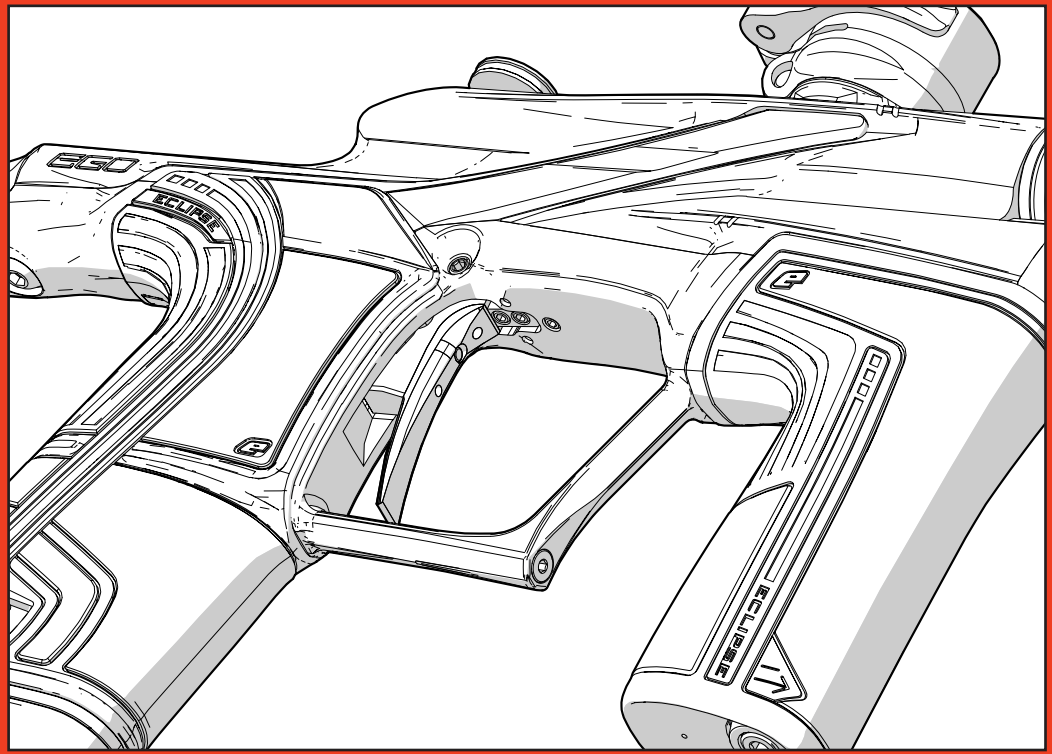
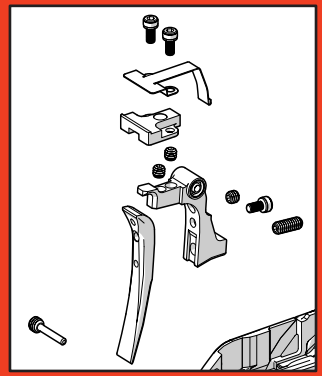
PLANET ECLIPSE: EGO LV2

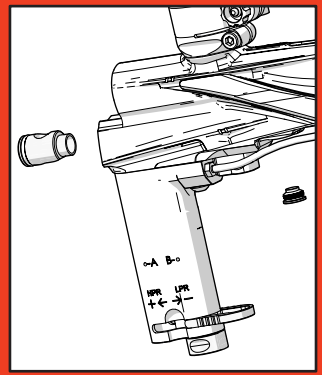
USER MANUAL: ENGLISH

EGO LV2

AIR | 68CAL | APT ECLIPSE® ADVANCED PAINTBALL TECHNOLOGY







WARNING!

IMPORTANT SAFETY NOTICES

- **PLANET ECLIPSE PAINTBALL EQUIPMENT IS NOT A TOY. PAINTBALL SAFETY RULES MUST BE FOLLOWED AT ALL TIMES.**
- Careless or improper use of the marker and/or parts, including failure to follow instructions and warnings within this User Manual could cause serious injury or even death.
- Do not remove or deface any warnings attached to the marker.
- 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 the user and any person within range. Proper protection must be worn during assembly, cleaning and maintenance.
- Hearing protection should be worn.
- Never shoot at a person who is not wearing proper protection.
- Never look directly into the barrel of the marker. Accidental discharge into the eyes may cause permanent injury or even death. Never look into the barrel or breech area of the marker whilst the marker is switched on and able to fire.
- Keep the marker switched off until ready to shoot.
- Treat every marker as if it is loaded and ready to fire.
- The electronic ON/OFF button is the marker's disabling device. Always switch OFF when not in use.
- Always fit a barrel-blocking device when not in use.
- Always remove paintballs from the marker when not in use.
- Do not field strip or remove any parts while the marker is pressurised.
- Do not pressurise the marker without the components of the marker correctly installed; high-pressure gas may be emitted.
- Do not fire the marker without the bolt correctly installed.
- Never put your finger or any foreign objects into the paintball feed tube of the marker.
- Never allow pressurised gas to come into contact with any part of your body.
- Always remove the first stage regulator and relieve all residual gas pressure from the marker before disassembly.
- Always remove the first stage regulator and relieve all residual gas pressure from the marker for transport and storage.
- Always follow guidelines given with your first stage regulator for safe transportation and storage.
- Always store the marker in a secure place.
- Observe all local and national laws, regulations and guidelines.
- Persons under 18 years of age must have adult supervision when using or handling the marker.

WARNING!

IMPORTANT SAFETY NOTICES

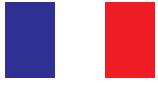
- Only use professional paintball fields where codes of safety are strictly enforced.
- Use compressed air/nitrogen only. Do not use any other compressed gas or pressurised liquid including CO2.
- Always follow instructions, warnings and guidelines given with any first stage regulator you use with the marker.
- Use 0.68 inch calibre paintballs only.
- Always measure your marker's velocity before playing paintball, using a suitable chronograph.
- Never shoot at velocities in excess of 300 feet (91.44 metres) per second, or at velocities greater than local or national laws allow.
- Any installations, modifications or repairs should be carried out by a qualified individual at a licensed and insured paintball facility.

WARNING !

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.

THIS USER MANUAL IS IN ENGLISH.

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



LE MODE D'EMPLOI EST EN ANGLAIS.

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

ESTE MANUAL DE USUARIOS (OPERARIOS)

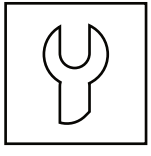
Usarios está en Inglés.Contiene importantes normas de seguridad e instrucciones. Si no está seguro de algùn punto o no entiende los contenidos de este manual debe consultar con un experto.

DIESE BEDIENUNGS – UND BENUTZERANLEITUNG IST IN ENGLISCH.

Sie enthaelt wichtige Sicherheitsrichtlinen und –bestimmungen. Solten Sie sich in irgendeiner Weise unsicher sein, oder den Inhalte dies Heftes nicht verstehen, lassen Sie sich bitte von einen Experten beraten.

04 CONTENTS

LET'S GO



SUPPORT

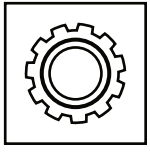
Eclipse customers have access to our worldwide technical support network that will help you with any technical problems from localised service centres to on–site* tech support.

QUALITY

All Eclipse products undergo meticulous checks by experienced specialists who care about the product that arrives at your door. Precision materials + high standards = a quality product.

WARRANTY

Our exceptional 24 months from date of manufacture OR minimum of 12 months with proof of purchase warranty ensures your claim will be repaired or replaced in a snap!



STANDARD

Your Eclipse marker is awesome and requires no after market parts however, for genuine Eclipse accessories and support please consult your local Eclipse Dealer for upgrade options.

* Conditions apply, see online policies for full details at planeteclipse.com

06 INTRODUCTION

SETTING UP

FIG.1

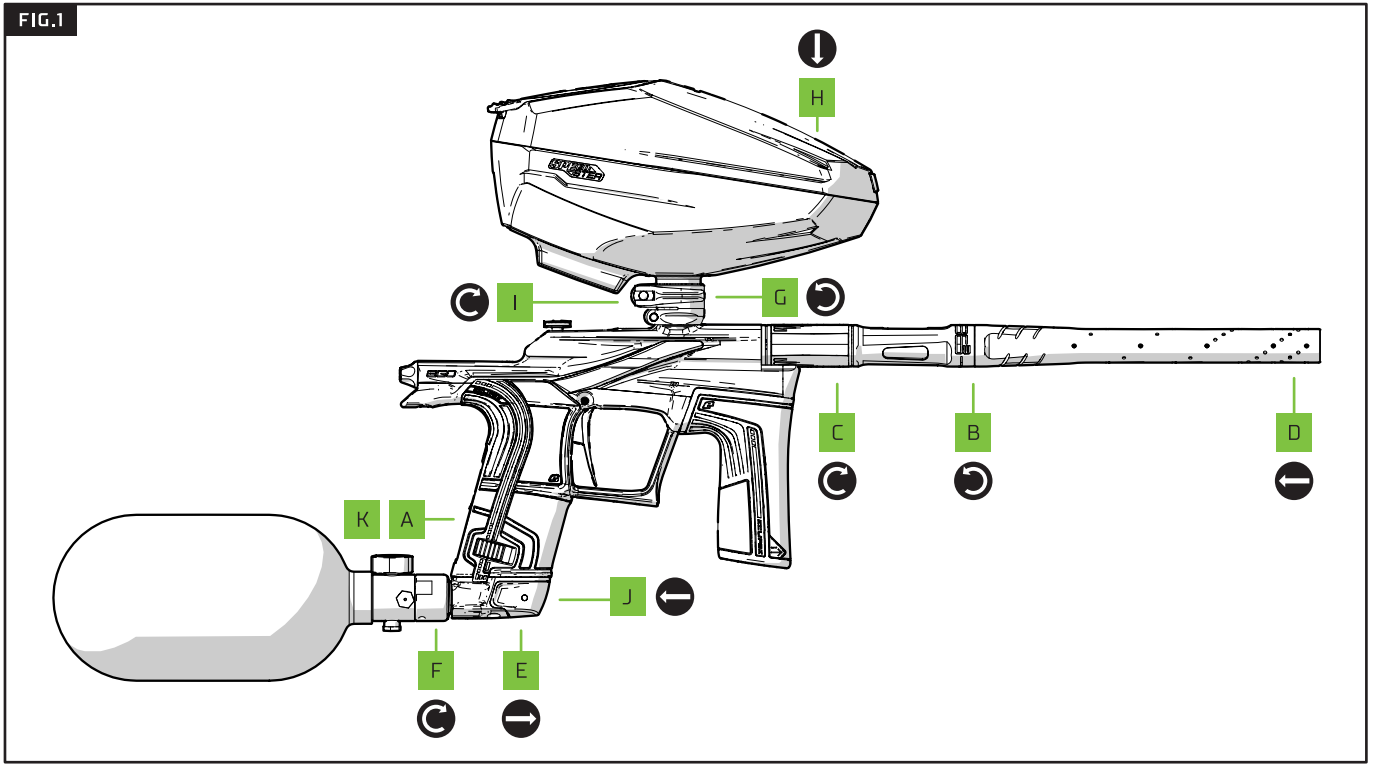


FIG.1

A **SWITCH MARKER OFF BEFORE YOU BEGIN.**

B **BUILD THE 3-PIECE S63 BARREL.**
Slide the insert into the back section.
Rotate the barrel tip counter-clockwise onto the back.

C **ATTACH THE COMPLETE BARREL TO THE MARKER.**
Rotate the barrel clockwise into the marker body.

D **FIT A BARREL BLOCKING DEVICE FOR SAFETY.**

E **ENSURE THE MARKER IS DE-GASSED.**
Push and hold the POPS button then pull the POPS bonnet away from the POPS body.

F **ATTACH A PRE-SET AIR SYSTEM.**
Rotate the air system clockwise into the POPS body.

G **LOOSEN THE CLAMPING FEED-NECK.**
Open the feed-neck lever away from the feed-neck.
Rotate the feed wheel counter-clockwise.

H **ATTACH A LOADER.**

I **SECURE THE LOADER.**
Rotate the feed wheel clockwise to tighten.
Close the feed-neck lever to secure.

J **GAS THE MARKER.**
Push the POPS bonnet into the POPS body until it engages.

K **SWITCH ON THE MARKER.**

! **IMPORTANT!** To switch ON/OFF see page 08.

! **DO NOT** over-tighten the barrel.

! **ALWAYS** ensure marker is de-gassed when setting up.

! **NEVER** use CO2. Only use compressed air or Nitrogen.

WARNING !

Always make sure that the marker is OFF with a barrel blocking device installed and that no paintballs are in the marker or loader before attaching an air system.

Compressed air and nitrogen systems can be extremely dangerous if handled or used incorrectly.

Only attach an air system certified for use within the country of use.

Never add lubricants or grease into the fill adaptor of the air system regulator.

Ensure that all screws are tightened and no parts are loose before installing an air system.

Do not pressurise the marker without the bolt system correctly installed, as high pressure gas will be emitted.

Do not install a compressed air system or load paintballs into the marker until you feel confident with your ability to handle the marker safely and responsibly.

08 INTRODUCTION

SWITCHING THE MARKER ON/OFF

FIG.1

The navigation console houses the breech sensor (BS) status indicator A; the navigation buttons: **Up** B **Select** C **Down** D; and OLED screen E.

SWITCHING ON

Press and hold **Select** (or double-click it *) until TURN OFF? is displayed. The LED A will flash to indicate the BS status.
See page 15 for BS indicator references.

SWITCHING OFF

Press and hold **Select** until TURN OFF? is displayed. Press **Select** again to switch off.

FIRING THE MARKER

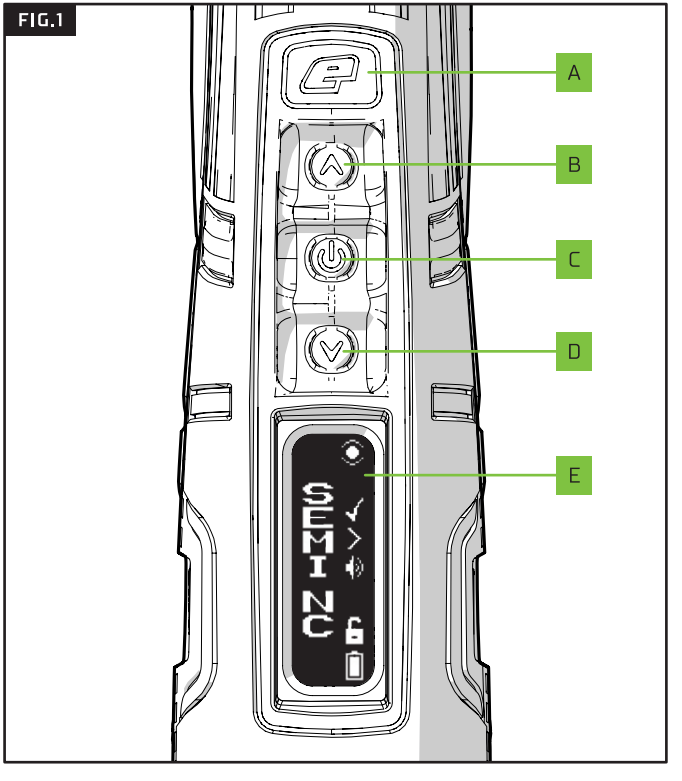
Pull the trigger to fire. The BS status indicator (LED) and the breech sensor indicator (OLED) will signify if the marker is able to fire.

To toggle the breech sensor on/off push and hold **Up** for 0.5 seconds when the marker is on. See page 10 for BS indicator states.

* Double-click can be disabled in the HARDWARE menu (page 50).

WARNING!

DO NOT dry fire your marker as this may lead to damage over a sustained period.



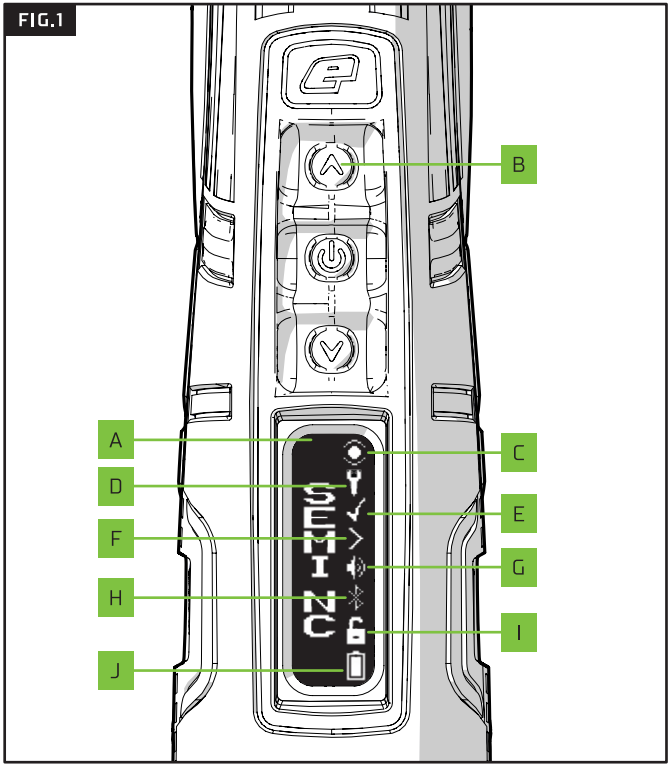


FIG.1

Once powered-up a run screen will be displayed. There are a number of run screens and, with the exception of the Splash screen, they all have the same layout.

- A Run screen specific information.
- B Tap **Up** to cycle through the run screens.
- C The breech sensor (BS) indicator.
  See page 10 for BS indicator states.
- D The service indicator.
- E Factory preset indicator.
- F The trigger detection indicator.
- G The sound indicator.
- H The Bluetooth® indicator (if module is installed).
- I The lock indicator (to change the lock state see page 19).
- J The battery level indicator (see page 13).

INTRODUCTION

OLED INDICATORS

FIG.1

The BS indicator A displays the various states of the breech sensor.

BS ENABLED AND A BALL IS DETECTED
The marker can be fired up to the selected rate of fire.

BS ENABLED AND NO BALL IS DETECTED
The marker cannot be fired.

BS DISABLED
The marker can be fired up to the rate of fire set by the BS OFF ROF parameter (see page 42).

BS ENABLED IN TRAINING MODE
Training mode is enabled and simulates firing up to the selected rate of fire.

BS DISABLED IN TRAINING MODE
Training mode is enabled and simulates firing up to the rate of fire set by the BS OFF ROF parameter.

BS DISABLED DUE TO DETECTION FAULT
A fault has temporarily disabled the BS and reduced the rate of fire to 2bps below the BS ON ROF parameter.

BS FAULT CLEARED AND A BALL IS DETECTED
A fault has been cleared and the marker can be fired up to the selected rate of fire.

BS FAULT CLEARED AND NO BALL IS DETECTED
A fault has been cleared but the marker cannot be fired.

