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U.S. Patent Nos. 5,228,427; 5,755,213; 5,957,119; 6,260,821; 6,349,711; 6,494,195; 6,644,295; 6,644,296; 6,823,857;  
6,694,963; 6,810,871; 7,017,497; 7,044,119.

**CLONE<sup>®</sup> GTi**  
Owners Manual



# Clone GTi Model Owners Manual

V1.00

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**CAUTION!**

**This is not a toy. Misuse may cause serious injury or death. Eye protection designed specifically for paintball must be worn by user and persons within range. Recommend 18 years or older to purchase. Persons under 18 must have adult supervision.**

**READ OWNER'S MANUAL BEFORE USING.**

## MacDev 2 Year Warranty

Your marker is covered by the MacDev 2 year warranty against manufacturing defects. Your marker is guaranteed free of manufacturing defects for a period of two (2) consecutive years beginning from the product purchase date for the original owner. The warranty is not transferable in the event of 2nd hand sale. This warranty does not cover damage due to theft, misadventure or operator error/abuse. Your warranty also does not cover the replacement of consumable items including, but not limited to; o-rings, tools, detents, sensor eyes, barrel blockers, screws, solenoids or batteries (at our discretion).

If a manufacturing defect is detected, the owner must lodge a claim with MacDev, or an authorised MacDev tech centre in their region before the warranty has expired. The owner must supply proof of purchase, and surrender their marker for evaluation. MacDev, or their authorised representative, will evaluate the product to determine the validity of the warranty claim. In the event of a successful warranty claim, the defective part will be either repaired or replaced at no cost to the owner.

To ensure that you are covered for warranty, please keep your original proof of purchase in your records. The owner is solely responsible for producing this proof in the event of claiming warranty.

To claim warranty, please visit the support section of the macdev website ([www.macdev.net](http://www.macdev.net)) to find the tech centre in your region.

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## KNOW YOUR CLONE®



Your Clone marker represents the pinnacle of premium grade paintball markers available today.

Please take the time to learn the parts of your Clone, it will help you when reading this manual.

Numbered basic parts as shown in the figure on the left:

1. Shift® 3 piece barrel
2. Feed clamp lever (used to affix your loader)
3. Drivetrain, pull up and back to remove (note: marker must be degassed first)
4. Eye covers and screws
5. Gladiator GT Inline (High Pressure Regulator)
6. Velocity adjustment screw (anti clockwise to increase velocity)
7. Trigger with screw adjustments
8. OLED display used to view gun status/settings
9. Membrane pad with power and programming buttons
10. Venting ASA, screw your air system in here
11. Venting ASA on/off knob (used to turn the air on or off)

Please note, the features and included accessories are subject to change, and may vary from those show in this manual.

## QUICK SETUP

### Switching your marker on and off

The on/off button is located on a membrane pad on the rear of the frame. Push the button with the power symbol (🔌), when done correctly, your OLED will display the MacDev logo and the marker will be set with the beam sensor system on and ready to fire. Turn your marker off by holding the power button down until the OLED system goes blank.

### Firing your marker

If a paintball is loaded in your marker, and the power is switched on, you may fire the marker by pulling the trigger. If a paintball is not loaded, then you need to either load one, or read the section below on disabling the beam sensor.

### Understanding the beam sensor

Your Clone is equipped with a visible light sensor to determine if a paintball is correctly loaded. This system is used to prevent accidental ball breakage due to misloaded paintballs. The OLED indicator on the side of your grip will show you the status of the beam sensor:



Ball loaded



Sensor disabled



No ball loaded



Sensor fault

### Disabling the beam sensor

To disable the sensor (for dry firing), hold the scroll button on the membrane pad (⏮) until the beam sensor disabled icon appears on the OLED display. You can re-enable the beam sensor the same way.

### Membrane Pad



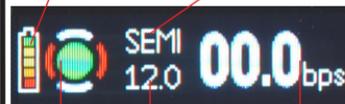
Power button  
(for power on/off)

Scroll button  
(for eyes on/off and programming)

### OLED Display

Battery meter

Cycle mode



Cycle speed (max)

Sensor status

Pressure meter/  
ROF meter

### Installing a preset air system

Your Clone comes equipped with a high quality venting ASA (Air System Adaptor) that is designed for use with commercially available air/nitrogen systems.

