



# EGGQ



**OPERATORS  
MANUAL**

# ⚠️ WARNING /

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

- The Eclipse Ego9 is not a toy.
- Careless or improper use, including failure to follow instructions and warnings within this User Manual and attached to the Ego9 could cause death or serious injury.
- Do not remove or deface any warnings attached to the Ego9.
- 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.
- Persons under 18 years of age must have adult supervision when using or handling the Ego9.
- Observe all local and national laws, regulations and guidelines.
- Use only professional paintball fields where codes of safety are strictly enforced.
- Use compressed air/nitrogen only. Do not use CO<sub>2</sub>.
- Always follow instructions, warnings and guidelines given with any first stage regulator you use with the Ego9.
- Use 0.68 calibre paintballs only.
- Keep the Ego9 switched off until ready to shoot.
- Treat every marker as if it is loaded.
- Never point the Ego9 at anything you do not intend to shoot.
- Do not shoot at persons at close range.
- Always measure your markers velocity before playing paintball, using a suitable chronograph.
- Never shoot at velocities in excess of 300 feet (91.44 meters) per second, or at velocities greater than local or national laws allow.
- Do not fire the Ego9 without the bolt in the breech, as high-pressure gas will be emitted.
- Do not fire the Ego9 without the bolt pin locked securely in place.
- Never look into the barrel or breech area of the Ego9 whilst the marker is switched on and able to fire.
- Never put your finger or any foreign objects into the paintball feed tube of the Ego9.
- Never allow pressurised gas to come into contact with any part of your body.
- Always switch off the Ego9 when not in use.
- Always fit a barrel-blocking device to the Ego9 when not in use on the field of play.
- Always remove all paintballs from the Ego9 when not in use on the field of play.

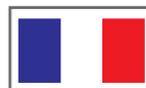
# ⚠️ WARNING /

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

- Always remove the first stage regulator and relieve all residual gas pressure from the Ego9 before disassembly.
- Always remove the first stage regulator and relieve all residual gas pressure from the Ego9 for transport and storage.
- Always follow guidelines given with your first stage regulator for safe transportation and storage..
- Always store the Ego9 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 mode d'emploi, demandez conseil à un expert.



**ESTE MANUAL DE USUARIOS (OPERARIOS) USARIOS 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 unsicher sein. Oder den Inhalte dieses Heftes nicht verstehen, lassen Sie sich bitte von einem 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 PAGE 78-79)**

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**NOTE:** THE BORE SIZE OF YOUR SHAFT 3 MAY VARY ACCORDING TO THE MODEL OF EGO9 YOU HAVE.

Your Eclipse Ego9 comes as standard with an Eclipse Shaft 3 barrel.

The barrel screws into the body of the Ego9 using a right hand thread meaning that if you hold the Ego9 pointing away from you the barrel screws into the body in a counter-clockwise direction.

The barrel comprises of two parts, a barrel back **A** and a barrel front **B**. The two parts are joined together with a left hand thread meaning that if you hold the barrel, with the back nearest you, the front unscrews in a counter-clockwise direction. The bore size of the barrel back is engraved at the end of the barrel back **C**.

On the barrel back there is a 016 NBR 70 o-ring **D** which prevents the barrel from vibrating loose from the Ego9 body when the marker is fired. There is also a 015 NBR 70 o-ring on the barrel front **E** helps with alignment when the two sections are screwed together.

Replace and lubricate these o-rings with Eclipse Grease as necessary.



**NOTE:** THE EGO9 WILL ONLY ACCEPT COCKER THREADED BARRELS. DO NOT USE ANY OTHER TYPE OF BARREL THREAD.



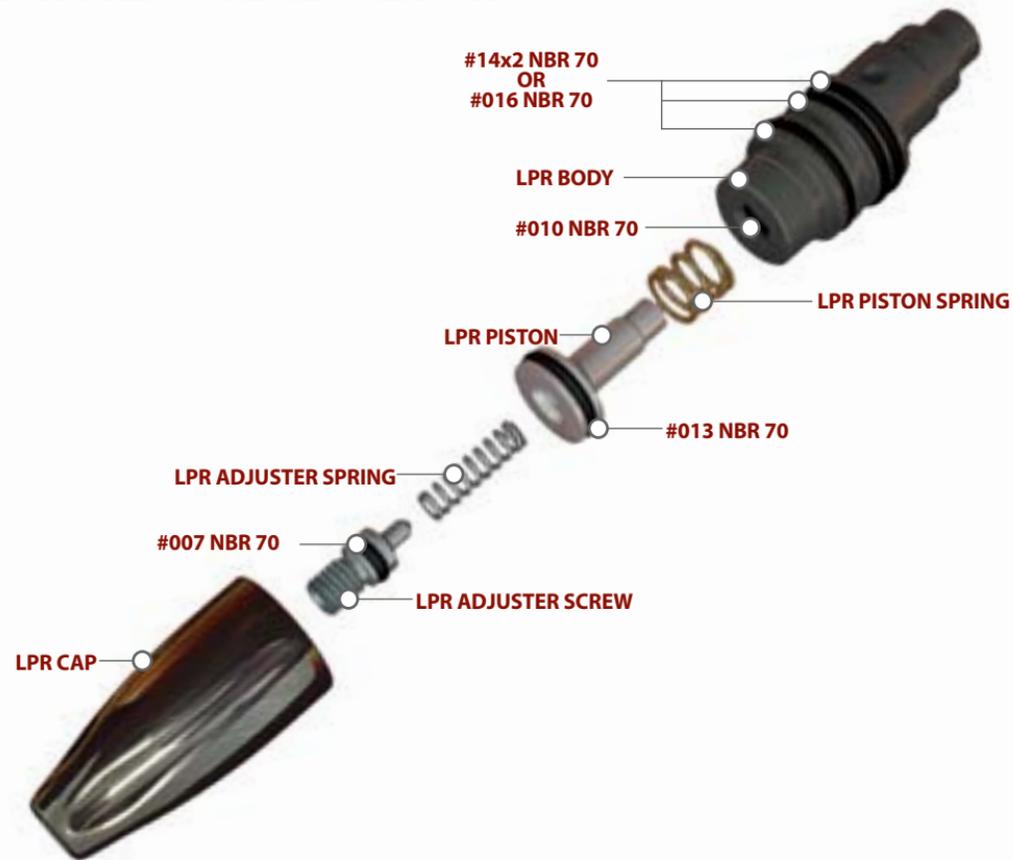
## INLINE REGULATOR



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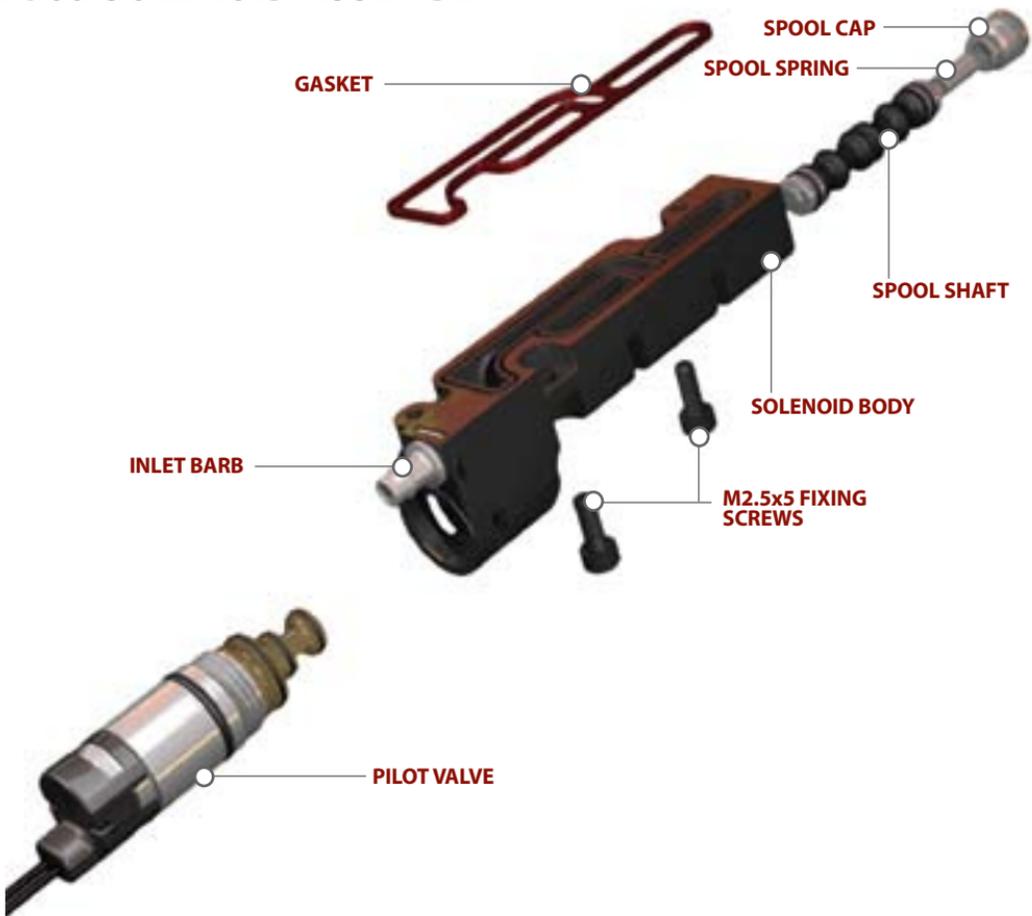
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# EGO9 SOLENOID ASSEMBLY



# OPERATIONAL OVERVIEW

Below is a brief overview of what happens during the Ego9 firing cycle. The location of parts discussed in the text below can be found on page 80-81.

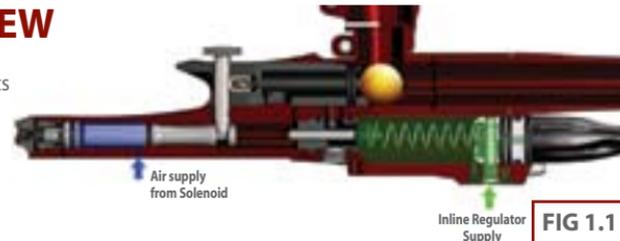
Assuming the Ego9 is gassed up and turned on **FIGURE 1.1** shows the marker in its idle position. The Rammer is held in its rear position with pressurised air from the LPR directed through the Solenoid to the front of the rammer. The Valve Chamber is full of pressurised air from the Inline Regulator.

Providing a ball is in the breach and the trigger is pulled, a signal is sent to the Solenoid which redirects the supply of air from the front of the Rammer to the rear, which pushes the Rammer and Bolt forward toward the Valve (**FIGURE 1.2**). As this happens the air in front of the rammer is vented out through an exhaust port in the Solenoid Manifold.

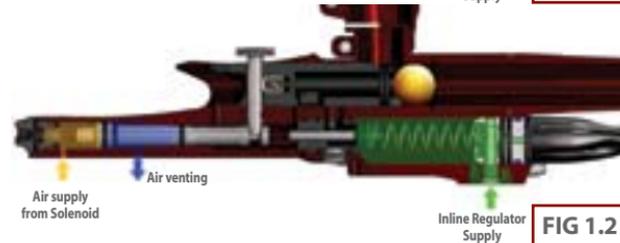
The Rammer makes contact with the Valve Stem and continues to be pushed forward, now pushing the Valve forward with it. This breaks the Valve seal allowing pressurised air to flow up through the Valve and into the Bolt and vent down the barrel, propelling a ball. (**FIGURE 1.3**)

The time that the Rammer is held in this forward position is dependant on the Dwell parameter. The longer the Dwell the longer the Ego9 vents gas down the barrel. When this Dwell time has elapsed, the Solenoid redirects the supply of air from the back of the Rammer to the front, pushing the Rammer and Bolt back to the rear position. This loss of forward force allows the Valve to re-seal and the Valve Chamber is re-pressurised. As the rammer moves back air behind it is vented through an exhaust port in the Solenoid Manifold (**FIGURE 1.4**).

