current scenario, tap on ‘Stop’. It may also be paused at any time.

7.4 Trainees and the Lobby

When a trainee is first put in the headset and the app run, they will find themselves in a fire station. This is the lobby where they wait while the instructor selects and launches a scenario.

The trainee may take tutorials or just explore to familiarise themselves with both VR in general and use of the hose.

Figure 40: Fire Station Lobby

When the instructor launches a scenario, a call-out alert is activated in the fire station and the trainee must accept it by either clicking on ‘Start Scenario’ or on the fire truck. The scenario will then launch (note: some scenarios may take up to 20 seconds to run).

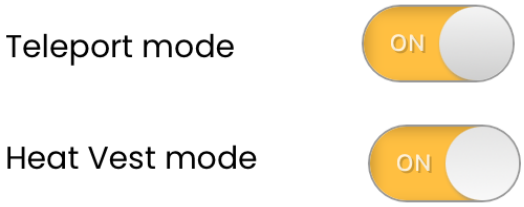
7.5 Selecting Difficulty

Instructors may change scenario difficulty by tapping on the desired difficulty setting. The default (and recommended) setting is ‘Normal’.

7.6 Teleport Mode

You may toggle teleport on/off as desired. The default (and recommended) setting is ‘On’.

Figure 41: Select Teleport and Heat Vest Mode



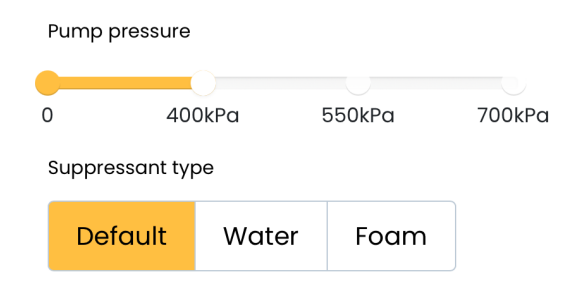
7.7 Heat Vest Mode

The heat vest can be toggled on/off as desired.

7.8 Pump Pressure

Pump pressure and by extension, hose force can be controlled by the Pump Pressure. Default pump pressures are 400kPa, 550kPa and 700kPa. Note that when 700kPa is selected there is significant force applied to the user and this setting should not be used for more than a few minutes. The hose reel system is not designed for long duration operation at 700kPa.

Figure 42: Select Pump Pressure and Suppressant Type



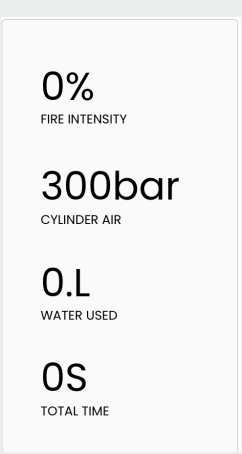
7.9 Suppressant Type

Instructors can change the suppressant type at any time while a scenario is running. Default automatically selects the recommended starting suppressant type for a scenario.

7.10 Runtime Analysis Sidebar

The instructor can monitor runtime statistics such as fire intensity, a trainee's air and water usage, and attack time via the side bar.

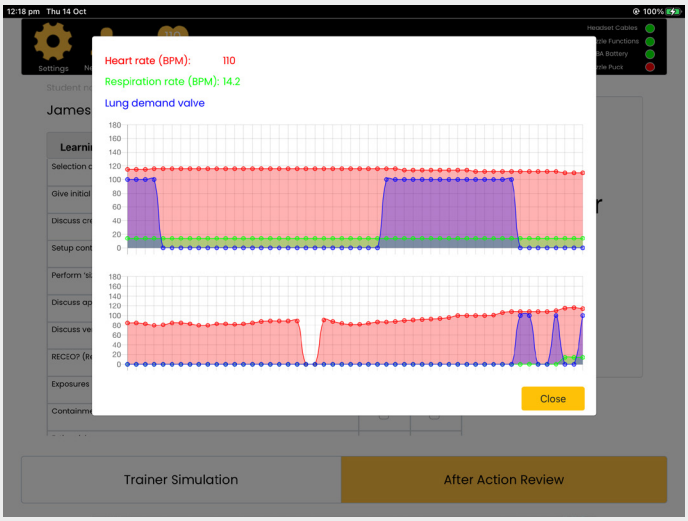
Figure 43: Runtime Analysis



7.11 Biometric Feedback

If the Rhythm Armband Heartrate Monitor is being used the instructor can monitor biofeedback such as heart rate (BPM), respiration rate and lung demand valve by tapping on the 'Biometrics' button.

