eclipseblade™

Operating Manual

Introduction

About this Manual

This manual contains the installation and operating instructions for the eclipseblade Electronic Grip Frame.

Because most people do not like reading manuals, the following is a guide to what you <u>must</u> read -

If you will be fitting the eclipseblade Electronic Grip Frame yourself then please read the following sections <u>before</u> starting the installation -

Section 1 - Orientation.

Section 2 - Fitting.

Section 3 - Quick Set-Up.

If the eclipseblade Electronic Grip Frame has been supplied to you already fitted, and you want to get up and running quickly, then read the following sections -

Section 1 - Orientation.

Section 3 - Quick Set-Up.

However, if you want to have a full understanding of the eclipseblade Electronic Grip Frame then please read the whole manual.

Orientation

1. Orientation

This section names the component parts of the eclipseblade Electronic Grip Frame

2. Fitting

This section explains how to fit the eclipseblade Electronic Grip Frame to your marker. If the eclipseblade Electronic Grip Frame has been supplied pre-fitted then you may skip this section.

3. Quick Set-Up

This section provides details on how to get up and running quickly with the eclipseblade Electronic Grip Frame. This section is essential reading.

Orientation

4. Using the eclipseblade

This section provides more detailed information on how to interact with the eclipseblade Electronic Grip Frame via its user interface.

5. Advanced Set-Up

This section contains more detailed information on setting up the eclipseblade Electronic Grip Frame.

Orientation

Appendix A - Display / Menu Tree

This section provides a quick reference to the user interface.

Appendix B - Maintenance

Guide to performing routine maintenance.

Appendix C - Fault Finding

This section provides information on how to resolve any problems that might arise with your eclipseblade Electronic Grip Frame.

Appendix D - Drilling Template

See centre pages for actual size Drilling Template Pull-Out. Inside back cover, scaled drawing of a typical marker body. Can be used to produce additional drilling templates.

Orientation

Fig 1-1

Orientation

Figure 1-1 shows all of the components that come with the eclipseblade kit.

1. **Frame** - the frame houses the electronics, the battery and the hammer release mechanism.
2. **Trigger** - the trigger is used to fire the marker.
3. **Grips** - the wrap-around rubber grips cover the frame and protect the electronics housed within.
4. **Breech Sensor** - the breech sensor fits through a hole in the side of the marker body and 'looks' into the breech. A ribbon cable runs from the breech sensor vertically down and into a recess in the frame.
5. **Breech Sensor Cover** - this cover is used to protect both the breech sensor and the breech sensor cable.
6. **Cocking Solenoid** - this solenoid is used to control the cocking mechanism of the marker by switching the pneumatic supply to either side of the ram. Two electrical wires connect the solenoid to the grip circuit board.
7. **Cocking Solenoid Manifold** - the cocking solenoid is mounted into a manifold, which doubles as a protective cover.
8. **Grip Screws** - these screws are used to hold the grip onto the Frame.
9. **Frame Screws** - these screws are used to hold the frame to a marker.
10. **Hex Key** - this key is used to adjust the trigger.
11. **Low Pressure Hose** - this hose is used to attach the cocking solenoid to the cocking pneumatics of the marker.
12. **Sear Solenoid Retainer** - this is used to clamp the sear solenoid in place.

Fig 1-2
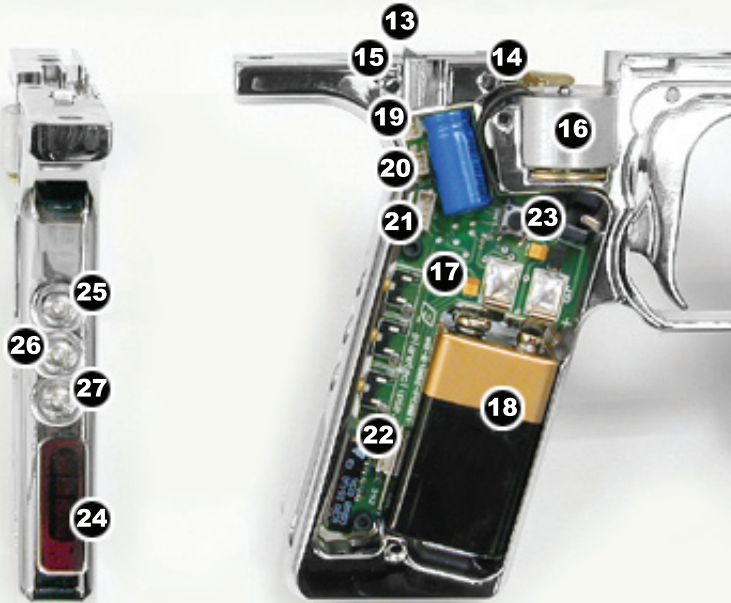
13. Sear - the sear pivots to provide a mechanism for releasing the hammer.

14. Sear Pin - this pin passes through the centre of the sear and is retained by a small set screw.

15. Sear Spring - this spring is used to return the sear to its rest position.

16. Sear Solenoid - this solenoid is used to pivot the sear and therefore release the hammer. The solenoid is held in place by two set screws, one on each side of the frame. Two electrical wires connect the solenoid to the grip circuit board.

17. **Grip Circuit Board** - this printed circuit board contains all of the electronics required to control the operation of the eclipseblade Electronic Grip Frame.

18. **Battery** - the battery provides the power for the electronics. The battery terminals are pushed against two spring connectors on the grip circuit board. A groove is machined into the frame below the battery to assist with battery removal.

19. **Cocking Solenoid Connector** - this connector is used to connect the cocking solenoid wires to the grip circuit board.

20. **Sear Solenoid Connector** - this connector is used to connect the sear solenoid wires to the grip circuit board.

21. **Breech Sensor Connector** - this connector is used to connect the breech sensor ribbon cable to the grip circuit board.

22. **Interface Connector** - this connector is used to connect the a computer to the grip circuit board by means of the eclipseblade Electronic Grip Frame PC Interface (available separately).

23. **Setup Pushbutton** - this pushbutton is used to activate the setup menu.

24. **Display** - this four character, LED display is used to provide the user with visual information.

25. **Raise Pushbutton** - this pushbutton is used to turn the breech sensor off and on, to scroll up through menu options and to increase the values of parameters.

26. **Select Pushbutton** - this pushbutton is used to activate the main menu and to select the displayed menu option or parameter value.

27. **Lower Pushbutton** - this pushbutton is used to control the game timer, to scroll down through menu options and to decrease the values of parameters.

Fitting

Fitting the eclipseblade Electronic Grip Frame is relatively straightforward, however if you are uncomfortable drilling holes into the body of your marker then we recommend that you have the frame fitted by an Eclipse Authorised Service Centre, details of which can be found on the Planet Eclipse website (www.planeteclipse.com).

Tools Needed to Fit the Frame and Solenoid

• 1/8" Hex Key
• 1/16" Hex Key
• 5/64" (2mm) Hex Key
• Adjustable Wrench
• Loctite/PTFE Tape
• 9V Battery (PP3, 6LR61,MN1604)

Tools Needed to Fit the Breech Sensor

• Pillar Drill / Drill Press
• No.20 (0.1610", 4.1mm) Drill
• No.43 (0.089", 2.3mm) Drill
• No.4-40 UNC Tap
• Centre Punch
• Electrical Tape
• Pointed-Nose Pliers
• De-Burring tool
• Wire Cutters

Preparation

You will need to prepare your marker ready to receive the eclipseblade Electronic Grip Frame kit.

The eclipseblade Electronic Grip Frame kit comprises of 3 main elements, the Frame, the Cocking Solenoid and the Breech Sensor.

The fitting of the Frame and the Cocking Solenoid are essential to the operation of the eclipseblade Electronic Grip Frame, whereas the Breech Sensor, though thoroughly recommended, is not crucial to the basic operation of the kit.

The installation of the Frame and Cocking solenoid can be carried out with just a little basic knowledge, however we recommend that an Eclipse Authorised Service Centre carry out the installation of the Breech Sensor as this does include a small amount of machining to the body of the marker.

For Frame and Cocking Solenoid Only

Remove gas source, paint, barrel and loader. Ensure all gas is purged from the gun. If the gun is fitted with fore-grip or vertically mounted regulator, remove these also.

Remove the existing grip-frame from the gun.

Remove all low pressure hosing from the ram, 3-way and low pressure regulator.

Remove the low-pressure regulator. **Note:** You may need to remove the barb fitting from the regulator in order to turn it past the body of the 3-way. This will depend on the type of regulator fitted to your marker.

