# TABLE OF CONTENTS

- **QUICK REFERENCE** .......................................................... PAGE 02
- **IMPORTANT SAFETY INSTRUCTIONS AND GUIDELINES** .......................................................... PAGE 03
- **BOARD SETTINGS AND FUNCTIONS** .......................................................... PAGE 04
- **FUSE BOLT** .......................................................... PAGE 08
- **LOW PRESSURE REGULATOR (LPR)** .......................................................... PAGE 10
- **HYPER2** .......................................................... PAGE 12
- **ANTI CHOP EYES/ BALL DETENTS** .......................................................... PAGE 13
- **TRIGGER ADJUSTMENT** .......................................................... PAGE 14
- **EXPLODED VIEW** .......................................................... PAGE 15
- **TROUBLE SHOOTING GUIDE** .......................................................... PAGE 16
- **WARRANTY INFORMATION** .......................................................... PAGE 17
IMPORTANT SAFETY INSTRUCTIONS AND GUIDELINES

• The MATRIX marker is not a toy. Misuse may cause serious injury or death.
• Please read, understand and follow the directions in the MATRIX owner’s manual.
• Eye protection that is designed specifically for paintball and meets ASTM/CE standards must be worn by user and persons within range.
• Recommend 18 years or older to purchase. Person under 18 must have adult supervision.
• Always treat the MATRIX marker as if it were loaded and able to fire.
• Only use compressed air or nitrogen gas in the MATRIX marker. DO NOT USE CO2.
• Do not exceed 800 psi input pressure.
• Ensure all air lines and fittings are tightened and secured before gassing up the MATRIX.
• Always chronograph the MATRIX marker before playing paintball.
• Never shoot the MATRIX marker at velocities in excess of 300 feet per second, or at velocities greater than local or national laws allow.
• Never look into the barrel or breech area of the MATRIX when the marker is switched on and able to fire.
• Always fit a barrel blocking device to your MATRIX when not in use on the field of play.
• The owner’s manual should always accompany the product for reference or in the event of resale and new ownership.
• Do not point the MATRIX marker at anything that you do not intend to shoot.
• Do not shoot at people, animals, houses, cars or anything not related to the sport of paintball.
• Do not fire the MATRIX without the Fuse bolt screwed in completely.
• If you read these instructions and do not fully understand them or are unsure of your ability to make necessary adjustments properly, call DYE or your local pro shop for help.
When servicing your marker:
• Make sure a barrel sock is fitted to the MATRIX.
• Make sure your hopper is removed from the MATRIX.
• Make sure there are no paintballs in the breech of the MATRIX.
• Always remove the first stage regulator and relieve all residual gas pressure from the MATRIX before disassembly.
• The MATRIX can hold a small residual charge of gas, typically 1 shot, with the first stage regulator removed. Always discharge the marker in a safe direction to relieve this residual gas pressure.

**WARNING**
- The MATRIX is not water resistant. Excess moisture can cause damage to electronic parts.
- Keep the board and all electrical components clean of dirt, paint and moisture.
- To clean the board, use canned air. If a more aggressive cleaning method is needed, lightly scrub the components with a soft, dry brush. Heavy scrubbing will damage the board.

**TERMINAL SETTINGS AND CONFIGURATION MODE**

There are four settings you can alter on the MATRIX board with the DIP switches inside the grip frame:

<table>
<thead>
<tr>
<th>Setting</th>
<th>Function Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ABS on/ABS off</td>
<td>Adjusts the Auto-Release System (ABS) function to either on or off.</td>
</tr>
<tr>
<td>Trigger Sensitivity</td>
<td>Adjusts the delay between two trigger pulls for improved accuracy.</td>
</tr>
<tr>
<td>Dwell</td>
<td>This setting adjusts the dwell time of the solenoid, allowing for finer control over the marker's firing rate.</td>
</tr>
<tr>
<td>ROF</td>
<td>Adjusts the rate of fire when the eye is deactivated.</td>
</tr>
</tbody>
</table>

**LED LIGHT INDICATOR**

There is a LED light mounted on the backstrap of the frame, under the two buttons. This light provides information to the user by the MATRIX. There are three colors on the LED light: red, green and orange.

When you turn on the marker in normal operation mode with the power button, the light colors mean the following:

- **Orange**: Bootup sequence.
- **Red**: No ball detected inside the MATRIX (eye on).
- **Green**: Ball detected inside the MATRIX (eye on).
- **Blinking Red**: Eye function turned off. The MATRIX will fire even though there is no ball inside the breech.
- **Blinking Green**: Eye blocked. This means that your eyes are either dirty or there is a bad connection. The ROF (rate of fire) is automatically reduced to prevent chopping. If this happens during game play, you can turn the eye off to increase your ROF.
- **Blinking Orange**: Indicates a low battery. Battery should be changed as soon as possible.