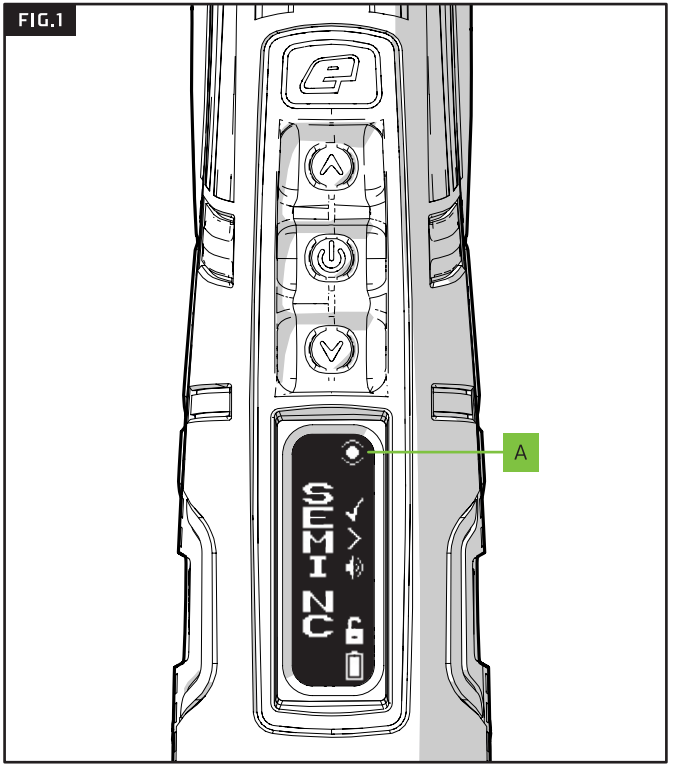


FIG.1

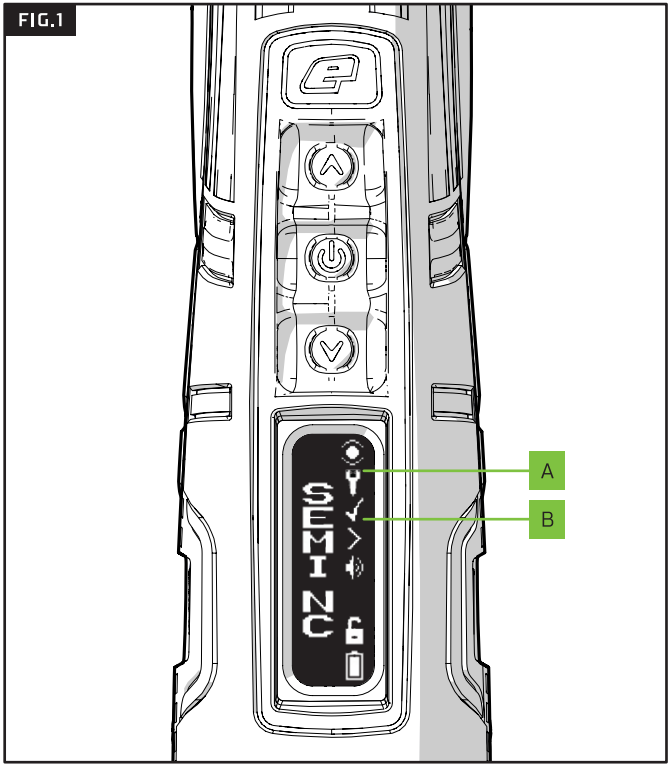


FIG.1

When displayed, the Service Indicator A is used to indicate that the marker requires some user maintenance.

LUBRICATION REQUIRED
The marker has fired a sufficient number of shots to warrant lubrication.

SERVICE REQUIRED
The marker has fired a sufficient number of shots to warrant a service.

A Preset is a group of parameters designed to control the firing mode of the marker.

A Factory Preset is one that has been built into the marker firmware and is designed to conform with the rules of a particular paintball league or industry recognised standard.

The Factory Preset Indicator B is used to indicate whether or not the currently selected preset is one of the Factory Presets.

FACTORY PRESET
The parameters conform to a factory preset.

NOT A FACTORY PRESET
The parameters do not conform to a factory preset.

INTRODUCTION

OLED INDICATORS

FIG.1

The Trigger Detection Indicator A is used to indicate the state of the trigger.

MICROSWITCH NOT ACTUATED
The trigger is in a released or forward state.

MICROSWITCH ACTUATED
The trigger is in a pulled or rearward state.

The sound indicator B is used to indicate whether the speaker is on or off.

SOUND ENABLED
Sound is used to indicate certain events.

SOUND DISABLED
Sound has been muted.

When displayed, the Bluetooth® indicator C is used to indicate that Bluetooth® is enabled. Only applicable if the Bluetooth® module has been installed.

BLUETOOTH® ENABLED
Bluetooth® is On.

IMPORTANT: If the Bluetooth® module is NOT installed then all relevant Bluetooth® parameters will be automatically excluded from the menus.

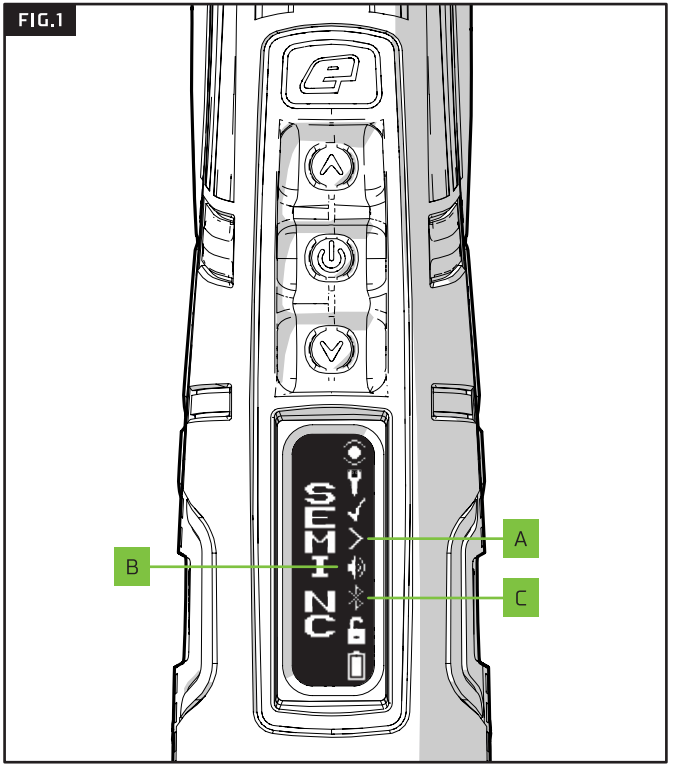


FIG.1

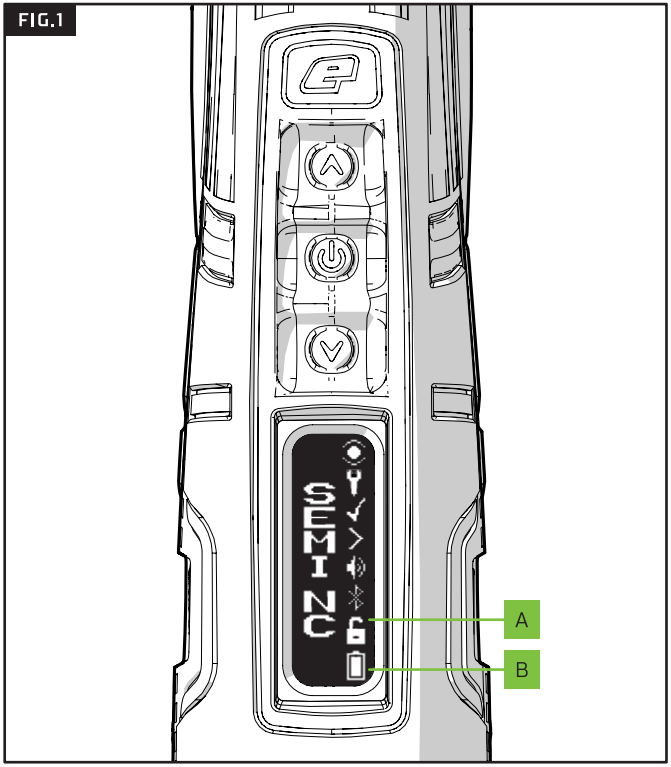


FIG.1

The Lock Indicator A shows the status of the Tournament Lock (see page 19 to change the lock state).

LOCKED
Firing mode parameters cannot be changed. This is a tournament legal mode of operation.

UNLOCKED
Firing mode parameters can be changed.

The Battery Indicator B shows the level of charge the battery has.

FULL BATTERY
The battery is fully charged.

50% DRAINED BATTERY
The battery level is 50% drained and should be monitored.

DRAINED BATTERY
The battery should be changed.

BATTERY CIRCUIT FAULT
The battery level cannot be determined.

ESTIMATED BATTERY
The battery level is estimated and not accurate until the marker is fired.

INTRODUCTION

FIRMWARE VERSION CHECK

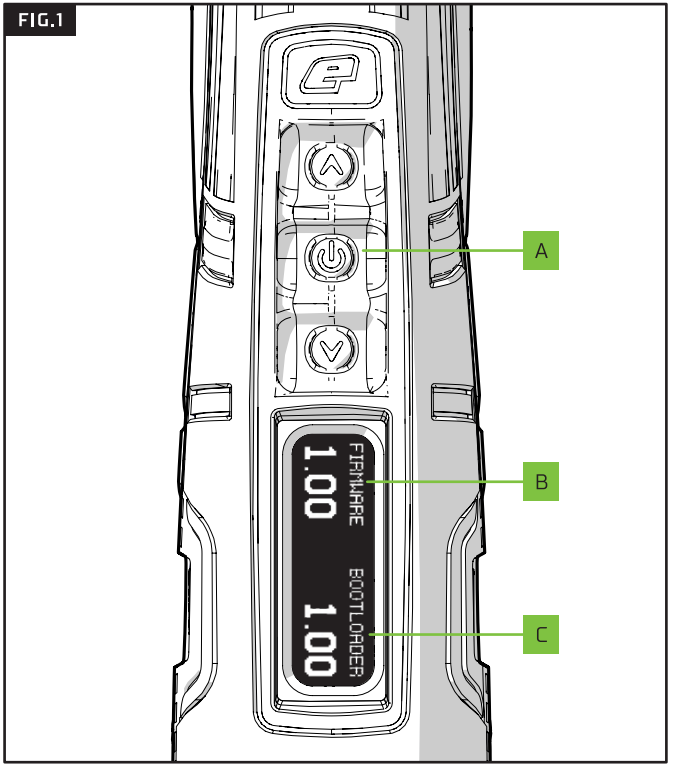
FIG.1

To check which version of firmware is currently installed in the marker, do the following –

1. Push and hold **Select** A to switch the marker on.
2. When the marker logo appears, let go of **Select**.
3. The version screen will now be displayed. *

The firmware number B indicates the version of the control program and the bootloader number C indicates the version of the bootloader, a separate program used to connect to a PC for the purpose of performing firmware updates.

* If you push and hold Select when the version screen appears, the screen will remain until Select is released.



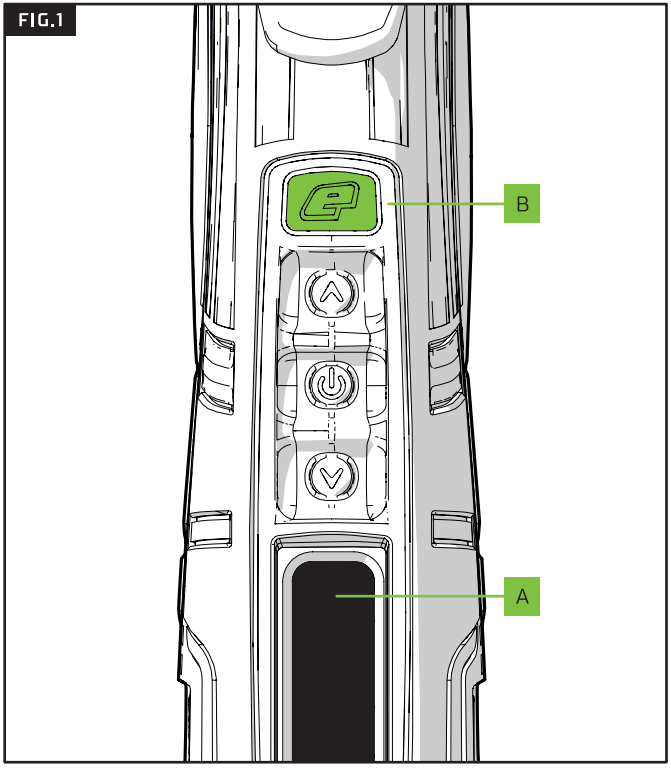


FIG.1

In addition to the OLED user interface A the navigation console also houses the flashing BS status indicator B .

The BS status indicator will flash and change colour depending on the breech sensor's operational status.

See table below.

LED INDICATION	BS STATUS
Flashing Yellow	BS enabled. No paintball detected. Marker will NOT fire.
Flashing Light Blue	BS enabled. Paintball detected. Marker WILL fire.
Flashing Purple (Slow)	BS disabled. Marker WILL fire.
Flashing Purple (Fast)	Blockage detected. BS disabled. Marker WILL fire.

INTRODUCTION

REMOVING THE GRIPS

FIG.1

To unlock and remove the grips you must slide the grip release tabs forwards A which will unlock the grip halves. This needs to be done on both sides of the grips.

FIG.2

Use the plastic section of the rear grip B to leverage the rear grip away from the frame.

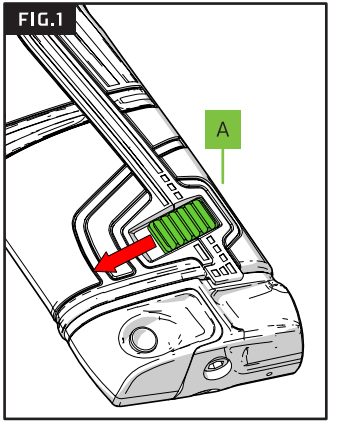
FIG.3

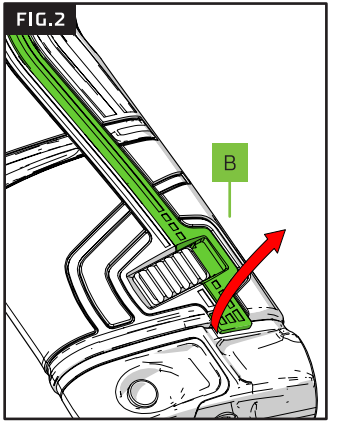
Lift and pull the rear grip section C away from the frame.

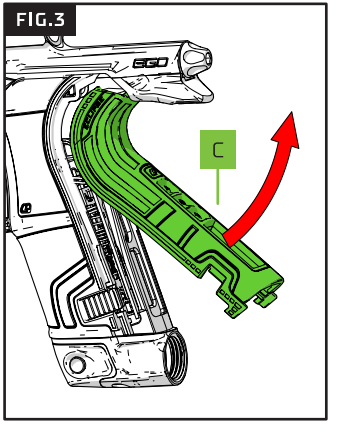
FIG.4

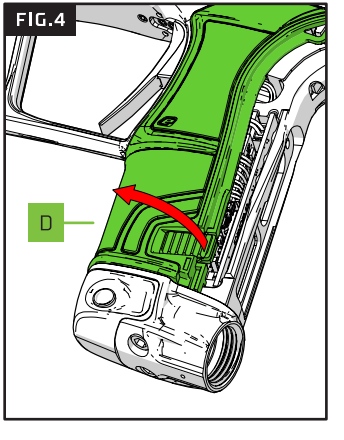
Lift and pull the front grip section D away from the frame.

Removing the grips will allow access to the battery, tournament lock, wiring, circuit board and its connections.



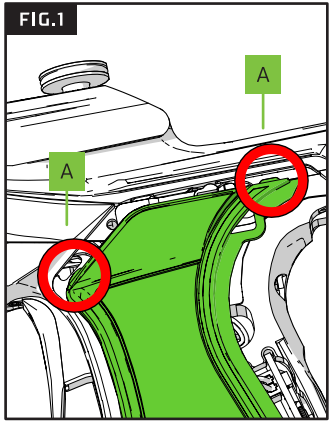


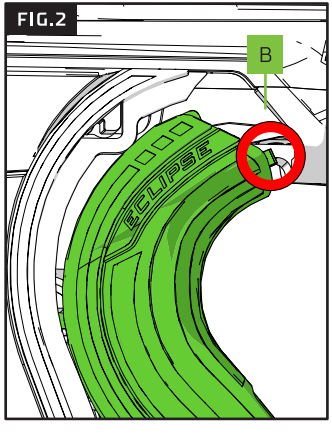


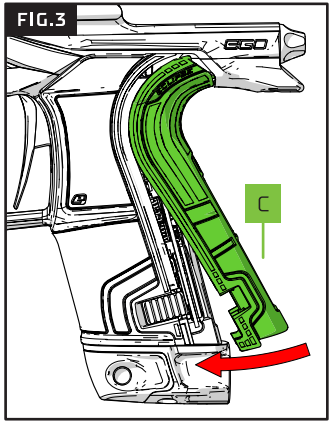


WARNING!

Always make sure that the marker is OFF with a barrel blocking device installed and that no paintballs are in the marker or loader before removing/replacing the grips.







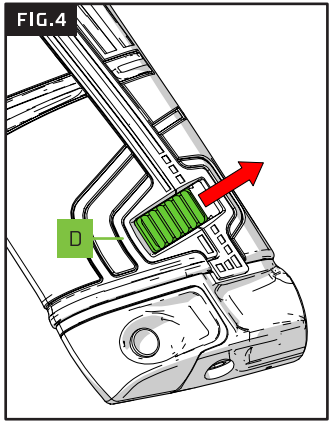


FIG.1

Replace the grips in the reverse order of how you removed them. You MUST check that the location tabs A (both sides) in the front grip section clip beneath the body before fitting the front grip section.

FIG.2

This also applies to the rear grip section. Make sure the location tabs B (both sides) clip under the body before fitting the rear grip section.

FIG.3

Once the location tabs are in place simply simply swing the rear grip section into place C .

FIG.4

Finally, secure the grips by closing the grip release tabs D .

WARNING!

Always make sure that the marker is OFF with a barrel blocking device installed and that no paintballs are in the marker or loader before removing/replacing the grips.

INTRODUCTION

BATTERY REPLACEMENT

With the grips removed (see page 16) you can access the battery.

FIG.1

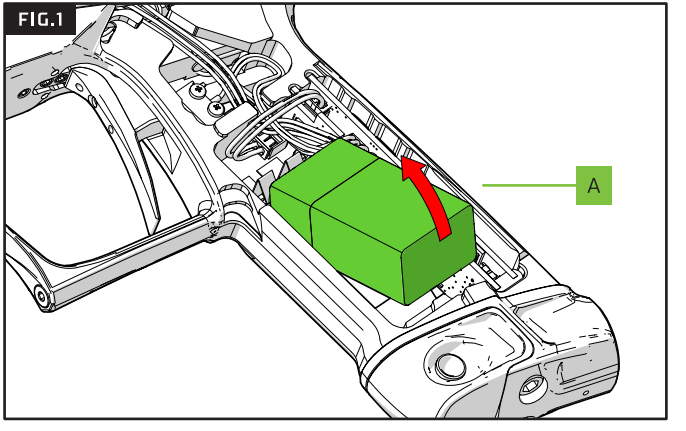
To remove the battery simply lift the base of the battery up and out putting slight pressure on the contacts to ease removal A.