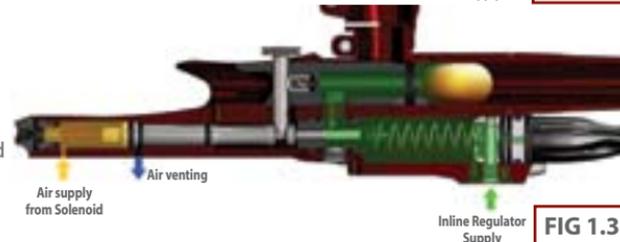
The Ego9 has now completed one cycle and is ready to fire again.



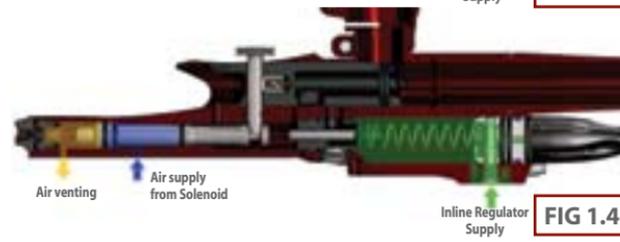
**FIG 1.1**



**FIG 1.2**



**FIG 1.3**



**FIG 1.4**

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## THE EGO9 NAVIGATION CONSOLE

At the rear of the Ego9 grip frame you will find the Navigation Console (FIGURE 1.5).

The Navigation Console is used for:

- > **TURNING THE EGO9 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 EGO9 BBSS ON AND OFF USING THE  BUTTON**
- > **RESETTING RECORDED VALUES USING THE  BUTTON**
- > **CONTROLLING THE GAME TIMER WITH THE  BUTTON**



## INSTALLING A 9V BATTERY

Ensure that the Ego9 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 wrench 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 micro-switch 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.



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## SWITCHING ON THE EGO9

To switch on the Ego9 press the button twice in quick succession, referred to elsewhere in this manual as 'double-clicking'. The Ego9 can also be switched on by pushing and holding the button (FIGURE 3.1).

## SWITCHING OFF THE EGO9

Press and hold the button until the display shows OFF?. Release the button and re-press it to turn off the Ego9. Alternatively when the display reads OFF?, you can pull the trigger once to turn off the Ego9.

## FIRING THE EGO9

Pull the trigger to fire the Ego9. The entire firing sequence is controlled electronically by the Ego9 circuit board, enabling any user to easily achieve high rates of fire.

## THE EGO9 CIRCUIT BOARD

There are three sockets on the Ego9 Circuit board two of which are occupied by the BBSS Connector (A) and the Ego9 Solenoid Connector (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 (SEE FIGURE 3.2).

**NOTE:** ON POWER UP THE EGO 9 CHECKS TO SEE IF ANY COMPATIBLE THIRD PARTY PRODUCTS ARE CONNECTED TO THE AUXILIARY SOCKET AND IF ANY ARE FOUND AUTOMATICALLY ENABLES THE AUXILIARY PORT.



FIG 3.1

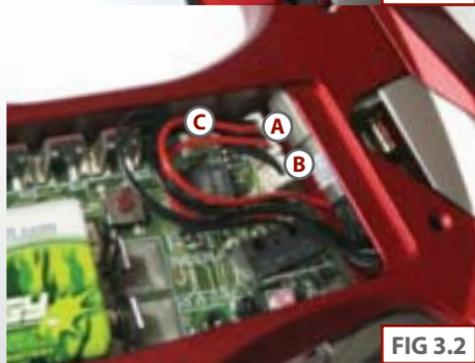


FIG 3.2

## USING THE BREAK BEAM SENSOR SYSTEM

The Break Beam Sensor System is used to detect when a paintball is ready to fire from the Ego9. If no paintball is ready then the BBSS will inhibit the Ego9 from firing. This prevents the Ego9 from 'chopping' paintballs that are not fully loaded into the marker.

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 right 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 if 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 Ego9's Break Beam Sensor System are covered in full on page 24 of this user manual.

**NOTE:** WHEN THE EGO9 IS TURNED ON, THE BREAK BEAM SENSOR SYSTEM IS AUTOMATICALLY ENABLED.

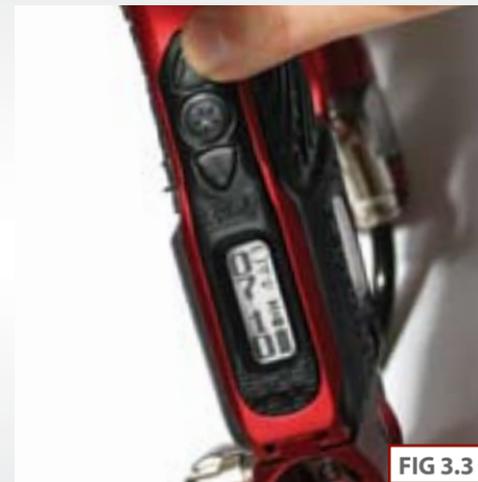


FIG 3.3

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## SETTING UP

Before you can begin to use your Ego9, you will need to attach an air system and a paintball loader.

**NOTE:** THE EGO9 CANNOT BE USED WITH CO2, IT CAN ONLY BE POWERED BY COMPRESSED AIR OR NITROGEN.

### INSTALLING A PRESET AIR SYSTEM

Every Ego9 comes complete with an Eclipse On/Off Purge System (OOPS) which provides a direct connection for a preset air system. Before screwing the air system into the OOPS ensure that the On/Off knob is wound out approximately half way (SEE FIGURE 4.1).

Be careful not to unscrew the On/Off knob too far as it will come completely off the OOPS. If this happens, replace the On/Off knob by screwing it back onto the OOPS body in a clockwise direction.

Screw the preset air system into the OOPS (SEE FIGURE 4.2) so that the bottle screws in all the way and is tight. Slowly turn the On/Off knob in a clockwise direction allowing the OOPS to depress the pin of the preset air system causing the Ego9 to become pressurised, providing that there is sufficient air in your tank (SEE FIGURE 4.3).

You have now installed a preset air system onto your Ego9.

**⚠ WARNING** //////////////////////////////////////  
**WARNING: ALWAYS RELIEVE ALL RESIDUAL GAS PRESSURE FROM THE EGO9 BEFORE UNSCREWING THE PRESET AIR SYSTEM.**



FIG 4.1

FIG 4.2

FIG 4.3

## T-SLOT MOUNTING SYSTEM

The Ego9 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).

T-SLOT MOUNT



## 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.**

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## SETTING THE TRIGGER

The Ego9 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 52).

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

As standard each Ego9 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 6.1).

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 6.2).

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 6.3).



FIG 6.1



FIG 6.2



FIG 6.3

## (CONTINUED)

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 6.4).

The **Spring Return Strength Screw** can only be adjusted by first removing the frame from the marker body, as per the instructions in the Maintenance section on page 63. The Spring Return Strength Screw is used to adjust the spring strength that returns the trigger to its resting position. Turn the screw clockwise to increase the amount of spring return strength in the trigger pull. Turn this screw counter clockwise to reduce the amount of spring return strength in the trigger pull. Do not turn the screw too far counter clockwise or there will not be enough force to return the trigger consistently (SEE FIGURE 6.5).

When setting the trigger it is important to ensure that the electronic trigger detection is working correctly. When the trigger is fully depressed the Trigger Detection Indicator (TDI) should point upwards . When the trigger is fully released the TDI should point downwards . For more information, see Understanding the Trigger Detection Indicator (TDI) on page 25 and The Filter Menu on page 46.

FIGURE 6.6 KEY

- A Spring
- B Spring Return Strength Screw
- C Trigger Pin Locking Screw
- D Front Stop Trigger Screw
- E Magnet Return Strength Screw
- F Micro Switch Activation Screw
- G Rear Stop Trigger Screw



FIG 6.4



FIG 6.5

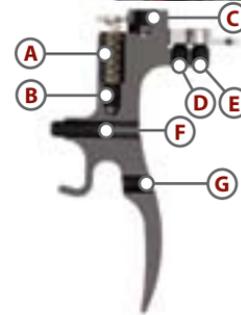


FIG 6.6

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## ADJUSTING THE VELOCITY

When using your Ego9, you may wish to change the velocity at which your Ego9 is firing. This is done by inserting a 1/8" hex key into the adjuster screw at the bottom of your Ego9 Inline Regulator and adjusting it accordingly (SEE FIGURE 7.1). By turning this adjuster screw clockwise you decrease the output pressure of the Inline Regulator and consequently the velocity, by turning the adjuster screw counter clockwise you increase the output pressure of the Inline Regulator and consequently the velocity. (There are also engravings on the bottom of the Inline Regulator showing which direction increases and decreases velocity).

**NOTE:** AFTER EACH ADJUSTMENT FIRE TWO CLEARING SHOTS TO GAIN AN ACCURATE VELOCITY READING. NEVER EXCEED 300FPS.

## ADJUSTING THE LPR PRESSURE

When using your Ego9, you may wish to change the output pressure of your LPR. This is easily done by inserting a 1/8" inch hex key into the adjuster screw at the front and adjusting it accordingly (SEE FIGURE 7.2). However we recommend that the LPR screw be left set flush with the front of the LPR cap.

By turning the adjuster screw clockwise, you decrease the output pressure of your LPR and consequently reduce the pressure driving your rammer back and forth. By turning the adjuster screw counter clockwise, you increase the output pressure of your LPR and consequently increase the pressure driving your rammer back and forth.

**NOTE:** TURNING THE ADJUSTER SCREW IN TOO FAR WILL PREVENT THE EGO9 FROM FIRING.



FIG 7.1



FIG 7.2

## USER INTERFACE

The Ego9 has a simple user interface through which all aspects of it's 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 or double-clicking the button will switch the Ego9 on. The LCD display will show the Ego9 logo. When the button is released, the LCD will show the Run Screen, which is the screen displayed during the normal use of the Ego9.

## 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 Ego9. A typical Run Screen is shown on the right.

On the left of the screen is a display option that is user selectable from the Main Menu (see page 33). This option can be:-

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

Briefly pressing the button will replace the display option with the name of the currently selected Preset (see page 37).

On the right of the screen are up to six icons, each of which provides graphical indication on different parts of the Ego9 control electronics:

BREAK BEAM SENSOR SYSTEM INDICATOR

AUX OUT INDICATOR

SOUND INDICATOR

TRIGGER DETECTION INDICATOR

LOCK INDICATOR

USER SELECTABLE DISPLAY OPTION

BATTERY LEVEL INDICATOR



**NOTE:** THE AUX OUT INDICATOR IS ONLY DISPLAYED WHEN YOU CONNECT A COMPONENT SUCH AS A RF TRANSMITTER VIA THE AUXILIARY SOCKET ON THE CIRCUIT BOARD (SEE PAGE 14).

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## UNDERSTANDING THE BREAK BEAM SENSOR SYSTEM 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 Ego9 can be fired at the maximum rate of fire determined by the chosen firing mode.
- 
**BBSS ENABLED NO BALL DETECTED**  
 The Ego9 cannot be fired.
- 
**BBSS DISABLED**  
 The Ego9 can be fired at a maximum rate of fire as set by the **OFF ROF** parameter (see page 40).
- 
**BBSS FAULT DETECTED**  
 The system is disabled. The Ego9 can only be fired at a maximum rate of fire of 10bps, regardless of the chosen firing mode.
- 
**BBSS FAULT HAS BEEN CLEARED**  
 The sensor has been re-enabled. A ball is detected and the Ego9 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 Ego9 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 40).

