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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.

For a complete list of patents please visit: www.dyeprecision.com/patents

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DYE ASSAULT MATRIX



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DAM™ OWNER'S MANUAL

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Included with your DYE ASSAULT MATRIX™

- DYE ASSAULT Matrix Marker
- 2 pc DYE Ultralite Barrel
- DYE Tactical Magazine
- Allen Wrench 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™
- ARK - Assault Repair Kit
- Barrel Sock
- Owner's Manual
- Warranty Card
- 9V Battery

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

For a complete service the following tools are required:

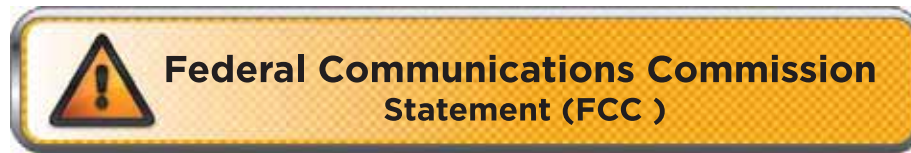
- 5/16" Allen key
- #0 Phillips head screw driver
- A sharp pick to remove O-rings
- DYE Multi-Tool (sold separately)
- Retainer Clip Pliers



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Federal Communications Commission (FCC) Statement

15.21

You are cautioned that changes or modifications not expressly approved by the part responsible for compliance could void the user's authority to operate the equipment.

15.105(b)

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

- 1) this device may not cause harmful interference, and
- 2) this device must accept any interference received, including interference that may cause undesired operation of the device.



- The DAM™ marker is not a toy. Misuse may cause serious injury or death. Never point the DAM™ at anyone unaware of its function.
- Please read, understand and follow the directions in the DAM™ 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. Persons under 18 must have adult supervision.
- Always treat the DAM™ marker as if it were loaded and able to fire.
- Only use compressed air or nitrogen gas in the DAM™ marker. DO NOT USE CO₂
- 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 DAM™.
- Always chronograph the DAM™ marker before playing paintball.



- Never shoot the DAM™ 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 DAM™ when the marker is switched on and able to fire.
- Compressed gas is dangerous. Do not allow compressed gas to contact your skin or try to stop a leak by covering it with your hand.
- Always fit a barrel-blocking device to your DAM™ 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 DAM™ 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 DAM™ 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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QUICK REFERENCE

USING YOUR MARKER

QUICK START UP GUIDE

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

STEP 1. BATTERY INSTALLATION

A. Free either side of the tool-less grip by placing a finger in the groove located at the rear of the grip frame and pull away from the marker.

B. Open grip panel and install 9V battery on to the connector inside the frame. Note that the battery can only be connected one way.

WARNING: While closing the frame observe that no wires are caught between the frame and the grip panel. Improper assembly may cause permanent damage.

C. Close grip panel by first fully seating the left or right side of the grip. Then place the bottom edge into position **(1)** and tilt the top-front **(2)** into the frame. Then press the top-rear **(3)** until you hear a click.



STEP 2. BARREL INSTALLATION

A. Screw the barrel on to the front of the DAM™. Make sure it threads all the way in and that the barrel is secure.

B. Attach the barrel sock so that it covers the tip of the barrel and secure the strap around the back of the DAM™.



QUICK REFERENCE

USING YOUR MARKER

STEP 3A. LOADER INSTALLATION

A. Install the DAM™ Feedneck by removing the button head screws **(4)** located on the right side of the gun on the Feedneck Cover Plate with a 1/16 Allen Wrench. Remove the cover plate and place the Feedneck Adaptor over the opening while ensuring the posts insert into the holes located at the top of the DAM™. Reinsert screws and screw until snug.

Do NOT over Tighten. A low-strength thread adhesive such as Loctite may be required to keep the screws in place.



