HIGH PERFORMANCE PAINTBALL MARKER

Thank you for purchasing an Aura paintball marker. Please take the time to read through this manual before you use your marker. If you have any questions please contact us.

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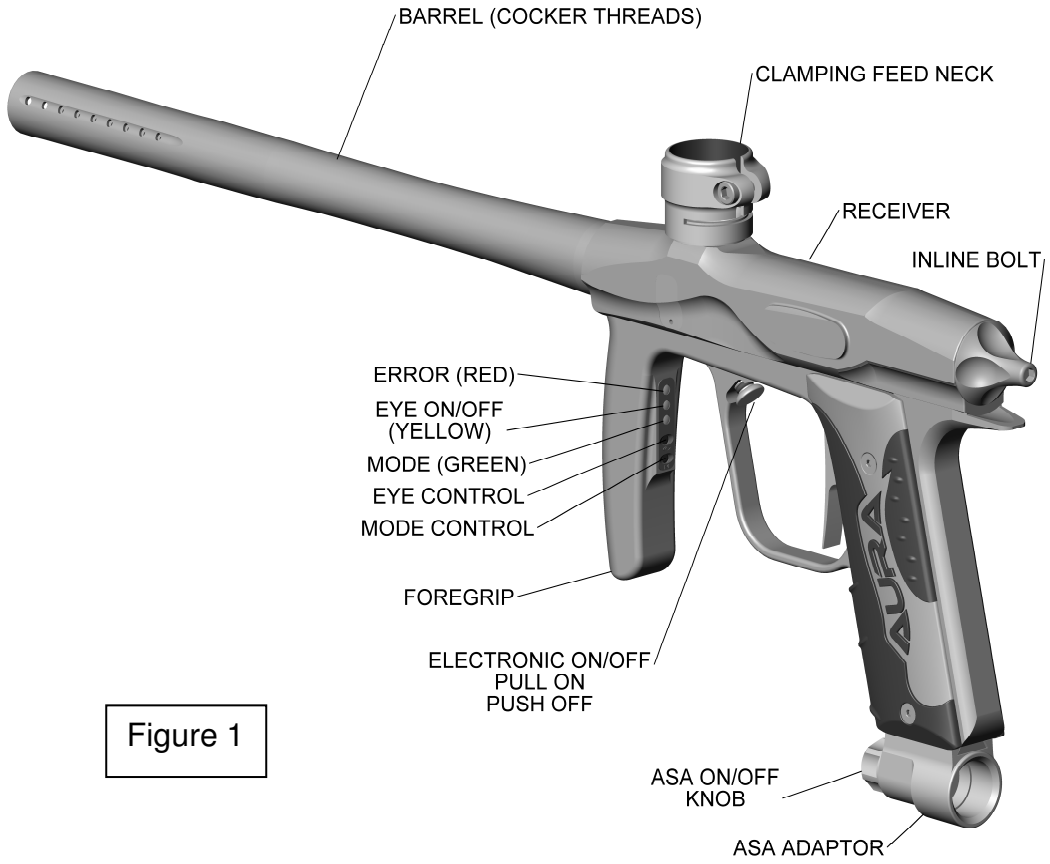


