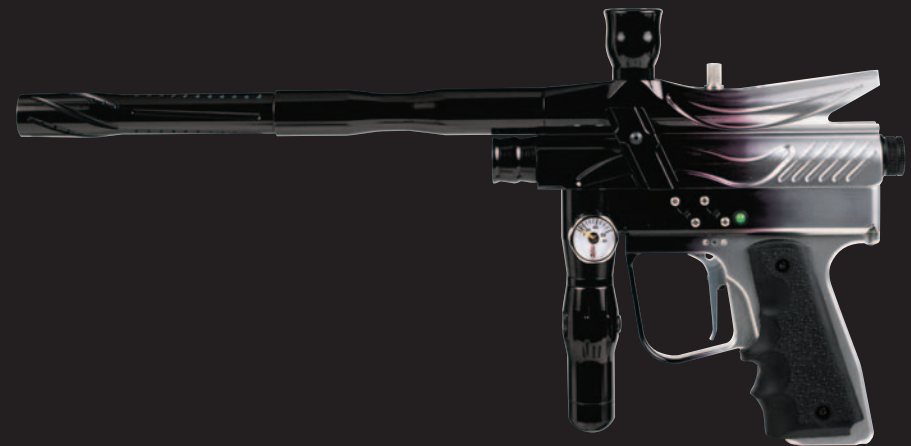


Indian Creek™  
d e s i g n

**B2K PDS**

paintball detection system

**USER'S MANUAL**



# B2K PDS

# USER MANUAL

## INSTRUCTION MANUAL

### Version 2.1

### Indian Creek Design BushMaster series

### Model B2K PDS

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## **STATEMENT OF LIABILITY**

The manufacturer delivers this marker with the understanding that the manufacturer assumes no responsibility for its resale or safe handling. Misuse, abuse or failure to follow the manufacturer's instructions contained in this manual could result in property damage, bodily injury or death. The manufacturer assumes no responsibility for physical injury or property damage resulting from the use of this marker.

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**⚠WARNING:** This is not a toy. Misuse may cause serious injury or death. Eye protection designed specifically for paintball must be worn by the user and persons within range. Recommend 18 years of age or older to purchase. Persons under 18 years of age must have adult supervision. READ OWNER'S MANUAL BEFORE USING.

## B2K PDS OVERVIEW

The B2K PDS – Paintball Detection System is a high quality paintball marker specially designed to meet the needs of the professional style tournament player. The B2K PDS is an electronic solenoid actuated computer controlled marker. The major components of the B2K PDS are machined from solid, aircraft-grade aluminum, and then hard anodized per military specifications. No castings are used in the construction of the B2K PDS, thereby providing the end user with a high-quality, precision-engineered marker. The PDS (paintball detection system) is designed to detect whether or not a paintball is seated in the breach ready to fire. If a paintball is not there, it will not fire. An on/off switch has been provided for the PDS for the instance of dry firing and simply over-riding the PDS.

Paintball markers get a lot of abuse. Indian Creek Design, Inc., has built the B2K PDS with this in mind. All internal parts, wear and contact surfaces have been heat treated or hard anodized. The toughest and most resilient materials and components have been used in the design of this marker.

The B2K PDS uses a single standard 9-volt battery for operation. The circuitry is a micro-processor based digital controller.

The B2K PDS does not need tools in order to field-strip. Removing the field-strip link-pin of the bolt enables the removal of the entire bolt assembly.

The B2K PDS offers low-pressure operation. The main operating pressure is 180-220 PSI nominally adjusted to visually via the gauge on the primary (input) regulator. The secondary pressure is factory pre-set and regulated to 85-95 PSI. Gas usage is controlled through these 2 internal regulators. One unique feature of this marker is the regulator adjustment. This allows precise adjustment for the velocity control of the marker and for gas efficiency.

The B2K PDS comes with a removable barrel system. This feature allows the user to select a barrel that is most suitable for the playing conditions. All barrels are mirror-honed with a, step-bore and straight and spiral tip porting and stock length is 12".

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## OPERATION

Read the entire manual before you prepare your B2K PDS for firing. Safety and safe marker handling are the most important aspects of paintball sports. Please practice each of the following steps with an unloaded marker before attempting to charge your marker with compressed air and paintballs. Do not load compressed air and paintballs into your B2K PDS until you feel completely confident with your ability to handle your B2K PDS safely.

Keep your finger out of the trigger guard and away from the trigger; point the muzzle of the marker in a safe direction at all times. Keep the marker turned off until ready to operate. The B2K PDS does not have a mechanical safety, only an on-off switch! Always keep your B2K PDS pointed in a safe direction. Always use a barrel plug.

