



**proto**

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**DYE Precision, Inc.** U.S. Patent # 5,613,483; 7,594,503; 7,765,998. OTHER U.S. AND INT'L PATENTS PENDING.

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.

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*proto*

**REFLEX**  
RAIL



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# REFLEX RAIL™ OWNER'S MANUAL

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## **INCLUDED WITH YOUR PROTO MATRIX REFLEX RAIL™**

MATRIX Marker

2 pc Proto Barrel

Allen tool set including 0.05", 1/16", 5/64",  
3/32", 1/8", 5/32", 3/16" and 1/4"

1/4 oz. DYE Slick Lube™

Parts Kit

Barrel Plug

Owner's Manual

Warranty Card

9V Battery

The REFLEX RAIL™ comes with all the tools required to perform general maintenance and set up.

For a complete service the following tools are required:

5/16" Allen key

#0 Phillips head screw driver

A sharp pick to remove O-rings

DYE Multi-Tool (sold separately)

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# W A R N I N G

**IMPORTANT SAFETY INSTRUCTIONS AND GUIDELINES**

- The REFLEX RAIL™ marker is not a toy. Misuse may cause serious injury or death.
- Please read, understand and follow the directions in the REFLEX RAIL™ 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 REFLEX RAIL™ marker as if it were loaded and able to fire.
- Only use compressed air or nitrogen gas in the RAIL™ 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 REFLEX RAIL™.
- Always chronograph the REFLEX RAIL™ marker before playing paintball.



# W A R N I N G

IMPORTANT SAFETY INSTRUCTIONS AND GUIDELINES

- Never shoot the REFLEX RAIL™ 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 REFLEX RAIL™ 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 REFLEX RAIL™ 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 REFLEX RAIL™ 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 REFLEX RAIL™ 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.

# QUICK REFERENCE

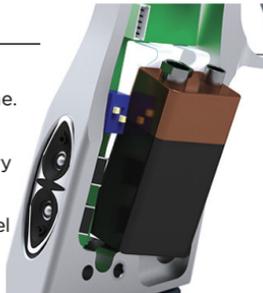
## USING YOUR MARKER

### QUICK START UP GUIDE

**Before playing with your new REFLEX RAIL™ paintball marker there are a few important steps to take.**

#### STEP 1. BATTERY INSTALLATION \_\_\_\_\_

- Remove three right hand side grip panel screws with a 3/32" Allen key.
- Open grip panel and install 9V battery into the connector inside the frame. Note the markings on the board above the battery terminals that indicate which of the board contacts are positive and negative and install the battery accordingly.
- Close grip panel and tighten the three 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 REFLEX RAIL™. Make sure it threads all the way in and is secure.
- Attach the barrel sock so that it covers the tip of the barrel and secure the strap around the back of the REFLEX RAIL™.

#### STEP 3. LOADER INSTALLATION \_\_\_\_\_

- Use the lever arm to tighten your loader into the adjustable feedneck on the REFLEX RAIL™. For best performance you need a force-feeding motorized loader, preferably the Rotor™ Loader. Loader should now be held in with a snug fit.



# QUICK REFERENCE

## USING YOUR MARKER

### STEP 4. ATTACHING GAS SOURCE

A. Make sure that the knob on the front of the ON/OFF airport is in the OFF position, do this by turning the knob clockwise or down. Now screw in your air system to the ON/OFF airport and turn the knob of the airport counter clockwise all the way to the locked position, to turn the gas supply on.

### STEP 5. TURNING ON THE RAIL™ AND CHECKING THE VELOCITY

Turning on the REFLEX RAIL™ and checking the velocity

A. Make sure you and everybody around you is wearing ASTM / CE approved paintball masks.

B. Press and hold the top button located behind the grip frame until the REFLEX RAIL™ turns on. **WARNING, THE REFLEX RAIL™ WILL NOW BE LIVE. MAKE SURE BARREL SOCK IS IN PLACE AND DO NOT POINT THE REFLEX RAIL™ AT ANYTHING YOU DON'T INTEND TO SHOOT.**

C. Fill up the loader with .68 caliber paintballs.

D. Shoot the REFLEX RAIL™ over a chronograph to check the velocity. If adjustment is needed, adjust the velocity by turning the Hyper3™ 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 REFLEX RAIL™ to shoot above 300fps or what the field rules / local laws permit.

