PROTEGE

561

OPERATIONS MANUAL

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WARNING!

This paintball marker is not a toy. Misuse or mishandling can result in serious injury or death. Every person within range of a loaded paintball gun must wear eye protection specifically designed for paintball. Recommended at least 18 years of age to purchase, 14 years old to use with adult supervision or 10 years old to use on paintball fields meeting ASTM standards F1777-97. Ensure you read entire instruction manual before operating your Protege .

SAFETY / CAUTION

Please follow all local, state, and federal laws concerning the operation and use of paintball markers. By purchasing this paintball marker you assume all liability.

B.L.A.S.T. assumes no liability for injury or death due to misuse or mishandling of this marker.

- Never point a paintball marker at anyone not wearing paintball approved goggles. Even at the lowest possible operating velocity, a paint ball will cause serious injury should it hit someone in the eye area.
- Never look down the barrel of your marker with or without wearing paintball approved goggles.
- Before performing any maintenance on the marker, ensure air source is disconnected and marker has been dry fired.
- Leave the ON/OFF switch in the OFF position whenever marker is not operational.
- Always insert barrel plug in barrel when marker is not operational. Re move only in designated operational areas.
- Only play at commercial playing fields that have a chronograph, ref erees, and clearly marked safe areas. Chronograph your marker before each game to ensure marker is operating at a safe velocity. Safe veloc ity is considered to be 280 feet per second (fps).

WARRANTY

Marker Warranty

Bob Long Technologies warrantees our markers against manufacturing defects. Electrical components are warranted for a period of 90 days. All solenoids and wire harnesses are tested for function prior to leaving our factory. Solenoids and wire harnesses will only be warranted at the discretion of Bob Long Technologies. Only use factory authorized lubricants when maintaining your marker. The use of non-authorized lubricants or maintenance solutions will void your warranty. The use of Teflon tape as a sealant for any marker component may internally damage electro-pneumatics. The use of Teflon tape will void your warranty. When installing aftermarket Drop-Forwards, ensure attachment fasteners DO NOT protrude into internal grip assembly. When installing aftermarket grips, ensure attachment fasteners DO NOT protrude into internal grip assembly. Any attachment fasteners protruding into the grip assembly will void your warranty.

For questions concerning your Protege or this manual please call (925) 625-7929.

INTRODUCTION:

The time-tested Intimidator platform has a new brother—the Protege. Beginning in 2000 with the release of the Classic Intimidator, Bob Long set the bar high with the first marker to feature breakbeam anti-chop eyes, dual regulation, an integrated drop forward, two piece barrel, and gradient anodizing in several patterns in one marker—in one affordable package.

Although this marker was relatively under the radar of the paintball community, Bob Long Technologies set the paintball world on fire in 2001 with the release of the Ground Zero Intimidator—the smallest, fastest, and most consistent marker to hit the scene. Featuring a 45 frame, the new Torpedo™ regulator, and faster electronics—and a smaller, sportier feel.

In 2002, Bob Long expanded upon the Intimidator line with the release of more models, extensive milling and upgraded electronics; featuring the world's most aggressive marker programming at the time. Three years later, Bob Long rocked the tournament on its heels again with the Alias Intimidator—bringing Intimidator speed and reliability to a smaller scale.

Finally, in the Intimdator's last stand before the release of the Protege, the Generation Five brought efficiency and speed to a whole new level. And new for 2008, the Protege aims to surpass all expectations, and set the bar notches higher—in a true Bob Long fashion.

The Protege marker represents the newest addition to the stable of cutting edge Bob Long products. Featuring the absolute newest and greatest features a marker can offer, the Protege serves as the latest issue of the acclaimed Intimidator series. The Protege incorporates the winning features of the timeless Intimidator with the demands of the modern player. The Protege is smaller, faster, stronger and lighter than any of its predecessors—and more affordable. Utilizing the patented 4C Quad optoelectronic system, the Protege combines the blazing electronic speed of the Marq series with the utterly efficient stacked-tube poppet design of the Intimidator.