## UNDERSTANDING THE AUX OUT INDICATOR

The auxiliary socket on the Ego9 circuit board allows third party products such as loaders or RF transmitters to be interfaced to the Ego9.

On power up the Ego 9 checks to see if any compatible third party products are connected to this socket and, if any are found, switches on the auxiliary port and displays the Aux Out Indicator.

There are two possible conditions that can be indicated:



**AUX OUT ENABLED**  
 The AUX OUT is enabled. Each time the circuit board detects a valid trigger pull a signal will be sent to the AUX connector on the circuit board.



**AUX OUT DISABLED**  
 The AUX OUT is disabled. No signal will be sent to either the AUX connector on the circuit board.

## UNDERSTANDING THE SOUND INDICATOR

The **SOUND** Indicator on the main screen is used to convey if the **SOUND** parameter in the Hardware Menu (page 52) is switched on or off.

There are two possible conditions that can be indicated:



**SOUND ENABLED**  
 The **SOUND** parameter is enabled. The Ego9 will make sounds when switched on and off and when the game timer alarms or times out.



**SOUND DISABLED**  
 The **SOUND** parameter is disabled. The Ego9 will not make any sounds.

## UNDERSTANDING THE TRIGGER DETECTION INDICATOR (TDI)

In order for the trigger to be successfully operated it must first be released and then pulled. The Trigger Detection Indicator (TDI) is used to indicate each of the possible trigger states.



**OPTO SENSOR SELECTED, READING 0%**  
 The Ego9 is configured to use the Opto sensor to detect trigger pulls. The Opto sensor is currently reading 0%, i.e. the trigger is fully released.



**OPTO SENSOR SELECTED, READING BELOW RELEASE POINT**  
 The Ego9 is configured to use the Opto sensor to detect trigger pulls. The Opto sensor is currently reading below the Opto Release Point, i.e. the trigger is considered 'released'.



**OPTO SENSOR SELECTED, READING MID-RANGE**  
 The Ego9 is configured to use the Opto sensor to detect trigger pulls. The Opto sensor is currently reading somewhere between the Opto Release Point and the Opto Pull Point, i.e. the trigger is half depressed.



**OPTO SENSOR SELECTED, READING ABOVE PULL POINT**  
 The Ego9 is configured to use the Opto sensor to detect trigger pulls. The Opto sensor is currently reading above the Opto Pull Point, i.e. the trigger is considered 'pulled'.



**OPTO SENSOR SELECTED, READING 100%**  
 The Ego9 is configured to use the Opto sensor to detect trigger pulls. The Opto sensor is currently reading 100%, i.e. the trigger is fully depressed.



**MICRO-SWITCH SELECTED, NOT ACTUATED**  
 The Ego9 is configured to use the micro-switch to detect trigger pulls. The micro-switch is not currently actuated, i.e. the trigger is released.



**MICRO-SWITCH SELECTED, ACTUATED**  
 The Ego9 is configured to use the micro-switch to detect trigger pulls. The micro-switch is currently actuated, i.e. the trigger is pulled.

From the factory the Ego9 will have the Opto sensor enabled. The Micro-Switch option can be selected by referring to the Hardware Menu (see page 52).

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## UNDERSTANDING THE LOCK INDICATOR

The Ego9 has a tournament lock which prevents the user from making changes to any parameter that affects the way in which the Ego9 shoots, without the need for tools. This feature is necessary in order to make the Ego9 legal for tournament play.

When the lock is enabled the lock indicator will show a closed padlock .

When the lock is disabled the lock indicator will show an open padlock .

## UNDERSTANDING THE BATTERY LEVEL INDICATOR

The battery level indicator is used to show the state of the battery within the Ego9. 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 Ego9 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 35).

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 **SOUND** parameter is on.

When the Game Timer reaches 00:00, GAME OVER will be displayed and the audible alarm will sound continually, provided that the **SOUND** 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 Ego9 is switched off.



## THE SHOT COUNTER

The Shot Counter increments every time that the Ego9 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 left 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 PEAK RATE OF FIRE

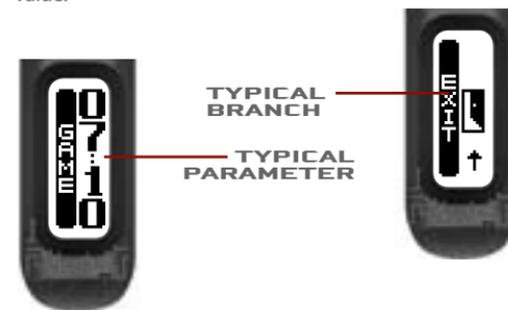
When the Peak ROF is selected for display the Run Screen will look something like the screen to the left, which differs from the display of the Average ROF by the inclusion of the indicator 'PK'. The value displayed in the top left of the screen represents the rate of fire measured between the last two 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 0.5 seconds.



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 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.



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.

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## MAIN MENU

### MAIN MENU

OFF?		Turn off the Ego9
DISPLAY	Timer Shots Avg ROF Peak ROF Cancel	Display the game timer on the Run Screen Display the shot counter on the Run Screen Display the average rate of fire on the Run Screen Display the peak rate of fire on the Run Screen Cancel the display selection
TIMER		
GAME	00:00 - 60:00	Countdown game timer start time
ALARM	00:00 - 10:00	Alarm activation time
START	Button Trigger Cancel	▼ button starts the game timer Trigger pull starts the game timer Cancel game timer start event selection
BACK		Go back one menu level
EXIT		Return to the Run Screen

Parameters followed by a \* are part of the smart menu system and will only be displayed depending on your chosen settings. (E.g. The MAX ROF parameter will only become available if the ROF CAP parameter is set to on).

## SET-UP MENU

### SET-UP MENU

LOCK	Off On Cancel	Turn the tournament lock off Turn the tournament lock on Make no changes to the tournament lock
PRESET		
LOAD	User 1 User 2 Factory NPPL PSP xx** MS xx** Cancel	Load the User 1 settings Load the User 2 settings Load the default factory settings (semi-automatic) Load NPPL compliant settings Load the PSP 20xx compliant settings Load Millennium Series 20xx compliant settings Cancel the load operation
SAVE	User 1 User 2 Cancel	Save the current settings as the User 1 settings Save the current settings as the User 2 settings Cancel the save operation
BACK		Go back one menu level
MODE	Semi Ramp Cancel	Select semi-automatic mode of fire Select ramping mode of fire Cancel the mode selection
ROF CAP	Off On Cancel	Turn off the rate of fire cap Turn on the rate of fire cap Cancel the ROF cap selection
MAX ROF*	10.0 - 30.0	Rate of fire cap in balls per second when BBSS is enabled
OFF ROF	4.0 - 15.0	Rate of fire cap in balls per second when BBSS is disabled

\*\* - xx in a preset parameter will be substituted by a numerical value on the LCD display denoting the relevant year that preset was introduced.

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## SET-UP MENU

RAMP SET*		
TYPE	Step Linear Cancel	Select step type ramping Select linear type ramping Cancel the ramp type selection
RATE	0 - 100	Percentage linear ramp rate
PULL NO	4 - 9	Number of shots before ramping can start
KICK IN	5.0 - 15.0	Rate at which trigger has to be pulled in pulls per second before ramping can start
SUSTAIN	5.0 - 15.0	Rate at which trigger has to be pulled in pulls per second in order to maintain ramping
RESTART	0.0 - 1.0	Time in seconds after last trigger pull during which ramp can be restarted
BACK		Go back one menu level
TIMING		
DWELL	0.0 - 25.0	Solenoid energise time in milliseconds for each shot
FSD COMP	0.0 - 3.0	First shot drop-off compensation time in milliseconds
LIGHT	0.0 - 20.0	Backlight off delay in seconds
SLEEP	5 - 60	Auto power off time in minutes
BACK		Go back one menu level
FILTER		
DBOUNCE	Level 9	Use trigger debounce level 9 (less bounce)
	Level 1 Cancel	Use trigger debounce level 1 (more bounce) Cancel debounce selection
EMPTY	1.0 - 20.0	Time in milliseconds that the breech must remain empty before the BBSS can look for a paintball

## SET-UP MENU

FULL	1.0 - 20	Time in milliseconds that a paintball must be in the breech for the Ego9 to be ready to fire
PULL TM	3.0 - 25.0	Time in milliseconds that the trigger must be pulled for a shot to be fired
REL TM	3.0 - 25.0	Time in milliseconds that the trigger must be released before a pull can be recorded
PULL PT*	51 - 99	Top limit (trigger activation point) of debounce band expressed as a percentage
REL PT*	1 - 49	Bottom limit (trigger release point) of debounce band expressed as a percentage
BACK		Go back one menu level
TRAININ	Off On Cancel	Training mode disabled Training mode enabled Cancel training mode selection
HARDWRE		
TRIGGER	Opto Switch Cancel	Use Opto sensor to detect trigger operation Use micro-switch to detect trigger operation Cancel trigger detection method selection
SOUND	Off On Cancel	Turn off audible indicator Turn on audible indicator Cancel audible indicator selection
TONES*	Off On Cancel	Turn off audible tone when any button is pressed Turn on audible tone when any button is pressed Cancel audible tone selection
BACK		Go back one menu level
EXIT		Return to the Run Screen

Parameters followed by a \* are part of the smart menu system and will only be displayed depending on your chosen settings. (E.g. The MAX ROF parameter will only become available if the ROF CAP parameter is set to on).

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## ACCESSING THE MENU SYSTEM

To access the Main Menu from the Run Screen double-click the **⊙** button and the first item on the Main Menu will be displayed. Alternatively, push and hold the **⊙** button for 2 seconds.

To access the Set-up Menu from either the Run Screen or the Main Menu push the internal button and the first item on the Set-up Menu will be displayed.

**NOTE:** IF THE TOURNAMENT LOCK IS SET TO 'OFF' THEN THE MAIN MENU AND SET-UP 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 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 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.

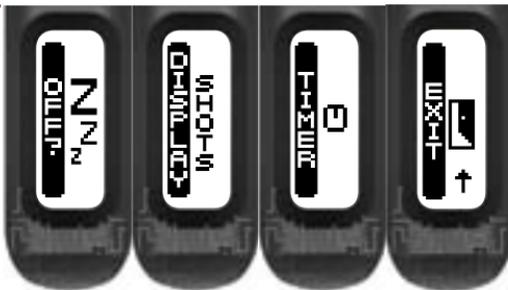
A numeric parameter has a value which is a number whereas a choice parameter is one that has a small number of distinct choices. Altering parameter values is essentially the same for both types of parameter.

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 it was prior to editing.

## THE MAIN MENU

The Main Menu comprises parameters that do not affect the way in which the Ego9 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 Ego9, 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.

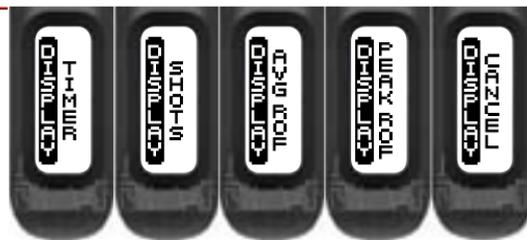
## DISPLAY

### THE DISPLAY PARAMETER

This parameter is used to select the information that is displayed on the left 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 is ended and the display returns to the Run Screen.



