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**MATRIX**



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PROTO MATRIX RAIL

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DYE Precision, Inc. U.S. Patent # 5,613,483 and additional patents pending.

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# P M R O W N E R ' S M A N U A L

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## INCLUDED WITH YOUR PROTO MATRIX RAIL

- MATRIX Marker
- Allen tool set including 0.50, 1/16", 5/64", 3/32", 1/8", 5/32", 3/16" and 1/4".
- 1/2 oz. DYE Slick Lube™
- Parts Kit
- Barrel Sock
- Owner's Manual
- Warranty Card
- 9V Battery

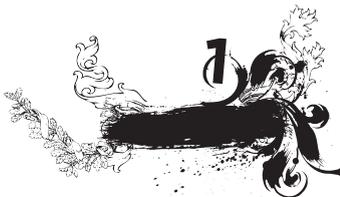
The PMR comes with the tools required to perform general maintenance and setting up.  
For a complete service the following tools are required

- 3/8" allen key
- 5/16" allen key
- #0 Phillips head screw driver
- A sharp pick to remove O-rings

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# QUICK REFERENCE - USING YOUR MARKER

## QUICK START UP GUIDE

Before playing with your new PMR paintball marker there are a few important steps to take.

### STEP 1. BATTERY INSTALLATION

- Remove two left hand side grip panel screws with a 3/32" allen key
- Open grip panel and install 9V battery into the connector inside the frame
- Close grip panel and tighten the two screws back. While closing the panel observe that no wires get caught between the frame and the grip panel



### STEP 2. BARREL INSTALLATION

- Screw on the barrel to the front of the PMR. Make sure it threads all the way in and tightens good
- Attached the barrel sock so that it covers the tip of the barrel and secure the strap around the back of the PMR



### STEP 3. LOADER INSTALLATION

- Tighten your loader into the adjustable feed neck on the PMR with a 5/32" sized allen key. For best performance you need a force feeding motorized loader.

### STEP 4. ATTACHING GAS SOURCE

- Screw on a preset air system into the airport located on the bottom of the grip frame. Make sure air system is screwed in all the way. If there is a leak screwing in the air system or if no gas comes out of the air system even when screwed in all the way consult page 11 in this manual for pin depressor adjustment.

### STEP 5. TURNING ON THE PMR AND CHECKING THE VELOCITY

- Make sure you and everybody around you is wearing ASTM / CE approved paintball masks
- Press and hold the top button located behind the grip frame until the PMR turns on. WARNING, the PMR is LIVE. Make sure barrel sock is in place and do not point the PMR to anything you don't intend to shoot.
- Fill up the loader with .68 caliber paintballs
- Shoot the PMR over a chronograph to check the velocity. If adjustment is needed adjust the velocity by turning the Hyper2 velocity adjustment screw with a 3/16" allen key. In (clockwise) will reduce the velocity and out (counter clockwise) will increase the velocity. After each adjustment it takes a few shots before the change can be seen on the chronograph. Never adjust the PMR to shoot faster than 300fps or what the field rules / local laws permit.



**WARNING**

## IMPORTANT SAFETY INSTRUCTIONS AND GUIDELINES

- The PMR marker is not a toy. Misuse may cause serious injury or death.
- Please read, understand and follow the directions in the PMR 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 PMR marker as if it were loaded and able to fire.
- Only use compressed air or nitrogen gas in the PMR marker. DO NOT USE CO<sub>2</sub>.
- Do not exceed 850 psi input pressure.
- Only use .68 caliber paintballs that meet ASTM/CE standards
- Ensure all air lines and fittings are tightened and secured before gassing up the PMR.
- Always chronograph the PMR marker before playing paintball.
- Never shoot the PMR 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 PMR when the marker is switched on and able to fire.
- Compressed gas is dangerous, do not allow compressed gas to come in contact with your skin or try to stop a leak by covering it with your hand
- Always fit a barrel blocking device to your PMR when not in use on the field of play.
- The owner's manual and any related warnings or instructions should always accompany the product for reference or in the event of resale and new ownership.
- Do not point the PMR 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 PMR without the 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 Precision or your local pro shop for help.

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# PMR BOARD

## SETTINGS AND FUNCTIONS



### BUTTONS AND LED LIGHT INDICATOR

There are two buttons and an LED light indicator mounted inside the frame of the PMR. These are accessible on the back side of the frame. The top button is used to turn the PMR ON and OFF. The bottom button is used to turn the Eye feature of the PMR ON and OFF. To turn the PMR ON press and hold the top button until the LED light turns on. The Eye feature is always on when the PMR is turned on, to turn off the eye feature press and hold the bottom button until the LED light starts blinking Red indicating the eye feature is turned off.