**NOTE:** The eye is always activated when you turn the marker on.

---

**TURNING THE MATRIX ON AND OFF**

To turn on the MATRIX, press and hold the upper button until the LED light turns orange. The orange light indicates board bootup. After the bootup sequence, the LED will turn either RED (no ball on GREEN (ball ready to fire). To turn the MATRIX off, press and hold the power button until the LED turns off.

**FIRED THE MATRIX**

As soon as the marker is turned on and the LED turns from orange to either red or green, the MATRIX is ready to fire. If there is no ball and the LED is RED, you need to hold the trigger for 1 second to fire the MATRIX to the once. If there is a paintball inside the breech and the LED is green, just press the trigger to fire the marker.

**LED LIGHT INDICATOR**

There is a LED light mounted on the backstrap of the frame, under the two buttons. This light provides information to the user by the MATRIX. There are three colors on the LED light: red, green and orange.

When you turn on the marker in normal operation mode with the power button, the light colors mean the following:

- **Orange**: Bootup sequence.
- **Red**: No ball detected inside the MATRIX (eye on).
- **Green**: Ball detected inside the MATRIX (eye on).
- **Blinking Red**: Eye function turned off. The MATRIX will fire even though there is no ball inside the breech.
- **Blinking Green**: Eye blocked. This means that your eyes are either dirty or there is a bad connection. The ROF (rate of fire) is automatically reduced to prevent chopping. If this happens during game play, you can turn the eye off to increase your ROF.
- **Blinking Orange**: Indicates a low battery. Battery should be changed as soon as possible.

**NOTE:** The eye is always activated when you turn the marker on.
The following settings can only be modified in configuration mode. To 
activate the configuration mode, turn your marker off and set DP switch 2 
to the on position. Next, turn your marker on. The 3-color LED cycles 
through all colors for one second to indicate that you have entered the 
configuration mode. To cycle through different settings, pull and release the 
trigger. Configuration mode has 3 settings that can be changed. 

**Configuration Mode**

- **Green - Trigger Sensitivity**
  - Values 1 - 20 (factory default 5)
  - Trigger sensitivity is the amount of time that the trigger has to be released before the next trigger pull is allowed. In some situations with too low a value, the marker may begin to shoot full-auto.

- **Red - Dwell**
  - Values 5 - 30 (factory default 18)
  - Dwell is the amount of time that the solenoid will be activated. Follow these steps for the best way to set your dwell:
    1. Remove loader and any paintballs from the MATRIX marker.
    2. With the dwell set at 12, start increasing the value until the marker begins to fire.
    3. When you reach the setting where the marker begins to fire, get some paint and a 
       loader and go to a chronograph.
    4. Increase the dwell until you see no increase in the velocity. This is the optimal dwell 
       setting to be used.

- **Orange - Rate Of Fire (ROF)**
  - Values 5 - 24 (factory default 24)
  - The ROF is selected by software when the eye is on. The only limiting factor is the 
    loader feed rate. The marker pneumatic cycle rate is far faster than any loader on the 
    market. You should set this setting to the constant feed rate of your loader. Setting this 
    higher than your loader is capable of feeding risks blowing a ball.

**NOTE:** When Anti Chop Eye (ACE) is deactivated, the ROF is unlimited by software when the eye is on. The only limiting factor is the 
loader feed rate. The marker pneumatic cycle rate is far faster than any loader on the 
market. Setting this 

**TO CHANGE THE VALUE OF A SETTING:**

1. While in configuration mode, pull the trigger and hold it for more than one second. The LED will flash to indicate the previous setting.
2. After that, you can change the dwell time by the trigger.
   - For example, if you want to change the trigger sensitivity to 7 units, pull the trigger and hold it for more than one second. The LED will flash orange twice.
3. Pull and hold the trigger until the LED starts to flash (factory default for trigger sensitivity setting is 5 units, so the LED will flash 5 times).
4. When the LED stops flashing, pull and release the trigger seven times in a fast pace. The new value is set after you haven’t touched the trigger for one second.
5. To exit configuration mode, set DP switch 2 to the off position.

**NOTE:** You cannot turn your marker off with the power button when the marker is in configuration mode. You must first set DP switch 2 to the off position. 