# REFLEX RAIL™ BOARD

## SETTINGS AND FUNCTIONS



### TURNING THE REFLEX RAIL™ ON AND OFF

To turn on the REFLEX RAIL™, press and hold the power button until the LED's turn blue. The blue light indicates board boot up. After the boot up sequence, the LED's will turn either RED (no ball) or GREEN (ball in breach, ready to fire). To turn the REFLEX RAIL™ off, press and hold the power button until the LED's turn off.

**NOTE: The REFLEX RAIL™ automatically switches off after 10 minutes of non-use.**

### FIRING THE REFLEX RAIL™

As soon as the marker is turned on and the LED's turn from blue to either red or green, the REFLEX RAIL™ is ready to fire. If there is no ball and the LED's are RED, you need to hold the trigger for 1 second to force the REFLEX RAIL™ to fire 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

The REFLEX RAIL™ uses two super bright LED's mounted on the circuit board inside the grip frame. These two lights are used to provide information to the user about the REFLEX RAIL™. They will always show the same information and it does not matter which LED you look at. One is mounted behind the PROTO™ logo on the left side of the grip panel. The other one can be seen by looking at the top left side of the grip frame while holding the REFLEX RAIL™ in the position you would while playing a game.

# RAIL™ BOARD

## SETTINGS AND FUNCTIONS

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

- Blue** - Boot sequence
- Red** - Breech is clear, no ball detected inside the REFLEX RAIL™ (eye is on)
- Green** - Ball in breech, ready to fire (eye on)
- Blinking Red** - Eye is turned off
- Blinking Green** - Eye failure, eye is blocked or dirty (see REFLEX RAIL™ Eye, page 26)
- Blinking Blue** - Indicates a low battery; battery should be changed as soon as possible



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

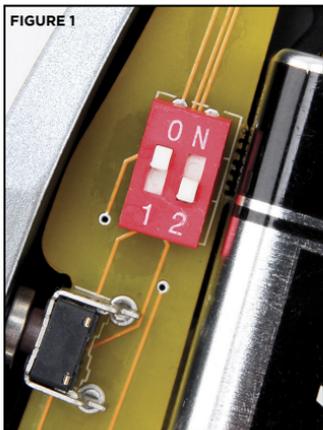


When servicing your marker:

- Make sure a barrel sock is fitted to the REFLEX RAIL™.
- Make sure your hopper is removed from the REFLEX RAIL™.
- Make sure there are no paintballs in the breech of the REFLEX RAIL™.
- Always remove the first stage regulator and relieve all residual gas pressure from the REFLEX RAIL™ before disassembly.
- The REFLEX RAIL™ can hold a small residual charge of gas, typically 2 shots, with the first stage regulator removed. Always discharge the marker in a safe direction to relieve this residual gas pressure.

# REFLEX RAIL™ BOARD

## SETTINGS AND FUNCTIONS



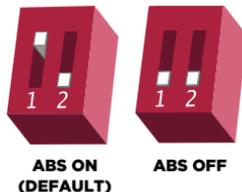
### BOARD SETTINGS AND CONFIGURATION MODE

There are five settings you can alter on the RAIL™ board with the DIP switches inside the grip frame (see figure 1):

- |                            |   |
|----------------------------|---|
| <b>ABS</b>                 | Anti Bolt Stick.  |
| <b>Trigger Sensitivity</b> | This setting adjusts the delay between two trigger pulls. |
| <b>Dwell</b>               | This is the time the solenoid is activated for.           |
| <b>Rate Of Fire</b>        | This setting is for adjusting the maximum rate of fire.   |
| <b>Firing Mode</b>         | This is the firing mode the REFLEX RAIL™ uses.            |

There are two DIP switches mounted on the board of the REFLEX RAIL™ (See figure 1). The first one is used for the ABS setting and the second one is used to access a configuration mode, which changes the other four settings.

**Anti Bolt Stick** - When ABS is activated, the dwell is increased after 15 seconds of non-use for the next shot fired. This helps to prevent bolt-stick, but may result in higher velocity for the first shot.



# REFLEX RAIL™ BOARD

## SETTINGS AND FUNCTIONS

**CONFIGURATION MODE** - The following settings can only be modified in configuration mode. To activate the configuration mode, turn your marker off and set DIP switch 2 to the ON position. Next, turn your marker on. The LED's 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.



**NORMAL  
MODE**



**CONFIGURATION  
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 to cycle through different options.
2. When the LED indicates the color you wish to change, pull and hold the trigger until the LED starts 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 - if you do not wish to alter the value of the setting, you must re-enter the previous setting.
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.
5. To exit configuration mode, set DIP 2 to the off position.