Figure 1

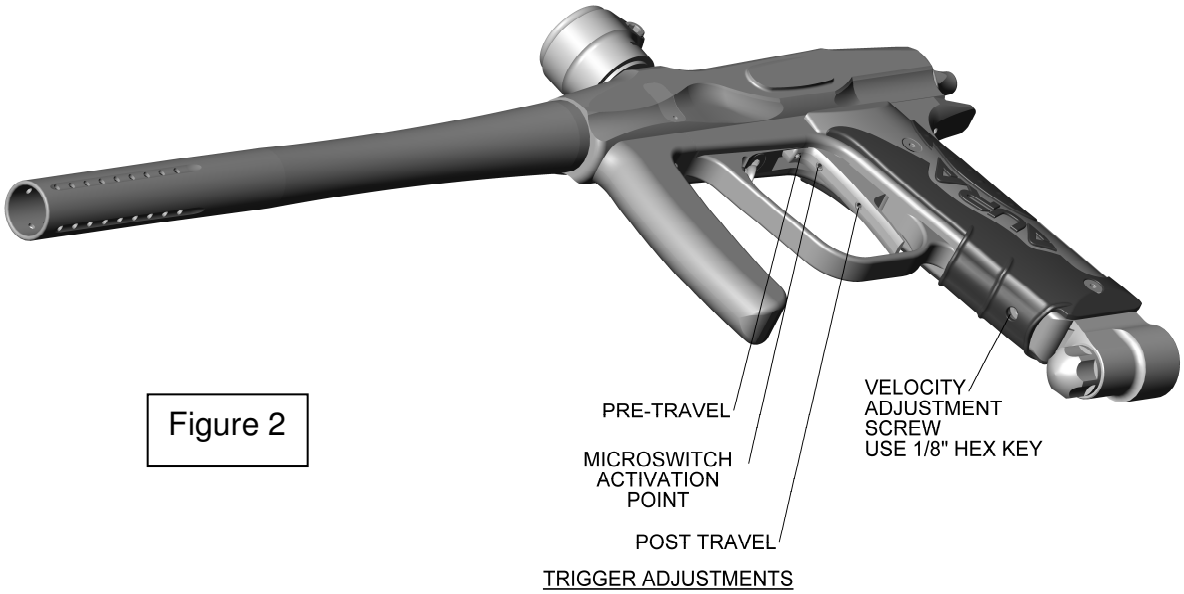


Figure 2

TRIGGER ADJUSTMENTS

Getting started

Connecting the air source

The Aura has a standard ASA to accept a screw in air tank. First, make sure that the knob is all the way out by turning it counterclockwise. Carefully screw in the air tank until it stops. Turning the knob clockwise will allow air to flow into the marker from the tank.
To remove the tank, turn the knob counterclockwise. This will release all the air in the marker and make it safe to remove the tank. We recommend the use of compressed air or nitrogen air tank with a maximum output pressure of 800 PSI.

Attaching a loader

Loosen the screw on the clamping feed neck with a 5/32" hex key and insert the loader. Adjust it to the desired location and tighten. If you wish to replace the feed neck with an aftermarket part, look for ones with ICD/Mini threads.

Attaching the barrel

The barrel simply threads on. Tighten it until you see the Aura logo lined up with the side of the marker. The barrel threads are autococker type.

Turning the marker ON

The electronic ON/OFF is located inside the trigger guard. Pull the knob outward to turn the board ON and push in to turn OFF. All three leds will come on for 2secs and the marker will be ready to fire in semi mode with the eyes on. Refer to figure 1.

Adjusting the velocity

The Aura has an adjustable regulator in the handle frame that controls the pressure in the marker thereby controlling the velocity. The best way to adjust the velocity is to turn the adjusting screw clockwise using a 1/8" hex key. This will be the minimum velocity. Check the velocity with a chronograph and gradually increase the velocity by turning the screw counterclockwise. Refer to figure 2 for adjustment screw location.

Trigger adjustment

The trigger has adjustments for pre travel, post travel and microswitch activation point. These are adjusted via the set screws in the trigger using a 1/16" hex key. Refer to figure 2 for adjustment screw locations.

Adjustment procedure

1. Ensure that the air is turned off to the marker.
2. Turn the marker on
3. Turn the eyes off. Now when you pull the trigger you will hear the solenoid valve clicking.
4. Adjust the pre and post travel position of the trigger to suit your liking.
5. Pull the trigger and listen for the solenoid. Turn the set screw clockwise until you hear the solenoid valve clicking. If you do not hear the solenoid then the screw may be too far in. Turn the trigger set screw counterclockwise until you hear the solenoid click when you pull the trigger.
6. Check for proper function by pulling and releasing the trigger.

