



# **ISTAR FRAME**

**ETEK**

MADE FOR ETEK.

**OPERATORS MANUAL**

## **WARNING**

# **ADHERE STRICTLY TO THESE AND ALL OTHER SAFETY INSTRUCTIONS AND GUIDELINES!**

1. The Eclipse Etek STAR Frame is not a toy.
2. Careless or improper use, including failure to follow instructions and warnings within this User Manual and attached to the Etek STAR Frame could cause death or serious injury.
3. Do not remove or deface any warnings attached to the Etek STAR Frame.
4. Paintball industry standard eye/face/ear and head protection designed specifically to stop paintballs and meeting ASTM standard F1776 (USA) or CE standard (Europe) must be worn by user and any person within range.
5. Persons under 18 years of age must have adult supervision when using or handling the Etek STAR Frame.
6. Observe all local and national laws, regulations and guidelines.
7. Use only professional paintball fields where codes of safety are strictly enforced.
8. Use compressed air/nitrogen only. Do not use CO<sub>2</sub>
9. Always follow instructions, warnings and guidelines given with any first stage regulator you use with an Etek STAR Frame equipped marker.
10. Use 0.68 calibre paintballs only.
11. Keep the Etek STAR Frame switched off until ready to shoot.
12. Treat every Etek STAR Frame equipped marker as if it is loaded.
13. Never point the Etek STAR Frame equipped marker at anything you do not intend to shoot.
14. Do not shoot at persons at close range.
15. Always measure your markers velocity before playing paintball, using a suitable chronograph.
16. Never shoot at velocities in excess of 300 feet (91.44 meters) per second, or at velocities greater than local or national laws allow
17. Do not fire the Etek STAR Frame equipped marker without the bolt in the breech, as high-pressure gas will be emitted.
18. Do not fire the Etek STAR Frame equipped marker without the bolt pin locked securely in place.
19. Never look into the barrel or breech area of the Etek STAR Frame equipped marker whilst the marker is switched on and able to fire.
20. Never put your finger or any foreign objects into the paintball feed tube of the Etek STAR Frame equipped marker.
21. Never allow pressurised gas to come into contact with any part of your body.

# WARNING

## ADHERE STRICTLY TO THESE AND ALL OTHER SAFETY INSTRUCTIONS AND GUIDELINES!

22. Always fit a barrel-blocking device to the Etek STAR Frame equipped marker when not in use on the field of play.

23. Always remove all paintballs from the Etek STAR Frame equipped marker when not in use on the field of play.

24. Always remove the first stage regulator and relieve all residual gas pressure from the Etek STAR Frame equipped marker before disassembly.

25. The Etek STAR Frame equipped marker can hold a small residual charge of gas, typically 2 shots, with the first stage regulator removed. Always discharge the marker in a safe direction to relieve this residual gas pressure.

26. Always remove the first stage regulator and relieve all residual gas pressure from the Etek STAR Frame equipped marker for transport and storage.

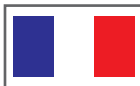
27. Always follow guidelines given with your first stage regulator for safe transportation and storage..

28. Always store the Etek STAR Frame equipped marker in a secure place..



### THIS USERS MANUAL IS IN ENGLISH.

It contains important safety guidelines and Instructions. Should you be unsure at any stage, or unable to understand the contents within this manual you must seek expert advice.



### LE MODE D'EMPLOI EST EN ANGLAIS.

Il contient des instructions et mesures de sécurité importantes. En cas de doute, ou s'il vous est impossible de comprendre le contenu du monde d'emploi, demandez conseil à un expert.



### ESTE MANUAL DE USUARIOS (OPERARIOS)

usuarios está en Inglés. Contiene importantes normas de seguridad e instrucciones. Si no está seguro de algún punto o no entiende los contenidos de este manual debe consultar con un experto.



### DIESE BEDIENUNGS - UND BENUTZERANLEITUNG IST IN ENGLISCH.

Sie enthält wichtige Sicherheitsrichtlinien und -bestimmungen. Sollten Sie sich in irgendeiner Weise un sicher sein. Oder den inhalte dies heftes nicht verstehen, lassen Sie sich bitte von einen Experten beraten.

**NOTE: THIS USER MANUAL MUST ACCOMPANY THE PRODUCT IN THE EVENT OF RESALE OR NEW OWNERSHIP. SHOULD YOU BE UNSURE AT ANY STAGE YOU MUST SEEK EXPERT ADVICE! (SEE SERVICE CENTERS)**

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## KNOW YOUR ETEK STAR FRAME



- ETEK STAR FRAME (A)
- ETEK STAR FRAME CIRCUIT BOARD (B)
- FRAME SCREWS FOR MOUNTING ETEK STAR FRAME ONTO AN ETEK2 (C)
- FRAME SCREWS FOR MOUNTING ETEK STAR FRAME ONTO AN ETEK (D)
- T-SLOT / DOVETAIL ADAPTOR (E)
- ETEK QEV (F)
- LOW PRESSURE HOSE (G)
- RUBBER GRIP (H)
- RUBBER GRIP SCREWS (I)

# THE ETEK STAR FRAME NAVIGATION CONSOLE

At the rear of the Etek STAR Frame you will find the Navigation Console. The Navigation Console is used for:

- > TURNING THE ETEK STAR FRAME ON AND OFF USING THE  BUTTON
- > SCROLLING THROUGH MENUS WITH THE  AND  BUTTONS
- > SELECTING PARAMETERS TO EDIT USING THE  BUTTON
- > EDITING PARAMETERS USING THE  AND  BUTTONS
- > TURNING THE ETEK STAR FRAME BBSS ON AND OFF USING THE  BUTTON
- > RESETTING RECORDED VALUES USING THE  BUTTON
- > CONTROLLING THE GAME TIMER WITH THE  BUTTON

 PREVIOUS / RAISE

 SELECT

 NEXT / LOWER



STAR  
FRAME

ORIENTATION

7.

## INSTALLING THE ETEK STAR FRAME ONTO AN ETEK AND AN ETEK2 MARKER

The Etek STAR frame can only be fitted to either an Etek or Etek2 Paintball marker. The following installation guide can be applied to either marker, but if you have any doubts regarding fitting the Etek STAR Frame to your Etek/Etek2 marker then you should contact your nearest Eclipse Service Centre for advice. Full details of Eclipse Service Centres can be found on pages 50 and 51 of this manual.

De-gas your marker and discharge any stored gas in a safe direction before proceeding. Remove the loader, barrel and air tank so that you can comfortably work on the marker. Disconnect the 1/4" Macroline hosing from both the elbow attached to the Inline Regulator and the elbow attached to the OOPS at the base of your existing grip frame. Remove the Inline Regulator by unscrewing it from the front regulator mount (FRM) and the marker should now resemble **FIGURE 1.1**. Using a 5/64" hex key remove the three countersunk screws from the right hand side of the rubber grip (**SEE FIGURE 1.2**) and peel back the rubber grip to reveal the inside of the grip frame (**SEE FIGURE 1.3**).

Unplug the solenoid from its connector on the circuit board, unplug the Break Beam Sensor System (BBSS) from its connector on the circuit board (**SEE FIGURE 1.4**). Using a 1/8" hex key undo and remove both frame screws by turning them in a counter-clockwise direction (**SEE FIGURE 1.5**). At this stage your existing frame can now be removed from the marker body and set aside for later use, leaving the marker body with the solenoid assembly still attached as shown in **FIGURE 1.6 ON THE NEXT PAGE**.



**FIG 1.1**



**FIG 1.2**



**FIG 1.3**



**FIG 1.4**



**FIG 1.5**



## INSTALLATION CONTINUED..

Using a 1/4" (1.2x6.5mm) sized flat-head screw driver, unscrew the two banjo barb fittings from the rear of the underside of your Etek or Etek2 body as shown in **FIGURE 1.7**. Using a pair of snips, cut the low pressure hosing from the barb on the Front Regulator Mount (FRM) so that the solenoid assembly can be removed completely from the marker body (**SEE FIGURE 1.8**).

Cut the low pressure hose free from the two banjo barb fittings on the body and the three barbs on the solenoid manifold and discard, leaving the solenoid and manifold assembly and two banjo barbs (**SEE FIGURE 1.9**).