In normal operation mode the LED light indicator shows you the following information:

**Yellow:** Boot up Sequence

**Red:** No ball detected inside the PMR, eye is turned on

**Green:** Ball detected inside the PMR, eye is turned on

Blinking **red:** Eye is turned off

Blinking **green:** Eye blocked. Either the eye is dirty, the marker is not gassed up, there is bad connection between the board and the eye's or the battery is low.

### SETTINGS AND CONFIGURATION MODE

There are five settings that can be altered in the PMR circuit board.

1. ABS (Anti Bolt Stick)
2. Trigger sensitivity
3. Dwell
4. ROF (Rate Of Fire)
5. Fire Mode

Settings 2-5 are changed from a configuration mode. Setting 1, Anti Bolt Stick, is changed by turning DIP switch #1 on the circuit board either ON or OFF. When the ABS is turned on the dwell is increased after 15 seconds of non-use for the next shot fired. This helps to prevent bolt stick. Factory default is ON. Notice that the setting is only activated after re-starting the PMR.

To change settings 2-5 you will need to activate the configuration mode. To activate the configuration mode, turn your marker off, open the two left side grip panel screws with a 3/32" allen key and set DIP switch 2 to the on position. Next, turn your marker on. The 3-color LED will cycle 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 4 settings that can be changed.

### 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 of a value, the marker may begin to shoot full-auto.

### RED - DWELL. Values 1 - 40 (factory default 25)

Dwell is the amount of time that the solenoid will be activated. Follow these steps for the best way to set your dwell:

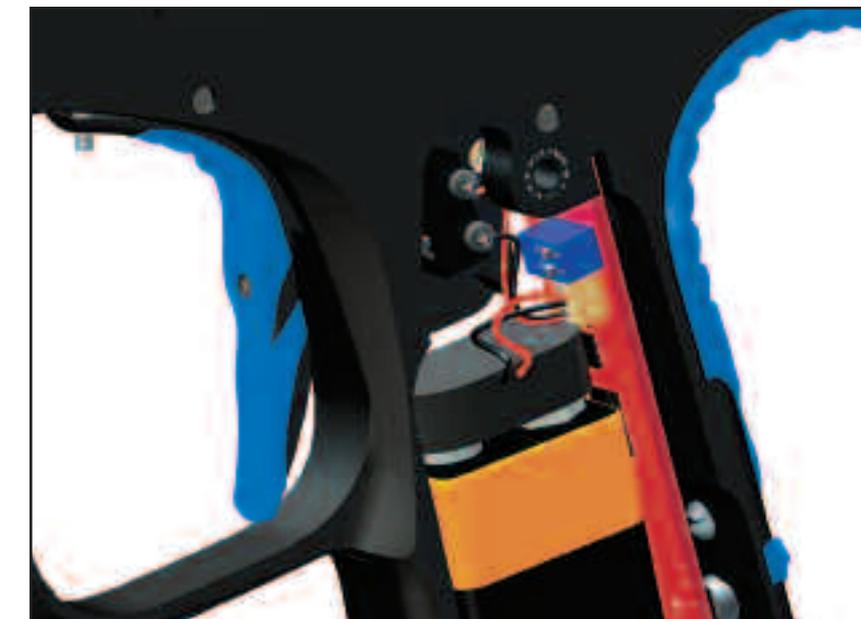
- Remove loader and any paintballs from the PMR marker.
- With the dwell set at 20, start increasing the value until the marker begins to fire.
- When you reach the setting where the marker begins to fire, get some paint and a loader and go to a chronograph.
- Increase the dwell until you see no increase in the velocity. This is the optimal dwell setting to be used.

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

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# PMR BOARD

## SETTINGS AND FUNCTIONS



### YELLOW - RATE OF FIRE (VALUES 1-20)

The ROF setting is used to set the maximum rate of fire of the PMR. The values do not correspond directly to a certain Balls Per Second (BPS) value. You will need to use the table below to locate your desired maximum ROF setting. The factory default is 15 (20 BPS). This setting is used both when the Eye function is turned on and off.

1	10 BPS	11	15.6 BPS
2	11 BPS	12	15.9 BPS
3	12 BPS	13	16 BPS
4	14 BPS	14	18 BPS
5	14 BPS	15	20 BPS
6	14.5 BPS	16	22 BPS
7	14.7 BPS	17	24 BPS
8	14.9 BPS	18	26 BPS
9	15.2 BPS	19	28BPS
10	15.4 BPS	20	30 BPS

### FLICKERING YELLOW - FIRE MODE (VALUES 1-3)

The fire mode setting is used to select the fire mode of the PMR. Factory default is semi automatic mode; one trigger pull shoots out one paintball. The Millennium mode and the PSP mode follow the rules of the paintball tournament series.

