

DM4



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<< SPECS >>

WEIGHT [2.3 LBS]
 WIDTH [1.375"]
 LENGTH [9.75"]
 HEIGHT [8.5"]
 EFFICIENCY [1,200 SHOTS OFF 68CU 4500PSI]
 BATTERY LIFE [40,000 SHOTS]
 OPERATING PRESSURE [175PSI]
 CYCLE PRESSURE [75PSI]
 MAX RATE OF FIRE [20+BPS, LIMITED TO HOPPER FEED RATE]
 BARREL THREAD [COCKER]



DM4™ OWNER'S MANUAL



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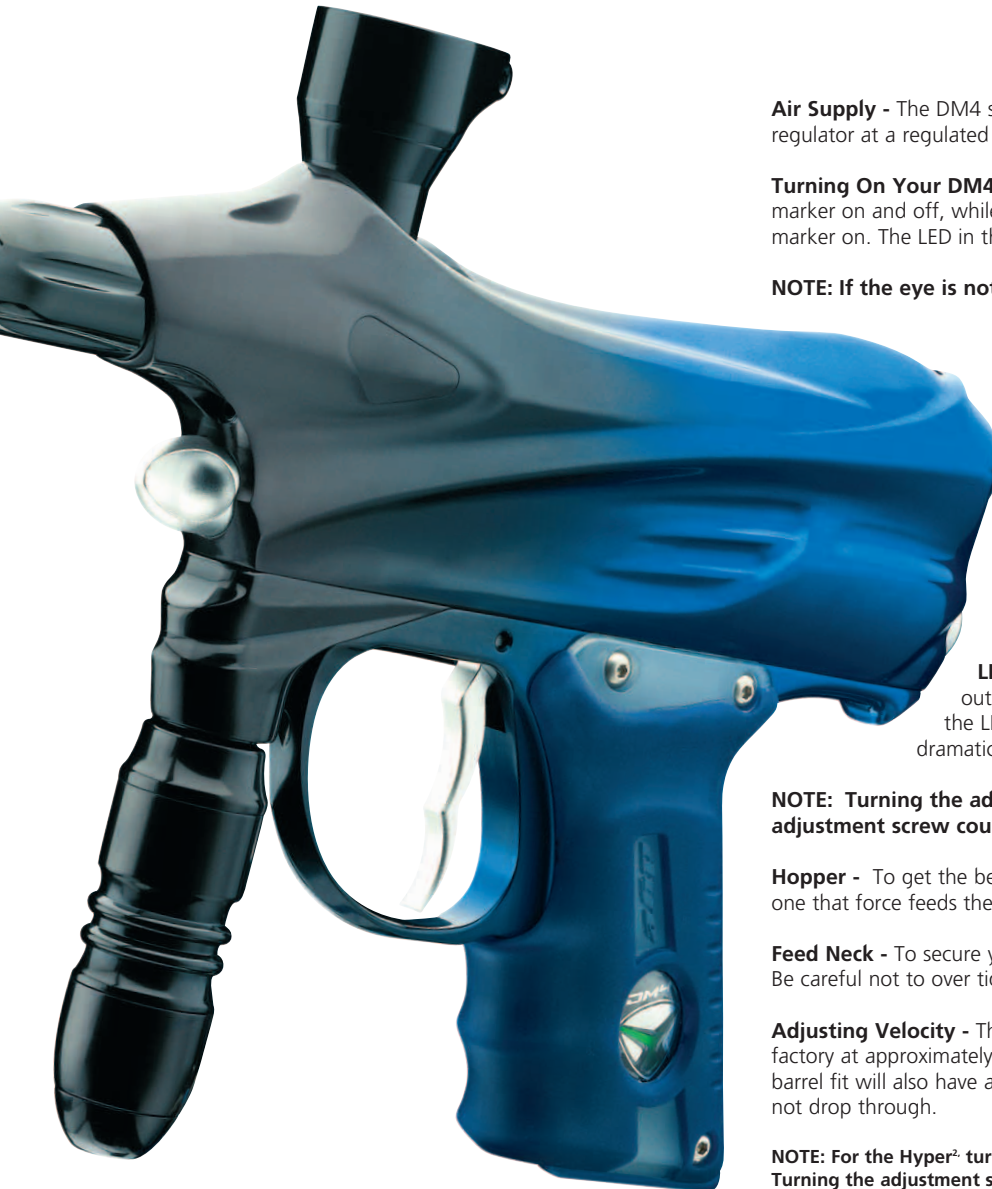
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QUICK REFERENCE - Using your marker.



Air Supply - The DM4 should be operated using air/nitrogen gas only. This air needs to be supplied to the Hyper2 in-line regulator at a regulated pressure of no more than 800 psi. The Hyper2 in-line regulator comes factory preset at 175psi.

Turning On Your DM4 - The DM4's power is controlled by a simple two button membrane pad. The top button turns the marker on and off, while the bottom button turns the eye on and off. Hold the power button for 3 seconds to turn the marker on. The LED in the grip will illuminate during the boot sequence.

NOTE: If the eye is not working properly, try replacing the battery.

