



MacDev 2004/05



SONIC
Cyborg™

Find us on the web at:
www.macdev.net
Please post warranty cards to:



Australia/New Zealand

MacDev
PO Box 584
Gynea, NSW
AUSTRALIA 2227



USA

Paintball Kingdom
2407 Ansonville Rd
Marshville NC
USA 28103



Canada

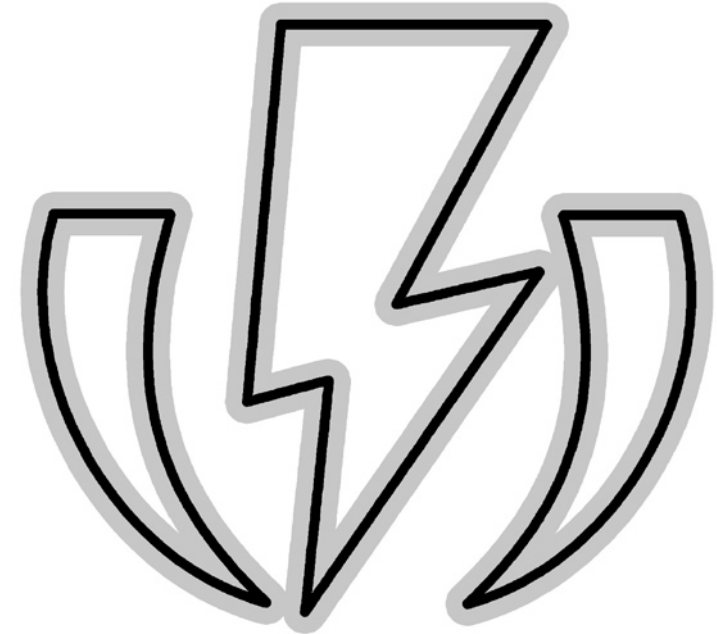
Bastion Paintball
1713D Bowen Rd
Nanaimo BC
Canada V9S1G8



Europe

OPB
Sandgärdsgatan 20
352 30 Växjö
SWEDEN

Users Manual



Mac Developments - Australia

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Sonic Cyborg Users Manual Version 2.02

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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.

Cyborg Limited Factory Warranty

The Cyborg marker is covered by the MacDev 12 month warranty against manufacturing defects. The Cyborg is guaranteed free of manufacturing defects for a period of twelve (12) consecutive months beginning immediately after purchase from a registered Cyborg retailer. If a manufacturing defect is detected, the defective part will be either repaired or replaced at no cost to the owner. The Cyborg warranty is not transferrable in the event of 2nd hand sales - the warranty may only be claimed by the original Cyborg retail purchaser. The Cyborg warranty does not cover damage due to theft, misadventure or operator error/abuse.

To become eligible for the Cyborg Factory Warranty the purchaser must complete and return this warranty page to the MacDev representative in your area as listed over the page. To activate your warranty, this card must be completely filled out and returned within 14 days of the date of purchase.

Full Name: _____

Address: _____

Country: _____ Zip Code: _____

Phone number _____

Email address: _____

Store purchased from: _____

Date of Purchase: _____

Other MacDev products owned (if any): _____

-----MacDev use only-----

Cyborg Serial #: _____ Tested: _____

Cut here and send to MacDev for warranty - address overleaf



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Introduction

The Cyborg is an open bolt, electropneumatic marker designed specifically for accuracy and speed. After the success of the stock Cyborg Marker, work began on an even higher performance version - the Sonic Cyborg. Your Sonic Cyborg is built from precision machined components manufactured on some of the most sophisticated computer controlled machinery in the world today. This high quality construction, coupled with careful design by qualified engineers, results in a fast, accurate and reliable marker.

The Sonic Cyborg has been factory fitted with every Sonic upgrade ever made for the Cyborg.

Specifications

Weight: 1.8lbs

Length: 9.25" (no barrel)

Height: 8.66" (no air source)

Width: 1.18"

Calibre: 0.68"

Power source: 9V battery

Gas source: Compressed air/N2 only

Barrel threads: Standard AutoCocker

Detent threads: Standard Autococker

Inline regulator: 04 Gladiator

Solenoid: Custom 5-way, 5V

Fire rate: true 34bps

Anti chop system: CyberSense II Software with IR beam eye

Fire modes: Semi auto only

Operating pressure: 200psi

Processor speed : 12MHz (1 million trigger updates/sec)

Getting Started

Your Cyborg requires a source of Compressed air to be installed before use. The best air system to use with your Cyborg is the Conquest air system. However, thanks to the 04 Gladiator inline regulator, your Cyborg can accept air input from any air system supplying 400-900psi of compressed air (DO NOT USE CO2).