Fitting

Remove the grub-screws from the 3-way coupling, and dis-engage the coupling from the 3-way shaft.

Remove the 3-way complete.

Remove the 3-way coupling and the 3-way actuating rod.

Your semi-block should now only have the ram attached to it, with no hosing. There should be no grip-frame on the gun. *(figure 2-1)*

Fig 2-1   Fig 2-2

At this stage it is VERY important that you check the type, and condition of the cocking lug (or Timing Pin) inserted in the hammer. *(figure 2-2)*

It is VITAL to the correct operation of this kit that the cocking lug is of the type:

1/4"-28 UNF or more typically known as a "fat" cocking lug, and that it is "square-cut" at the tip and polished. The lug CANNOT have either a chamfered, rounded or pointed end to the cocking lug. A lug with anything other than a polished "square-cut" tip will severely impair the performance of the eclipseblade Electronic Grip Frame.

If your cocking lug does not fit the above description then it is advisable to either change it or modify it at this stage, before continuing with the installation of the eclipseblade Electronic Grip Frame.

Fitting the Breech Sensor

NOTE: These instructions and Template are for a vertical feed body only.

Remove the bolt and Anti-Double Ball

You may also want to remove the Cocking rod, Back-block, Semi-Block and Anti-Tamper, to aid with drilling.

Place the Breech Sensor Drilling Template *(see centre pages)* over the body and secure in place with tape.

Mark the centres of both holes using a centre punch, through the Template.

Remove the Template.

Clamp the body flat and level in a drill press vice.

Use a No.20 (0.1610", 4.1mm). drill *(figure 2-3)* and No.43 (0.089", 2.3mm) drill *(figure 2-4)* in the locations indicated on the template.
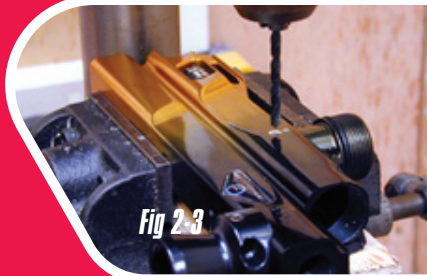

Fig 2-3   Fig 2-4

Fitting

Remove the body from the vice.

Use a 4-40 UNC tap to thread the No.43 (0.089", 2.3mm) hole for the Breech Sensor retaining screw.

Remove any metal cuttings from the breech and use a scraper to carefully remove any burrs on the inside of the breech round the 2 new holes.

If you removed the cocking rod, back-block, semi-block and anti-tamper, replace them now, ensuring that you fix the back-block the correct distance onto the pump rod. So that with the ram all the way forward, the back-block just touches the body.

Your gun is now ready to accept the eclipseblade Electronic Grip Frame kit.

Fitting the Cocking Solenoid

The 5-way cocking solenoid valve comes pre-assembled into the solenoid manifold. There is no reason to remove the cocking solenoid from the manifold in order to install the manifold, so leave the cocking solenoid fitted into the manifold.

The Cocking solenoid manifold attaches directly into the semi-block, in place of the conventional 3-way. *(figure 2-5)*

Feed the cocking solenoid cable through the semi-block and through the vertical reg-mount, if one is fitted. If fitting to a Mini-Cocker, simply feed cable through the semi-block.

Screw the manifold into the semi-block, being careful not to cross-thread the manifold. Do not force into place if the threads appear tight.

The manifold may not line up when screwed all the way into the semi-block. It may be necessary to back up so that the hose attachments are at the top.

Fig 2-5   Fig 2-6
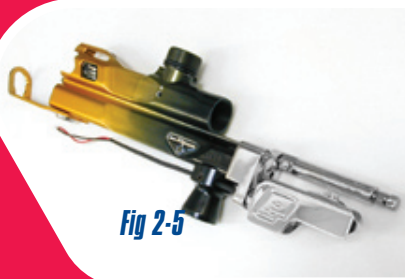
Attach the low pressure regulator back onto the semi-block. It may be necessary to remove the outlet fitting (nipple/barb) of the regulator in order to screw the regulator past the new solenoid manifold. Use Hydraulic sealant or thread-lock to seal the threads of the regulator into the semi-block. Use hydraulic sealant or thread-lock to seal the threads of the outlet (nipple/barb) back into the regulator. Position the regulator so that the barb is pointed upwards towards the top of the manifold.

Attach a piece of low-pressure hose between the rear ram barb and the rear solenoid manifold barb.

Attach a piece of low-pressure hose between the low-pressure regulator barb and the centre solenoid manifold barb.

Attach a piece of low-pressure hose between the front ram barb and the front solenoid manifold barb.

The pneumatics of the gun have now been installed. *(figure 2-6)*

Fitting

Fitting the Frame

Completely remove the wrap-around rubber grips from the eclipseblade grip frame. Be careful not to drop the solenoid retainer!

If the breech sensor is being fitted, place the Breech Sensor cable on the side of the gun and mark on the cable with a felt marker the position of the cable where it will pass into the frame. *(figure 2-7)*

Fig 2-7   Fig 2-8

Now place the cable in the slot in the top of the frame, so that the cable exits the frame at the cut-out in the top edge of the frame. Line up the mark previously made on the cable with the cut-out in the frame. *(figure 2-8)*

Place the Solenoid cable into the slot alongside the breech sensor cable. *(figure 2-9)*

Bring frame up to the bottom of the gun, and attach using the two 10-32 UNF x 1/2" stainless button head screws. *(figure 2-10 and 2-11)* Ensure that no wires are trapped between the top of the grip frame and the bottom of the marker body. Do not tighten the screws.

Fig 2-9

Fig 2-10

Place the breech sensor into its hole in the gun body *(figure 2-12)* and check that the exposed cable is not too long. If it is too long then, draw some of the cable back through the frame by gently pulling the back of the wire.

Fig 2-11

Fig 2-12

With the cable at the correct length, and ensuring that no wires are trapped between the top of the grip frame and the bottom of the marker body, tighten the two frame screws. Also check that the solenoid retainer is straight, and that it does not catch on the sear.

Fitting

Plug the breech sensor cable into the relevant socket on the grip circuit board. This connector is polarised and will only fit one way round. *(figure 2-13)*

Plug in the cocking solenoid cable into the relevant socket on the grip circuit board. This connector is also polarised. *(figure 2-14)*
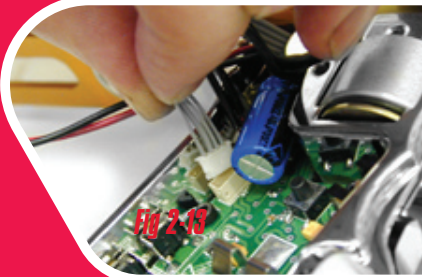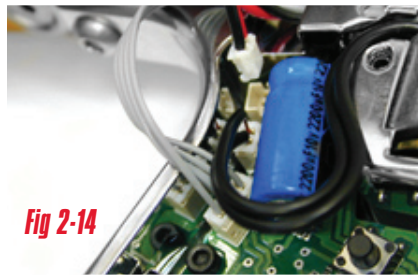
Fig 2-13   Fig 2-14

Very carefully fold the wires into the frame ready to re-install the rubber grips.

If the breech sensor is being fitted, then you will need to modify the breech sensor cover in order to locate it into the slot in the frame. Using a strong pair of pointed pliers, bend both wires away from each other and at 90° to the rubber cover. *(figure 2-15)* Then bend both wires towards the frame, at 90° to the vertical. *(figure 2-16)* Insert the wires into the slot in the frame. *(figure 2-17)* Slide one end in first, *(figure 2-18)* then squeeze the rubber to allow the other end to be inserted into the frame (if the wires are too long then trim as required DO NOT TRIM TOO MUCH OFF).

Fitting

Fig 2-15   Fig 2-16

Fig 2-17   Fig 2-18

Attach the top end of the Breech Sensor Cover to the side of the body above the Breech Sensor, using the 4-40 UNC counter-sunk screw provided. *(figure 2-19)*

Fitting

Fig 2-19

Fig 2-20

Testing

Before installing a battery and fitting the rubber grips it is necessary to set the sear release mechanism:

Pull the back-block back by hand to cock the marker.

If the hammer lug does not catch on the sear, adjust the lug down until it does catch on the sear.

Use your finger or thumb to manually actuate the sear-release plunger on the sear solenoid. Pushing up on the plunger will cause the sear to actuate and release the hammer lug. *(figure 2-20)*

Set the hammer lug so that the hammer is released near the top of the plunger travel. This will increase the life of both the sear and the hammer lug. This will lead to increased reliability of the sear release mechanism.