# REFLEX RAIL™ BOARD

## SETTINGS AND FUNCTIONS

### GREEN - Trigger Sensitivity Values 1 - 20 (factory default 3)



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 REFLEX RAIL™ can register more trigger than what was actually pulled. This can cause the REFLEX RAIL™ to auto, even in semi-automatic mode. To fix this, adjust the trigger sensitivity setting higher.

### RED - Dwell



### Values 1 - 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:

- Remove loader and any paintballs from the RAIL™ marker.
- With the dwell set at 10, 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: You cannot turn your marker off with the power button when the marker is in configuration mode. You must first set DIP switch 2 to the OFF position.**

# REFLEX RAIL™ BOARD

## SETTINGS AND FUNCTIONS

### BLUE - Rate Of Fire (ROF) Values 1 - 45



The ROF setting is used to set the maximum rate of fire of the RAIL™. 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 setting is **20 (12.5 bps)**.

<b>1</b>	9.80 BPS	<b>10</b>	10.75 BPS	<b>19</b>	12.34 BPS	<b>28</b>	13.88 BPS	<b>37</b>	15.87 BPS
<b>2</b>	9.90 BPS	<b>11</b>	10.86 BPS	<b>20</b>	<b>12.50 BPS</b>	<b>29</b>	14.08 BPS	<b>38</b>	16.12 BPS
<b>3</b>	10.0 BPS	<b>12</b>	10.98 BPS	<b>21</b>	12.65 BPS	<b>30</b>	14.28 BPS	<b>39</b>	16.39 BPS
<b>4</b>	10.10 BPS	<b>13</b>	11.11 BPS	<b>22</b>	12.82 BPS	<b>31</b>	14.49 BPS	<b>40</b>	16.66 BPS
<b>5</b>	10.20 BPS	<b>14</b>	11.62 BPS	<b>23</b>	12.98 BPS	<b>32</b>	14.70 BPS	<b>41</b>	20.00 BPS
<b>6</b>	10.30 BPS	<b>15</b>	11.76 BPS	<b>24</b>	13.15 BPS	<b>33</b>	14.92 BPS	<b>42</b>	20.22 BPS
<b>7</b>	10.41 BPS	<b>16</b>	11.90 BPS	<b>25</b>	13.33 BPS	<b>34</b>	15.15 BPS	<b>43</b>	25.0 BPS
<b>8</b>	10.52 BPS	<b>17</b>	12.04 BPS	<b>26</b>	13.51 BPS	<b>35</b>	15.38 BPS	<b>44</b>	28.57 BPS
<b>9</b>	10.63 BPS	<b>18</b>	12.19 BPS	<b>27</b>	13.69 BPS	<b>36</b>	15.62 BPS	<b>45</b>	33.33 BPS

Increasing ROF too high will increase probability of ball breakage. If this occurs decrease ROF setting.

### YELLOW - Firing Mode



#### Values 1 - 4 (default 1)

This setting changes the firing mode of the REFLEX RAIL™. Default is semiautomatic. In the semiautomatic mode, one trigger pull shoots out one paintball. The PSP mode and the Millennium modes follow the rules of the paintball tournament series.

- Value 1** - Semi-automatic Mode
- Value 2** - Millennium Mode
- Value 3** - PSP Mode
- Value 4** - Full auto with first shot safety feature

# TRIGGER ADJUSTMENT



## ADJUSTING YOUR TRIGGER

The trigger's forward and over travel, spring tension, and reach are fully adjustable so that you can fine-tune the trigger to your exact liking. You do not need to remove the frame or grip from the gun in order to adjust the trigger pull.

There are two adjustment screws located on the right side of the Ultralite™ frame and one adjustment screw behind the trigger.

## TO ADJUST TRIGGER TRAVEL (SEE FIGURE 1)

Use a  $\frac{5}{64}$ " Allen wrench to make the desired adjustments.

- The screw toward the front of the trigger (**1**) 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 (**2**) 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.**

## TO ADJUST SPRING TENSION (SEE FIGURE 1)

- Use a  $\frac{5}{64}$ " Allen wrench to make the desired adjustment. The adjustment is made by pushing the Allen wrench through a hole in the trigger (**3**).



- 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.

