



RX MODEL

OWNERS MANUAL

**MACDEV**

# Cyborg RX Owners Manual

V1.00

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## Warranty

Your marker is covered by the MacDev 12 month warranty against manufacturing defects. Your Marker is guaranteed free of manufacturing defects for a period of twelve (12) consecutive months beginning immediately after purchase from a registered retailer. The solenoid is warranted for a period of thirty (30) days after the date of purchase. If a manufacturing defect is detected, the defective part will be either repaired or replaced at no cost to the owner. Your warranty is not transferrable in the event of 2nd hand sales - the warranty may only be claimed by the original retail purchaser.

Your warranty does not cover damage due to theft, misadventure or operator error/abuse.

To make a successful warranty claim, the owner must produce their warranty card and proof of purchase.



**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.**

## Contents

Know your Cyborg  
Quick Setup  
Using your Cyborg  
Advanced Setup  
Maintenance  
Parts List  
Troubleshooting

## CONTENTS

### Know your Cyborg RX (Page 5)

All users should read this section to learn the parts of your Cyborg and their names.

### Quick Setup (page 7)

Learn how to set your Cyborg up for use the first time.

- Switching your Cyborg on and off
- Firing your Cyborg
- Understanding the beam sensor
- Disabling the beam sensor
- Installing a preset air system
- Turning the air on and off
- Using a loader with your Cyborg
- Installing a loader onto your Cyborg
- Removing your loader

### Using your Cyborg (Page 10)

Essential reading on how to use your Cyborg marker.

- Adjusting the velocity
- Adjusting the trigger
- Replacing the battery

### Advanced Setup (Page 11)

A section for those who are comfortable with making fine adjustments to the Cyborg marker.

- About the tourney lock
- Programming the software
- Debounce
- Cycle mode
- Cycle speed
- Cycle speed fine
- Ramp start
- Ramp degree

- Mechanical debounce
- Anti bolt stick (ABS)
- Cycle filter
- Ball settle delay
- Solenoid on time (dwell)
- Eye function
- Auto power off
- Game timer
- Brightness
- User profiles
- Reset to default
- Using an RF transmitter
- Using the USB connector

### Maintenance (Page 17)

Maintaining your purchase is essential to long term product satisfaction.

- Basic cleaning
- Maintaining the bolt
- Maintaining the drivetrain
- Maintaining the low pressure regulator (LPR)
- Maintaining the inline regulator

### Parts List (Page 21)

An exploded view of your Cyborg with parts labelled.

### Troubleshooting (Page 25)

Solving common difficulties.

