



Insight NG

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CAUTION: READ ALL WARNINGS BEFORE USING OR ATTEMPTING ANY WORK ON YOUR MARKER. SHOULD YOU BE UNSURE AT ANY POINT, STOP AND SEEK PROFESSIONAL SUPPORT.

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. It is 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 the entire instruction manual before operating your marker.

Warranty

Bob Long Technologies warrants our paintball markers to be free from defect in materials and workmanship for a period of 1 year from purchase date. This warranty will only be honored for the initial retail purchaser and is non-transferable. Wear items such as batteries and seals are not covered under warranty.

This warranty does not cover:

- > Any system failure resulting from the use of a non-authorized propellant. The only authorized propellants are nitrogen or compressed air.
- > Surface damage such as scratches, nicks, or dings.
- > Improper disassembly or re-assembly.
- > Improper lubrication. The only authorized grease for maintaining a Bob Long marker is Molykote® 33 made by the Dow Corning Corporation (Dow 33). Authorized oil is limited to Tri-flow® or any other synthetic oil made specifically for maintaining a paintball marker.
- > Modification or any other alteration of a marker or its parts. Dremels, acid, most things involving a show on the Bravo network or HGTV fit in this category.
- > Misuse of any conceivable kind. Yes, letting a hipster use your marker may damage your warranty.

This warranty is limited to repair or replacement of defective items with the initial retail purchaser to pay shipping costs. The initial retail purchaser must enclose a copy of the original sales receipt with the marker to be repaired for this warranty to be honored.

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Introducing the Insight NG

The first spool valve marker designed from the ground up for the efficiency and performance with the innovation that only comes from Bob Long. We expanded on the efficiency and spool capabilities first shown in the Marq Victory platform markers by raising them to a new level. The insight brings an entirely new level of efficiency (1,500 shots off of one 68 ci HPA fill have been reported). Combining this with tool less maintenance for routine operations and you have a perfect fit for the tournament or the scenario player.

Ready for the Field

The Insight NG provides what you need to play with the smoothness and quietness of a spool valve with the efficiency and performance only from Bob Long. With the addition of your hopper, air tank, and safety gear you are ready to take the field. Always follow the local rules and safety instructions from the field where you are playing. The Insight NG is designed to perform exceptionally on the field but may be set to velocities or firing modes which are not allowed on some fields.

Component	Feature
Feedneck	LeverLock – the most adjustable feedneck available
Control Board	Frenzy 5 – enhanced feature set for spool valve support
Eyes	2C eyes with 4C option available for smoother and faster rates of fire
One Piece Tournament Barrel	Evenly honed for optimal performance
Grips	Unique highly ergonomic wraparound design

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Maintenance Intervals

Amount of Time	Estimated Cases of paint	Recommended Upkeep
While talking smack with your friends in between games	meh	<ul style="list-style-type: none"> Remove the engine and barrel Run a clean swab through the firing chamber Put a drop of oil on the bolt O-rings if your friends are still failing to get on the field Reinstall engine
After a day of play	1-2 Cases	<ul style="list-style-type: none"> Repeat above steps Wipe down marker outside Clean and relube engine
After a Weekend	2-4 Cases	<ul style="list-style-type: none"> Repeat above steps Inspect O-rings for damage Inspect eye area for debris
A Month	10 Cases	<ul style="list-style-type: none"> Repeat above steps Clean, inspect, and grease HPR Piston O-ring

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Quick Start

Safety

Always use proper safety equipment and observe the rules for the locations where you play. Always use a barrel blocking device when in an area where people do not have their masks on. Before each day of play ensure that all parts are functioning correctly and ensure that you comply with the rules and safety briefing of your local paintball fields.

Installing Air Tank

Much like any other tournament marker, the Insight NG requires the use of compressed air, commonly referred to as High Pressure Air (HPA). Use of a low output pressure compressed air system is recommended with each Bob Long marker. If using an adjustable-output air system, set the system's output to between 450 and 550 psi. Make sure the ASA (Air Source Adapter) is in the off position by turning the chrome cam drive knob on the bottom of the ASA counter clockwise. Attach your compressed air tank by screwing it into the ASA. When you are ready to chrono your marker turn the cam drive knob clockwise until it completes turning – this is shortly after you hear air pressurizing the marker.