The venting ASA included with your Clone uses a knob to turn the air from your preset system on or off. Before installing your preset air system, you must unscrew the ASA knob by approximately 3 turns.

Once this is done, carefully screw your air system into the ASA until it stops.

WHEN SCREWING YOUR AIR SYSTEM INTO THE ASA, THE THREADS SHOULD BE LOOSE. IF AT ANY POINT THEY BECOME TIGHT, DO NOT FORCE THE THREADS, THIS MAY CAUSE DAMAGE TO YOUR AIR SYSTEM OR YOUR MARKER!

### Turning the air on and off

To pressurise your marker, screw the ASA knob down until it stops. This will depress the pin on the end of your air system and pressurise the marker (provided you have sufficient air in your air system).

To depressurise your Clone, unscrew the ASA knob until you hear the air being vented from the cap. Your air system is now turned off and safe to remove.

NOTE: WHEN YOU UNSCREW THE ASA KNOB, YOUR MARKER MAY STORE ONE SHOT. POINT THE MARKER IN A SAFE DIRECTION AND FIRE OFF THAT SHOT BEFORE ENTERING A SAFE AREA.



Installing an air system



Turning the air on

## Using a loader with your Clone

Your Clone marker can operate using any commercially available loader. The software and beam sensor will compensate for the speed of the hopper, ensuring that the marker fires as quickly as the loader allows.

## Installing a loader onto your Clone

Open the cam lever as shown. This should allow your loader neck to fit into the feed tube as shown. If your loader does not fit into the feed tube, then you may have to loosen cam lever - this is done by rotating the cam lever (anti-clockwise). Once your loader is pushed all the way down into the feed tube, close the cam lever. If your loader is loose, you may need to open the cam lever, and tighten it (by turning clockwise) to adjust the cam system to hold your hopper tightly. Only ever adjust your cam lever by one turn at a time to prevent overtightening.

DO NOT OVER TIGHTEN YOUR FEED CLAMP! OVERTIGHTENING MAY RESULT IN DAMAGE TO YOUR LOADER OR CLAMP.

## Removing your loader

Open the clamp by swinging the lever on its hinge. This will loosen the loader and allow you to remove it easily. If it does not remove easily, then it means that you have the cam lever overtightened.



## USING YOUR CLONE

To get the most out of your marker, make sure that you follow the instructions in this section to ensure that the marker is adjusted correctly.

### Adjusting the velocity

The velocity of the Clone is adjusted via an adjustment screw on the bottom your inline regulator. To increase velocity, use a 1/8" allen key to turn the adjustment screw anti clockwise. Always adjust your velocity in small increments and use a chronograph.

DO NOT ADJUST YOUR VELOCITY ABOVE 300FPS, AND ALWAYS OBEY LOCAL LAWS AND REQUIREMENTS.

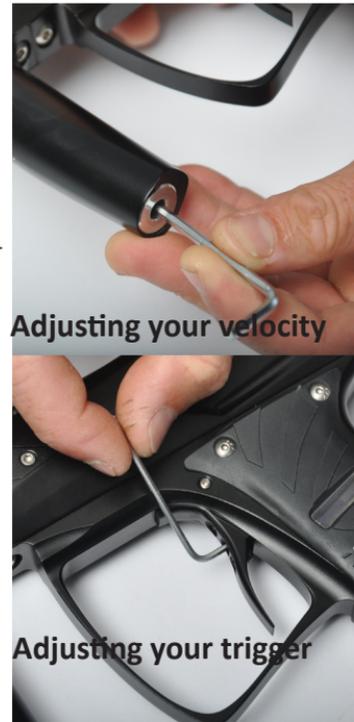
### Adjusting the trigger

Your trigger has three adjustment screws, they are located in the front face of the trigger in the following order from top to bottom:

- Pull tension
- Switch actuation point
- Pull length

CAUTION! WHEN ADJUSTING THE SWITCH ACTUATION SCREW, MAKE CERTAIN THAT YOU DO NOT ADJUST THE SCREW IN TOO FAR, AS THIS MAY RESULT IN DAMAGE TO YOUR MICROSWITCH.

You can easily adjust these three screws to personalise the feel of your trigger.



Adjusting your velocity

Adjusting your trigger

## Replacing the battery

Remove the three screws holding the wrap around grip onto the left hand side of your grip frame. Gently remove the battery from the clip on harness. Replace the battery with a high quality alkaline 9V battery (type 6LR61).