- Common problems and solutions
- Technical assistance

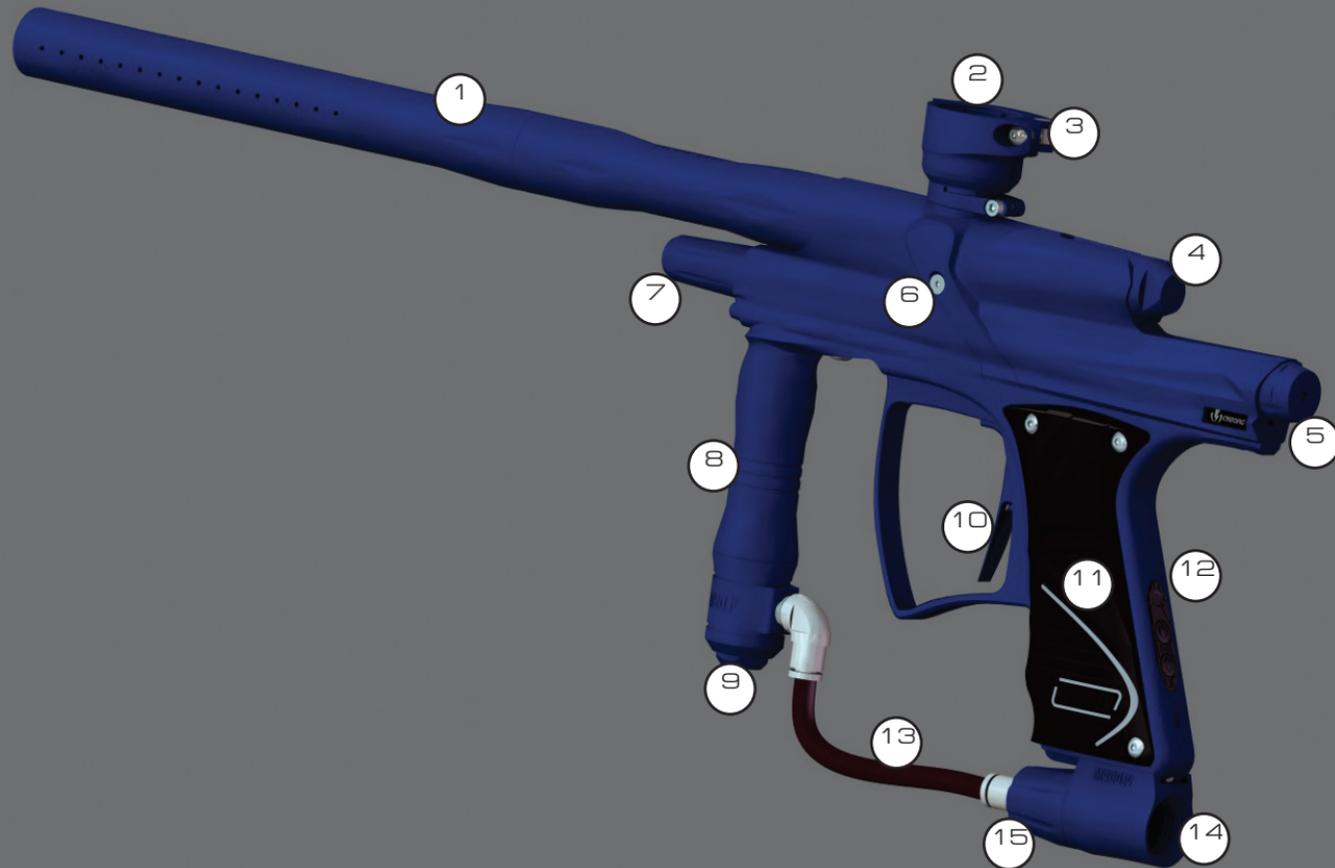
### Parts and Accessories

Enhance the Cyborg experience with a range of genuine accessories and spare parts.

#### Contents

- Know your Cyborg
- Quick Setup
- Using your Cyborg
- Advanced Setup
- Maintenance
- Parts List
- Troubleshooting

## KNOW YOUR CYBORG RX



Your Cyborg RX marker has been CNC milled from a solid billet of 6061 aircraft grade aluminium, representing the highest quality workmanship available in aluminium manufacturing. The milling has been performed by a 3D surfacing machine, with each marker taking many hours to produce.

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

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

1. Matchstik 2 piece barrel
2. Feed clamp lever (used to affix your loader)
3. Feed clamp adjuster screw
4. Bolt assembly, twist anti clockwise and pull to remove
5. Drivetrain, unscrew to remove (note: bolt must be removed first)
6. Eye covers and screws
7. LPR (Low Pressure Regulator)
8. Gladiator Inline (High Pressure Regulator)
9. Velocity adjustment screw (anti clockwise to increase velocity)
10. Trigger with screw adjustments
11. OLED display used to view gun status/settings
12. Membrane pad with power and programming buttons
13. Air hose
14. Venting ASA, screw your air system in here
15. Venting ASA on/off cap (used to turn the air on or off)

Contents

Know your Cyborg

Quick Setup

Using your Cyborg

Advanced Setup

Maintenance

Parts List

Troubleshooting

## 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 Cyborg 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      Lock status

Cycle mode



Sensor status

Game timer/  
ROF meter

## Installing a preset air system

Your Cyborg 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 Cyborg uses a screw cap to turn the air from your preset system on or off. Before installing your preset air system, you must unscrew the ASA cap by approximately 3 turns (do not unscrew it further, as the cap can come off completely).