Turning on the Insight NG

Press and release the power button on the back of the grip frame to turn the marker on. The OLED display on the back of the marker will show the remaining battery capacity, firing mode, and other settings. A full explanation of the firing modes and board settings is available in the Frenzy 5 manual available at BobLongDirect.com in the downloads section.

To power off marker: Press and hold the power button until the countdown appears on the screen. Once it counts 3..2..1..Off release the power button. Every time the marker is turned on, the eyes are enabled. The marker can be turned off regardless of the state of the eyes.

Adjusting Velocity

The Regulator on the Insight NG should be adjusted at the chronograph of your field before you begin play. The regulator is adjusted using a 1/8" hex wrench at the shown location on the back of the grip frame.

Turning the screw clockwise (or inward) will increase your velocity; turning the screw counterclockwise will decrease your velocity. Only turn the wrench 1/8th - 1/16th of a turn with each adjustment.

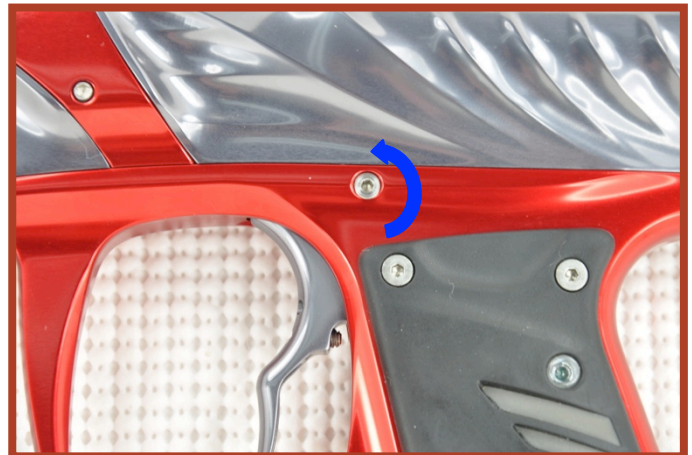


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Trigger Adjustment and Maintenance

The Insight NG comes with a roller bearing trigger, which you can adjust for the feel that is most comfortable with your style of play. To simplify maintenance the trigger can be removed from the marker while the grip frame is attached.

1. The Insight NG has two adjustment screws. The bottom screw is for trigger post-travel and the top screw adjusts the activation point (where the marker fires). To adjust the screws insert a hex key and turn the screw. The screws have Loctite on them from the factory to prevent the adjustment from slipping so a firm, steady pressure is needed for the initial adjustment.
2. To remove the trigger begin by removing the trigger pivot pin
3. If the trigger spring encounters resistance when partially removed it may be catching on the micro switch of the control board. Simply push up on the spring with a hex key and it will slide free.
4. Use swabs dipped in alcohol to clean any residual paint or grime from the trigger area. If necessary open the grip panels and clean inside the frame as well.
5. When reinstalling the trigger press up on the spring slightly to prevent snagging the microswitch.

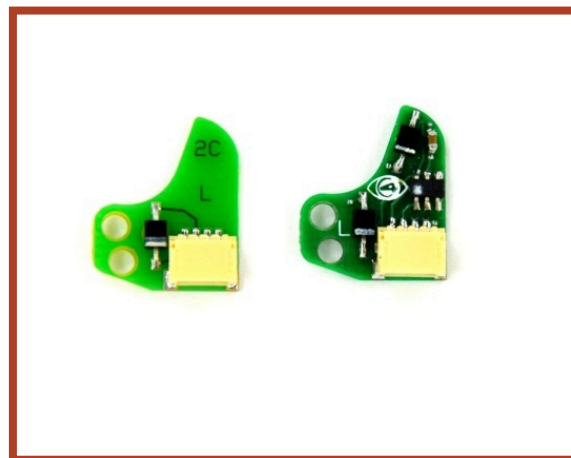
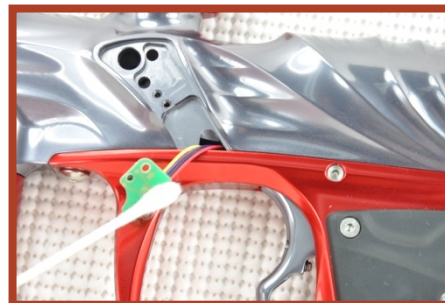
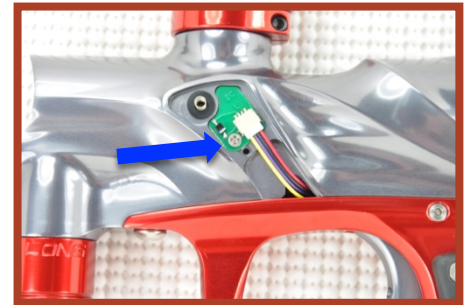
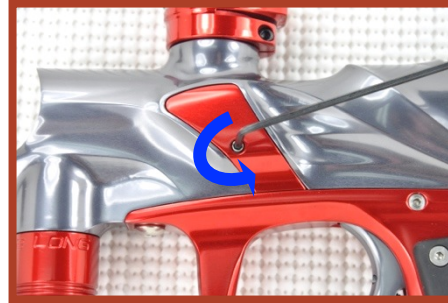