**SUPER IMPORTANT NOTE: IF YOU ARE NOT FITTING THE ETEK QEV, USE THE HOSE LENGTH TEMPLATE AT THE BOTTOM OF PAGE 53**

Referring to the hose length template at the top of page 53 of this manual, take the coil of low pressure hosing that is included in your Etek STAR frame kit and cut the three lengths of hosing that are required (**SEE FIGURE 1.10**)



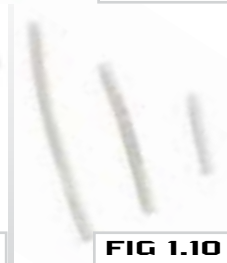
**FIG 1.7**



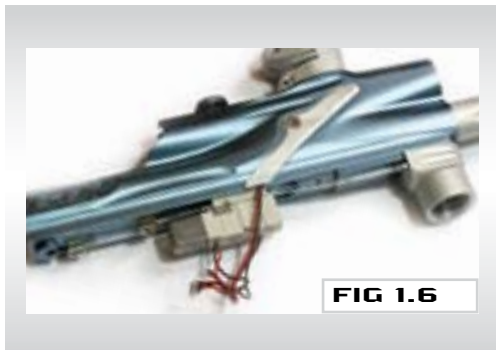
**FIG 1.8**



**FIG 1.9**



**FIG 1.10**



**FIG 1.6**

## INSTALLATION CONTINUED..

Using a flat head screwdriver, screw the Etek QEY into the rear fitting hole of the Etek/Etek2 body and screw one of the banjo barb fittings into the front fitting hole of the Etek/Etek2 body (**SEE FIGURE 1.11**). Taking the longest length of low pressure hose, attach one end to the barb fitting on the FRM and the other to the barb labelled "1" on the manifold; the solitary front barb (**SEE FIGURE 1.12**). At the other end of the manifold there are two barb fittings that are labelled "2" and "4" on the manifold. Attach the shortest length of low pressure hose to the barb labelled "4" on the manifold, and attach the remaining length of low pressure hose to the barb labelled "2" on the manifold (**SEE FIGURE 1.13**). Using a pair of non serrated needle-nosed pliers attach the shortest hose to the banjo barb fitting and the medium length of hose to the barb fitting on the Etek QEY (**SEE FIGURE 1.14**). Position the solenoid assembly in the designated area on the underside of the Etek/Etek2 body in preparation for the frame to be fitted (**SEE FIGURE 1.15**)

**NOTE:** Push all low pressure hose connections firmly onto the barb fitting to ensure an adequate seal. Replace as necessary if the low pressure hose is damaged or stretched.



**FIG 1.11**



**FIG 1.12**



**FIG 1.13**



**FIG 1.14**



**FIG 1.15**

## INSTALLATION CONTINUED..

**IMPORTANT: ENSURE BBSS WIRES ARE LINED UP WITH THE DESIGNATED SLOTS IN THE FRAME PRIOR TO ATTACHING FRAME TO MARKER BODY.**

Carefully thread the solenoid and BBSS wiring harnesses through the space in the top of the Etek STAR Frame (SEE FIGURE 1.16). Line up the Etek STAR Frame so that it can be attached to the marker body, taking care not to trap any of the wiring harnesses. Refer to the diagram on page 52 of this manual and select the correct sized frame screws (dependant on whether you are fitting the frame to an Etek or Etek2 marker) and using a 1/8" hex key attach the Etek STAR Frame to the marker body (SEE FIGURE 1.17).

**NOTE: ALWAYS use the 3/8" length frame screw in the front screw hole when attaching the Etek STAR Frame to an Etek or Etek2 marker. The length of the rear frame screw will vary according to which marker you are installing the frame to. Please refer to page 52 of this manual, but if you are still unsure please contact your nearest Eclipse Service Centre.**

Continue the installation process by plugging the BBSS and solenoid wiring harnesses into their relevant connectors on the Etek STAR Frame Circuit board (see page 15), bending the wires as shown to ensure that they do not obstruct the use of the Opto sensor or micro-switch (SEE FIGURE 1.18). Fit a 9 volt alkaline battery (type PP3, 6LR61, MN1064) into the recess with the battery terminals away from you. The positive terminal (+) should be on the right hand side, nearest to the side of the frame (SEE FIGURE 1.19). Fit the rubber grip onto the frame and using a 5/64" hex key attach the six countersunk screws that hold the rubber grip onto the grip frame (SEE FIGURE 1.20 ON THE NEXT PAGE).

**NOTE: The Etek STAR Frame utilizes a T-Slot mounting rail as standard. If your chosen ASA Adapter uses a dovetail, then you will need to install the dovetail conversion rail included in the Etek STAR Frame kit.**



FIG 1.16



FIG 1.17

FIG 1.18



FIG 1.19

## INSTALLATION CONTINUED..

If installing the Etek STAR Frame onto an Etek2, take the original Etek2 grip frame and use a 3/32" hex key to loosen the two set screws that attach the OOPS body to the bottom of the grip frame and remove the OOPS from the base of the original Etek2 grip frame (SEE FIGURE 1.21). The base of the Etek STAR Frame is compatible with the T-Slot mounting system used on the Etek2 (SEE FIGURE 1.22) so taking your Etek2 OOPS slide it onto the base of the Etek STAR Frame and using a 3/32" hex key tighten the two set screws to lock the OOPS in place (SEE FIGURE 1.23).

If installing the Etek STAR Frame onto an Etek that does not have a T-Slot mounted OOPS, use a 3/32" hex key to loosen the set screw inside the original Etek grip frame that tightens the OOPS body onto the base of the grip frame so that it can be removed from the rail by sliding it backwards (SEE FIGURE 1.24). Slide the dovetail conversion rail onto the bottom of Etek STAR Frame and using a 3/32" hex key tighten the two set screws to secure it in place (SEE FIGURE 1.25 ON THE NEXT PAGE). Slide the chosen ASA adaptor onto the dovetail conversion rail and using a 3/32" hex key tighten the two set screws that secure the ASA adaptor onto the dovetail conversion rail (SEE FIGURE 1.26 ON THE NEXT PAGE).



FIG 1.20



FIG 1.21



FIG 1.22



FIG 1.23



FIG 1.24

## INSTALLATION CONTINUED..

Complete the installation by screwing the Inline Regulator back into the FRM (SEE FIGURE 1.27) and re-attach the length of 1/4" Macroline to the fitting in both the Inline Regulator and the OOPS body (SEE FIGURE 1.28).

**NOTE:** If you suspect that the Macroline hosing that you are using is damaged, replace immediately.

You have now successfully installed the Etek STAR Frame onto your Etek/Etek2 marker.



FIG 1.25



FIG 1.26



FIG 1.27



FIG 1.28

## INSTALLING A 9V BATTERY

Ensure that the Etek STAR Frame is switched off. Lay the marker on a flat surface in front of you with the feed tube furthest away and with the barrel pointing to the right.

Use a 5/64" (2mm) hex key to remove the three countersunk screws that hold the rubber grip onto the frame. Peel the grip to the right to expose the circuit board within the frame.

Remove any fitted battery by sliding your thumb or finger into the recess below the battery and levering the battery out of the frame [SEE FIGURE 2.1].

**DO NOT** pull on the top of the battery to remove it as this can cause the battery terminals to bend and will result in a poor electrical connection.

Fit a 9-volt alkaline battery (type PP3, 6LR61 or MN1604) into the recess with the battery terminals away from you. The positive terminal should be on the right hand side, nearest to the side of the frame [SEE FIGURE 2.2].

Ensure that all of the wires are within the recess of the frame and away from the trigger microswitch and opto sensors so as not to interfere with their operation and replace the rubber grip and replace the three countersunk screws.

**DO NOT OVER-TIGHTEN THE SCREWS.**

**NOTE: BATTERY VOLTAGE MUST NOT EXCEED 10 VOLTS. SOME 9 VOLT RECHARGEABLE BATTERIES CAN EXCEED THIS VOLTAGE IF OVER CHARGED. IF IN DOUBT DO NOT USE RECHARGEABLE BATTERIES.**





**FIG 2.1**





**FIG 2.2**

## SWITCHING ON THE ETEK STAR FRAME

Press and hold the  button [SEE FIGURE 3.1]. After one second the Etek STAR Frame logo will be displayed. Release the  button and the Run Screen will be displayed.

## SWITCHING OFF THE ETEK STAR FRAME

Press and hold the  button until the display shows **OFF?** Release the  button and re-press it to turn off the Etek STAR Frame. Alternatively when the display reads **OFF?**, you can pull the trigger once to turn off the Etek STAR Frame.

## FIRING THE ETEK STAR FRAME

Pull the trigger to fire the Etek STAR Frame. The entire firing sequence is controlled electronically by the Etek STAR Frame circuit board, enabling any user to easily achieve high rates of fire.