- To make the trigger pull stiffer, turn the Allen wrench clockwise or in.
- To make the trigger pull lighter, turn the Allen wrench counterclockwise or out.

### **TO ADJUST TRIGGER REACH (SEE FIGURE 1)**

To adjust, simply loosen the two 6-32 screws **(4)** using a 1/16" Allen wrench. You do not have to remove the screws from the trigger. Now the front of the trigger (shown in green) should rotate freely while the back of the trigger remains relatively stationary. When the desired reach angle has been achieved, tighten the two 6-32 screws snugly.

## **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, the marker will not fire with every trigger pull. For tournament use, it is recommended to change the battery for each tournament.

### **CHANGING THE BATTERY**

The battery is housed on the right side of the grip frame. To access the battery, remove the three screws holding the right side grip panel down. Use a 3/32" Allen key. When inserting a new battery notice the + and - marks on the board. The positive lead of the 9V battery goes to the left and the negative lead to the right.

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

# REFLEX RAIL™ BOLT

## ASSEMBLY AND MAINTENANCE



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

The REFLEX RAIL™ BOLT should be cleaned and re-lubed after each day of use.

There are 4 parts in the REFLEX RAIL™ BOLT kit that mount together as one unit. To remove the REFLEX RAIL™ BOLT from your REFLEX RAIL™, use a 1/4" Allen key and turn the Back Cap out 2 full turns counter clockwise. Now pull out the complete REFLEX RAIL™ bolt kit from the REFLEX RAIL™.

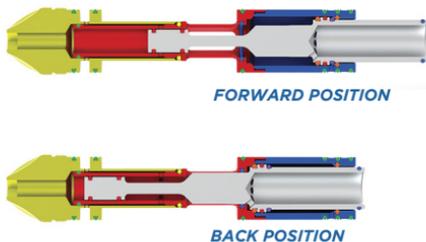
To disassemble the REFLEX RAIL™ bolt kit, you unthread the front most part called the Can and the Manifold from each other. Then pull out the actual moving bolt from inside these pieces.

Notice that to separate the Can and the Bolt you need to remove the bolt tip O-ring before the bolt is able to slide through the Can.

### HOW DOES IT WORK

Air is supplied into two points on the REFLEX RAIL™ BOLT. In the back air is routed through the Back Cap air Manifold and fills up the supply chamber around the Manifold. In 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 REFLEX RAIL™ is fired the solenoid is actuated and the air inside the Can is exhausted out. The force created by the air



# REFLEX RAIL™ BOLT

## ASSEMBLY AND MAINTENANCE



inside the supply chamber causes the bolt to start moving forward. Once the bolt has moved about half way forward, the tail of the bolt closes the input into the supply chamber. Once the Bolt reaches the forward point, the valve of the REFLEX RAIL™ Bolt is opened and air inside the supply chamber goes through the Bolt and fires the paintball.

After this the solenoid is deactivated and gas is supplied 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.



When servicing your marker:

- Make sure your hopper is removed from the marker.
- Make sure there are no paintballs in the breach of the marker.
- Always remove the air supply and relieve all gas pressure in the marker before disassembly.
- When using the marker in temperatures below 50° Fahrenheit it may be necessary to lube the REFLEX RAIL™ bolt more frequently.

# REFLEX RAIL™ BOLT

## ASSEMBLY AND MAINTENANCE

### MAINTENANCE

The basic maintenance for the REFLEX 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 change them if needed, and finally applying a thin coat of DYE Slick Lube on all surfaces. Before installing the REFLEX RAIL™ BOLT back to the REFLEX RAIL™ marker check that the bolt moves freely without a lot of friction and make sure all pieces are threaded together snugly.

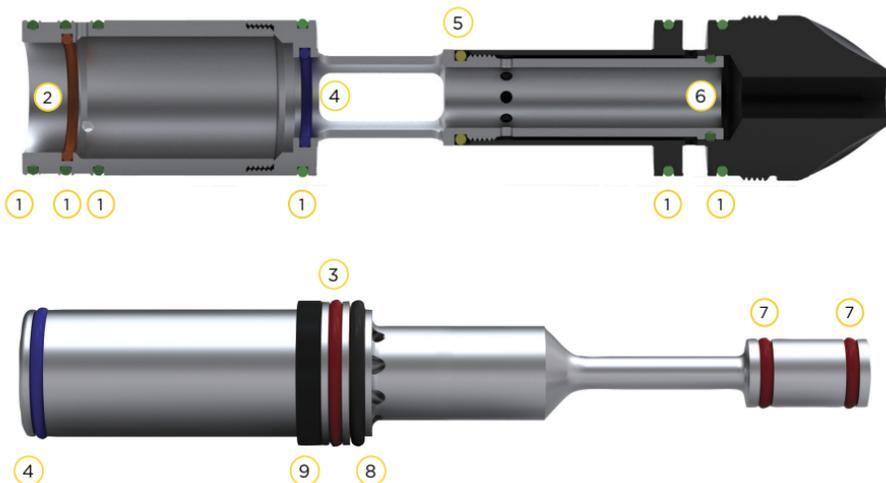
If the REFLEX RAIL™ BOLT is not kept clean and well lubed, you will either start seeing erratic velocity, leaks or over long period of time, physical damage to the REFLEX RAIL™ BOLT components.