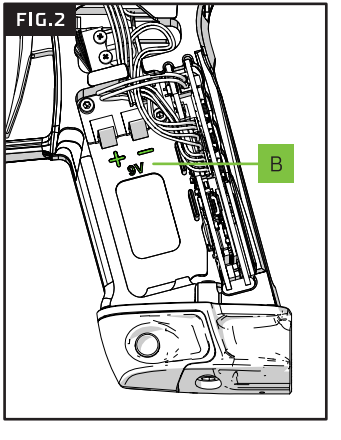
FIG.2

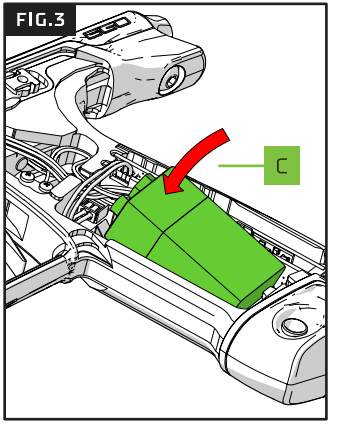
Removing the battery allows access to the battery recess and the battery connection orientation marks (+/–) B.

FIG.3

When fitting a new battery push the bottom part into the recess first, then pivot the top of battery and its connectors in place C.







IMPORTANT!

ALWAYS use good quality batteries. DO NOT use rechargeable batteries.

FIG.1

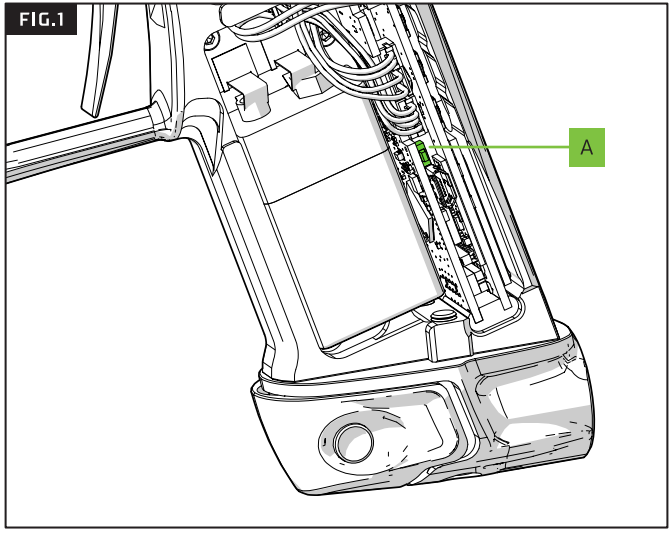


FIG.2

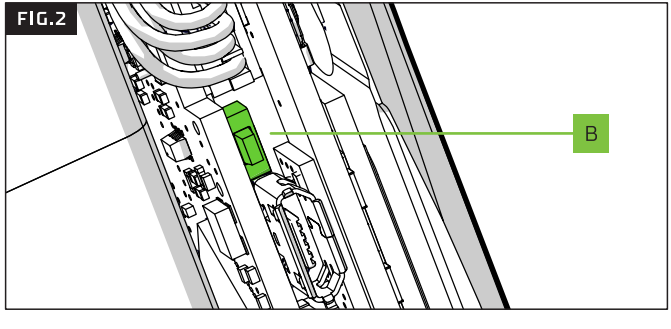


FIG.1

Remove the grips a shown on page 16 to access the tournament lock button A on the left side of the frame.

FIG.2

Push the tournament lock button B to toggle the tournament lock state – which will be displayed on the OLED screen. See page 13 for more information.

Many of the marker features and settings require the tournament lock state to be set to UNLOCK.

WARNING!

Always make sure that the marker is OFF with a barrel blocking device installed and that no paintballs are in the marker or loader before changing the tournament lock state to avoid accidentally firing the marker.

INTRODUCTION

BREECH SENSORS AND DETENTS

FIG.1

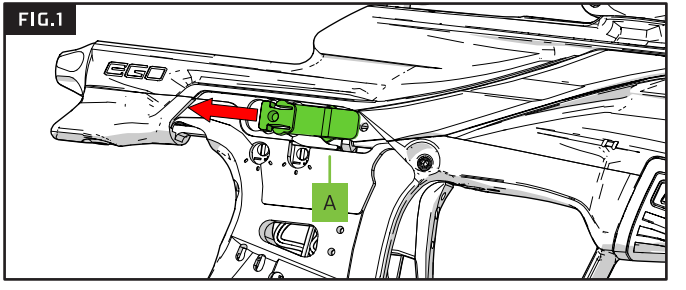
Once the grips have been removed you can access the breech sensor (BS) cover release clips A which are on both sides of the marker. Slide the clips rearwards to release the breech sensor (BS) covers.

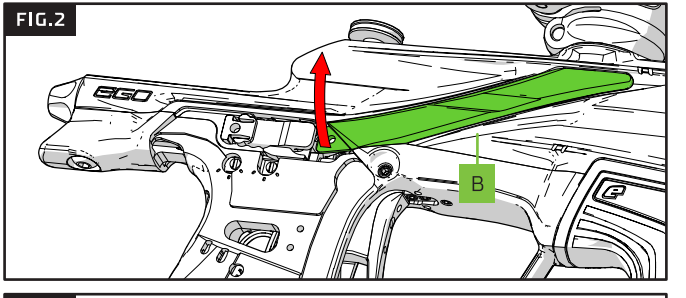
FIG.2

The BS covers B will now be free to remove.

FIG.3

Simply lift the BS covers B away from the body to expose the BS wires and sensors C and rubber detents D.





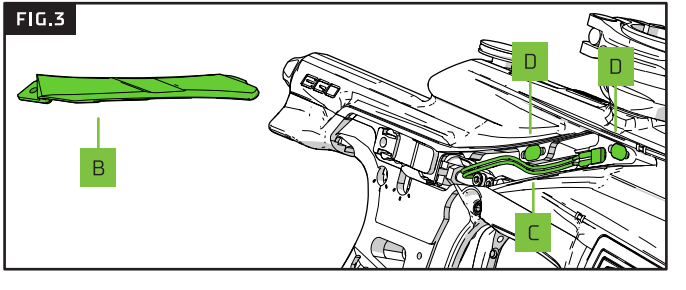


FIG.1

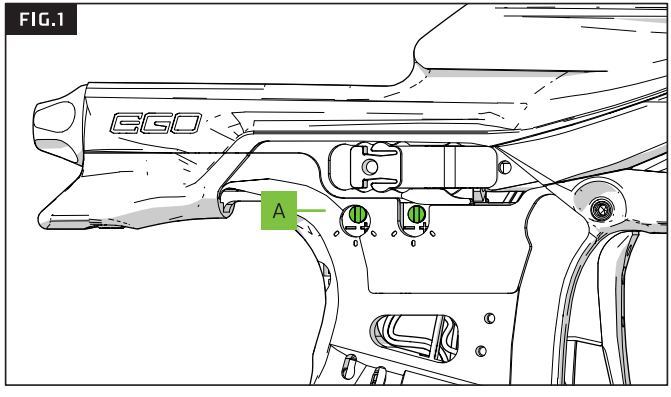


FIG.2

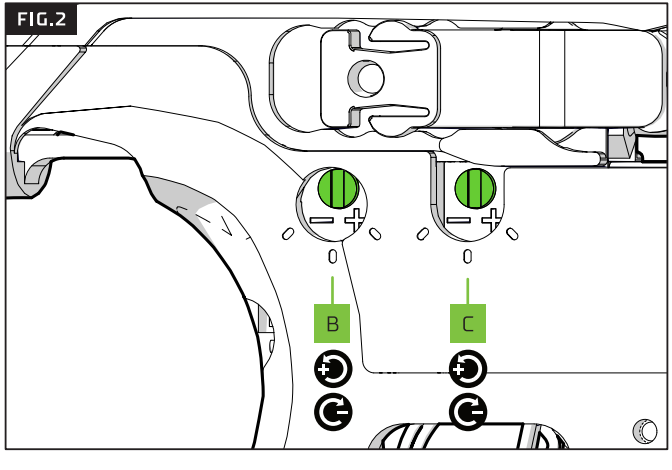


FIG.1

Remove the grips to access. The Solenoid Flow Restrictor (SFR) A controls the speed of the bolt and rammer.

FIG.2

The rear SFR screw B controls the speed of the rearward action of the bolt and rammer.

The front SFR screw C controls the speed of the forward action of the bolt and rammer.

Turning the SFR screws counter-clockwise towards the + position increases the speed. Turning clockwise towards the – position decreases the speed.

WARNING!

If the rearward speed is TOO LOW this will cause very low rates of fire.

If the forward speed is set TOO LOW this will cause very low and inconsistent velocity.

INTRODUCTION

VELOCITY ADJUSTMENT

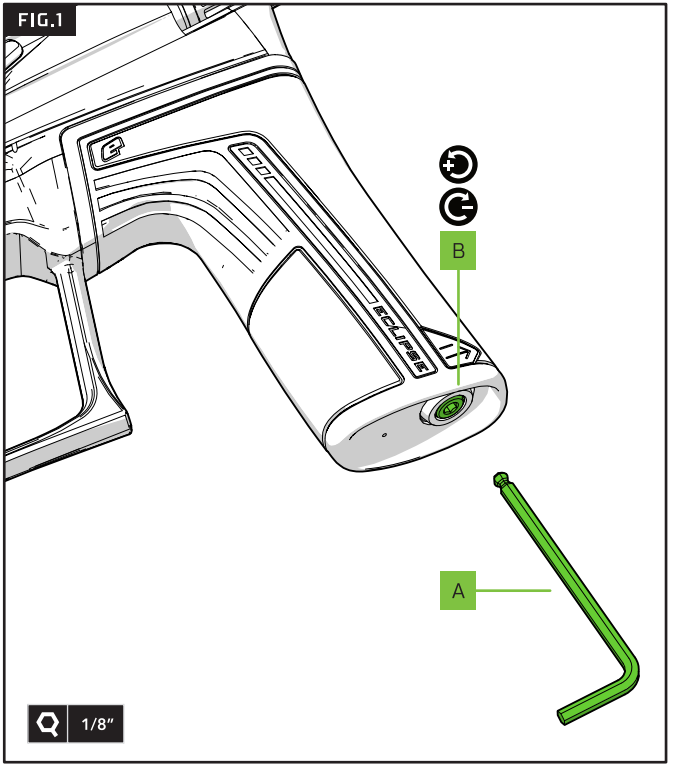
FIG.1

The velocity adjustment screw is accessed from the bottom of the foregrip. Insert a 1/8 hex key A into the adjuster screw B to increase/decrease the velocity.

Turn the hex key clockwise to reduce velocity.
Turn the hex key counter-clockwise to increase velocity.

! Fire two clearing shots after each velocity adjustment for an accurate velocity reading.

! **DO NOT** turn the adjustment screw in too far as this will prevent the marker from firing.



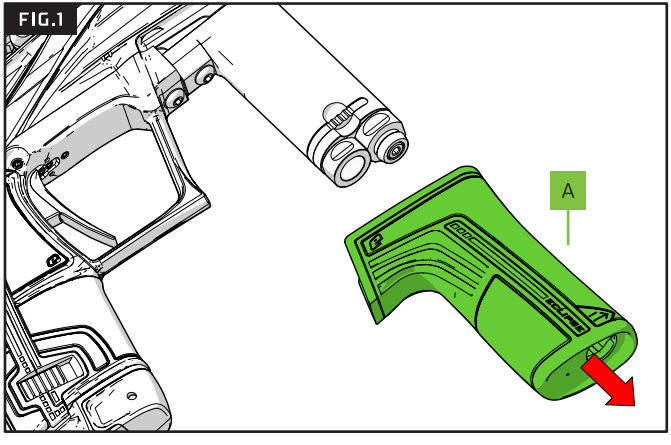
WARNING!

DO NOT exceed 300FPS.

ALWAYS wear correct protective equipment when firing your marker.

NEVER point your marker in the direction of other people when not on the field.

ALWAYS be aware of where the barrel is facing when adjusting the velocity.



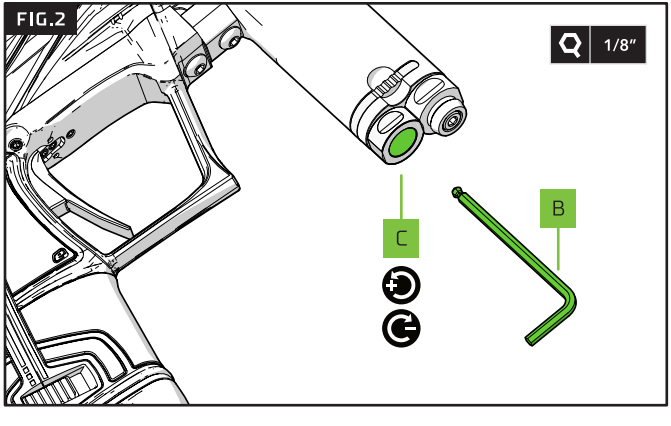


FIG.1

Remove the foregrip A by pulling downwards firmly.

FIG.2

Insert the 1/8" hex key B. Into the LPR adjustment barrel C. Turn the key counter-clockwise to increase the LPR pressure or clockwise to reduce the LPR pressure.

Note: The FACTORY position is ½ turn counter-clockwise from its fully screwed in position.

WARNING!

Winding the LPR adjuster too far in, or out will seriously affect how the marker operates and in some cases it will prevent it from firing.

INTRODUCTION

TRIGGER ADJUSTMENT

FIG.1

Trigger retaining screw (5/64) A holds the trigger assembly in place. Removing this allows the assembly to be removed via trigger guard.

Spring return screw (1/16) B adjusts the spring strength of the trigger return. Clockwise increases the strength, counter-clockwise decreases it.

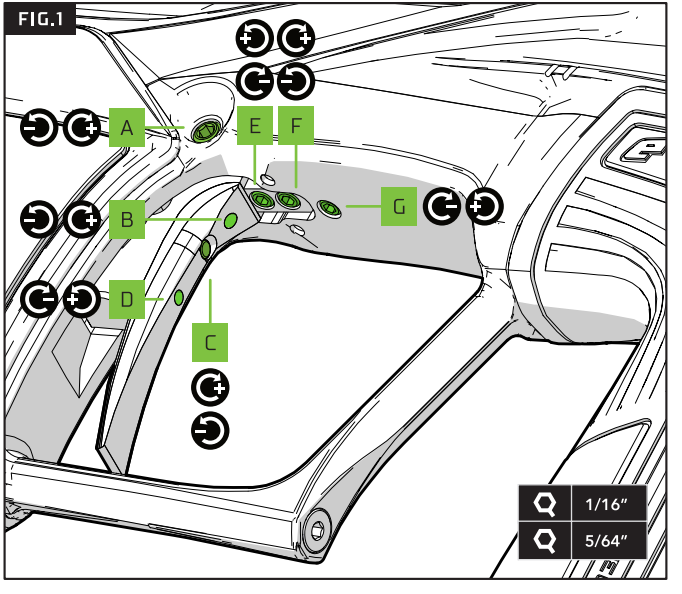
Trigger shoe retaining screw (5/64) C can be removed to switch the trigger shoe. This screw can only be accessed when the trigger assembly is removed.

Micro-switch screw (1/16) D adjusts the distance between the trigger and micro-switch. Clockwise reduces the distance, counter-clockwise increases it.

The (1/16) pre-travel screw E adjusts the distance the trigger travels before being pulled. Clockwise reduces the amount of travel (shortening the trigger), counter-clockwise increases the distance.

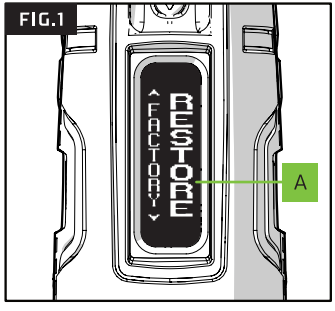
The (1/16) magnet adjuster screw F adjusts the strength of the trigger return. Clockwise increases the strength, counter-clockwise reduces it.

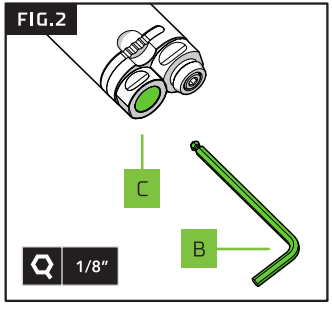
The (1/16) post-travel screw G adjusts the distance the trigger travels once pulled. Clockwise reduces the amount of travel (shortening the trigger) counter-clockwise increases the trigger pull distance.

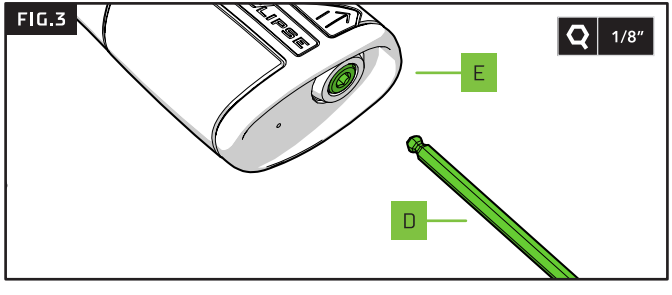


WARNING!

DO NOT wind the screws in too far as this may prevent the marker from firing, or even damage it. If pre-travel screw is wound in too far the marker may fire unintentionally.







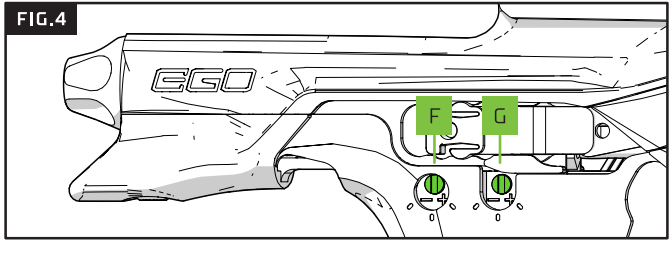


FIG.1 – FACTORY RESTORE

Navigate to the HARDWARE > FACTORY menu item and select the RESTORE option A.

FIG.2 – LPR

Using the 1/8 hex key B turn the LPR adjuster screw C clockwise until it is in the fully screwed–in position. Then back it off by half a turn counter–clockwise.

FIG.3 – VELOCITY

Using the 1/8 hex key D turn the velocity adjuster screw E counter–clockwise until it is in the full screwed–out position. Then wind it in 2 turns clockwise.

FIG.4 – SFR

Using a small flat head screwdriver, set the rear SFR adjuster F and the front SFR adjuster G to the 12 o' clock position.

Your marker is now set to stock factory settings.