4C ENHANCING EYE SYSTEM

4C System Enhancing Eyes Theory and Functionality

For years, high performance paintball markers have minimized paintball breakage by using a break-beam infrared sensor system commonly known as "eyes". These eye systems are traditionally positioned at the bottom of a markers breech. Single sensor eye systems will only allow a marker to fire when a paintball has finally rested on the bottom of the breech, therefore breaking the infrared beam and communicating "fire" to the markers micro-controller. A broad spectrum of controlled testing has proven this current eye system to be the predominant limiting factor when seeking out maximum rate of fire potential. Our engineering staff at Bob Long Technologies has successfully implemented an advanced system of optoelectronics which can increase a markers cycle rate almost 40%. The multi-sensor 4C System Enhancing Eyes define the absolute cutting edge in electronic marker technology.

There are two instances of wasted time in a markers firing sequence (cycle time). One instance occurs during the time taken for a micro-controller to energize the coil of a solenoid. The second instance occurs during the time taken for a markers bolt to respond to the recently transferred air pressure. This combined time can be 20mS or greater. A marker cycling at 20 balls per second has a cycle time of 50mS, so 20mS would account for 40% of the total cycle time. Using multiple sensors around the breech provides the information needed to accelerate the cycle time. A sensor near the top of the breech indicates whether or not another paintball is ready to be loaded. A sensor near the bottom of the breech indicates whether or not a paintball is properly staged and ready to be propelled. These sensors working in tandem provide us with valuable time measurements and other consistency data. Because we now know how long it takes paintballs to move down through the breech into the final staged position, we energize the solenoid coil early so when a paintball reaches the final staged position the bolt has begun its forward movement. This timing adjustment, made possible by 4C System Enhancing Eyes, eliminates all wasted time in a markers firing sequence.

4C "Play by Play"

Here is a more detailed description of how the 4C System Enhancing Eyes work. The time it takes for a markers bolt to move back past sensors toward final open position, allowing a paintball to fall, will be recorded. The time it takes for the next paintball to pass by the top sensor while falling will be recorded. The time difference between these measurements will be calculated by the markers micro-controller and a paintballs falling velocity will be obtained. This falling velocity will indicate if the hopper being used is force-fed or gravity-fed. Use of a force-fed hopper will result in the much higher falling velocity of paintballs. Force-feeding also provides the best

estimates of time required for a paintball to fall into its final staged position. Because vital measurements have been obtained by the 4C System Enhancing Eyes a solenoids coil can now be pre-energized, factoring for mechanical delay. Use of a gravity-fed hopper will result in a slow inconsistent falling velocity. If a gravity-fed hopper is detected the pre-energizing sequence is ruled out by the micro-controller and only the bottom sensor will be used in processing when the firing sequence should begin. Assume it takes 15mS to get a markers bolt moving forward (calculating 20mS for a ball to fall past upper sensor into final staged position at lower sensor). In this instance the solenoid can be activated 5mS after the upper sensor is triggered. 15mS later the paintball will reach its final staged position at the same time the bolt has begun its forward movement. This cycle timing adjustment, made possible by 4C System Enhancing Eyes, eliminates all wasted time in a markers firing sequence.

4C is a registered trademark of Extreme Paintball Design, LLC patent pending

Air Supply: Much like any other tournament marker, the Protege requires the use of compressed air or nitrogen only. The Protege is compatible with both high-pressure and low-pressure compressed air systems. If using an adjustable-output air system, set the system's output between 400 and 500 psi. Screwing your preset air system into the ASA at the bottom of the grip will pressurize the marker, preparing it for use.

Turning on your Protege:
To power up your Protege, press the On\Off button on the rear of the marker. The LED (light-emitting diode) should light up and indicate the status of that marker. By default, the marker is ready to fire when loaded with paint and air when powered on. To turn the Protege off, press and hold the button until the LED lights orange, then red. Release the button and the marker will be powered off.

Adjusting Velocity:
Although both of the regulators on the Protege come preset from the factory, always adjust the regulators to account for paint to bore match, atmospheric differences, and your field's maximum chronograph limit. The velocity of your marker is controlled through the vertical regulator, which is adjusted with a 1\8" Allen wrench. Turning the screw clockwise (or inward) will increase your velocity; turning the screw counterclockwise will decrease your velocity.