### Installing the 9 volt Power Source

The B2K PDS requires a single 9-volt battery as the electronic power source. The use of long life batteries is recommended.

The 9-volt battery is located in the grip behind the trigger and below the on-off switch. The battery is accessed through the grip panel located on the left side of the marker.

Remove the 2 screws that hold the grip panel in place. Connect the battery to the terminal and place the battery inside the frame carefully being sure that the black and red wires to the terminal are toward the top. Make sure that there are no abrupt kinks and the wires are comfortably placed, do not force them into place. Replace the grip panel and 2 screws.

If you need to remove the complete battery frame and grip follow these instructions. Before removing the tray, remove the grip frame side panel on the left side, exposing the CPU and battery. To remove the tray, use a 7/64 hex wrench and remove the four 6-32X1" screws around the bottom of the tray. Gently separate the upper section from the lower section, being careful not to put stress on the wiring harness (blue wires) connected to the solenoid valve on the upper section. Place the tray and upper body together being careful not to pinch any wires in the body, bring the blue wire loop back to its original position. Turn the main on-off switch to the on position and be sure the LED lights up, then turn off. Replace the four 6-32X1" screws and the grip panel.

### CO2, Nitrogen or Compressed Air Usage

The B2K PDS comes with a female "Push-In" fitting adapter on the input of the regulator. The B2K PDS can be set up to use a nitrogen or compressed air system. Although it may be used, CO2 is not recommended for use as the propellant.

### **Adjustable regulator compressed air systems:**

The input pressure from your compressed air system should be regulated down to 350-500 PSI output pressure. Note: on MOST systems, there is a large difference between the setting pressure and the actual output operating pressure. If your compressed air system does not have an output pressure gauge on its regulator we do not recommend its use.

### **Fixed output regulated compressed air systems:**

The B2K PDS will work just fine with a pre-set tank. You will get better performance from a lower output pressure than a high (750-850) output. VERIFY the output pressure from the regulator. If your compressed air system does not have an output pressure gauge on its regulator we do not recommend its use.

### **CO2 usage:**

Although it may be used, CO2 is not recommended for use as the propellant. Generally the CO2 that we use as an industry is industrial grade CO2. It is dirty, pumped from large tanks full of contaminants including rust and metal flakes. CO2 can be used successfully if used with anti-siphon systems and filters. Be aware that the use of CO2 may result in less than optimal performance.

**REMEMBER: CO2, compressed air or nitrogen systems can be extremely dangerous if misused or improperly handled. Use only properly certified cylinders.**

Before pressurizing your BKO, check to make sure that you have a barrel blocking device in place and there are no paintballs in the marker. The on-off switch should be OFF. Air can now be applied, the marker will become pressurized and the bolt will move backwards.

### Paintball and Loader Usage

The B2K PDS comes equipped to accept 1.03" OD standard-gravity feed loaders. Fit the loader directly into the vertical feed tube. Always twist it down in a CLOCKWISE direction. Always twist it off in a CLOCKWISE direction as well. The B2K PDS uses .68 caliber, water-soluble paintballs. The paintballs are gravity fed from the loader through the direct vertical feed nipple and into the breech of the marker.

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## Firing the B2K PDS

Keep your finger out of the trigger guard and away from the trigger; point the muzzle of your marker in a safe direction at all times during this process. Be sure your goggles are securely in place. Push the on-off switch into the off position.

Always keep your B2K PDS pointed in a safe direction!

1. Place the empty loader onto the marker. Be sure that it is securely mounted in place.
2. Apply the compressed gas, pressurizing the marker.
3. Put the paintballs into the loader.
4. Remove the barrel plug.
5. Aim the marker at the target.
6. Push the on-off switch to the ON position, the LED will light up.
7. Place your finger on the trigger.
8. Pull the trigger with a smooth squeezing motion. BANG. . . .

## UNLOADING THE B2K PDS

Keep your finger out of the trigger guard and away from the trigger; point the muzzle of your marker in a safe direction during this entire process. Always keep your B2K PDS pointed in a safe direction!

1. Install the barrel blocking device
2. Push the on-off switch to the off position. The LED will be off.
3. Remove the pressurized gas from the marker carefully.
4. Tilt the marker so that the loader is upside down and beneath the body of the marker.
5. Remove the paintball loader from the direct vertical-feed tube, turning the loader in a clockwise direction.
6. Inspect the inside of the direct vertical-feed tube to be sure that a ball does not remain inside the breech.

## MAINTENANCE

**CAUTION:** Before attempting to perform any maintenance operations or any marker disassembly, make sure that all paintballs and the propellant source have been removed from the marker. Install the barrel blocking device, push the on-off switch to the OFF position and keep the marker in its "SAFE" mode.