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Maintaining the Eyes and Detents

In the event of a chopped ball or debris in the breach, the eyes in your Insight NG may need cleaning. The most common ways for debris to enter the ball chamber is through the hopper when using a rapid/ speed feed type system. Tournament grade balls may break in the stack if the loader applies too much pressure.

1. Remove the eye cover screw using a 5/64" hex wrench, then remove the eye cover.
2. Remove the detent and spring by pressing on the detent from inside the chamber.
3. Carefully unscrew the PCB retaining screw. (Phillips head)
4. Gently tilt the eye PCB away from the body of the marker.
5. Use a cotton swab to clean the surface of the eye, the eye holes, detent and detent hole. Dampen the swab with alcohol if necessary.
6. NOTE: If removing the eyes from the wiring harness unplug the harness from the eye PCB by pulling on the white plug and not the wires. Pulling on the wires could potentially damage your harness.
7. After the eye, detent, and mounting area have been sufficiently cleaned, reinstall the PCB and reinstall the PCB retaining screw and eye cover.



Note:

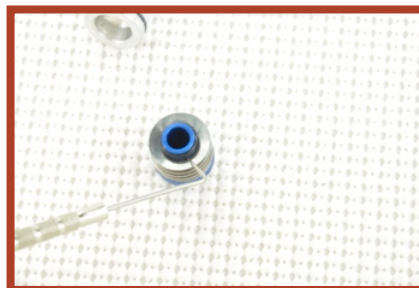
- The 4C eye system will allow for higher rates of fire through quicker cycling times.
- To determine whether the 4C eyes are installed refer to the picture to the right. The 4C eyes have more components as well as the number 4 silk screened onto the PCB.

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Maintaining the Regulator

Your Insight NG comes equipped with the best regulator on the market. To ensure the highest consistency and the maximum flow possible, we recommend that you clean and lubricate it according to the maintenance schedule or whenever you encounter inconsistency. The regulator will typically perform flawlessly for many cases of paint before requiring any maintenance.

1. Degas the marker and ensure that there are no paintballs in the breech or barrel of the marker.
2. Unscrew the bottom half of the regulator from the marker. Note that the top half is factory tightened and should not be removed.
3. Reach into the regulator base with tweezers or needle nose pliers to remove the regulator piston.
4. After the piston is removed turn the regulator base upside down and tap the spring stack and spring follower into your hand. The picture to the right shows the regulator body, spring stack, and piston.
5. The main valve located in the top portion of the regulator which is still connected to the marker does not need to be removed from the marker body or serviced. Never replace or attempt to service a working main valve.
6. Inspect the surface of the piston and piston O-ring for excessive wear or nicks and replace as necessary.
7. Inspect the interior walls of the regulator base. Use a swab on the interior of the regulator base to clean debris and old grease.
8. When reassembling the spring follower (spring stack assembly) make sure that the top and bottom spring washers curve to the outside. The retaining o-ring does not require lubrication
If in doubt – just stack the spring washers like this: **)(()()()**
9. There is a concave area around the Piston O-ring that holds additional lube and reduces the need for frequent maintenance. Grease the piston O-ring with a thin coat of lube which fills the concave area
10. Reassemble the regulator by gently replacing the spring follower (spring stack assembly) and piston into the regulator base.