**Value 1** - Semi automatic mode

**Value 2** - PSP mode

**Value 3** - Millennium Mode

### TO CHANGE A VALUE OF A SETTING

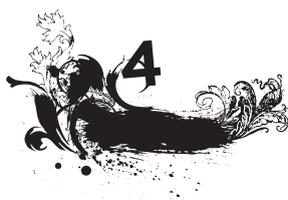
1. While in the configuration mode choose the color you wish to change by pulling the trigger.
2. When the LED indicates the color you wish to change pull and hold the trigger until the LED start to flash
3. The LED will flash as many times as the previous setting was and it will then turn off. Now pull the trigger as many times as you wish the new setting to be.
4. When done the LED will cycle through all the colors again to indicate setting was saved and turn back to green. You can now change another setting or quit the configuration mode



Normal Mode



Configuration Mode



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# PMR BOARD

## SETTINGS AND FUNCTIONS

### 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

### CHANGING THE BATTERY

The battery is housed on the left side of the grip frame. To access the battery, remove the two 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. Clip a new battery into the 9V connector and carefully place it back into the frame making sure that no wires are pinched underneath the battery.



## 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.

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# TRIGGER ADJUSTMENT



The Trigger's forward travel and over travel are fully adjustable so that the user can fine-tune the trigger to his/her exact preference.

To adjust the trigger an .050 Allen key is needed. There are two adjustment screws located on the trigger

The screw on the top front of the trigger controls the forward travel. Screwing it in will shorten the trigger's length of pull. Note: If this screw is screwed too far in, the switch will be depressed all the time causing the PMR to fire once immediately after turning it on and not firing after that!

The screw on the back of the trigger controls the over travel. By turning this screw you can adjust how far back the trigger will travel. Note: If this screw is adjusted too far, the trigger will not be allowed to travel far enough to depress the switch and the marker will not fire

The trigger spring used to return the trigger is located inside the frame. It is not suggested to remove this spring as it will cause excess wear on the micro switch



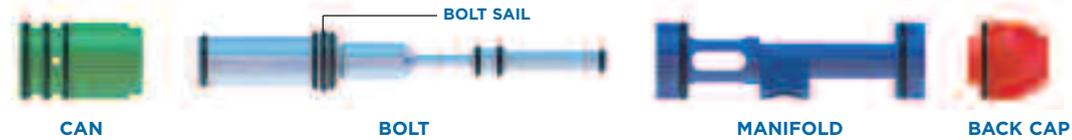
## WARNING

- 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.**

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# RAIL™ BOLT

## ASSEMBLY AND MAINTENANCE



The RAIL™ BOLT is the main component of the PMR marker. In order to achieve the best possible performance of the PMR it is essential that the RAIL™ BOLT is kept clean, well lubed and in good working order.

The RAIL™ BOLT should be cleaned and re-lubed every 10 000 shots or after breaking paint or playing in severe conditions.

There are 4 parts in the RAIL™ BOLT kit that mount together as one unit. To remove the RAIL™ BOLT from your PMR use a 1/4" Allen key and turn the Back Cap out until it spins loosely. Now pull out the complete RAIL™ bolt kit from the PMR.



FORWARD POSITION

To dis-assemble you unthread the front most part called the Can and the Manifold from each other and pull out the actual moving bolt from inside these pieces. Notice that to remove the Can you need to remove the bolt tip O-ring before the bolt can slide through the Can.