Figure 44: Biometric Feedback



7.12 Battery Feedback

The heading bar contains status lights for Headset Cables, Nozzle Functions, SCBA battery and Nozzle Puck.

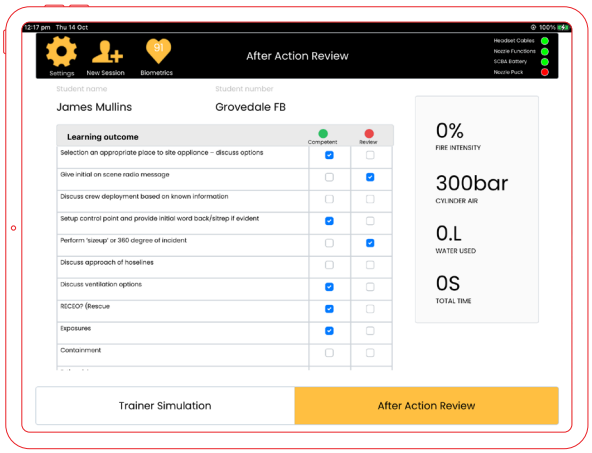
8. After Action Review

The Review Tab on the iPad is used by the instructor during simulations to assess student learning outcomes. This section allows an instructor to:

- Add student details (name and student number)
- Save training records (saved to desktop of SCBA computer by date, time and student name)
- Tick off standard competencies as supplied by FLAIM
- Add or remove learning outcomes that are saved for future training sessions.

Please contact FLAIM Systems at info@flaimsystems.com to understand options for saving this data to your organisation's learning management system.

Figure 45: After Action Review Tab



The instructor can monitor firefighters during and after training.

8.1 Completing After-Action Reviews

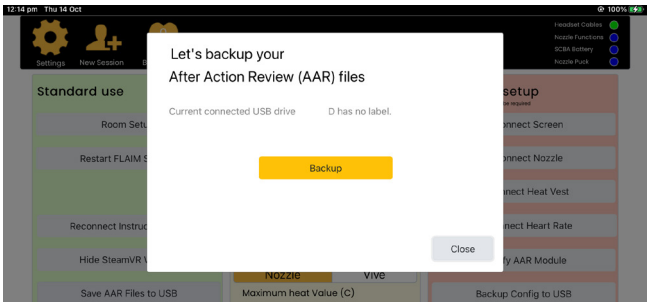
The instructor can switch to the After-Action Review screen at any time while a scenario is running by tapping on the After Acton Review tab. They can then check Competent or Review for each learning.

When the trainee has completed a scenario that scenario will still run until the instructor taps on stop. This is an ideal time to review with the trainee and complete the After-Action Review.

8.2 Saving After-Action Reviews

The instructor can save AAR files to USB by going to Settings and tapping on Save AAR Files to USB in the standard settings section. This will save all trainee sessions.

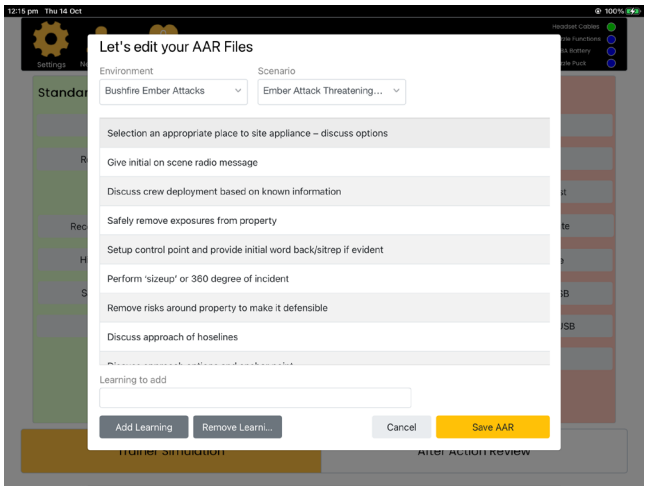
Figure 46: Saving AAR Files



8.3 Modifying AAR Learnings

Instructors can modify, delete, and add new learnings to the AAR by going to settings and tapping on Modify AAR Module in the Advances section.

Figure 47: Modifying AAR Learnings



9. Fault finding

The following table contains a matrix of possible faults and solutions.

Fault	Solution
The SCBA set does not turn on	Ensure that the battery is connected firmly and is fully charged (by checking on charger or pushing the battery status button on the Milwaukee battery). Use a second battery to confirm. Press the power button and confirm that it is depressed and that the power light on this switch light comes on after ~5 seconds.
The SCBA set turns off or restarts	Ensure that the battery is fully charged Ensure that the operating temperature does not exceed 30 degrees Celsius / 85 degrees Fahrenheit.
iPad app doesn't respond to button presses	Restart the app by double clicking the home button and swiping up. Re-run the app from the home screen. Ensure that the hose reel and SCBA are turned on.