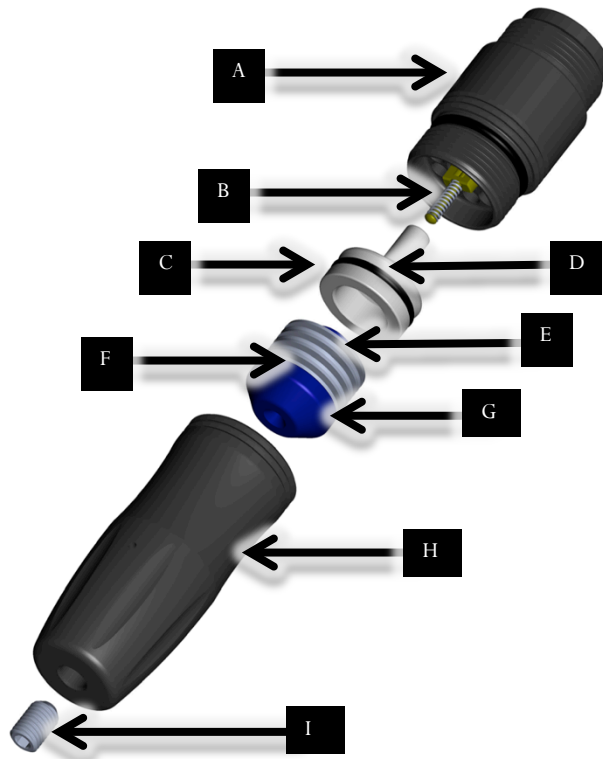
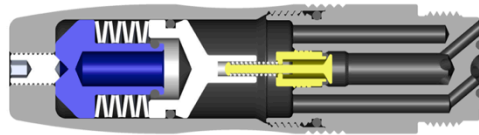


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Regulator – Technical View

The Insight NG regulator has very few moving parts. Below shows the cutaway and external regulator views of the assembled regulator.

- A. Inline Regulator Center
- B. Main Valve
- C. Piston
- D. Piston O-ring
- E. Retaining O-Ring
- F. Spring Stack
- G. Spring Follower
- H. Regulator Base
- I. Adjustment Screw

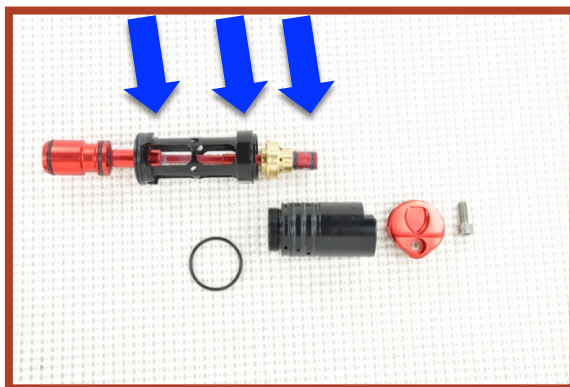


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Engine Removal and Disassembly

Before removing the engine from the marker remove the hopper, air source, and turn off the control board.

1. Remove the engine by depressing the Gas Interlock Button on the top of the marker body and then sliding it to the rear.
2. Once the engine is removed, slide the bolt to the front.
3. Unscrew the Volume Chamber from the Ram Housing.
4. All of the moving O-rings can be lubricated without further disassembly. The picture at the bottom of the page shows the O-ring locations. For normal maintenance it is not necessary to remove the Back Block Cap.
5. Wipe off any debris or old lube from the engine.
6. Place a light film of Dow 33 on the shaft and where it is exposed. Slide the bolt back and forth to lubricate the internal O-rings
7. Place a light film of Dow 33 on the external O-rings except for the bolt.
8. Place a drop of Tri-Flow on each bolt O-ring.
9. If the front and rear engine pieces were disassembled, screw them back together, making sure to have the 021 O-ring in place between the two parts.



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Setting the Pressure

The pressure can be set on your Insight NG through the use of the pressure tester. This will enable you to quickly set the pressure when you get to the field or perform maintenance on your marker. Setting the pressure without the tester requires additional patience and more test paintballs at the field.

1. Turn off and degas the marker.
2. Remove the hopper and slide the engine from the body.
3. Ensure the pressure tester is fully seated in the body of the marker. It will slightly protrude from the rear and you will feel a slight pop as it slides fully into position.
4. Starting with the set-screw slightly protruding from the base of the regulator then turn on the air to the marker.
5. Gradually increase the pressure by turning the screw clockwise until you reach 160 PSI.
6. Once the desired pressure is achieved degas the marker then remove the tester and reinsert the engine. Finalize the settings over the chronograph.



NOTE: If you are setting the pressure without the tester make short 1/8" turns and fire a test shot over the chronograph after each adjustment.