Standard firing modes

The firing mode is changed by pressing the lower mode button. The green LED will indicate the current mode. Pressing the mode button again will cycle through the various modes. After 10 seconds the led will turn off to save power.

Firing mode	Function	Green LED display
Semi automatic	One shot per trigger pull at a rate of fire (ROF) determined by the user setting.	Blinking once slowly
3 shot burst	Three shots are fired at a shot rate of 10 bps regardless if the eyes are on or off. If the trigger is released before the three shots are fired the marker will stop firing.	3 quick blinks
Full auto	Fires continuously at 10 bps while the trigger is pulled regardless if the eyes are on or off.	Continuously blinking
Ramping 1	Fires in semi auto and ramps up to the max ROF when the trigger is pulled more than the ramp engage parameter. (Parameter 4) Ex. Ramp engage set to 5 bps. If the trigger is pulled more than 5 bps, the Aura will start firing at the max ROF setting.	Fading LED following by 1 blink
Ramping 2	Same as above with another ramp engage parameter setting. (Parameter 5)	Fading LED following by 2 blinks

Intelligent break beam ball sensor system

The Aura has a break beam sensor system with eye shields that prevent any dirt from entering the sensor. The eyes can be cleaned by simply removing the bolt and using a squeegee. If any malfunction should occur the software automatically overrides the eye function and reduces the rate of fire. The upper mode button on the foregrip allows you to enable or disable the sensor system. The software detects the actual position of the ball as it approaches the bottom of the breach. This is a more reliable way of ensuring that the ball is in position rather than using a time delay.

The in-position tolerance can be adjusted depending on the paintballs being used. If you are using relatively tough paintballs you can set the precision to low. A high precision will ensure that the ball is fully in the breach which would be useful for fragile paintballs. Refer to the user adjustable parameter section to change this setting.

Turning the ball sensor ON & OFF

The infrared ball sensor can be turned on and off by pressing the eye mode button. Pressing once will indicate the current status (ON or OFF) and pressing again will toggle the current status. The eye function is indicated by the yellow led in the following manner:

One blink	Eye sensor ON
Two blinks	Eye sensor OFF

Eye sensor alarms

The Aura software monitors the ball sensor and reports an alarm if no ball is present or if the breach has not cleared in the allotted time. This may be due to debris blocking the sensor, the sensor not functioning or if the bolt is jammed. Ball sensor alarms are indicated by the red LED. When the aura software detects a breach not cleared error the shot rate is automatically reduced to 12 balls per second. This allows you to use the marker even though the ball sensor is not working properly, unless the bolt is jammed. The Aura will continue to display an error while you are shooting. Refer to the troubleshooting section to clear the error.

Alarm	Display-Red LED
No ball present	3 quick blinks
Breach not cleared	3 quick blinks followed by a solid light

Tournament modes

The tournament modes are adjusted via the dip switch on the main board located in the foregrip. To access the board, remove the foregrip using a 1/8" hex key. Slide the foregrip off the marker. Use a small screwdriver to flip the switches to the desired setting. After you change the setting you will need to cycle the power on and off to load the new setting. The green led indicates you are in tournament mode while the yellow and red led show the respective modes based on the dip switch positions. If you press the mode button while in tournament mode the leds will indicate the current tournament setting. The shot rate is determined by the shot rate in the user parameter setting. The eye mode button and eye sensor function the same way as in standard mode. If there is any ball breakage or malfunction of the sensors the software will override the shot rate and reduce it to 12 balls per second.

Tournament mode	SW1	SW2	SW3	SW4	Green LED	Yellow LED	Red LED
Semi auto: One shot per trigger pull	⇩Off	⇧On	⇩Off	⇩Off	●	○	○
PSP3. Three semi shots then transitions to 3 rounds burst. Returns to semi mode after 1 second of no activity.	⇩Off	⇧On	⇩Off	⇧On	●	○	●
NXL: Semi for the first 3 shots then full automatic on the 4th pull and hold. Resets to semi after 1 second of no activity.	⇩Off	⇧On	⇧On	⇩Off	●	●	○
Millennium**:** When the triggering speed exceeds 7.5 BPS, ramping will turn on at the 6th trigger pull. Resets to semi if the pull speed is less than 7.5 BPS	⇩Off	⇧On	⇧On	⇧On	●	●	●

User adjustable parameters

The parameters can be adjusted through the mode buttons and trigger. The settings are saved into the non volatile memory.