Blue	- Boot Sequence
Solid Red	- Breech is clear, no ball (eye on)
Green	- Ball in breech, ready to fire (eye on)
Blinking Red	- Eye is off
Blinking Green	- Eye failure (see DM4 Board, page 13)

On/Off - The On/Off knob is located under the barrel at the front of the DM4. To turn the gas on, turn the knob counter-clockwise. To turn the gas off, turn the knob clockwise. All gas will vent from the DM4 when the knob is turned off. Air may still be present in the LPR and solenoid after the air has been vented from the gun, by the on/off. Be sure all air has been vented by discharging the gun in a safe direction. If servicing the gun removal of the bolt will also allow any trapped air to escape.

LPR - The LPR is pre-set from the factory at approximately 75-80 psi and should need no adjustment out of the box. If fine tuning adjustment is desired or needed you must be sure that you are adjusting the LPR correctly. See page 10 for detailed instructions. If the LPR is improperly adjusted you could dramatically hinder the DM4's performance or prevent the marker from functioning at all.

NOTE: 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.

Hopper - To get the best performance out of your DM4, it is recommended that you use a motorized loader. Preferably one that force feeds the paint really, really fast!

Feed Neck - To secure your loader into the adjustable feed neck use a 5/32 Allen wrench. Be careful not to over tighten the collar as it can cause the neck to beak.

Adjusting Velocity - The velocity is adjusted through the Hyper² in-line regulator. The Hyper² in-line is pre-set from the factory at approximately 170 psi. This pressure setting should have the marker shooting at about 285fps. Your paint-to-barrel fit will also have a noticeable affect on your velocity. Make sure that the paintball fits into the barrel loosely but does not drop through.

NOTE: For the Hyper² turning the adjustment screw clockwise, or in, will lower the output pressure, decreasing the velocity. Turning the adjustment screw counterclockwise, or out, will raise the output pressure, increasing the velocity.

NOTE: If the battery is too low, it may not be able to power the solenoid correctly. This will affect your DM4's velocity, causing it to become inconsistent and/or low.

WARNING

IMPORTANT SAFETY INSTRUCTIONS AND GUIDELINES

- The DM4 marker is not a toy. Misuse may cause serious injury or death.
- Please read, understand and follow the directions in the DM4 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 DM4 marker as if it were loaded and able to fire.
- Only use compressed air or nitrogen gas in the DM4 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 DM4.
- Always chronograph the DM4 marker before playing paintball.
- Never shoot the DM4 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 DM4 when the marker is switched on and able to fire.
- Always fit a barrel blocking device to your DM4 when not in use on the field of play.
- The owner's manual should always accompany the product in the need of reference or the event of resale and new ownership.
- Do not point the DM4 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 DM4 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.

DM4 BOARD - Settings and Functions.



Figure 1

TURNING THE DM4 ON AND OFF

To turn on the DM4 press and hold the power button (see figure 1) until the LED light turns blue. The blue light indicates board bootup. After the bootup sequence, the LED will turn either RED (no ball) or GREEN (ball ready to fire). To turn the DM4 off press and hold the power button until the LED turns off.

NOTE: The DM4 automatically switches off after 10 minutes of non-use.

FIRING THE DM4

As soon as the marker is turned on and the LED turns from blue to either red or green, the DM4 is ready to fire. If there is no ball and the LED is RED, you need to hold the trigger for 1 second to force the DM4 to fire once. If there is paint inside the breech and the LED is green, just press the trigger to fire the marker.

LED LIGHT INDICATOR

There is a super high intensity LED light mounted on the board behind the DM4 logo on the left side of the grip panels. This light provides information to the user by the DM4. There are three colors on the LED light. Red, green and blue.

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

Blue	Bootup sequence.
Red	No ball detected inside the DM4 (eye on)
Green	Ball detected inside the DM4 (eye on)
Blinking Red	Eye function turned off, The DM4 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.



BLUE



RED



GREEN

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

WARNING

- When servicing your marker:**
- Make sure a barrel sock is fitted to the DM4.
 - Make sure your hopper is removed from the DM4.
 - Make sure there are no paintballs in the breech of the DM4.
 - Always remove the first stage regulator and relieve all residual gas pressure from the DM4 before disassembly.
 - The DM4 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.

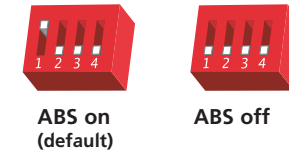
DM4 BOARD - Settings and Functions (continued).

BOARD SETTINGS AND CONFIGURATION MODE

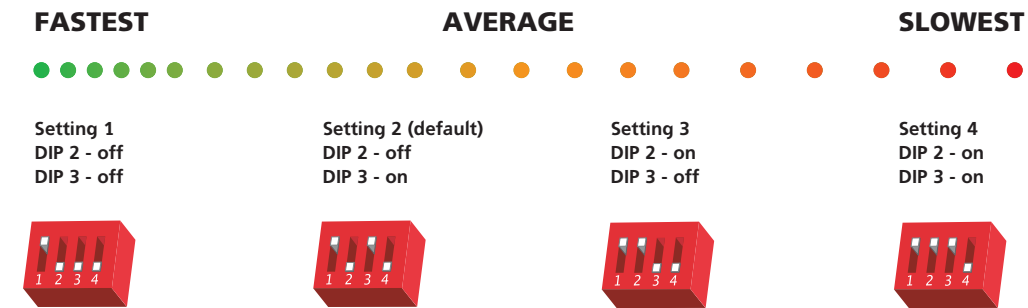
There are five settings you can alter on the DM4 board with the DIP switches inside the grip frame (see figure 1):

ABS	Anti Bolt Stick.
Eye sensitivity	This setting changes how long the eye waits for the ball to set into the breech.
Trigger sensitivity	This setting adjusts the delay between two trigger pulls.
Dwell	This is the time the solenoid is activated for.
ROF	Rate Of Fire when the eye is deactivated.