## ADVANCED SETUP

### About the tourney lock

The Clone board is equipped with a tourney lock system. When the tourney lock system is activated, the gun cannot be reprogrammed on the field - making it tournament legal.

If your board is in locked mode, you can view your settings, but a lock indicator will be shown on the right hand side of the screen, indicating that your board will need to be unlocked before settings may be changed.

The lock status can be changed by opening the left hand side of the marker wrap around grip to gain access to the circuit board. The tournament lock is a black button. tap the button and you will see a tourney lock screen. Use the scroll button to change the status to off, then hold the trigger to confirm. if done correctly, you will no longer be able to adjust the settings on your board.

### Programming the Clone software

To program the board, hold down the trigger whilst turning the marker on. When done correctly, you will see a message on your display screen indicating that programming mode is loading. You must continue to hold the trigger until the program mode is loaded, then release the trigger.

### Categories

Inside the programming system, settings are organised into categories. Select the desired category by scrolling down with the scroll button (⏮), or up with the power button (⏻). Enter the category by holding the trigger.

Once inside a category, you can use the scroll and power buttons to scroll through to different settings. They may be adjusted by holding in the trigger, then adjusting the value with the scroll or power buttons.

### Menu Tree

Fire Mode	Settings	Preferences	System
-Preset	-Dwell	-Boot screen	-Total shots
-MAX ROF	-Debounce	-Sound	-Version
-ROF cap	-Eye delay	-ROF meter	-Zero pressure
-Ramp config	-Eye sensitivity	-Back	-Back
-Back	-Bolt delay		
	-Clearing shot		
	-FSDO time		
	-FSDO dwell		
	-Back		

### Fire mode category

The fire mode category has all settings related to how your marker behaves when firing. details on the settings are given below:

Preset - a range of preset setups for common situations

MAX ROF - a setting for the rate of fire cap

Ramp config - details for ramping behaviour (this is only available for ramping modes)

### Settings category

This category contains the detailed settings for the gun. These should only be changed by advanced users, or if directed to by a MacDev tech. Incorrect settings may cause your marker to behave erratically or poorly.

Dwell - the amount of time your solenoid is given power - the Clone GTi should be set to a minimum of 12ms. If the weather is very cold, or your marker requires it, you may set this a little higher.

Debounce - the amount of bounce filtering applied by the software. This setting may be increased to remove unwanted trigger bounce.

Eye delay - this is a parameter used to give a paintball time to settle in the breach of the gun. If you have unexplained ball breakage, then you may need to increase this setting.

Eye sensitivity - the sensitivity of the software to changes in your eyes. Please do not change this parameter unless directed (default 10).

Bolt delay - a time used in the software for effective tracking of the paintball bolt. Please do not change this parameter unless directed (default 8ms).

Clearing shot - a clearing shot function will allow the user to force a shot by holding the trigger in - even if the eyes cannot detect a ball. Set this to off, if you would not like to use this function.

FSDO time - FSDO stands for First Shot Drop Off. If you leave your gun for some time, and the first shot is lower than it should be, then you can use this parameter to correct it. This parameter is the time that the software waits before correcting for FSDO.

FSDO dwell - this is the amount of extra dwell given to the solenoid to overcome FSDO - if directed to do so by the above parameter.

## Preferences category

This category contains settings related to the user experience.

Boot screen - The boot screen can be disabled if desired.

Sound - sound can be disabled if desired.

ROF meter - the settings for the ROF meter may be changed here. You can adjust the number of shots sampled, and if the maximum is held to the peak (peak hold).

## System category

This category contains system information and settings.

Total shots - total shots since your board was made.

Version - current software version.

Zero pressure - This is used to zero your pressure transducer. If your pressure transducer is reading incorrect values it can be zeroed here. You must have your gun empty of all pressure before performing this action - if it is not, you will get incorrect transducer readings.

## Using an RF transmitter

Your stock board has provision for an RF transmitter attachment. To use the RF transmitter function, you must plug a compatible RF transmitter module into the RF transmitter plug (directly under the eye plugs on your board), and it will be activated automatically.

## Using the USB connector

Your stock board has a mini USB connector on the bottom of the board to the right of the 9V battery. The USB connectivity may be used to update your software via a standard USB/mini USB cable.