BACK POSITION

### HOW DOES IT WORK

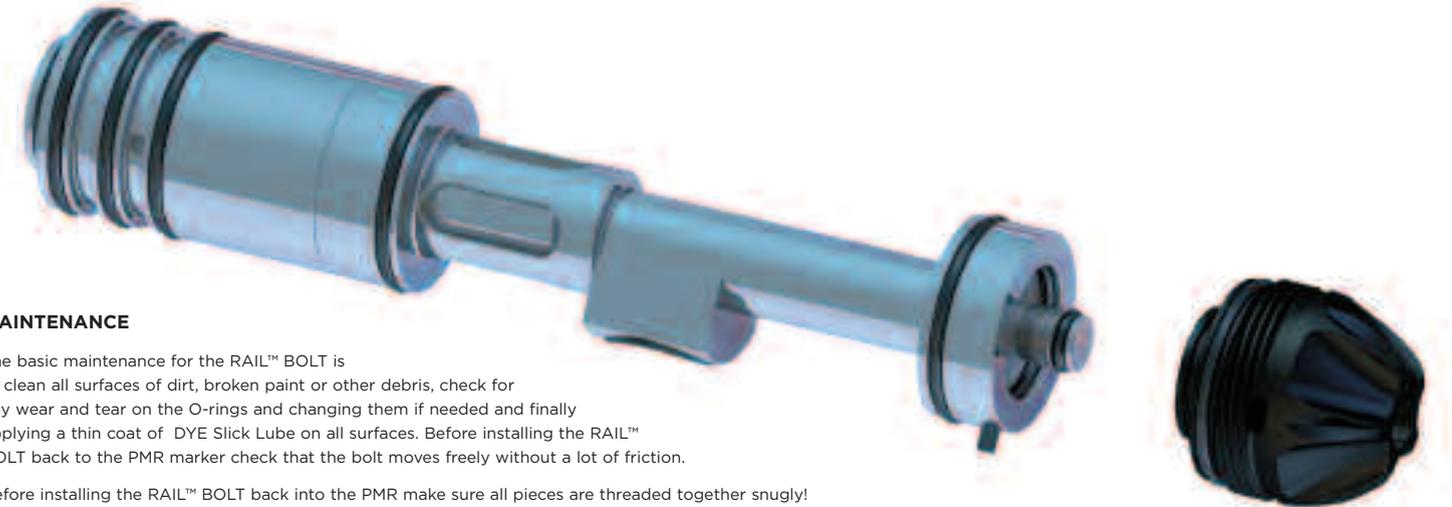
Air is supplied into two points on the RAIL™ BOLT. On the back air is routed through the Manifold and fills up the supply chamber around the Manifold. On the front air is routed through the solenoid into the Can. This air pushes against the Sail on the Bolt which keeps the bolt in the back position.

When the PMR is fired the solenoid is actuated and the air inside the can is exhausted out. This causes the Bolt to start moving forward with the force created by the air inside the supply chamber. Once the bolt has moved about half way forward the input into the supply chamber is closed and a patent pending Boost™ feature is activated on the back. This gives the bolt an extra push forward and makes sure the valve of the PMR is opened fast and efficiently. The secondary benefit of this Boost™ feature is that on the initial part of the bolt movement the bolt pushes very gently against the paintball inside the breach reducing ball breakage.

Once the Bolt reaches the forward point the valve of the RAIL™ BOLT is opened and air inside the supply chamber goes through the bolt and fires the paintball. After this the solenoid is de-activated and gas is applied through the solenoid back into the can. This causes the bolt to return to the back position and the supply chamber to be re-charged. Notice that when the bolt moves to the back position a small amount of gas used for the Boost™ feature is leaked out through the back cap.

# RAIL™ BOLT

## ASSEMBLY AND MAINTENANCE



### MAINTENANCE

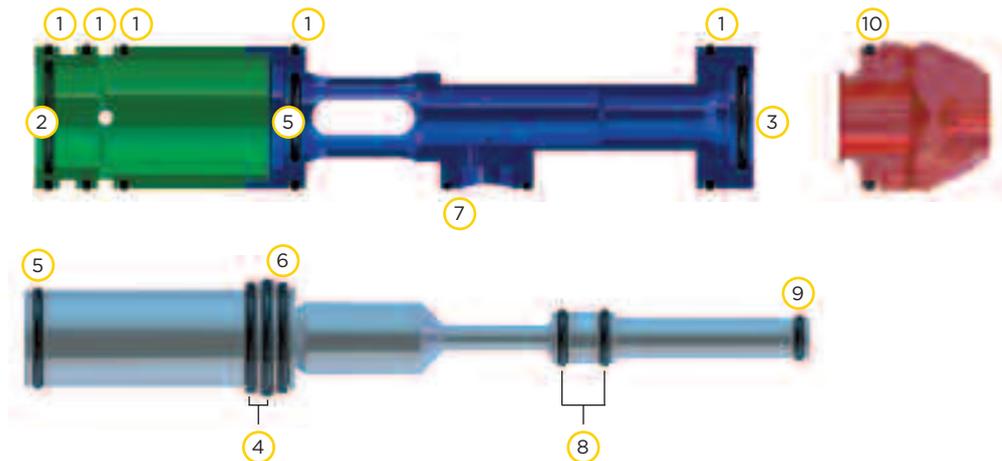
The basic maintenance for the RAIL™ BOLT is to clean all surfaces of dirt, broken paint or other debris, check for any wear and tear on the O-rings and changing them if needed and finally applying a thin coat of DYE Slick Lube on all surfaces. Before installing the RAIL™ BOLT back to the PMR marker check that the bolt moves freely without a lot of friction.