### **Simple Maintenance**

Keep your B2K PDS clean and lubricated to eliminate the friction that would prevent reliable operation. Clean and lube the marker before each use, and do not put it away dirty.

**USE NO OILS!** Do not use petroleum-based lubricants in the lubrication of this marker. Teflon or silicon spray lubricants are the recommended types of lubrication for the bolt area of the main housing. Lithium grease is recommended for lubricating the regulator pistons, and the cylinder assembly. Be sure it is Lithium Grease and not axel grease.

### **Cleaning Paint from the Barrel**

Unscrew the barrel with approximately one and one half (1-1/2) revolutions to remove the barrel for swabbing/cleaning. Keep the barrel clean to insure the continued accuracy of the B2K PDS. Gelatin from the paintballs has a tendency to build up in the barrel. As part of your cleaning ritual, wash out the barrel with hot soapy water and rinse it well.

PDS (paintball detection system)

Keep the infrared emitters and detectors clean for your best results.

### **Removing the Bolt Assembly (Field Stripping)**

Remove the paint and pressurized gas from the marker. The marker can be field stripped while it is pressurize but this is not recommended.

1. Install the barrel blocking device.
2. Push the on-off switch to the off position. The LED will be off.
3. Remove the pressurized gas from the marker carefully.
4. Remove (pull) the knurled pin from the top of the marker. Pull the bolt body out the back of the main body.

Once the bolt assembly is removed, it is possible to clean the entire upper receiver of the marker, including the breech and feed tube area. You may slightly lubricate the rear section of the bolt and bolt chamber with a light synthetic spray lubricant before re-installing the bolt. Do not use petroleum/oil-based lubricants; do use Teflon or silicon-based lubricants. The bolt is NOT a simple plastic; it is a natural Delrin acetate material, which is a Dupont 3M material, developed specifically for this type of application. The use of a metal type of bolt will void all warranties.

1. Point the barrel downward and slide the bolt in until the link pin hole lines up with the slot in the hammer and carefully install the link pin.
2. Carefully install the link pin.

Note: You must be sure that the link pin is engaged PROPERLY with the hammer, if the link pin IS NOT PROPERLY replaced, you may damage the hammer/cylinder assembly. Remember...operator error is not covered by warranty!

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## STORAGE AND TRANSPORTATION

- Your B2K PDS must be clear of all paint and propellant when not being used.
- Be sure the on-off switch is off and the LED is not lighted.
- Put the barrel blocking device in place.
- Make sure the marker is clean.
- Store your B2K PDS in a clean, cool, dry place.
- Keep your B2K PDS away from any unauthorized users.

Your B2K PDS must be clear of all paint and any source of propellant during transportation to and from the playing field. Keep your barrel plug in place. Keep the on-off switch in the off position. Protect your B2K PDS from excessive heat during transportation. Observe and obey all local, state and federal laws concerning the transportation of paintball markers. For information concerning any of the laws in your area, contact your nearby friendly law enforcement agency.

**IMPORTANT:** Never carry your B2K PDS uncased when not on a playing field. The non-playing public and law enforcement personnel may not be able to distinguish between a paintball marker and firearm. For your own safety and to protect the image of the sport, always carry your B2K PDS in a suitable marker case or in the box in which it was shipped. If you must ship your B2K PDS for any reason, the box in which you purchased the marker is acceptable to all major carriers. Never ship charged CO2 or pressurized gas containers.

## ADJUSTING THE TRIGGER PULL

You will notice three(3) screws in your trigger. These screws adjust the length of pull, actuation point and spring tension of the trigger. The bottom screw adjusts your trigger stop point (length of pull). The top screw is the contact point for your micro switch or actuation point. The center screw is the spring tension adjustment screw.

1. Use blue loctite while adjusting the screws. Normal activity can cause the screws to back out of adjustment. DO NOT glob the loctite on, it can cause damage to the micro switch if you use too much.
2. Begin by adjusting the bottom screw to your desired pull. Screw it in to lessen the distance the trigger must travel.
3. Very Carefully screw in the top screw. Making large adjustments can force the screw into the micro switch and damage it. You will want to screw it in to the point where it makes contact with the micro switch but does not permanently rest on it. Continually check to verify that the LED flashes off and then back on when you pull the trigger. If you pull the trigger and the LED goes off and stays off, you have adjusted the screw in too far. Back it out.
4. Adjust the spring tension by turning the screw in for more tension and out for less tension.
5. Clean up any excess loctite and let it dry for at least an hour before using your B2K PDS. This ensures the screws will remain in place.