INTRODUCTION

UNLOADING THE MARKER

FIG.1

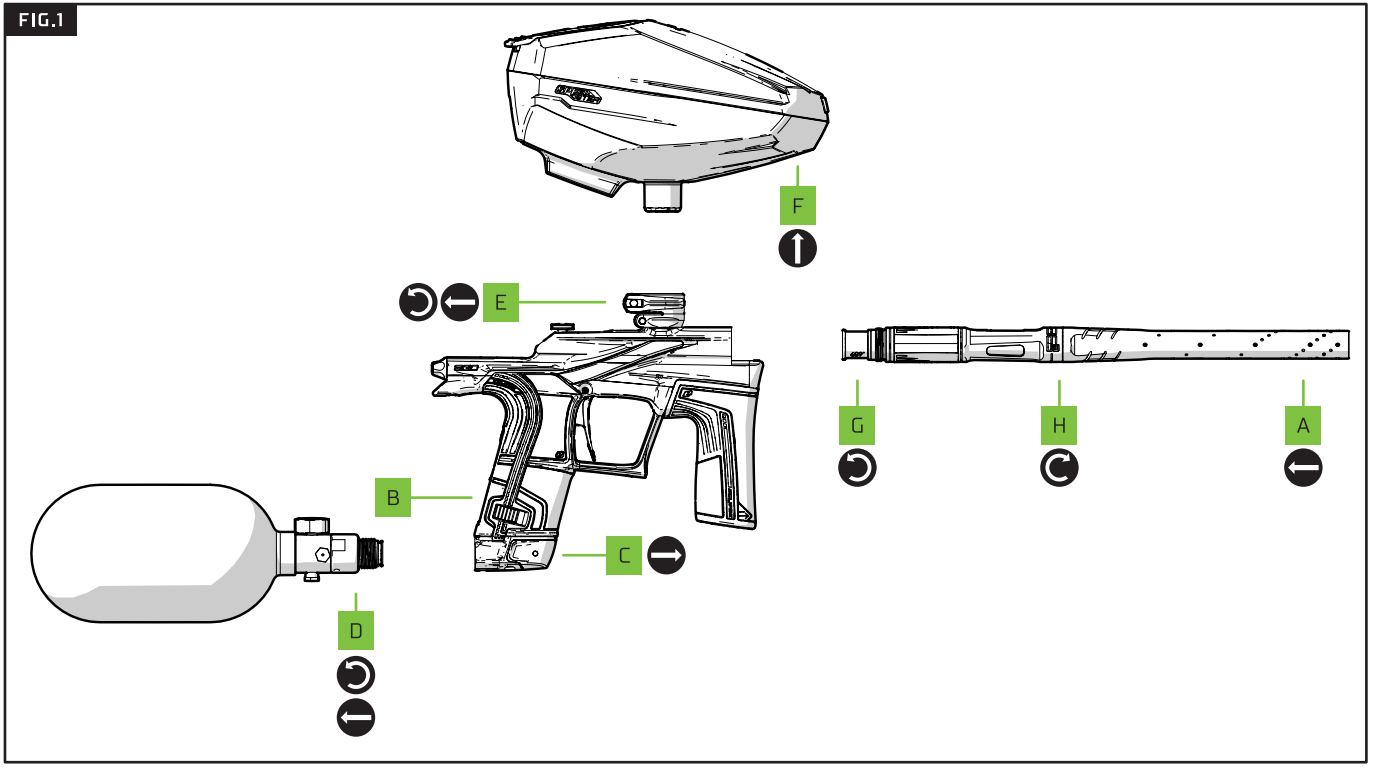


FIG.1

A **ENSURE THAT A BARREL BLOCKING DEVICE IS FITTED.**
To prevent accidentally firing a paintball when unloading.
Remove barrel blocking device after step F.

B **SWITCH THE MARKER OFF.**

C **DE-GAS THE MARKER.**
Push in and hold the POPS button and pull the POPS bonnet away from the POPS body.

D **REMOVE THE PRE-SET AIR SYSTEM.**
Rotate air system counter-clockwise from the POPS body.

E **LOOSEN THE CLAMPING FEED-NECK.**
Open the feed-neck lever away from the feed-neck.
Rotate the feed wheel counter-clockwise.

F **REMOVE THE LOADER.**
If the feed-neck is too tight, loosen the feed wheel.

G **REMOVE THE BARREL FROM THE MARKER BODY.**
Rotate the barrel counter-clockwise to remove.

H **REMOVE THE BARREL TIP FROM THE BARREL BACK.**
Rotate the barrel tip clockwise to remove.

! **IMPORTANT!** To switch OFF/ON, see page 08.

! **IMPORTANT!** Always de-gas before unloading.

! **IMPORTANT!** Always remove air system before unloading.

! **IMPORTANT!** Always remove any paintballs from the breech of the marker once the loader has been removed.

! **IMPORTANT!** The barrel tip is reverse threaded so unscrew it CLOCKWISE.

WARNING!

Always make sure that the marker is OFF with a barrel blocking device installed and that no paintballs are in the marker or loader before attaching an air system.

Compressed air and nitrogen systems can be extremely dangerous if handled or used incorrectly.

Only attach an air system certified for use within the country of use.

Never add lubricants or grease into the fill adaptor of the air system regulator.

Ensure that all screws are tightened and no parts are loose before installing an air system.

Do not pressurise the marker without the bolt system correctly installed, as high pressure gas will be emitted.

Do not install a compressed air system or load paintballs into the marker until you feel confident with your ability to handle the marker safely and responsibly.

INTRODUCTION

STORAGE AND TRANSPORTATION

- Your marker must be clear of all paint and propellant during transportation or storage.
- Make sure the marker is switched OFF.
- Remove the barrel from the marker.
- Make sure the marker is clean of any paint residue, dirt and moisture.
- Store your marker in a clean, cool, dry place.
- Keep your marker away from any unauthorised, unprotected or unsafe users.
- Protect your marker from excessive heat during transportation.
- When transporting a paintball marker by air, check with the airline regarding their policies on transporting paintball equipment as hold luggage before arriving at the airport.
- Observe and obey all local and national laws concerning the transportation of paintball markers.
- Use the box in which the marker was originally supplied to protect the marker against rough handling during transport.

WARNING!

Never carry your marker un-cased when not on a playing field. The non-playing public and law enforcement personnel may not be able to distinguish between a paintball marker and a real firearm. For your own safety and to protect the image of paintball, always carry the paintball marker in a suitable marker case, such as the one in which it was supplied.

	TECH SUPPORT SCAN TO ACCESS OUR LIVE TECH SUPPORT HUB. FACEBOOK.COM/GROUPS/PETECHHUB.
	TECH VIDEOS SCAN TO WATCH IN-DEPTH TECH GUIDANCE VIDEOS. YOUTUBE.COM/PLANETECLIPSETV
	WARRANTY SCAN TO CHECK WARRANTY SUPPORT ELIGIBILITY. PLANETECLIPSE.COM/WARRANTY/

From our live tech services, instructional video guidance and ongoing warranty support you'll quickly discover that our reputation for industry-leading after-sales care goes way beyond anything you've experienced before.

So pat yourself on the back for making the right choice and welcome to the family.

#WEGOTYOURBACK

MAINTENANCE

FAULT FINDING TABLES

SYMPTOM	POSSIBLE CAUSE	SOLUTION
The marker will not switch on.	Battery needs replacing.	Replace the battery.
	New battery has drained on the shelf.	Replace with another battery.
	Battery is fitted incorrectly.	Fit the battery correctly aligning the terminals correctly.
	Battery terminals are not making a proper connection with the battery.	Remove the battery, gently bend the terminals towards the battery for a better connection and replace the battery.
The battery doesn't last very long.	The battery is low quality.	Use a fresh good quality Alkaline or Lithium battery. Do not use rechargeable batteries.
The marker leaks from the solenoid and/or manifold.	Either of the two gaskets are damaged and/or not seated correctly in the manifold body pocket.	Ensure gasket is seated correctly.
		Replace the gasket if damaged using the LV2 parts kit.
	Solenoid valve and/or manifold is over-pressurising.	Check the LPR output pressure. Adjust accordingly.
		Clean and inspect the LPR assembly paying particular attention to the piston o-ring, piston tip and regulator seal. Replace damaged components as required.
	Damaged or incorrect seals on rammer.	Replace the rammer seals.
	Damaged manifold inlet barb or low pressure hose.	Check low pressure hose for cuts or replace the barb.
	Damaged solenoid valve.	Replace the LV2 solenoid valve.
The marker leaks down the barrel.	Damaged exhaust valve.	Replace the exhaust valve.
	Damaged valve guide.	Replace valve guide and o-rings.
	Incorrect o-ring on the valve guide.	Replace front o-ring on valve guide with a new #013 NBR70 o-ring.
Marker fires but the bolt doesn't move.	The bolt pin is not located in the rammer correctly.	Lift bolt pin and align correctly with the position of the rammer.
Gas vents quickly down the barrel once the marker is gassed up.	The exhaust valve is jammed in the valve guide.	Replace exhaust valve and valve guide as necessary.
Bolt shoots forward on gas up and leaks down the barrel.	Solenoid valve spool resting in forward position on gas up.	Hold back Bolt Pin while gassing up LV2

SYMPTOM	POSSIBLE CAUSE	SOLUTION
Low rate of fire/rate of fire not reaching the ROF cap.	Rear solenoid flow restrictor is set too low.	Set the rear SFR to its factory level or increase towards + side
	The force setting of the loader is too low.	Adjust the loader force feed settings.
The marker is chopping or trapping paint.	The paint is poor quality.	Try a higher quality of paint.
	The BS is switched off.	Switch on the BS.
	The bolt is dirty causing the BS to incorrectly detect a paintball.	Clean the bolt and breech.
	The BS is dirty causing the incorrect detection of paintballs.	Clean the BS.
Low constant velocity.	The regulator output pressure is set too low.	Increase the output pressure.
	The LPR is set too low.	Increase the output pressure of the LPR.
	The solenoid flow restrictor (SFR) B is set too low.	Set SFR B to level factory setting or towards +
	The cam-lever is incorrectly installed.	Strip down and re-install the cam lever assembly correctly.
Low velocity first shot.	The FSD COMP is too low or FSD DELAY is too long to overcome stiction on solenoid and/or rammer o-rings.	Increase FSD COMP or shorten FSD DELAY.
High velocity first shot.	The FSD COMP is set too high or FSD DELAY is too short.	Reduce FSD COMP or lengthen FSD DELAY.
	The inline regulator pressure is creeping.	Strip and clean inline regulator replacing regulator seal in adjuster assembly if necessary.
	The LPR pressure is creeping.	Strip and clean the LPR replacing regulator adjuster and seal if necessary.
The trigger is very 'bouncy'.	Incorrect filter settings.	Check trigger filter and debounce settings suit your trigger setup.
	Trigger pull is too short and return strength is too low.	Return the trigger operation to standard, then adjust.

MAINTENANCE

FAULT FINDING TABLES

SYMPTOM	POSSIBLE CAUSE	SOLUTION
The marker does not fire.	The POPS is not fully engaged.	Push the POPS bonnet back until it engages.
	The solenoid flow restrictors (SFRs) are set too low.	Set the SFRs to their factory settings.
	The battery quality or charge level is very low.	Install a new high quality Alkaline battery.
	The battery is flat.	Replace the battery.
	The Training mode is enabled.	Disable Training mode.
	The Dwell parameter is set too low.	Increase the Dwell parameter.
	The trigger is set up incorrectly.	Set up the trigger correctly so that it pulls freely.
	The solenoid is not plugged into the PCB.	Plug solenoid wire into the port on the PCB.
	The BS is enabled but there is no paint in the breech.	Fill loader with paint/check for jams in loader/feedtube
	The micro-switch is not being activated.	Adjust the trigger accordingly.
	The PCB is damaged.	Replace the PCB.
	The solenoid valve is damaged.	Replace solenoid valve.
Velocity drop-off during rapid fire.	The battery quality or charge level is low.	Install a new high quality Alkaline battery.
	The solenoid flow restrictor (SFR) is set too low.	Increase the SFR settings to factory default.
	The air system regulator flow is too low.	Try another air system.
	Dirty/partially blocked regulator.	Strip, clean, lubricate and rebuild the regulator.
The Breech Sensor (BS) does not appear to be reading correctly.	The BS is dirty.	Access and clean both sides of the BS.
Two or more balls are being fed into the breech.	Worn/damaged detents.	Replace the rubber detents.
	The feed force is too high from the loader.	Adjust the loader settings accordingly.

SYMPTOM	POSSIBLE CAUSE	SOLUTION
The BS is not reading at all.	The BS devices are the wrong way around.	Check that the red receiver device is on the right-hand side of the breech.
	There is a broken wire or contact, or a short circuit on either of the breech sensor cables.	Check the plug and 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.
The BS turns itself off after firing and the display shows the BS fault icon.	One or both of the BS devices are dirty.	Clean the BS devices.
	The BS is damaged or faulty.	Replace the BS.
	One or both of the BS devices are out of place.	Reinstall the BS. Check alignment.
The marker is inconsistent.	The inline regulator is supercharging.	Strip and clean the regulator replacing the regulator seal.
	The Dwell is too low.	Increase the Dwell parameter.
	The front SFR is set too low.	Increase the front SFR setting.
	Poor quality paintballs.	Use better quality paintballs.
	Poor paintball size to barrel bore match,	Use a closer paintball/bore size match.
	Inconsistent air supply from air system.	Use a better quality air system.
The marker is inefficient.	The Dwell is excessively high.	Reduce the Dwell parameter.
	LPR is set too high.	Reduce the LPR setting.
	Poor paintball size to barrel bore match,	Use a closer paintball/bore size match.
Low rate of fire.	The rear SFR is set too low.	Increase the rear SFR setting.
Leaking rammer assembly (louder when bolt is removed).	The front rammer shaft o-ring has deteriorated.	Replace the front rammer shaft o-ring.
The marker leaks from the hole A on regulator housing.	HPR needs cleaning and greasing or 008 oring replacing.	Clean and inspect the o-rings. Replace if damaged.
The marker leaks from the hole B on regulator housing.	LPR needs cleaning and greasing or 008 oring replacing.	Clean and inspect the o-rings. Replace if damaged.

MAINTENANCE

TUNING GUIDE

IMPORTANT

1. We highly recommend that the Ego LV2 is NOT dry fired. That means no firing of the marker with just air if it can be avoided. The Bolt and Rammer rely heavily on the back pressure caused by the ball being fired down the barrel to reset the Bolt and Rammer to the rear position. Dry firing will lead to damage of the Rammer Bumper and potentially the Rammer and Body of the Marker.
2. Because of the nature of the new dynamics and the increased range of adjustability of the LV2, it is possible to upset the balance of the Marker and take it out of its optimized performance window. This can lead to reduced efficiency, and increased wear and tear on the Rammer Bumper. Pay particular attention to the LPR settings and the Dwell settings.
3. The Ego LV2 factory settings are optimised for use in cold/Winter climates. Both Dwell and LPR settings can be reduced when using the marker in warmer climates. This will give improvements in efficiency and behaviour as well as longevity of components. With a brand new Ego LV2 Marker there is no need to 'break-in' the marker first before making these adjustments. When using the marker in cold/Winter weather conditions it is recommended to reset the Ego LV2 to its factory state of tune. Attempting to use a low Dwell and LPR output in cold climates may cause performance issues.
4. The LV2 does not "feel" like any other pre-LV Ego when it is being fired. Without firing paint over the Chronograph, DO NOT try to set these markers up by "feel" alone. We have had several reports of customers dry firing or firing paint, and "feeling" like the marker was shooting low (compared to older versions of the Ego). They have then "tuned" the marker by feel and sound alone, to what they think sounds like the correct velocity and then used the marker. In all cases the markers have been returned to us shooting in excess of 350fps! Not only is this dangerous, but it is putting excess stress on the internals of the marker. Please be aware, this marker does not "feel" like any other marker when it is shooting paint or dry firing. Always confirm any adjustments by using a Chronograph. The "LV2 Tuning Guide" on page 35 should help any techs and players to tune the Ego LV2 accurately, following the correct tuning procedure.

Please contact your nearest service centre if you have any questions or issues regarding the tuning of the Ego LV2. The Ego LV2 has a much larger range of adjustment than any previous Ego Markers. As such it can be easy to upset the balance of the LV2 and take it out of its optimum performance window. In particular, this can have a notable effect on efficiency.

PRIOR TO TEST

1. Adjust the FRONT Solenoid Flow Restrictor to the middle (or towards '+') this improves efficiency over the stock settings.
2. Reset the LPR, HPR and dwell to factory recommended settings as found in the Manual (9.5ms).
3. Ensure the air tank is full or has at least 2500psi.
4. Ensure paint isn't too small in the barrel or shooting inconsistently. Check the paint in other markers if the readings are poor over the Chronograph.
5. The Bolt should move smoothly in the breech with virtually no friction between the Bolt and Body of the marker. Oil or replace the 14x2 o-rings on the Bolt as shown on page 72.

TUNING THE DWELL

1. Set everything to Factory; setting the Dwell to 9.5ms and the LPR Adjuster screw to 1/2 turn out from fully in.
2. Tune the Ego LV2 with the paint you will shoot at that event.
3. Chronograph the marker to 280-290fps (or the fps enforced by law or event rules) using the Inline Regulator to adjust.
4. Once at 280-290fps go to Dwell Parameter Mode.
5. Fire 3-4 shots over the chronograph, then lower the Dwell by 0.5ms and then fire 3-4 more shots.
6. If velocity remains in the 280-290fps region, repeat step 5.
7. Repeat steps 5 and 6 until you see the velocity drop from the 280- 290fps region.
8. Once the velocity has started to drop STOP lowering the Dwell and now INCREASE the Dwell by 0.5ms.
9. Fire several shots over the Chronograph to ensure that the velocity is consistently back in the 280-290fps region.
10. The Dwell is now tuned for that Marker setup.

TUNING THE LPR

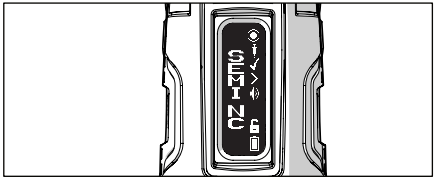
1. Once tuned, check the Dwell to see if the LPR can be reduced further. Same as above, but using the LPR adjuster screw.
2. Fire the marker over the Chronograph and then turn the LPR adjuster in/clockwise (LPR pressure down) 1/8th of a turn.
3. Chronograph again and check the velocity and consistency.
4. If velocity is unchanged, reduce the LPR setting further.
5. Repeat steps 2-4 until the velocity starts to drop, then increase the LPR pressure back UP 1/8th of a turn.
6. Fire a few shots to check consistency. Keep the marker clean and correctly lubed, paying particular attention to the Bolt and maintaining a smooth operation. Further adjustments may be required if there is a significant change in the weather or paint being used.

ELECTRONICS

OLED RUN SCREENS

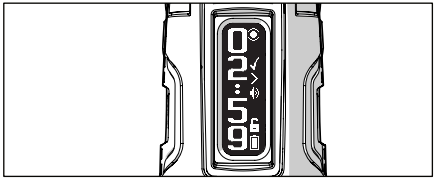
MODE SCREEN

This screen allows the firing parameters to be examined quickly without having to enter the setup menu. Tap the bottom pushbutton to cycle through the relevant parameters, MODE.