**NOTE:** When you set the values, remember that only trigger sensitivity starts from 1. The "dwell" and "rate of fire" start from 5.

Therefore, to set the dwell at 20, you need to pull the trigger sixteen times, because the first trigger pull will start at 5.

**CHECKING CONFIGURATIONS**

You can check your DP switch configuration by pulling and holding the trigger when you turn the marker on. Hold the trigger until the LED starts flashing. Orange indicates the anti bolt stick (ABS) setting (1 flash is off and 2 flashes is on). For example, if your ABS is ON then the LED will flash orange twice.

**BATTERY**

The 9V battery will last for about 40,000 shots. Please be aware that there are substantial differences in performance between different brands of batteries. Use of high quality alkaline or lithium ion batteries is recommended for maximum battery life. If you plan not to use your marker for a long period of time (a month), it is recommended that you remove the battery from the marker. When the battery voltage starts to go too low, you will notice your velocity starts to decrease and the board can 
turn off. For tournament use, it is recommended to change the battery for each tournament. When 
changing your battery, take special care to ensure the wiring harness is not pinched under the battery (see figure 1).

**CHANGING THE BATTERY**

The battery is housed on the left side of the grip frame. To access the battery, remove the three 
screws holding the left side grip panel down. Use a 3/32” Allen wrench. Carefully lift the battery out 
of the frame, taking care not to damage the battery lead wires.

When inserting a new battery, make sure the solenoid and eye wires are pushed into the wire 
passage at the rear of the frame. This will ensure that the wires are not pinched or cut.

**WARNING**

- A low battery will not be able to power both the ACE eye and the trigger switch, causing ACE eye failure.
- If the battery is low, it may not be able to power the solenoid correctly. This will affect the MATRIX’s velocity, causing it to become inconsistent and/or low.
- An intermittent blinking orange light indicates a low battery. A low battery can cause malfunctions to the marker. In this case, the battery should be changed as soon as possible.

**NOTE:** If the marker will not function with the eye on, there is a good chance the battery needs to be changed.

**WARNING**

- An intermittent blinking orange light indicates a low battery. A low battery may cause malfunctions to the marker. In this case, the battery should be changed as soon as possible.
BOLT MAINTENANCE

Regular MATRIX Fuse bolt maintenance is vital to the performance of the MATRIX. If the Fuse bolt is not kept well-greased and the o-rings in good shape, the performance of the MATRIX will be greatly hindered. To remove the bolt, you will need a 1/4” Allen wrench. Unscrew the bolt from the rear of the marker. It only takes one and one half revolutions to unscrew the bolt so that it can be pulled out. After the bolt has been cleaned and greased and is ready to be inserted into the body, be sure all bolt sleeve components are screwed together snugly. Slowly push the bolt into the body. Take care not to cut or nick the o-rings as they pass the threads.

GREASE THE MATRIX FUSE BOLT EVERY 10-15 THOUSAND SHOTS.

BEFORE INSTALLING THE BOLT INTO THE MARKER, BE SURE ALL BOLT SLEEVE COMPONENTS ARE SCREWED TOGETHER SNUGLY.

If you do not grease the bolt, you will run the risk of damaging o-rings. This will create excessive friction and drag on the bolt, ultimately resulting in breaking the bolt. When greasing the MATRIX Fuse bolt, pay special attention to all o-rings that are on the bolt and that ride on a surface of the bolt. The first seven o-rings listed below should be generously greased during maintenance.

FUSE BOLT O-RING LIST

1. Bolt tip (014)
2. Bolt sail (015)
3. Inside bolt stem (009)
4. Rear bolt stem (009)
5. Front wall internal (017 UR70)
6. Top hat (017 UR70)
7. Top hat (013)
8. Outer sleeve (020)
9. Front bumper (015)
10. Rear bumper (111)

NOTE: All remaining o-rings should have a thin coating of grease as well.

FUSE BOLT OPERATION

To achieve top performance from your MATRIX, it is important to understand the basic operation of the MATRIX’s patented FUSE bolt system.

The Fuse Bolt has four components:

1. Cylinder
2. Bolt
3. Top Hat
4. Rear Cap

Air is supplied to the bolt at two points. A high-pressure supply of air is routed to the back of the bolt into the supply chamber. The air source is responsible for propelling the ball. Low-pressure air is supplied from the LPR to the solenoid. From the solenoid, the air is routed through two small holes to the section of the bolt referred to as the cylinder.

When the MATRIX is aired up, air is transferred by the solenoid to the front of the cylinder. This air pushes against the bolt sail and the bolt is held in the back position. When the bolt is held back, the 013 o-ring in the top hat seals around the bolt and contains the air in the supply chamber.