Changing the parameters

Hold the trigger down while turning the marker on by pulling the safety switch out. All three LEDs will blink indicating that you are in programming mode.
You can cycle through the parameters by pulling the trigger. The parameter number is indicated in binary using the three LEDs with the Red LED as the least significant bit and the green LED as the most significant bit. After you have selected the parameter you wish to change, the LEDs will display the current value. The upper mode keys increases the value while the lower mode key decreases the value. Once you are finished with the parameter settings turn the marker off and on to load the new settings. These new settings are now saved into the memory.

Parameter (No.)	Green LED	Yellow LED	Red LED	Range	Default setting
1. Shot rate	○	○	●	10.5 to 20 in .5bps increments 21-25 in 1 bps increments	25 bps
2. Solenoid dwell	○	●	○	3ms to 15 ms 1ms increments	6 ms
3. Trigger debounce	○	●	●	2ms to 10 ms 1ms increments	2 ms
4. Ramp1 engage	●	○	○	3 to 8 trigger pulls per second (pps) 1 pps increments	6 bps
5. Ramp 2 engage	●	○	●	3 to 8 trigger pulls per second (pps) 1 pps increments	8 pps
6. Ball in position accuracy	●	●	○	Low (1) Medium (2) High (3) – recommended for fragile paint	Medium (2)

Note:○ Led is off,● Led on

Displaying the parameter value

The three LEDs are used to display the value of the parameter in the following format:

Green	Yellow	Red
Tens	Ones	Decimal (.1)

Example 1: Shot rate of 15.5 bps

Green	Yellow	Red
One blink (1)	Five blinks (5)	Five blinks (5)

Example 2: Shot rate of 20.0 bps

Green	Yellow	Red
Two blinks (2)	No blinks (0)	No blinks (0)

Example 3: Trigger debounce of 5.0 ms

Green	Yellow	Red
No blinks (0)	Five blinks (5)	No blinks (0)

Restoring to factory defaults

The board can be restored to the factory default settings by holding down the upper mode button for 10 seconds. Release the button when all three LEDs flash.

Maintaining your Aura

The Aura has been designed to require a minimal amount of maintenance for proper operation. It is recommended that before each use you put 2 drops of light gun oil in the ASA. When the marker is gassed up the oil will distribute through the marker. This will be adequate to keep the marker working properly.
Visit our website www.mokal.com for detailed technical bulletins related to troubleshooting and service.

Removing the ball detents for cleaning

The Aura uses two spring loaded ball detents to prevent the double feeding of paintballs. They are located near the front of the receiver. To remove, insert a 1/16" hex key into the access hole in the cover. Make sure that the hex key is fully engaged in the screw otherwise you may strip the hex in the screw. Unscrew the cover and lift out the ball detent and spring.

To install the ball detent:

1. Place the ball detent in the hole in the receiver.
2. Put the spring in the ball detent,
3. Put the cover screw in the slot of the cover and put the hex key in the screw through the access hole in the cover.
4. Place the cover over the ball detent and spring.
5. Tighten the screw.

Note: Do not over tighten the screw otherwise you may strip the hex in the screw which will make it difficult to remove the cover.