Once the marker is properly chronoed the pressure can be checked again. Use this new pressure instead of 160 as the default whenever you perform maintenance on your marker.

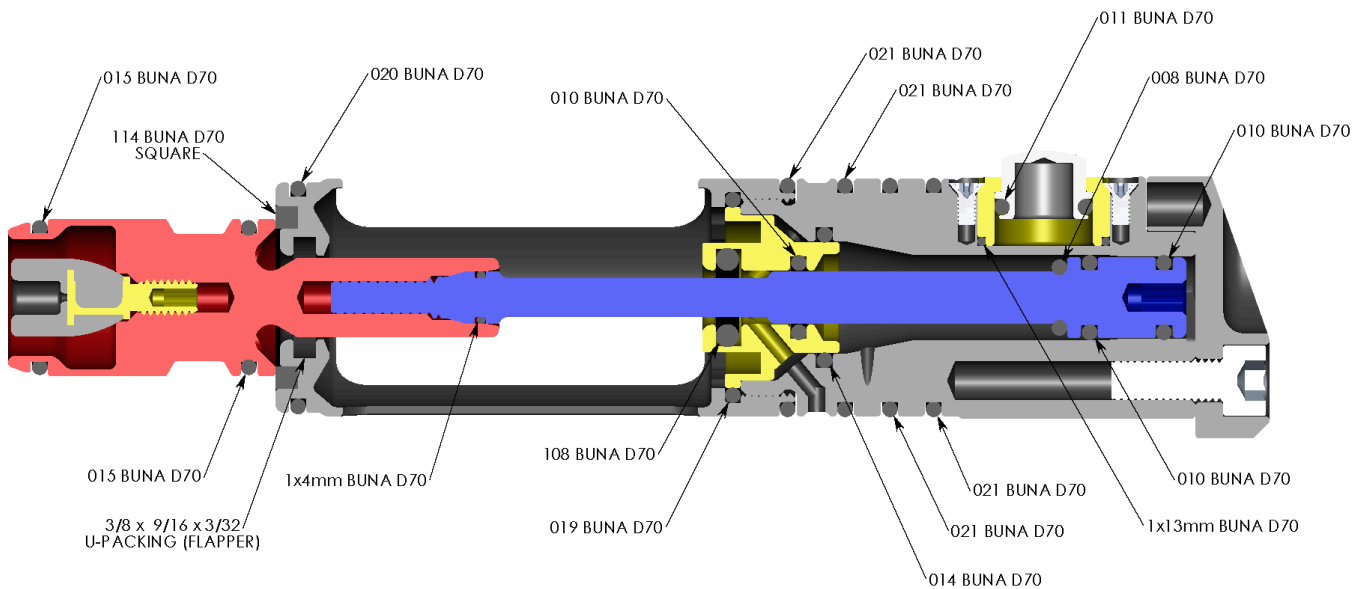


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Engine - Section Views

The Insight NG Engine is designed for easy, tool free routine maintenance. O-rings should not be replaced unless there is a problem with operations. Not all of the O-rings in the engine are the standard round size and shape found in other markers. In order to ensure the continuous high performance of your Insight use replacement O-ring kits direct from Bob Long or from authorized Bob Long dealers.