When the marker is fired, the microswitch is pressed, telling the solenoid to switch the flow of air from the front of the cylinder to the rear of the cylinder. Air that enters the rear of the cylinder will push on the bolt sail, moving the bolt forward. The air in the front of the cylinder is vented.

As the bolt moves forward, the tapered stem passes through the top hat. Once the bolt stem can no longer seal with the 013 o-ring, the air contained in the supply chamber is released. The air passes through the venturi ports in the bolt and out the front of the bolt to propel the ball. When the bolt is in the forward position, the inside bolt stem o-ring prevents the flow of air from continuously flowing through the marker when the bolt is forward. This helps the marker shoot much more efficiently.

NOTE: LOW OR ERRATIC VELOCITY MAY BE DUE TO A LOW BATTERY NOT SUPPLYING AMPLE ELECTRICAL CURRENT TO THE SOLENOID. IN THIS CASE, CHANGE THE BATTERY.
When servicing your marker:
• Make sure your hopper is removed from the MATRIX.
• Make sure there are no paintballs in the breach of the MATRIX.
• Always remove the air supply and relieve all gas pressure in the MATRIX before disassembly.
• It is not recommended for the user to remove the LPR from the body and disassemble it.

LPR (Low Pressure Regulator) - Adjustments and Maintenance

When servicing your marker:
• Make sure your hopper is removed from the MATRIX.
• Make sure there are no paintballs in the breech of the MATRIX.
• Always remove the air supply and relieve all gas pressure in the MATRIX before disassembly.
• It is not recommended for the user to remove the LPR from the body and disassemble it.

LPR Assembly, Cleaning, Testing and Changing Seals

The Low-Pressure Regulator (LPR) is located in the lower front of the MATRIX (see Figure 1). The function of the LPR is to lower the air pressure supplied to the marker by the in-line, before it reaches the solenoid. This pressure is used to move the bolt forward and back. The factory setting is 75 PSI. You can fine tune your MATRIX to its minimum cycle pressure. This will reduce the amount of force of the bolt hitting the ball (reducing ball break) and help with efficiency. Too low of pressure will cause the bolt to not cycle or move sluggishly or not at all. If you experience dramatic shoot down during rapid fire, the LPR may be adjusted too low. Too high of pressure will cause the marker not to shoot as smoothly, potentially increase ball breakage and cause undue wear and fatigue on the bolt components.

It is important to keep the seat and piston face clean of all dirt and debris. Clean the seat and piston face and grease the retainer o-ring every six months or 60,000 shots. Every six months, remove the LPR; clean all dirt and old grease out of the LPR. Inspect all o-rings for damage, and apply new grease to all the o-rings and sealing surfaces.

The LPR has five components and six seals
1 Piston large o-ring (014) 6 Piston small o-ring (006)
2 Piston 7 Main seal (mounted in the seal retainer)
3 Piston spring 8 Seal retainer o-ring (010)
4 Body 9 Seal retainer (functions as an adjustment screw also)
5 Body o-rings (3pcs, 015)

The only user-serviceable part in the LPR is the seal retainer. This seal needs to be changed in the unlikely case the LPR is creeping up.

LPR Pressure can be set quite accurately even without an LPR test tool. Screwing the adjustment screw (seal retainer) all the way in will set the LPR pressure to approximately 25 psi. Now turning out the adjusting screw 180 degrees will increase the pressure by approximately 5 psi. For example, turning the screw 5 complete turns out will set the pressure to approximately 75 psi. Use a 3/16" Allen wrench to make all adjustments to the LPR. Turning the adjustment screw clockwise, or in, will lower the LPR’s output pressure. Turning the adjustment screw counterclockwise, or out, will raise the LPR’s output pressure.

CHANGING THE SEAL RETAINER

1 Screw out LPR cap in front of the marker using a 1/4” Allen wrench.
2 Screw out LPR seal assembly (brass) using a 3/32” Allen wrench.
3 Screw in new LPR seal assembly.
4 Screw LPR cap in place securely.

If the user needs to replace the whole LPR assembly, follow these instructions:
1 Take frame off the marker.
2 Remove the ASA to gain access to the LPR set screw.
3 Screw out LPR set screw using a 5/64” Allen wrench.
4 Screw out LPR cap using a 3/16” Allen wrench.
5 Pull out the LPR by screwing a rod with a 10/32 thread into the seal retainer (brass piece) inside the LPR and pulling it out.
6 Put everything back in reverse order. Be sure to grease the #015 o-rings, so as to prevent cutting them upon installation.
7 Tighten LPR cap securely.