MARKER ELECTRONICS

Congratulations! Your marker comes with one of the most technologically advanced circuit boards ever made for any paintball marker. The following instructions and diagrams will teach you how to unleash the potential of the Frenzy 3.0 to let you squeeze every drop of performance out of your Protege.

BASIC OPERATIONS

To power on marker:

Press power button once and release.

To turn eyes off:

Pull and hold trigger while powering on marker. LED will flash white then release.

To power off marker:

Press power button and hold. LED will flash orange then red and board will power itself off.

ONBOARD LED INDICATOR

NOTE: THE FOLLOWING LEDs ARE FLASHING DURING NORMAL OPERATION!

|	
Eyes on. No paintball staged in Chamber.	Eyes off / Simulate
Low Battery. Change battery immediately to avoid failure.	Eye Malfunction. Clean eyes to resume normal operation.
2C Eye ONLY - Bottom eye tripped. Paintball properly staged in chamber.	4C Eye ONLY - Top eye tripped. Also use this to test top eye.
4C Eye ONLY - Bottom eye tripped. Paintball properly staged in chamber.	

Dipswitch Cheatsheet

We understand that sometimes the dipswitch settings on your board might get a bit confusing. Have no fear! Below are some dipswitch diagrams showing you the most common settings so that you can get back on the field as soon as possible.
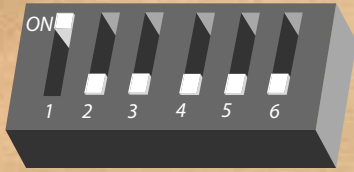
NPPL - SEMI UNCAPPED
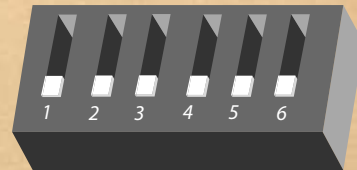
PSP - 3 SHOT
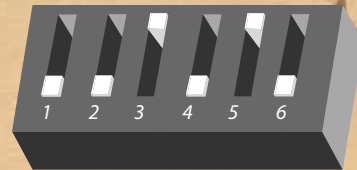
PSP - RAMPING

DIPSWITCH INDICATORS

Dipswitches control the specific electronic settings of the marker. In the illustraton to the left, Dipswitch 1 would be ON, and dipswitches 2-6 would be OFF.

Setting	1	2	3	4	5	6
ON	Final Tune Cycle Delay ON	Debounce Setup Mode ON	ROF Cap ON (15 BPS)	Firing Mode (See Below)	Firing Mode (See Below)	Dwell Setup Mode ON
OFF	Fine Tune Cycle Delay OFF	Debounce Setup Mode OFF	ROF Cap OFF (Uncapped)	Firing Mode (See Below)	Firing Mode (See Below)	Dwell Setup Mode OFF

DIPSWITCH OPERATION

Debounce Setup Mode:

To check your Debounce setting:
• Flip dipswitch #2 to ON
• Power up the marker
• The LED will flash the current Debounce setting, and the marker will power itself off. (IE: 1 flash = 1ms of Debounce)
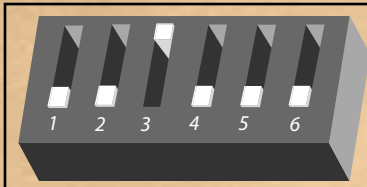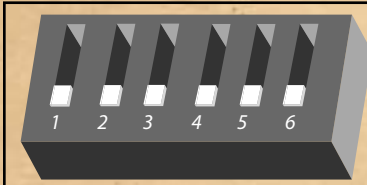

To change your Debounce setting:
• Flip dipswitch #2 to ON
• Power up the marker.
• Pull, and hold down the trigger while powering the marker on.
• The LED will now become white; release the trigger. After releasing the trigger, the LED will turn off, and flash the current Debounce setting, and then turn green indicating that it is ready for your response.
• Pull the trigger the number of times you wish to set the Debounce to (IE: 6 pulls = 6 ms of Debounce), and wait.
• The board will respond by flashing the setting you just entered, confirming your setting.
• Return dipswitch #2 back to the OFF position, and reboot your marker.