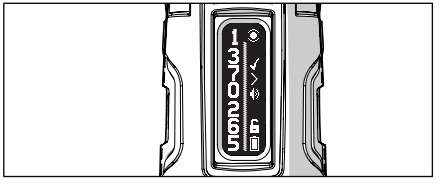
GAME TIMER SCREEN

This screen provides a countdown game timer. Tap the bottom pushbutton to start the game timer countdown. Hold the bottom pushbutton for 0.5 seconds to stop the timer. Push and hold the bottom pushbutton again to reset the game timer. When counting down the marker will sound an audible alarm when it reaches the ALARM 1 time, the ALARM 2 time and 00:00.



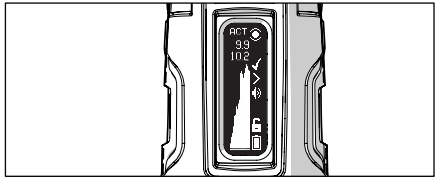
SHOT COUNTER SCREEN

This screen provides a resettable shot counter. Hold the bottom pushbutton to reset the counter.



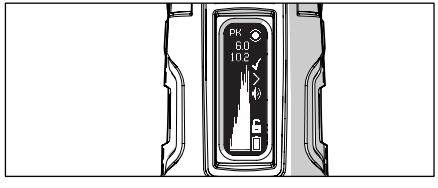
ACTUAL ROF SCREEN

This screen displays the actual ROF recorded over time along with the latest recorded reading and the maximum recorded reading. The actual rate of fire is the number of shots fired in each second of time. Hold the bottom pushbutton to zero the maximum recorded reading.



PEAK ROF SCREEN

This screen displays the peak ROF recorded over time along with the latest recorded reading and the maximum recorded reading. The peak rate of fire is derived from the time between consecutive shots. Hold the bottom pushbutton to zero the maximum recorded reading.



SPLASH SCREEN

This screen display the splash graphic which, by default, is the marker logo but can be modified or replaced by means of the E-Portal PC application.

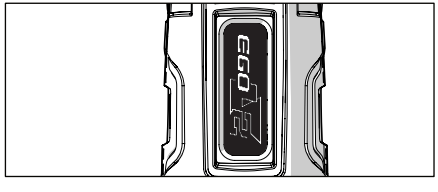


FIG.1

To access the settings menu, switch the marker on then push and hold the **Select** button until the TURN OFF? menu item is displayed. Double-clicking will also access the menu if enabled.

The top level menu shown opposite shows all the available menu items, each having their own tiered adjustable parameters. See pages 56-60 for a complete menu tree.

The availability of some menu items is dependent upon the setting of other parameters (e.g. the RAMP SETUP sub menu is only available when FIRE MODE is set to RAMP).

Select BACK to return to the previous menu level. Select EXIT to leave the settings menu.

Select TURN OFF? to turn off the marker.

The layout and parameters shown in this manual are correct at the time of printing.

FIG.1

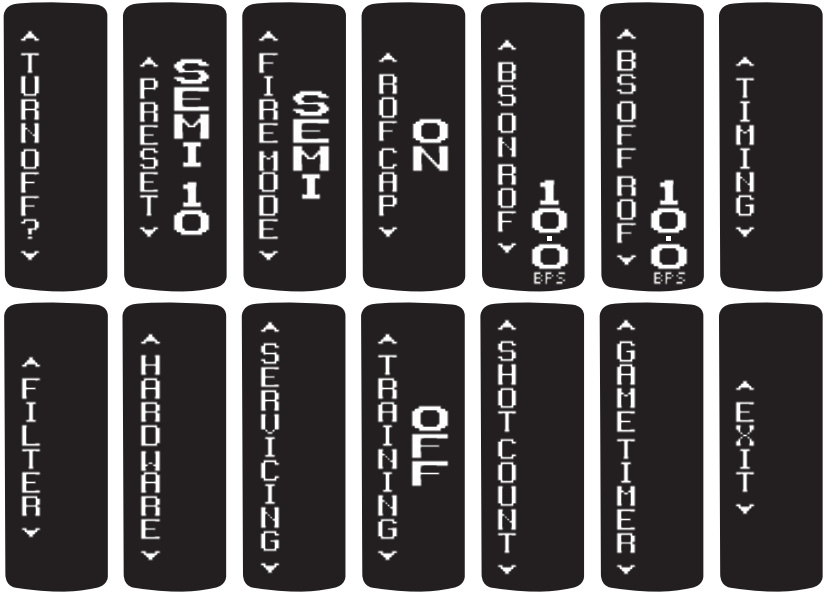


FIG.1

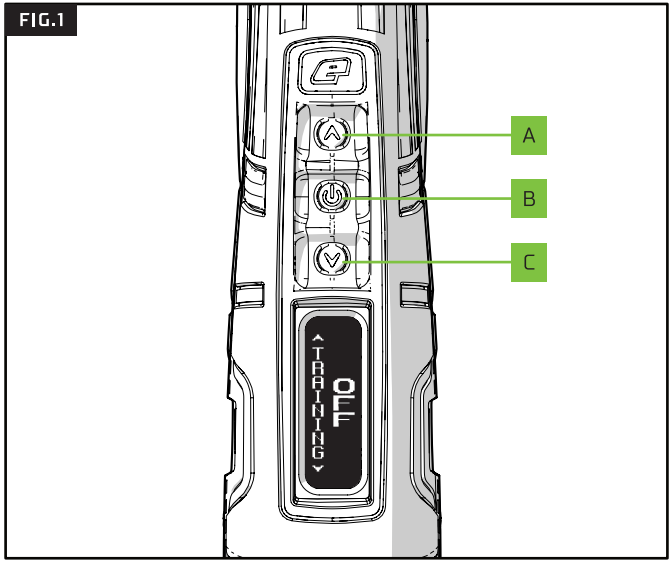


FIG.2

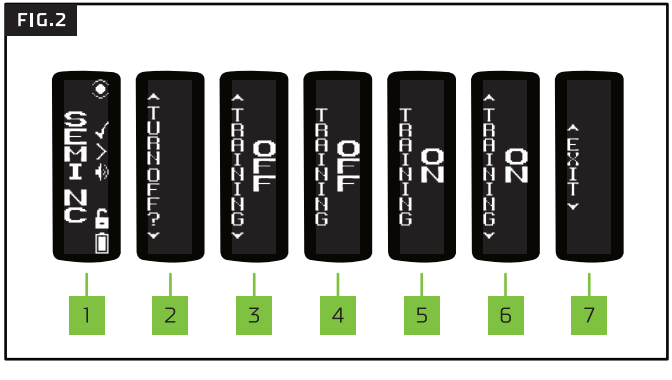


FIG.1

Once in a menu use the **Up** A and **Down** C buttons to navigate through the menu items.

Use the **Select** button B to select the item. If the item is an adjustable parameter then it can be adjusted with the **Up** and **Down** buttons and accepted with another push of the **Select** button.

FIG.2 EXAMPLE – CHANGING THE TRAINING PARAMETER

1. Turn the marker on and wait for the run screen to appear.
2. Push and hold **Select** until TURN OFF? appears on screen.
3. Use **Up** or **Down** to navigate to the TRAINING parameter.
4. Press **Select** to confirm the TRAINING parameter for adjustment. The arrows above the parameter will disappear.
5. Use **Up** and **Down** to scroll through the TRAINING parameter options (ON/OFF).
6. Use the **Select** button to confirm selection. The arrows above the parameter will now reappear.
7. Use **Up** or **Down** to find EXIT and press **Select** to return to the run screen.

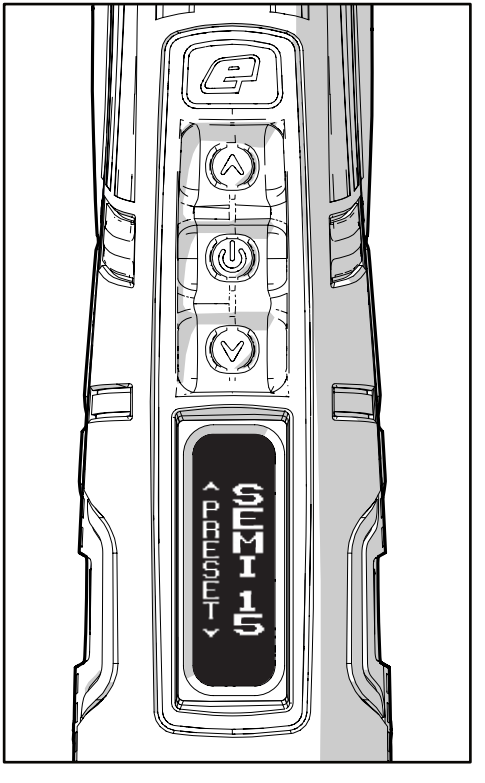
PRESETS

A preset is made up of all of the parameters that control the way in which the marker fires. These parameters are:

- FIRE MODE
- ROF CAP
- BS ON ROF
- BS OFF ROF
- RAMP TYPE
- RAMP RATE
- SEMI SHOTS
- KICK IN
- SUSTAIN
- RESTART
- TRAINING

Selecting a preset changes each of these parameters and so the marker can be quickly configured to comply with the rules laid down by any given league, tournament or field. There are 10 presets and any one can be modified by the user in order to customise the marker to their own requirements.

Any changes made will be saved.



FACTORY PRESETS

The default list of presets is designed to cover all of the major tournament rules:

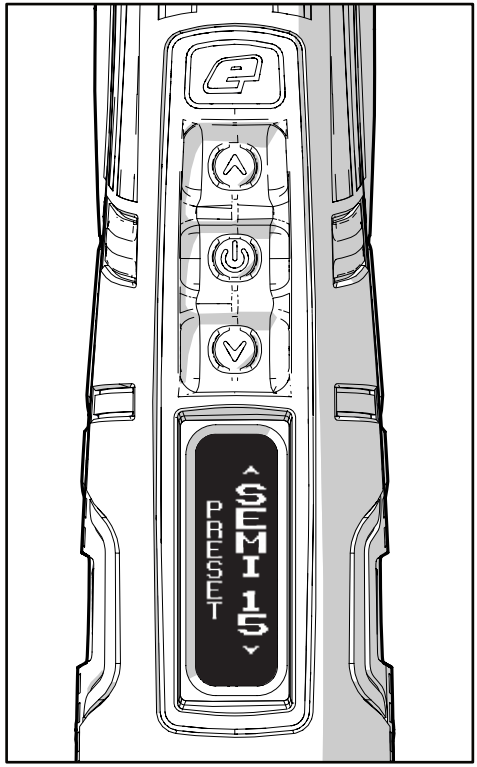
- SEMI NC: Uncapped semi-automatic.
- SEMI 10: Semi-automatic capped at 10 bps.
- SEMI 15: Semi-automatic capped at 15 bps.
- NXL 2016: Ramping capped at 10.2 bps, compliant with 2016 NXL rules.
- PSP 2015: Ramping capped at 10.2 bps, compliant with 2015 PSP rules.
- PSP FAST: PSP style ramping capped at 20.0 bps.
- RETRO: NXL style ramping capped at 5.5 bps.
- USER 1: User defined preset
- USER 2: User defined preset
- TRAIN: Uncapped semi-automatic training mode.

If the currently selected preset is a factory preset then a ✓ will be displayed on the run screen, otherwise a ✗ will be displayed. The presets can be restored to factory defaults by selecting FACTORY in the HARDWARE menu and choosing RESTORE.

FIG-1 PRESET PARAMETER

Select the required preset from the list of available presets (above). *

* Some presets may only be available in certain countries and on some models of the marker. All presets are correct at the time of printing.



ELECTRONICS

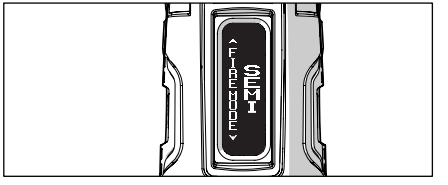
USER INTERFACE PARAMETERS

FIRE MODE PARAMETER

Sets the firing mode of the marker.

> SEMI: One shot per trigger pull.

> RAMP: Assisted firing with multiple shots per trigger pull under certain conditions.

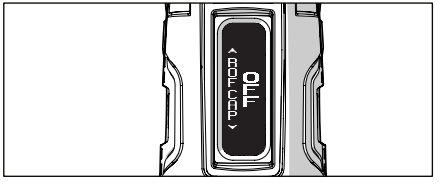


ROF CAP PARAMETER

The maximum rate of fire the marker can achieve.

> ON: ROF limited to the value set by the BS ON ROF parameter.

> OFF: ROF limited by loader speed.

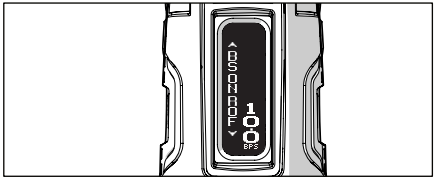


BS ON ROF PARAMETER

The maximum rate of fire that the marker can achieve with the breech sensor (BS) enabled. This parameter is only visible if the ROF CAP parameter is set to ON.

> Range: 4.0 – 20.0 bps (balls per second) In 0.1 increments. 1

1 Always calibrate your ROF CAP parameters to the local field meter for consistency.



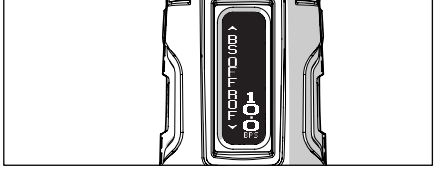
BS OFF ROF PARAMETER

The maximum rate of fire that the marker can achieve with breech sensor (BS) disabled. 1

> Range: 4.0 – 15.0 bps (balls per second) In 0.1 increments. 2

1 Should be set to the slowest loader feed rate to avoid chopping paintballs.

2 Always calibrate your ROF CAP parameters to the local field ROF meter to avoid penalties.



RAMP SETUP MENU

This menu is only visible when RAMP has been selected for the FIRE MODE parameter.

RAMP TYPE PARAMETER

Select the type of ramping required:

> **STEP**

The marker will fire in semi–automatic until a number of trigger pulls (set by SEMI SHOTS) have been made at a minimum pull rate (set by KICK IN). The marker will then fire at up to the maximum rate of fire (set by BS ON ROF) as long as the trigger is continually pulled at a required rate (set by SUSTAIN).

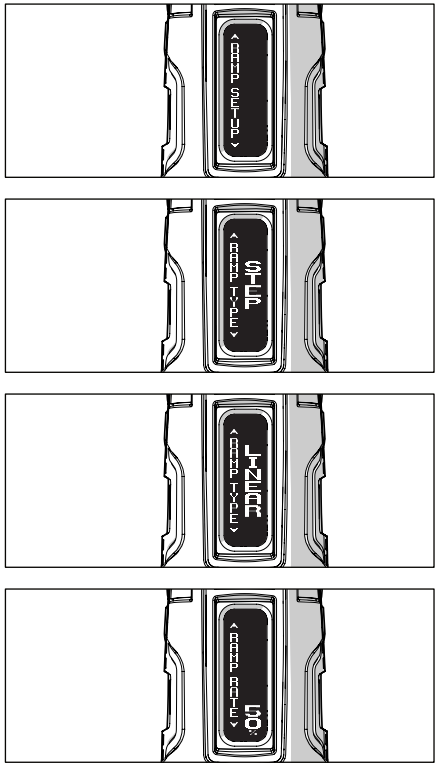
> **LINEAR**

The marker will fire in semi–automatic until a number of trigger pulls (set by SEMI SHOTS) have been made at a minimum pull rate (set by KICK IN). The rate of fire will then equal the rate of trigger pulls increased by a percentage (specified by RAMP RATE) up to a maximum rate of fire (set by BS ON ROF). Ramping is maintained as long as the trigger is continually pulled at a required rate (set by SUSTAIN).

RAMP RATE PARAMETER

Only visible when the RAMP TYPE parameter is set to LINEAR, this sets the percentage increase in rate of fire over rate of trigger pulls.

If the RAMP RATE is 50% and the trigger is pulled at 10 bps then the actual rate of fire is 15 bps (10 + 50%). This parameter can be set between 0 and 100% in 10% increments.



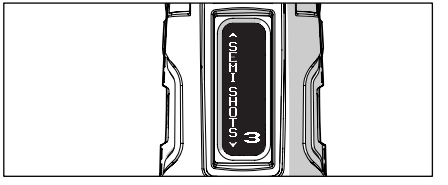
ELECTRONICS

USER INTERFACE PARAMETERS

SEMI SHOTS PARAMETER

The number of shots in semi automatic required at the KICK IN rate in order to start ramping.

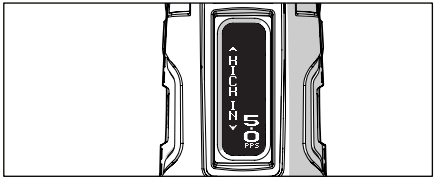
> Range: 3 – 9 pulls in 1 pull increments.



KICK IN PARAMETER

The rate at which the trigger has to be pulled in order to start ramping.

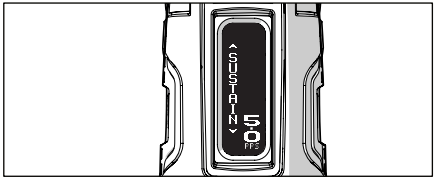
> Range : 3.3 – 10.0 pps (pulls per second) in 0.1 increments.



SUSTAIN PARAMETER

The rate at which the trigger must be continually pulled in order to maintain ramping.

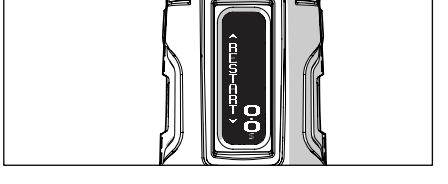
> Range : 3.3 – 10.0 pps (pulls per second) in 0.1 increments.



RESTART PARAMETER

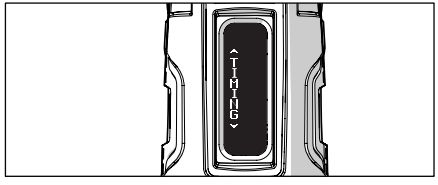
The amount of time after the last trigger pull during which ramping can be restarted with a single trigger pull.

> Range : 0.0 – 1.0 seconds in 0.1 increments.



TIMING MENU

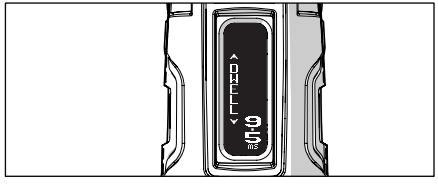
The parameters on the TIMING menu control the energise time of the solenoid valve.



DWELL PARAMETER

The amount of time that the solenoid valve is energised during each firing cycle.

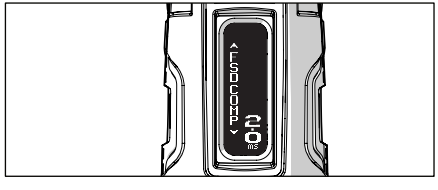
> Range : 5.0 – 35.0 ms (milliseconds) in 0.1 increments.



FSD COMP PARAMETER

'First Shot Drop–off' is a velocity drop of the first shot fired after the marker has been at rest. FSD COMP is added to the DWELL in order to compensate.