B. With loader adaptor installed and the On-the-Fly Switch **(5)** in the rear position, use the lever arm to tighten your loader into the adjustable feedneck on the DAM™. For best performance use a force-feeding motorized loader, preferably the DYE Rotor™ Loader. Loader should now be held in with a snug fit. Also See Page 28 “Loaders and Feedneck”

STEP 3B. MAGAZINE INSTALLATION

A. With either the Feedneck Adaptor or the Feedneck Cover Plate installed, insert a magazine into the Receiver Well **(6)** located at the bottom-front of the marker. Press firmly until you hear a click. To release the magazine use the Release button **(7)**, located in front of the trigger guard. Also see Page 22 “Magazine Operation”

QUICK REFERENCE

USING YOUR MARKER

STEP 4. ATTACHING GAS SOURCE

A. Make sure that the knob on the left side of the ON/OFF Airport is in the OFF position by turning the knob clockwise or up. Now screw in your air system to the ON/OFF airport and turn the gas supply on by turning the knob of the airport counter clockwise all the way to the locked position. Also see Page 32 "Airport" and the following page "Air/Nitrogen"



WARNING: AFTER STEP 5, THE DAM™ WILL BE LIVE. BEFORE PROCEEDING, MAKE SURE THE BARREL SOCK IS IN PLACE AND DO NOT POINT THE DAM™ AT ANYTHING YOU DON'T INTEND TO SHOOT.

STEP 5. TURNING ON THE DAM™ AND CHECKING THE VELOCITY

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

B. Press and hold the Power button, located on the control panel found on the left side of the marker body, until the DAM™ turns on. Also see Page 8 DAM™ Board

C. Fill up the loader with .68 caliber paintballs. (For Magazine loading see Page 22 "Magazine Operation")

D. Shoot the DAM™ over a chronograph to check the velocity. If adjustment is needed, adjust the velocity by turning the Hyper™ In-Line Regulator velocity screw:

(i) Place a 3/16" Allen key through the rear bolt cap of the DAM™. Inwards (clockwise) will reduce the velocity and outwards (counter clockwise) will increase the velocity.

(ii) After each adjustment it will take a few shots before the change in velocity can be seen on the chronograph. Never adjust the DAM™ to shoot above 300fps or the maximum velocity permitted by field rules / local laws, whichever is lowest.

Also see Page 20 "Velocity Adjustment"

AIR/NITROGEN

AIR / NITROGEN TANK OPTIONS AND INSTALLATION

The DAM™ will only work with Compressed air or Nitrogen air (HPA) systems such as the DYE Throttle® air system. Do not use CO₂ or any other compressed gas. The output pressure from the air system has to be between 400 – 850psi. Also see Page 32 “Airport”

TO INSTALL AN AIR SYSTEM

- A. Make sure that the knob on the left of the ON/OFF airport is in the OFF position by turning the knob clockwise or up.
- B. Screw the tank into the airport until snug.
- C. Turn the gas supply on by turning the knob of the airport counter clockwise all the way to the locked position.

TO REMOVE AN AIR SYSTEM

- A. Turn the gas supply off by turning the knob of the airport clockwise until you hear gas escaping. This will de-gas the airport and make the air system easy to remove.
- B. Unscrew the air system counter-clockwise.

WARNING: EVEN WITH THE AIR SYSTEM REMOVED THERE CAN BE GAS INSIDE THE DAM™ AND IT CAN STILL FIRE A PAINTBALL. ALWAYS TREAT THE MARKER AS LIVE AND NEVER POINT IT AT ANYTHING YOU DO NOT WANT TO SHOOT!



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DAM™ BOARD

SETTINGS AND FUNCTIONS

DAM™ CONTROL PANEL

Located on the left side of the DAM™ and above the grip, the DAM™ Control Panel controls the Power **(1)**, Fire Selection **(2)**, Electric Eye Function **(3)** and Circuit Board Programing **(3)+(1)**.

TURNING THE DAM™ ON AND OFF

To turn on the DAM™, press and hold the Power Button **(1)** until the LED's turn blue. The **BLUE** light indicates board boot up. After the boot up sequence, the rear LED **(3)** will turn either **RED** (no ball) or **GREEN** (ball in breach, ready to fire). To turn the DAM™ off, press and hold the Power Button **(1)** until all LED's turn off.



NOTE: The DAM™ automatically switches off after 10 minutes of inactivity.