**Never operate the USB connection while the board is powered on. Never update your board with software unless it has been downloaded directly from the MacDev website ([www.macdev.net](http://www.macdev.net)), the use of non**

**genuine software on your stock board will immediately void your entire marker warranty.**

## MAINTENANCE

If you take 10 minutes after every day of play to maintain your marker, you will be rewarded with consistent reliable performance.

You should perform basic cleaning after every day of play, and you should perform drivetrain maintenance every 10 cases. You should perform inline regulator maintenance every 25 cases. You can clean and maintain your Clone more often, it is up to you.

When maintaining your e, use only MacDev accessories. Your Clone is packaged with an allen key set and a

small tub of MacDev Militia Lube, only use Militia Lube to lubricate your Clone.

### Basic cleaning

After using your Clone, always clean old paint from the outside. Always clean your barrel using a barrel swab to remove traces of dirt and paint. Use your barrel swab to clean the breech and feed tube in a similar way. Your Clone internal parts are quite well protected and sealed. However, when not in use, dirt can get into the marker and cause problems - so storage of your marker is just as important as cleaning. When storing your marker, ensure that it is stored in the Clone bag that is free of dirt, otherwise dirt may get into the venting ASA or breech.

### Maintaining the drivetrain

Your drivetrain should be maintained after every 20,000 shots (10 cases). You may maintain your drivetrain more frequently if you wish.

Before working on your drivetrain, ensure that your marker is degassed, dry fire the gun with safety to ensure that there is no air remaining. Once that is done, pull the drive cover upwards firmly until it clicks, and pull the drivetrain backwards out of your marker. Set aside your marker so that you can focus on the drivetrain.

The disassembled drivetrain is shown below. To maintain your drivetrain, clean and re lubricate the following o-rings; bolt switch, bolt keg inner, valve, spacer inner, powertube tip and mid. Also clean and relubricate the bolt keg bore, valve keg bore, as well as the bolt and valve themselves.

After working on your drivetrain, reassemble it, then slide it back into your marker. Take care to align the pin correctly before pushing your drive cover down.

### **Maintaining the inline regulator**

We recommend that you maintain your inline regulator every 50,000 shots (25 cases).

Before working on your inline regulator, make certain that the air supply is turned off (via the venting ASA), and safely fire any gas out of the gun to ensure it does not have any residual pressure.

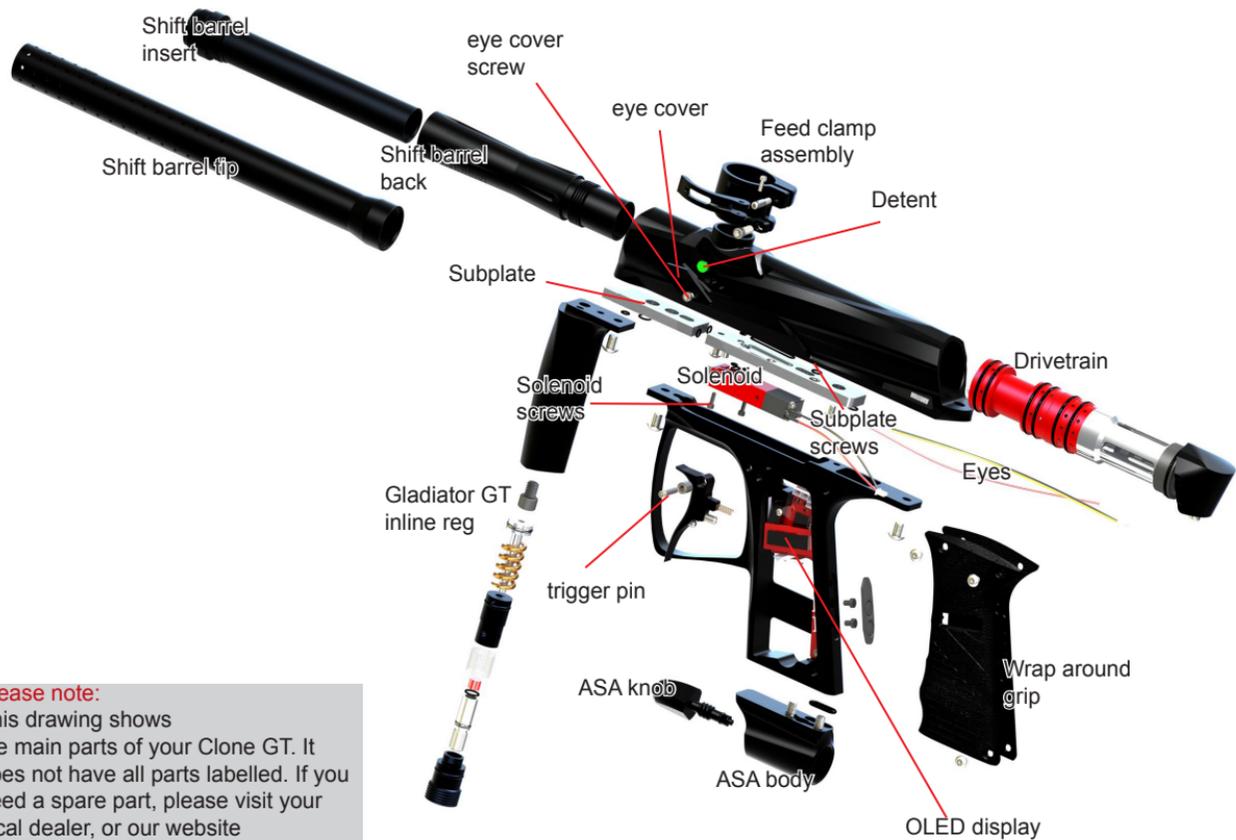
Use a 1/4" allen key to unscrew and remove the inline regulator bottomworks and o-ring retainer - these should come out together. Then tip the spring out and put it aside.