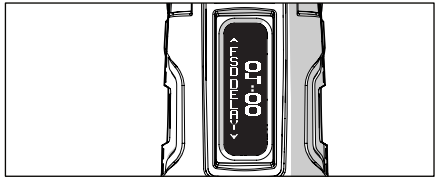
> Range : 0.0 – 5.0 ms (milliseconds) in 0.1 increments.



FSD DELAY PARAMETER

The amount of time the marker must be at rest before the FSD COMP is applied to a shot.

> Range : 00:00 – 04:00 minutes in 1 second increments.



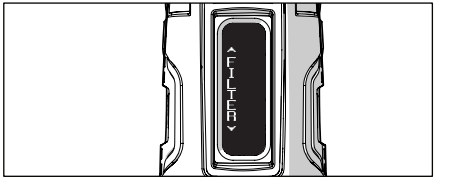
ELECTRONICS

USER INTERFACE PARAMETERS

FILTER MENU

The FILTER parameters are used to tune the software filters to prevent the marker from firing, unless all of the necessary conditions are met.

Factory default settings are suitable for most set-ups however, certain loader and trigger set-ups may require filter adjustments.

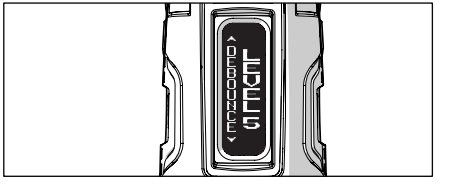


DEBOUNCE PARAMETER

Amount of trigger debounce. Changing this parameter directly changes the PULL TM and RELEASE TM parameters.

> LEVEL1: Least filtering (most trigger bounce).

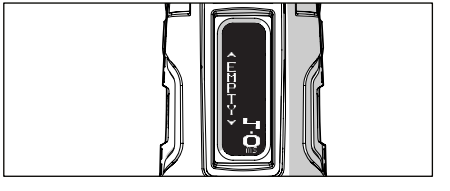
> LEVEL9: Most filtering (least trigger bounce).



EMPTY PARAMETER

The amount of time that the breech has to be empty before the marker registers that it is actually empty.

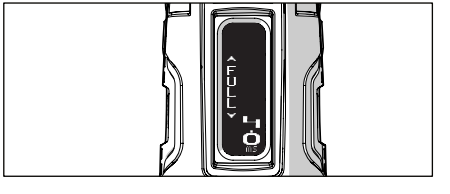
> Range : 1.0 – 20.0 ms (milliseconds) in 0.1 increments.



FULL PARAMETER

The amount of time that the breech has to be full (paintball in place) before the marker registers that it is actually full.

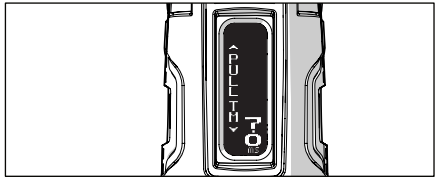
> Range : 1.0 – 20.0 ms (milliseconds) in 0.1 increments.



PULL TM PARAMETER

The minimum amount of time that the trigger must be pulled in order to be recognised as a valid trigger pull.

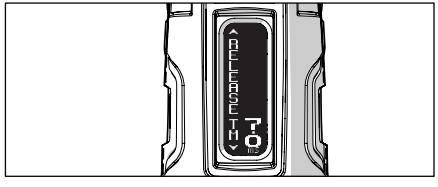
> Range : 1.0 – 20.0 ms (milliseconds) in 0.1 increments.



RELEASE TM PARAMETER

The minimum amount of time that the trigger must be released in order to be recognised as a valid trigger release.

> Range : 1.0 – 20.0 ms (milliseconds) in 0.1 increments.

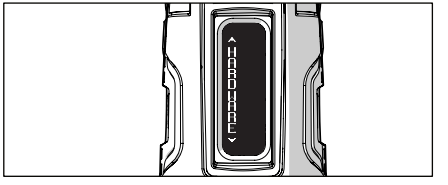


ELECTRONICS

USER INTERFACE PARAMETERS

HARDWARE MENU

The HARDWARE menu contains parameters that are used to control the electronics hardware.



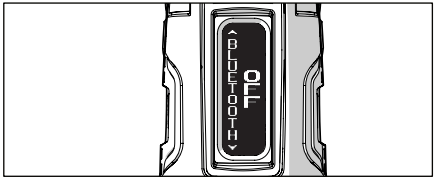
BLUETOOTH® PARAMETER

Enables the on-board Bluetooth® module.

> ON : Enable Bluetooth®
> OFF : Disable Bluetooth®

A blue LED indicates the Bluetooth® status.

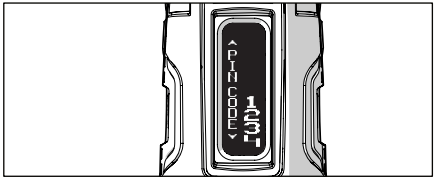
> Off : Disabled
> Single flash : Enabled
> Double flash : Connected



PIN CODE PARAMETER

Personal code used to secure communications with the E-Portal Lite smartphone app.

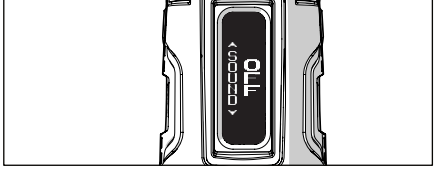
> RANGE : 0000 – 9999 in increments of 1.



SOUND PARAMETER

Enables the on-board speaker.

> ON : Sound enabled.
> OFF : Sound disa bled.

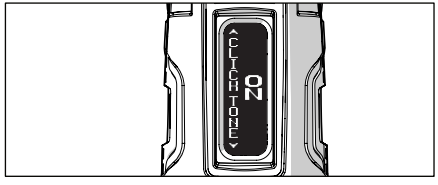


CLICK TONE PARAMETER

Pushbutton tones can be independently enabled. This item is only available if the SOUND parameter is set to ON.

> ON : Tones enabled.

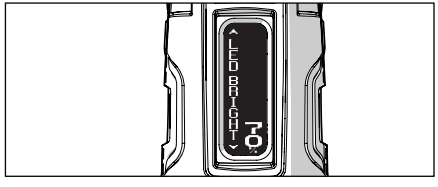
> OFF : Tones disabled.



LED BRIGHT PARAMETER

Brightness of the breech sensor LED.

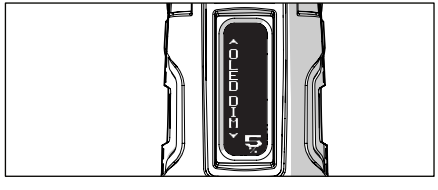
> RANGE : 10 – 100% in increments of 5.



OLED DIM

The level to which the OLED dims a short time after the last button press.

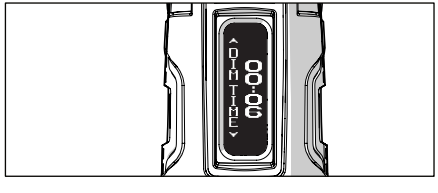
> RANGE : 50 – 100% in increments of 5.



DIM TIME

The time after which the OLED dims to the level specified by the OLED DIM parameter.

> RANGE : 00:01 – 00:20 in 1 second increments.



ELECTRONICS

USER INTERFACE PARAMETERS

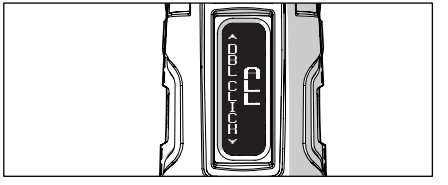
DBL CLICK PARAMETER

Sets where the **Select** button double-click can be used.

> NONE : Double-click disabled.

> POWER UP : Double-click to power up.

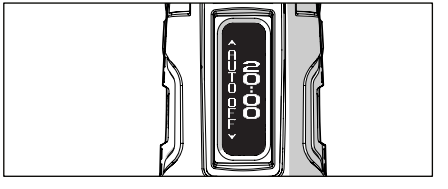
> ALL : Double-click to power up and access the setup menu.



AUTO OFF PARAMETER

The amount of time that the marker can be idle before it switches itself off.

> RANGE : 00:00 – 60:00 minutes in increments of 04:00. A value of 00:00 disables auto power off.



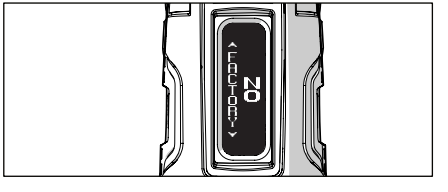
FACTORY PARAMETER

Restores all of the marker parameters back to their factory state.

> NO : do not perform a reset.

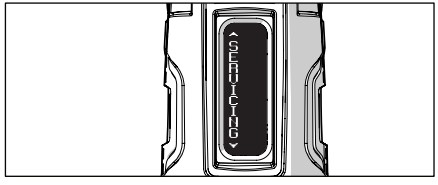
> RESTORE : restore all parameters to their factory default value. 1

1 CAUTION: This will erase all saved settings.



SERVICING MENU

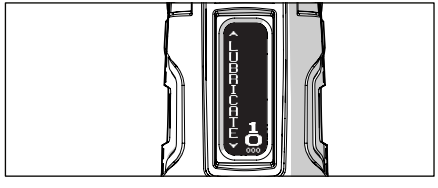
This menu contains items associated with servicing reminders.



LUBRICATE PARAMETER

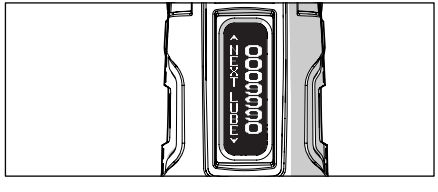
Sets the lubrication interval counter (NEXT LUBE) start value.

> RANGE : 0 – 25 (thousand) in increments of 1.



NEXT LUBE

This non-adjustable item displays the number of shots before the next lubrication is due.

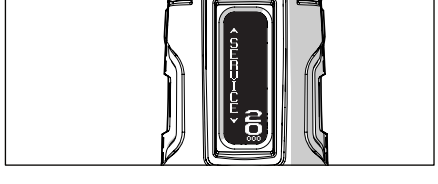


SERVICE PARAMETER

Sets the service interval counter (NEXT SERV) start value.

> RANGE : 0 – 100 (thousand) in increments of 1.

A value of 0 disables the counter.

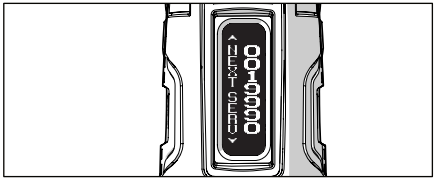


ELECTRONICS

USER INTERFACE PARAMETERS

NEXT SERV

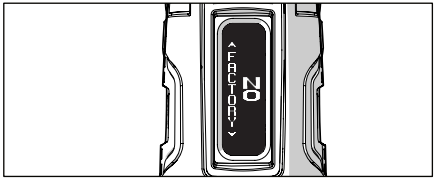
This non-adjustable item displays the number of shots before the next service is due.



RESET PARAMETER

Resets the servicing counters.

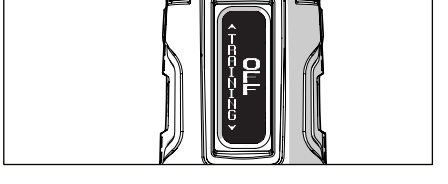
- > NO : do not perform a reset.
- > LUBE : Reset the NEXT LUBE counter.
- > SERVICE : Resets both the NEXT LUBE and the NEXT SERV counters.



TRAINING PARAMETER

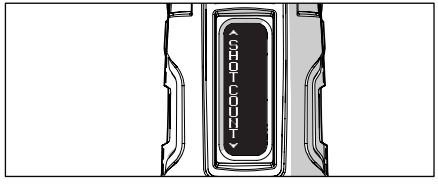
Simulates the firing cycle using a audible beep to represent a shot fired, allowing the user to practice their trigger technique without firing the marker.

- > ON : Training mode enabled.
- > OFF : Training mode disabled.



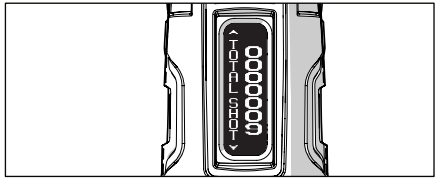
SHOT COUNT MENU

This menu contains items associated with the shot counter.



TOTAL SHOTS

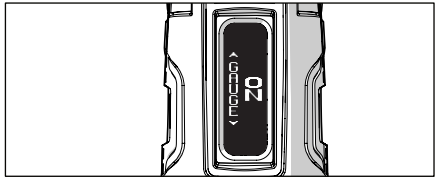
This non-adjustable item displays the total number of times that the solenoid has been energised.



GAUGE PARAMETER

This toggles the visibility of the shot counter gauge graphic on the shot counter run screen.

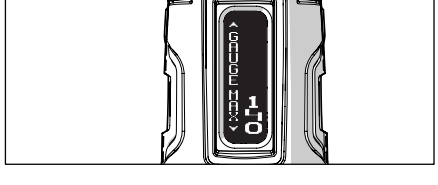
> ON : Gauge graphic enabled.
> OFF : Gauge graphic disabled.



GAUGE MAX PARAMETER

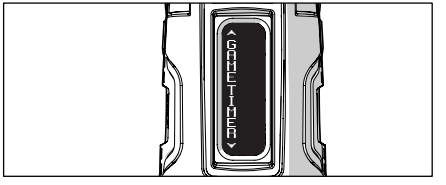
Shot counter gauge start point.

> RANGE : 100 – 2000 in increments of 10.



GAME TIMER MENU

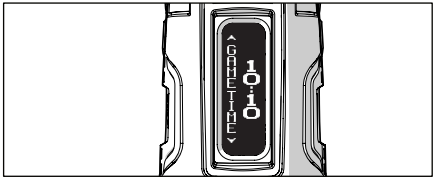
The game timer menu contains items associated with the game timer.



GAME TIME

Countdown game timer start point.

> RANGE : 00:00 – 60:00 minutes in increments of 00:10.
>
> A value of 00:00 disables the game timer.

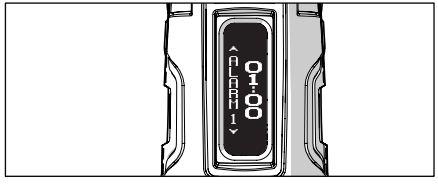


ALARM 1

An audible alarm is sounded when the game timer reaches this value.

> RANGE : 00:00 – 60:00 minutes in increments of 00:10.

A value of 00:00 disables this alarm.

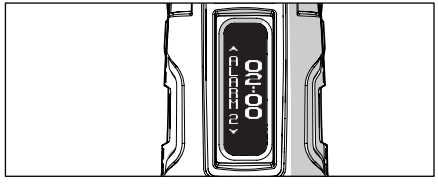


ALARM 2

An audible alarm is sounded when the game timer reaches this value.

> RANGE : 00:00 – 60:00 minutes in increments of 00:10.

A value of 00:00 disables this alarm.

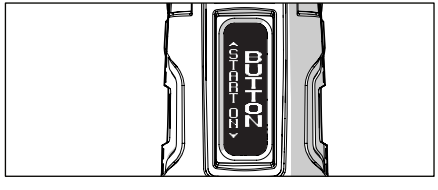


START ON

Sets the event which starts the game timer.

> BUTTON: bottom button starts the timer.

> TRIGGER: first trigger pull starts the timer.



ELECTRONICS

SETTINGS MENU SUMMARY

The table below is an overview of the main menu, which is the top level of the settings menu structure. The following pages summarise all of the items within the menu structure.

TURN OFF?	Select to turn off the marker.
PRESET	Select from a list of preset firing modes.
FIRE MODE	Choose between semi-automatic and ramping firing modes.
ROF CAP	Switch the rate of fire cap on or off.
BS ON ROF *	Adjust the maximum achievable rate of fire when the breech sensor (BS) is on.
BS OFF ROF	Adjust the maximum achievable rate of fire when the breech sensor (BS) is off.
RAMP SETUP *	Sub-menu for configuring the ramping firing mode.
TIMING	Sub-menu for adjusting the solenoid timing.
FILTER	Sub-menu for adjusting the trigger and breech sensor filters.
HARDWARE	Sub-menu for configuring hardware settings.
SERVICING	Sub-menu for defining and monitoring service intervals.
TRAINING	Enable/disable the ability to test shoot the marker without energising the solenoid.
SHOT COUNT	Sub-menu for managing the shot counter.
GAME TIMER	Sub-menu for managing the game timer.
EXIT	Exit the menu and return to the run display.

The lock icon indicates items that can only be selected when the tournament lock is switched off. See page 19.

* The asterisk indicates items with visibility dependent upon the settings of other items.

ELECTRONICS
SETTINGS MENU SUMMARY

TURN OFF		Select to turn off the marker.
PRESET	SEMI NC	Semi-automatic with no rate of fire (rof) cap.
	SEMI 15	Semi-automatic with a 15 balls per second (bps) rate of fire cap.
	SEMI 10	Semi-automatic with a 10 bps rate of fire cap. **(Default)**
	NXL 2016	Settings compliant with the 2016 rulebook of the NXL.
	PSP 2015	Settings compliant with the 2015 rulebook of the PSP.
	PSP FAST	PSP style ramping with a 20 bps rate of fire cap.
	RETRO	NXL style ramping with a 5.5 bps rate of fire cap, for compliance with some 'mech' tournament rules.
	USER 1	User defined preset.
	USER 2	User defined preset.
	TRAIN	Semi-automatic training with no rate of fire cap.
FIRE MODE	SEMI	Semi-automatic firing mode. **(Default)**
	RAMP	Ramping firing mode.
ROF CAP	ON	Enable the rate of fire cap. **(Default)**
	OFF	Disable the rate of fire cap.
BS ON ROF *	4.0 – 20.0	With ROF CAP enabled, this is the maximum achievable rate of fire when the breech sensor is turned on. **(Default 10.0)**
BS OFF ROF *	4.0 – 15.0	Maximum achievable rate of fire when the breech sensor is turned off. **(Default 10.0)**

ELECTRONICS

SETTINGS MENU SUMMARY

RAMP SETUP *			
	RAMP TYPE	STEP	Step type ramping. **(Default)**
		LINEAR	Linear type ramping.
	RAMP RATE*	0 – 100	Amount by which rate of fire increases over rate of trigger pulls, specified as a percentage. **(Default 50)**
	SEMI SHOTS	3 – 9	Number of consecutive semi-auto shots that have to be fired before ramping can start. **(Default 3)**
	KICK IN	3.3 – 10.0	Rate at which the trigger has to be pulled before ramping starts, specified in pulls per second. **(Default 5.0)**
	SUSTAIN	3.3 – 10.0	Rate at which the trigger has to be pulled to maintain ramping, specified in pulls per second. **(Default 5.0)**
	RESTART	0.0 – 1.0	Time after the last trigger pull during which ramping can be instantly restarted, specified in seconds. **(Default 0.0)**
TIMING			
	DWELL	5.0 – 35.0	Solenoid energise time, specified in milliseconds. **(Default 9.5)**
	FSD COMP	0.0 – 5.0	First shot drop-off compensation time, specified in milliseconds. **(Default 2.0)**
	FSD DELAY	00:00 – 04:00	First shot drop-off delay, specified in minutes. **(Default 04:00)**
FILTER			
	DEBOUNCE	LEVEL 9 – LEVEL 1	Trigger debounce level. LEVEL 9 has the greatest amount of trigger debounce filtering. **(Default LEVEL 5)**
	EMPTY	1.0 – 20.0	Minimum breech empty time for correct operation, specified in milliseconds. **(Default 4.0)**
	FULL	1.0 – 20.0	Minimum breech full time before the marker can fire, specified in milliseconds. **(Default 4.0)**
	PULL TM	1.0 – 20.0	Minimum trigger pull time for a valid pull, specified in milliseconds. **(Default 7.0)**
	RELEASE TM	1.0 – 20.0	Minimum trigger release time for a valid release, specified in milliseconds. **(Default 7.0)**

HARDWARE		
BLUETOOTH	ON	Bluetooth® enabled.
	OFF	Bluetooth® disabled. **(Default)**
PIN CODE	0000 – 9999	Security code for accessing the marker from E-Portal Lite. **(Default 1234)**
SOUND	ON	Enable sound from the internal speaker. **(Default)**
	OFF	Disable sound from the internal speaker.
CLICK TONE	ON	Enable button activation tones when SOUND is enabled. **(Default)**
	OFF	Disable button activation tones.
LED BRIGHT	50 – 100	Brightness of the LED indicator, specified as a percentage. **(Default 70)**
OLED DIM	50 – 100	Dimming level of the OLED display, specified as a percentage. **(Default 50)**
DIM TIME	00:01 – 00:20	Delay before the OLED display dims, specified in minutes. **(Default 00:06)**
DBL CLICK	NONE	Double-click functionality disabled.
	POWER UP	Double-clicking the SELECT pushbutton will power-up the marker.
	ALL	Double-clicking the SELECT pushbutton will power-up or display the Setup Menu. **(Default)**
AUTO OFF	00.00 – 60.00	Auto power-off time, specified in minutes. **(Default 20:00)**
RESET	NO	Do not reset.
	FACTORY	Reset all parameters to their factory state. CAUTION: This erases ALL changes.