Cleaning the Aura

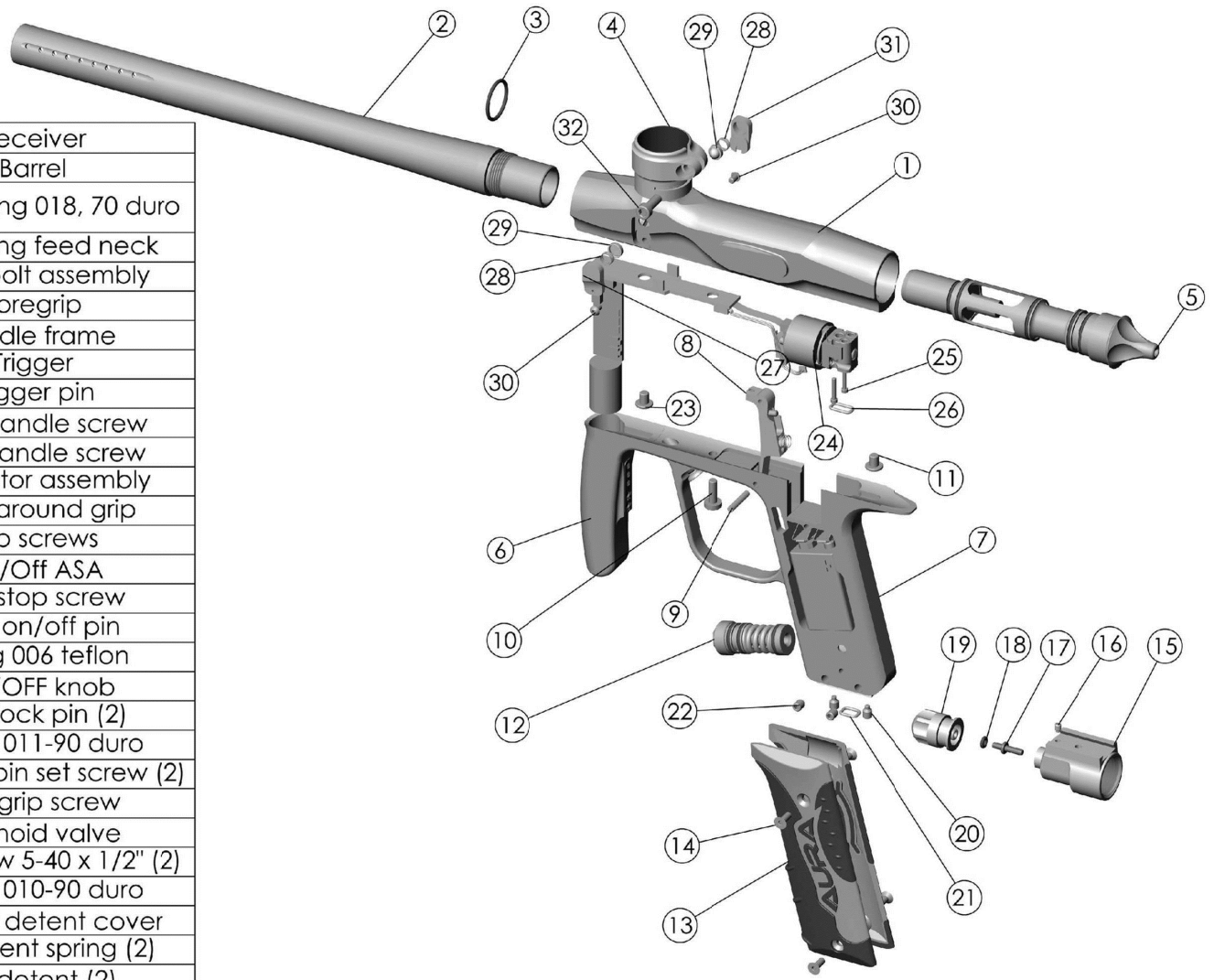
First remove the bolt assembly by inserting a 5/32" hex key in the rear cap. Unscrew the bolt assembly and pull it out. You can use a standard squeegee to clean the bore of the marker. Insert the squeegee from the back of the marker and pull it through the front.