Insert a new battery into the frame (see Quick Set-Up section below for battery installation), making sure that the positive terminal of the battery goes to the right hand side of the frame, and is in contact with the positively marked terminal on the PCB.

Replace the rubber grips.

Power up the eclipseblade Electronic Grip Frame and again, manually cock the gun by pulling back the back-block by hand.

Pull the trigger to check that the sear release mechanism works. If it does not, then remove the grips and set the lug again.

If the sear release mechanism still does not work, go to Appendix B - Fault Finding section.

Installation of the eclipseblade Electronic Grip Frame is now complete. You can now attach any regulators and the air system.

IMPORTANT: Make sure that there are no paintballs in the marker, remove the loader and barrel!

Gas up your gun and power up the eclipseblade Electronic Grip Frame (see Quick Set-Up below).

Check the cocking pressure from the low pressure regulator (LPR). Use a gauge if possible, and set the output pressure to around 80 psi if the breech sensor is being used. DO NOT EXCEED 100 PSI! This will damage the solenoid valve!

If the breech sensor is not being used then set the LPR pressure lower in order to reduce the chance of chopping (as you would on a mechanical marker). The exact pressure will depend upon the types of mainspring and ram in use.

Check the cocking pressure by selecting Classic Plus Mode (see Operating Mode selection 5-7) and holding the trigger on. Whilst the trigger is held on, and the back-block is back, check that the Back-block is all the way to the rear. If the back-block can be retracted further, by pulling on the bolt pin, then increase the cocking pressure coming from the low pressure regulator.

Test fire the gun to ensure that the gun is cycling correctly, i.e. the back block is coming all the way back and that the hammer lug is catching on the sear and that the sear is releasing the hammer lug fully.

Quick Set-Up

Fitting a Battery

Ensure that the eclipseblade Electronic Grip Frame is switched off (see below).

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" hex wrench to remove the three countersunk screws that hold the rubber grip onto the frame (a 2mm hex wrench can also be used). Peel the grip to the right to expose the electronics within the frame.

If present, remove the existing battery by sliding your thumb into the recess below the battery and levering the battery out of the frame. *(figure 3-1)* 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.

Fig 3-1   Fig 3-2

Fit a 9V 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. *(figure 3-2)*

Ensure that all of the wires are within the recess of the frame.

Push the rubber grip back into place and replace the three countersunk screws. Do not over-tighten the screws.

Switching On the eclipseblade

At the rear of the frame are three recessed pushbuttons. Press and hold the centre pushbutton. After one second the Firmware version will be displayed. Release the pushbutton and the game timer will be displayed.

Switching Off the eclipseblade

Press and hold the centre pushbutton for 1 second. The display will read '**OFF?**'. Release the centre pushbutton and re-press it to turn off the eclipseblade Electronic Grip Frame.

Firing the eclipseblade

Pull the trigger to fire the eclipseblade Electronic Grip Frame. The marker will fire and cycle just like a standard marker, however the firing cycle is electronically controlled which means that, once the trigger has been pulled, the entire firing cycle is handled automatically.

Quick Set-Up

Adjusting the Trigger

The Trigger is Factory set and needs no adjustment, however if you want to adjust it the following is a quick guide.

Using the hex wrench supplied with the eclipseblade Electronic Grip Frame, turn each of the three trigger set screws counter clockwise until they no longer protrude from the trigger.

Pull the trigger and note the point at which the marker fires. Turn the set screw that passes through the back of the trigger clockwise to reduce the amount of travel after the firing point. It will help to fire the marker after each small adjustment. Set the travel to your liking.

Again, pull the trigger and note the point at which the marker fires. Turn the setscrew that passes through the top of the trigger, nearest to the end of the trigger, clockwise to reduce the amount of travel before the firing point. It will help to fire the marker after each small adjustment. Again, set the travel to your liking.

Using the Breech Sensor

To switch off the breech sensor, press and hold the top pushbutton for 0.5 seconds. The display will briefly show the message **'EYE OFF'**, indicating that the breech sensor has been disabled.

To switch the breech sensor back on, again press and hold the top pushbutton for 0.5 seconds. The display will briefly show the message **'EYE ON'**, indicating that the breech sensor has been enabled.

Switching On

Pressing and holding the **Select** (middle) pushbutton will switch the frame on. The display will show the firmware version. Keeping a hold of the Select pushbutton will cause the battery level indicator to be displayed. When the pushbutton is released, the display will show the game timer.

Other displays are available, and these displays are accessible through the Main Menu.

The Main Menu

To activate the Main Menu, press and hold the **Select** pushbutton. After one second **OFF?** will be displayed, this is one of the options on the Main Menu, as shown below.

Lower →

OFF?	TIME	SHOT	BATT	EYE	MODE	DIM	BACK
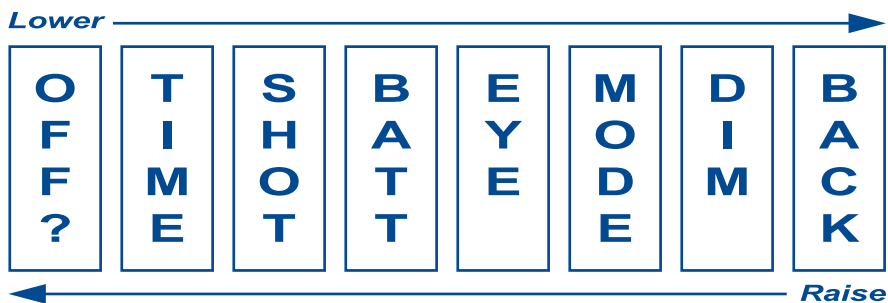
← *Raise*

Press the **Lower** (bottom) pushbutton to scroll down through each of the options on the menu. Once the last option on the menu has been displayed, pressing the **Lower** pushbutton will cause the first option to be displayed.

Press the **Raise** (top) pushbutton to scroll up through each of the options on the menu. Once the first option on the menu has been displayed, pressing the **Raise** pushbutton will cause the last option to be displayed.

Press the **Select** pushbutton to select the displayed option.

Selecting **BACK** will return the display to the display from which the main menu was selected.

The Game Timer

Scroll through the Main Menu until the **TIME** option is displayed and then press **Select**. This will display **SHOW**, the first option on the Timer Menu.
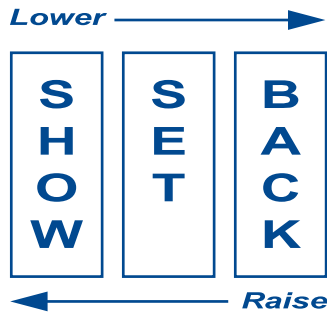
To display the game timer, simply **Select** the **SHOW** option.

To set the game timer, scroll to the **SET** option and then press **Select**.

To return to the Main Menu, scroll to the **BACK** option and press **Select**.

Setting the Game Timer

1
0
1
0

Once the **SET** option has been selected from the Timer Menu, the preset game time will be displayed, the factory setting for which is 10 minutes and 10 seconds.

To increase the preset game time, repeatedly press and release the *Raise* pushbutton. Each time that the pushbutton is pressed, the time will increase by 1 second. To increase the time more rapidly, press and hold the *Raise* pushbutton. The maximum preset game time is 99 minutes and 59 seconds, once this value has been exceeded, the timer will wrap around to 0 minutes and 0 seconds.

To decrease the preset game time, repeatedly press and release the *Lower* pushbutton. Each time that the pushbutton is pressed, the time will decrease by 1 second. To decrease the time more rapidly, press and hold the *Lower* pushbutton. The minimum preset game time is 0 minutes and 0 seconds, once this value has been exceeded, the timer will wrap around to 99 minutes and 59 seconds.

Once you have set the game timer preset to the required time, press the *Select* button to save the value and return to the Timer Menu. The display will briefly display **OK**, indicating that the time has been accepted.

Using the Game Timer

Once the **SHOW** option has been selected, the game timer will be displayed.

To start the game timer, press the *Lower* pushbutton. The timer will start to count backwards, in seconds, towards zero.

To stop the game timer, press and hold the **Lower** pushbutton for 1 second. The timer will pause at whatever time it had counted down to.

To reset the game timer, press and hold the **Lower** pushbutton for 1 second. The timer will return to its preset value. The game timer will also be reset whenever the eclipseblade Electronic Grip Frame is switched off.