## THE ETEK STAR FRAME CIRCUIT BOARD

There are three sockets on the Etek STAR Frame Circuit board two of which are occupied by the BBSS Connector (A) and the Etek STAR Frame Solenoid (B). The third socket on the board (C) is the Auxiliary socket to which third party products such as loaders and RF transmitters can be connected using the relevant wiring harness or parts. [SEE FIGURE 3.2]



FIG 3.1

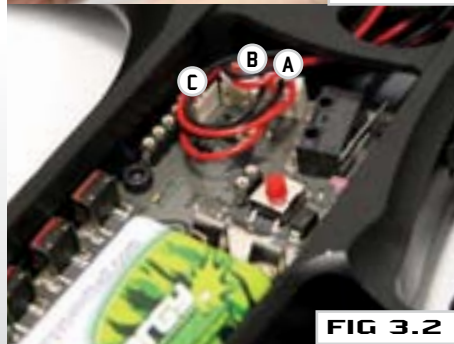







FIG 3.2



## USING THE BREAK BEAM SENSOR SYSTEM

The Break Beam Sensor System is used to detect when a paintball is ready to fire from an Etek STAR Frame equipped marker. If no paintball is ready then the **BBSS** will inhibit the marker from firing. This prevents the Etek STAR Frame equipped marker from 'chopping' paintballs that are not fully loaded into the breach.

To switch off the Break-Beam Sensor System, press and hold the  button for 0.5 second [SEE FIGURE 3.3].

The break beam sensor system indicator on the top left of the LCD will change from  (enabled) to  (disabled) .

To switch the Break-Beam Sensor System back on, press and hold the  button for one second. The indicator will change back to .

When the Break-Beam Sensor System is enabled, the indicator will change depending on whether the system has detected a ball or not. When **no** ball has been detected the indicator looks like this  when a **ball** has been detected the icon changes to look like this .

Additional features of the Etek STAR Frame's Break-Beam Sensor System are covered in full on page 21 of this user manual.



**FIG 3.3**

**NOTE: WHEN THE ETEK STAR FRAME IS TURNED ON, THE BREAK-BEAM SENSOR SYSTEM IS AUTOMATICALLY ENABLED**



## T-SLOT MOUNTING SYSTEM

The Etek STAR Frame utilises a T-slot arrangement to mount the OOPS to the bottom of the frame. The T-slot is an improvement over the dovetail mounting system found on most paintball markers, and is much more able to withstand the rigours of modern tournament paintball.

For backwards compatibility there are industry standard mounting holes in the base of the frame for mounting third party air source adaptors (ASAs).



## MACROLINE HOISING AND ELBOWS

To aid the longevity of your macroline hosing, it is very important to remove it from (and install it back into) the fittings in the correct manner:

Pull back the collet section of the macroline fitting and keep the collet depressed.

Pull the macroline hose out of the macroline fitting and release the collet.

Before installing the macroline hose into the macroline fitting ensure that the end has been trimmed correctly to ensure a tight fit in the fitting.



### **⚠ WARNING** //

IF YOU EVER REMOVE THE MACROLINE HOSE FROM THE FITTING, ALWAYS CHECK THE CONDITION OF YOUR MACROLINE HOISING AND IF IT IS WORN OR THE WRONG LENGTH REPLACE IT IMMEDIATELY.

## SETTING THE TRIGGER

The Etek STAR Frame provides the user with the option to use either a Micro-Switch or an opto sensor as the means for detecting trigger pulls. Before you begin to adjust and set your trigger, you must first select the method of trigger detection that you wish to use by entering the Set-Up Menu and making your selection from the Hardware Menu (SEE PAGE 48).

There are four adjustment points on the trigger – the **Front Stop Trigger Screw**, the **Rear Stop Trigger Screw**, the **Magnet Return Strength Screw** and the **Micro Switch Activation Screw**.

As standard each Etek STAR Frame comes with a factory set trigger travel of approximately 2mm in total length; one millimeter of travel before the firing point and one millimeter of travel after the firing point, and the trigger detection method set to opto.

The **Front Stop Trigger Screw** is used to set the amount of trigger travel prior to the marker firing. Turn this screw clockwise to reduce the amount of travel. Do not turn the screw too far or the trigger will be pushed past the firing point and the marker will not work. Turn this screw counter-clockwise to increase the amount of trigger travel (SEE FIGURE 4.1).

The **Rear Stop Trigger Screw** is used to set the amount of travel after the marker has fired. Turn this screw clockwise to reduce the amount of travel. Do not turn the screw too far or the trigger will be prevented from reaching its firing point and the marker will not work. Turn this screw counter-clockwise to increase the amount of travel (SEE FIGURE 4.2).



FIG 4.1



FIG 4.2

## SETTING THE TRIGGER CONT...

The **Magnet Return Strength Screw** is used to adjust the amount of force with which the trigger is returned to its rest position by the magnet. Turn the screw clockwise to increase the amount of force. Do not turn the screw too far or it will negate the position of the Front Stop Trigger Screw. Turn the screw counter-clockwise to reduce the amount of force. Do not turn the screw too far or there will not be enough force to return the trigger [SEE FIGURE 4.3].

The **Micro Switch Activation Screw** is used to adjust the point in the trigger pull at which the micro-switch is activated. Turn the screw clockwise to decrease the amount of trigger travel to the activation point. Turn the screw counter-clockwise to increase the amount of trigger travel to the activation point [SEE FIGURE 4.4].



If you have selected **SWITCH** from the **HARDWARE** Menu and are consequently using the micro-switch as the method of trigger detection then check that the micro-switch activates and de-activates fully on each trigger pull and trigger release. If you have selected **OPTO** from the **HARDWARE** Menu and are using the **OPTO** sensor as the method of trigger detection, refer to setting the **BAND HI** and **BAND LO** [SEE PAGE 45-46] as it is crucial that the trigger pull and trigger filters are set up together for the trigger filtering to work correctly.



## USER INTERFACE

The Etek STAR Frame has a simple user interface through which all aspects of its electronic control system can be monitored and adjusted by means of the three pushbuttons and graphical LCD which comprise the Navigation Console.

## SWITCHING ON

Pressing and holding the  button will switch the Etek STAR Frame on. The LCD display will show the Etek STAR Frame logo. When the  button is released, the LCD will show the Run Screen, which is the screen displayed during the normal use of the Etek STAR Frame.

## RUN SCREEN LAYOUT

The root of the user interface is the Run Screen. This screen is the one most often displayed and provides the user with essential feedback on the state of the Etek STAR Frame. A typical Run Screen is shown on the right.

On the right of the screen is a display option that is user selectable from the Main Menu (see page 27). This option can be:-

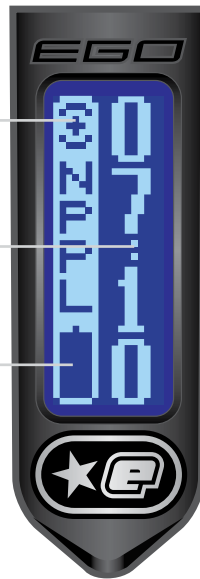
- > A GAME TIMER
- > A SHOT COUNTER
- > AN AVERAGE RATE OF FIRE INDICATOR
- > A PEAK RATE OF FIRE INDICATOR

On the left of the screen is the current firing mode and icons that provide graphical indication on different parts of the Etek STAR Frame control electronics.

BREAK-BEAM SENSOR  
SYSTEM INDICATOR

USER SELECTABLE DISPLAY  
OPTION

BATTERY LEVEL  
INDICATOR / LOCK INDICATOR



# UNDERSTANDING THE BBSS INDICATOR (BBSS)

The BBSS is able to switch itself off in the event that a blockage or contamination prevents it from functioning correctly. In this instance, the BBSS will switch itself back on once the blockage is cleared and the correct operation can be resumed.

The BBSS Indicator on the main screen is used to indicate the eight possible states of the BBSS as follows:



**BBSS ENABLED AND BALL DETECTED**  
The Etek STAR Frame can be fired at the maximum rate of fire determined by the chosen firing mode.



**BBSS ENABLED NO BALL DETECTED**  
The Etek STAR Frame cannot be fired.



**BBSS DISABLED**  
The Etek STAR Frame can be fired at a maximum rate of fire as set by the **OFF ROF** parameter (SEE PAGE 34)



**BBSS FAULT DETECTED**  
The system is disabled. The Etek STAR Frame can only be fired at a maximum rate of fire of 10bps, regardless of the chosen firing mode.



**BBSS SENSOR FAULT HAS BEEN CLEARED**  
The sensor has been re-enabled. A ball is detected and the Etek STAR Frame can be fired at the maximum rate of fire determined by the chosen firing mode.



**BBSS FAULT HAS BEEN CLEARED**  
The sensor is enabled. No ball is detected so the Etek STAR Frame cannot be fired. To reset the BBSS icon, use the **▲** button to switch off the BBSS and then back on again.




**BBSS ENABLED IN TRAINING MODE**  
The BBSS has been over-ridden as the user has selected training mode. As the user has chosen to leave the BBSS on, the achievable rate of fire is limited by the firing mode.




**BBSS DISABLED IN TRAINING MODE**  
The BBSS has been over-ridden as the user has selected training mode. As the user has chosen to turn the BBSS off, the achievable rate of fire is limited by the **OFF ROF** parameter (SEE PAGE 34).