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.



Eye Sensitivity - The eye sensitivity setting determines the time that is needed to allow the next ball to settle into the breech. Too sensitive an eye setting may result in chopping and too high a setting limits the maximum ROF that can be achieved. Optimal sensitivity setting varies between different paintball brands and the loader used. There are 4 different settings available. These settings can be achieved using DIP switches 2 and 3.



The most sensitive and fastest setting is 1; this should only be used with force feed loaders such as a HALO™. The middle two settings are good for other agitated loaders. Setting 4 is for slower loaders.

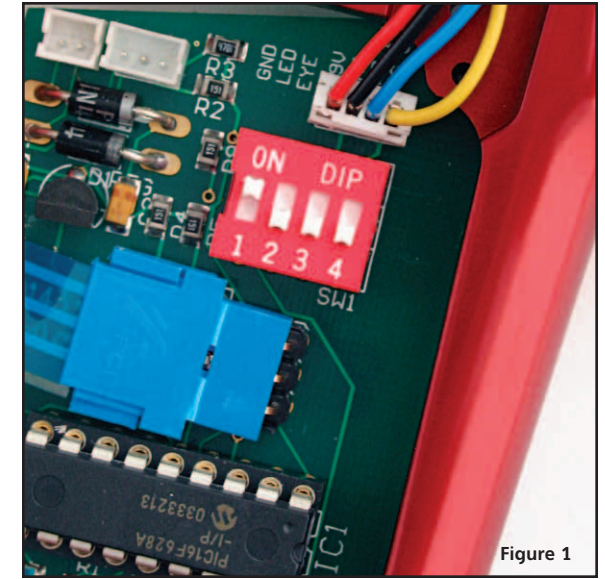


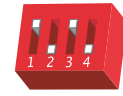
Figure 1

WARNING

- The DM4 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.

DM4 BOARD - Settings and Functions (continued).

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 4 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.



Normal Mode



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 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 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:

- Remove loader and any paintballs from the DM4 marker.
- With the dwell set at 12, 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.

Blue - Rate Of Fire (ROF)

[When Anti Chop Eye (ACE) is deactivated]

Values 5 - 24 (factory default 24bps)

The ROF is unlimited by software when the eye is on. The only limiting factor is the loader feeding rate and the marker pneumatic cycle rate which is by 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 chopping a ball.

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. After that, you can set the new value with the trigger. For example, if you want to change the trigger sensitivity to 7 units:
- 2 Cycle through menus by pulling and releasing the trigger until the LED lights GREEN (trigger sensitivity).
- 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. The LED will cycle through all colors to indicate that the new value is saved. All other configurations are changed the same way. Just as in part 2 above, change the mode to RED for "dwell" or BLUE for "ROF when ACE is deactivated" to change the desired configurations.
- 5 To exit configuration mode, set DIP 4 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 DIP switch 4 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.

DM4 BOARD - Settings and Functions (continued).

CHECKING CONFIGURATIONS

You can check your DIP switch configuration by pulling and holding the trigger when you turn the marker on. Hold the trigger until the LED starts flashing. Red indicates the eye sensitivity setting and yellow the anti bolt stick (ABS) setting (1 flash off and 2 flash on). For example, if your eye sensitivity is 3 and ABS is ON then the LED will flash red three times and yellow two times.

BATTERY

There is no low battery warning on the DM4. The 9V battery will last for about 40,000 shots, but there are big differences between different kinds/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 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 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 between the battery and the frame.

NOTE: IF THE MARKER WILL NOT FUNCTION WITH THE EYE ON, THERE IS A GOOD CHANCE THE BATTERY NEEDS TO BE CHANGED.



Figure 1

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 DM4's velocity, causing it to become inconsistent and/or low.

FUSE™ BOLT - Assembly and Maintenance.

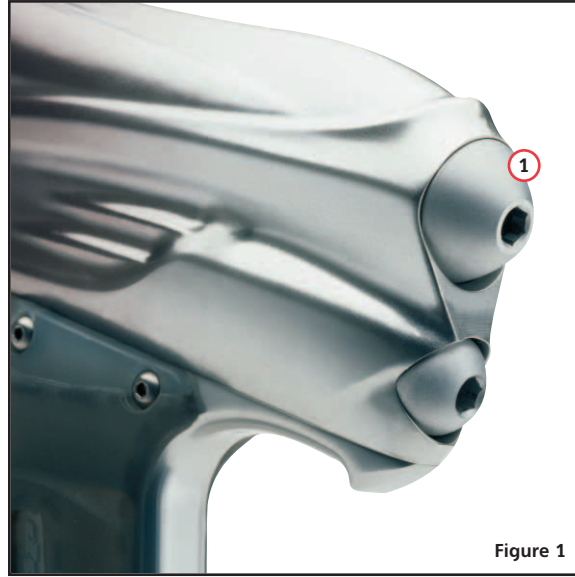


Figure 1

FUSE BOLT OPERATION

To achieve top performance from your DM4, it is important to understand the basic operation of the DM4's patented FUSE bolt system.