## B2K PDS TUNING GUIDE

High pressure regulator adjustment:

The B2K PDS has an innovative system. The pressurized gas is regulated internally. The pressure regulator is externally adjustable via the screw in the side of the high-pressure regulator. To increase the pressure use a 3/32" hex wrench inserted into the screw and turn clockwise.

**NOTE:** Only slight turns are needed to accomplish changes in the pressure used to shoot the paintball.

To decrease the pressure shown on the gauge, turn the screw counter-clockwise. You must take a clearing shot before the change in the decreasing direction can be registered.

A pressure gauge has been installed into the regulator body to indicate the exact operating pressure of the marker. This gauge is extremely useful. At the factory we set the regulator gauge to 180-200 PSI with an input pressure of 400 PSI using Compressed air as the base propellant. Under normal circumstances these settings will produce paintball velocities at approximately 280-300 fps. The input pressure from your tank should be set at 350-500 PSI. Higher input pressures will not provide increased performance. There is a specific input side and output side of the main input regulator. If the gauge and input sides are switched, the outcome will be total bypassing of the main input regulator.

1. If you have an adjustable tank regulator, the input pressure from your tank should be set at 350-500 PSI. Higher input pressures will not provide increased performance.
2. If you have a fixed output regulator on your tank (pre-set) then you may have to re-adjust the pressure shown on the gauge using the method discussed previously.
3. If you plan to use CO2, then please use an anti-siphon tank and a filter.

## Low pressure regulator adjustment (Velocity adjustment):

The low pressure regulator is externally adjustable via the adjustment screw with the slot for a wide screwdriver or even a quarter in the front of the low-pressure regulator. The low pressure regulator is pre-set at the factory to 85-95 PSI to operate the 4-way solenoid actuated valve. It may be necessary to re-adjust the low pressure regulator from time to time to achieve desired velocities. Bench adjusting the regulator can be done by pressurizing the marker, be sure the input regulator is set properly, and then turning the adjustment screw inward (clock-wise) until you hear a leak coming from the 4-way valve in the grip area. The 4-way valve has an over-pressurization relief valve that will start to bleed off at approximately 125 PSI, once you hear the leak start then back off the adjustment screw 2 turn and the leak will stop. That will approximate the pressure to about 90 PSI. The low pressure regulator is designed to shut down and preserve the integrity of the low pressure system if it sees an input pressure over approximately 400 PSI coming from the main input regulator. This marker was designed with safety and safety standards in mind. If you attempt to shoot paintballs at velocities higher than established safety standards, the marker will not function properly.

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**NOTE 1.** You may notice that if you attempt to operate the marker at extremely high velocities, the internals will not function properly!

**NOTE 2.** The B2K PDS is not designed to shoot above the safety limits established by industry standards.

## Leak Related Problems

1. The B2K PDS has a leak down the barrel. Reason: gas is leaking through or around the valve pin seal or O ring area.
  - a. Can you hear the leak when the gas is removed? Yes? There is no leak. You hear the ocean.
  - b. The valve seal is marred/scratched or worn out or dirt has gotten to it. Replace it.
2. The B2K PDS has a leak around the high pressure regulator seam. Reason: the seal between the regulator body and the main body is bad.
  - a. Tighten the regulator to the body.
  - b. Check and/or replace the O ring.
3. The B2K PDS has a leak around the low pressure regulator seam. Reason: the seal between the regulator body and main body is bad or the regulator has loosened up.
  - a. Tighten the regulator into the body.
  - b. Check and/or replace the O ring gasket. Sized -019.
4. The B2K PDS has a leak inside the grip/battery area. Reason: the 4-way valve is leaking.
  - a. Tighten the 4-way valve to the manifold. Take care not to over-tighten.
  - b. Check for over-pressurization from the low pressure regulator. Re-adjust the low pressure regulator.
  - c. Replace the O rings on the cylinder assembly. Sized -015.
  - d. Replace the piston O ring. Sized -011
  - e. Replace the solenoid/valve assembly.

## Ball Breakage Problems

1. The ball breaks in the breech.
  - a. Ball breakage is often caused by poor quality paintballs. Make sure you always use fresh, high quality paintballs.
  - b. The balls in your loader can bind, messing up your trigger timing. Note: Always use an agitated loader.

- c. As you run and shoot, you actually unweigh the gravity-fed balls in your loader. This can cause a ball to hesitate in its drop. This affects your trigger timing.
- d. If the ball retention O rings do not move freely, the paintballs will crush against it or it may have stuck in the depressed position allowing double feeding. Check their tension regularly and keep this area as clean as possible.
- e. If the ball retention O rings are too sloppy, the ball will not be held in the proper position. This may allow the next ball to enter the path of the bolt, subjecting it to impact cracking or shearing. Verify the tension of the O rings.