WARNING

When servicing your marker:
• Make sure your hopper is removed from the MATRIX.
• Make sure there are no paintballs in the breach of the MATRIX.
• Always remove the air supply and relieve all gas pressure in the MATRIX before disassembly.
• It is not recommended for the user to remove the LPR from the body and disassemble it.

LPR (Low Pressure Regulator) - Adjustments and Maintenance

WWW.PROTOPAINTBALL.COM
HYPER2 IN-LINE REGULATOR - ADJUSTMENTS AND MAINTENANCE

ANTI CHOP EYES/ BALL DETENTS - MAINTENANCE AND CHANGING

**HYPER2 IN-LINE REGULATOR - ADJUSTMENTS AND MAINTENANCE**

- The Hyper2 can hold a small residual charge.
- Excessive dirt and debris can affect the Matrix.
- Improper stacking of shims will cause damage to the Matrix.
- Excessive dirt and debris can affect the Hyper2's performance and increase the need for servicing.

**ANTI CHOP EYES/ BALL DETENTS - MAINTENANCE AND CHANGING**

**ADJUSTMENTS**

- The output pressure of the Hyper2 In-Line is adjusted by turning the brass seat housing. The seat housing screw is located up inside the bottom of the reg. A 3/16" Allen wrench will be needed for this operation.
- By turning the housing clockwise, you will decrease the output pressure of the reg. By turning the housing counterclockwise, you will decrease the output pressure of the reg.
- After each adjustment of the output pressure of the Hyper2 In-Line, you will need to cycle the marker a few times. This will allow your marker and air system to stabilize at their new operating pressure. The Hyper2 will need a break-in period of about 2,500 shots to let its seat form to the piston and reach its optimum performance.

**NOTE:**

- Use the factory setting for best performance.
- Always remove the regulator from the Marker before servicing.
- Make sure the inlet and outlet ports and connecting fittings are free of all dirt and paint.
- Clean any accumulated dirt out of the air chambers and passages.
- Keep the piston o-rings and spring pack generously greased to allow smooth velocity adjustment and prevent erratic velocity spikes and drop off.
- Be sure to reassemble the internal components and shim stack.

**CLEANING THE ANTI CHOP EYES**

- Quite often, just cleaning the breech out with a swab will clean the eyes well enough for them to read one another.
- A thorough cleaning, the best method is to use air. Using an air hose or canned air (typically used for dusting keyboards) works best.
- Blow the eyes clean from inside the breech. If you feel the eyes still need a more detailed cleaning, remove the eye cover to gain full access to the eyes.

**CHANGING BALL DETENTS**

- The ball detents are also located under the eye cover. If you are experiencing double feeding or chopping, check the condition of the ball detents. They should come to a soft point. If they are flat or heavily rounded, they should be replaced. Ball detents should be replaced about every 10,000 shots.

**NOTE:**

- Take care when replacing the eye cover over tightening the retaining screw could result in stripping the threads.

**USAGE**

- Carefully connect your air hose from your bottle or air system to the Hyper2 In-Low. The Hyper2 In-Line is set by the factory to approximately 230psi. This pressure should give you a velocity of approximately 285fps.
- The Hyper2 has nine components.
- Disassembly of the Hyper2 In-Line is easily done with 3/8" and 5/16" Allen wrenches.

- The Hyper2 In-Line is adjusted by turning the brass seat housing. The seat housing screw is located up inside the bottom of the reg. A 3/16" Allen wrench will be needed for this operation.
- By turning the housing clockwise, you will decrease the output pressure of the reg. By turning the housing counterclockwise, you will decrease the output pressure of the reg.
- After each adjustment of the output pressure of the Hyper2 In-Line, you will need to cycle the marker a few times. This will allow your marker and air system to stabilize at their new operating pressure. The Hyper2 will need a break-in period of about 2,500 shots to let its seat form to the piston and reach its optimum performance.

**MAINTENANCE**

- To ensure top performance from the Hyper2, maintenance should be performed every six months or sooner, depending on the severity of playing conditions. Cold, wet weather will shorten the effective life of the grease. Heavy dust or fine sand can infiltrate the Hyper2 and prevent the piston from moving smoothly and/or cut the o-rings.
- The Hyper2 has nine components.
- Disassembly of the Hyper2 In-Line is easily done with 3/8" and 5/16" Allen wrenches.
- Use the factory setting for best performance.
- Always remove the regulator from the Marker before servicing.
- Make sure the inlet and outlet ports and connecting fittings are free of all dirt and paint.
- Clean any accumulated dirt out of the air chambers and passages.
- Keep the piston o-rings and spring pack generously greased to allow smooth velocity adjustment and prevent erratic velocity spikes and drop off.
- Be sure to reassemble the internal components and shim stack.