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 cap 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 Cyborg, unscrew the ASA cap 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 CAP, YOUR MARKER MAY STORE ONE SHOT. POINT THE MARKER IN A SAFE DIRECTION AND FIRE OFF THAT SHOT BEFORE ENTERING A SAFE AREA.**

- Contents
- Know your Cyborg
- Quick Setup
- Using your Cyborg
- Advanced Setup
- Maintenance
- Parts List
- Troubleshooting



Turn air off

Turn air on

- Contents
- Know your Cyborg
- Quick Setup
- Using your Cyborg
- Advanced Setup
- Maintenance
- Parts List
- Troubleshooting

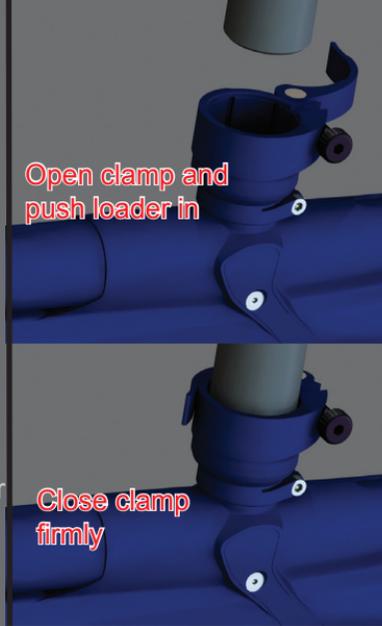
**Using a loader with your Cyborg**  
 Your Cyborg marker can operate using any commercially available loader. The software and beam sensor will compensate for the speed of the hopper, ensuring that the marker fires as quickly as the loader allows.

All Cyborg markers are equipped with a cam lever clamping feed tube. This system allows the easy installation and removal of your loader. You will need to adjust the feed tube to suit the loader that you have.

**Installing a loader onto your Cyborg**  
 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 the adjustment screw slightly. Once your loader is pushed all the way down into the feed tube, close the cam lever. If your loader is loose, you may now tighten the adjustment screw (by turning clockwise) to tighten the loader in place.

**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 clamp adjustment screw overtightened.



## USING YOUR CYBORG

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 Cyborg 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 gently and use a chronograph.

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

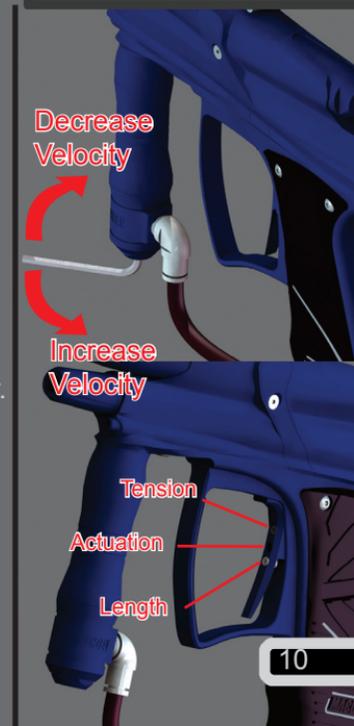
### Adjusting the trigger

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

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

**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.**



- Contents
- Know your Cyborg
- Quick Setup
- Using your Cyborg
- Advanced Setup
- Maintenance
- Parts List
- Troubleshooting

### Replacing the battery

Remove all six screws holding the wrap around grip onto your grip frame. Push the battery out of the frame by pushing the bottom right hand side of the battery.

Place the replacement battery into the marker, NOTE: make sure you put the bottom of the battery in first then push it onto the terminals. Only use high quality alkaline 9V batteries, the best possible choice is to use a MacDev Militia PowerPack (type 6LR61).

## ADVANCED SETUP

### About the tourney lock

The Cyborg 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.

Your marker has a tourney lock status indicator:



When in unlocked mode, settings on the board may be changed, when in the locked mode settings cannot be changed.

The lock status can be changed by opening the right hand side of the marker wrap around grip to gain access to the back of your circuit board. The tournament lock is a black button. Hold the button until you see the tournament lock status change.



### Programming the Cyborg software

To program the board, first ensure that the tournament lock is off, then turn the marker off. 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.

When in the programming mode, settings will be displayed ready to be adjusted. If you would like to adjust the setting displayed, hold the trigger until the word "Set" appears before the setting value. Press the scroll button (⬇️) to increase the set value, and the power button (⏻) if you would like to decrease the set value. When you are satisfied with the new setting, hold the trigger until the word "Set" is removed.

If you would like to advance to the next setting, press the scroll button. If you would like to go backwards, press the power button.

When you are finished with the program mode, hold the power button until the display goes blank (marker is powered down).

Each setting is described in detail below:

### Debounce

The debounce setting of your marker is used to control the amount of "bounce" in your trigger. A very low debounce setting will result in a lot of bounce. In some tournaments or fields, it will be necessary to reduce the amount of bounce by increasing the debounce setting. Always increase the debounce slowly, because settings higher than 15 may result in your marker feeling unresponsive.