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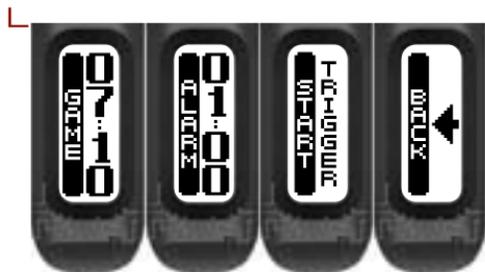
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## TIMER

### THE GAME TIMER MENU

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



## GAME

### THE GAME TIME PARAMETER

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 **SOUND** parameter is set to 'ON'.



## ALARM

### THE ALARM TIME PARAMETER

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 **SOUND** parameter is set to 'on'.

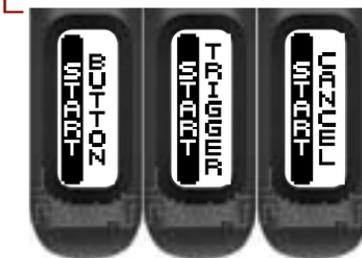


## START

### THE TIMER START PARAMETER

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.



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## THE SETUP MENU

This menu is the starting point for access to all of the parameters that control the way that the Ego9 operates. To access this menu, first turn on the Ego9 and then remove the 3 screws holding the right hand cheek of the rubber grips (SEE FIGURE 8.1). Peeling back the cheek will reveal a red Setup (A) button on the circuit board (SEE FIGURE 8.2), double-click this button or, alternatively, push and hold it for 2 seconds.

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.

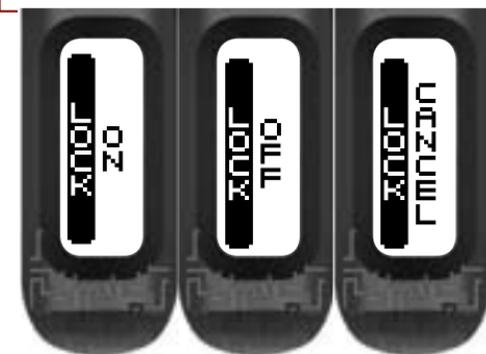


## LOCK THE TOURNAMENT LOCK PARAMETER

The Ego9 has a tournament lock which prevents the user from making changes to any parameter that affects the way in which the Ego9 shoots without the use of tools.

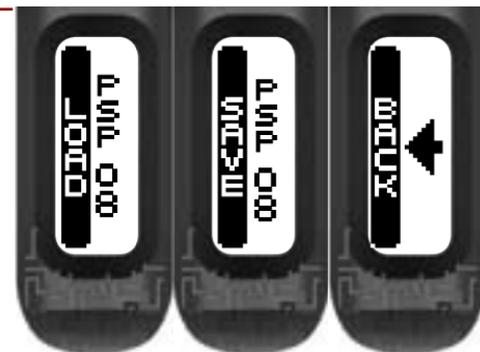
This parameter is used to set the state of the tournament lock and has the following choices:-

- > **OFF:** Turn on the tournament lock. The Set-up Menu is added to the Main Menu, making it easily accessible by pressing and holding the button.
- > **ON:** Turn off the tournament lock. The Set-up 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.



## PRESET THE PRESET MENU

In order to simplify the set up of the Ego9 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 Ego9 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.



## LOAD THE LOAD PRESET PARAMETER

This parameter is used to load the required Preset configuration and has the following choices.

- > **FACTORY:** Reset every parameter to the factory set defaults. The Ego9 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 Ego9 to comply with the 2008 NPPL rules governing firing modes.
- > **PSP xx:** Load a set of parameters that configures the Ego9 to comply with the 20xx PSP rules governing firing modes.

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> **MS xx:** Load a set of parameters that configures the Ego9 to comply with the 20xx Millennium Series rules governing firing modes.

> **CANCEL:** Editing is cancelled and the parameter remains unchanged.

> **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 Ego9, leaving **FILTER**, **TIMING** and **HARDWARE** parameters unchanged.

## SAVE

### THE SAVE PRESET PARAMETER

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.



**NOTE:** THE CURRENT PRESET CONFIGURATION CAN BE VIEWED FROM THE RUN SCREEN BY PRESSING THE BUTTON.

## MODE

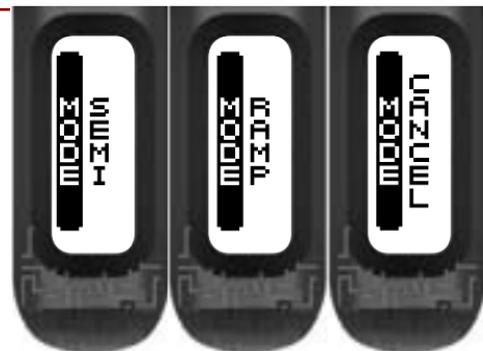
### THE FIRING MODE PARAMETER

This parameter is used to select the firing mode of the Ego9 and has the following choices:

> **SEMI:** This is the default and in this firing mode the Ego9 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 EGO9.

## ROF CAP

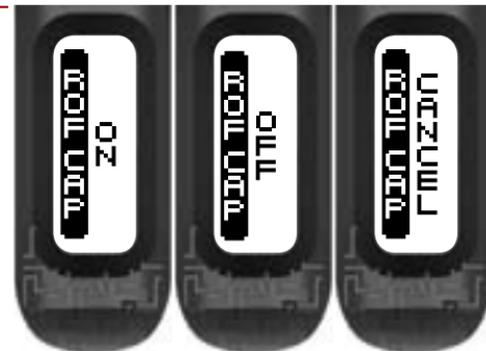
### THE RATE OF FIRE CAP PARAMETER

The **ROF CAP** parameter is used to specify whether or not the Ego9 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.



## MAX ROF

### THE MAXIMUM RATE OF FIRE PARAMETER

The **MAX ROF** parameter is used to set the maximum achievable rate of fire from the Ego9. The value of this parameter can be adjusted between 10.0 and 30.0 balls per second in 0.1bps increments.

The **MAX ROF** parameter will only be displayed if you have set the **ROF CAP** parameter to 'ON'.



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## OFF ROF

THE RATE OF FIRE WHEN BBSS OFF PARAMETER

The **OFF ROF** parameter is used to control how fast the Ego9 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.



## RMP SET

THE RAMP SETTINGS MENU

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 Ego9 ramps, as shown below:



## TYPE

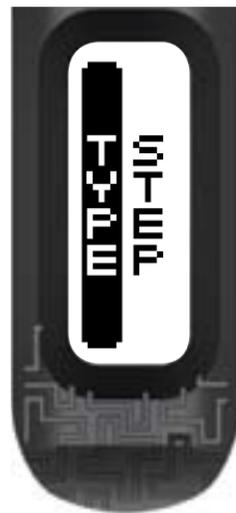
THE RAMP TYPE PARAMETER

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

> **STEP:** Step ramping will cause the Ego9 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 **ROF CAP** parameter is set to 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 Ego9 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 **ROF CAP** is on. 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.



## RATE

THE LINEAR RAMP RATE PARAMETER

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.



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## PULL NO

THE RAMP START PARAMETER

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 1 pull increments.



## KICK IN

THE RAMP KICK-IN PARAMETER

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.



## SUSTAIN

THE SUSTAIN RATE PARAMETER

Once the Ego9 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.



## RESTART

THE RAMP RESTART PARAMETER

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.



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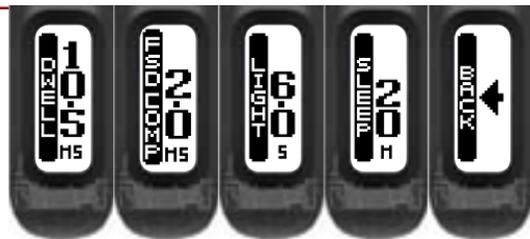
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## TIMING

### THE TIMING MENU

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



## DWELL

### THE DWELL PARAMETER

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 Ego9. 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 Ego9 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 Ego9 'beds-in'.



## FSD COMP

### THE FIRST SHOT DROP-OFF COMPENSATION PARAMETER

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 **FSD** 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.



## LIGHT

### THE LIGHT PARAMETER

The LCD backlight is illuminated whenever any of the buttons are pressed on the Ego9. 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.



## SLEEP

### THE SLEEP PARAMETER

If the Ego9 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 5 and 60 minutes in 5 minute increments.



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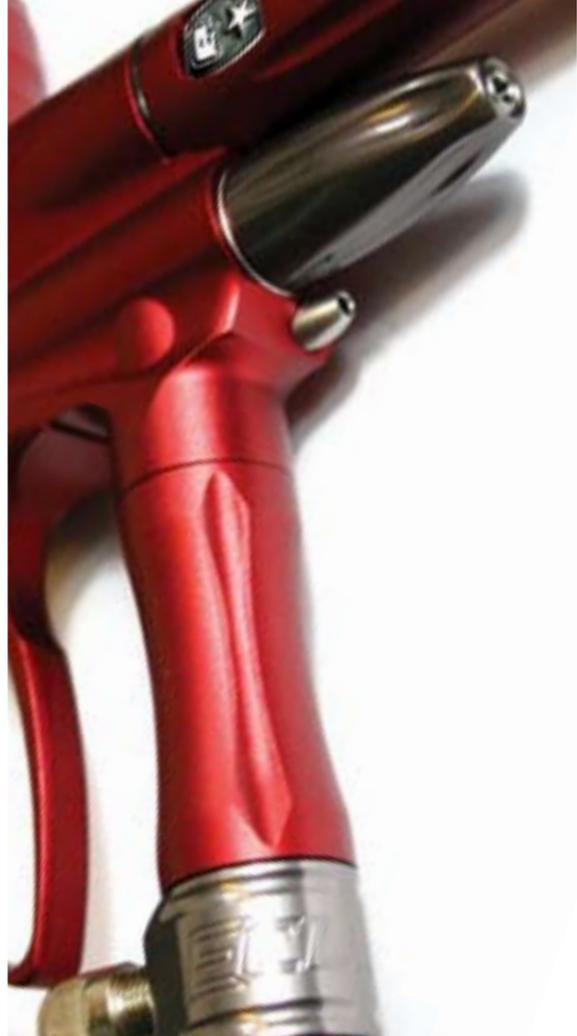
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## FILTER

### THE FILTER MENU

The parameters on the Filter Menu are all used to tune the Ego9's software filters which prevent the Ego9 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:



## DBOUNCE

### THE DEBOUNCE PARAMETER

The **DBOUNCE** parameter is used to combat any trigger bounce that might occur in the Ego9 and can be set between level 1 and level 9 in one level increments.

- > **LEVEL 9:** Level 9 providing the most filtering.
- > **LEVEL 1:** Level 1 providing the least filtering.
- > **CANCEL:** Cancel editing and leave the parameter unchanged.



## EMPTY

### THE BREECH EMPTY TIME PARAMETER

In order for the BBSS to function correctly it must first detect that the bolt is fully retracted and the breech is empty, and then detect that a paintball is loaded into the breech before the Ego9 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 breech must be empty. The parameter can be set between 1.0 and 20.0ms in 0.5ms increments.



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## FULL

### THE BREECH FULL TIME PARAMETER

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 Ego9 is allowed to fire. This parameter can be set between 1.0 and 20 milliseconds in 0.5ms increments.



## PULL TM

### THE TRIGGER PULL TIME PARAMETER

The **PULL TM** 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 3.0 and 20.0 milliseconds in 0.5 increments.



## REL TM

### THE TRIGGER RELEASE TIME PARAMETER

The **REL TM** 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 milliseconds in 0.1 millisecond increments.