Mounting an air system

Two mounting holes are provided on the base of the Cyborg grip frame for the purpose of attaching your air system. Please see your air system users manual for details on how to attach your air system to these mounting points.

Connecting the gas

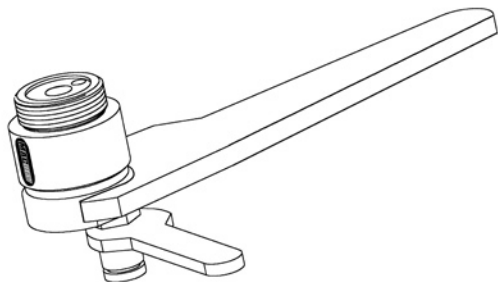
Now that your air system is mounted, you will need to connect the gas to the base of the Gladiator inline regulator. This is best achieved using MacLine (if you are using an air system output of 400-700psi) or braided hose (700psi+).

Your Cyborg comes from the factory with a MacLine fitting installed in the Gladiator. If you intend to use MacLine, then you can plumb your gun by pushing the MacLine from your air system into the fitting at the bottom of your Gladiator.

Your Cyborg is now ready to use. Screw the barrel into the Cyborg and carefully push a paintball hopper into the feed neck. Your Cyborg is now ready to operate. Never operate your Cyborg without eye, ear, mouth and neck protection for yourself and anybody within range.

If you need to change the fitting in the bottom of your Gladiator, please follow the instructions below.

Unscrew the bottom cap from your Gladiator (by hand). Use a wrench to hold the Gladiator bottom cap in place as you change the air fitting (as shown below). Do not over tighten the air fitting, and use a snug wrench on the Gladiator to prevent scratching. Now screw the Gladiator bottom cap back into the inline regulator.



Accessories

Use genuine MacDev accessories or factory approved aftermarket upgrades for best results. For the latest list of approved aftermarket products visit www.macdev.net

Rebuild Kit

The Cyborg rebuild kit contains all the most important parts of your Cyborg. This kit is good for peace of mind, especially when entering an important tournament.

Conquest Air/Nitro System

The Conquest air/nitro system is the highest quality compressed air delivery system available. The Conquest will deliver high volume, clean consistent air to your Cyborg in a lightweight compact unit - the ultimate accessory to your Cyborg.

MatchStik Kit

Your Cyborg was supplied bundled with a 2-piece MatchStik barrel. Own the full 7 piece kit to allow good paint to barrel match with the barrel designed for your Cyborg.

MacLine Kit

The MacLine kit includes 3 fittings (1 straight, 1 fixed elbow and 1 swivel elbow) as well as 1" of hose to ensure easy plumbing to any popular marker.

Ram Gauge

Check your LPR precisely for creep and recharge problems. Takes the guesswork out of tuning.

Troubleshooting

Some common difficulties are detailed in this section, for the latest troubleshooting information, please visit www.macdev.net. If you require more assistance with troubleshooting related issues, please contact your local macdev/Cyborg tech.

LED is flashing red or showing red at all times

The red LED indicates a low battery alarm. Replace the battery with a fresh one.

The marker is on, but will not cycle

Ensure that the paint is loaded correctly and that there is gas to the marker. If paint is loaded correctly, point the Cyborg at a safe target and hold the trigger for at least half a second. If the marker cycles then paint was not loaded correctly. Check that the trigger actuator adjustment is not set too far in or too far out (always back the adjustment out before trying to screw it in, because screwing it in too far may damage your circuit board).

There is a leak from the marker

Check the gauge on the side of the gun. It should be set to approximately 200psi. If the Gladiator needs adjustment, then adjust the pressure (using a 3/32" allen wrench on the bottom of the Gladiator - counterclockwise increases pressure). Then re-chrono the marker - the leak should disappear when the velocity is set correctly.

If the leak persists check the ram switching o-ring to ensure it is not dry or damaged. If the leak still will not disappear, please contact tech. support.

The marker breaks paint

Ensure that the top tube, bolt and barrel of your Cyborg are completely clean. Check to make sure that the paint is not too large for the Cyborg barrel. Ensure that your CyberSense is turned on and the barrel is screwed in completely.