## Cycle mode

Your Cyborg is equipped with 10 different cycle modes. These cycle modes will allow you to use your Cyborg in many different situations - tournament play, recreational and scenario. Always follow the rules and local regulations when selecting your cycle mode.

**NOTE: SOME VERSIONS MAY HAVE SOME MODES REMOVED TO COMPLY WITH LOCAL LAWS. FOR EXAMPLE, ALL MARKERS SOLD IN AUSTRALIA OFFER ONLY SEMI AUTO MODES.**

Semi-auto unlimited - one pull, one shot as fast as your loader can feed.

Semi-auto adj - one pull, one shot as fast as the cycle speed setting.

PSP ramping - ramping mode legal in the PSP league limited by the cycle speed setting.

PSP burst - more aggressive ramping mode legal in the PSP league limited by the cycle speed setting.

NXL full auto - full auto mode legal in the NXL league limited by the cycle speed setting.

Millennium - ramping mode legal in the Millennium league limited by the cycle speed setting.

Ramping - standard ramping mode limited by the cycle speed setting.

Response - fires both when the trigger is pulled and released limited by the cycle speed setting.

Burst - a burst is fired for each individual trigger pull, limited by the cycle speed setting.

Full auto - marker is cycled continuously when trigger is held, limited by the cycle speed setting.

## Cycle speed

This setting is measured in Balls Per Second (BPS). If you are using a cycle mode that is limited by the cycle speed setting, then your marker will not cycle faster than this setting (plus the fine adjustment in the next setting).

## Cycle speed fine

The fine adjustment allows the addition of 0.1bps increments for the very precise adjustment of your cycle speed.

## Ramp start

In ramping modes, the software requires you to achieve a given cycle speed before ramping shots are

added. This may be adjusted in this ramp start setting. This parameter is measured in trigger pulls per second (PPS). A low PPS setting will begin ramping more easily than a high PPS setting.

## Ramp degree

Once ramping is achieved (by exceeding the PPS setting above), the software will add shots. The ramp degree setting allows you to set the amount of shots added and is specified as a multiple of the actual trigger pulls. For example a setting of 2.0 will add double the actual trigger pulls - if the trigger pulls are 5 pulls per second, it will add  $2 \times 5 = 10$ , giving you a total speed of  $5 + 10 = 15$ bps.

## Mechanical debounce

Most difficulties experienced with bounce in your marker can be rectified by increasing the debounce setting at the start of your settings list. However, the mechanical debounce system is an alternative method for electronically removing bounce, and its setting can be increased to help remove bounce if the standard debounce setting is ineffective.

## Anti bolt stick (ABS)

When your marker is idle for long periods, friction and settling effects can cause your bolt or other moving parts to be sticky. The ABS system is used to overcome this on the first shot by temporarily increasing the dwell setting. The ABS is adjustable in increments of 1ms.

## Cycle filter

Your software allows the buffering of a single shot in case you pull the trigger during a cycle. This filter can be used to reduce the time allowed to buffer this shot. Adjustable from off (0%)-100%. Higher settings will reduce the amount of mechanical bounce in the marker, whilst low settings will make the marker feel aggressive and responsive.

### Ball settle delay

Most paintball loaders will bounce the paintball in the breech. The ball settle delay allows some time (measured in milliseconds) for the ball to settle in place before firing. If you experience excessive paint chopping, you should try increasing your ball settle delay.

### Solenoid on time (dwell)

When your marker is cycled, the solenoid valve is held open for the solenoid on time. If this setting is too low, the marker cannot cycle. If this setting is too high, the marker will use too much air. The correct setting for a Cyborg is 8-10ms.

### Eye function

Your Cyborg can utilise the beam sensor (eye) in different ways. This setting can be used to select which way you would like to have the sensor used. The system can use a delayed mode, where if a ball is not detected in the breech, a shot will be fired after a half second delay. This mode is useful if you are using a sound activated loader, or if you would like your gun to indicate to you when you are out of paintballs. Another option is the forced mode. In this mode, the marker will only fire if a ball is detected. However, the user can force a shot to be fired by holding the trigger until the marker fires.

### Auto power off

Your display system and other software uses power when switched on. To conserve power, the system can power off after a given period of time, this may be adjusted here.