## PULL PT

### THE TRIGGER PULL POINT PARAMETER

The **PULL PT** parameter is only available if **OPTO** has been selected in the Hardware Menu. **PULL PT** defines the point at which the trigger is considered pulled and is adjustable between 51% and 99% in 1% increments.



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## REL PT

### THE TRIGGER RELEASE POINT PARAMETER

The **REL PT** parameter is only available if **OPTO** has been selected in the Hardware Menu. **REL PT** 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 **DBOUNCE** choices (LEVEL 1-9). In attempting to eliminate trigger bounce it is advisable to try the nine fixed **DBOUNCE** 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 **PULL PT** parameter set as high as possible and the **REL PT** parameter set as low as possible:

1. Select the **PULL PT** 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 **PULL PT** 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 49).
4. Select the **REL PT** 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.



## (CONTINUED)

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.

6. Adjust the **REL PT** 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 50).

7. Set the Magnet Return Strength Screw and the Spring Return Strength Screw as required, making both the spring tension and the return force as strong as possible without compromising the "feel" of the trigger.

## TRAININ

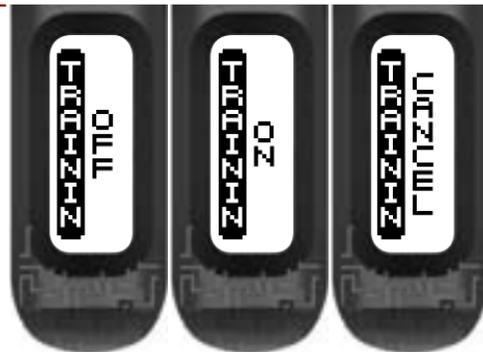
### THE TRAINING PARAMETER

The **TRAININ** parameter is used to select Training Mode. In Training Mode the Ego9 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 Ego9 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 Ego9 functions normally.
- > **ON:** Training Mode is enabled.
- > **CANCEL:** Cancel editing and leave the parameter unchanged.



NOTE: THE FASTEST WAY TO SHOOT AN EGO9 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 IN ORDER TO ELIMINATE WHAT IT PERCEIVES AS TRIGGER BOUNCE.

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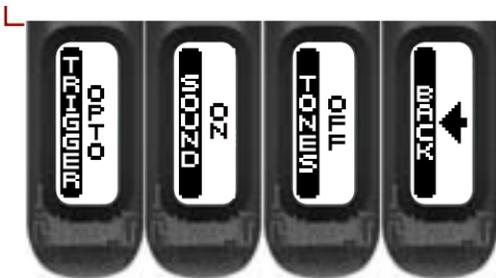
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## HARDWARE THE HARDWARE MENU

The Hardware Menu comprises parameters that control low level functionality of the Ego9 electronic hardware.



## TRIGGER THE TRIGGER DETECTION PARAMETER

The Ego9 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.



## SOUND THE SOUND PARAMETER

The Ego9 board is capable of emitting a variety of sounds to audibly signal when certain functions have been performed, including, but not limited to, powering up, powering off, changing the BBSS mode and successfully changing parameters. This parameter determines if this feature is switched on or off, switching it on will cause more drain on the battery. The choices available for this parameter are:

- > **OFF:** Sounds switched off.
- > **ON:** Sounds switched on.
- > **CANCEL:** Cancel editing and leave the parameter unchanged.



## TONES THE TONES PARAMETER

This parameter determines if the Ego9 emits a tone each time any of the pushbuttons on the Navigation Console are activated. As part of the Smart menu system the **TONES** parameter will only be shown in the Hardware Menu if the **SOUND** parameter is switched ON. The choices available for this parameter are:

- > **OFF:** Tones switched off.
- > **ON:** Tones switched on.
- > **CANCEL:** Cancel editing and leave the parameter unchanged.



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## CLEANING THE BREAK BEAM SENSOR SYSTEM

**⚠ WARNING** //

**WARNING: DE-GAS YOUR MARKER, DISCHARGING ANY STORED GAS IN A SAFE DIRECTION, AND REMOVE THE BARREL, LOADER AND AIR SYSTEM TO MAKE THE MARKER EASIER TO WORK ON.**

Undo the retaining screw for the Break Beam Sensor Cover on the right hand side of the Ego9 using a 5/64" (2mm) hex key (SEE FIGURE 9.1).

Remove the Sensor Cover to expose the back of the Break Beam Sensor unit (SEE FIGURE 9.2). Using a dry cotton bud, carefully remove any debris, paint or moisture from the back of the sensor unit and from inside the Sensor Cover.

Lift the BBSS free from the Ego9 body and using another dry cotton bud, remove any grease or debris build-up from the front of the sensor unit (SEE FIGURE 9.3).



FIG 9.1



FIG 9.2



FIG 9.3

## (CONTINUED)

Remove the rubber finger detent and using a dry cotton bud clean the detent and it's location point in the Ego9 Body. (SEE FIGURE 9.4) Replace the detent back into the Ego9 body (SEE FIGURE 9.5) and place the BBSS back into the designated slot in the body (SEE FIGURE 9.2). Ensure that the sensor is face down in the body i.e. looking into the breach.

Replace the Sensor Cover and using a 5/64" hex key, replace the Break Beam Sensor Cover retaining screw to hold the sensor cover in place (SEE FIGURE 9.6).

Repeat the procedure for the opposite side of the Ego9.

You have now cleaned your Break Beam Sensor System.

**NOTE:** WHEN CLEANING THE BREAK BEAM SENSOR SYSTEM INSPECT THE CONDITION OF RUBBER FINGER DETENTS AND REPLACE IF NECESSARY. ENSURE THAT THE RECEIVER SENSOR (INDICATED BY A RED MARK & RED HEAT SHRINK) IS LOCATED ON THE RIGHT-HAND SIDE OF THE MARKER BODY.

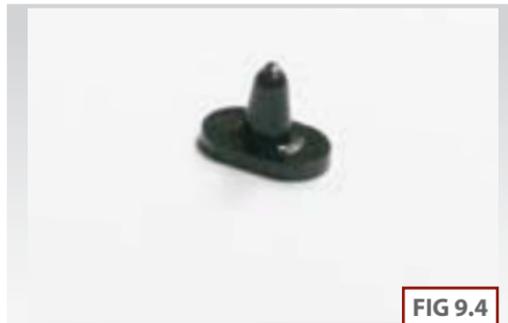


FIG 9.4



FIG 9.5



FIG 9.6

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## CLEANING THE INLINE REGULATOR

### ⚠ WARNING //////////////////////////////////////

**WARNING: DE-GAS YOUR MARKER, DISCHARGING ANY STORED GAS IN A SAFE DIRECTION, AND REMOVE THE BARREL, LOADER AND AIR SYSTEM TO MAKE THE MARKER EASIER TO WORK ON.**

**Note:** The internals of your Inline Regulator may vary according to the model of Ego9 that you have.

Disconnect the macroline hosing from your Inline Regulator allowing it to be unscrewed from the Front Regulator Mount (FRM) (SEE FIGURE 10.1).

Turn the Inline Regulator upside down and carefully unscrew the two sections (SEE FIGURE 10.2). These can be unscrewed by hand or using a 3/8 hex key in the top and a 5/16 hex key in the bottom of the Inline Regulator.

By firmly gripping the exposed end of the Inline Regulator Piston, carefully remove the piston and spring in its entirety (SEE FIGURE 10.3).

Insert a 1/8" hex key into the adjuster screw in the bottom half of the Inline Regulator, and wind the screw clockwise through the bottom section of the regulator body (SEE FIGURE 10.4) and pull free when it will no longer turn upwards anymore.

**NOTE:** THE ADJUSTER SCREW CAN ONLY BE REMOVED BY TURNING IT UPWARDS THROUGH THE BOTTOM SECTION OF THE INLINE REGULATOR. THE REGULATOR WILL BECOME DAMAGED IF THE ADJUSTER SCREW IS REMOVED INCORRECTLY.

Using a dry cotton bud, clean the 011 NBR 70 o-ring that sits at the top of the bottom section of the Inline Regulator (SEE OVERLEAF FIGURE 10.5). Using Elipse Gun Oil and a fresh cotton bud, re-lubricate the seal ready for re-assembly.



FIG 10.1



FIG 10.2



FIG 10.3



FIG 10.4

## (CONTINUED)

Thoroughly clean the two 008 NBR 70 o-rings on the adjuster screw and lubricate ready for re-assembly. Inspect the top face of the adjuster unit for any excessive wear or damage as this could cause the Inline Regulator to creep (SEE FIGURE 10.6).

**NOTE:** THE SEALING FACE ON THE INLINE REGULATOR PISTON CAN ALSO CAUSE THE REGULATOR TO CREEP OR "SUPERCHARGE"; SO THIS SHOULD ALSO BE CHECKED.

With the threaded section towards to the base of the regulator body, re-insert the adjuster screw into the bottom half of the regulator body (SEE FIGURE 10.7). Apply light pressure to the top of the adjuster screw and using a 1/8" hex key wind the adjuster screw counter-clockwise until it stops at the base of the regulator body. Turn the adjuster screw 4 turns in a clockwise direction to set the Inline Regulator pressure at approximately 160 psi.

Take the piston and spring and clean the seal at the top of the piston, re-lubricating it with a light smear of Elipse Grease ready for re-assembly (SEE FIGURE 10.8). Insert the piston and spring into the top half of the Inline Regulator body (SEE FIGURE 10.9).

### ⚠ WARNING //////////////////////////////////////

**WARNING: THE SPRING IN THE EGO9 INLINE REGULATOR HAS BEEN DESIGNED SPECIFICALLY FOR THE ECLIPSE EGO9. USING ANY OTHER SPRING WILL DAMAGE THE EGO9 AND VOID YOUR WARRANTY.**

Keeping the top half of the Inline Regulator upside down, screw the two halves of the Inline Regulator together (SEE FIGURE 10.10).

You have now stripped, cleaned, lubricated and assembled your Inline Regulator.

**NOTE:** IF ANY SEALS ARE DAMAGED THEN REPLACE THEM. EXTRA SEALS ARE AVAILABLE IN EGO9 PARTS KITS AVAILABLE ONLINE AT [WWW.PLANETECLIPSE.COM](http://WWW.PLANETECLIPSE.COM).



FIG 10.5



FIG 10.6



FIG 10.7



FIG 10.8



FIG 10.9



FIG 10.10

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## CLEANING THE LOW PRESSURE REGULATOR (LPR)

**⚠ WARNING** //

**WARNING: DE-GAS YOUR MARKER, DISCHARGING ANY STORED GAS IN A SAFE DIRECTION, AND REMOVE THE BARREL, LOADER AND AIR SYSTEM TO MAKE THE MARKER EASIER TO WORK ON.**

Note: The internals of your LPR may vary according to the model of Ego9 that you have. The Inline Regulator can be removed if needs be.

Unscrew the LPR Cap from the marker body (SEE FIGURE 11.1).

Remove the LPR Piston and rear spring from the LPR Cap (SEE FIGURE 11.2).

Cupping the palm of one hand, turn the LPR Cap upside down and tip the front spring out into your palm (SEE FIGURE 11.3).

Remove the rear spring from the LPR Piston and using a dry cotton bud, carefully clean the 013 NBR 70 o-ring on the LPR Piston (SEE FIGURE 11.4). If the seal is damaged then replace it. Once the seal has been cleaned, lubricate with a light application of Eclipse Grease so that it is ready for re-assembly.

**NOTE:** THE ADJUSTER SCREW DOES NOT NEED TO BE REMOVED FROM THE LPR CAP FOR REGULAR MAINTENANCE.



FIG 11.1



FIG 11.2



FIG 11.3



FIG 11.4

## (CONTINUED)

Insert the front spring (silver in colour) into the LPR Cap, so that it rests neatly on the adjuster screw (SEE FIGURE 11.5).