## UNDERSTANDING THE LOCK INDICATOR


The Etek STAR Frame has a tournament lock which prevents the user from making changes to any parameter that affects the way in which the Etek STAR Frame shoots, without the need for tools. This feature is necessary in order to make the Etek STAR Frame legal for tournament play.

When the lock is disabled, an open padlock  will alternate with the battery indicator.

## UNDERSTANDING THE BATTERY LEVEL INDICATOR


The battery level indicator is used to show the state of the battery within the Etek STAR Frame. When the battery is fresh the indicator will show a 'full' battery  and as the battery is drained, so the indicator will show the battery emptying. When the battery reaches a point at which the Etek STAR Frame will no longer function reliably, the indicator will start to flash. At this point the battery must be changed immediately.


## THE GAME TIMER

When the Game Timer is shown on the Run Screen then it can be started by pressing the  button and the timer will start to count down. The Game Timer can also be configured to start on a trigger press with the **START** parameter (see page 31).


When the Game Timer reaches the **ALARM** time the Game Timer will start to flash and the audible alarm will sound every second, provided that the optional Eclipse expansion board is fitted and the **BEEPER** parameter is set to 'on'.

When the Game Timer reaches 00:00, **GAME OVER** will be displayed and the audible alarm will sound continually, provided that the optional Eclipse expansion board is fitted and the **BEEPER** parameter is set to 'on'.

To stop the Game Timer at any time press and hold the  button for 0.5 seconds.

To reset the Game Timer to its preset start time, push and hold the  button for 1 second. The Game Timer will also be reset whenever the Etek STAR Frame is switched off.

## THE SHOT COUNTER

The Shot Counter increments every time that the Etek STAR Frame is fired, regardless of whether the Shot Counter is displayed or not. When the Shot Counter is displayed on the Run Screen it can be reset to 0 by pressing and holding the  button for 0.5 seconds.

## THE AVERAGE RATE OF FIRE

When the Average ROF is selected for display the Run Screen will look something like the screen to the right. The value displayed in the top right of the screen represents the number of full cycles completed in the last second - the average rate of fire over the second. The number below it is the maximum average rate of fire that has been recorded. To reset this maximum, press and hold the button for 0.5 seconds.



## THE MENU SYSTEM

Behind the Run Screen is a structured menu system comprised of multiple levels of menus. Each menu contains a number of menu items and each menu item can either be an editable parameter or a branch to another menu. Branches always have an animated graphic whereas parameters indicate their current value.



TYPICAL PARAMETER



TYPICAL BRANCH

## THE PEAK RATE OF FIRE



When the Peak ROF is selected for display the Run Screen will look something like the screen to the left, which differs from the display of the Average **ROF** by the inclusion of the indicator 'PK'. The value displayed in the top right of the screen represents the rate of fire measured between the last two shots. The number below it is the maximum peak rate of fire that has been recorded. To reset this maximum, press and hold the button for 0.5seconds.

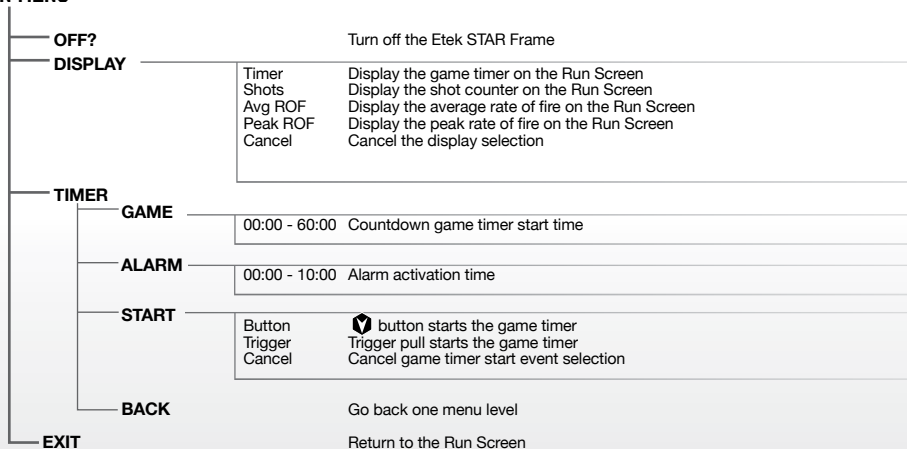
The Peak **ROF** is typically higher than the Average **ROF** as it is much easier to fire two shots in quick succession than it is to maintain a string over a longer period of time.

The menu structure is shown in the following pages.

The menus are 'smart menus' in that they will expand and contract depending upon the state of certain parameters. For example, the **MAX ROF** parameter is only visible when the **ROF CAP** parameter is set to 'on'. Smart menu items are indicated with a \* in the table below.

# MAIN MENU

## MAIN MENU





# SET-UP MENU

## SET-UP MENU

<b>LOCK</b>	Off	Turn the tournament lock off	
	On Cancel	Turn the tournament lock on Make no changes to the tournament lock	
<b>PRESET</b>	<b>LOAD</b>	User 1	Load the User 1 settings
		User 2	Load the User 2 settings
		Factory	Load the default factory settings (semi-automatic)
		NPPL	Load NPPL compliant settings
		PSP	Load PSP compliant settings
		MILLEN	Load Millenium Series compliant settings
		CFOA	Load CFOA compliant settings
		Cancel	Cancel the load operation
	<b>SAVE</b>	User 1	Save the current settings at the User 1 settings
		User 2	Save the current settings as the User 2 settings
Cancel		Cancel the save operation	
<b>BACK</b>		Go back one menu level	
<b>MODE</b>	Semi	Select semi-automatic mode of fire	
	Ramp	Select ramping mode of fire	
	Cancel	Cancel the mode selection	
<b>ROF CAP</b>	Off	Turn off the rate of fire cap	
	On	Turn on the rate of fire cap	
	Cancel	Cancel the ROF cap selection	
<b>MAX ROF*</b>	10.0 - 30.0	Rate of fire cap in balls per second when BBSS is enabled	
<b>OFF ROF</b>	4.0 - 15.0	Rate of fire cap in balls per second when BBSS is disabled	
<b>RAMP SET*</b>			

## SET-UP MENU

		<b>TYPE</b>	Step Linear Cancel	Select step type ramping Select linear type ramping Cancel the ramp type selection
		<b>RATE*</b>	0 - 100	Percentage linear ramp rate
		<b>PULL NO</b>	4 - 9	Number of shots before ramping can start
		<b>KICK IN</b>	5.0 - 15.0	Rate at which trigger has to be pulled in pulls per second before ramping can start
		<b>SUSTAIN</b>	5.0 - 15.0	Rate at which trigger has to be pulled in pulls per second in order to maintain ramping
		<b>RESTART</b>	0.0 - 1.0	Time in seconds after last trigger pull during which ramp can be restarted
		<b>BACK</b>		Go back one menu level
		<b>TIMING</b>		
		<b>DWELL</b>	0.0 - 25.0	Solenoid energise time in milliseconds for each shot
		<b>FSDO</b>	0.0 - 3.0	First shot drop-off compensation time in milliseconds
<b>LIGHT</b>	0.0 - 20.0	Backlight off delay in seconds		
<b>SLEEP</b>	0 - 60	Auto power off time in minutes		
<b>BACK</b>		Go back one menu level		
<b>FILTER</b>				
	<b>DBOUNCE</b>	TT Level 9 . . Level 1 Cancel	Use Trigger Transition Filter Use trigger debounce level 9 (less bounce)  Use trigger debounce level 1 (more bounce) Cancel debounce selection	
	<b>EMPTY</b>	1.0 - 20.0	Time in milliseconds that the breech must remain empty before the BBSS can look for a paintball.	
	<b>BALL</b>	1.0 - 20.0	Time in milliseconds that a paintball must be in the breech for the Etek STAR Frame to be ready to fire	

# SET-UP MENU

PULL	3.0 - 25.0	Time in milliseconds that the trigger must be pulled for a shot to be fired	
	RELEASE	3.0 - 25.0	Time in milliseconds that the trigger must be released before a pull can be recorded
	BAND HI*	51 - 99	Top limit (trigger activation point) of debounce band expressed as a percentage
	BAND LO*	1 - 49	Bottom limit (trigger release point) of debounce band expressed as a percentage
	TT TOL*	0 - 100	Percentage Trigger Transition Filter tolerance
	BACK		Go back one menu level
TRAININ	Off On Cancel	Training mode disabled Training mode enabled Cancel training mode selection	
HARDWARE			
TRIGGER	Opto Switch Cancel	Use opto sensor to detect trigger operation Use micro-switch to detect trigger operation Cancel trigger detection method selection	
	BBSS	Lo Power Hi Power Cancel	Select standard BBSS power level Select high power level for BBSS Cancel BBSS power level selection
	BEEPER	Off On Cancel	Turn off audible indicator Turn on audible indicator (if expansion board fitted) Cancel audible indicator selection
SIG OUT	Off On Cancel	Turn off auxiliary output Turn on auxiliary output Cancel auxiliary output selection	
	BACK		Go back one menu level
	EXIT		Return to the Run Screen

## ACCESSING THE MENU SYSTEM

To access the Main Menu from the Run Screen, push and hold the **Ⓢ** button for 1 second. The first item on the Main Menu will be displayed.