Before installing the RAIL™ BOLT back into the PMR make sure all pieces are threaded together snugly!

If the RAIL™ BOLT is not kept clean and well lubed you will either start seeing erratic velocity, leaks or over long period of time physical damage to the RAIL™ BOLT components.

Notice that it's normal for a small amount of gas to come out through the back cap when the PMR is fired. This gas is used for the Patented Boost forward technology of the PMR.

For troubleshooting leaks and other bolt problems consult the troubleshooting section at the end of this manual.



### RAIL BOLT O-RING LIST

- 1 BN 20
- 2 BN 17
- 3 BN 16
- 4 BN 15
- 5 BN 14
- 6 BN 14 x 2mm
- 7 BN 13
- 8 BN 09
- 9 BN 07
- 10 BN 18

## 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.
- When using the MATRIX in temperatures below 50° Fahrenheit it may be necessary to lube the RAIL™ bolt more frequently.



# LOADERS AND FEED NECK

## AIR/NITROGEN OPTIONS

### LOADERS AND FEED NECK

To achieve the maximum performance of the PMR you will need to use a motorized loader that force feeds paintballs into the PMR marker. Using a slower motorized loader or a non-motorized loader will work but the rate of fire will be reduced.

To fit a loader onto the PMR:

1. Loosen the feed neck adjustment screw with a 5/32" allen key
2. Push the loader all the way into the feed neck
3. Tighten the feed neck adjustment screw until loader is secure. Note that using too much force tightening the screw could cause damage to your loader.

There is no maintenance needed for the feed neck besides keeping it clean of broken paint, dirt and debris.

### AIR / NITROGEN TANK OPTIONS AND INSTALLATION

The PMR will only work with Compressed air or Nitrogen air systems such as the DYE Throttle air system. Do not use CO<sub>2</sub> or any other compressed gas. The output pressure from the air system has to be between 400 - 850psi

To install an air system screw tank into the airport all the way as far as it goes. To remove the air system screw out. There will be gas leaking for a few seconds while you screw the air system out. Notice that even with the air system removed there can be gas inside the PMR and it can still fire a paintball. Always treat the marker as being live and never point it to anything you don't intend to shoot at!



# AIRPORT

## ASSEMBLY AND MAINTENANCE

### AIRPORT ADJUSTMENT AND MAINTENANCE

The location of the airport adapter can be moved approximately 1/4" back or forward from

the stock position to fit your individual preference. To change the position:

1. Open the two left side grip panel screws with a 3/32" allen key
2. remove the 9V battery
3. using a 3/32" allen key loosen the airport locking screw until airport slides back and forth loosely
4. set the airport to the desired position
5. tighten then airport locking screw, install the 9V battery back and tighten the two grip panel screws

Before screwing in the air system into the airport always check that the threads both on the air system and the airport are clean and not worn out. If you think the threads are not in good condition contact DYE Precision or a professional store before screwing in the air system.

### AIRPORT PIN DEPRESSOR

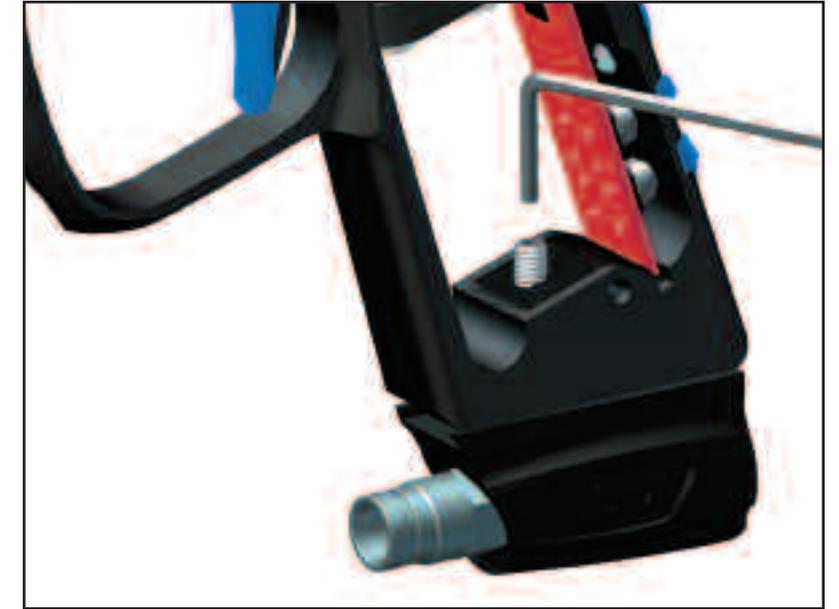
The airport supplied with the PMR comes with an adjustable pin depressor. It's preset to work with most of the systems on the market but if needed it can be adjusted.