ELECTRONICS

SETTINGS MENU SUMMARY

SERVICING			
	LUBRICATE	0 – 25	User–defined lubrication interval, specified in thousands of shots. **(Default 10)**
	NEXT LUBE	0 – 0025000	Shows the number of shots before the next lubrication is required (not adjustable).
	SERVICE	0 – 100	User–defined service interval, specified in thousands of shots. **(Default 20)**
	NEXT SERV	0 – 0100000	Shows the number of shots before the next service is required (not adjustable).
	RESET	NO	Do not perform a reset.
		LUBE	Reset the number of shots before the next lubrication.
		BOTH	Reset the number of shots before both the next service and the next lubrication.
TRAINING		ON	Training mode enabled.
		OFF	Training mode disabled. **(Default)**
SHOT COUNT			
	TOTAL SHOT	0000000 – 9999999	Total shot count of the marker. Not adjustable.
	GAUGE	ON	Shot counter gauge enabled. **(Default)**
		OFF	Shot counter gauge disabled.
	GAUGE MAX*	100 – 2000	Shot counter gauge maximum, specified in shots. **(Default 140)**
GAME TIMER			
	GAME TIME	00:00 – 60:00	Game timer start time, specified in minutes. **(Default 10:10)**
	ALARM 1	00:00 – 60:00	Alarm 1 activation time, specified in minutes. **(Default 01:00)**
	ALARM 2	00:00 – 60:00	Alarm 2 activation time, specified in minutes. **(Default 00:00)**
	START ON	BUTTON	Game timer starts when bottom button pushed. **(Default)**
		TRIGGER	Game timer starts on first trigger pull after power on.
EXIT			Exit the Settings menu.

UNITED STATES

CONTAINS TRANSMITTER MODULE – FCC ID: A8TBM71S2

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy, and if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

CANADA

CONTAINS TRANSMITTER MODULE – IC: 12246A-BM71S2

This device complies with Industry Canada's license exempt RSS. Operation is subject to the following two conditions:

(1) This device may not cause interference; and

(2) This device must accept any interference, including interference that may cause undesired operation of the device.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes:

(1) l'appareil ne doit pas produire de brouillage;

(2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

EUROPE

Compliance testing for transmitter module:

CERTIFICATION	STANDARDS	ARTICLE	LABORATORY	REPORT NUMBER
Safety	EN60950-1:2006 A11:2009/A1:2010/ A12:2011/A2:2013	(3.1(a))	TUV Rheinland	10053210 001
Health	EN 62479:2010			10053433 001
EMC	EN 301 489-1 V1.9.2	(3.1(b))		10052964 001
	EN 301 489-17 V2.2.1			
Radio	EN 300 328 V1.9.1	(3.2)		10053433 001
Notified body opinion	CE 0197			10048936 001

ELECTRONICS

E-PORTAL (VERSION 4.5 OR LATER)

E-Portal is a PC application that lets you connect to your marker via USB cable. Amongst other things you can use E-Portal to:

1. Upgrade the marker firmware.
2. Change the start-up splash screen.
3. Modify control parameters.

FIG-1

To access the USB Micro-B connector A remove the grips (see page 16) and connect the correct USB cable.

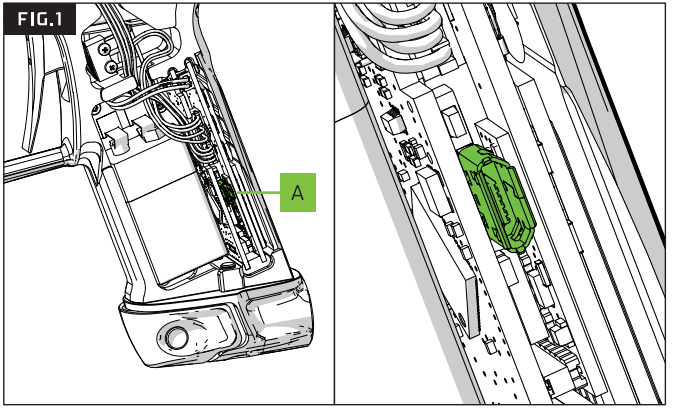
For E-Portal instructions and software download information visit **planeteclipse.com/eportal.**

SYSTEM REQUIREMENTS

Monitor Resolution – 1024x768 or higher.
1GHz processor.
1Gb RAM.
Microsoft® Windows® 7 / Windows® 8 / Windows® 10.
10Mb of storage space.

A USB data cable is required to connect the marker to a PC.
Be wary of charging cables that may not have the necessary data connections. This cable is not supplied with the marker.

FIG.1



DOWNLOAD:
PLANETECLIPSE.COM/EPORTAL

WARNING!

Always make sure that the marker is fully unloaded and the air system is disconnected, with a barrel blocking device installed, before connecting to a PC.

E-Portal Lite is a mobile application that lets you connect to your marker via Bluetooth®, **ONLY if the Bluetooth® module is installed**, and modify your marker control parameters.

For E-Portal Lite instructions and software download information visit **planeteclipse.com/eportal/eplite.**

E-Portal Lite can be downloaded from the App Store.

SYSTEM REQUIREMENTS

iOS device (iPhone / iPad).
iOS 13.0 or later.

APP STORE:
ECLIPSE E-PORTAL LITE

WARNING!

Always make sure your marker is fully unloaded and the air system is disconnected, with a barrel blocking device installed, before connecting to E-Portal Lite.

TECHNICAL

PARTS LIST

FIG.1

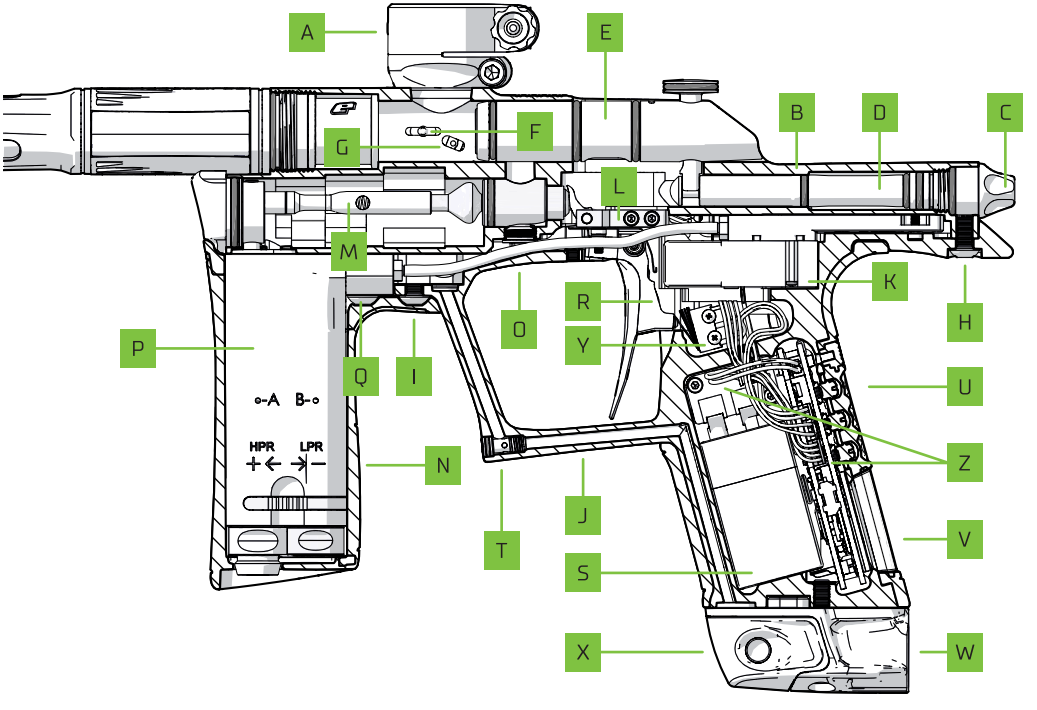


FIG.1

- A Low rise clamping feed tube assembly
- B Marker body
- C Rammer cap
- D Rammer assembly
- E Bolt assembly
- F Rubber detent
- G Breech sensor (BS) device
- H Rear frame screw
- I Front frame screw
- J Frame assembly
- K Solenoid assembly
- L Cam assembly
- M Valve assembly
- N LPR assembly
- O Valve plug
- P Regulator housing
- Q Regulator housing screw
- R Trigger assembly
- S 9v battery
- T Frame plug
- U Navigation console
- V OLED display screen
- W Push On Purge System (POPS)
- X POPS bonnet
- Y Micro-switch assembly
- Z Circuit boards

TECHNICAL

LV2 HPR ASSEMBLY

FIG.1

A	Regulator pin
B	Regulator body
C	#014 NBR60 o-ring
D	#014 NBR60 o-ring
E	Adjuster screw
F	#011 NBR70 o-ring
G	Purge poppet spring
H	Purge poppet
I	Regulator seal
J	Adjuster top
K	#011 NBR70 o-ring
L	Regulator spring
M	Regulator piston
N	#014 NBR70 o-ring
O	#008 NBR70 internal o-ring

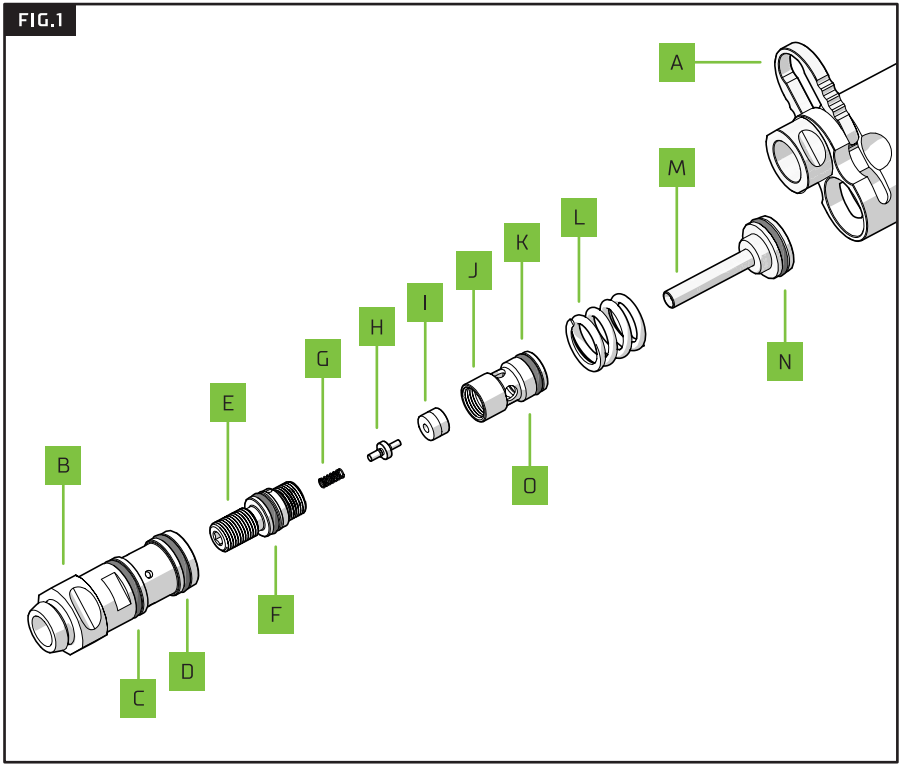


FIG.1

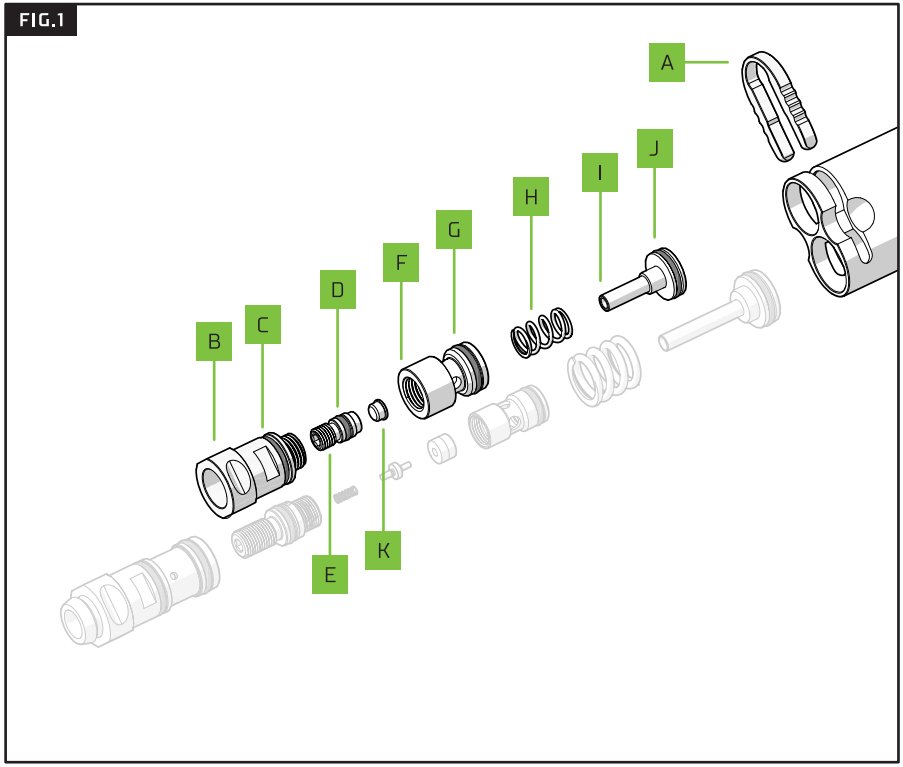


FIG.1

A	Regulator pin
B	LPR cap
C	#013 NBR70 o-ring
D	LPR adjuster screw
E	#007 NBR70 o-ring
F	LPR body
G	#013 NBR70 o-ring
H	Regulator spring
I	Regulator piston
J	#013 NBR70 o-ring
K	LPR adjuster seat

TECHNICAL

LV2 VALVE ASSEMBLY

FIG.1

- A — Valve chamber plug
- B — Valve post
- C — Valve spring
- D — Exhaust valve
- E — Valve guide
- F — Valve plug
- G — Regulator housing
- H — Valve chamber retaining bolt
- I — #017 NBR70 o-ring
- J — 3 x 1 NBR70 o-ring (x2)
- K — #013 NBR70 o-ring
- L — Regulator gasket
- M — Regulator plug
- N — 10-32 x 0.375 socket button head screw
- O — Inlet manifold
- P — 5 x 1 NBR70 o-ring
- Q — Regulator pin

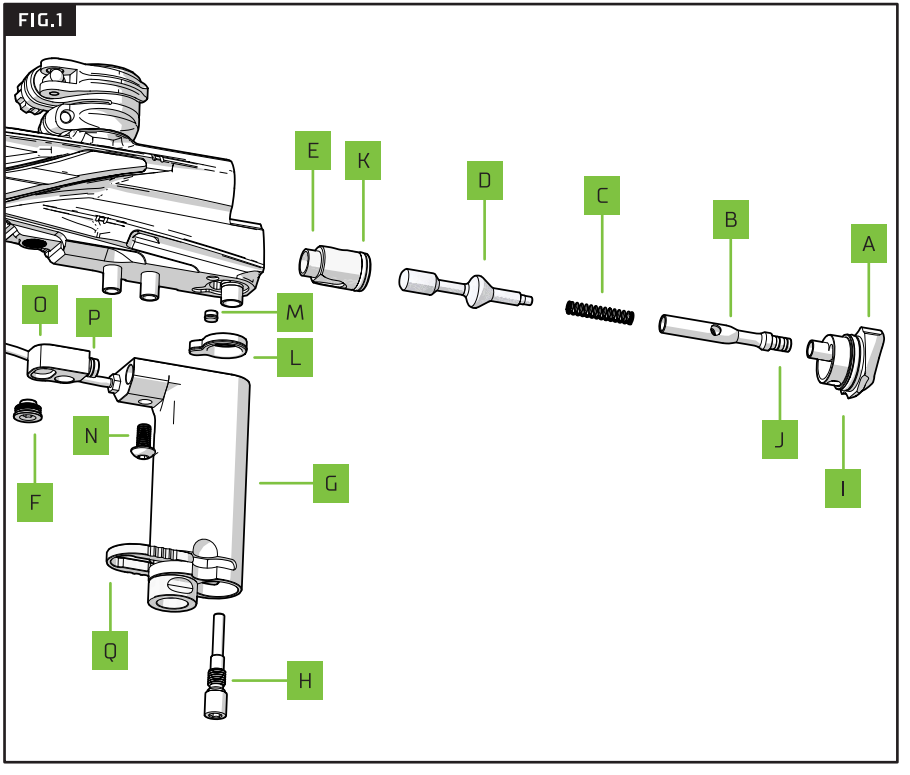


FIG.1

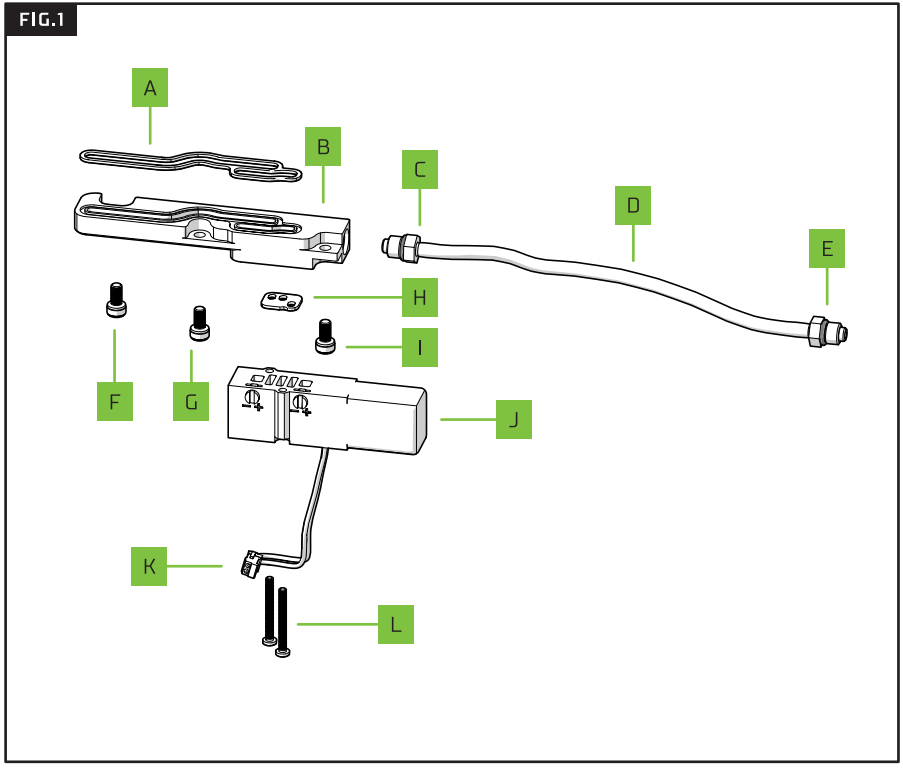


FIG.1

A	Manifold to body gasket
B	Manifold body
C	Manifold barb
D	1/8" low pressure hose
E	Manifold barb
F	M2.5x5 (cap-head socket)
G	M2.5x5 (cap-head socket)
H	Manifold to solenoid gasket
I	M2.5x5 (cap-head socket)
J	Solenoid pilot
K	Solenoid plug
L	M1.7x16 (cross pan-head screws)