The marker shoots down under rapid fire

Check to make certain that your air system is set to 400psi or above. When firing the gun ensure that the gauge on the side of the gun recharges quickly (if this recharges slowly, perform routine Gladiator inline reg maintenance). If the air system is set correctly and the gauge on the side of the gun recharges well, perform routine maintenance on the Cyborg ram and LPR.

Setting the Velocity

Your Sonic Cyborg has been factory set to between 275 and 300fps. The Sonic Cyborg should be adjusted to comply with local legal velocities. The Sonic Cyborg velocity can be adjusted over the chronograph without tools. First gas up your marker and check the gauge on the side (above the front grip) This gauge indicates the pressure setting of your inline regulator (Gladiator) and should be set to 200psi at all times. Remove the Sonic Adjuster cap from the front of your Sonic Cyborg to expose the LPR adjuster.

Now chrono the marker, to increase the velocity turn the LPR adjuster clockwise, or turn the adjuster counter-clockwise to reduce the velocity. Never set the velocity over 300fps, or use/chrono your Cyborg without first ensuring that you and all other people in range are wearing appropriate protective clothing.

Operating Your Cyborg

Turning the power on and off

To turn your Cyborg marker on, simply press and hold the on/off button for 2 seconds. You will see the indicator LED flash red once and hear a single soft chime. If you release the button at this point the Cyborg will be set to active mode, with CyberSense activated (at this point the indicator LED should shine green). If you have a paintball in the Cyborg ready to fire, the Cyborg will operate normally, however if you attempt to fire without a paintball in the Cyborg it will not cycle.

To turn your Cyborg off, simply press and hold the on/off button until the indicator LED flashes red twice and chimes twice - then release the button. The indicator LED should extinguish.

Deactivating the CyberSense

Your Cyborg should always be operated with the CyberSense active. However, there are instances where it may be necessary to deactivate this function (for example if you need to fire the Cyborg without paintballs). To deactivate the CyberSense you can either:

- Hold the on/off button down until the indicator LED flashes 3 times
or
- Change dip switch 6 to the off position

Fine Tuning and Customising your Cyborg

Your Cyborg can be adjusted in many ways to suit your individual playing style. You can adjust the trigger feel, sensitivity and speed.

Trigger Adjustment

There are 3 set screws around the trigger area to use for fine tuning the trigger. The lower screw on the front of the trigger is used to adjust the length of the trigger pull - screw it clockwise to reduce the trigger pull length. The second, higher screw on the front of the trigger is used to adjust the actuation position. Screw this screw clockwise to actuate the microswitch earlier in the trigger pull.

CAUTION: be cautious when adjusting this screw - adjusting the screw too far in may cause damage to your circuit board!

The final adjustment screw is located on the inside top of the trigger guard - winding this screw in a clockwise direction will increase the trigger pull tension.

Trigger Sensitivity Adjustment

The sensitivity of the trigger system can be adjusted via the dip switches located under your wrap around grip.

Trigger Filter

The Cyborg has a built in trigger filter to help eliminate trigger bounce. If you experience trigger bounce, ensure that the bounce filter is set to high. Always use the bounce filter if you are using high trigger sensitivity settings.

Auto Power Off

The Sonic Cyborg is equipped with an Auto Power off function. If you do not want the Cyborg to turn off after long periods (approx 30 mins) then you may disable this function using dip switch 4.

CyberSense Mode

The Sonic Cyborg is equipped with two CyberSense Modes:

TEB Mode - TEB Stands for Temporary Eye Bypass. In this mode, the CyberSense will not allow your Cyborg to fire unless a paintball is detected in the breach. However, if you hold the trigger in (without releasing) for at least 1/2 a second the Cyborg will fire once.

Delayed Mode - In this mode, if the trigger is pulled when a paintball is not detected, the Cyborg will delay 1/2 a second before firing.

Gladiator Inline Regulator Maintenance

To keep your Gladiator working well you should clean and lubricate the piston regularly (at least every 20,000 shots or so, you may perform this maintenance more often if desired). To do this follow these easy steps:

1. Degas the Cyborg of all pressurised gas, then remove the Gladiator from the Cyborg. Unscrew the Gladiator bottomworks and put it aside.
2. Place a clean rag on the tabletop and push the piston assembly out from the top. Separate the piston from the o-ring retainer and spring washers.
3. Clean the piston, o-rings and o-ring retainers of old grease using a clean rag, do not leave any lint or cotton strands on or between the o-rings. Re-apply Dow 33 to the o-rings.
4. Clean the piston bore using a Q-tip to remove all old grease.
5. Using a clean Q-tip, apply grease to the piston bore. Do not over apply grease - all you need is a thin film.
6. Slide the spring washers back onto the piston and lubricate the shaft with Dow 33. Now slide the upper o-ring retainer back onto the shaft. Push the inner retainer o-ring over the shaft and position the outer retainer o-ring in the groove. Now slide the lower o-ring retainer over the shaft to sandwich the o-rings in place.
7. Slide the piston etc back into the Gladiator topworks and screw the bottom and topworks back together before re-installing the Gladiator onto your Cyborg.