FIRING THE DAM™

As soon as the marker is turned on and the rear LED turns from **BLUE** to either **RED** or **GREEN**, the DAM™ is ready to fire. If there is no ball and the rear LED is **RED**, you need to hold the trigger for 1 second to force the DAM™ to fire once. If there is a paintball inside the breech and the rear LED is **GREEN**, just press the trigger to fire the marker.

FIRE SELECTION

The DAM™ comes with a Fire Selector Button **(2)**. The first time the DAM™ is powered up from the factory, it will be in Semi-Automatic mode. Press the Fire Selector and the DAM™ will be in 3-Round Bust mode. Press it again and the DAM™ will be in Fully Automatic mode. Press it a third time to return to Semi-Auto mode. Notice that as the modes are cycled the three **BLUE** indicator lights change. These indicate the number of the mode. 1 is always Semi-Auto while modes 2 and 3 are programmable. Also see Page 13 DAM™ Board Settings and Functions



DAM™ BOARD SETTINGS AND FUNCTIONS

LED LIGHT INDICATOR

The DAM™ uses several super bright LED's mounted on the circuit board inside the grip frame. These lights are used to provide information to the user about the DAM™. The LED's are located on the left side of the DAM™ above the grip frame while holding it in a firing position.



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

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 DAM™ (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 DAM™ Eye, page 29) |
| Blinking Blue | - Indicates a low battery; change the battery as soon as possible. |

To turn off the eye feature press and hold the front 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 DAM™.
- Make sure your loader/magazine is removed from the DAM™.
- Make sure there are no paintballs in the breech of the DAM™.
- Always remove the first stage regulator and relieve all residual gas pressure from the DAM™ before disassembly.
- The DAM™ 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.

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DAM™ BOARD SETTINGS AND FUNCTIONS

BOARD SETTINGS AND CONFIGURATION MODE

There are five settings to alter on the DAM™ board including two DIP switches inside the gun body

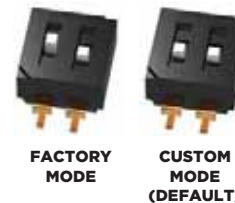
Trigger Sensitivity	Adjusts the delay between two trigger pulls.
Dwell	This is the time the solenoid is activated for.
Rate Of Fire	Adjusts the maximum rate of fire.
Firing Modes	Configures the different firing modes on the DAM™.
Factory Reset	Puts the DAM™ in its original configuration.
Configuration Lock	Disables the Configuration Mode

DIP SWITCHES - There are two DIP switches mounted on the board of the DAM™. These switches can be accessed by removing the left side of the Tool-less Grip and exposing a hole at the top of the grip frame and on the underside of the body. Use a 3/32 Allen wrench to activate the DIP switch. When the switch is towards the Front of the gun (Forward) is OFF (Default position) and when it is towards the Back of the gun (Backward) is ON. The first one returns the DAM to Factory settings and the second blocks access to the configuration mode.



FACTORY RESET SETTING - When the #1 DIP (Left) switch is ON (Backward), the DAM™ circuit board is temporarily reset to the factory specified settings. Use this mode to trouble shoot the DAM™. When the #1 DIP switch is OFF (Forward), the circuit board will return to the user defined previous settings.

NOTE: When in the Factory Reset Setting the Board is still programmable and all changes WILL be saved. However these changes will not take effect until the #1 DIP Switch is turned OFF (Forward)



DAM™ 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. Next, hold down the Eye Button **(3)** and turn your marker on. The LED's cycle through all colors for one second to indicate that you have entered the configuration mode.

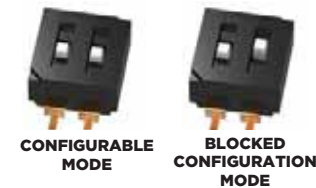
To cycle through different settings, pull and release the trigger.
Configuration mode has 6 settings that can be changed.
To exit configuration mode, hold down the Power button.



TO CHANGE A VALUE OF A SETTING

- A. While in the configuration mode, choose the color you wish to change by pulling the trigger to cycle through different options.
- B. When the LED indicates the color you wish to change, pull and hold the trigger until the LED starts to flash.
- C. The LED will flash as many times equal to the previous setting. Then it will turn off. Now pull the trigger a number of times equal to the desired setting – if you do not wish to alter the value of the setting, you must re-enter the previous value.
- D. The LED will cycle through all the colors again to indicate the setting was saved and finally turn back to **GREEN**. You can now change another setting or exit the configuration mode.
- E. To exit configuration mode, set DIP 2 to the off position.