The Shot Counter

Scroll through the Main Menu until the **SHOT** option is displayed and then press *Select*. This will display **SHOW**, the first option on the Shot Counter Menu.

Lower ⟶

| **S H O W** | **Z E R O** | **B A C K** |

⟵ *Raise*
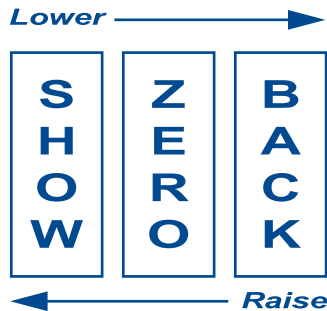
To display the shot counter, simply *Select* the **SHOW** option.

To zero the shot counter, scroll to the **ZERO** option and then press *Select*.

To return to the Main Menu, scroll to the **BACK** option and press *Select*.

Using the Shot Counter

0
5
7
2

Once the **SHOW** option has been selected from the Shot Counter Menu then the shot counter will be displayed.

The shot counter displays a running total of the number of shots fired by the eclipseblade Electronic Grip Frame and will increment every time that the marker is fired.

The display will normally show the 4 lowest digits of the 7 digit counter. To display the highest 3 digits, press the *Lower* pushbutton.

The shot counter has a maximum possible 9,999,999 shots.

The shot count is saved whenever the eclipseblade Electronic Grip Frame is switched off.

Battery Level Indicator

Scroll through the Main Menu until the **BATT** option is displayed and then press *Select*. This will display the battery level indicator.

The indicator shows the current battery level in the form of a vertical bar. The taller the bar, the more charge is in the battery. When the battery charge approaches the minimum operating level, the word **LOW** is displayed indicating that the battery should be changed soon. Once the battery charge falls below the minimum operating level, the word **FLAT** is displayed. You should not continue to use the battery past this point.

The Breech Sensor

The breech sensor is an advanced anti-chop eye. When the breech sensor is on, the software will prevent the breech from closing until a ball is detected in the breech. In this way the eclipseblade Electronic Grip Frame prevents the bolt from closing prematurely and chopping or trapping a paintball.

Scroll through the Main Menu until the **EYE** option is displayed and then press *Select*. This will display **SHOW**, the first option on the Sensor Menu.

Lower ⟶

| SHOW | SET | BACK |

⟵ **Raise**
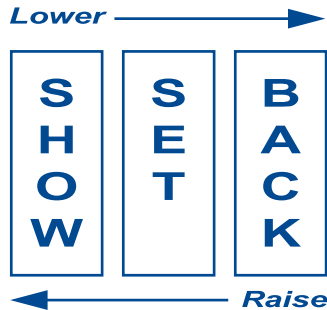
To display the breech sensor reading, simply *Select* the **SHOW** option.

To set the breech sensor sensitivity, scroll to the **SET** option and then press *Select*.

To return to the Main Menu, scroll to the **BACK** option and press *Select*.

The Breech Sensor Reading

008

Once the **SHOW** option has been selected from the Sensor Menu then the breech sensor reading will be displayed.

This sensor reading is a numerical representation of the signal from the breech sensor. This number can be any value between 0 and 255 - the lower this value, the more light is being reflected back to the sensor by an object that is in front of the sensor, such as the bolt or a paintball, and therefore the less sensitive the sensor has to be.

Use this display to determine whether the breech sensor is operating correctly by opening and closing the bolt and observing the display reading swing from almost 255 when the bolt is open to almost 0 when the bolt is closed.

Adjusting the Breech Sensor Sensitivity

050

Once the **SET** option has been selected from the Sensor Menu, the sensitivity level is displayed.

Press and release the *Raise* pushbutton to increment the sensitivity level. Press and hold the *Raise* pushbutton to increase the sensitivity level more rapidly.

Press and release the *Lower* pushbutton to decrement the sensitivity level. Press and hold the *Lower* pushbutton to decrease the sensitivity level more rapidly.

Press *Select* to set the sensitivity level at the displayed level. The display will briefly display **OK**, indicating that the level has been accepted.

Selecting the Operating Mode

Scroll through the Main Menu until the **MODE** option is displayed and then press *Select*. This will display **SEMI**, the first option on the Mode Menu. The eclipseblade Electronic Grip Frame has two modes of operation, Semi Auto mode and Classic Plus mode.

Lower →

| SEMI | CLAS | BACK |

← **Raise**
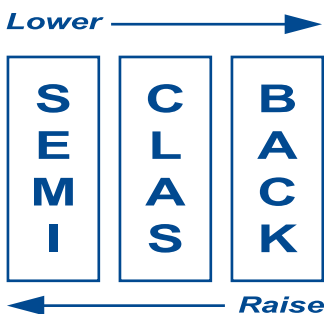
To select the Semi Auto mode of operation, *Select* the **SEMI** option.

To select the Classic Plus mode of operation, scroll to the **CLAS** option and press *Select*.

To return to the Main Menu, scroll to the **BACK** option and press *Select*.

In Semi Auto mode, depressing the trigger will start the firing cycle as follows -

> The sear solenoid is energised, which actuates the sear and causes the hammer to be released.

> The cocking solenoid is energised, which causes the cocking block to retract the bolt and open the breech.

> If the breech sensor is active then the cocking block remains retracted for a preset time (CTO Factory set at 250ms) or until a paintball is detected in the breech. If the breech sensor is inactive then the cocking block will remain retracted for a preset time (CON Factory set at a minimum of 65ms).

> The cocking solenoid is de-energised and the cocking block brings the bolt forward, closing the breech.

In Classic Plus mode, depressing the trigger will again start the firing cycle as follows -

> The sear solenoid is energised, which actuates the sear and causes the hammer to be released.

> The cocking solenoid is energised, which causes the cocking block to retract the bolt and open the breech.

> If the breech sensor is active then the cocking block remains retracted until the trigger is released, and either a ball is detected by the sensor or a preset time has elapsed without a ball being detected (CTO Factory set at 250ms). If the breech sensor is inactive then the cocking block will remain retracted until the trigger is released, provided that the cocking block has been retracted for at least a preset time (CON Factory set at a minimum of 65ms).

The cocking solenoid is de-energised and the cocking block brings the bolt forward, closing the breech.

Classic Plus provides the feel of a classic mechanical marker, but without the possibility of 'short stroking' the trigger.

Setting the Display Brightness

006

Scroll through the Main Menu until the **DIM** option is displayed and then press *Select*. This will display the brightness level.

The number represents the amount of display dimming in the form of a number. The higher the number, the dimmer the display.

Press and release the *Raise* pushbutton to increase the dimming of the display. Once maximum dimming has been achieved, pressing the *Raise* pushbutton again will cause the dimming to go to its minimum setting.

Press and release the *Lower* pushbutton to decrease the dimming of the display. Once minimum dimming has been achieved, pressing and releasing the *Lower* pushbutton again will cause the dimming to go to its maximum setting.

There are 6 levels of brightness and the level should be set to suit the environment in which the marker is being used. Please note that increased brightness will drain the battery more quickly.

Advanced Set-Up

Setting the Trigger

There are three adjustment points on the trigger - the **Front Stop Trigger Screw**, the **Rear Stop Trigger Screw** and the **Return Strength Trigger Screw**.

Start by turning each of the three screws counter-clockwise until they are no longer protruding from the trigger.

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 its firing point and the marker will not work. Turn this screw counter clockwise to increase the amount of trigger travel.

Fig 5-1

The **Rear Stop Trigger Screw** is used to set the amount of trigger 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 trigger travel.

Fig 5-2

Advanced Set-Up

The **Return Strength Trigger Screw** is used to adjust the amount of force with which the trigger is returned to its rest position. Turn the screw clockwise to increase the amount of force. Do not turn this 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.

Fig 5-3

If the maximum return force is required then the trigger set-up can be simplified by removing the **Front Stop Trigger Screw** and using the **Return Strength Trigger Screw** to set the front stop.

The Setup Menu

To activate the Setup Menu, press and hold the **Setup** pushbutton which is located inside the grip, on the circuit board, above the battery. After one second, **TIMG** will be displayed - this is one of the options on the menu, as shown below.

Lower ⟶

| TIMG | FILT | FACT | BACK |
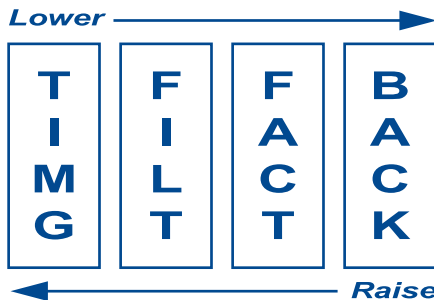
⟵ **Raise**

Advanced Set-Up

Press the **Lower** pushbutton to scroll down through each of the options on the menu. Once the last option on the menu has been displayed, pressing the **Lower** pushbutton will cause the first option to be displayed.