LPR Maintenance

The LPR should be cleaned and re-lubricated at the same time as the Gladiator inline regulator. Remove the adjuster cap by unscrewing it from the LPR (counter-clockwise), and remove the spring under the adjuster. Use a pair of needle nosed pliers to remove the LPR piston. Clean and relubricate the piston bore using a q-tip then clean and re-lubricate the piston itself before replacing it back in the LPR body. Replace the LPR spring and adjuster cap. You will need to re-chrono your marker after doing this.

Caring for your Cyborg

The Cyborg is a very low maintenance marker, however there are some things that you can do to keep it running at optimum performance. Always use Dow 33 to lubricate your Cyborg, do not use Silicone spray or oil of any kind.

Bolt Maintenance

The Sonic Cyborg bolt is made from a very high quality self lubricating plastic with three wiping O-rings. These wiping O-rings should be kept clean and oiled. During normal usage, the Cyborg bolt can become dirty. To remove the bolt, gently pull the pull pin upwards until it clicks. The bolt and pull pin should then slide freely out of the gun. Clean the bolt with a clean, dry soft cloth. If you notice scratches along the bolt, it is likely that you have not cleaned it often enough - it is a good idea to clean the bolt after every days play, or if it gets excessive paint/dirt in it during the course of play.

When replacing the bolt, it is critical to ensure that the bottom of the pull pin is located correctly in the slot on the ram inside the gun. If the bolt is incorrectly installed your Cyborg will not operate correctly and damage may result.

Ram Maintenance

The ram of your Cyborg does the most work of any part of the gun. For this reason the ram system needs to be kept clean and well lubricated. Before removing your ram ensure that there is no gas in the gun. First remove the bolt (as described above in bolt maintenance) and unscrew the ram cap (counter-clockwise) and remove it from the gun. Then grasp the ram end and pull it out of the Cyborg. Now remove the hammer from the ram housing. Clean the old grease off the ram housing bore using a clean q-tip, and clean the old grease from the ram housing and hammer using a clean lint free cloth. Use a clean q-tip to re-lubricate the bore of the ram housing with Dow 33, and use your finger to re-lubricate the o-rings on the hammer as well as the hammer shaft. Slide the hammer back into the ram housing and re-lubricate the o-rings on the outside of the ram housing. Now your ram is ready to be replaced back into the marker - slide it back in carefully before securing it in place with the ram nut. Take care that the bolt is replaced correctly as described above in bolt maintenance.

Ram maintenance can be performed as often as you like, and should be done at least every 20,000 cycles.

Regulator Maintenance

Your Gladiator inline regulator and LPR should be kept clean and lubricated for best results.

Dip Switch Settings

The dip switches are located under the left hand grip plate. Take great care when switching the switches as they are small and fragile. Avoid changing the switches often as careless use may cause damage. Your Cyborg is factory set with the best dip switch settings - if you have no problems, do not change the dip switch settings! Dip switches 7&8 are used by the MacDev factory - There is no use switching them.

CAUTION! Take great care when switching the dip switches - use a very small screwdriver and take care not to push downwards on the switch (only across) - damage to the dip switches can result in board malfunction.

A switch summary is provided:

Dip Switch Number						Setting
1	2	3	4	5	6	
ON	ON	-	-	-	-	Normal sensitivity *
ON	OFF	-	-	-	-	Low sensitivity
OFF	ON	-	-	-	-	High sensitivity
OFF	OFF	-	-	-	-	Very low sensitivity
-	-	ON	-	-	-	High Filter *
-	-	OFF	-	-	-	Low Filter
-	-	-	ON	-	-	Auto power off enabled *
-	-	-	OFF	-	-	Auto power off disabled
-	-	-	-	ON	-	TEB Mode *
-	-	-	-	OFF	-	Delayed Mode
-	-	-	-	-	ON	CyberSense ON *
-	-	-	-	-	OFF	CyberSense OFF

* Factory default settings

Sonic Cyborg Schematic

This schematic does not show all Cyborg parts. Some parts have been omitted for clarity.