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



# REFLEX RAIL™ BOLT

## ASSEMBLY AND MAINTENANCE



### REFLEX RAIL™ BOLT O-RING LIST

1	<b>O20</b>	N 70	6	<b>O12</b>	N 70
2	<b>O17</b>	N 70	7	<b>O09</b>	N 70
3	<b>O15</b>	N 70	8	<b>O13x2mm</b>	N 90
4	<b>O14</b>	N 70	9	Bolt Front Bumper	
5	<b>O13</b>	N 70			

# LOADERS AND FEED NECK

## LOADERS AND FEED NECK

To achieve the maximum performance of the REFLEX RAIL™ you will need to use a motorized loader that force-feeds paintballs into the REFLEX RAIL™ marker, preferably the Rotor™ Loader. Using a slower motorized loader or a non-motorized loader will work, but the rate of fire and performance will be reduced.

## TO FIT A LOADER ONTO THE REFLEX RAIL™:

The Cam Lever Feedneck is adjustable to fit any standard loader. To adjust the cam locking system, lift the cam lever away from the feed collar, and rotate the lever clockwise to tighten or counterclockwise to loosen the grip on the loader. Once the cam lever is facing in the forward direction, press the cam lever down against the feed collar to secure the loader in the feedneck. To loosen the locking system and remove the loader, lift the cam lever away from the feed collar. Take care not to over-tighten the cam locking system. The lever should not be overly difficult to lower into the locked position.



# AIR/NITROGEN

## AIR / NITROGEN TANK OPTIONS AND INSTALLATION

The REFLEX RAIL™ 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 the tank into the airport all the way as far as it will go. 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 REFLEX RAIL™ 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!



# HYPER3™ IN-LINE REGULATOR

## ADJUSTMENTS AND MAINTENANCE



### VELOCITY ADJUSTMENT

The velocity of the RAIL™ is adjusted by adjusting the input pressure into the RAIL™. This is controlled with the Hyper3™ regulator. The Hyper3™ on the RAIL™ is factory set to 150 psi which will give you a velocity of about 285 FPS (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 RAIL™ over a paintball chronograph.
3. To lower the velocity turn the Hyper3™ 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

For the REFLEX RAIL™ to function properly, it is essential that the input pressure into the marker stays consistent at all times. The general maintenance needed for the Hyper3™ regulator is to keep it clean of dirt and debris at all times. A more extensive service should be performed every 12 months by a trained Tech 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 Hyper3™ has a break in period of about 2000 shots before it achieves the best performance.

# HYPER3™ IN-LINE REGULATOR

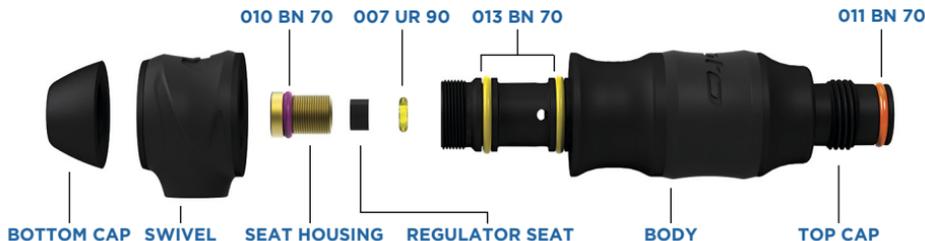
## ADJUSTMENTS AND MAINTENANCE

### HYPER3™ REGULATOR DIS-ASSEMBLY INSTRUCTIONS

To disassemble the Hyper3™ regulator you will need a 3/16" Allen key and a 5/16" Allen key. Place the 3/16" Allen key inside the top cap and the 5/16" Allen key inside the bottom cap. Unscrew the bottom cap from the Hyper3™ body.