Place the gold coloured spring onto the LPR Piston and insert Piston and Spring into the LPR Cap, o-ring end first (SEE FIGURE 11.6).

Before screwing the LPR Cap back onto your Ego9, use a dry cotton bud to clean the 010 NBR 70 o-ring inside the LPR Body (SEE FIGURE 11.7). Lubricate this seal using a light 3 in 1 oil, such as Eclipse Gun Oil.

Replace the LPR cap by screwing it onto the LPR Body in the Ego9 (SEE FIGURE 11.8).

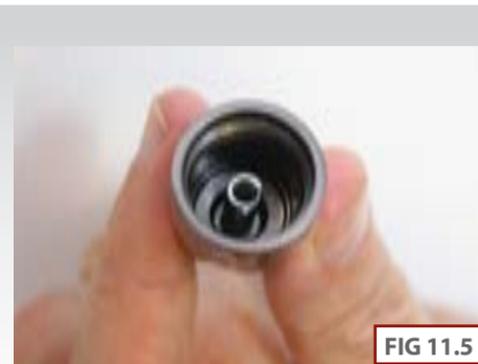


FIG 11.5



FIG 11.6



FIG 11.7



FIG 11.8

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## MAINTAINING THE RAMMER

**⚠ WARNING** //

**WARNING: DE-GAS YOUR MARKER, DISCHARGING ANY STORED GAS IN A SAFE DIRECTION, AND REMOVE THE BARREL, LOADER AND AIR SYSTEM TO MAKE THE MARKER EASIER TO WORK ON.**

Pull the Bolt pin upwards so that it disengages the Rammer, allowing the bolt to be removed via the rear of the Ego9 (SEE FIGURE 12.1).

Using a 3/16" hex key, unscrew and remove the Rammer Cap at the rear of the Ego9 (SEE FIGURE 12.2).

Raise the front of the Ego9 and tap the Ego9 onto your hand until the rammer falls into the palm of your hand (SEE FIGURE 12.3).

Thoroughly clean the Rammer Shaft and all of its seals, paying special attention to the 009 NBR 70 o-ring on the middle of the Shaft (SEE FIGURE 12.4), the rear 011 NBR 70 o-ring (SEE FIGURE 12.5) and the condition of the bumper in the Rammer Cap (SEE FIGURE 12.6 OVERLEAF).

Replace any worn seals/bumpers using authentic Eclipse Ego9 spare parts.



FIG 12.1



FIG 12.2



FIG 12.3



FIG 12.4



FIG 12.5

## (CONTINUED)

Lubricate all of the seals on the Rammer Shaft and inside the Rammer Cap and replace the Rammer into the rear of the Ego9 body as shown in (SEE FIGURE 12.7).

**NOTE: DO NOT USE ECLIPSE GREASE ON THE RAMMER. ONLY USE LIGHT PAINTGUN OIL, WE RECOMMEND ECLIPSE GUN OIL.**

Replace the Rammer Cap, using the 3/16" hex key to secure it into the Ego9 body (SEE FIGURE 12.8).

**NOTE: DO NOT OVER TIGHTEN THE RAMMER CAP SCREW.**

Noting the position of the Rammer in the Ego9 body (SEE FIGURE 12.9), replace the Bolt and locate the Bolt pin into the designated groove in the Rammer Shaft (SEE FIGURE 12.10).

**NOTE: THE NUMBER OF O-RINGS ON THE RAMMER MAY VARY ACCORDING TO THE MODEL OF EGO9 THAT YOU HAVE.**



FIG 12.6



FIG 12.7



FIG 12.8



FIG 12.9



FIG 12.10

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## CLEANING AND LUBRICATING THE BOLT

**⚠ WARNING** //////////////////////////////////////  
**WARNING: THIS PROCEDURE CAN BE PERFORMED WITH THE EGO9 GASSED UP AS WELL AS DE-GASSED. IF PERFORMING THIS PROCEDURE WITH THE EGO9 GASSED UP ENSURE A BARREL BLOCKING DEVICE IS USED AND THAT THE EGO9 IS SWITCHED OFF TO MAKE THE SYSTEM SAFER TO WORK ON.**

Raise the Bolt pin and remove the Bolt and Bolt pin from the Ego9 marker body (FIGURE 13.1).

Using a dry cotton bud remove any paint or grease from the surface of the Bolt (SEE FIGURE 13.2).

Lubricate the Bolt (SEE FIGURE 13.3) and replace the Bolt, locking the Bolt pin into the designated slot in the Rammer (SEE FIGURE 13.4).

**NOTE: WE RECOMMEND THE USE OF ECLIPSE GUN OIL ON THE EGO9 RAMMER AND BOLT.**



FIG 13.1



FIG 13.2



FIG 13.3



FIG 13.4

## REMOVING THE FRAME

**⚠ WARNING** //////////////////////////////////////  
**WARNING: DE-GAS YOUR MARKER, DISCHARGING ANY STORED GAS IN A SAFE DIRECTION, AND REMOVE THE BARREL, LOADER AND AIR SYSTEM TO MAKE THE MARKER EASIER TO WORK ON.**

Disconnect any hosing and unscrew the Inline Regulator from the front regulator mount as detailed in the "Cleaning the Inline Regulator" section of this Maintenance guide (pages 56-57).

Using a 5/64" hex key remove the six screws that attach the Ego9 rubber grips to the Ego9 grip frame (SEE FIGURE 14.1). Unplug the solenoid and unplug the break beam sensor system from their connections on the Ego9 circuit board (SEE FIGURE 14.2).

Using a 1/8" hex key undo the two frame retaining screws (SEE FIGURE 14.3) and remove the frame from the Ego9 body, taking care not to damage any wires (SEE FIGURE 14.4).

You have now removed the frame.



FIG 14.1



FIG 14.2



FIG 14.3

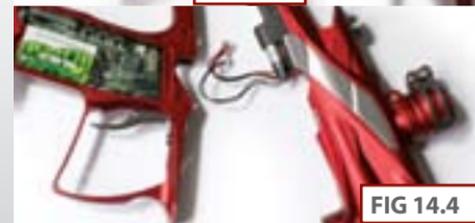


FIG 14.4

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## ATTACHING THE FRAME

**⚠ WARNING** //

**WARNING: DE-GAS YOUR MARKER, DISCHARGING ANY STORED GAS IN A SAFE DIRECTION, AND REMOVE THE BARREL, LOADER AND AIR SYSTEM TO MAKE THE MARKER EASIER TO WORK ON.**

Carefully thread the solenoid and break beam sensor system wires through the access holes in the top of the Ego9 grip frame (SEE FIGURE 14.5) and re-attach the grip frame to the marker body by tightening the two grip frame screws using a 1/8" hex key (SEE FIGURE 14.6).

Ensure that the break beam sensor system cables lie neatly in the slots provided for them in the Ego9 grip frame and connect the solenoid and the break beam sensors to their relevant connections on the Ego9 circuit board (SEE FIGURE 14.7). Adjust both the solenoid wires and the break beam sensor system wires so that they sit neatly within the grip frame (SEE FIGURE 14.8).

Re-attach the Ego9 rubber grips to the frame by using a 5/64" hex key to replace the 6 grip screws.



FIG 14.5



FIG 14.6



FIG 14.7



FIG 14.8

## THE EGO9 TRIGGER ASSEMBLY

**⚠ WARNING** //

**WARNING: DE-GAS YOUR MARKER, DISCHARGING ANY STORED GAS IN A SAFE DIRECTION, AND REMOVE THE BARREL, LOADER AND AIR SYSTEM TO MAKE THE MARKER EASIER TO WORK ON.**

Having removed the trigger frame completely from the Ego9 body (see page 63), use a 5/64" hex key to remove the two screws that hold the bearing carrier in place in the top of the frame (SEE FIGURE 15.1). Gently lift the bearing carrier and trigger assembly free from the trigger frame taking care not to damage the micro-switch or the Opto sensors (SEE FIGURE 15.2).

Using a 1/16" hex key, loosen the trigger pin retaining set screw from the bottom of the trigger (SEE FIGURE 15.3). Use a small hex key to push the trigger pin out of the bearing carrier from one side (SEE FIGURE 15.4).

Clean the trigger and bearing carrier thoroughly and also clean the space within the frame that the trigger sits into.

Carefully remove the Trigger Spring from the spring hole in the top of the trigger and clean off any paint debris or moisture from it (SEE FIGURE 15.5).



FIG 15.1



FIG 15.2



FIG 15.3



FIG 15.4



FIG 15.5

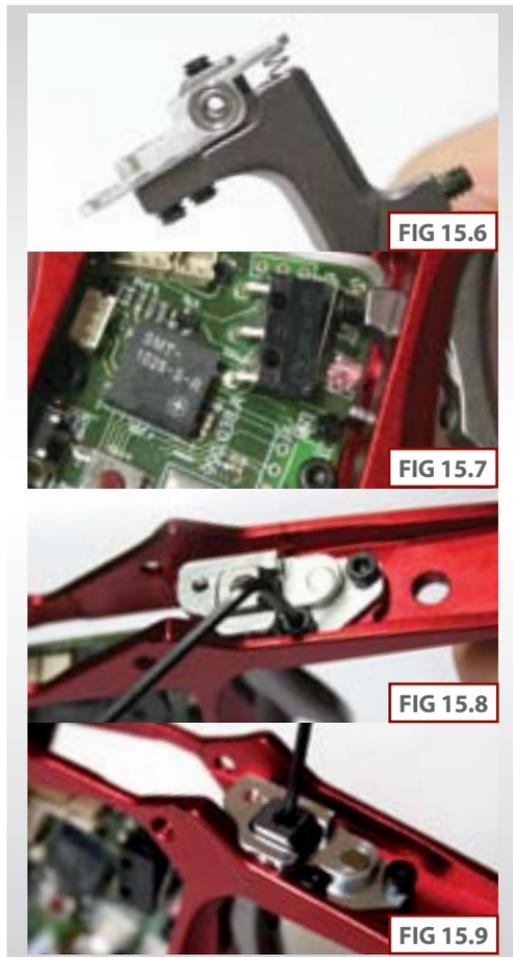
## (CONTINUED)

Replace the Trigger Spring into the spring hole in the top of the trigger and position the trigger so that the hole through the trigger lines up with the holes in the bearing carrier, slide the trigger pin in place (SEE FIGURE 15.6).

Gently lower the trigger assembly and bearing carrier into the frame, taking care not to damage the micro-switch or the Opto sensor, and ensuring that the trigger is positioned correctly (SEE FIGURE 15.7). Using a 5/64" hex key tighten the two screws that hold the bearing carrier in place in the top of the Ego9 frame (SEE FIGURE 15.8). Using a 1/16" hex key tighten down the trigger pin retaining set screw (SEE FIGURE 15.9).

**NOTE: DO NOT FULLY TIGHTEN THE TRIGGER PIN RETAINING SCREW UNTIL THE BEARING CARRIER HAS BEEN SECURED IN THE FRAME. THIS IS TO ENSURE THE TRIGGER PIN IS CORRECTLY LINED UP AGAINST THE SIDE WALL OF THE FRAME.**

You have now stripped and cleaned your Ego9 trigger.