**WARNING**

- The Hyper2 can hold a small residual charge of gas, typically 1 shot. Always discharge the marker in a safe direction to relieve this residual gas pressure.
- Always remove the regulator from the Matrix before servicing.
- Improper stacking of shims will cause failure of the regulator and possible damage to the Matrix.
- Excessive dirt and debris can affect the Hyper2's performance and increase the need for servicing.

**ANTI CHOP EYES**

- The Anti Chop Eye (ACE) system will prevent the Matrix from chopping paint by not allowing the marker to fire until a ball is fully seated in front of the bolt. The eyes use a beam across the breech. On one side there is a transmitter, and on the opposite side a receiver. In order for the marker to fire with the eyes turned on, the signal between the two eyes must be broken. After every shot, before the next ball drops in the breech, the eye transmitter and receiver must see each other. If the eyes are dirty and cannot see each other between shots, the LED on the board will start blinking green. This means that the eyes are dirty. This is an extremely reliable system as long as the eyes are kept clean. The most common reason for dirty eyes is broken paint. If the eyes become dirty, the marker will default to a reduced rate of fire to prevent chopping. If this happens during game play, you can bypass this by turning the eyes off. Clean the eyes as soon as possible.

**NOTE:**

- If the battery is low, the marker may act as if the eyes are dirty or not fire at all. In this case, replace the battery.

---

**CLEANING THE ANTI CHOP EYES**

- Quite often, just cleaning the breech out with a swab will clean the eyes well enough for them to read one another.
- A thorough cleaning, the best method is to use air. Using an air hose or canned air (typically used for dusting keyboards) works best.
- Blow the eyes clean from inside the breech. If you feel the eyes still need a more detailed cleaning, remove the eye cover to gain full access to the eyes.

**NOTE:**

- Regular eye cleaning is recommended even if no paint is broken. Clean the eyes every two months or 10,000 shots to eliminate any built up dirt. Excess grease from the front bolt o-ring can build up in front of the eyes. Remember to check for this after greasing the bolt and cycling the marker a few times.

---

**CHANGING BALL DETENTS**

- The ball detents are also located under the eye cover. If you are experiencing double feeding or chopping, check the condition of the ball detents. They should come to a soft point. If they are flat or heavily rounded, they should be replaced. Ball detents should be replaced about every 10,000 shots.

**NOTE:**

- Take care when replacing the eye cover over tightening the retaining screw could result in stripping the threads.

---

**USAGE**

- Carefully connect your air hose from your bottle or air system to the Hyper2 In-Low. The Hyper2 In-Line is set by the factory to approximately 230psi. This pressure should give you a velocity of approximately 285fps.
- The Hyper2 has nine components.
- Disassembly of the Hyper2 In-Line is easily done with 3/8" and 5/16" Allen wrenches.

**ANTI CHOP EYES/ BALL DETENTS - MAINTENANCE AND CHANGING**

**ADJUSTMENTS**

- The output pressure of the Hyper2 In-Line is adjusted by turning the brass seat housing. The seat housing screw is located up inside the bottom of the reg. A 3/16" Allen wrench will be needed for this operation.
- By turning the housing clockwise, you will decrease the output pressure of the reg. By turning the housing counterclockwise, you will decrease the output pressure of the reg.
- After each adjustment of the output pressure of the Hyper2 In-Line, you will need to cycle the marker a few times. This will allow your marker and air system to stabilize at their new operating pressure. The Hyper2 will need a break-in period of about 2,500 shots to let its seat form to the piston and reach its optimum performance.

**MAINTENANCE**

- To ensure top performance from the Hyper2, maintenance should be performed every six months or sooner, depending on the severity of playing conditions. Cold, wet weather will shorten the effective life of the grease. Heavy dust or fine sand can infiltrate the Hyper2 and prevent the piston from moving smoothly and/or cut the o-rings.
- The Hyper2 has nine components.
- Disassembly of the Hyper2 In-Line is easily done with 3/8" and 5/16" Allen wrenches.
- Use the factory setting for best performance.
- Always remove the regulator from the Matrix before servicing.
- Improper stacking of shims will cause failure of the regulator and possible damage to the Matrix.
- Excessive dirt and debris can affect the Hyper2's performance and increase the need for servicing.