To remove the piston, use the 1/8" allen key from your set, and push it gently into the hole in the end of the piston (still inside your inline regulator body). Push the key slightly to one side and use it to pull the piston out of your inline regulator body.

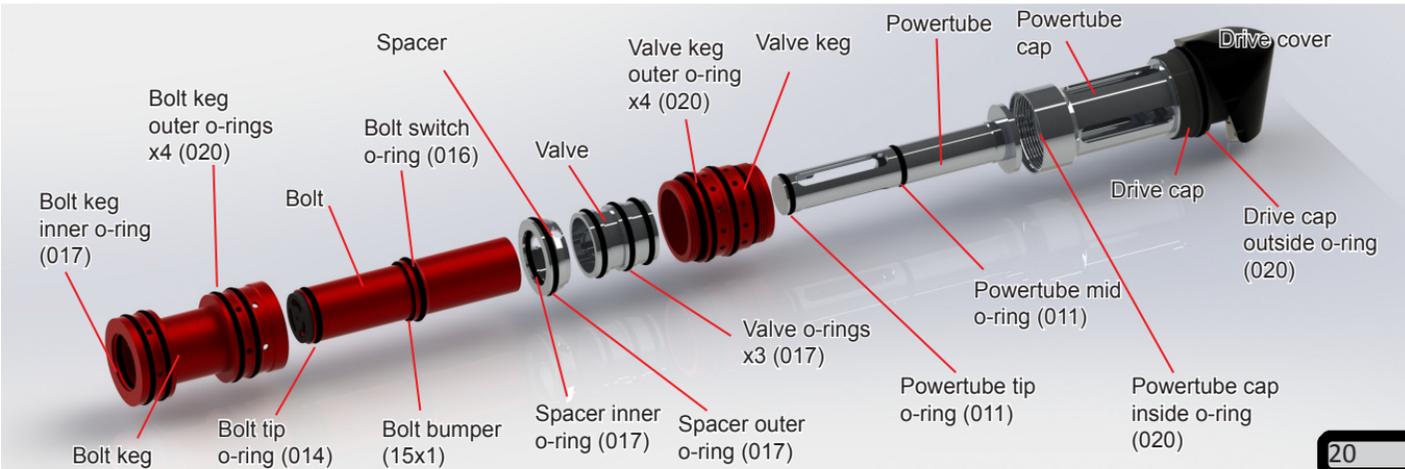
**CAUTION: take care not to damage the end of the piston. Do not use pliers, sharp tools or excessive force to extract the piston - a damaged piston will require replacement, it cannot be repaired. If you are unsure of the piston removal, ask a technician to do it for you.**

Clean dirt and old grease from your piston. Relubricate the piston o-ring and piston shaft with Militia Lube, before putting the spring onto the piston, and fitting the piston and spring back onto the regulator bottomworks. Finally, screw the assembly back into your inline regulator body, and tighten lightly into place using your 1/4" allen key.