## THE EGO9 SOLENOID ASSEMBLY

**⚠ WARNING //**

**WARNING: DE-GAS YOUR MARKER, DISCHARGING ANY STORED GAS IN A SAFE DIRECTION, AND REMOVE THE BARREL, LOADER AND AIR SYSTEM TO MAKE THE MARKER EASIER TO WORK ON.**

With the frame separated from the Ego9 body and the Solenoid Assembly and BBSS Assembly unplugged from the circuit board (see page 63) use a 5/64" hex key to undo and remove the two screws that hold the Solenoid Assembly onto the Ego9 body (SEE FIGURE 16.1).

With the Solenoid Assembly completely removed from the Ego9 body the bottom of the Ego9 body should now resemble FIGURE 16.2 Ensure that the air transfer holes in the bottom of the body are free from contamination from any dirt, debris, paint or moisture and clear away any excess grease if it appears to be blocking any of the transfer holes.

Check the underside of the Solenoid Assembly to ensure that it is also free from damage or debris (SEE FIGURE 16.3). Remove and clean the rubber gasket as shown in FIGURE 16.4. Replace the rubber gasket ensuring that it lies flat in its designated groove in the minifold body (SEE FIGURE 16.5).

If you are replacing a defective Pilot Assembly, unscrew it from the minifold and replace it with a new Pilot Assembly unit (SEE FIGURE 16.6).



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## (CONTINUED)

Using a 5/64" hex key remove the Spool Cap and Spring (SEE FIGURE 16.7). Remove the Spool Shaft using a pair of needle-nosed pliers as shown in SEE FIGURE 16.8. Clean the Spool Shaft using a cloth to wipe off any paint, debris or old grease and lubricate all of the o-rings on the Spool Shaft with Eclipse Grease before re-inserting it (SEE FIGURE 16.9). Replace the Spool Spring then Spool Cap using a 5/64" hex key to secure them in place (SEE FIGURE 16.10).

Hold the Solenoid Assembly onto the bottom of the Ego9 body, taking care to line it up correctly with the screw holes in the body and to avoid pinching the BBSS wires underneath it. Use a 5/64" hex key to tighten the two screws that hold the Solenoid Assembly onto the Ego9 body (SEE FIGURE 16.11).

You have now successfully stripped and cleaned your Ego9 Solenoid Assembly.

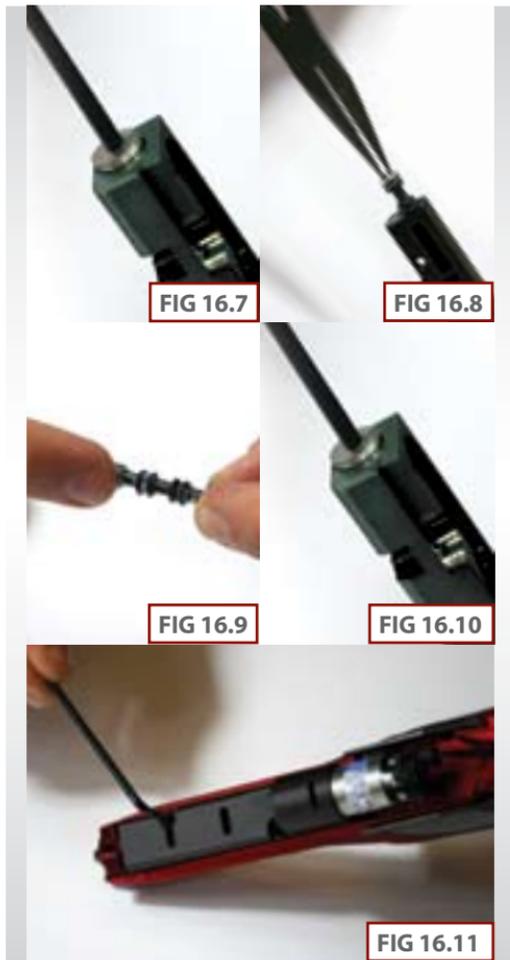


FIG 16.7

FIG 16.8

FIG 16.9

FIG 16.10

FIG 16.11

## REMOVING THE VALVE ASSEMBLY

**⚠ WARNING ///**  
**WARNING: DE-GAS YOUR MARKER, DISCHARGING ANY STORED GAS IN A SAFE DIRECTION, AND REMOVE THE BARREL, LOADER AND AIR SYSTEM TO MAKE THE MARKER EASIER TO WORK ON.**

Lift the bolt pin and slide the bolt out of the rear of the marker. Disconnect any hosing and unscrew the Inline Regulator from the front regulator mount as detailed in the "Cleaning the Inline Regulator" section of this Maintenance guide (page 56-57). Remove the frame as detailed on page 63.

Take the Ego9 body and turn it so that the underside of the Solenoid Assembly, and Valve plug are visible and accessible (SEE FIGURE 17.1). Using a 1/8" hex key remove the screw from the front regulator mount that holds the LPR Body into the marker body (SEE FIGURE 17.2).

Remove the entire LPR assembly, the valve spring and the exhaust valve from the marker body (SEE FIGURE 17.3). Using a 1/8" hex key remove the valve plug from the underside of the Ego9 body (SEE FIGURE 17.4). The bottom of the exhaust valve guide should now be visible through the valve plug hole (SEE FIGURE 17.5). Ensure that the rammer is in its rear position and taking an L-shaped hex key, place it down through the bolt slot in the top of the body so that you can apply light pressure to pop the valve guide out of its place in the Ego9 body (SEE FIGURE 17.6).

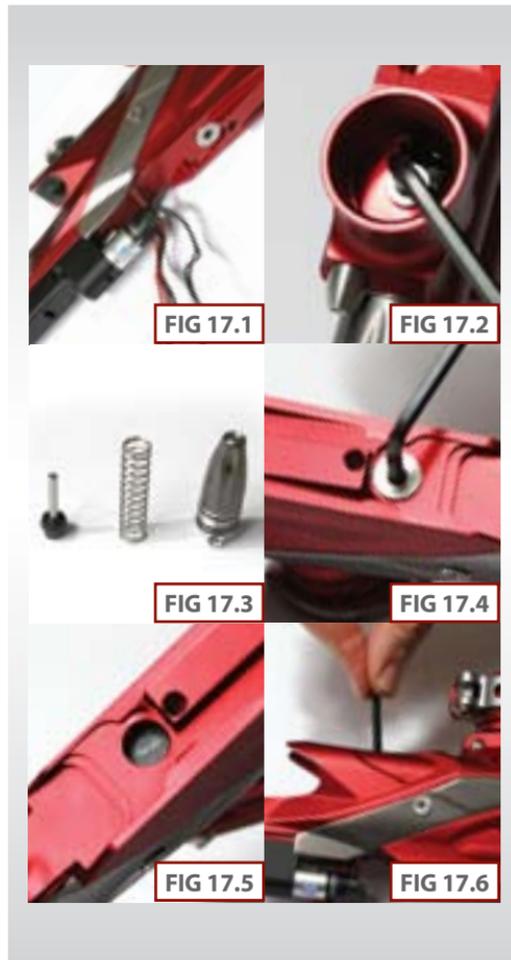


FIG 17.1

FIG 17.2

FIG 17.3

FIG 17.4

FIG 17.5

FIG 17.6

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## (CONTINUED)

Note how one side of the exhaust valve guide is flat (A) whilst the other is raised (B) to create the surface that the exhaust valve seals on (SEE FIGURE 17.7). Inspect the sealing face of both the exhaust valve guide and the exhaust valve for any excessive wear or damage. If the exhaust valve or the exhaust valve guide is damaged then replace with authentic Ego9 parts.

Lubricate both of the o-rings on the exhaust valve guide with Eclipse Gun Oil (SEE FIGURE 17.8). Lubricate the o-rings on the LPR body with Eclipse Gun Oil (SEE FIGURE 17.9).

Place the exhaust valve in the exhaust valve guide, making sure that the sealing faces are next to each other, and place the valve spring over the end of the exhaust valve and then place this sub-assembly over the LPR Body (SEE FIGURE 17.10).

**NOTE:** MAKE SURE THE LARGER DIAMETER FRM SCREW HOLE ON THE LPR BODY AND THE BLOCKED SIDE OF THE EXHAUST VALVE GUIDE ARE IN LINE WITH EACH OTHER BEFORE INSERTING THE PART STACK INTO THE EGO9.

Holding the LPR Assembly so that the larger hole on the LPR body is facing the bottom of the marker body, insert the valve assembly, valve spring and LPR assembly into the front of the marker body (SEE FIGURE 17.11).



## (CONTINUED)

When the exhaust valve is in the correct place, you will be able to see the closed side through the valve plug hole in the Ego9 body (SEE FIGURE 17.12).

Using a 1/8" hex key replace the FRM Screw that secures the LPR body into the marker body (SEE FIGURE 17.13).

**NOTE:** ENSURE THAT THE LPR BODY IS IN THE CORRECT ORIENTATION BEFORE ATTEMPTING TO REPLACE THE FRM SCREW. THE LARGER OF THE TWO HOLES ON THE LPR BODY SHOULD BE AT THE BOTTOM WHEN ALIGNING THE HOLES WITH THE EGO9 BODY.

Make sure that the exhaust valve guide is lined up correctly and then take a 1/8" hex key and replace the valve plug (SEE FIGURE 17.14).

You have now successfully stripped and cleaned your Ego9 Valve Assembly. See page 64 on how to attach the Ego9 Frame.



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## THE EGO9 ON/OFF PURGE SYSTEM (OOPS)

**⚠ WARNING** //

**WARNING: DE-GAS YOUR MARKER, DISCHARGING ANY STORED GAS IN A SAFE DIRECTION, AND REMOVE THE BARREL, LOADER AND AIR SYSTEM TO MAKE THE MARKER EASIER TO WORK ON.**

Having disconnected the macroline hose from the fitting on the OOPS Body, unscrew the OOPS Knob from the OOPS Body (SEE FIGURE 18.1). Clean off any dirt, debris or moisture from the OOPS Knob and the threaded section of the OOPS Body.

Use an appropriately sized hex key to push the OOPS Pin out of the OOPS Body (SEE FIGURE 18.2) and then remove the OOPS Insert using a pair of needle nosed pliers (SEE FIGURE 18.3).

Clean and check the condition of the two o-rings on the outside of the OOPS Insert, replacing as necessary (SEE FIGURE 18.4).



FIG 18.1

FIG 18.2

FIG 18.3

FIG 18.4

## (CONTINUED)

Clean and check the condition of the single internal o-ring in the front of the OOPS Insert, replace if necessary (SEE FIGURE 18.5). Lubricate all three of these o-rings liberally using Eclipse Grease (SEE FIGURE 18.6).

Replace the OOPS Insert into the OOPS Body ensuring that the o-ring end goes in first, pushing it into place (SEE FIGURE 18.7).

Lubricate the narrow end of the OOPS Pin with a Smear of Eclipse Grease and push the pin, narrow end first, into the OOPS Body so that it sits in the OOPS Insert and pokes through the front of the OOPS Body (SEE FIGURE 18.8).

Screw the OOPS Knob back onto the OOPS body until only a couple of threads are showing (SEE FIGURE 18.9).

Reconnect the macroline hose to the fitting on the OOPS Body (SEE FIGURE 18.10).

You have now successfully cleaned and maintained your On/Off Purge System.