ROF Cap

The ROF (Rate of Fire) cap on the Frenzy 3.0 is simple and intuitive. Controlled through dipswitch 3, follow the instructions below to program your BPS (Balls Per Second) Cap Setting:

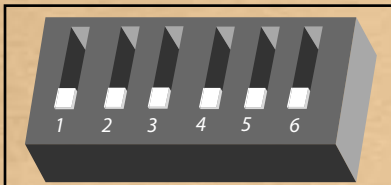|	
	ROF Programming Mode ON

	ROF Programming Mode OFF

• Flip dipswitch #3 to ON
• Power up the marker.
• Pull, and hold down the trigger while powering the marker on.
• The LED will now become white; release the trigger. After releasing the trigger, the LED will turn off, and flash the current BPS Cap setting, and then turn green—indicating that it is ready for input.
• Pull the trigger the number of times you wish to set the BPS Cap to (IE: 13 pulls =13 BPS Cap), and wait.
• The board will respond by flashing the setting you just entered, confirming your setting.
• Return dipswitch #3 back to the OFF position, and reboot your marker.

Firing Mode Setup:

Firing Modes are controlled through dipswitches 4 and 5. To configure them, simply manipulate the switches to the setting you desire.

Semi- Auto

3 Shot Burst

Ramping

Full Auto

All assisted firing modes (Full Auto, Ramping, 3 Shot) activate after the 3rd trigger pull.

Dwell Setup Mode:

To check your Dwell setting:
• Flip dipswitch #6 to ON
• Power up the marker
• The LED will flash the current Dwell setting, and the marker will power itself off. (IE: 1 flash = 1ms of Dwell)
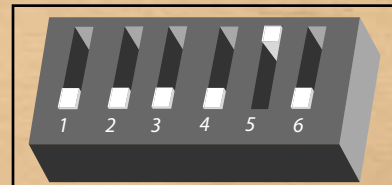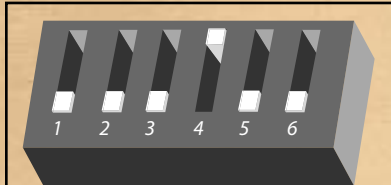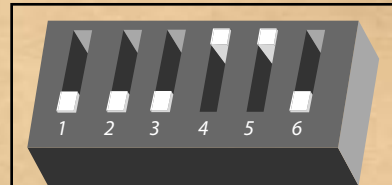
To change your Dwell setting:
• Flip dipswitch #6 to ON
• Power up the marker.
• Pull, and hold down the trigger while powering the marker on.
• The LED will now become white; release the trigger. After releasing the trigger, the LED will turn off, and flash the current Debounce setting, and then turn green—indicating that it is ready for input.
• Pull the trigger the number of times you wish to set the Debounce to (IE: 6 pulls = 6 ms of dwell), and wait.
• The board will respond by flashing the setting you just entered, confirming your setting.
• Return dipswitch #2 back to the OFF position, and reboot your marker.

NOTE: DO NOT ARBITRARILY CHANGE THE DWELL SETTING OF YOUR MARKER! DOING SO CAN CAUSE ERRATIC VELOCITY READINGS AND MARKER MALFUNCTION!

European Mode

To comply with European firearm regulations, the Frenzy 3.0 board can be configured to remove the Full Auto and 3-Shot modes. To enable the European Mode:

• Turn off the marker
• Turn dipswitches 4 and 5 ON (turning the marker to full auto)
• Hold down the trigger and power on the marker (continue to hold down the trigger even after the marker has booted); the LED will flash white once
• After the LED has flashed white, press the power button again and it will change color
• Release the trigger, and the LED will change color again
• Pull the trigger 10 times; the marker will now power down after 3 seconds
• Turn dipswitch 3 to the ON position
• The board is now capped at 15 balls per second, and locked with European settings

Australian Mode (Semi-Automatic Mode Only)

• Power off board.
• Set dip switches 4 and 5 to the (On) position.
• Pull and hold trigger while powering on board.
• When LED flashes white press power button once, then LED will turn aqua.
• Release trigger and LED will turn green awaiting your response.
• Pull trigger 13 times then wait until board powers itself off.
• Set dip switches 4 and 5 back to the (Off) position.
• When you power on your board it will be locked in Australian Mode.
• Use dip switch 3 to cap your BPS output in compliance with tournament regulations.