O-Ring Locations

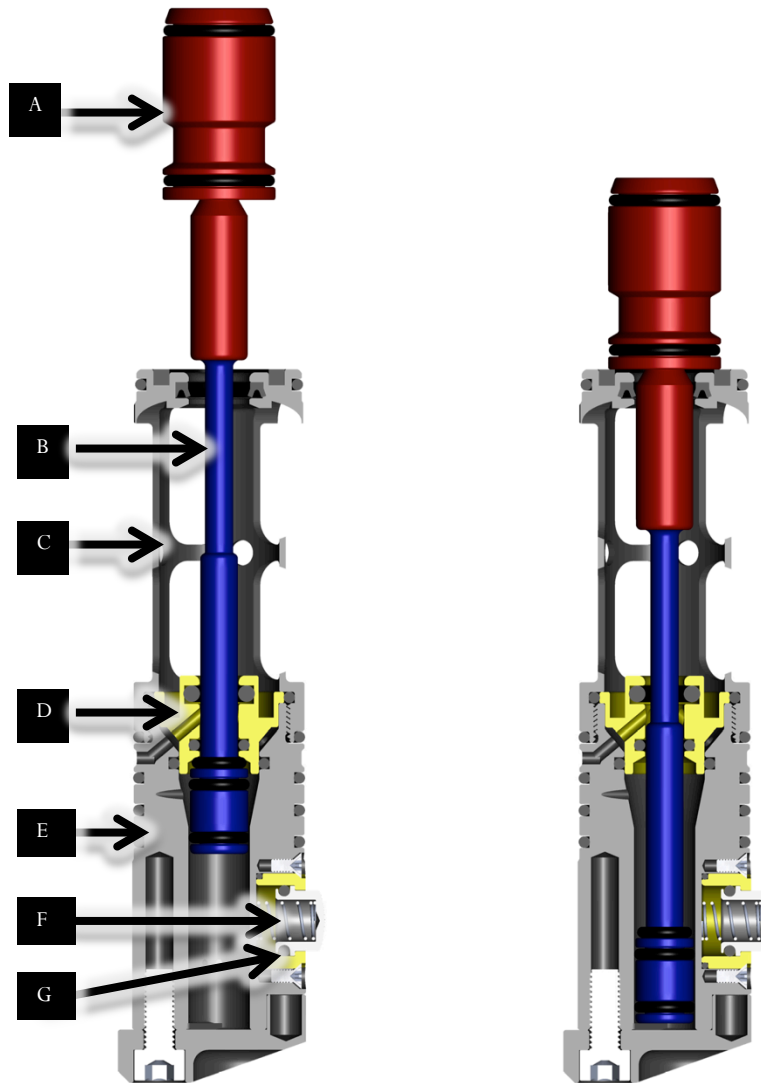


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Engine Components

The cutaway view shows the engine components with the bolt in forward and retracted positions.

- A. Bolt
- B. Ram Shaft
- C. Volume Chamber
- D. Refill Plug (Brass)
- E. Ram Housing
- F. Gas Interlock Button
- G. Gas Interlock Housing (Brass)



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O-Rings and Fasteners

O-rings

Part Name	Specifications	Quantity
Ram Housing to Back Block Cap	1 x 2mm Buna D70	1
Mainbody to Solenoid Manifold	1 x 3mm Buna D70	2
Grip Frame to Mainbody	1 x 4mm Buna D70	1
Ram Shaft to Pillow Bolt (For Friction Only)	1 x 4mm Buna D70	1
Cam Drive ASA to Grip Frame	1 x 4.5mm Buna D70	1
Mainbody to Solenoid Manifold	1 x 4.5mm Buna D70	1
Mainbody to Solenoid Manifold	1 x 7.5mm Buna D70	1
Mainbody to Solenoid Manifold	1 x 9mm Buna D70	1
Ram Housing to Gas Interlock Housing	1 x 13mm Buna D70	1
Inside Mainbody to Inline Reg Center	1.5 x 20mm Buna D70	1
Outside of Ram Shaft (Bumper)	008 Buna D70	1
Inside of Refill Plug	010 Buna D70	1
Outside of Ram Shaft	010 Buna D70	2
Inline Reg Center to Mainbody	011 Buna D70	1
Outside of Gas Interlock Button	011 Buna D70	1
Outside of Inline Reg Spring Follower (Retains Bellville Washers of Spring Stack)	011 Buna D70	1
Inside of Ram Housing	014 Buna D70	1
Outside of Pillow Bolt	015 Buna D70	1
Outside of Inline Reg Piston	016 Buna D70	1
Inline Reg Center to Inline Reg Base	018 Buna D70	1
Inside of Volume Chamber	019 Buna D70	1
Volume Chamber to Mainbody	020 Buna D70	1
Between Ram Housing and Volume Chamber	021 Buna D70	1
Outside of Ram Housing	021 Buna D70	3
Inside of Refill Plug (Refill Mainseal)	108 Buna D70	1
Pillow Bolt to Volume Chamber Bumper	114 Buna D70 Square	1
Inside of Volume Chamber (Spool Valve Mainseal)	3/8 x 9/16 x 3/32 D70 U-Packing	1








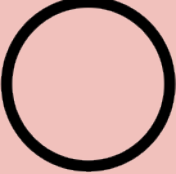







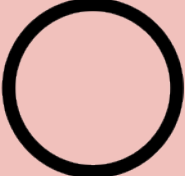
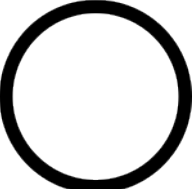
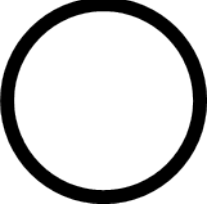
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Fasteners