FIG 18.5

FIG 18.6

FIG 18.7

FIG 18.8

FIG 18.9

FIG 18.10

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SYMPTOM	POSSIBLE CAUSE	SOLUTION
Although a fresh battery has been fitted, the Ego9 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 lithium battery. Do not use a low quality or rechargeable battery.
The Ego9 leaks from the solenoid.	The gasket is damaged and/or not seated correctly in its designated pocket in the Solenoid Body.	Replace the gasket if damaged using Ego9 parts kit. Ensure the gasket is seated correctly.
	Damaged Ego9 Solenoid.	Replace Ego9 Solenoid.
	LPR is supercharging causing intermittent leaking.	Clean LPR Piston seal.
		Inspect regulator seal (in LPR Piston) and regulator seat (in LPR Body). Replace if necessary.
	Solenoid Spool Shaft is damaged or dirty.	Clean or replace if required.
	Damaged or incorrect seals on Rammer.	Replace seals.
	It is leaking from the Barbs.	Check hose for cuts or replace barbs.
It is over-pressurizing from damaged seals on the valve chamber.	Change Valve Chamber seals.	
The Ego9 leaks down the barrel.	Leaky Exhaust Valve.	Replace Exhaust Valve.
	Damaged Valve Seat.	Replace Valve Guide and o-rings.
Gas vents quickly down barrel as soon as it is gassed up.	Incorrect seal on front of Valve Guide.	Replace front seals on Valve Guide with 013 NBR70.
	The Exhaust Valve has become jammed in the Valve Guide.	Replace Exhaust Valve and valve guide as necessary (see Maintenance Section).

SYMPTOM	POSSIBLE CAUSE	SOLUTION
The marker is chopping or trapping paint.	The Break Beam Sensor System is switched off.	Switch on the Break Beam Sensor System.
	The Bolt is dirty, causing the sensor system to incorrectly detect a paintball.	Clean the Bolt.
	The Break Beam Sensor System is dirty causing the incorrect detection of paintballs.	Clean the Break Beam Sensor System.
	The Dwell parameter is set too low.	Increase the Dwell parameter.
The Ego9 fires yet bolt doesn't move.	Bolt pin is not located in Rammer correctly.	Lift Bolt pin and line up with position of rammer correctly (See Maintenance Section).
The Ego9 does not fire.	Trigger is set up incorrectly.	Set trigger up correctly. (See Advanced Set-Up Section)
	Solenoid is not plugged into the Ego9 PCB.	Plug solenoid into port on the Ego9 PCB.
	The Break Beam Sensor System is enabled but there is no paint.	Fill loader with paint.
	Micro-switch is not being activated.	Adjust Micro-switch activation screw accordingly.
	Micro-switch is damaged.	Replace circuit board.
	Solenoid Pilot Valve is damaged.	Replace Pilot Valve.
Low Velocity First Shot.	FSD Comp parameter is too low to overcome stiction on Solenoid and / or Rammer O-rings.	Increase FSD Comp parameter.
High Velocity First Shot.	FSD Comp parameter set too high.	Reduce FSD Comp parameter.
	Inline Regulator pressure is creeping.	Strip and clean Inline Regulator. Replace Inline Regulator piston if necessary.
The trigger very "bouncy".	Incorrect Filter settings.	Check that your trigger filter and debounce settings suit your trigger set-up.
	Trigger pull too short and return strength too low.	Refer to Advanced Set-Up Section for guidelines of how to adjust your Ego9 trigger accordingly.

SYMPTOM	POSSIBLE CAUSE	SOLUTION
The Break Beam Sensor System does not appear to be reading correctly.	The Break Beam Sensor System is dirty.	Keep the Break Beam Sensors clean to ensure correct readings (See Maintenance Section).
	Break Beam Sensors are the wrong way around.	Check that the red receiver is on the right-hand side of the Breach.
The Break Beam Sensor System is not reading at all.	There is a broken wire or contact, or a short circuit on either of the Breach Sensor cables.	Check the plug of the cables. Check for cuts or pinches in the sensor cables.
	Either sensor is back to front.	Check that the sensors face each other when installed.
Two or more balls are being fed into the breach.	If the Ego9 is being used with a force feed loader, it is possible that the loader is forcing balls past the ball detent.	Change the rubber finger detent.
Ego9 is inconsistent.	Inline Regulator is supercharging.	Strip and clean Inline Regulator. (See Maintenance Section)
Leaking Rammer Assembly ( Leak gets louder when bolt is removed ).	Front ram shaft seal deteriorated.	Replace front Rammer Shaft seal.
Eye turns itself off after firing.	Eye is dirty.	Clean the eyes.
	Eye is faulty.	Replace the eyes.
	Eye is out of place.	Re-Install Eyes. Check alignment.
When the Ego9 powers up, no game timer / shot counter / ROF indicator is displayed and the gun will not fire.	The trigger is permanently depressed.	Turn the front stop set screw in the top of the trigger counter-clockwise until the display reads correctly. If there is sufficient trigger adjustment then turn the return force set screw counter clockwise also.

## ECLIPSE CERTIFIED SERVICE CENTERS

Are you unsure of where to send your Ego9 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  
**Email:** technical@planetecclipse.com  
**Visit:** www.planeteclipse.com

#### OPM

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

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**Visit:** www.paintballcamp.com

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**Email:** paintball@pontodemira.com  
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**Visit:** www.sissos.fi

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**Email:** gerry.b@planetecclipse.com  
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## PART NAME

- |                               |                                     |                                    |
|-------------------------------|-------------------------------------|------------------------------------|
| 01 Valve Guide                | 28 9V Battery                       | 55 Bolt O-Ring                     |
| 02 Valve Plug                 | 29 Frame                            | 56 Clamping Feed Tube              |
| 03 Valve Spring               | 30 Trigger                          | 57 Clamping Feed Tube Screw        |
| 04 Exhaust Valve Assembly     | 31 Printed Circuit Board            | 58 Body                            |
| 05 Rammer Cap                 | 32 Magnet                           | 59 1/4" Elbow                      |
| 06 Rammer Cap O-Ring          | 33 Trigger Adjuster Screw           | 60 1/4" Hose                       |
| 07 Rammer                     | 34 Trigger Pin Locking Screw        | 61 OOPS Body                       |
| 08 Front Rammer O-Ring        | 35 Push Button Strip                | 62 OOPS Pin                        |
| 09 Front Rammer Bumper O-Ring | 36 Display Window                   | 63 OOPS On/Off Knob                |
| 10 Rear Rammer O-Ring         | 37 PCB Screw                        | 64 OOPS Insert                     |
| 11 Pilot Valve                | 38 Grip Screw                       | 65 OOPS Adjuster Screw             |
| 12 Solenoid Assembly          | 39 Navigation Console               | 66 OOPS Insert External O-Ring     |
| 13 Barb                       | 40 Frame Screw                      | 67 OOPS Insert Internal O-Ring     |
| 14 Solenoid Retaining Screw   | 41 Trigger Pin                      | 68 Inline Regulator Swivel O-Rings |
| 15 Low Pressure Hose          | 42 Inline Regulator Swivel          | 69 Valve Guide O-Rings             |
| 16 Torpedo                    | 43 Inline Regulator Top             | 70 Bolt Plunger                    |
| 17 LPR Cap                    | 44 Inline Regulator Top O-Ring      | 71 Bolt Spring                     |
| 18 LPR Adjuster Screw         | 45 Inline Regulator Bottom          |                                    |
| 19 LPR Adjuster Screw O-Ring  | 46 Inline Regulator Bottom O-Ring   |                                    |
| 20 LPR Adjuster Spring        | 47 Inline Regulator Piston          |                                    |
| 21 LPR Piston                 | 48 Inline Regulator Piston O-Ring   |                                    |
| 22 LPR Piston O-Ring          | 49 Inline Regulator Spring          |                                    |
| 23 LPR Piston Spring          | 50 Inline Regulator Adjuster Screw  |                                    |
| 24 LPR Body                   | 51 Inline Regulator Adjuster O-Ring |                                    |
| 25 LPR Body External O-Ring   | 52 Anti-Double Ball Finger          |                                    |
| 26 LPR Body Internal O-Ring   | 53 Bolt                             |                                    |
| 27 FRM Screw                  | 54 Bolt Pin                         |                                    |

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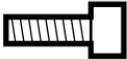
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SCREW	QTY	DESCRIPTION
	7	PCB SCREW (3), BEARING CARRIER (2), SOLENOID (2) (M2.5 x5 CAP HEAD SOCKET)
	8	RUBBER GRIP SCREW (6), BBSS COVERS SCREW (2) (6-32UNC x5/16 COUNTERSUNK SOCKET)
	1	SHORT FEED NECK SCREW (1 x10-32UNF x1/2 CAP HEAD SOCKET)
	1	LONG FEED NECK SCREW (1 x10-32UNF x5/8 CAP HEAD SOCKET)
	1	INLINE REGULATOR ADJUSTER SCREW (CUSTOM MANUFACTURED)
	1	MICRO-SWITCH SCREW (6-32 UNC x1/2 SOCKET SET SCREW)
	4	TRIGGER ADJUSTMENT SCREW (6-32 UNC x3/16 SOCKET SET SCREW)
	1	TRIGGER PIN LOCKING SCREW (6-32 UNC x1/8 SOCKET SET SCREW)
	2	T-RAIL SCREW (10-32 UNF x1/2 SOCKET SET SCREW)
	1	VALVE PLUG (CUSTOM MANUFACTURED)
	1	LPR ADJUSTER SCREW (CUSTOM MANUFACTURED)
	2	SHORT FRAME SCREW (10-32 UNF x3/8 SOCKET BUTTON HEAD)
	1	FRM RETAINING SCREW (CUSTOM MANUFACTURED)

O-RING	LOCATION	O-RING	LOCATION
	Inline Regulator Swivel Barrel Back LPR Body*		Back of the Rammer Rammer Cap Inline Regulator Bottom
<b>016</b>			Inside LPR Body Inside Rammer Cap
	Inline Regulator Piston Inline Regulator Top (NBR 90) Barrel Front Bolt		Rammer Front Bumper Rammer Shaft
<b>015</b>			OOPS Insert External Inline Regulator Adjuster Screw
	LPR Body*		Torpedo LPR Adjuster Screw
<b>14x2</b>			OOPS Insert Internal (NBR 90)
	Valve Guide LPR Piston	<b>007</b>	
<b>013</b>		<b>006</b>	
<p><b>* = EITHER 016 OR 14x2 O-RINGS CAN BE USED ON THE LPR BODY DUE TO THE FACT THAT IT HAS TWO SEALING O-RINGS.</b></p> <p><b>ALL O-RINGS ARE NBR 70 DUROMETER UNLESS OTHERWISE STATED.</b></p>			

**ECLIPSE GUN OIL**

The recommended oil for use in all maintenance and servicing procedures that require oil.


**ECLIPSE GREASE**

The recommended grease for use in all maintenance and servicing procedures that require grease.


**TECH FLEX MAT**

Protect your Ego9 whilst you maintain it with the Eclipse Tech Flex Mat.


**TECH SHIRT**

The perfect pocket covered garment for carrying all those hex keys and spares for your Ego9.


**ECLIPSE GEO**

The perfect kit bag companion for your Ego9. The Eclipse Geo is our new breed of paintball marker.


**09 GRAVEL PACK**

Transport your Laptop in style with the new '09 Gravel Pack.


**EGO9 COMPREHENSIVE SPARES KIT**

Replacement spares to service your Ego9. (not all parts shown)


**BBSS SPARES KIT**

Replacement Break Beam Sensor System kit for your Ego9.


**ECLIPSE EGO9/ETEK/GEO TOOL TUBE**

This handy little tool tube includes all of the hex key sizes that you will need to strip and maintain your Ego9, Etek or Geo marker.


**BALL DETENTS**

10 Replacement rubber Detents for your Ego9.


**ECLIPSE SHAFT 3 BARREL BACKS**

Different size barrel backs to suit different size paint. Available in .685 .689 .691 .695 bore sizes (backs sold individually). Colour and size subject to availability.


**09 LOWLAND KITBAG**

What better place to keep your Ego9?





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