Press the **Raise** pushbutton to scroll up through each of the options on the menu. Once the first option on the menu has been displayed, pressing the **Raise** pushbutton will cause the last option to be displayed.

Press the **Select** pushbutton to select the displayed option.

Selecting **BACK** will return the display to the display from which the Setup Menu was selected.

Timing the eclipseblade

Apart from the setting of the lug, the timing of the eclipseblade Electronic Grip Frame is handled entirely by the electronics.

There are five parameters that have an effect on the timing and these parameters have to be understood in order to correctly set the timing of your marker.

Firstly, we will look at how the eclipseblade Electronic Grip Frame operates when the breech sensor is disabled.
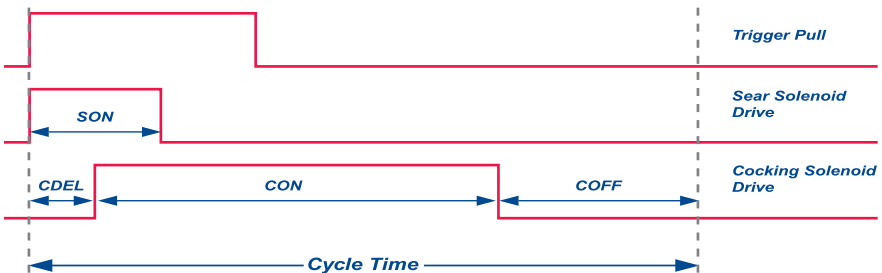
When the trigger is pulled, the sear solenoid is energised immediately, releasing the hammer and causing the marker to fire. The amount of time for which the sear solenoid is energised is known as the **Sear Solenoid On Time (SON)**. This time should be set as short as possible, but has to be long enough in order that the hammer is actually released. On markers with heavy mainsprings or rough lugs this value will be higher than on markers with light mainsprings and smooth lugs.

Some time after the sear solenoid has been energised, the cocking solenoid is energised. The delay between the two solenoids being energised is known as the **Cocking Solenoid On Delay (CDEL)**. This is the time that would be affected by the 3-way on a stock marker and controls the amount of time that is allowed for the hammer to open the valve before the marker starts to re-cock.

Energising the cocking solenoid causes the ram to push back the back block, retracting the bolt and allowing a paintball to drop into the breech. The cocking solenoid has to remain energised long enough for all of this to happen and that time is known as the **Cocking Solenoid On Time (CON)**.

After the cocking solenoid on time has expired, the cocking solenoid is de-energised causing the ram to pull forwards the back block, closing the bolt and cocking the marker. The amount of time that is allowed for the bolt to fully close is known as the **Cocking Solenoid Off Time (COFF)**. Once this time has expired, the cycle is complete and the marker is allowed to fire again on the next trigger pull.

The cycle time is therefore the amount of time from the trigger being pulled to the end of the cocking solenoid off time and is calculated as follows -

Cycle Time = CDEL + CON + COFF

And the maximum rate of fire is calculated as follows -

Max ROF = 1000 / Cycle Time

Timing the eclipseblade Electronic Grip Frame for use with the breech sensor enabled is almost exactly the same as for with the breech sensor disabled. However in this case the **Cocking Solenoid On Time (CON)** is controlled automatically by the breech sensor such that this time is terminated as soon as the sensor detects a paintball in the breech of the marker.
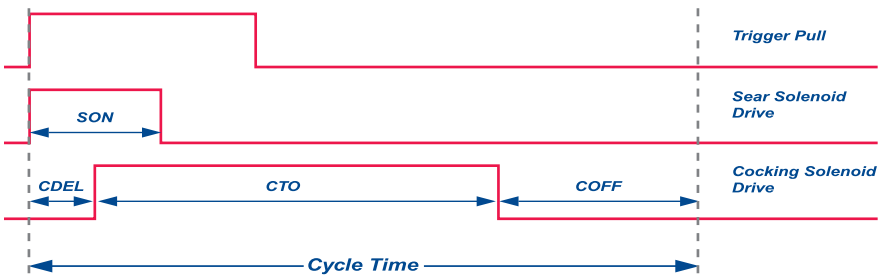
If no paintball is detected within a given time then the cocking solenoid will be disabled. This time is known as the **Cocking Solenoid Time-Out (CTO)**.

With the breech sensor enabled, it is not possible to calculate the maximum rate of fire as this will depend on how fast the paintballs are fed into the breech.

The Timing Menu

Scroll through the Setup Menu until the **TIMG** option is displayed and then press *Select*. This will display **SON**, the first option on the Timing Menu.

Lower

| SON | CDEL | CON | CTO | COFF | BACK |

Raise

Press the *Lower* pushbutton to scroll down through each of the options on the menu. Once the last option on the menu has been displayed, pressing the *Lower* pushbutton will cause the first option to be displayed.

Press the *Raise* pushbutton to scroll up through each of the options on the menu. Once the first option on the menu has been displayed, pressing the *Raise* pushbutton will cause the last option to be displayed.

Press the *Select* pushbutton to select the displayed option.

Selecting **BACK** will return the display to the Setup Menu.

Advanced Set-up

Sear Solenoid On Time (SON)

Scroll through the Timing Menu until the **SON** option is displayed.

004

Press the *Select* pushbutton to display the sear solenoid on time value. The value is specified in milliseconds and is adjustable in 1ms steps.

Press and release the *Raise* pushbutton to increment the on time. Press and hold the *Raise* pushbutton to increase the on time more rapidly.

Press and release the *Lower* pushbutton to decrement the on time. Press and hold the *Lower* pushbutton to decrease the on time more rapidly.

Press *Select* to save the sear solenoid on time and return to the timing menu. **OK** will be displayed briefly to indicate that the value has been accepted.

Cocking Solenoid On Delay (CDEL)

Scroll through the timing menu until the **CDEL** option is displayed.

003

Press the *Select* pushbutton to display the cocking solenoid on delay value. The value is specified in milliseconds and is adjustable in 1ms steps.

Press and release the *Raise* pushbutton to increment the delay value. Press and hold the *Raise* pushbutton to increase the delay value more rapidly.

Press and release the **Lower** pushbutton to decrement the delay value. Press and hold the **Lower** pushbutton to decrease the delay value more rapidly.

Press **Select** to save the cocking solenoid on delay and return to the Timing Menu. **OK** will be displayed briefly to indicate that the value has been accepted.

Cocking Solenoid On Time (CON)

0
6
5

Scroll through the timing menu until the **CON** option is displayed.

Press the **Select** pushbutton to display the cocking solenoid on time value. The value is specified in milliseconds and is adjustable in 1ms steps.

Press and release the **Raise** pushbutton to increment the on time value. Press and hold the **Raise** pushbutton to increase the on time value more rapidly.

Press and release the **Lower** pushbutton to decrement the on time value. Press and hold the **Lower** pushbutton to decrease the on time value more rapidly.

Press **Select** to save the cocking solenoid on time and return to the Timing Menu. **OK** will be displayed briefly to indicate that the value has been accepted.

Advanced Set-Up

Cocking Solenoid Time-Out (CTO)

Scroll through the timing menu until the **CTO** option is displayed.

250

Press the *Select* pushbutton to display the cocking solenoid time-out value. The value is specified in milliseconds and is adjustable in 1ms steps.

Press and release the *Raise* pushbutton to increment the time-out. Press and hold the *Raise* pushbutton to increase the time-out more rapidly.

Press and release the *Lower* pushbutton to decrement the time-out. Press and hold the *Lower* pushbutton to decrease the time-out more rapidly.

Press *Select* to save the cocking solenoid time-out and return to the Timing Menu. **OK** will be displayed briefly to indicate that the value has been accepted.

Cocking Solenoid Off Time (COFF)

Scroll through the timing menu until the **COFF** option is displayed.

028

Press the *Select* pushbutton to display the cocking solenoid off time value. The value is specified in milliseconds and is adjustable in 1ms steps.

Press and release the *Raise* pushbutton to increment the off time. Press and hold the *Raise* pushbutton to increase the off time more rapidly.

Press and release the *Lower* pushbutton to decrement the off time. Press and hold the *Lower* pushbutton to decrease the off time more rapidly.

Press **Select** to save the cocking solenoid off time and return to the Timing Menu. **OK** will be displayed briefly to indicate that the value has been accepted.