MAINTENANCE

Mileage	Recommended Upkeep
5,000 Shots (2.5 Cases)	• Clean and regrease rammer • Inspect o-rings for damage • Clean debris and old grease from ram interior
10,000 Shots (5 Cases)	• Repeat above steps • Clean, inspect, and regrease HPR Piston and o-rings • Clean, inspect, and regrease LPR Piston and o-rings
20,000 Shots (10 Cases)	• Repeat above steps • Clean, inspect, and regrease poppet shaft o-ring

Rammer Maintenance

• De-gas the marker and insure that there are
  no paintballs in the breech or barrel of the marker.
• Remove the ram cap from the rear of the marker.
• Remove the bolt from the marker by pulling upward on the bolt pin.
• Remove the ram by tilting the marker up ward, allowing the ram to gently slide out of the ram sleeve.
• Remove the ram from the Protege, and clean any excess grease and debris from the ram with a clean cloth.
• Inspect the surface of the ram and orings for excessive wear or nicks, and replace as necessary.
• Inspect the interior of the ram sleeve—if necessary, use a swab on the interior of the ram sleeve to clean debris and old grease.
• Regrease the ram with Dow 55, and gently replace the ram back into the sleeve.
• Reinstall your Protege ram cap, and check the marker for leaks by airing it up.
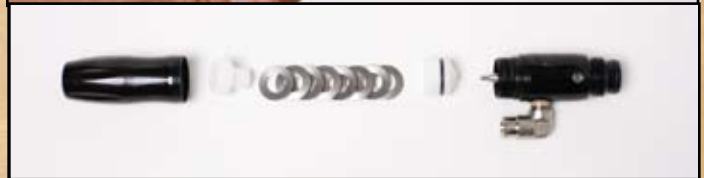
360 ˚ Inline Regulator:

Your Protege comes equipped with one of the best high pressure regulators on the market. To ensure the best consistency and the highest flow possible, it is recommended that you clean and relubricate the HPR according to the maintenance schedule.

HPR Maintenance:

• Degas the marker and ensure that there are no paintballs in the breech or barrel of the marker.
• Remove your macroline hose from the 90˚ fitting on your regulator
• Unscrew your regulator from the Protege vertical adaptor, and set your marker down.
• Grasp the two halves of the regulator, and unscrew the regulator base in a counter clockwise fashion.
• Tap the regulator base on a hard, flat surface to allow the regulator piston, spring stack, spring follower to slide out of the regulator base.
• Inspect the surface of the piston and oring for excessive wear or nicks, and replace as necessary.
• Inspect the interior walls of the regula tor base—if necessary, use a swab on the interior of the regulator base to clean de bris and old grease.
• Regrease the piston with Dow 55, and gently replace the piston, spring stack, and spring follower back into the regulator base.

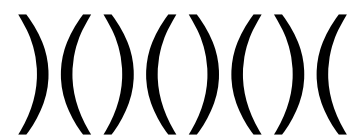Proper Washer Stack Layout:

)()()(

Protege Low Pressure Regulator:

Your Protege comes equipped with one of the best low pressure regulators on the market. To ensure the best consistency and the highest flow possible, it is recommended that you clean and relubricate the low according to the maintenance schedule.