### Game timer

Your display system can display either a rate of fire indicator or a game timer. If the game timer is switched off, the rate of fire indicator will be displayed. The game timer will be started when the user presses and releases (not hold) the power button (  ).

### Brightness

Your OLED display system has an adjustable brightness setting. Lower brightness settings conserve battery power.

### User profiles

Users who make changes to the default settings can save these settings as profiles so that they can be reloaded at a later time. There are three different profile slots available.

To save a profile, enter the save profile setting by holding the trigger. Once inside the setting, you can use the scroll button to select the profile slot number you would like to save to. Once the desired slot is displayed, hold the trigger again, and the software will ask you to confirm (with the power button) or cancel (with the scroll button).

To load a profile, follow the same steps after entering the load profile setting. Please note that when loading a profile, the current settings will be replaced by the loaded profile.

### Reset to default

The default settings on your software are preset by the factory to give good all round performance from your Cyborg. If you have made changes to your software, and would like to return your software to factory default settings, you can use this reset feature.

To reset your software, enter the reset setting by holding the trigger. Once inside the setting, you can use the scroll button to select the word “yes”, hold the trigger again, and the software will ask you to confirm (with the power button) or cancel (with the scroll button).

- Contents
- Know your Cyborg
- Quick Setup
- Using your Cyborg
- Advanced Setup
- Maintenance**
- Parts List
- Troubleshooting

### 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 and inline regulator maintenance after at least every 2 days of play. You can clean and maintain your Cyborg more often, it is up to you.

When maintaining your Cyborg, use only MacDev accessories. Your Cyborg is packaged with an allen key set and a small tub of MacDev Militia Lube, only use Militia Lube to lubricate your Cyborg.

### Basic cleaning

After using your Cyborg, 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 Cyborg 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 Cyborg bag that is free of dirt, otherwise dirt may get into the venting ASA or breech.

### Maintaining the bolt

Your Cyborg bolt is held into the gun by the patented bolt sleeve. Before the bolt can be removed, your bolt must be back (in the loading position). The bolt is always back when the Cyborg is gassed up (unless it is firing).

Twist the bolt through 45 degrees as shown, then pull the bolt assembly out of the Cyborg. If your bolt sleeve will not twist, check that the bolt is back. If there is no pressure in the gun, you can reach down the feed tube to push the bolt back.

The bolt should be clean and lightly greased on the tip o-rings. Clean the bolt bore and breech using a barrel swab.

## BOLT REMOVAL



### Maintaining the drivetrain

The drivetrain can only be removed after the bolt assembly has been completely removed (see above). To remove the drivetrain, unscrew the rear cap, and then pull the drivetrain out in one piece. Once separated from the gun, remove the screw holding the ram and hammer guide together. Remove the hammer and valve cupseal and clean the old grease and dirt from all parts including the inside of the ram body and hammer guide (use a q-tip for this).

Use a small amount of militia lube on the inside of the ram body, and generous amounts on the hammer switch and hammer front o-rings. Slide the lubricated hammer back into the ram body and then secure the hammer guide in place using the locking screw.

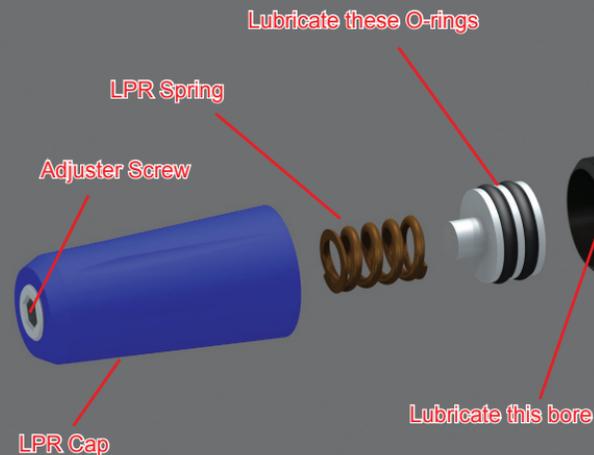
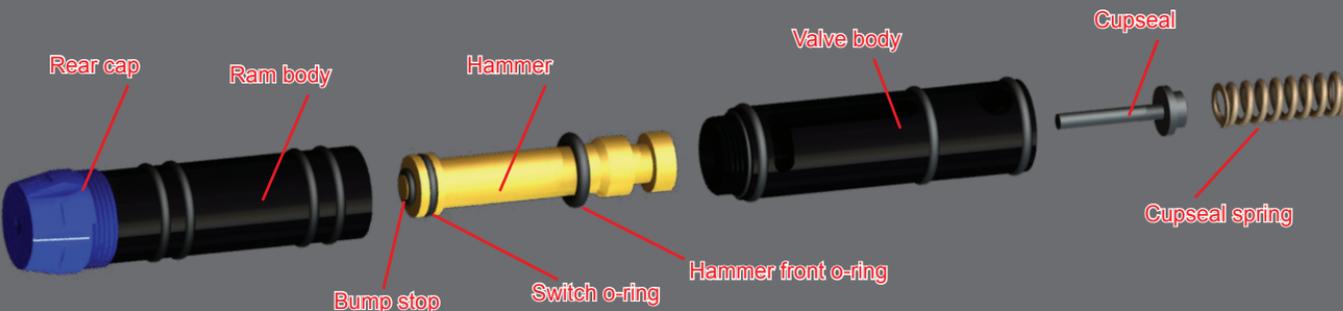
Before sliding the drivetrain back into the gun, locate the cupseal spring on the cupseal and take care that it is aligned correctly after installation.