Part Name	Specifications	Quantity
Motherboard to Grip Frame Mounting Screw	M2 x 4mm Pan Head Machine SS	1
Motherboard to Grip Frame Mounting Screws	M2 x 10mm Pan Head Machine SS	2
Gas Interlock Housing to Ram Housing	2-56 x 3/16" Flat Head Machine SS	2
Left Eye PCB to Mainbody	2-56 x 3/16" Flat Head Machine SS	1
Right Eye PCB to Mainbody	2-56 x 3/16" Flat Head Machine SS	1
Daughterboard to Grip Frame Mounting Screws	2-56 x 3/16" Socket Head Cap SS	2
OLED Bezel to Grip Frame Mounting Screws	2-56 x 3/16" Socket Head Cap SS	2
Left Eye Cover to Mainbody	2-56 x 3/16" Socket Head Cap SS	1
Right Eye Cover to Mainbody	2-56 x 3/16" Socket Head Cap SS	1
Leverlock Feed Neck to Mainbody	4-40 x 7/16" Socket Head Cap BO	1
Left Grip to Grip Frame Mounting Screws	6-32 x 1/4" Low Head Socked Cap SS (Custom 5/64" Hex Drive)	3
Right Grip to Grip Frame Mounting Screws (9v Battery Access)	6-32 x 1/4" Low Head Socked Cap SS (Custom 5/64" Hex Drive)	3
Trigger Activation Adjustment	6-32 x 1/4" Cup Point Socket Set SS	1
Trigger Stop Adjustment	6-32 x 1/4" Cup Point Socket Set SS	1
Cam Drive ASA to Grip Frame	8-32 x 3/8" Low Head Socket Cap SS (Custom 3/32" Hex Drive)	2
Front Grip Frame Mounting Screw	10-32 x 1/2" Button Head Socket Cap SS	1
Rear Grip Frame Mounting Screw	10-32 x 3/8" Low Head Socket Cap SS (Custom 1/8" Hex Drive)	1
Back Block Cap to Ram Housing	10-32 x 1/2" Socket Head Cap SS	1
Solenoid Manifold to Mainbody	10-32 x 1/2" Socket Head Cap SS	1
Inline Reg Base (Velocity Adjustment)	1/4-28 x 3/8" Cup Point Socket Set SS	1

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O-Ring Size Table

1x2mm		1x3mm	
1x4mm		1x4.5mm	
1x7.5mm		1x9mm	
1x13mm		1.5x20mm	
008		010	
011		014	
015		016	
018		019	
020		021	

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Q&A

1. **Q:** My Insight NG is VERY bouncy and I can't do anything! I've topped out the debounce and AMB and I put the trigger in like every position possible.
A: Make sure the proper trigger spring is installed. The Insight NG uses a heavier spring than other Bob Long markers. Make sure the trigger activates near the end of the pull. If necessary back out the trigger activation set screw ½ turn.
2. **Q:** Where can I get an O-ring kit?
A: Bob Long Technologies and authorized resellers have O-ring and parts kits available.
3. **Q:** What is the recommended dwell setting?
A: Dwell should be at 12 from the factory. There's no advantage to running a higher dwell to "break it in". There are exactly zero heavy springs in the HPR that need broken in.
4. **Q:** I lowered my bolt delay and now the eyes registering an eye malfunction and lowered my bps to 12. What should I do?
A: The bolt delay is too low at 12ms, the eyes are activating too early while the bolt is still cycling backwards to prepare itself for the next paintball to drop. The eyes activate, see your bolt, and never register a change from the bolt to the ball coming in place. Raising the setting to 15 will normally clear this problem.
5. **Q:** So what is this bolt delay setting?
A: Bolt delay is actually an eye activation setting and not a bolt setting. Essentially you need a delay added in so the eyes don't turn on while the bolt travels backwards after a shot. If they turn on too soon, the marker thinks the bolt is a ball and will queue the next shot. This causes skipped shots and occasional chops. Keep it at 10 (or higher)
6. **Q:** What weight is the stock Insight NG micro switch?
A: 80g
7. **Q:** I am seeing large velocity fluctuations – what should I do?
A: Check for a good paint to barrel match. Ensure the HPR spring stack is assembled correctly and that your ram, HPR, O-ring is lubed with Dow 33. Apply a drop of blue Loctite to the threads of the HPR adjustment screw then check the regulator pressure. Lubricate the engine assembly.
8. **Q:** How much oil should I put on the bolt?
A: Just a few drops on the bolt. Too much oil can cause bolt movement problems and cause velocity problems from oil in the barrel.
9. **Q:** What thread type is the barrel?
A: Autococker (Cocker)
10. **Q:** Is the stock trigger a roller bearing?
A: Yes, it is a dual roller bearing.
11. **Q:** Why is it called the Gas Interlock Button instead of the Release Button on the Engine?
A: Our design engineer gets paid by the letter for the parts he designs