To access the Setup Menu from the Run Screen, push and hold the internal button for 1 second. The first item on the Setup Menu will then be displayed.

**NOTE: IF THE TOURNAMENT LOCK IS SET TO 'OFF' THEN THE MAIN MENU AND SETUP MENU ARE JOINED TOGETHER WHICH MEANS THAT THEY CAN BE ACCESSED IN EITHER OF THE TWO WAYS ABOVE.**

## MOVING AROUND THE MENUS

Press and release the **⏩** button to display the next item on the menu. When the last menu item is displayed, pressing the **⏩** button will display the first item.

Press and release the **⏪** button to display the previous item on the menu. When the first menu item is displayed, pressing the **⏪** button will display the last item.

When the displayed menu item is a branch, as indicated by an animation on the right of the screen, press the **Ⓢ** button to move to another menu.

## ALTERING PARAMETERS

When the displayed menu item is a parameter, as indicated by a parameter value on the right of the screen, pressing the **Ⓢ** button will activate the **EDIT** mode which allows the parameter value to be altered. When **EDIT** mode is active, edit indicators appear on the left of the screen as shown in the screen below.

### EDIT INDICATORS

There are two types of parameter, numeric parameters and choice parameters. A numeric parameter has a value which is a number whereas a choice parameter is one that has a small number of distinct choices. Altering parameter values is essentially the same for both types of parameter.



To alter a numeric parameter, first activate the **EDIT** mode. Press the **⏩** button to increase the parameter value one step at a time. Press and hold the **⏩** button to increase the parameter value rapidly. When the value reaches its maximum it will revert to its minimum value. Press the **⏪** button to decrease the parameter value one step at a time. Press and hold the **⏪** button to decrease the parameter value rapidly. When the value reaches its minimum it will revert to its maximum value. When the required parameter value is displayed press the **Ⓢ** button to accept the value and end the **EDIT** mode.

To alter a choice parameter, first activate the **EDIT** mode. Press the **⏩** button to display the next choice in the list. When the last choice is displayed, pressing **⏩** will display the first choice in the list. Press the **⏪** button to display the previous choice in the list. When the first choice is displayed, pressing the **⏪** button will display the last choice in the list. When the required choice is displayed press the **Ⓢ** button to accept the choice and end the **EDIT** mode. If the displayed choice is Cancel then pressing the **Ⓢ** button will end the **EDIT** mode and restore the parameter to the value that is was prior to editing.

## THE MAIN MENU

The Main Menu comprises parameters that do not affect the way in which the Etek STAR Frame shoots and which therefore do not have to be tournament locked.



From the Run Screen push and hold the button. Initially, the current Preset configuration will be displayed and then after one 1 second **OFF?** will be displayed, the first item on the Main Menu.

To turn off the Etek STAR Frame, select the **OFF?** branch or pull the trigger while the **OFF?** branch is displayed.

To return to the Run Screen, select the **EXIT** branch.

**NOTE: IF THE LOCK OPTION IS DISABLED FURTHER OPTIONS WILL BE DISPLAYED IN THE MAIN MENU.**

## THE DISPLAY PARAMETER (DISPLAY)

This parameter is used to select the information that is displayed on the right of the Run Screen. This parameter has the following choices:-

- › **TIMER:** The Game Timer is displayed on the Run Screen
- › **SHOTS:** The Shot Counter is displayed on the Run Screen
- › **AVG ROF:** The Average Rate of Fire is displayed on the Run Screen
- › **PEAK ROF:** The Peak Rate of Fire is displayed on the Run Screen
- › **CANCEL:** Editing is cancelled and the parameter remains unchanged.

This parameter differs from most others in that once a choice has been made then the **EDIT** mode it ended and the display returns to the Run Screen.



## THE GAME TIMER MENU (TIMER)

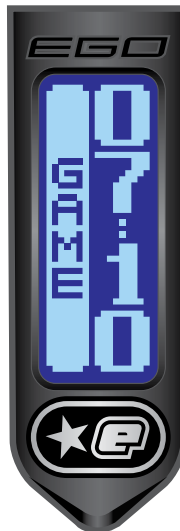
This menu is comprised of parameters that control the operation of the Game Timer:



## GAME PARAMETER (GAME)

This parameter is used to set the game time; the time from which the game timer counts down to zero. This parameter can be set between 00:00 and 60:00 minutes in 10 second increments and the factory default is 07:10 (7 minutes 10 seconds).

When the game timer reaches 00:00, **GAME OVER** will be displayed and the audible alarm will sound continually, provided that the optional Eclipse expansion board is fitted and the **BEEPER** parameter is set to 'on'.



## ALARM PARAMETER (ALARM)


An alarm condition is generated whenever the game timer counts down to a specific time set by the **ALARM** parameter. This parameter can be set between 00:00 and 10:00 minutes in 10 second increments.

When the alarm condition is generated the game timer will start to flash and the audible alarm will sound every second, provided that the optional Eclipse Expansion Board is fitted and the **BEEPER** parameter is set to 'on'.

**NOTE: THE ETEK STAR FRAME HAS THE ABILITY TO BE UPGRADED WITH AN AUDIBLE ALARM FEATURE BY INSTALLING AN ECLIPSE EXPANSION BOARD (SOLD SEPARATELY).**

## START PARAMETER (START)

This parameter is used to select the event which will cause the game timer to begin counting down. This parameter has the following choices:

- › **BUTTON:** Pressing the  button will start the game timer
- › **TRIGGER:** Pulling the trigger will start the game timer.
- › **CANCEL:** Cancel editing and leave the parameter unchanged.



## THE SETUP MENU

This menu is the starting point for access to all of the parameters that control the way that the Etek STAR Frame operates. To access this menu, first turn ON the Etek STAR Frame and then remove the 3 screws holding the right hand cheek of the rubber grips (see figure 5.1). Peeling back the cheek will reveal a red **SETUP** button on the circuit board (**SEE FIGURE 5.2**) which should be pushed and held for 1 second.

If the tournament lock (**LOCK**) is off then this menu is joined to the end of the Main Menu and can therefore be accessed without tools.



**FIG 5.1**




**FIG 5.2**



## THE TOURNAMENT LOCK PARAMETER (LOCK)

The Etek STAR Frame has a tournament lock which prevents the user from making changes to any parameter that affects the way in which the Etek STAR Frame shoots without the use of tools.

This parameter is used to set the state of the tournament lock and has the following choices:-

- › **OFF:** Turn off the tournament lock. The **SETUP** menu is added to the **MAIN** menu, making it easily accessible by pressing and holding the  button.
- › **ON:** Turn on the tournament lock. The **SETUP** menu is only accessible by removing the right hand cheek of the rubber grips and then pressing and holding the red **SETUP** button on the circuit board.
- › **CANCEL:** Cancel selection and leave the parameter unchanged.



## THE PRESET MENU (PRESET)

In order to simplify the set up of the Etek STAR Frame a number of Preset configurations are available for selection. Choosing one of these presets will cause all of the necessary parameters to be set in such a way as to make the Etek STAR Frame comply with the rules governing a particular paintball league. It is also possible for the user to save up to two Preset configurations of their own.

## THE LOAD PRESET PARAMETER (LOAD)

This parameter is used to load the required Preset configuration and has the following choices. With the exception of **FACTORY** each of the Presets changes only those parameters that control the firing mode of the Etek STAR Frame, leaving Filter, Timing and Hardware parameters unchanged.

- › **FACTORY:** Reset every parameter to the factory set defaults. The Etek STAR Frame leaves the factory set in this way and this is also described on the Run Screen as **SEMI**.
- › **NPPL:** Load a set of parameters that configures the Etek STAR Frame to comply with the 2007 **NPPL** rules governing firing modes.
- › **PSP:** Load a set of parameters that configures the Etek STAR Frame to comply with the 2007 **PSP** governing firing modes.
- › **MILLEN:** Load a set of parameters that configures the Etek STAR Frame to comply with the 007 Millennium Series rules governing firing modes.
- › **CFOA:** Load a set of parameters that configures the Etek STAR Frame to comply with the 2007 **CFOA** rules governing firing modes.
- › **CANCEL:** Editing is cancelled and the parameter remains unchanged.