### Maintaining the low pressure regulator (LPR)

The LPR on your Cyborg does not require as much maintenance as the drivetrain, bolt and inline regulator. Most of the time you will not need to open it to maintain it. However, after many days of play, you should perform the following maintenance steps.

Remove the LPR cap and load spring. Under the load spring is a piston, remove this piston with a pair of needle nosed pliers. Clean the old grease from the piston and piston bore. Now use MacDev Militia lube to lubricate both the bore and the piston before re-assembly.

- Contents
- Know your Cyborg
- Quick Setup
- Using your Cyborg
- Advanced Setup
- Maintenance
- Parts List
- Troubleshooting



- Contents
- Know your Cyborg
- Quick Setup
- Using your Cyborg
- Advanced Setup
- Maintenance
- Parts List
- Troubleshooting

### Maintaining the inline regulator

Your inline regulator (otherwise know as Gladiator reg), regulates the pressure from your air system down to the pressure used to fire your Cyborg. It is very important that your inline regulator is working well, if not, you may experience problems with velocity fluctuation or shutdown.

Before working on your Gladiator reg, 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.

Remove the hose from the fitting in the bottom of the Gladiator reg - you do this by pushing the collar in, whilst pulling the hose out. Once the hose is removed, you can unscrew the Gladiator reg from your Cyborg. Put your Cyborg aside so that you can concentrate on your Gladiator reg.

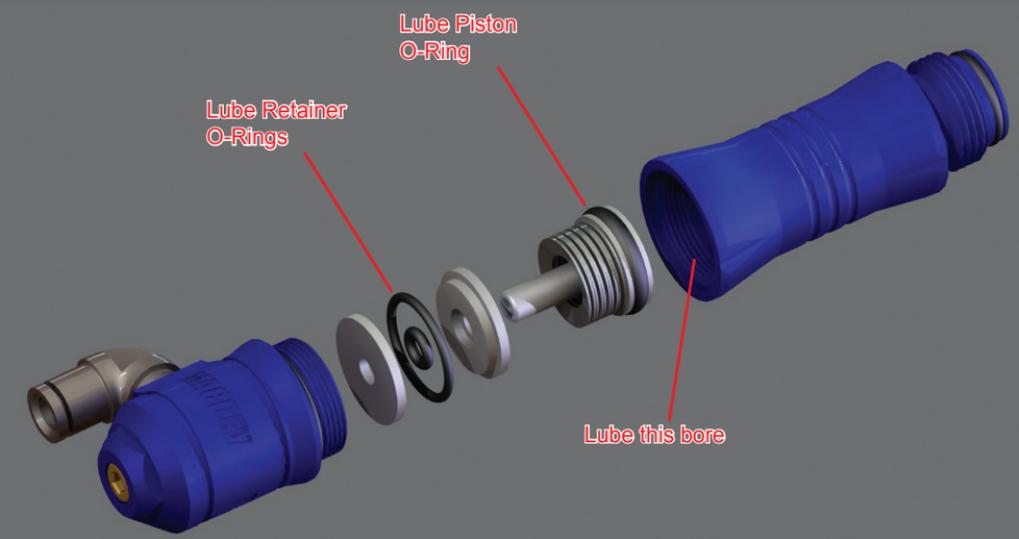
Unscrew the bottomworks from the topworks of the Gladiator reg. Use an allen key from your tool set to push the internals out of the topworks. Disassemble the internals as shown.