TECHNICAL

LV2 BOLT/RAMMER ASSEMBLY

FIG.1

A	Plunger
B	Plunger spring
C	Bolt insert
D	#012 NBR70 o-ring
E	Bolt tip
F	Bolt body
G	14x2 NBR70 o-ring
H	14x2 NBR70 o-ring
I	#013 NBR70 o-ring
J	#013 NBR70 o-ring
K	Bolt pin
L	Rammer cap
M	#013 NBR070 o-ring
N	Rammer bumper
O	#010 NBR070 o-ring (rear)
P	#011 NBR070 o-ring (middle)
Q	#010 NBR070 o-ring (bumper)
R	Rammer shaft
S	#010 NBR070 o-ring (middle)

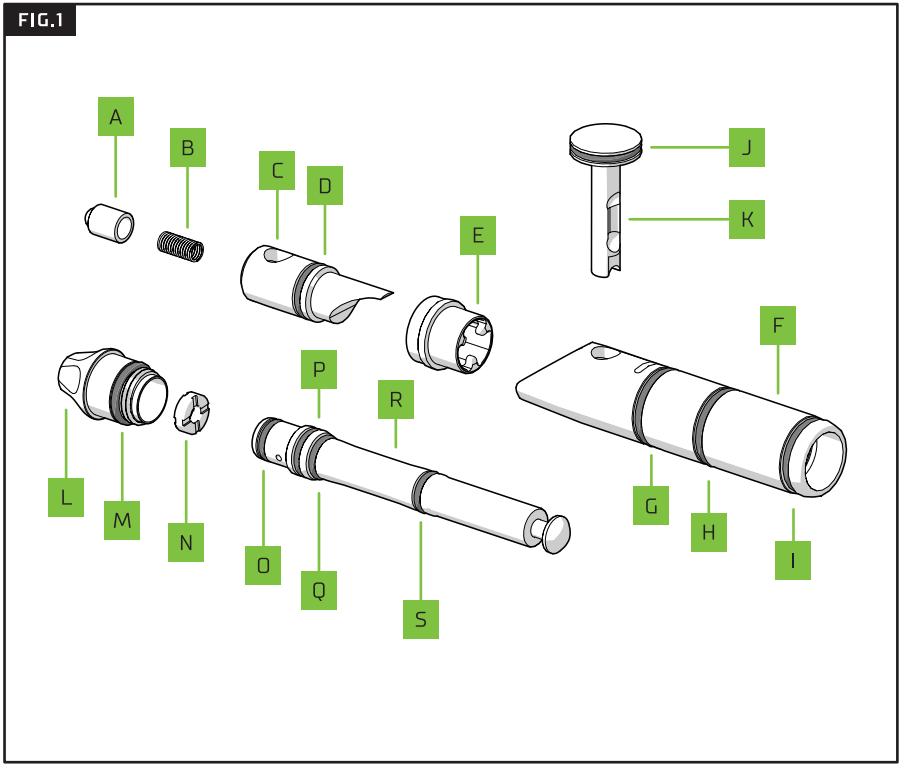


FIG.1

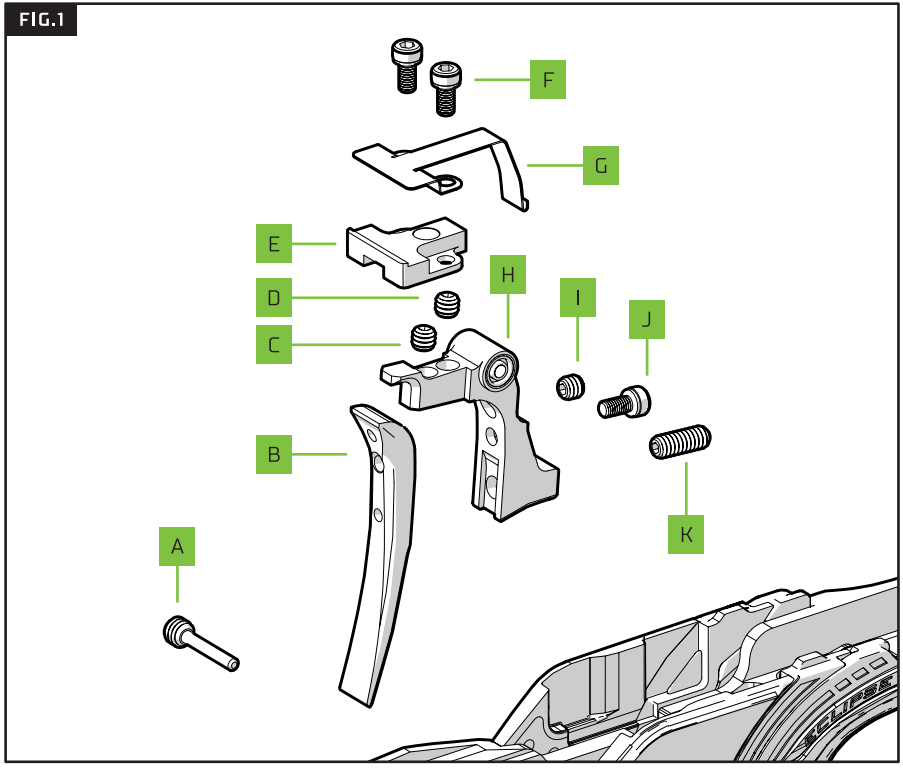


FIG.1

A	Trigger pin
B	Trigger shoe
C	Magnet adjuster screw 6-32 UNC x 1/8" socket
D	Pre-travel adjuster screw 6-32 UNC x 1/8" socket
E	Magnet carrier
F	Magnet carrier screws (x2) M2.5 x 5 cap-head socket
G	Trigger spring
H	Trigger body
I	Trigger spring adjuster screw 6-32 UNC x 1/8" socket
J	Trigger shoe retaining screw M2.5 x 5 cap-head socket
K	Micro-switch screw 6-32 UNC x 1/2" socket

TECHNICAL

LOW RISE CLAMPING FEED-NECK

FIG.1

- A — Clamping feed wheel o-ring #004 NBR70
- B — Clamping feed wheel
- C — Short clamping feed screw 10-32 UNF x 1/2"
- D — Feed tube
- E — Feed insert
- F — Machined clamping feed screw
- G — Locating feed lever
- H — Feed swivel
- I — Feed swivel o-ring #006 NBR70

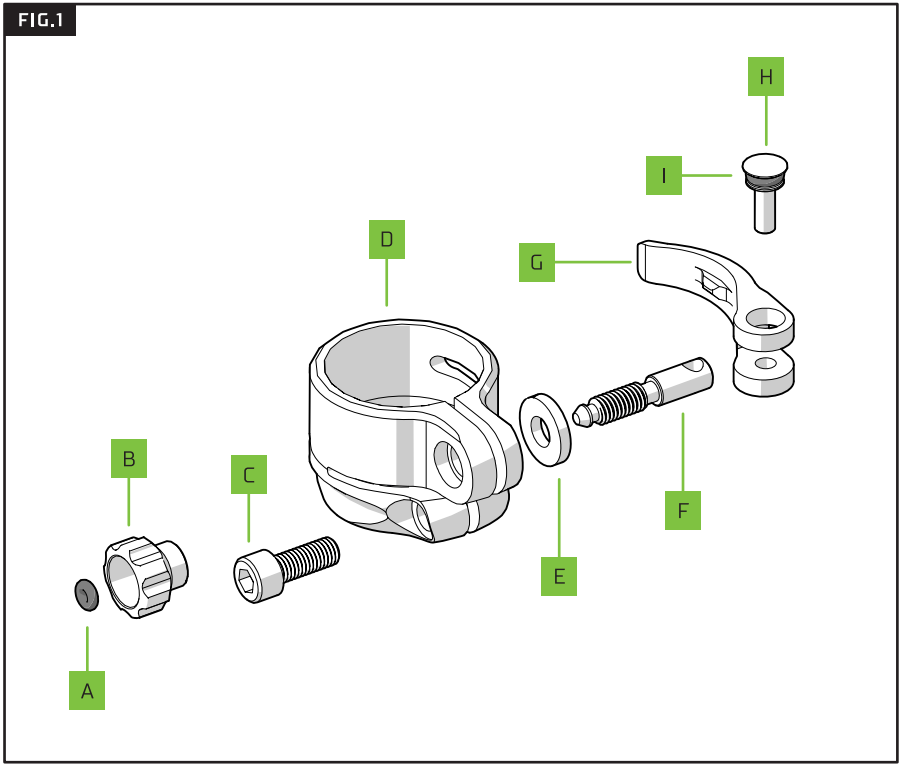


FIG.1

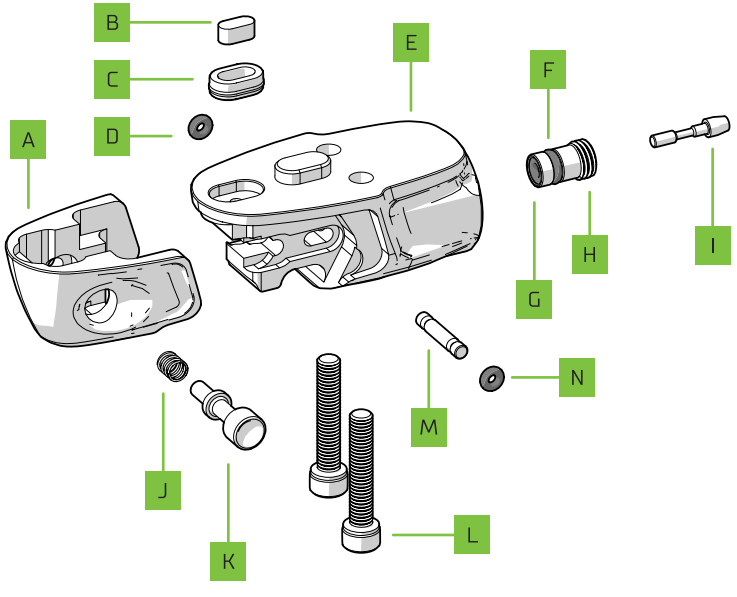


FIG.1

A	POPS bonnet
B	Inlet filter
C	POPS gasket
D	#004 NBR070 o-ring
E	POPS body
F	#007 NBR70 o-ring
G	#005 NBR90 internal o-ring
H	POPS insert
I	POPS pin
J	Latch spring
K	Latch button
L	POPS screws 10-32 UNF x 1" Cap-head socket
M	Push rod
N	#004 NBR70 o-ring

TECHNICAL

CIRCUIT BOARDS

FIG.1

A	Main circuit board
B	GUI circuit board
C	Comms circuit board
D	Solenoid Connector
E	Micro-switch connector
F	BS connector
G	Tournament lock button
H	LED light
I	Up button
J	Select button
K	Down button
L	OLED display
M	Power connector
N	USB connector

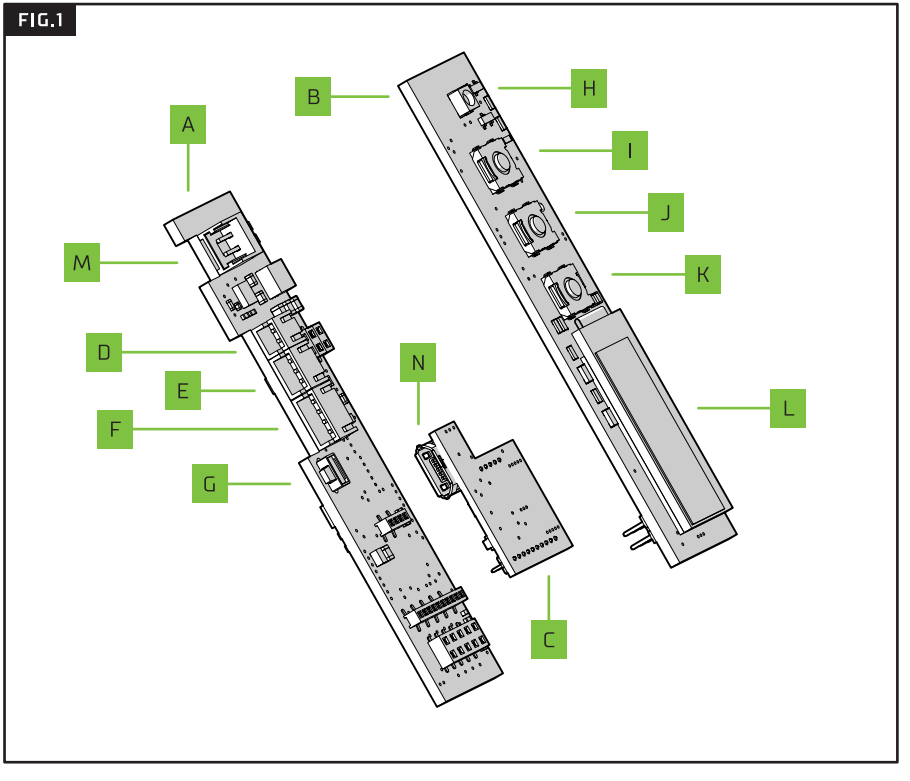


FIG.1

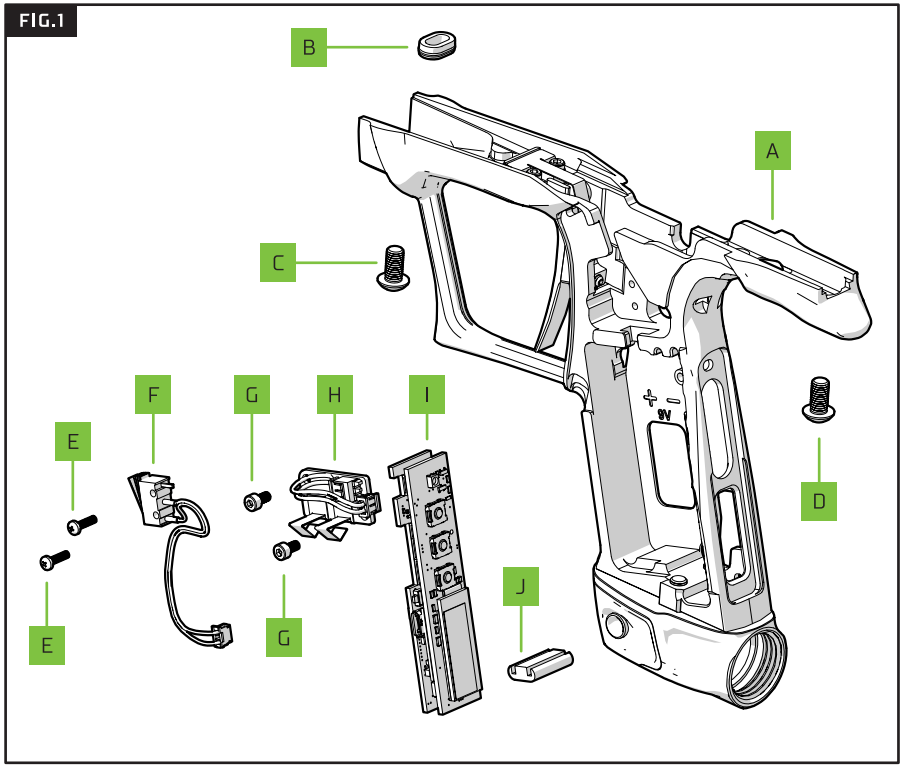


FIG.1

A	Frame
B	Inlet gasket
C	Front frame screw 10-32 x 0.375 socket button head screw
D	Rear frame screw 10-32 x 0.375 socket button head screw
E	Micro-switch mounting screws (x2) M2 x 8 socket pan cross-head screw
F	Micro-switch
G	Battery terminal screws (x2) M2.5 x 5 cap-head socket
H	9v battery board
I	Circuit board assembly
J	PCB retainer

INDEX

>

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802.084.A-000

THIS PRODUCT IS COVERED BY AND/OR LICENSED UNDER ONE OR MORE OF THE FOLLOWING PATENTS:

G.B. PATENTS:
2,342,710; 2,345,953; 2,352,022; 2,391,292; 2,391,063;

U.S. PATENTS:
7,836,873; 7,603,995; 7,073,284; 8,104,463; 7,509,953; 7,921,839; 7,089,697; 7,866,307; 8,082,912; 7,076,906; 7,607,424; 7,980,238; 8,960,175; 8,528,877; 8,201,547; 8,397,706; 8,210,160; 7,073,284; 6,311,682; 6,748,938; 6,860,259; 6,941,693; 6,973,748; 5,881,707; 5,967,133; 6,035,843; 6,474,326; 6,637,421; 6,644,295; 6,810,871; 6,901,923; 7,121,272; 7,100,593; 7,610,908; 7,603,997; 7,946,285; 6,349,711; 7,044,119; 7,185,646; 7,461,646; 7,556,032; 7,591,262; 7,617,819; 7,617,820; 7,640,925; 7,640,926; 7,866,308;

APPLICATION NUMBERS:
12/256,832; 12/613,958; 12/493,777; 11/654,721; 11/747,107; 12/503,504; 11/781,821; 60/832,548; 11/965,886; 10/280,115

Additional U.S. and International Patents may be pending.

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