## THE LOAD PRESET PARAMETER CONT...

- > **USER 1:** Load a set of custom firing mode parameters that have been previously saved by the user.
  - > **USER 2:** Load a second set of custom firing mode parameters that have been previously saved by the user.
- With the exception of **FACTORY** each of the Presets changes only those parameters that control the firing mode of the Etek STAR Frame, leaving Filter, Timing and Hardware parameters unchanged.

## THE SAVE PRESET PARAMETER (SAVE)

This parameter is used to save the current set of parameters as a user defined custom Preset configuration. This parameter has the following choices:-

- > **USER 1:** Save the current parameters as the Preset 'USER 1'
- > **USER 2:** Save the current parameters as the Preset 'USER 2'
- > **CANCEL:** Editing is cancelled and the parameter remains unchanged.

## THE FIRING MODE PARAMETER (MODE)

This parameter is used to select the firing mode of the Etek STAR Frame and has the following choices:

- > **SEMI:** This is the default and in this firing mode the Etek STAR Frame will fire one shot for every trigger pull.
- > **RAMP:** In this firing mode, the rate of fire is increased above the rate at which the trigger is pulled once certain criteria have been met. These criteria are set by the parameters on the **RAMP SET** menu.
- > **CANCEL:** Editing is cancelled and the parameter is unchanged.



**PLEASE NOTE: CERTAIN MODES MAY ONLY BE AVAILABLE IN CERTAIN COUNTRIES AND ON CERTAIN MODELS OF THE ETEK STAR FRAME.**

## RATE OF FIRE CAP PARAMETER (ROF CAP)

The Rate of Fire Cap parameter is used to specify whether or not the Etek STAR Frame should have a limited, or capped rate of fire. When the **ROF CAP** is enabled, the maximum achievable rate of fire is set by the **MAX ROF** parameter. Choices for the **ROF CAP** parameter are:-

- > **OFF:** Rate of Fire only limited by the loader.
- > **ON:** Rate of Fire limited to the **MAX ROF** parameter value.
- > **CANCEL:** Cancel editing and leave the parameter unchanged.



If the **ROF CAP** is switched **ON**, then the **MAX ROF** parameter will feature as an item in the **SET-UP** Menu. If the **ROF CAP** is switched **OFF**, the **MAX ROF** parameter is redundant and omitted from the **SET-UP** Menu.

## MAXIMUM RATE OF FIRE PARAMETER (MAX ROF)

The Maximum Rate Of Fire parameter is used to set the maximum achievable rate of fire from the Etek STAR Frame. The value of this parameter can be adjusted between 10.0 and 30.0 balls per second in 0.1bps increments.

The **MAXIMUM RATE OF FIRE** parameter will only be displayed if you have set the **ROF CAP** parameter to 'on'.





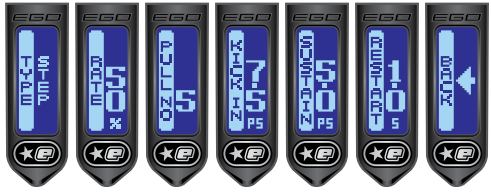
# RATE OF FIRE WHEN BBSS OFF PARAMETER (OFF ROF)

The **OFF ROF** parameter is used to control how fast the Etek STAR Frame cycles when the Break-Beam Sensor System is disabled. This parameter can be set between 4.0 and 15.0 balls per second and should always be set to the slowest speed of the loading system in use.



# THE RAMP SETTINGS MENU (RMP SET)

This menu is only available when ramping has been selected with the **MODE** parameter and comprises a list of parameters that control the way in which the Etek STAR Frame ramps, as shown below:



## THE RAMP TYPE PARAMETER (TYPE)

This parameter is used to select the ramping style and has the following choices:-

› **STEP:** Step ramping will cause the Etek STAR Frame to shoot in semi-automatic until a number of trigger pulls, set by **PULL NO**, have been made at a minimum pull rate, set by **KICK IN**. At this point the rate of fire will step up to the maximum rate of fire as set by **MAX ROF** (or the maximum loader speed if the rate of fire cap, **ROF CAP** is off). Ramping is maintained as long as the user continues to pull the trigger at a required rate set by **SUSTAIN**.

› **LINEAR:** Linear ramping will cause the Etek STAR Frame to shoot in semi-automatic until a number of trigger pulls, set by **PULL NO**, have been made at a minimum pull rate, set by **KICK IN**. At this point the rate of fire will equal the rate of trigger pulls increased by the percentage specified by **RATE** up to a maximum rate of fire as set by **MAX ROF**, if the rate of fire cap is off). Ramping is maintained as long as the user continues to pull the trigger at a required rate set by **SUSTAIN**.

› **CANCEL:** Editing is cancelled and no changes are made to the parameter.



## THE LINEAR RAMP RATE PARAMETER (RATE)

The parameter is only available when Linear Ramping is selected and is used to set the percentage increase in rate of fire over rate of trigger pulls.

For example, if the user is pulling the trigger at a rate of 10 pulls per second and the **RATE** parameter is set to 50% then the rate of fire is 10 plus 50% extra which is 15 balls per second.

This parameter can be set between 0 and 100% in 10% increments.



## THE RAMP START PARAMETER (PULL NO)

The parameter sets the number of trigger pulls that are required at the **KICK IN** rate before ramping will start. The parameter can be set between 4 and 9 pulls in increments of 1.



## THE RAMP KICK-IN PARAMETER (KICK IN)

This parameter sets the minimum rate at which the user has to pull the trigger in order to start ramping. This parameter can be set between 5.0 and 15.0 pulls per second in 0.1 pulls per second increments.



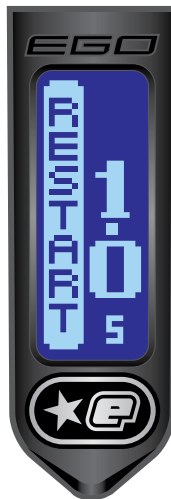
## THE SUSTAIN RATE PARAMETER (SUSTAIN)

Once the Etek STAR Frame is ramping the user has to continue to pull the trigger at a minimum rate in order to maintain the ramping. This parameter sets this rate and can be between 5.0 and 15.0 pulls per second in 0.1 pulls per second increments.



## THE RAMP RESTART PARAMETER (RESTART)

The **RESTART** parameter defines the amount of time after the last trigger pull during which the ramp can be restarted with a single trigger pull. If a trigger pull occurs after the **RESTART** time has expired, then the other ramp start conditions have to be met before ramping will restart. This parameter can be set between 0.0 and 1.0 seconds in 0.1 second increments.



## THE TIMING MENU

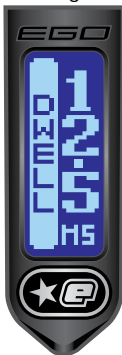
The parameters on the Timing menu all relate to the timing of specific events.



## THE DWELL PARAMETER (DWELL)

The Dwell parameter sets the amount of time that the solenoid is energized and therefore the amount of gas that is released with each shot of the Etek STAR Frame. Setting this parameter too low will result in low velocity shots and/or excessive shot to shot velocity fluctuations. Setting the parameter too high will simply waste gas and make the Etek STAR Frame louder.

The **DWELL** can be set between 0.0 and 25.0 milliseconds. The factory default setting can normally be reduced after a few thousand shots as the marker 'beds-in'.



## THE FIRST SHOT DROP-OFF COMPENSATION PARAMETER (FSDO)

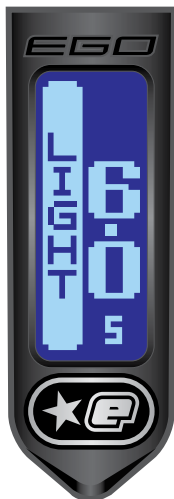
First shot drop off is a reduction in velocity of the first shot fired after an extended period of not firing and is caused by the stiction between dynamic o-rings and the surfaces that they are in contact with. In order to compensate for **FSDO** this parameter can be set to add extra time to the **DWELL** parameter for the first shot. This parameter can be set between 0.0 and 3.0 milliseconds.





## THE LIGHT PARAMETER (LIGHT)

The LCD backlight is illuminated whenever any of the buttons are pressed on the Etek STAR Frame. The **LIGHT** parameter is used to set the amount of time that the backlight stays lit between 0.0 and 20.0 seconds in 0.5 second increments. Setting this parameter to 0.0 will prevent the backlight from coming on when a button is pressed.



## THE SLEEP PARAMETER (SLEEP)

If the Etek STAR Frame is inactive for a period of time then it will automatically switch off in order to save power. The **SLEEP** parameter is used to set that time between 0 and 60 minutes in 5 minute increments. Setting this parameter to 0.0 will prevent the Etek STAR frame from automatically switching off.