A picture of the parts inside your Gladiator reg are shown on the adjacent page. Please note that to complete this simple maintenance, you do not need to completely disassemble the regulator as shown, all the parts are shown to help you if you need it for troubleshooting.

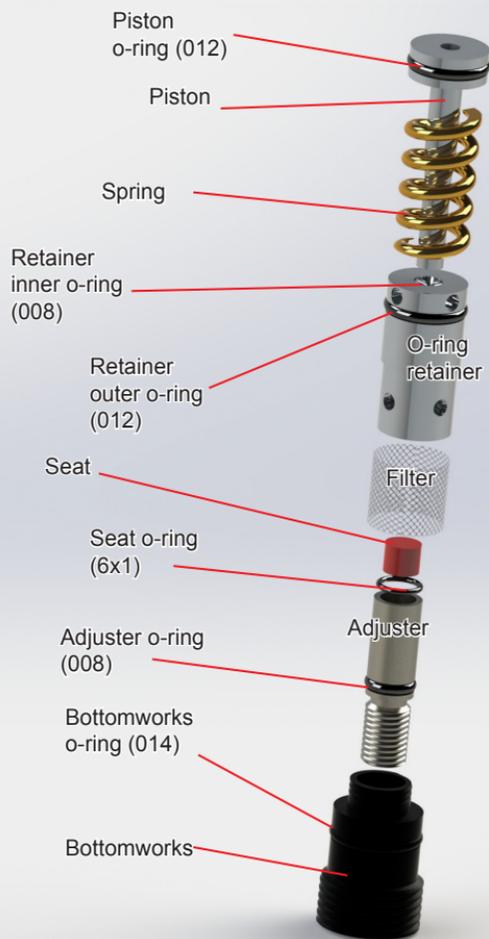


**Please note:**  
 This drawing shows the main parts of your Clone GT. It does not have all parts labelled. If you need a spare part, please visit your local dealer, or our website [www.macdev.net](http://www.macdev.net) to see a full spares drawing.



**Simple Maintenance:**

Yes, its that easy. The right hand picture shows all the parts, but you don't need to open your regulator further, unless you need to trouble-shoot it.



## TROUBLESHOOTING

If you are experiencing difficulties with your marker, please check this table first to see if there is an easy solution listed. If at any time you are unsure about how to work on your marker, please contact a certified MacDev technician or service centre.

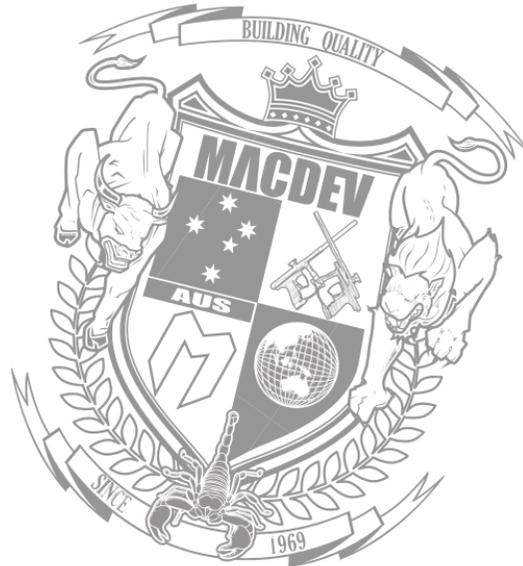
Symptom	Possible Cause	Solution
Although a fresh battery has been fitted, your Clone will not turn on	The battery has not been fitted correctly	Ensure that the battery is firmly connected to both terminals. Ensure that the positive (+) terminal is connected to the positive terminal on your battery.
Your Clone leaks from the solenoid	Leaking bolt switch o-ring	Clean and relubricate the drivetrain with particular attention to the bolt switch o-ring. Replace if necessary.
	Leaking manifold o-rings	Check that the 3 manifold o-rings are in place between the solenoid and subplate. If they are damaged or missing, then replace them.
Your Clone uses excessive air	Valve is leaking	Check that the valve o-rings are clean and well lubricated, replace if worn.
	General leak	Make certain that there are no leaks from your gun or air system wasting your air supply.