The Filter Menu

Scroll through the Setup Menu until the **FILT** option is displayed and then press *Select*. This will display **BALD**, the first option on the Filter Menu.
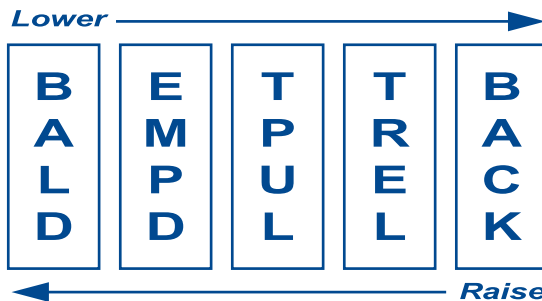
Press the **Lower** pushbutton to scroll down through each of the options on the menu. Once the last option on the menu has been displayed, pressing the **Lower** pushbutton will cause the first option to be displayed.

Press the **Raise** pushbutton to scroll up through each of the options on the menu. Once the first option on the menu has been displayed, pressing the **Raise** pushbutton will cause the last option to be displayed.

Press the **Select** pushbutton to select the displayed option.

Selecting **BACK** will return the display to the Setup Menu.

Advanced Set-Up

Using the Breech Sensor Filter

During the firing cycle, the breech sensor looks first for an empty breech and then for a paintball within the breech. Only when the sensor has detected both conditions will it allow the bolt to close. The breech sensor software filter allows you to fine tune the operation of the breech sensor by allowing you specify how long the sensor has to see 'empty' for and how long it has to see a ball for.

Setting the Ball Detection Time

004

Scroll through the Timing Menu until the **BALD** option is displayed.

Press the **Select** pushbutton to display the ball detection time value. The value is specified in milliseconds and is adjustable in 1ms steps.

Press and release the **Raise** pushbutton to increment the detection time. Press and hold the **Raise** pushbutton to increase the detection time more rapidly.

Press and release the **Lower** pushbutton to decrement the detection time. Press and hold the **Lower** pushbutton to decrease the detection time more rapidly.

Press **Select** to save the ball detection time and return to the Filter Menu. **OK** will be displayed briefly to indicate that the value has been accepted.

Setting the Empty Breech Detection Time

Scroll through the Timing Menu until the **EMPD** option is displayed.

Press the *Select* pushbutton to display the empty breech detection time value. The value is specified in milliseconds and is adjustable in 1ms steps.

Press and release the *Raise* pushbutton to increment the detection time. Press and hold the *Raise* pushbutton to increase the detection time more rapidly.

0
0
4

Press and release the *Lower* pushbutton to decrement the detection time. Press and hold the *Lower* pushbutton to decrease the detection time more rapidly.

Press *Select* to save the empty breech detection time and return to the Filter Menu. **OK** will be displayed briefly to indicate that the value has been accepted.

Using the Trigger Filter

The trigger has to be pulled for a specified time in order for that trigger pull to be accepted as a valid trigger pull. The marker cannot be fired until it has had a valid trigger pull.

The trigger then has to be released for a specified time in order for that release to be accepted as a valid trigger release. The marker cannot be fired again until it has first had a valid trigger release (followed, of course, by another valid trigger pull).

The trigger software filter allows you to fine tune the operation of the trigger by allowing you specify how long the trigger has to be pulled for and how long it has to be released for. This filter allows you to make the trigger more or less 'bouncy'.

Advanced Set-Up

Setting the Trigger Pull Time

Scroll through the Timing Menu until the **TPUL** option is displayed.

040

Press the **Select** pushbutton to display the trigger pull time value. The value is specified in milliseconds and is adjustable in 1ms steps.

Press and release the **Raise** pushbutton to increment the pull time. Press and hold the **Raise** pushbutton to increase the pull time more rapidly.

Press and release the **Lower** pushbutton to decrement the pull time. Press and hold the **Lower** pushbutton to decrease the pull time more rapidly.

Press **Select** to save the trigger pull time and return to the Filter Menu. **OK** will be displayed briefly to indicate that the value has been accepted.

Increasing this value reduces 'bounce'. Reducing this value increases 'bounce'.

Setting the Trigger Release Time

040

Scroll through the Timing Menu until the **TREL** option is displayed.

Press the **Select** pushbutton to display the trigger release time value. The value is specified in milliseconds and is adjustable in 1ms steps.

Press and release the **Raise** pushbutton to increment the release time. Press and hold the **Raise** pushbutton to increase the release time more rapidly.

Press and release the *Lower* pushbutton to decrement the release time. Press and hold the *Lower* pushbutton to decrease the release time more rapidly.

Press *Select* to save the trigger release time and return to the Filter Menu. **OK** will be displayed briefly to indicate that the value has been accepted.

Increasing this value reduces 'bounce'. Reducing this value increases 'bounce'.

Factory Settings Menu

Scroll through the Setup Menu until the **FACT** option is displayed and then press *Select*. This will display **PR S**, the first option on the Filter Menu.
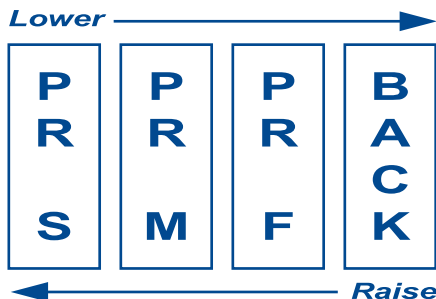
Lower →

| P R S | P R M | P R F | B A C K |

Raise ←

Press the *Lower* pushbutton to scroll down through each of the options on the menu. Once the last option on the menu has been displayed, pressing the *Lower* pushbutton will cause the first option to be displayed.

Press the **Raise** pushbutton to scroll up through each of the options on the menu. Once the first option on the menu has been displayed, pressing the **Raise** pushbutton will cause the last option to be displayed.

Press the **Select** pushbutton to select the displayed option.

Selecting **BACK** will return the display to the Setup Menu.

Selecting a Factory Setting

The eclipseblade Electronic Grip Frame has three sets of factory settings, designed for slow markers (**PR S**), medium markers (**PR M**) and fast markers (**PR F**).

These factory settings cover all of the parameters previously discussed and provide a good starting point for setting up the eclipseblade Electronic Grip Frame for optimal performance. These factory settings also provide a safety net, allowing you to restore the eclipseblade to a known condition when you've screwed it up and have no idea why!

Select whichever option is most appropriate for the marker. **OK** will be briefly displayed, indicating that the setting has been accepted.

If you are unsure then start with the slowest option, **PR S**, and work your way up.

Display / Menu Tree

Main Menu

OFF?		Turn the eclipseblade Off
TIME		Go to the Timer Menu
	SHOW	Show the Game Timer
	SET	Set the Game Timer Preset
	BACK	Return to the Main Menu
SHOT		Go to the Shot Counter Menu
	SHOW	Show the Shot Counter
	ZERO	Zero the Shot Counter
	BACK	Return to the Main Menu
BATT		Show the Battery Level Indicator
EYE		Go to the Sensor Menu
	SHOW	Show the Breech Sensor Reading
	SET	Set the Breech Sensor Sensitivity
	BACK	Return to the Main Menu
MODE		Go to the Mode Menu
	SEMI	Set Semi-Auto Mode of Fire
	CLAS	Set Classic Plus Mode of Fire
	BACK	Return to the Main Menu
DIM		Set the Display Brightness
BACK		Return to the Regular Display Mode

Setup Menu

TIMG		Select the Timing Menu
	SON	Set the Sear Solenoid On Time
	CDEL	Set the Cocking Solenoid On Delay
	CON	Set the Cocking Solenoid On Time
	CTO	Set the Cocking Solenoid Timeout
	COFF	Set the Cocking Solenoid Off Time
	BACK	Return to the Setup Menu
FILT		Select the Filter Menu
	BALD	Set the Ball Detection Time
	EMPD	Set the Empty Breech Detection Time
	TPUL	Set the Trigger Pull Time
	TREL	Set the Trigger Release Time
	BACK	Return to the Setup Menu
FACT		Select the Factory Settings Menu
	PR S	Set the Factory Presets for a Slow Marker
	PR M	Set the Factory Presets for a Medium Marker
	PR F	Set the Factory Presets for a Fast Marker
	BACK	Return to the Setup Menu
QUIT		Return to the Regular Display Mode

Maintenance

Cleaning the Breech Sensor...