LPR Maintenance:
- Degas your marker and ensure that there are no paintballs in the breech or barrel of the marker.
- Remove your macroline hose from the 90˚ fitting on your regulator
- Unscrew your regulator from the Protege vertical adaptor, and set the vertical regulator down.
- Grasp the low pressure regulator to ensure that it does not eject from the marker upon removal of its retaining screw.
- Remove the LPR retaining screw from inside the Protege vertical adaptor, and allow the LPR assembly to slide out of the marker.
- Remove the brass LPR adjustment screw from the LPR assembly by unscrewing it in the counterclockwise direction.
- Remove the LPR cap from the LPR body by unscrewing it in the counterclockwise direction.
- Tap the LPR body on a hard, flat surface to allow the LPR piston, spring, and washer to slide out of the regulator base.
- Inspect the surface of the piston and oring for excessive wear or nicks, and replace as necessary.
- Inspect the interior walls of the LPR body—if necessary, use a swab on the interior of the LPR body to clean debris and old grease.
- Regrease the piston with Dow 55, and gently replace the piston, spring stack, and spring follower back into the LPR body.
- Replace and tighten the LPR cap, and reinsert the brass LPR adjuster screw.
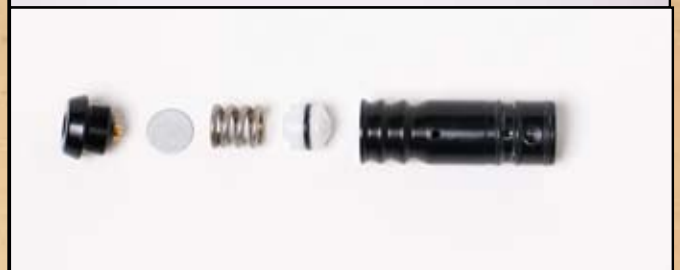
Poppet Maintenance:

- Degas the marker and ensure that there are no paintballs in the breech or barrel of the marker.
- Remove your macroline hose from the 90˚ fitting on your regulator
- Unscrew your regulator from the Protege vertical adaptor, and set the vertical regulator down.
- Grasp the low pressure regulator to ensure that it does not eject from the marker upon removal of its retaining screw.
- Remove the LPR retaining screw from inside the Protege vertical adaptor, and allow the LPR assembly to slide out of the marker.
- Using a pair of needle nose pliers, remove the poppet return spring and poppet valve from the front of the ram sleeve.
- Inspect the surface of the poppet and oring for excessive wear or nicks, and replace as necessary.
- Clean debris and excess grease from the poppet surface, and regrease the poppet oring with Dow55.
- Replace the poppet and poppet return spring into the ram sleeve, and attach the LPR with the LPR retaining screw.

Anti Chop Eye Maintenace:

In the event of a chopped ball or debris in the breech, your Protege eyes may need cleaning.

• Remove the eye cover screw, and remove the eye cover.
• Carefully unscrew the PCB retaining screw
• Gently lift the eye PCB away from the body of the marker.
• Unplug the main harness from the eye PCB (be careful to not pull on the wires—this could potentially damage your harness and\ or eye PCB)
• Remove the eye PCB for cleaning.
• Use a clean cotton swab to clean the sur face of the eye, dampen the swab with alco hol if necessary.
• You can safely clean the electronic compo nents on eye PCB with canned air as well— however, be careful to not invert the can or apply direct downward pressure on any com ponent.
• After the eye has been sufficiently cleaned, reinstall the PCB and reinstall the PCB re taining screw and eye cover.
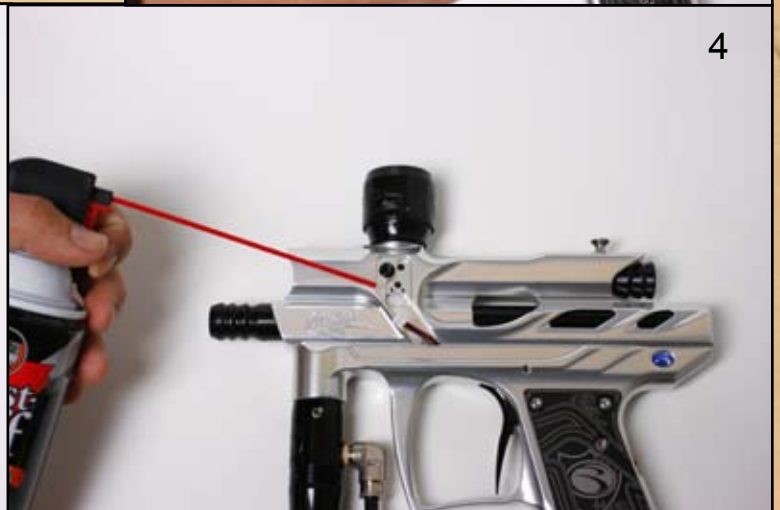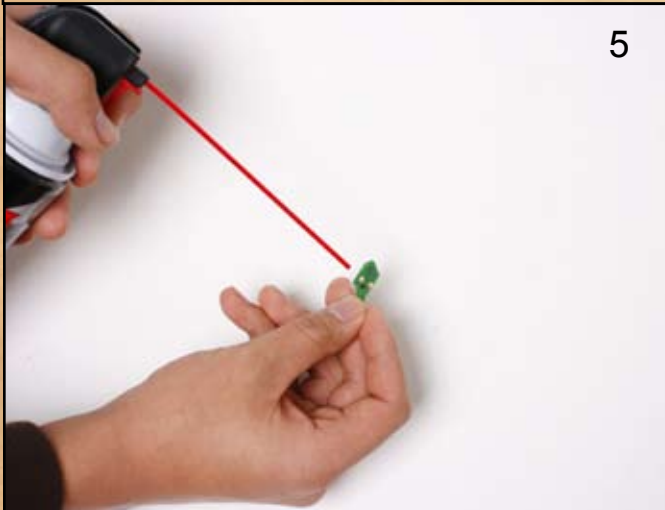
CONSUMABLES LIST