Use a clean cloth to wipe the old grease from the o-rings. Use a q-tip to clean the old grease from inside the topworks bore. Apply a thin film of grease to the shaft of the piston and the retainer o-rings before re-assembling the internals. Use your finger or a q-tip to apply a thin film of grease to the topworks bore, and apply a generous film of grease to the piston o-ring before pushing the internals back into the Gladiator reg topworks.

Now use your clean cloth to remove any excess grease from the piston tip and clean the seat (the red plastic part in the centre of the bottomworks). Screw the topworks and bottomworks back together. Make certain that the Gladiator reg is screwed together firmly by hand. This will prevent it from unscrewing accidentally during play.

Re-assemble your Cyborg by attaching the Gladiator inline reg and hose. Push the hose in firmly until it stops. Re-chronograph your Cyborg before use on the field.

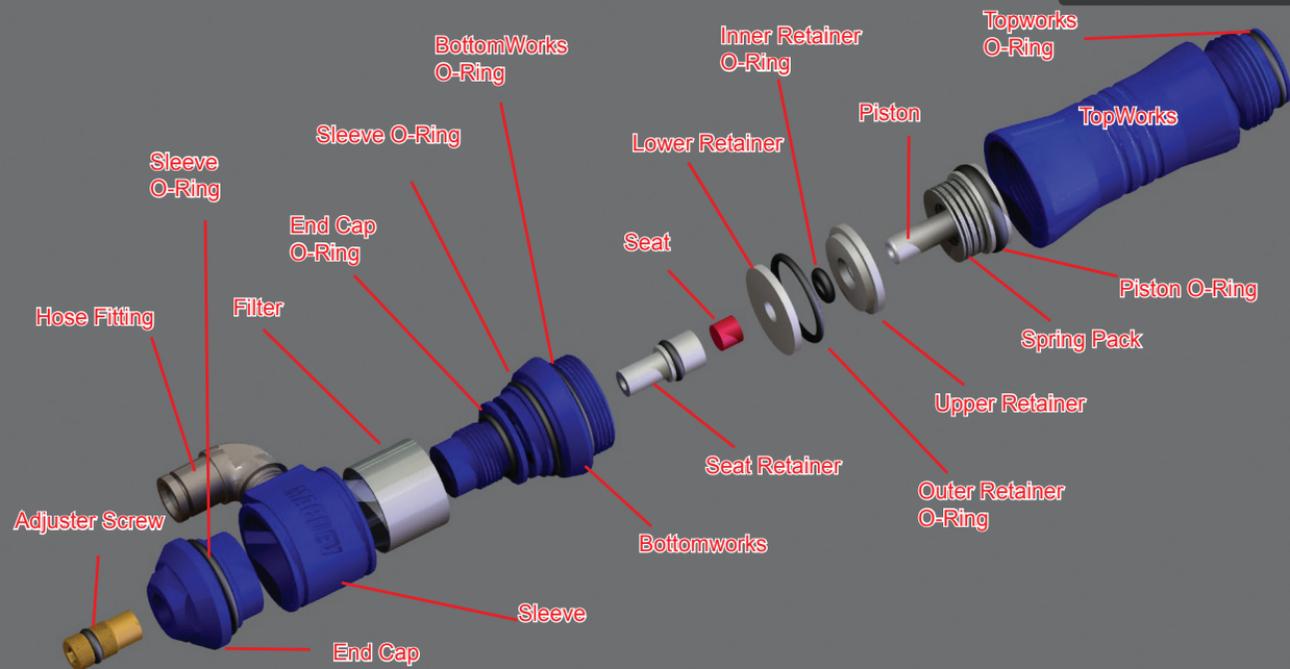
### Gladiator RX inline regulator cleaning



# CYBORG RX MAIN PARTS



# GLADIATOR RX INLINE REGULATOR



Contents  
 Know your Cyborg  
 Quick Setup  
 Using your Cyborg  
 Advanced Setup  
 Maintenance  
 Parts List  
 Troubleshooting

## 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 Cyborg 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 Cyborg leaks from the solenoid	Leaking hammer switch o-ring	Clean and relubricate the drivetrain with particular attention to the hammer 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 Cyborg uses excessive air	Dwell set too high	Check the Dwell setting on your board. It should be 8-10ms.
	General leak	Make certain that there are no leaks from your fittings or air system wasting your air supply.