This design consists of three sleeves threaded together to capture the only moving part of the system, the bolt.

The FUSE Bolt has four components

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

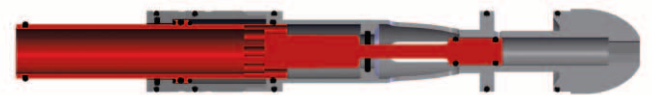
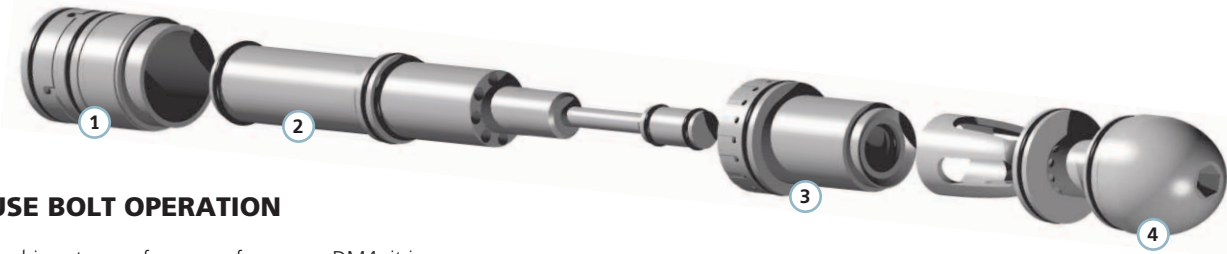
Air is supplied to the bolt at two points. A high-pressure supply of air is routed to the back of the bolt into the supply chamber. This air source is responsible for propelling the ball. Low-pressure air is supplied from the LPR to the solenoid. From the solenoid, the air is routed through two small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

When the DM4 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 micro switch 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 against 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.



FORWARD POSITION



BACK POSITION

WARNING

When servicing your marker:

- Make sure your hopper is removed from the DM4.
- Make sure there are no paintballs in the breech of the DM4.
- Always remove the air supply and relieve all gas pressure in the DM4 before disassembly.
- When using the DM4 in temperatures below 50°, it may be necessary to lube the FUSE bolt more frequently.

FUSE™ BOLT - Assembly and Maintenance (continued).

BOLT MAINTENANCE

Regular DM4 bolt kit maintenance is vital to the performance of the DM4. If the bolt kit is not kept well-greased and the o-rings in good shape, the performance of the DM4 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 BOLT KIT EVERY 10-15 THOUSAND SHOTS.

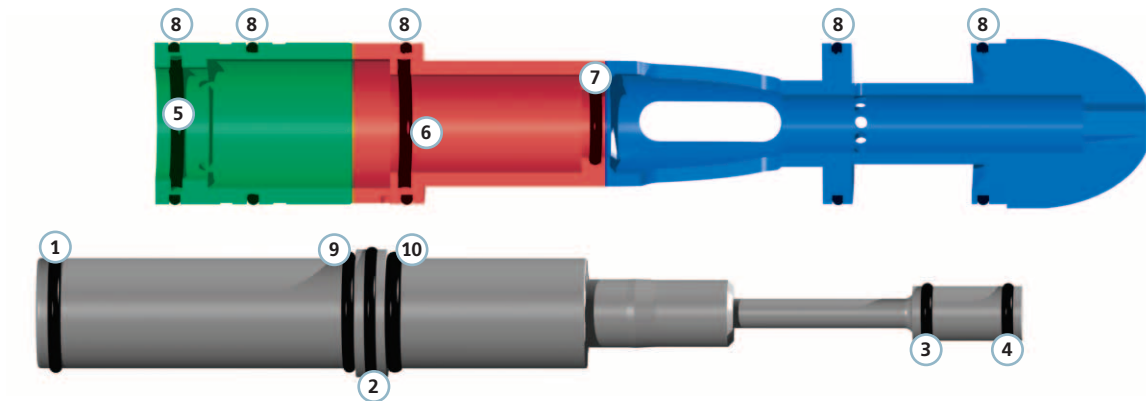
BEFORE INSTALLING THE BOLT INTO THE MARKER, BE SURE ALL BOLT SLEEVE COMPONENTS ARE SCREWED TOGETHER SNUGLY

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 DM4 bolt kit, 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.



LPR (LOW PRESSURE REGULATOR) - Adjustments and Maintenance.