Fault	Solution
iPad app doesn't load or shows a white screen	The SCBA isn't turned on or hasn't finished loading (~40 seconds) The hose reel is not powered Restart the computer and the iPad app
I can't see my nozzle	Ensure that the tracking puck is turned on and showing a green LED. If showing a blue flashing light, hold the power button for ~5 seconds until it turns off and turn it on again. If this doesn't work, try re-pairing the puck (see adding hardware section. If the puck is showing a red LED then it must be recharged
Headset isn't tracking/ headset is grey	Ensure that the two trackers are installed correctly and powered on. Each tracker battery should have at least 1 red light. Make sure that the headset has a clear line of sight to at least one tracker at all times. Restart the SCBA if tracking doesn't return.
Tracking is off or I feel tall/short	Ensure that the trackers have not been moved. Redo room setup making sure the headset is on the ground.
No force feedback in hose reel or force is weak.	Ensure the hose reel is powered. Ensure the nozzle isn't in 'flush' setting. Ensure pump pressure is set on iPad app.

Fault	Solution
Nozzle doesn't show correct water pattern or show water at all or pattern change is delayed	This fault can be caused by a number of factors. Restart the nozzle controller (V2) in setup screen. Check AAA batteries in nozzle. Ensure tracking puck is firmly seated on nozzle. Ensure no large RF generators or WIFI access points are too close to the system. Restart the SCBA. Disable heat suit and try with only the nozzle. Re-pair the nozzle as shown in 'Adding New/Replacement Hardware).
Instructor view does not show on TV	Ensure the HDMI receiver is powered and shows a white or green power light. Ensure correct source is selected on the TV/Projector. Move the SCBA closer to the receiver. This system is an off the shelf video sender and is susceptible to RF noise. Change locations or restart SCBA if picture is not restored by trying the above. Ensure correct power supply and USB lead are used to power the system. Incorrect power supply can cause intermittent loss of video. For FLAIM Trainer Duo systems, please ensure that the correct transmitter has been selected. Restart the SCBA

FLAIM Systems maintains a support team via email at support@flaimsystems.com and will respond within 24 hours for any further technical issues.

10. Battery charging

Safety Advice

FLAIM Trainer has a number of batteries that must be charged and maintained for optimal usage. It is critical that all batteries are checked for damage before and after use and before and after charging.

If any battery shows signs of damage or swelling, then please dispose of safely.

Lithium polymer batteries can pose a fire risk if improperly stored, charged or maintained.

Please treat them with respect and only charge them under supervision in a safe area.

Failure to manage batteries may result in damage to FLAIM Trainer.

10.1 Main battery charging

The main battery is connected to the charger by sliding it into its charge bay. The main battery should be fully charged within ~60 minutes and last ~60-70 minutes of solid use.

10.2 Tracker battery charging

The tracker batteries are charged by removing them from the tripods and connecting them in turn to the supplied charger. The tracker batteries take ~1 hour to charge and should last a full day of operation or more.

Figure 48: Main battery charger connection

Figure 49: Tracker batteries connect to charger

10.3 Nozzle battery replacement

The nozzle batteries are non-rechargeable standard off the shelf AAA batteries **Figure 43**. They can be replaced when the nozzle fails to connect.

10.4 Nozzle puck charging

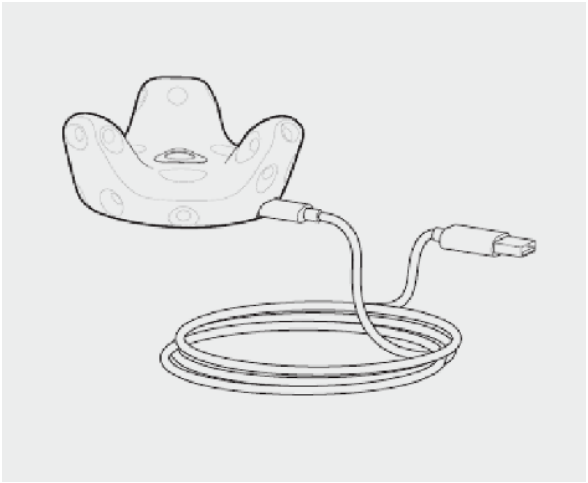
The nozzle puck is charged via a micro USB cable supplied in the kit. This USB cable can be connected to a USB power brick or the USB port on the left side of the battery charger. When fully charged, the power light should show a solid white colour. The nozzle puck should last ~8hrs and charge within 1 hour.