## THE FILTER MENU

The parameters on the Filter menu are all used to tune the Etek STAR Frame's software filters which prevent the Etek STAR Frame from firing unless all of the necessary conditions are met. The factory default settings will be suitable for most set-ups, however certain loader and trigger set-ups may require modification of one or more of these parameters.:

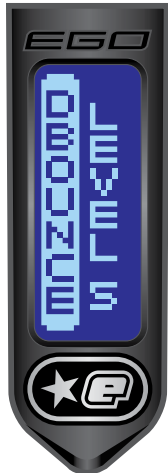


## THE DEBOUNCE PARAMETER (DBOUNCE)

This parameter is used to combat any trigger bounce that might occur in the Etek STAR Frame.

This parameter can be set to the following choices:-

- > **TT:** The Trigger Transition Filter is used to remove trigger bounce.
- > **LEVEL 9:** The debounce filter is used to remove trigger bounce, this filter has nine levels with level 9 providing the most filtering and
- > **LEVEL1:** Level 1 providing the least filtering.
- > **CANCEL:** Cancel editing and leave the parameter unchanged.



## THE EMPTY BREACH TIME PARAMETER (EMPTY)

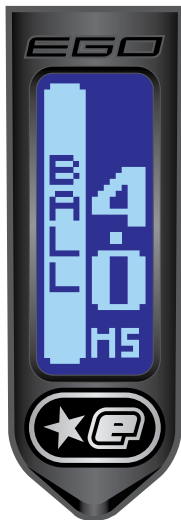
In order for the **BBSS** to function correctly it must first detect that the bolt is fully retracted and the breach is empty, and then detect that a paintball is loaded into the breach before the Etek STAR Frame is allowed to fire.

Slots or holes in some third party bolts can fool the **BBSS** and so this parameter is used to specify a minimum time that the breach must be empty. The parameter can be set between 1.0 and 20.0ms in 0.5ms increments.



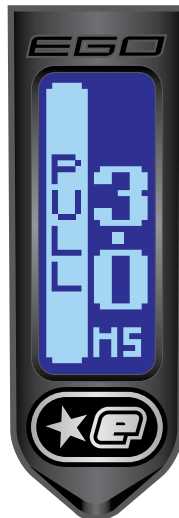
## THE BALL PARAMETER (BALL)

Tumbling paintballs can take time to settle in the breech before they can be successfully fired. This parameter is used to set the amount of time that a paintball has to be in the breech before the Etek STAR Frame is allowed to fire. This parameter can be set between 1.0 and 20.0 milliseconds in 0.5ms increments.



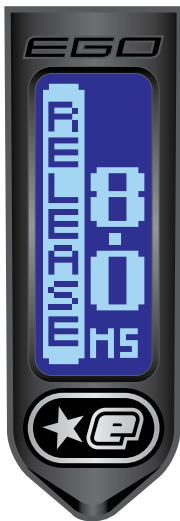
## THE PULL PARAMETER (PULL)

The **PULL** parameter is used to set the minimum amount of time that the trigger must be pulled before it is recognised as a valid trigger pull. This parameter can be set between 1.0 and 20.0 milliseconds in 0.5ms increments.



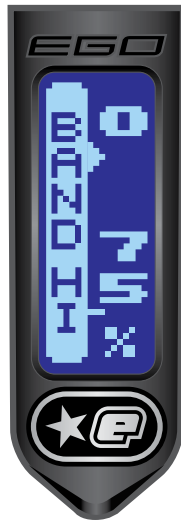
## THE RELEASE PARAMETER (RELEASE)

The **RELEASE** parameter is used to set the minimum amount of time that the trigger must be released before it is recognised as a valid trigger release. This parameter can be set between 3.0 and 25.0 ms in 0.1 ms increments.



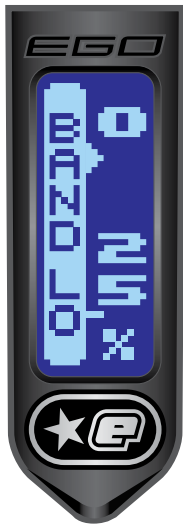
## THE BAND HIGH PARAMETER (BAND HI)

The **BAND HI** parameter is only available if **OPTO** has been selected in the **HARDWARE** menu. **BAND HI** defines the point at which the trigger is considered pulled and is adjustable between 51% and 99% in 1% increments.



## THE BAND LOW PARAMETER (BAND LO)

The **BAND LO** parameter is only available if **OPTO** has been selected in the **HARDWARE** menu. **BAND LO** defines the point at which the trigger is considered released and is adjustable between 1% and 49% in 1% increments.



## BASIC TRIGGER FILTER SET-UP

95% of trigger bounce problems can be eliminated by utilizing one of the nine fixed **DEBOUNCE** choices (**LEVEL** 1-9). In attempting to eliminate trigger bounce it is advisable to try the nine fixed **DEBOUNCE** choices before attempting any advanced set up of the trigger filters.

## ADVANCED TRIGGER FILTER SET-UP

In order to optimize the Trigger Filters it is necessary to have the **BAND HI** parameter set as high as possible and the **BAND LO** parameter set as low as possible:

1. Select the **BAND HI** parameter. Observe that the graphical bar rises and falls as the trigger is pulled and released. The actual value of the graphical bar is displayed in the top right of the display.
2. Set the **REAR STOP TRIGGER SCREW** as required, ensuring that the bar is as close to 100% as possible when the trigger is fully depressed against the set screw. It is advisable to allow for some extra travel in the trigger pull once the bar has reached its maximum value.
3. Adjust the **BAND HI** parameter so that when the trigger is fully depressed the bar settles above the indicator on the left hand side of the screen (**SEE PAGE 45**).
4. Select the **BAND LO** parameter. Observe that the graphical bar rises and falls as the trigger is pulled and released. The actual value of the graphical bar is displayed in the top right of the display.
5. Set the **FRONT STOP TRIGGER SCREW** as required, ensuring that the bar is as close to 0% as possible when the trigger is fully released against the set screw. It is advisable to allow for some extra travel in the trigger release once the bar has reached its minimum value.

## THE TRAINING PARAMETER (TRAININ)

The **TRAININ** parameter is used to select Training Mode. In Training Mode the Etek STAR Frame will function exactly the same as normal but with two important differences:-

1. The solenoid valve is under-driven so that the rammer only moves a small amount and does not strike the exhaust valve. This simulates the firing cycle without wasting air and generating lots of noise.
2. The BBSS is overridden so that the Etek STAR Frame can cycle without paint. The centre of the BBSS indicator changes to a 'T' to indicate that Training Mode is enabled.

The Training parameter choices are as follows:-

- › **OFF:** Training Mode is disabled and the Etek STAR Frame functions normally.
- › **ON:** Training Mode is enabled.
- › **CANCEL:** Cancel editing and leave the parameter unchanged.



6. Adjust the **BAND LO** parameter so that when the trigger is fully released the bar settles beneath the indicator on the left hand side of the screen (SEE PAGE 46).

7. Set the **MAGNET RETURN STRENGTH SCREW** and the Micro Switch Activation Screw as required, making both the spring tension and the return force as strong as possible without compromising the "feel" of the trigger.

Optional (only if TT had been selected in Debounce parameter):

8. Select the **TT TOL** parameter. With the gun gassed up and preferably fitted with loader and firing paint, try to get the marker to bounce by pulling the trigger very slowly. If the marker bounces, then reduce the **TT TOL** value until it no longer does so. If the marker does not bounce then increase the **TT TOL** value until it starts to bounce and then reduce it again until the bouncing stops.

Whilst this set up process should completely eliminate bounce, it may result in a trigger pull that is not ideally suited to the user, in which case it will be necessary to make adjustments to the trigger and then modify the Trigger Filter parameters accordingly.



**NOTE: THE FASTEST WAY TO SHOOT AN ETEK STAR FRAME IS TO WALK THE TRIGGER WITH TWO OR MORE FINGERS. FEATHERING (NOT FULLY RELEASING) THE TRIGGER WILL CAUSE THE FILTERING SYSTEM TO REDUCE THE RATE OF FIRE DOWN IN ORDER TO ELIMINATE WHAT IT PERCEIVES AS TRIGGER BOUNCE.**

## THE HARDWARE MENU

The **HARDWARE** Menu comprises parameters that control low level functionality of the Etek STAR Frame electronic hardware.



## THE TRIGGER PARAMETER (TRIGGER)

The Etek STAR Frame is fitted with a dual trigger pull detection system. A non-contact opto-electronic trigger sensor arrangement is used to detect trigger movement whilst a micro-switch is used to provide a more traditional tactile feedback for the trigger. The **TRIGGER** parameter is used to select which system is used. The choices available are as follows:-

- › **OPTO**: Select the Opto sensor for trigger pull detection.
- › **SWITCH**: Select the micro-switch for trigger pull detection.
- › **CANCEL**: Cancel editing and leave the parameter unchanged.