Next unscrew the brass seat housing from the body with a 3/16" Allen key. Slide the swivel from the body.

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. Remember to apply lube to the O10 and O13's in the regulator before re-assembly. Further disassembly to service the top section of the Hyper3™ should be performed by a trained Tech.

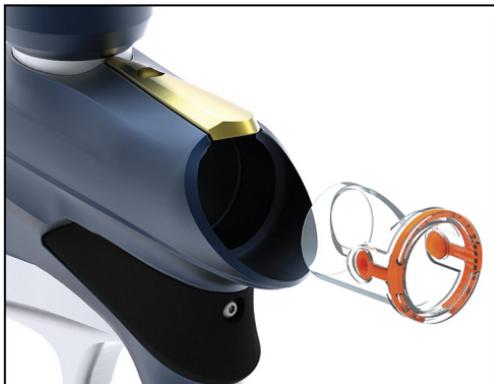


# ANTI CHOP EYES/ BALL DETENTS

## MAINTENANCE AND CHANGING

### ANTI CHOP EYES

The Anti Chop Eye (ACE) system will prevent the RAIL™ 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.**

### SELF CLEANING EYE FEATURE

The RAIL™ is equipped with a self-cleaning eye feature. There is a clear polycarbonate sleeve mounted inside the breech of the gun covering the eyes. When the bolt tip O-ring passes through the Eye Pipe, it sweeps off any dirt, grease or paint that could be blocking the eyes. Normally it is enough to just fire the RAIL™ to clean anything blocking the eyes. If this does not clear the blockage use a swab to clean the inside of the breech.

# ANTI CHOP EYES/ BALL DETENTS

## MAINTENANCE AND CHANGING

For a more thorough cleaning, pull the Eye Pipe with the ball detents out the front of the breech. With the Eye Pipe out use a swab to clean the breech. This should be enough to clean the eye system. If the system needs further cleaning, pull out the eye carrier and eye wires through the feed neck. To prevent damaging the eye wires, it is best to remove the frame and disconnect the eye wires from the board. Use a soft rag and q-tips to clean off any built up paint or grease.

When re-assembling the eye guard system, work backwards from disassembly. The Eye Pipe is keyed into the breech and can only go in one way.

**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 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 detent system is clipped to the outside of the Eye Pipe. The ball detent system needs little or no maintenance. The detents should easily flex out of the way with little force, such as a paintball moving past. If you are experiencing double feeding or chopping, check the condition of your ball detents with your finger to make sure they are not broken, stuck in the up or down position, and that they move in and out of the breech freely. If excessive broken paint or dirt has jammed your ball detents, remove the Eye Pipe/detent system from the front of the RAIL™ and unclip the detents for a thorough cleaning. Reinstall the detents, and Eye Pipe after you have sufficiently cleaned the detents and breech.

Be careful not to over-flex the detents when handling them. Excessive flexing could break or damage the detents.

**NOTE: TAKE CARE WHEN REPLACING THE EYE PIPE. BE CAREFUL THAT THE DETENT CLIP IS FULLY SEATED ONTO THE EYE PIPE.**

# AIRPORT

## ASSEMBLY AND MAINTENANCE



### ON/OFF AIRPORT DISASSEMBLY AND ASSEMBLY

#### REMOVE PIN HOUSING ASSEMBLY

To disassemble the UL™ airport use the airport tool included on the DYE Multi-Tool (available separately).

- Insert the airport tool into the Pin Housing and turn counterclockwise 3-4 revolutions. Note that the airport lever must be in the OFF position for the tool to grab the housing. Remove housing out of the airport body.
- The pin and **005 O-ring** may or may not come out with the housing, if necessary use a pair of needle-nosed pliers to pull the pin out and a dental pick to remove the **005 O-ring**.

#### INSTALL PIN HOUSING ASSEMBLY

- Coat the **005 O-ring** in lube and drop it into the airport body. Use a 1/4" Allen wrench to fully seat the O-ring in place by pushing gently on it.
- Insert the Pin into the Pin Housing from the backside.
- Place the housing onto the airport tool and insert the housing into the airport body.
- Turn clockwise until the Pin Housing fits snugly into the airport body.
- If the airport tool is not available, a pair of needle-nose pliers can be used to unscrew the Pin Housing. Just take care to not scratch or damage the threads or Pin Housing.