CONFIGURATION LOCK - Some locations may require the DAM™ to be limited in its function. To block access to the configuration mode turn the #2 DIP (Right) switch ON (Backward). The configuration mode will no longer activate. To access configuration mode, turn the 2 DIP switch OFF (Forward) and activate normally.



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



RED - Dwell Values 1 - 30 (factory default 20)

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 DAM™ 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.



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

The ROF setting is used to set the maximum rate of fire of the DAM™. 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)**.

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



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

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DAM™ BOARD SETTINGS AND FUNCTIONS



PURPLE - Firing Mode 1 Values 1 - 4 (default 1)

This setting changes the second firing mode of the DAM™. Default 3 Round Burst. In the 3 Round Burst mode, one trigger pull shoots out three paintballs. The PSP mode and the Millennium modes follow the rules of each respective paintball tournament series.

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



YELLOW- Firing Mode 2 Values 1 - 4 (default 2)

This setting changes the third firing mode of the DAM™ Fire Selector button. Default fully-automatic. In full-auto mode, holding the trigger down will fire a constant stream of paintballs at the selected rate of fire. The PSP mode and the Millennium modes follow the rules of each respective paintball tournament series.

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



WHITE - FIRE SELECTOR LOCKOUT Values 1 - 2 (default 1)

This setting will lock the DAM™ to the fire mode last selected with the Fire Selector button. For example, if the gun needs to be used in a PSP tournament follow this procedure. Program the "Yellow - Firing Mode 1" to Value 3 "PSP Mode," exit configuration mode, select the second firing position (two lights) with the Fire Selector button to put the gun into PSP Mode. Then reenter configuration mode and set the White - Fire Selector Lockout to Value 2. Upon exiting configuration mode the DAM™ will be locked into PSP Mode. To fully lock the DAM™ for tournament play the 2 DIP switch should be turned on to initiate the Configuration Lock. To return the gun to normal Fire Selector Operation, simply switch back to Free Mode.

- Value 1** - Free Mode
- Value 2** - Locked Mode

TRIGGER ADJUSTMENT



ADJUSTING YOUR TRIGGER

The Trigger's Forward and Over-Travel 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 to adjust the trigger pull.

There are 2 adjustment screws located on the left side of the Ultralite™ Frame.

To adjust trigger travel

- A. Use a $\frac{5}{64}$ " Allen wrench to make the desired adjustments.
- B. The screw toward the front of the trigger **(1)** controls the forward travel. Screwing it in will shorten the trigger's pull length.

NOTE: if the screw is adjusted too far IN, the switch will be held at all times and the marker will not fire.

C. 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 IN, the trigger will not be allowed to travel far enough to depress the switch and fire the marker. However if it is adjusted too far OUT, the circuit board can be damaged.



- 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 ADJUST TRIGGER SPRING TENSION

Remove the sticky grip from the grip frame following the instructions on Page 4. This will expose the brass Spring Adjustment Knob **(3)**. Screw the knob in the clockwise direction to reduce spring tension. Unscrew the knob counter-clockwise to increase spring tension.

NOTE: Do not unscrew too far or the bolt will come loose. Make sure there is always at least 4-5 threads left for a secure hold.

If you find that the spring tension is inconsistent, add a small drop of thread adhesive to the tip of the brass threads and let dry before re-installing. This will create light resistance when turning the knob and ensure it holds after many activations of the trigger.

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 do not plan 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 get too low, the marker will not fire with every trigger pull or worse. For tournament use, it is recommended to change the battery for each tournament.



CHANGING THE BATTERY

The battery is housed inside the grip frame. To access the battery, free either side of the tool-less grip by placing a finger in the groove located at the rear of the grip frame and pull away from the marker. When inserting a new battery, notice the shape of the connectors. The battery can only be installed one way.

NOTE: If the marker will not function with the eyes on, a battery change is recommended.