Battery replacement

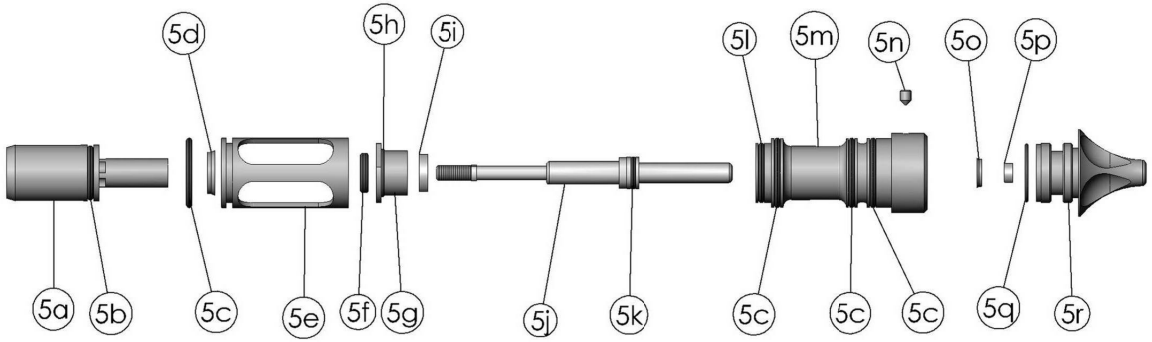
Remove the four screws hold the wraparound grip and push the battery out from the access hole on the handle frame. Note the proper polarity when installing a new battery. The + side of the battery is indicated on the board in the handle frame. We recommend the use of a high quality alkaline battery.

Aura parts diagram

1	Receiver
2	Barrel
3	Barrel o-ring 018, 70 duro
4	Clamping feed neck
5	Inline bolt assembly
6	Foregrip
7	Handle frame
8	Trigger
9	Trigger pin
10	Front handle screw
11	Rear handle screw
12	Regulator assembly
13	Wraparound grip
14	Grip screws
15	On/Off ASA
16	ASA stop screw
17	ASA on/off pin
18	o-ring 006 teflon
19	ON/OFF knob
20	ASA lock pin (2)
21	O-ring 011-90 duro
22	ASA lock pin set screw (2)
23	Foregrip screw
24	Solenoid valve
25	Cap screw 5-40 x 1/2" (2)
26	O-ring 010-90 duro
27	Left ball detent cover
28	Ball detent spring (2)
29	Ball detent (2)
30	Screw 4-40 x 3/16" button head
31	Right ball detent cover
32	Cap screw 10-32 x 1/2"

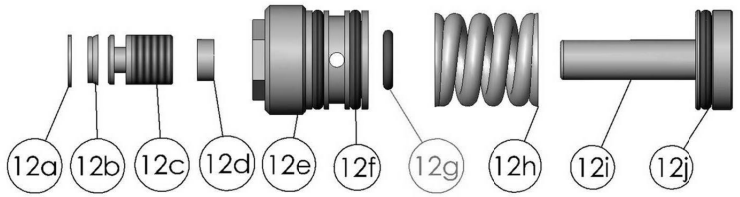


Inline bolt exploded diagram



5a	Bolt head	**5f**	109 70 duro o-ring	**5k**	o-ring 010 70 duro	**5p**	Rear cushion
5b	M14 x 1mm o-ring	**5g**	Front cap	**5l**	016 70 duro o-ring	**5q**	M16.5 x 1 o-ring
5c	018 70 duro o-ring	**5h**	M12 x 1 o-ring	**5m**	Rear sleeve	**5r**	Rear cushion cap
5d	Front u-cup seal	**5i**	Front bumper	**5n**	6-32 x 3/16" set screw		
5e	Front sleeve	**5J**	Rear shaft	**5o**	Rear shaft seal		

Regulator exploded diagram



12a	C-clip	**12f**	o-ring 014 70 duro
12b	Adjusting screw seal	**12g**	o-ring 011 70 duro
12c	Adjusting screw	**12h**	Regulator spring
12d	Regulator stem seal	**12i**	Regulator stem
12e	Regulator cap	**12j**	o-ring 015 70 duro