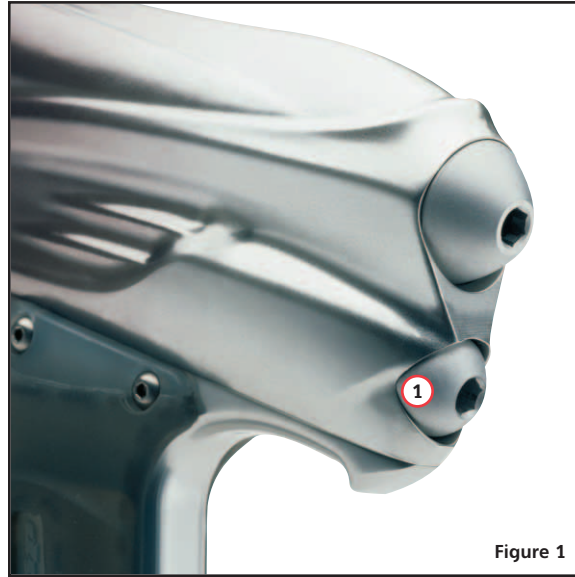
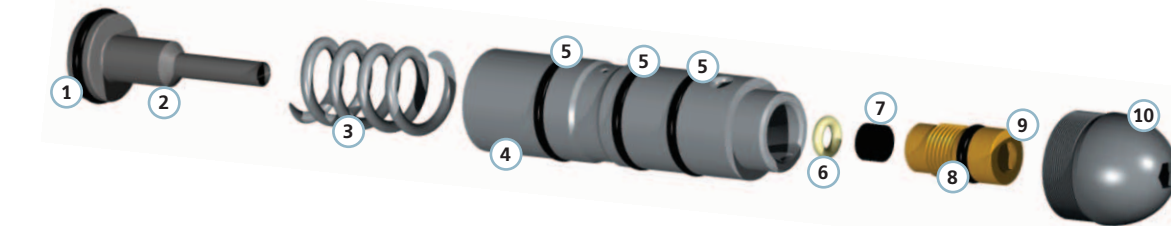


Figure 1

WARNING

When servicing your marker:

- Make sure your hopper is removed from the DM4.
- Make sure there are no paintballs in the breech of the DM4.
- Always remove the air supply and relieve all gas pressure in the DM4 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 back of the DM4 [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 DM4 to its minimum cycle pressure. This will reduce the amount of force of the bolt hitting the ball (reducing ball breaks) 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 three months or 20,000 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) | 10 LPR back cover |

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.

CHANGING THE SEAL RETAINER.

- 1 Screw out LPR back cover behind the marker using a 1/4" allen.
- 2 Screw out LPR seal assembly (brass) using a 3/16" allen.
- 3 Screw in new LPR seal assembly.
- 4 Screw LPR back cover in place securely.

If the user needs to replace the whole LPR assembly, follow these instructions:

- 1 Take frame off the marker.
- 2 Screw out LPR set screw using a 5/64" allen.
- 3 Screw out LPR cap using a 1/4" allen.
- 4 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.
- 5 Put everything back in reverse order. Be sure to grease the #5 o-rings, as to not cut them upon installation.
- 6 Tighten LPR back cover securely.

The 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.**

ON/OFF VALVE - Maintenance and Changing O-rings.



ON/OFF: USAGE AND CHANGING O-RINGS.

The On / Off knob is located under the barrel in the front of the DM4 [see figure 1]. Using the on / off is simple. To turn the gas off, turn the knob so that it is facing sideways. If you had gas inside the marker it will bleed out. To turn the gas on, turn the knob so that it faces vertically.

The ON/OFF has three o-rings

- | | |
|------------|-------|
| 1 009 UR90 | 2 012 |
|------------|-------|

In case of a leak from the on/off, it is easy to service:

- 1 Take the frame of the marker.
- 2 Unscrew set screw holding on/off in place (screw just in front of the front frame screw).
- 3 Pull out on/off, change damaged o-ring(s).
- 4 Lube with grease.
- 5 Push back in.
- 6 Screw in set screw.
- 7 Put frame back on.
- 8 Gas up and test.

MAINTENANCE

The on/off needs very little maintenance. To help prevent o-ring failure and leaks, grease the on/off every four 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 on/off and prevent it from moving smoothly and or cut the o-rings.

NOTE: Air may still be present in the LPR and solenoid after the air has been vented from the gun, by the on/off. Be sure all air has been vented by discharging the gun in a safe direction. If servicing the gun removal of the bolt will also allow any trapped air to escape.