Symptom	Possible Cause	Solution
Your Clone is chopping paintballs	Beam sensor is turned off	Always play with the beam sensor enabled.
	Beam sensor is dirty or blocked	Clean the breach, bolt and sensor.
	Loader is set on a force setting too high for your paintballs	Some force fed loaders can apply enough force to break a fragile paintball. If this is the case, consult your loader manual to reduce the force setting.
	Detents are missing or incorrectly installed	Replace or re-install your detents.
	Ball settle delay too low	Increase the ball settle delay (pg 15)
Your Clone will not fire	The trigger is set up incorrectly	Ensure that the trigger actuates the micro-switch by adjusting the actuator screw.
	The beam sensor is on, and there are no paintballs loaded	Load some paintballs.
	The solenoid is not plugged in	Plug the solenoid into the board.
Your Clone fires high on the first shot or inconsistently.	Creeping inline regulator	Clean and lubricate the inline regulator, ensure that the seat and piston are in good condition.
Your Clone fires low on the first shot	Sticking drivetrain	Clean and relubricate the drivetrain. If you continue to have problems: -increase the dwell by 1-2 ms. -increase the ABS parameter on your board.

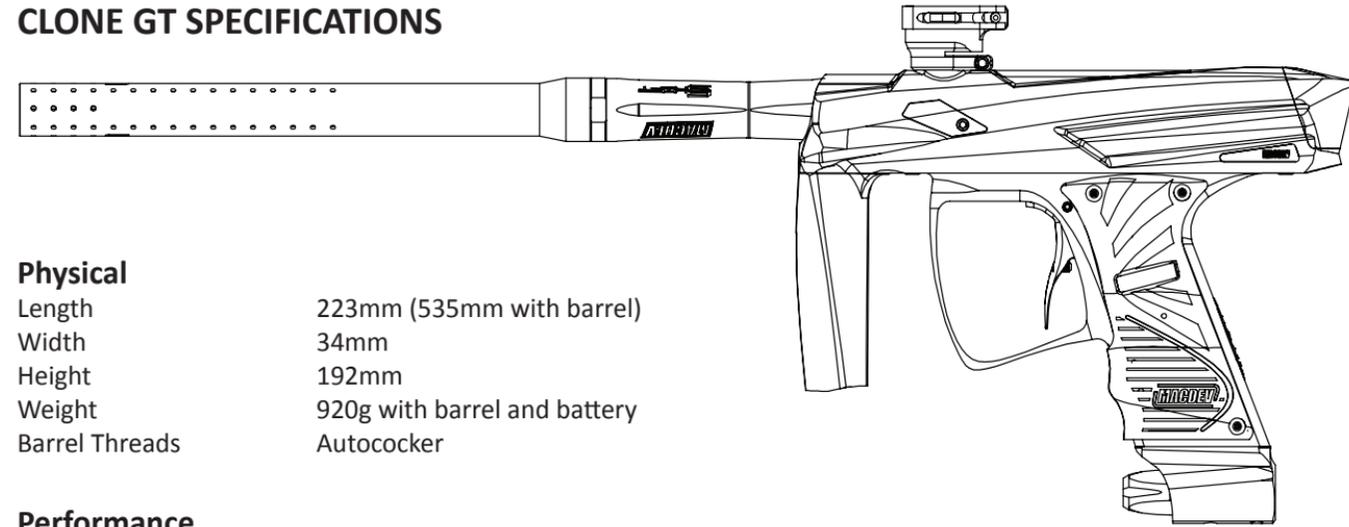
Symptom	Possible Cause	Solution
The beam sensor is not reading correctly	Eyes are connected incorrectly	Red/white wire eye is the left hand plug Yellow/black wire eye is the centre plug.
	Eyes are faulty	Replace the eye pair.

## MACDEV TECHNICAL ASSISTANCE

If you require technical assistance, please contact your local MacDev service centre. You can also find assistance on the MacDev support website [www.macdev.net](http://www.macdev.net).



## CLONE GT SPECIFICATIONS



### Physical

Length	223mm (535mm with barrel)
Width	34mm
Height	192mm
Weight	920g with barrel and battery
Barrel Threads	Autococker

### Performance

Operating pressure	100psi
Maximum Rate of Fire	30 BPS

### Electronics

Software	Militia Soft Version 2.0
Hardware	Militia Version 2.0 (Lead Free)
Display	OLED high visibility low power usage 96x16px
Power	9V standard battery 6LR61
Fire modes	Semi, NXL, PSP, Response, Burst, Full Auto
Connectivity	Mini USB
Solenoid	5V 1W