Symptom	Possible Cause	Solution
Your Cyborg 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.
Your Cyborg will not fire	The trigger is set up incorrectly	Ensure that the trigger actuates the microswitch 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 Cyborg 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 Cyborg 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/black 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 Cyborg Website, [www.cyborgmarker.com](http://www.cyborgmarker.com), or the MacDev main website [www.macdev.net](http://www.macdev.net).

Alternatively, you can contact one of our main distribution points:



MacDev Australia  
(Sydney, Australia)

Ph: +612 9531 5055

Fax: +612 9531 5188

Visit: [www.macdev.net](http://www.macdev.net)

Mail: [info@macdev.net](mailto:info@macdev.net)



MacDev USA  
(Miami, USA)

Ph: +1 305 681 4385

Fax: +1 305 953 3843

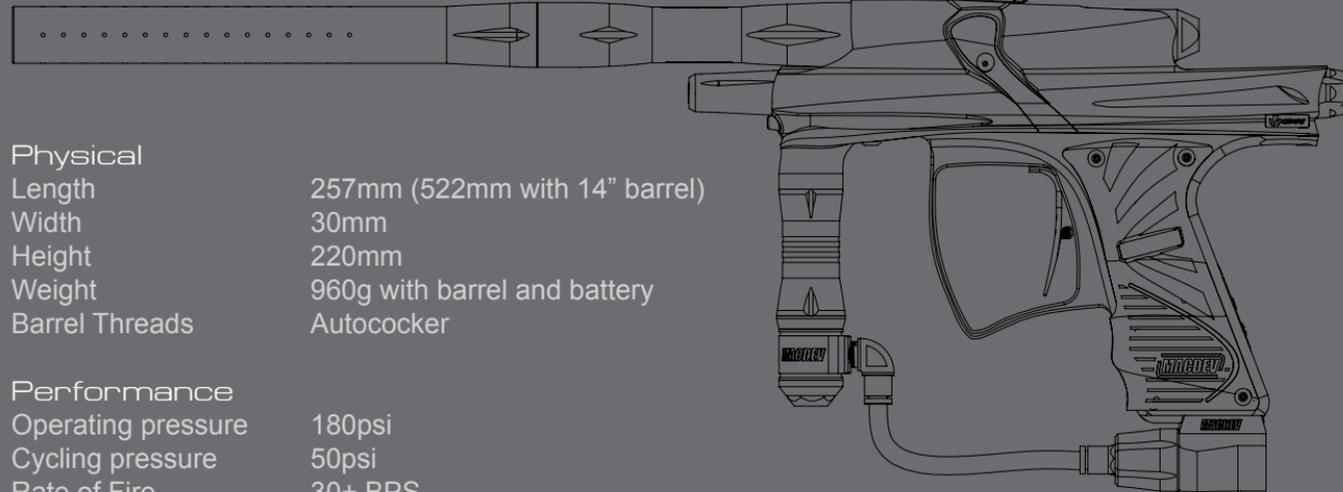
Tollfree: +1 877 MACDEV1

Visit: [www.macdevusa.com](http://www.macdevusa.com)

Mail: [info@macdevusa.com](mailto:info@macdevusa.com)



# CYBORG RX SPECIFICATIONS



## Physical

Length	257mm (522mm with 14" barrel)
Width	30mm
Height	220mm
Weight	960g with barrel and battery
Barrel Threads	Autococker

## Performance

Operating pressure	180psi
Cycling pressure	50psi
Rate of Fire	30+ BPS
Efficiency	1800+ shots per 68/4500psi tank

## Electronics

Software	Militia Soft Version 1.0
Hardware	Militia Version 1.0 (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

# PARTS AND ACCESSORIES

Use only genuine Cyborg spares and accessories - to do anything less may result in sub standard performance of your marker.

Visit your local MacDev retailer for spares kits, barrels, air systems and other MacDev Products.



[www.macdev.net](http://www.macdev.net)  
[www.cyborgmarker.com](http://www.cyborgmarker.com)  
[www.macdevmilitia.com](http://www.macdevmilitia.com)

# **MACDEV**

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The Cyborg RX paintball marker is covered by the following granted patents as well as international pending patents: 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.

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