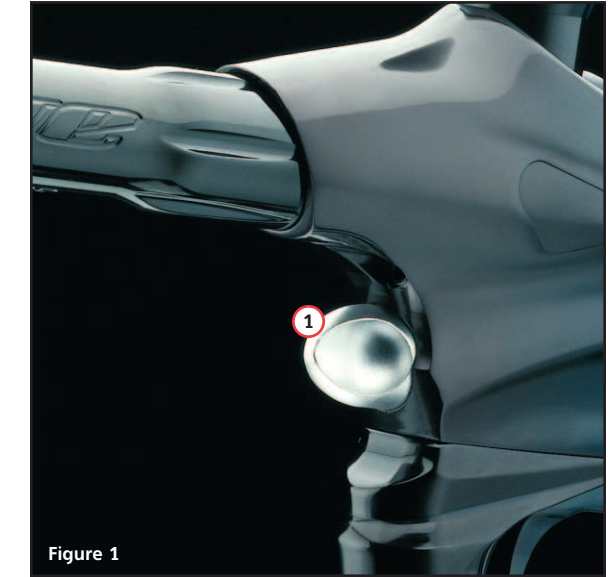


Figure 1

WARNING

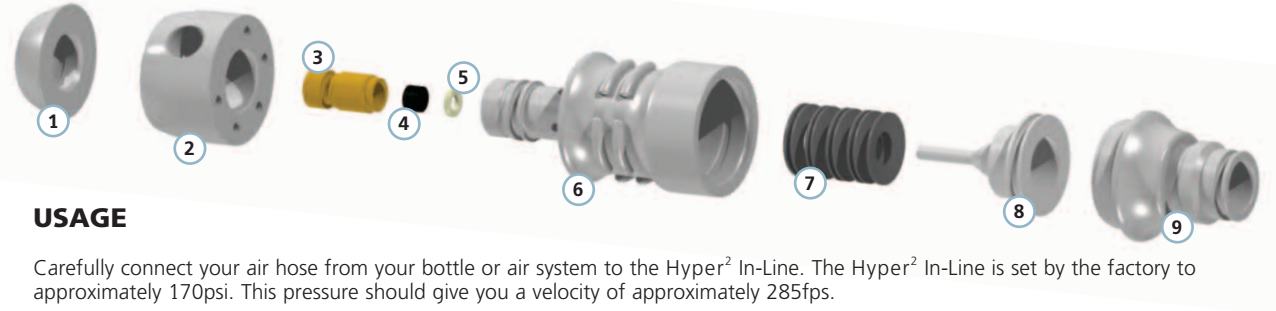
When servicing your marker:

- Make sure your hopper is removed from the DM4.
- Make sure there are no paintballs in the breech of the DM4.
- Always remove the first stage regulator and relieve all residual gas pressure from the DM4 before disassembly.
- The DM4 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.

HYPER² IN-LINE REGULATOR - Adjustments and Maintenance.



Figure 1



USAGE

Carefully connect your air hose from your bottle or air system to the Hyper² In-Line. The Hyper² In-Line is set by the factory to approximately 170psi. This pressure should give you a velocity of approximately 285fps.

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 counter-clockwise, you will increase the output pressure of the reg to the marker. By turning the housing clockwise, 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 your 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.

The Hyper² has nine components

- | | |
|-----------------|------------|
| 1 Retaining cap | 6 Reg body |
| 2 Swivel | 7 Shims |
| 3 Seat housing | 8 Piston |
| 4 Seat | 9 Reg cap |
| 5 Piston o-ring | |

Shim Stack

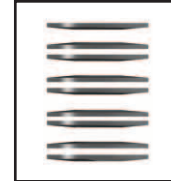


Figure 2

Disassembly of the Hyper² In-Line is easily done with 3/8" and 5/16" Allen wrenches.

MAINTENANCE

To ensure top performance from the Hyper² maintenance should be performed every four 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.

- 1 Make sure the inlet and outlet ports and connecting fittings are free of all dirt and paint.
- 2 Examine all o-rings for nicks or cuts.
- 3 Carefully inspect the seat for excessive wear that might cause spiking and over-pressurizing.
- 4 Clean any accumulated dirt out of the air chambers and passages.
- 5 Keep the piston o-rings and spring pack generously greased to allow smooth velocity adjustment and prevent erratic velocity spikes and drop off.
- 6 Clean off all old grease that may be contaminated with dirt; reapply fresh grease to the piston and other necessary areas.
- 7 Be sure to reassemble the internal components and shim stack (see figure 2) in the proper order and direction.
- 8 See diagram for assistance.

WARNING

- The Hyper² can hold a small residual charge of gas, typically 2 shots. Always discharge the marker in a safe direction to relieve this residual gas pressure.
- Always remove the regulator from the DM4 before servicing.
- Improper stacking of shims will cause failure of the regulator and possible damage to the DM4.
- Excessive dirt and debris can affect the Hyper²'s performance and increase the need for servicing.

ANTI CHOP EYE/BALL DETENTS - Maintenance and Changing.

ANTI CHOP EYES

The Anti Chop Eye (ACE) system will prevent the DM4 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.

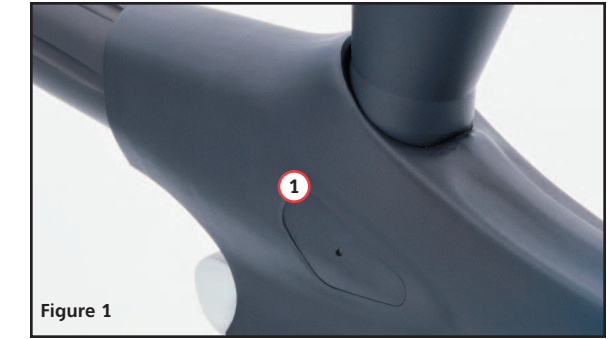
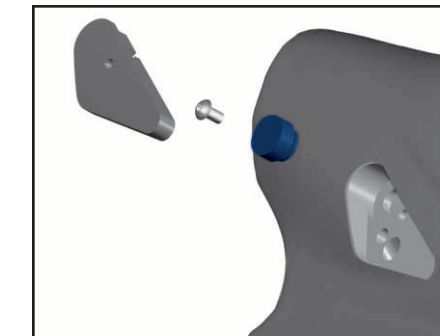
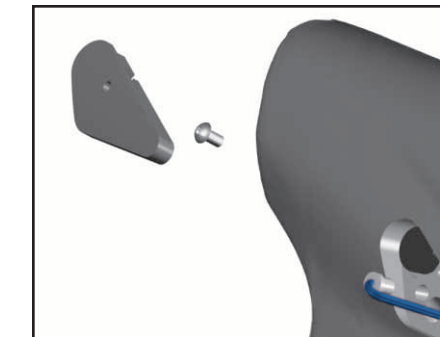