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12. **Q:** What items are recommended to keep in my toolkit?

A: Each of the following:

- Dow 33
- Triflow oil
- O-rings
- One wooden chopstick (Just in case you drop one during lunch)
- Standard (Imperial) Hex key set

13. **Q:** How do I reset the settings to factory on the stock board?

A: Scroll through the board settings menu and select Factory Reset.

14. **Q:** My feedneck isn't tightly clamping my loader- what should I do?

A: Use a hex wrench to tighten the adjustment screw.

15. **Q:** Where can I find additional information and other users of Bob Long Markers?

A: www.intimidatorowners.com also the PBNation subforums dedicated to Bob Long products located at <http://www.pbnation.com/forumdisplay.php?f=146>

16. **Q:** I need to ship my marker in for technical support – what is the address?

A: The address varies depending on whether shipping by postal service or another method.

USPS/postal shipping:

Bob Long Technologies
P.O. Box 457
Mokelumne Hill, CA 95245

Other shipping methods:

Bob Long Technologies
11669 Highway 26
Mokelumne Hill, CA 95245

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Troubleshooting Guide

Marker will not turn on out of the box	<ul style="list-style-type: none"> -Ensure that the battery that you're using in your new marker is a high quality alkaline or lithium 9 volt. -Verify that your battery is correctly oriented (matching with the correct terminals), and that it is making firm contact with the prongs on the circuit board. -Make sure that the wiring harness is correctly inserted into the receptacle.
Velocity is inconsistent over the chronograph	<ul style="list-style-type: none"> -Always check that your paintballs are of high quality, and consistent in size, as well as using a good paint to bore match. -Make sure the HPR is set to the proper pressure. -Replace your battery. -Inspect the engine O-rings for nicks and that they are properly greased
Marker is breaking paint	<ul style="list-style-type: none"> - Always check that your paintballs are of high quality, and consistent in size, as well as using a good paint to bore match -Make sure the regulator is not set to an excessive pressure -Ensure that your detent springs and bolt face are in good condition and there is no debris in the breech of the marker -Reset your board settings to factory settings and use a force-fed loader. -Check the tension/pressure settings and batteries in your force fed loader. Having too high of a feed pressure with fragile paint can cause balls in the stack to break
Marker does not gas up after tank is connected	<ul style="list-style-type: none"> -Verify that the pin valve on your tank is outputting pressure to the regulator - some tanks will not work properly with certain ASAs -Attempt gassing up the marker with another tank to see if this remedies the issue.
Marker is leaking from the ASA	<ul style="list-style-type: none"> -Check the tank O-ring (015 Urethane D90) for nicks or tears

CAUTION: READ ALL WARNINGS BEFORE USING OR ATTEMPTING ANY WORK ON YOUR MARKER. SHOULD YOU BE UNSURE AT ANY POINT, STOP AND SEEK PROFESSIONAL SUPPORT.

	-Verify that the ASA is securely attached to the grip frame.
Marker display is dim or incorrect when turned on	-Verify that your battery is correctly oriented (matching with the correct terminals), and that it is making firm contact with the prongs on the circuit board.
Marker fires more than one shot per pull, or has trigger bounce	- Verify that your trigger has the spring installed and that it is properly seated - Verify that your marker is in semi-automatic mode - Raise your marker's debounce level, and make sure that your trigger activation point is not too short.
Marker leaks down the barrel	-Verify that the poppet seal, inner volume chamber o- ring, and blast guide are not scored or otherwise damaged
Marker double feeds	-Verify that detent springs are in place, detents are not excessively worn, they have a drop of oil, and move freely
What is the infinite loop reference item?	Post on the PBNation Intimidator forum and ask Gamer565 that question

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