## THE BBSS PARAMETER (BBSS)

This parameter controls the amount of power used by the Break Beam Sensor System and should normally be left on it's default low power setting. However scratches on the surface of either of the sensors, or the use of some third party sensors, may require that the **BBSS** power level be increased. Higher power levels will cause more drain on the battery. The choices available for this parameter are:-

- › **LO POWER**: Low power **BBSS** drive
- › **HI POWER**: High power **BBSS** drive
- › **CANCEL**: Cancel editing and leave the parameter unchanged

## THE AUXILIARY OUTPUT PARAMETER (AUX OUT)

The auxiliary output is on a three pin connector in the circuit board and is used to provide an interface between the Etek STAR Frame and third party equipment such as loaders. The **AUX OUT** parameter is used to enable the auxiliary output which pulses every time the Etek STAR Frame is fired. The parameter choices are:-

- › **OFF**: Auxiliary output off.
- › **ON**: Auxiliary output on.
- › **CANCEL**: Cancel editing and leave the parameter unchanged.

**NOTE:** If the optional Eclipse expansion board is fitted then the output on that board is pulsed at the same time as the auxiliary output.





# ECLIPSE CERTIFIED SERVICE CENTERS

Are you unsure of where to send your Etek STAR Frame to be repaired or serviced? If your local Eclipse dealer can't assist you, why not contact your nearest Certified Eclipse Service Center and arrange to send it into them to undertake any work that you require.

## UNITED KINGDOM & EUROPE

### PLANET ECLIPSE LTD

England

**Call:** +44(0)161 872 5572  
**Fax:** +44(0)161 872 5972  
**Email:** technical@planeteclipse.com  
**Visit:** www.planeteclipse.com

### OPM

Germany

**Call:** ++49(0) 211 210 2300  
**Fax:** ++49(0) 211 210 23030  
**Email:** salesforce@paintball.de  
**Visit:** www.paintball.de

### ESTRATEGO PORTUGAL

Portugal

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**Fax:** ++351 213 863 715  
**Email:** info@estratego.pt  
**Visit:** www.estratego.com

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**Fax:** +7(0) 95 7851 738  
**Email:** info@paintball.ru  
**Visit:** www.paintball.ru

### CAMP

France

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**Fax:** +33(0)1 41 09 1009  
**Email:** atelier@paintballcamp.com  
**Visit:** www.paintballcamp.com

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**Fax:** ++48 22 212 8018  
**Email:** info@skill.com.pl  
**Visit:** www.skill.com.pl

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**Fax:** ++34 986 730 131  
**Email:** jota@adrenalicia.com  
**Visit:** www.adrenalicia.com

### PONTO DE MIRA

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**Fax:** ++351 214 120 144  
**Email:** paintball@pontodemira.com  
**Visit:** www.pontodemira.com

### AG5

Czech Republic

**Call:** ++420 272 762 938  
**Fax:** ++420 272 762 938  
**Email:** info@paintballshop.cz  
**Visit:** www.paintballshop.cz

### TCB PAINTBALL

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**Call:** ++46 702 317 361  
**Email:** info@tcbpaintball.com  
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**Email:** post@westsport.no  
**Visit:** www.westsport.no

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**Email:** mikke@ahaa.fi  
**Visit:** www.coolgames.fi

### BREAKOUT KFT

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**Email:** info@joinpaintball.hu  
**Visit:** www.joinpaintball.hu

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**Fax:** (401) 247 0931  
**Email:** gerry.b@planeteclipse.com  
**Visit:** www.planeteclipse.com

### DGX PAINTBALL

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**Email:** Darin@dgxpainball.com  
**Visit:** www.dgxpainball.com

### PAINTBALL SHOWCASE

East Coast

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**Visit:** www.paintballshowcase.com

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**Fax:** ++603 7722 1435  
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**Visit:** www.extremeindoorpaintball.com.au

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**Visit:** www.gzpaintball.com

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**Visit:** www.pbchawaii.com

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**Email:** Walt@proSTARpb.com  
**Visit:** www.proSTARpb.com

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**Email:** dy\_xfactor@yahoo.com  
**Visit:** www.texasxfactor.com

### FOX PAINTBALL

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**Email:** DJ@foxpaintball.com  
**Visit:** www.foxpaintball.com

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**Visit:** www.espxtremesportz.com

### BADLANDS PAINTBALL

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**Email:** techzone@badlandspaintball.com  
**Visit:** www.badlandspaintball.com

### PAINTBALL CENTRAL

North Carolina

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**Fax:** (336) 274 5655  
**Visit:** www.paintballcentral.com  
www.pbcspartspark.com

### ACTION PAINTBALL GAMES









Australia

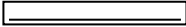


**Call:** ++61 2 9679 0011  
**Fax:** ++61 2 9679 0100  
**Email:** sales@actionpaintball.com.au  
**Visit:** www.actionpaintball.com.au

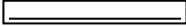
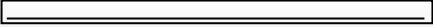
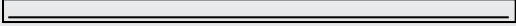
### THE PAINTBALL SHOP

South Africa

**Call:** ++27 413640549  
**Fax:** ++27 413640549  
**Email:** info@paintballshop.co.za  
**Visit:** www.paintballshop.co.za

SCREW	QTY	DESCRIPTION
	7	PCB SCREW (3), BEARING CARRIER (2), QEV BLOCK (2) (M3 x 5 CAP HEAD SOCKET)
	8	RUBBER GRIP SCREW (6), BBSS COVERS SCREW (2) (6-32UNC x 3/8 COUNTERSUNK SOCKET)
	1	MICROSWITCH SCREW (6-32 UNC x 1/2 SOCKET SET SCREW)
	4	TRIGGER ADJUSTMENT SCREW (6-32 UNC x 3/16 SOCKET SET SCREW)
	2	T-RAIL SCREW (10-32 UNF x 1/2 SOCKET SET SCREW)
	2	10-32 UNF x 3/8" ETEK2 STANDARD FRAME SCREW (FRONT FRAME SCREW (ETEK STAR FRAME))
	1	10-32 UNF x 1/2" ETEK STANDARD FRAME SCREW (REAR FRAME SCREW WHEN FITTING AN ETEK STAR FRAME TO AN ETEK2)
	1	10-32 UNF x 5/8" ETEK LONG FRAME SCREW (REAR FRAME SCREW WHEN FITTING AN ETEK STAR FRAME TO AN ETEK)

HOSE LENGTHS (QEV FITTED)	DESCRIPTION
  	<p><b>SMALLEST PIECE:</b> Banjo fitting to left side rear barb on minifold.</p> <p><b>MEDIUM PIECE:</b> QEV to right side rear barb on minifold</p> <p><b>LONGEST PIECE:</b> Front barb on minifold to FRM</p>

HOSE LENGTHS (NO QEV FITTED)	DESCRIPTION
  	<p><b>SMALLEST PIECE:</b> Front banjo fitting to left side rear barb on minifold.</p> <p><b>MEDIUM PIECE:</b> Rear banjo fitting to right side rear barb on minifold.</p> <p><b>LONGEST PIECE:</b> Front barb on minifold to FRM</p>

**TECH FLEX MAT**

Protect your Ego whilst you maintain it with the Eclipse Tech Flex Mat.

**'08 STRIPE LAPTOP BAG**

Transport your Laptop in style with the new '08 Laptop Bag.

**'08 STRIPE KITBAG**

What better place to keep your Ego8?

**BALL DETENTS**

10 Replacement rubber Detents for your Ego8.

**ECLIPSE SHAFT 2 BARREL KIT**

3 different bores size backs,  
2 different length barrel tips; a  
combination to suit every occasion.

**LASER EYE KIT**

Add a Red Laser Beam to the breach of your Ego8 or Etek marker with this Laser Eye Kit! This product is not compatible with other Egos.



### ECLIPSE GUN OIL

The recommended oil to use on all maintenance and servicing procedures.



### ECLIPSE STARS WRISTBANDS

Fed up of wearing gloves but can't take the pain of getting shot on a gloveless hand? Settle for the happy medium of one of the new Eclipse Star Wristbands then and save the pain!



### BURN BEANIE

Won't help you shoot any straighter, won't make you run any faster but will make you look the part as you're strutting your stuff on-field. Keeps your noggin nice and cosy too!



### ECLIPSE EGO8/ETEK TOOL TUBE

This handy little tool tube includes all of the hex key sizes that you will need to strip and maintain your Ego8 or Etek marker.



### ETEK ZICK KIT

Kick? What kick? Add the Etek ZICK Kit to your Etek marker and the existing amount of kick will be reduced even further. Include a replacement rammer and rammer cap that must only be used together.