**NOTE: For exploded view of airport and parts list see page 28 .**

# TROUBLE SHOOTING GUIDE

## AIR LEAKS

### AIR LEAKING FROM THE AIRPORT

- Check the o-ring on the air system. If needed change the O-ring and try again. The O-ring normally used is an O15/70 but some manufacturers might use a different size. Consult the manual of the air system you are using.
- Replace the #006 O-ring located inside the airport. This can be disassembled using a 3/16" Allen wrench and a 7/16" socket.
- Check that the hose connector is tight. Use a 7/16" allen key to 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 HYPER3™ REGULATOR

- If the leak is coming from the bottom of the regulator you will need to disassemble the regulator and change the #010 O-ring and the seat on the brass seat retainer mounted inside the Hyper3™ 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 is from the top of the regulator

change the #011 O-ring on the outside of the cap.

- If the leak comes from the small hole in the middle of the regulator then consult a trained technician before attempting to disassemble the Hyper3 regulator.

### AIR LEAKING BETWEEN BODY AND FRAME

- Firstly, check that the Hyper3 input pressure has not been adjusted too high or too low.
- The other possibility is that one of the gas passages is leaking. Gas up the REFLEX RAIL™ without the frame attached and try to locate the exact point of leakage. If the 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 REFLEX RAIL™

- Check that the bolt kit is tightened all the way into the REFLEX RAIL™. 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 cap of the bolt. Also change the two #009 O-rings located on the tail of the bolt. Lube well and re-insert the bolt kit into the REFLEX RAIL™. Check bolt kit break down picture on page 19 for O-ring locations.
- Last, check that the gas passage blocking screw located on the right side of the REFLEX RAIL™ is not leaking. If the

# TROUBLE SHOOTING GUIDE

leak is coming from this hole, remove screw and apply thread sealant to it.

Make sure to tighten the screw well and wait for sealant to dry before re-gassing marker.

## **AIR LEAKING FROM FRONT OF THE REFLEX RAIL™**

- 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**

### **REFLEX RAIL™ WON'T TURN ON**

- Make sure battery is new and well charged.
- Check that battery terminals are touching the contacts on the REFLEX RAIL™ Circuit board
- Make sure there is no dirt or debris blocking the button from being pressed.

### **REFLEX RAIL™ WILL TURN ON / OFF BY ITSELF OR THE EYES WILL TURN ON / OFF BY THEMSELVES**

- Both of these problems are caused because the button(s) are being held down, as if they are pressed all the time.
- Remove board from the frame by removing the grip panel on the left hand side, disconnecting the cables and removing the board. Carefully remove the two buttons and clean them well.

- Re-assemble and test. If problems persist, contact authorized service center.

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

- Check that the eye wire is properly connected to the board.
- Change the battery. The eyes are normally the first thing to stop working when a battery is dying.
- Next try to clean the eyes. See page 22 for details on how to remove the Eye Pipe and clean the eyes.  
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 RAIL™, the light should be red after the boot up sequence. If it is, the eyes are working.

### **SOLENOID WILL NOT ACTIVATE / TRIGGER NOT WORKING**

- Check that the trigger is able to press the microswitch. You should hear a small click when pulling the trigger.
- If the REFLEX RAIL™ 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.
- Change the battery if you are not positive about it's charge.
- Check that the solenoid cable is attached to the board and to the right connector.

# TROUBLE SHOOTING GUIDE

## **TRIGGER BOUNCE / REFLEX RAIL™ 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 / REFLEX RAIL™ WON'T FIRE**

### **REFLEX RAIL™ 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 (18).
- Make sure bolt is well lubed and moves well. If there is too much friction in the Bolt, it will cause the REFLEX RAIL™ to shoot down.
- Make sure air system is screwed in all the way and Air Port is locked into on position.

### **FIRST SHOT IS TOO HIGH**

- Change the Seat inside the Hyper3™ regulator. For disassembly instructions consult the technical section.
- 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 well and are consistent in size. The stock

barrel with the REFLEX RAIL™ is .688 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 Hyper3™ regulator is working correctly and that the pressure is consistent. A separate regulator-testing tool is available.