To adjust the pin depressor remove the hose from the front of the airport by pushing the gray plastic housing towards the fitting and pulling the hose out. Next use a 3/32" allen key to move the set screw mounted inside the Airport Turn the screw back a few turns so that the pin valve on the air system will never be pressed.

Next:

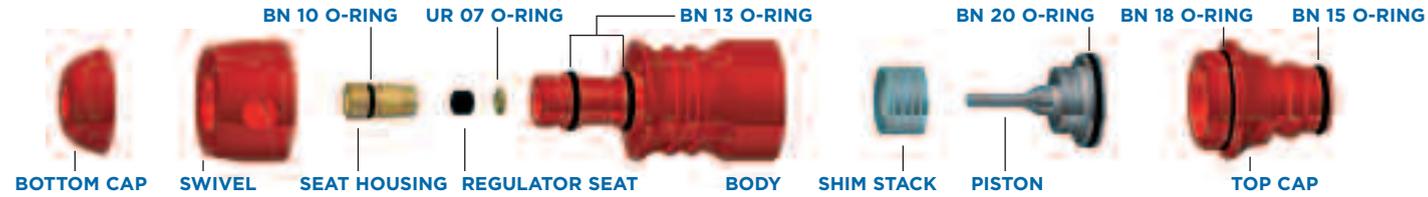
1. Screw on the air system used on the gun into the airport all the way, no air should come out.
2. Turn the pin depressor screw in until a small amount of air starts to come out
3. turn the air system out about half a turn, air leak should stop
4. Screw in the pin depressor screw enough for air to start leaking again.
5. Screw out the air system and connect hose again.
6. Now the pin depressor screw is set to the optimal point for your air system.

If the screw is set too far out the pin valve on the air system is opened too early and air will leak out through the exhaust hole on the top of the airport. If the screw is not far enough the pin valve on the airport will never be opened or will be opened too little for good flow.



# HYPER2™ IN-LINE REGULATOR

## ADJUSTMENTS AND MAINTENANCE



### VELOCITY ADJUSTMENT

The velocity of the PMR is adjusted by adjusting the input pressure into the PMR. This is controlled with the Hyper2 regulator. The Hyper2 on the PMR is factory set to 150psi which will give you a velocity of about 285FPS (Feet per Second). A 3/16" allen key will be needed for this operation. Turning the adjustment screw in (clockwise) will decrease the pressure and out (counterclockwise) will increase the pressure. To adjust the velocity:

1. Make sure you and everybody around you is wearing ASTM/CE approved paintball goggles
2. Shoot the PMR over a paintball chronograph
3. To lower the velocity turn the Hyper2 adjustment screw in, to increase the velocity turn the screw out. Only turn the screw a quarter turn at a time and shoot over the chronograph again. Notice that a few shots are needed before the change can be seen on the chronograph

### MAINTENANCE

It is essential for the PMR to function properly that the input pressure into the marker stays consistent at all times. The general maintenance needed for the Hyper2 regulator is to keep it clean of all dirt and debris at all times. A more extensive service should be performed every 12 months or if the output pressure of the regulator doesn't stay consistent. This can be seen as inconsistent velocity and verified with a regulator tester (sold separately). Notice that the Hyper2 has a break in period of about 2000 shots before it achieves the best performance.

To service the Hyper2 regulator you will need to dis-assemble it, lube all moving parts and change any seals and o-rings that have worn out.

### HYPER2 REGULATOR DIS-ASSEMBLY INSTRUCTIONS

To disassemble the Hyper2 regulator you will need a 3/8" allen key and a 5/16" allen key. Place the 3/8" allen key inside the top cap and the 5/16" allen key to the bottom cap. Unscrew the caps from each other.

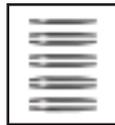
Next unscrew the Brass seat housing from the body with a 3/16" allen key. Slide the swivel from the body and finally push out the piston from the body with a small allen key. If extra grip is needed to remove the top cap you can hold slide a small allen key trough the holes underneath the swivel.

The O-rings most important for the function of the regulator are the #020 on the piston and the #007 one inside the body. To change the #007 urethane o-ring use a sharp o-ring pick to pull it out. A small flat head screw driver is helpful when re-inserting the new o-ring.

To change the seat pull out the old seat from the housing with a sharp object. Insert the new seat in place and push it down with a flat object. Notice that it takes about 2000 shots for the seat to perfectly sit into the seat housing. This is called the break in period for the regulator.