Figure 1



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 covers to gain full access to the eyes.

To remove the eye covers you will need a 1/16" Allen wrench [.050" Allen for the first runoff DM4's]. Simply insert the Allen wrench into the hole in the eye cover to access the retaining screw [see figure 1]. As you back the screw out, the plate will be pushed up.

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 of 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 gun a few times.

CHANGING BALL DETENTS

The ball detents are also located under the eye covers. 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 COVERS. OVER-TIGHTENING THE RETAINING SCREW COULD RESULT IN STRIPPING THE THREADS.

Trigger Adjustment

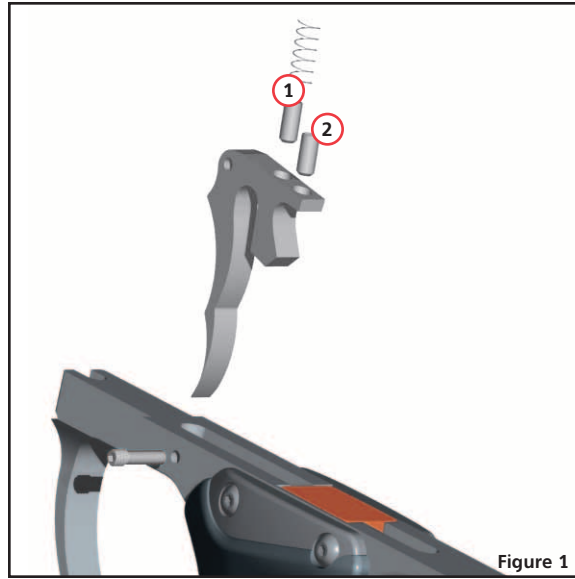


Figure 1

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 pre-mature wear on the micro switch, resulting in failure.
- Be sure you do not pinch the wires between the frame and body when reattaching the frame to the body.

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 DM4.
- As you pull the frame away from the body, take care as to not 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 to 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.

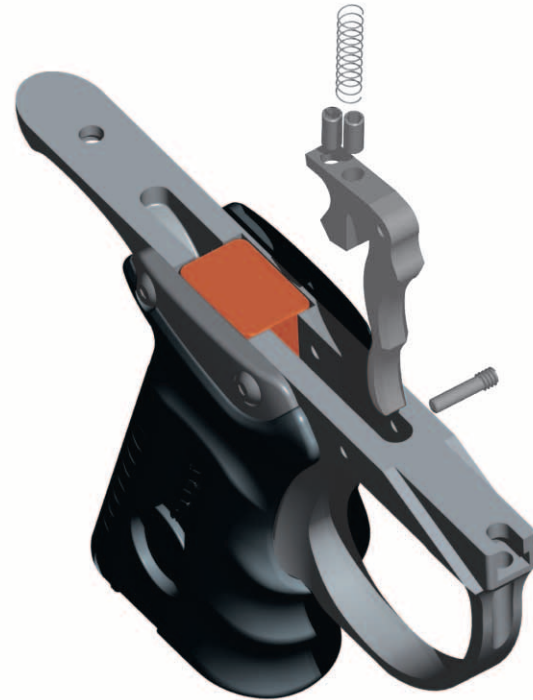
- The screw to the rear of the trigger controls the over travel. By turning this screw you can adjust how far the trigger will travel after it reaches the firing point.

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 micro switch to fail much sooner than when a spring 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 micro switch 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.

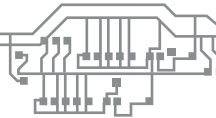


DM4 EXPLODED VIEW



PARTS LIST

- 1 Adjustable Feed Neck
- 2 On/Off Knob
- 3 Ball Detent
- 4 Eye Cover
- 5 ASA (o-ring 014)
- 6 ASA Screw
- 7 Hyper²
- 8 "ACE" Eye
- 9 On/Off Set Screw
- 10 Solenoid
- 11 Front Frame Screw
- 12 45 Frame
- 13 Rear Frame Screw
- 14 LPR Retaining Screw
- 15 LPR
- 16 LPR Cap
- 17 Fuse Bolt
- 18 DM4 Body
- 19 Eye Cover Screw



Trouble Shooting Guide

DM4 TROUBLE SHOOTING

AIR IS LEAKING BETWEEN THE FRAME AND THE BODY

- First remove the frame and try to pinpoint the source of the leak:
- If it comes from the small hole under the LPR, you need to remove your LPR. The cause of the leak is either one of the #13 o-rings on the outside of the LPR or the #6 o-ring found inside the LPR. **See page 10.**
- If it seems to come from somewhere around the solenoid, the first thing to do is to turn the on/off knob to off position. If the leak continues, the cause is a bad o-ring on the on/off. If it stops there are three likely causes:
 1. #15 on the bolt seal
 2. #20 on the cylinder (the one on the middle of the cylinder)
 3. Seat under the solenoid

THERE IS A LEAK FROM THE BACK OF THE LPR PLUG

- Remove the LPR and change the back-most #15 o-ring on the LPR body. If that does not help, change the seal retainer inside the LPR body. Refer to page 10 of the manual for disassembly instructions.