## Regulator Related Problems

1. The gauge reads correctly when charged, but climbs in pressure after a few moments.
  - a. The regulator seal has been contaminated. Disassemble the regulator, and clean the seal with a Q-tip and alcohol. If you need assistance in the disassembly of the regulator, please call (208) 468-0446.
2. The gauge reads correctly when charged, but drops in pressure after a few shots.
  - a. The regulator may not be adjusted correctly. Remove all pressurized gas, and back off the regulator adjustment screw 3 turns. Pressurize the system and adjust the pressure back up to the desired pressure.
  - b. Slow regulator recovery can be directly related to the recovery time of the tank regulator. All compressed air tank regulators are not created equally, some may perform and some may not.
3. The gauge reads correctly when charged, but drops in pressure after a few shots, and is slow to climb back to normal pressure.
  - a. The recovery side of the regulator is sluggish and may need cleaning and lubrication. If you need assistance in the disassembly of the regulator, please call (208) 468-0446.
  - b. The regulator seal needs to be replaced if it has a deep groove in it from the regulator cup.
  - c. Slow regulator recovery can be directly related to the recovery time of the tank regulator. All compressed air tank regulators are not created equally, some may perform and some may not.

**Replacing or removing the original regulators voids all warranties.**

**Battery Related Problems**

1. LED functions but the marker does not fire.
2. Alternately missed shots.
3. Velocity drops while firing several shots.
4. Erratic Velocities. Jumps of 20 fps or more.
5. Unexplainable paintball breakage.
6. Slight leak from the solenoid in the back of the grip.
  - a. Change the battery. The LED only requires 1\_ volts to function. The solenoid requires a minimum of 5 volts to operate. This means the marker may appear to be getting enough power when it is not. All batteries are NOT created equal. Performance will vary. Therefore, if you experience any erratic behavior, always change the battery first.

**LIMITED WARRANTY**

The manufacturer warrants the replacement of any original part due to defect in materials and/or workmanship of this air marker. This warranty will be in effect for twelve (12) months for parts and twelve (12) months for labor following the original date of purchase for the original purchaser. Such warranty service will be provided only if the warranty registration card included with this manual is filled in completely and on file with the manufacturer. All other service will be duly charged for and returned via UPS C.O.D.

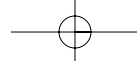
The manufacturer will replace without charge any original part that is determined by Indian Creek Design, Inc., to be defective under the terms of this warranty. However, shipping charges are not covered hereunder. Failure due to an accident, abuse, neglect, modification, normal wear, operator error, maintenance by other than an authorized the manufacturer, dealer, or use of parts inconsistent with the use originally intended for the air marker as sold, is not covered by this warranty.

There are no other warranties or guarantees, expressed or implied, made by the manufacturer, on this air marker. The sole and exclusive liability of the manufacturer, and/or its authorized dealers, affiliates, or agents pursuant to this warranty will be for repair or replacement of the defective part; incidental or consequential damages are expressly excluded hereunder.

The manufacturer, its authorized dealers, affiliates, or agents, will not be liable under this warranty, nor under any state or federal law, or the common law or otherwise for any damage or failure, including personal injury, resulting from such use and/or alteration. This warranty gives you specific legal rights, and you may also have other rights that may vary from state to state.

**For warranty parts, service or information contact:  
Indian Creek Design, Inc.  
1019 First Street North  
Nampa, Idaho 83687  
(208) 468-0446**

**Or visit [www.icdpaintball.com](http://www.icdpaintball.com)**



**NOTES:**

**Warranty Registration**

Please take the time to send in this warranty by mail or fax or go to [www.icdpaintball.com/registration.htm](http://www.icdpaintball.com/registration.htm) for convenient online warranty registration.

PDS Serial#: \_\_\_\_\_

Your Name: \_\_\_\_\_

Address: \_\_\_\_\_

Address: \_\_\_\_\_

City: \_\_\_\_\_ State: \_\_\_\_\_

Country: \_\_\_\_\_ Zip/Postal Code: \_\_\_\_\_

Email: \_\_\_\_\_

Telephone: \_\_\_\_\_

Date of Purchase: \_\_\_\_\_

Place of Purchase: \_\_\_\_\_

If you wish to register by mail, you should copy this page, fill it out and mail it to:

Indian Creek Design, Inc.

1019 First Street North

Nampa, Idaho 83687

Or

You may copy this page, fill it out and fax it to:

(208) 468-6650