**WARNING**

- The Hyper2 can hold a small residual charge of gas, typically 1 shot. Always discharge the marker in a safe direction to relieve this residual gas pressure.
- Always remove the regulator from the Matrix before servicing.
- Improper stacking of shims will cause failure of the regulator and possible damage to the Matrix.
- Excessive dirt and debris can affect the Hyper2's performance and increase the need for servicing.

---
ADJUSTING YOUR TRIGGER

The trigger’s forward travel and over travel are fully adjustable so that the user can fine-tune the trigger to his or her exact liking.

- Remove the grip frame from the body of the MATRIX.
- As you pull the frame away from the body, take care so as not to damage the wires running between the two parts. Be careful not to lose the trigger spring.
- The two adjustment screws are located at the top of the trigger in the grip frame (see Figure 1).
- Use a 5/64” Allen wrench to make the desired adjustments.
- The screw toward the front of the trigger controls the forward travel. Screwing it in will shorten the trigger’s length of pull. Note: If this screw is adjusted too far, the switch will be held down at all times and the marker will not fire.
- The screw toward the rear of the trigger controls the over travel. By turning this screw you can adjust how far the trigger will travel after it reaches the firing point. Note: If this screw is adjusted too far, the trigger will not be allowed to travel far enough to depress the switch and fire the marker.
- When the desired trigger pull has been achieved, reattach the frame to the body.
- Take care that the spring is seated properly. Using the trigger without a spring is not recommended and will cause the microswitch to fail much sooner than when a spring is used.
- Be sure that all wires are laid properly in their appropriate cavities.

NOTE: Be sure that the frame and trigger assembly are kept clean. If there is excess dirt or paint build up around the trigger, the trigger will no longer move freely. In addition, paint and dirt can cause the microswitch to not function properly or fail.

CAUTION: BE SURE YOU DO NOT PINCH THE WIRES BETWEEN THE FRAME AND BODY WHEN REATTACHING THE FRAME TO THE BODY.

- Be sure the trigger is not adjusted to the point where it is too sensitive and may cause accidental discharge of the marker.
- Removing the trigger spring will cause premature wear on the microswitch, resulting in failure.
- Be sure you do not pinch the wires between the frame and body when reattaching the frame to the body.

WWW.PROTOPAINTBALL.COM
TROUBLE SHOOTING GUIDE

MATRIX TROUBLE SHOOTING

AIR LEAK BETWEEN THE FRAME AND BODY
- This serves as a bleed-off to help prevent over-pressurizing. De-gas the Hyper2; be sure all air is vented out.
- Check for nicks, cuts, or sharp edges in the area.
- Make sure the frame is tight against the body:
  - Check to make sure the #016 o-ring on the inside of the bolt is seated properly.
  - Check to make sure the #020 o-ring on the cylinder is seated properly.
  - Check to make sure the #006 o-ring inside the LPR is seated properly.

AIR LEAK FROM THE SIDE VENT HOLE
- In the case of the Hyper2, make sure the vent hole is not too large. If too large, the Hyper2 may blow off.
- Check to make sure the #016 o-ring on the inside of the bolt is seated properly.
- Check to make sure the #020 o-ring on the cylinder is seated properly.
- Check to make sure the #006 o-ring inside the LPR is seated properly.

AIR LEAK FROM THE LPR CAP
- Check for nicks or sharp edges in the area.
- Make sure the #013 o-ring on the top hat of the bolt is seated properly.
- Check to make sure the #016 o-ring on the inside of the bolt is seated properly.

INCONSISTENCY VERSUS THE GROOMING
- Clean and inspect:
  - Piston or spring stack may be binding due to excessive dirt or lack of lubricant.
  - Seat may have excessively deep piston groove cut into it. Replace if needed.
  - Check for blocked air passage in hose line or regulator. Adjustment screw may be screwed in too far.

TRIGGER BOUNCE
- If you are having excessive trigger bounce when firing the gun, make sure you have an uncut spring behind the trigger.
- Check to make sure there are no broken solenoid wires.
- Check to make sure the trigger is adjusted properly and is actuating the microswitch.
- Check to make sure dwell setting is at stock value.

OUTPUT PRESSURE CREEPS UP
- If the output pressure is creeping up, try adjusting the regulator:
  - Make sure dwell setting is at stock value.
  - Make sure the LPR pressure is set correctly. Try turning the LPR pressure a bit higher. If the pressure seems inconsistent, you can
    - Tighten the LPR pressure a bit higher.
  - If the leak comes through the inside of the bolt, replace the #013 on the bolt top hat. If the cause is this #013 o-ring, the
    - #013 o-ring on the inside of the bolt.
  - If the cause is not the #013 o-ring, replace the #015 o-ring on the outside of the LPR or the #006 o-ring found inside the LPR (see page 10).