INCONSISTENT VELOCITY OVER THE CHRONO

- There are multiple causes for this problem. Below is a checklist of causes of velocity fluctuations:
 1. Inline regulator not giving consistent pressure: refer to the Hyper² manual for service, or if using an after-market regulator, refer to its manufacturer.
 2. Low battery: change the battery.
 3. Bad seals in the bolt: take out the bolt, clean it, lube it with Dye Slick Lube™. Replace any o-rings that seem damaged, swollen or in bad shape otherwise.
 4. LPR pressure set incorrectly or LPR pressure fluctuating: if pressure is too low, the bolt will not cycle correctly. Try turning the LPR pressure a bit higher. If the pressure seems inconsistent, you can have an authorized Matrix center check the LPR pressure. List of tech centers can be found at www.dyematrix.com
 5. Dwell set too low: if you set the dwell too low, the dump chamber will not empty completely and will cause erratic velocities. Refer to board settings page for information on setting the dwell.

HYPER² TROUBLE SHOOTING

NO OR POOR AIR FLOW

- Check for blocked air passage in hose line or regulator. Adjustment screw may be screwed in too far.
- Seat may have excessively deep piston groove cut into it. Replace if needed.

ERRATIC VELOCITY OR SHOOT DOWN

- Piston or spring stack may be binding due to excessive dirt or lack of lubricant.
- Seat may be dirty or damaged. Clean and grease reg. Inspect and replace damaged parts as needed.

OUTPUT PRESSURE CREEPS UP

- Dirty seat or damaged piston face.
- Clean and inspect; if either is damaged, replace.

AIR LEAKS FROM SIDE VENT HOLE

- Piston o-rings may be damaged. Inspect o-rings.
- Replace if any visible nicks or cuts are found.

AIR LEAKS OUT BOTTOM OF ADJUSTMENT SCREW

- This is a safety bleed-off to help prevent over-pressurizing. De-gas the Hyper²; be sure all air is vented out of the reg. Supply air back to the regulator. The leak should stop. If the leak persists replace the reg seat. Make sure there are no nicks or scratches on the raised ring at the bottom of the seat-retaining cavity.

LEAK BETWEEN THE BODY AND THE REAR CAP

- Replace the #20 o-ring on the bolt rear cap

MARKER WILL NOT FIRE

- If the LED light is red, the marker will not fire because there is no ball inside the marker. Hold the trigger for 1 second and the marker should fire. If it does not fire after holding the trigger, or if the LED light is green and it will not fire, check your trigger settings to make sure the micro switch is actuating. Refer to trigger adjustment page for information on setting the trigger. Last cause can be a broken solenoid wire: check that the solenoid wire is properly connected to the board.
- Check to make sure the on/off is in the on position.

MARKER SHOOTING SLOW WHEN EYE IS ON AND BLINKING GREEN

- The eyes are not working correctly. Try cleaning the eyes. You know that they are clean when the LED turns red when there is nothing inside the breech of the DM4.

THE EYE IS CLEAN AND ALL THE WIRES ARE CONNECTED BUT IT IS STILL NOT WORKING. IF THE EYE IS TURNED OFF THE DM4 WILL WORK.

- Change the battery. The voltage in the battery is too low for the eye to function correctly.

AIR LEAKING THROUGH THE BARREL

- There are three possible o-rings that cause this leak. If the leak comes through the inside of the bolt, the o-ring that is leaking is the #13 on the top hat part of the bolt. If it's leaking from the outside of the bolt shaft, the bad o-ring is either the #17 on the inside of the bolt cylinder or the #20 on the outside of the bolt can.

THERE IS A LEAK FROM THE BACK HOLE OF THE BOLT

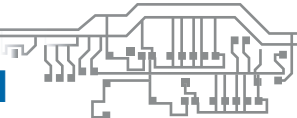
- Take out the bolt, unscrew the back part of the bolt and change the #9 o-ring on the back of the bolt shaft.

INCLUDED WITH YOUR DM4

- DM4™ Marker
- Allen tool set including 5/64", 3/32", 1/8", 5/32", 3/16", and 1/4"
- 1 oz. Dye Slick Lube™
- Parts Kit
- Barrel Sock
- Owner's Manual

ADDITIONAL RECOMMENDED TOOLS

- 1/16" Allen wrench
- 3/8" Allen wrench
- 5/16" Allen wrench
- Canned Air



DM4 WARRANTY 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 is available through our web site, dyematrix.com.

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