10.5 iPad charging

The iPad should be charged using the included lightning cable after each use.

Figure 50: Nozzle batteries behind tracking puck

Figure 51: Nozzle puck charging via micro USB cable



11. Safety

Safe use of the FLAIM Trainer is paramount. The following safety guidelines should be followed to ensure that trainees and support staff are protected at all times.

Safety Advice

FLAIM Trainer is only to be used for firefighting training of emergency services personnel and first responders, workforce, customer and community engagement.

FLAIM Trainer must not be used for operational or actual firefighting, live fire training using gas fired, carbonaceous or other fuelled fire training, in wet conditions or where exposed to direct water or other firefighting liquids and agent streams.

11.1 Travelling with batteries

The batteries used by the FLAIM Trainer system are designed to be transported in their protective case when travelling by road.

When travelling by air, most airlines require the batteries, for the trackers and SCBA to be carried on board the aircraft as part of hand luggage. Airlines generally require the terminals to be taped to prevent in-advertent short circuit.

Please check with your airline before travel, as some airlines require pre-approval for batteries of this capacity to travel.

SCBA Battery Capacity: 18V 12Ah 216Wh x 2

Tracker Battery Capacity: 12V 4Ah 48Wh x 2

11.2 Charging batteries

All batteries should be charged under supervision with appropriate fire protection in place (Dry Chemical Extinguisher).

Batteries should be charged in an open area, ideally on a cement or non-combustible surface, away from ignition sources and flammable objects. Batteries should not be charged when hot and may require a 30 minute cooling period when removed from a SCBA before charging is commenced. The included batteries have a thermal safety mechanism built in and will not charge if too hot. Please ensure that only genuine Milwaukee, 6Ah, 8Ah, 9Ah or 12Ah batteries are used. FLAIM cannot guarantee 'no name batteries' and will not warrant FLAIM hardware when incorrect batteries are used.

11.3 Weight

The SCBA sets weigh ~11kg and should not be worn by users with back problems. Generally, if users are not able to wear SCBA operationally then they should refrain from wearing the FLAIM Trainer.

When performing community engagement small children and the elderly are discouraged from using the system. Please contact FLAIM Systems to ask about the 'FLAIM Trainer LITE' system for these use cases.

When travelling with the system care should be taken when lifting the units and their travel cases.

Cases weigh between 19kg/42lbs and 27kg/60lbs depending on fit out.

11.4 Reel/Hose line forces

The forces delivered by the haptic hose line can be significant and are equivalent to real world hose forces. Care should be taken to ensure that the hose line system is appropriately attached to a wall or anchor point and that the user is prepared and supported for the force to be exerted when operating the nozzle.

11.5 Heat

The heat suit is capable of producing temperatures of up to ~70 degrees Celsius. The vest should be worn under PPE but over a suitable cotton t-shirt or similar. Hot temperatures are only created when in close proximity to a virtual fire for a very short period of time so as to ensure no lasting discomfort to participants. Heat can be removed instantly by disconnecting the magnetic heat suit power connector or by clicking heat off in the iPad application.

12. Maintenance

12.1 SCBA mask

The half facemask should be removed from the SCBA backplate and regulator assembly after each use and cleaned as per departmental decontamination standard operating procedures. Ensure that the mask is thoroughly dry before re-attaching to the FLAIM Trainer system as damage to the breath detection system can occur.

12.2 Batteries

Batteries should be charged after use and should never be left connected to the SCBA sets for extended periods. Batteries should be inspected before and after use and disposed of and replaced if swelling, cuts, nicks or damage to the pack is detected.

The batteries used by FLAIM Trainer are high capacity and should be treated with respect. Lithium Polymer batteries if punctured or treaded incorrectly can cause fire and injury.

12.3 SCBA

Straps and the harness should be stowed appropriately before putting on to ensure longevity of the SCBA backpack.