When re-assembling the regulator take care to note that the shim stack around the piston is assembled in the correct order. (see attached figure)

You should apply lube to all the o-rings in the regulator before re-assembly.



Shim Stack  
Figure 2

# ANTI CHOP EYES/ BALL DETENTS

## MAINTENANCE AND CHANGING

### ANTI CHOP EYES

The Anti Chop Eye (ACE) system will prevent the PMR 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. For 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.

To remove the eye cover, you will need a 1/16" Allen wrench.

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 40,000 shots.

**NOTE: TAKE CARE WHEN REPLACING THE EYE COVER. OVER-TIGHTENING THE RETAINING SCREW COULD RESULT IN STRIPPING THE THREADS.**



# TROUBLE SHOOTING GUIDE

## AIR LEAKS

### AIR LEAKING FROM THE AIRPORT

- Check the O-ring on the Air system. If needed change a new o-ring and try again. The o-ring normally used is #15 but some manufacturers might use a different size. Consult the manual of the air system you are using.
- Check that the hose connector is tight. Remove the hose from the connector by pushing the gray plastic towards the connector and pull out hose. Insert a 3/16" allen key into the connector and tighten. If needed remove and apply thread sealant to the thread and re-tighten. If unsure consult expert advice
- Check that the end of the hose is cut straight and is not worn out. If needed cut a small piece off the hose with a razor blade and re-insert hose into the fitting. Make sure hose goes all the way to the end.

### AIR LEAKING FROM THE HYPER2 REGULATOR

- First locate the position of the leak
- For dis-assembly instructions consult the technical section under Hyper2 regulator
- If the leak is coming from the bottom of the regulator you will need to dis-assemble the regulator and change the #010 O-ring and the seat on the brass seat retainer mounted inside the Hyper 2 regulator
- If the leak is coming from the swivel piece where the hose connector mounts you will need to change the two #013 o-rings under the swivel piece or tighten the hose connector.
- If the leak comes from the small hole in the middle of the regulator there are two possible o-rings. Change the #020 o-ring on the piston and the #007 urethane o-ring inside the body of the regulator
- If the leak is from the top of the regulator change the #015 o-ring on the outside of the cap

### AIR LEAKING FROM THE ASA

- First make sure that the asa is tightened well into the body of the PMR by removing the Hyper2 regulator and tightening the ASA screw with a 3/16" allen key.
- Next change the #015 o-ring on the top cap of the Hyper2 and apply a small amount of lube to the o-ring
- Finally, if above steps don't help remove the Asa with a 3/16" allen key and change the #012 O-ring mounted on the top of the ASA. Apply a small amount of lube and tighten back together.

### AIR LEAKING BETWEEN BODY AND FRAME

- Leak between the body and the frame can be caused by a couple of things
- First pull out the Bolt kit and change the #015 sail o-ring and the 3 #020 o-rings on the outside of the can

- If above doesn't help remove the frame from the PMR and remove the solenoid by unscrewing the two screws mounting it down. Apply some lube to the seat underneath the solenoid and re-assemble making sure that the solenoid is well tightened into the body and that the eye wire is not pinched underneath the solenoid
- Last possibility is that one of the gas passages is leaking. Gas up the PMR without the frame attached and try to locate the exact point of leakage. If leak is coming from one of the blocked holes remove the screw, apply some thread sealant and re-attach screw to the body

### AIR LEAKING FROM BACK OF THE PMR

- Check that the bolt kit is tightened all the way into the PMR. If the bolt kit is loose, it will start to leak
- If above does not solve the leak, remove the bolt kit and change the #020 o-ring on the back part of the bolt. Also change the two #009 O-rings located in the stem of the bolt. Lube well and re-insert the bolt kit into the PMR. Check bolt kit break down picture on page 9 for o-ring locations
- Last check that the gas passage blocking screw located on the right side of the PMR is not leaking. If the leak is coming from this hole remove screw and apply thread sealant to it. Make sure to tighten screw well and wait for sealant to dry before re-gassing marker.

### AIR LEAKING FROM FRONT OF THE PMR

- Remove the Bolt kit from the marker and change the #017 o-ring located inside of the can and the #014 o-ring located inside the Manifold Lube well and re-assemble.
- If above doesn't help try changing the #020 o-rings located outside of the Can. Lube well before re-inserting bolt kit.

## PROBLEMS WITH ELECTRONICS

### PMR WON'T TURN ON

- Make sure battery is new and well charged
- Check that battery is connected to the 9V clip inside the PMR and that the other end of the 9V harness is connected to the board
- Make sure there is no dirt or debris blocking the button from being pressed

### PMR WILL TURN ON / OFF BY IT SELF OR THE EYES WILL TURN ON / OFF BY THEM SELVES

- Both of these problems are caused because the button(s) are pressed all the time.