De-gas your marker and remove the barrel and loader to make it easier to work on. Undo the retaining screw on the breech sensor cover using a 1/16th inch Allen key. (see fig.6-1)

Fig 6-1

Fig 6-2

Gently lift the breech sensor cover to expose the back of the breech sensor.

(see fig.6-2)

... Cleaning the Breech Sensor

Using a dry Q-tip, carefully remove any debris, paint or moisture from the back of the breech sensor unit and from inside the breech sensor cover.

(see fig.6-3)
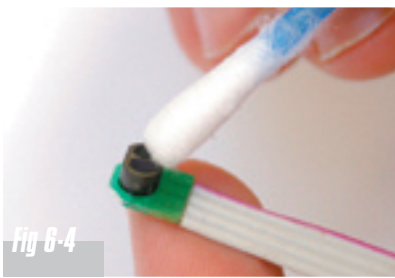
Fig 6-3   Fig 6-4

Carefully ease the breech sensor out of the cocker body and using another dry Q-tip, remove any grease or debris from the front of the unit. (see fig.6-4)

Replace the breech sensor in the cocker body and replace the breech sensor cover. Using a 1/6th Allen key, replace the retaining screw to hold the breech sensor cover in place. Be careful not to cross-thread the screw. Do not overtighten the screw.

You have now cleaned your breech sensor.

Maintenance

Cleaning the Cocking Solenoid...

De-gas your marker and remove the screws that hold down the right hand side of the grip cover onto the e-Blade frame, using a 5/64th inch Allen key. (see fig.7-1)

Fig 7-1
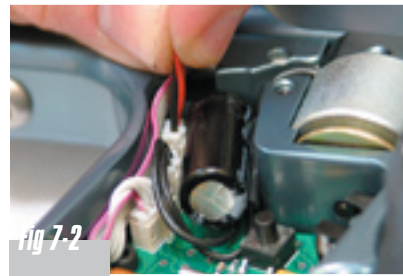
Fig 7-2

Carefully unplug the cocking solenoid lead connector from the top port on the PCB. (see fig.7-2)

...Cleaning the Cocking Solenoid

Remove the two grip frame screws using a 1/8th inch Allen key and carefully free the cocking solenoid leads from the groove in the top of the grip frame.

(see fig.7-3)

Fig 7-3   Fig 7-4

On the underside of the cocking solenoid manifold, you will see that there are two screws holding the solenoid into the manifold. (see fig.7-4)

Maintenance

...Cleaning the Cocking Solenoid

Using the correct size Philips head screwdriver, carefully remove these two screws so that the cocking solenoid is no longer held in place. (see fig.7-5)

Fig 7-5

Fig 7-6

Carefully lift the cocking solenoid from it's manifold, taking care to pass the lead and connector safely through the hole in the semi block that the cocking solenoid manifold screws into. (see fig.7-6)

Maintenance

...Cleaning the Cocking Solenoid

Remove the solenoid gasket from the bottom of the cocking solenoid and make sure that it is thoroughly clean and free of any debris. (see fig.7-7)

Fig 7-7

Fig 7-8
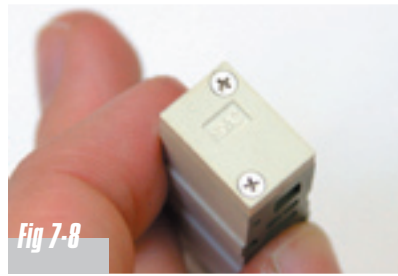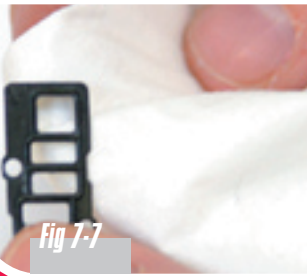
Holding the cocking solenoid with the smallest end facing you, use a small Philips head screwdriver to remove the end cap. If you are in doubt which end this is, there is a small "A" printed on the top of the solenoid. One end of the spool will now be exposed. (see fig.7-8)

Maintenance

...Cleaning the Cocking Solenoid

Turn the cocking solenoid around so that the grey end (a small "B" is printed on the top of the solenoid as well) is now facing you, use a small Philips head screwdriver to remove the end cap. (see fig.7-9)

Fig 7-9

Fig 7-10

Another set of screws is now exposed. Remove these to expose the other end of the spool. (see fig.7-10)

...Cleaning the Cocking Solenoid

Using a small tool carefully push the spool out of the solenoid body.

(see fig.7-11)
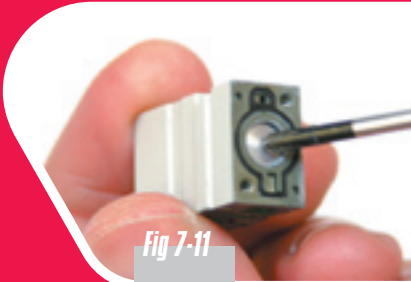
Fig 7-11   Fig 7-12

Carefully inspect each of the spool o-rings to check that they are not damaged and lubricate well with Molycote Dow 33. If any of the spool o-rings are damaged please contact us and we will advise you on how best to proceed. (see fig.7-12)

...Cleaning the Cocking Solenoid

Replace the spool into the solenoid body and reattach the small end cap onto the end marked "A", making sure that the notch in the end cap is at the bottom and that the SMC marked on the end cap reads the right way up when it is attached. (see fig.7-14)

Fig 7-14   Fig 7-15

Re-attach the middle section to the end of the solenoid marked with a "B" and then reattach the grey end cap to the exposed end of the middle section that you have just attached. (see fig.7-15)

Maintenance

...Cleaning the Cocking Solenoid

Turn the solenoid upside down and apply a small amount of Molycote Dow 33 to where the solenoid gasket will sit. correctly and that it lines up with the holes at the bottom of the solenoid. (see fig.7-16)

Fig 7-16

Fig 7-17

X

Replace the solenoid gasket making sure that it is sitting is correct,

(see fig.7-17) for correct and in-correct replacements.

Maintenance

...Cleaning the Cocking Solenoid

Carefully feed the cocking solenoid leads through the hole in the manifold so that the cocking solenoid sits comfortably in the manifold. (see fig.7-18)

Fig 7-18

Fig 7-19

Replace the solenoid retaining screws and tighten snugly so that the gasket seals the solenoid into the manifold. (see fig.7-19)

Carefully reposition the cocking solenoid leads and breech sensor and cover into their designated places at the top of the frame before tightening the frame screws and attaching your e-Blade frame back onto your cocker.

Plug your cocking solenoid connector into the top port of the PCB, and reattach the grip cover screws.

You have now cleaned your cocking solenoid.

Maintenance

Lubricating the Sear...

De-gas your marker and remove the barrel and loader to make it easier to work on. Undo the retaining screw on the breech sensor cover using a 1/16th inch Allen key, and lift the breech sensor and cover clear of the marker body. (see fig.8-1)
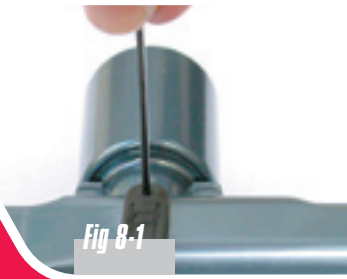
Fig 8-1

Fig 8-2

Remove the two grip frame screws using a 1/8th inch Allen key and carefully free the frame from the body, exposing the sear. (see fig.8-2)

Maintenance

...Lubricating the Sear

Using Wurth HHS 2000, highly adhesive, pressure resistant, synthetic grease, spray a light coating onto the polished rear face of the sear. Blow onto the HHS 2000 to dry it onto the sear and repeat the process so that a second coat is applied (NOTE: Wurth HHS 2000 is the recommended lubricant, but any highly adhesive, pressure resistant lubricant should work).

(see fig.8-3 and 8-4)

Fig 8-3   Fig 8-4

Reattach the grip frame to the marker, taking care not to damage the breech sensor or the cocking solenoid leads. Attach the two grip frame screws and the breech sensor cover screw.

You have now lubricated your sear.

Maintenance

Checking and Setting Sear Solenoid Plunger travel...

De-gas your marker and remove the barrel and loader to make it easier to work on. Using a 5/64th inch Allen key, remove the screws that hold down the right hand side of the grip cover onto the e-Blade frame. Carefully peel back the rubber grip cover and hold it to one side. (see fig.9-1)

Fig 9-1   Fig 9-2

Using a pair of digital callipers, measure the distance in millimetres, between the base of the sear solenoid and the top of the plunger. The optimum distance should be 1.45mm (0.0575")(+/- 0.05mm/0.0020").