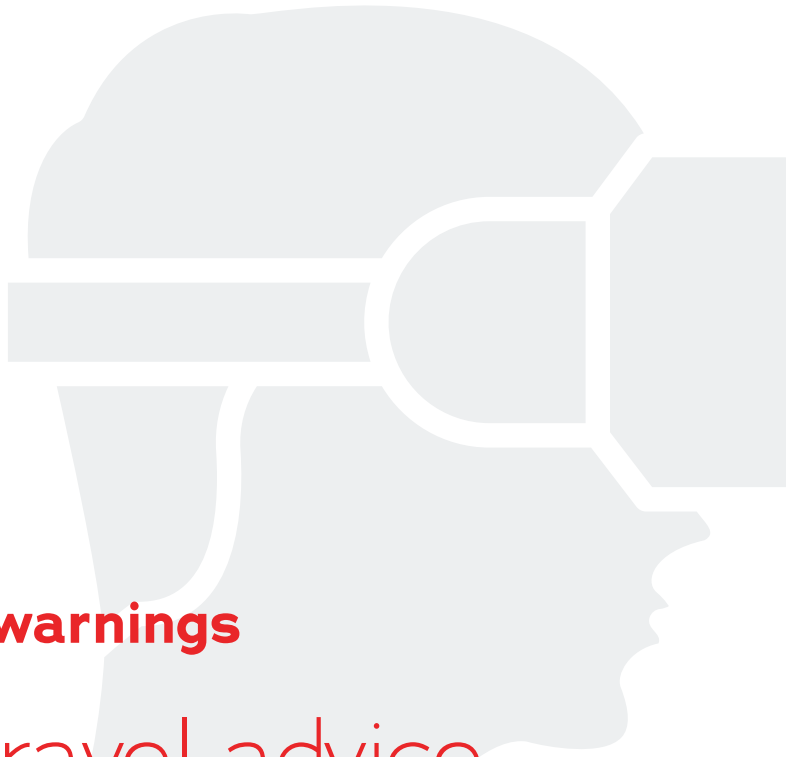
12.4 Head mounted display (HMD)

The HMD should never be left hanging from its cord as damage can occur. The HMD is robust but should only be cleaned with lens wipes as use of a cloth to clean lenses may scratch them and distort imagery.

12.5 Heat suit

The heat suit system may be hand washed after the removal of the electronics box and heating pads.

FLAIM Trainer has no user serviceable parts inside and if a subsystem is damaged or fails to operate as expected, please contact your nearest FLAIM distributor or agent for replacement components.



13. Travel advice and warnings

In addition to travel advice about batteries (see Safety – Travelling with batteries), when travelling with the FLAIM Trainer system on aircraft it is important to notify check-in staff about the equipment.

When X-rayed, the SCBA sets look like operational sets and as such airline staff often assume that the sets are pressurised. In order to reduce travel delay it is best to show/inform staff prior to check in. All batteries should also be removed from the support case and carried on board the aircraft.

14. Adding new/replacement hardware

This section should only be required if you need to replace a damaged piece of hardware. FLAIM Trainer kits ship fully paired to work out of the box.

14.1 Connecting hardware

You can connect new hardware by using the iPad 'Settings Tab' and selecting 'Advanced Settings'. This tab allows users to re-pair HDMI receivers, nozzles/branches and heat suits. The advanced settings also allow system configuration including:

- Change of units Litres/kPa or Gallons/PSI
- Toggle SCBA dirty mask effect
- Change of iPad and simulation scorecard language (note After Action Review text modification will require iPad system language change)
- Maximum heat suit temperature
- Using the system without hose reel and Nozzle/Branch (Vive controller).

Changes to configurations in Advanced Settings should not be performed unless under direction of FLAIM Systems or a reseller (with the exception of language settings, and SCBA mask visibility). Misuse may result in unpredictable system operation. After closing the advanced settings window, normal operation of the FLAIM Trainer can be achieved by clicking 'Restart FLAIM System'.

14.2 Re-pairing the tracking puck

If the nozzle tracking puck is accidently placed into pairing mode you will see a blue flashing LED, the puck light remains blue during operation and the nozzle isn't depicted in the training scenario, it may need to be 're-paired' to establish connection with the FLAIM Trainer.

Step 1.

Using the mouse, right click on the SteamVR window (Figure 45) and select Devices-Pair Controller.

Figure 52: SteamVR Software

Step 2.

Ensure that the tracking puck is charged and turned on (blue light). Press and hold the power button again for 2 seconds and the blue power light will start flashing indicating that it is in pairing mode. Within a few seconds 'VIVE Controller Paired!' (Figure 46) should be displayed and the power light on the tracking puck should be green. You can now click 'Done' and start your scenarios.

Figure 53: Looking for Tracking Puck and Paired!

15. Further support

Once again thanks for choosing FLAIM Trainer as a part of your training solution.

For further support, please contact your local distributor or agent in country during business hours or email support@flaimsystems.com

This product has been designed, developed or manufactured under a management system certified by Bureau Veritas against ISO 9001:2015.

Doc no. BR-09-002, V1

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