- Remove board from the frame by removing the grip panel on the left hand side, disconnecting the cables and pulling the board out. Carefully remove the two buttons and clean them well.
- Re-assemble and test. If problems persist, contact authorized service center for board replacement

### EYES WILL NOT WORK, LED KEEPS BLINKING GREEN

- First change the battery. The eyes are normally the first thing to stop working when a battery is dying
- Next try to clean the eyes. You can either use canned air and blow out the eye holes through the feed neck hole or remove the eye plates with a 1/16" allen key, pull out the eyes from the mounting holes carefully and clean them with q-tips. To test if the eyes work make sure there is nothing inside the breech and that the bolt is in the back position. Turn on the PMR, the light should be red after the boot up sequence. If it is the eyes are working.
- Check that the eye wire is connected to the board so that metal clips are facing down.
- If nothing above helps contact a store or DYE Precision for eye replacement.

### SOLENOID WILL NOT ACTIVATE / TRIGGER NOT WORKING

- Check that the trigger adjustment is not set so that the micro switch cannot activate. You should hear a small click when pulling the trigger
- If the PMR fires once when turned on but not after that your trigger is set so that the micro switch is always activated. Re-adjust the trigger
- If the trigger is correctly adjusted but the PMR still won't fire check that the micro switch cable is well inserted into the board and to the correct connector (the micro switch connector is marked with the text "SWI" on the board)
- Change the battery if not positive about it's charge
- Check that the solenoid cable is attached to the board and to the right connector (solenoid should be attached to the connector that is marked with the text "SOL")

### TRIGGER BOUNCE / PMR SHOOTING MORE THAN ONE BALL PER PULL IN SEMI AUTOMATIC MODE

- Raise the trigger sensitivity level in the configuration mode
- Check that the trigger is not adjusted too short
- Make sure there is a trigger spring inside the frame

### ERRATIC VELOCITY / PMR WON'T FIRE

### PMR FIRES BUT BALLS ARE DROPPING OFF OR NOT EVEN COMING OUT OF THE BARREL

- Make sure the battery is good
- Raise the dwell to factory level (25)
- Make sure bolt is well lubed and moves well. If there is too much friction in the bolt it will cause the PMR to shoot down
- Make sure air system is screwed in all the way

### FIRST SHOT IS TOO HIGH

- Change the Seat inside the Hyper2 regulator. For dis-assembly instructions consult the technical section
- Check that the #013 o-ring on the outside of the Manifold is in place and in good condition
- Try turning off the ABS feature by turning dip #1 to the off position

### VELOCITY IS NOT CONSISTENT

- Make sure the paintballs you are using fit the barrel good and are consistent in size. The stock barrel with the PMR is .690 size. You should be able to blow the paintball through the barrel but they should not roll through the barrel on their own.
- Remove the bolt kit and re-lube it. Change any o-rings causing a lot of friction. Make sure #014 o-ring in bolt tip is in place and in good condition
- Raise the dwell
- Change the battery
- Check that the Hyper2 regulator is working good and that the pressure is consistent. A separate regulator testing tool is available for this. If needed, dis-assemble and change worn out O-rings in the Hyper2 regulator

## OTHER CATEGORIES

### DOUBLE FEEDING

- If you get two balls firing at once change the ball detents by removing the eye plates, taking out the old ball detents and inserting new ones

### BREAKING PAINT

- Make sure you use high quality paintballs and that they are stored according to the manufacturers instructions
- Check that #14 O-ring on bolt tip is in place and in good condition
- Make sure your loader is working good and that the rate of fire is not set higher than the maximum feed rate of the loader
- Check that the barrel you are using is not too tight for the paintballs you are using.



# MATRIX EXPLODED VIEW

## PARTS LIST

- 1 Clamping Feed Neck
- 2 Ball Detent
- 3 Eye Cover
- 4 Hyper2™
- 5 "ACE" Eye
- 6 Solenoid
- 7 Front Frame Screw
- 8 45 Frame
- 9 Rear Frame Screw
- 10 RAIL™ Bolt
- 11 MATRIX Body
- 12 Eye Cover Screw
- 13 Airport



# MATRIX WARRANTY INFORMATION

## Warranty and legal information

### WARRANTY

DYE Precision, Inc. Warrants for one year to the initial retail purchaser, from the initial date of 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 warrantied. The solenoid and electronic components on the marker are warrantied 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.

### 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 and international contacts are available through our web site, [www.protopaintball.com](http://www.protopaintball.com).

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