Part Name	Specifications	Quantity
Xpress Mount ASA Set Screws	8-32x3\16 Cup Point Socket Set Screw	4
Grip Panel Screws	6-32 x 3\16 Button Head Socket Cap Screw	6
Bottom PCB Retaining Screw	M2x4mm Pan Head Machine Screw	1
Trigger Spring Stop Screws	M2x12mm Pan Head Machine Screw	2
Trigger Pre-Travel Set Screw	6-32x3\8 Cup-Point Socket Set Screw	1
Trigger Post-Travel Set Screw	6-32x1\4 Cup-Point Socket Set Screw	1
Rear Grip Frame Screw	10-32x5\16 Button Head Socket Cap Screw	1
Drive Manifold Screw	2-56x1\4" Socket Head Cap Screw	1
Rear Bolt Spring Retainer Screw	1\4-28x3\8 Cup-Point Socket Set Screw	1
Bolt Pin Detent Ball	3\16" Ball Bearing	1
Eye Cover Screw	2-56x1\4" Socket Head Cap Screw	2
Eye Board PCB Retaining Screw	2-56x1\4" Flat Head Machine Screw	2
Bottom Air Passage Plug	M3x3mm Cup-Point Socket Set Screw	1
LPR Retaining Screw	10\32 x 1\2 Socket Head Cap Screw	1
360° Inline Regulator Swivel Lock Screws	10\32x1\4" Cup-Point Socket Set Screw	2
360° Inline Regulator Adjustment Screw	1\4-28x3\8 Cup-Point Socket Set Screw	1
Rear Air Passage Plug	M3x8mm Cup-Point Socket Set Screw	1
Front Air Passage Plug	M3x8mm Cup-Point Socket Set Screw	1

O-RING LIST

Part Name	Specifications	Quantity
360˚ Inline Regulator Piston Oring	016 Buna (Durameter 70)	1
360˚ Regulator ASA Internal Stem Orings	014 Buna (Durameter 70)	2
360˚ Regulator ASA Oring	015 Buna (Durameter 70)	1
Primary Air Chamber Gasket	028 Buna (Durameter 70)	1
LPR Housing Orings	015 Buna (Durameter 70)	3
LPR Piston Oring	012 Buna (Durameter 70)	1
Bolt Orings	014 Buna (Durameter 70)	3
Poppet Shaft Oring	006 Buna (Durameter 70)	1
Rear Ram Oring	011 Buna (Durameter 70)	1
Front Ram Oring	006 Buna (Durameter 70)	1
Drive Manifold Orings	1mm X 3mm Buna (Durameter 70)	2
Hose Barb Fitting Seal	1mm X 3mm Buna (Durameter 70)	3
Solenoid Manifold Oring	1mm X 4.5 mm Buna (Durameter 70)	1
Ram Sleeve Orings	015 Buna (Durameter 70)	5
Ram Sleeve Internal Cap Seal	1mm x 14mm Buna (Durameter 70)	1