(see fig.9-2)

If your sear solenoid plunger travel is between 1.40mm(0.0555") and 1.50mm(0.0595"), then replace the grip cover and reattach the three grip screws that hold it in place.

B-14

Maintenance

...Checking and Setting Sear Solenoid Plunger travel

If your sear solenoid plunger travel is not within the suggested range, turn the marker over and remove the remaining three screws that attach the left hand side of the grip cover to the frame. Also unplug the cocking solenoid connector from the top port of the PCB at this time. (see fig.9-3)

Fig 9-3   Fig 9-4
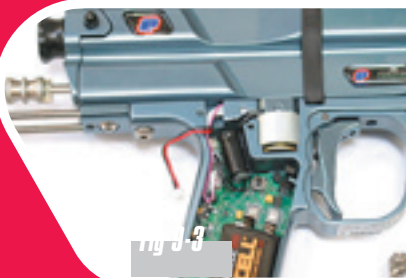
Remove the two grip frame screws using a 1/8th inch Allen key, the breech sensor cover screw using a 1/16th inch Allen key, and lift the breech sensor and cover away from the marker body, unplugging the breech sensor connector from it's port on the PCB at this time. Remove the sear solenoid retainer to allow easy access to the sear and sear solenoid. (see fig.9-4)

...Checking and Setting Sear Solenoid Plunger travel

Using a 1/16th Allen key loosen the sear pin retaining screw in the top of the frame, so that the sear pin can be removed and the sear and sear spring can be removed from the grip frame. (see fig.9-5)

Fig 9-5   Fig 9-6

Using a 1/16th Allen key loosen the two screws either side of the sear solenoid that hold it in place. Loosen them enough so that the sear solenoid can be removed easily without any damage. (see fig.9-6)

Maintenance

...Checking and Setting Sear Solenoid Plunger travel

By gripping the sear solenoid at the bottom of the plunger, lift it free from the grip frame, ensuring that the lead is not damaged, exposing the set- screw that determines the length of the sear solenoid plunger travel. (see fig.9-7)
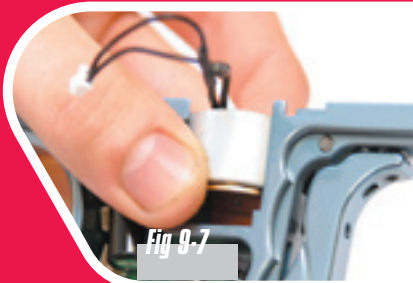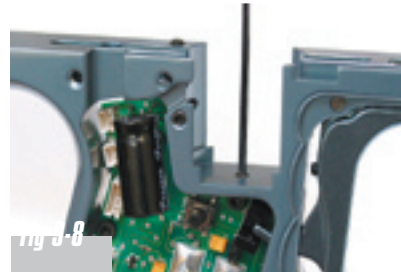
Fig 9-7   Fig 9-8

Using a long handled 1/16th inch Allen key adjust this set-screw as required. If your plunger travel is too low you will have to wind the set screw in further, if your plunger travel is too high then the set screw will have to be raised until you achieve the correct setting. Make sure that the grub screw is tight. If it is easy to turn you will need to Loctite the screw in place to stop it moving during use. (see fig.9-8)

...Checking and Setting Sear Solenoid Plunger travel

When adjusting the set-screw, make sure that you re-check the plunger travel before re-assembling sear solenoid and hold t whilst measuring the p distance to make sure rate. Repeat until the is achieved. (see fig.9

Reassemble the grip fra that no parts are left out a leads are pinched when at frame to the marker body. R the grip cover.

Fig 9-9
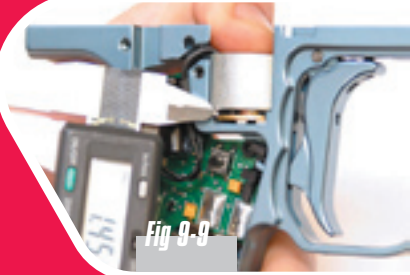
You have now checked and altered (if necessary) your sear solenoid plunger travel.

Fault Finding

The following tables details some of the more common problems that may be encountered with the eclipseblade Electronic Grip Frame.

Symptom	Possible Cause	Solution
Although a fresh battery has been fitted, the eclipseblade will not switch on.	The battery has been fitted incorrectly.	Fit the battery correctly with the positive terminal nearest to the side of the frame.
	The battery terminals are not making proper contact with the battery.	Remove the battery, gently bend the terminals towards where the battery will sit and then replace the battery.
The battery does not seem to last very long.	The battery type is of a low quality.	Use an alkaline or metal hydride battery. Do not use a low quality or rechargeable battery.
	The eclipseblade uses a small amount of charge when the gun is switched off.	If you do not plan to use your marker for a while then remove the battery.
	If the brightness of the display is turned up high then the battery will drain more quickly than if the brightness is set lower.	Turn the brightness of the display down.
	If the hammer release is stiff then the sear solenoid will need more power to	Polish hammer lug. Lubricate Back of sear (see page maintenance section).
The marker is shooting slowly.	The timing parameters have been altered.	Check and adjust the timing parameters as required. If in doubt, reset to factory settings.

Symptom	Possible Cause	Solution
The marker will not shoot, or shoots intermittently.	The trigger has been incorrectly set.	Adjust the trigger stops.
	If the grips are off then bright light can interfere with the trigger sensor.	Replace the grips or shade the trigger sensor.
The marker is cocking, but not firing.	One of the sear solenoid wires is broken.	Repair the broken wire.
	The cocking lug has been over extended.	Back off the cocking lug by turning it counter-clockwise.
	There is excessive friction between the timing lug and the sear.	Reduce the main spring tension.
		Polish and oil the lug. Oil the sear.
The marker is cocking but not firing when shooting quickly.	The battery is getting low on charge. There is excess friction between the sear and hammer lug	Replace the battery. Polish hammer lug. Lubricate Back of sear.(see maintenance)
Two or more balls are being fed into the breech.	The ball detente is broken or jammed.	Change the ball detente spring or finger.
	If the eBlade is running in Classic Plus mode with a Halo loader, it is possible that the loader is forcing balls past the ball detente.	

Fault Finding

Symptom	Possible Cause	Solution
The marker is chopping or trapping paint.	The breech sensor is switched off.	Switch on the breech sensor.
		Increase the breech open time.
	The bolt is dirty, causing the breech sensor to incorrectly detect a retracted bolt.	Clean the bolt.
		Increase the breech empty detection time (EMPD).
	The breech sensor is dirty causing the incorrect detection of paintballs.	Clean the breech sensor.
	The sensitivity of the breech sensor has not been set correctly for the paint or bolt being used.	Adjust the sensitivity of the breech sensor.
	The loader is feeding too slowly, causing balls to bounce in the breech.	Ensure that the loader is working properly and that the loader batteries are okay.
		Decrease the ball detection time (BALD).
		Use a faster loader.
		Shoot slower!

Fault Finding

Symptom	Possible Cause	Solution
The cocking solenoid is leaking	Is it leaking from the Barbs?	Check Hoses for cuts.
		Remove barbs, clean threads and Loctite the barbs back in place. DO NOT OVER TIGHTEN THE BARBS.
	Is it leaking from inside the solenoid manifold?	Check Low Pressure Regulator (LPR) pressure first. This should not exceed 90 psi.
		Check solenoid retaining screws first (see Maintenance section)
		If leak persists, fully strip, clean and lubricate the solenoid and gasket (see maintenance section)
My trigger is very "Bouncy", how can I reduce it?	Increase the trigger filter settings.	Increase the settings up to TPUL = 10, TREL = 35-40
	Reduce LPR pressure	Reduce the LPR pressure down to its minimum level to reduce the kick of the gun.
	Reduce the mass of the bolt system	Reducing the mass of the bolt, back-block and pump rod will reduce the kick of the gun and reduce trigger bounce.
How can I get the best performance out of my gun?	Check your setup	Using a force-fed loader (Halo B VL eVLution II) with the breech sensor installed will give the highest performance gains.
		Use a quick ram and light bolt to increase the cycle speed of the bolt system.

Drilling Template

50% of actual size

CENTRE

CUT ALONG THIS LINE

2.3mm Drill
Followed By
4-40 UNC

CENTRE

⌀5.1000

⌀4.1000

CUT ALONG THIS LINE

eclipseblade™

actual size

2.3mm Drill
Followed By
4-40 UNC

CENTRE

Ø4

CUT ALONG THIS LINE

CENTRE

CUT ALONG THIS LINE

5.1000

.1000