ERRATIC VELOCITY OR SHOOT DOWN
- The two main reasons for this are:
  - Air leak between the frame and body
  - Air leak from the side vent hole

NO OR POOR AIR FLOW
- Air leak between the body and rear cap
- Output pressure creeping up

HYPERRA TROUBLE SHOOTING

RIO OR POOR AIR FLOW
- Check to make sure the regulator is at least 60 psi.
- Check to make sure there is no air inside the storage chamber.
- Check to make sure the #013 o-ring on the top hat of the bolt is seated properly.
- Check to make sure the #016 o-ring on the inside of the bolt is seated properly.

ERATRIC VELOCITY OR SHOOT DOWN
- Check to make sure the #016 o-ring on the inside of the bolt is seated properly.
- Check to make sure the #020 o-ring on the cylinder is seated properly.
- Check to make sure the #006 o-ring inside the LPR is seated properly.

OUTPUT PRESSURE CREEPS UP
- Check to make sure the #016 o-ring on the inside of the bolt is seated properly.
- Check to make sure the #020 o-ring on the cylinder is seated properly.
- Check to make sure the #006 o-ring inside the LPR is seated properly.

AIR LEAK FROM SIDE VENT HOLE
- Check to make sure the #016 o-ring on the inside of the bolt is seated properly.
- Check to make sure the #020 o-ring on the cylinder is seated properly.
- Check to make sure the #006 o-ring inside the LPR is seated properly.

AIR LEAK FROM BOTTOM OF ADJUSTMENT SCREW
- This is a safety bleed-off to help prevent over-pressurizing. If the bolt leaks, try to turn it until an even set of o-rings are seated.
- Check to make sure the #016 o-ring on the inside of the bolt is seated properly.
- Check to make sure the #020 o-ring on the cylinder is seated properly.
- Check to make sure the #006 o-ring inside the LPR is seated properly.

INCLUDED WITH THE HYPER2

MATERIAL MARKER
- Allen tools including #64*, #30*, #16*, #5/8*, #1/2*, and #1/4*
- 1 #016 Star Slick Lube™
- Pluck Kit
- Barrel Sock
- Owner’s Manual

ADDITIONAL RECOMMENDED TOOLS

- C9™+ mission
- Dye™ Paint capsules
- Finish™ airbrush
- Carbine Air

TECHNICAL SUPPORT

Our Technical Support Department is open Monday through Friday, from 9am to 5pm, PST, and can be reached at 858-536-5183. Additional support is available through our web site, www.protopaintball.com.

DISCLAIMER

The specifications & photographs in this material are for information and general guidance purposes only.

Our products are continually updated and changes may be made to specification, design or appearance from time to time. These are subject to change without notice. Contents of box may therefore vary from owner’s manual. For details of changes in design, specification or appearance consult your local dealer or distributor.

The FUSE™ bolt and Slick Lube™ are registered trademarks. Design rights, copyrights and all other rights reserved. All patterns, drawings, photographs, instructions or manuals remain the intellectual property of the manufacturer.

Covered by one or more of the following U.S. Patents: 5,613,483; 5,881,707; 5,967,133; 6,035,843 and 6,474,326.

All rights will be strenuously enforced.

DYE Precision, Inc.
10637 Scripps Summit Ct.
San Diego, CA. 92131

WWW.PROTOPAINTBALL.COM

WARRANTY

DYE Precision, Inc.

Warranty for one year to the initial retail purchaser, from the date of initial purchase, that the paintball marker and regulator are free from defects in materials and workmanship, subject to the requirements, disclaimers and limitations of this warranty: Disposable parts, normal maintenance and standard wear and tear parts such as batteries, o-rings and seals are not warranted. The solenoid and electronic components on the marker are warranted for six months. This warranty does not cover scratches, nicks, improper disassembly, improper re-assembly, misuse, neglect or improper storage. Modification to the product will void the warranty. The only authorized lubricant for the marker is Slick Lube™. Use of any other lubricant will void your warranty. This warranty is limited to repair or replacement of defective parts with the customer to pay shipping costs. Warranty card and proof of purchase must be submitted to Dye Precision for warranty to be in effect. This warranty is not transferable. This warranty does not cover performance. Paintball markers are non-refundable.