## **OTHER CATEGORIES**

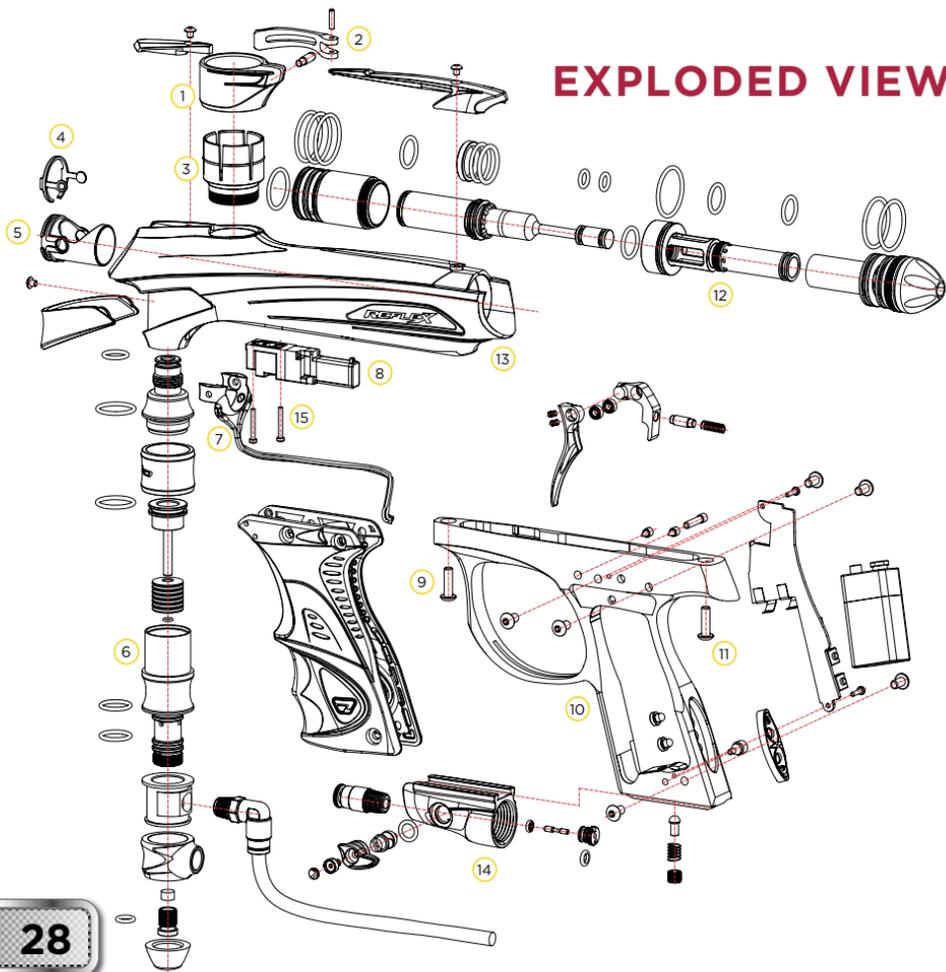
### **DOUBLE FEEDING**

- If you get two balls firing at once change the ball detents on the self-cleaning Eye Pipe.

### **BREAKING PAINT**

- Make sure you use high quality paintballs and that they are stored according to the manufacturers instructions.
- Make sure your loader is working well 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.
- Check the condition of the ball detents.

# EXPLODED VIEW



# RAIL™ WARRANTY INFORMATION

## WARRANTY AND LEGAL INFORMATION

### PARTS LIST

- 1 Clamping Feed Collar
- 2 Feed Neck Lever
- 3 Feed Neck
- 4 Ball Detent
- 5 Eye Pipe
- 6 Hyper3™
- 7 "ACE" Eye
- 8 Solenoid
- 9 Front Frame Screw
- 10 Ultralite Frame
- 11 Rear Frame Screw
- 12 REFLEX RAIL™ Bolt
- 13 REFLEX RAIL™ Body
- 14 Airport
- 15 Solenoid screws

#### 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 covered under warranty. The solenoid and electronic components on the marker are covered under warranty 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 Departments are open Monday through Friday.

DYE Precision, Inc. can be reached at 858-536-5183 ext.277 from 9am to 5pm PST.

DYE Europe can be reached at +44 (0) 20-8649-6330 from 9am to 5pm GMT.

DYE Asia can be reached at 886 (0) 4-2407-9135 from 9am to 5pm GMT +8 hours.

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

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All patterns, drawings, photographs, instructions or manuals remain the intellectual property of the manufacturer.

DYE Precision, Inc. U.S. Patent # 5,613,483. OTHER U.S. AND INT'L PATENTS PENDING. 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.

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