

OPERATORS MANUAL: PALMER'S PUMPERS

INTRODUCTION:

The best place to start is at the beginning. What they are and why they are.

Many years ago, I quickly discovered that most Paintball players are considerably younger than I am. I also quickly figured out that since I could not outrun them, I had better be able to out-gun them. Those discoveries led me to providing myself with a paintgun that would give me that edge. From quick changes, to Hi- performance valve designs, to Some interesting concepts in launch tube (barrel) configuration; the steps were taken to reach the highest levels of ON-FIELD effectiveness.

Our paintguns are designed and built to be the most effective equipment on the Paintball field without compromising Accuracy, Firepower, or Dependability. If you pay a little attention to, and take care of this equipment, it can last a lifetime and give you more control over your game than you ever thought possible. Design characteristics allow the use of this equipment in just about any environment/weather conditions that you might want to play in; Without taking away from or adding anything to it.

Your paintgun has but one purpose; to hit what you aim at, so as to Eliminate Opponents. What you now have is one of the best ways possible to accomplish that purpose! The following Information will show you what you must do for your paintgun so that your paintgun can do its job effectively for you. Keep in mind that your paintgun cannot play the game for you. However, if you give 110% to your game, this paintgun can keep up with you.

WARNINGS

READ AND REMEMBER THERE MAY BE A QUIZ !!

CAUTION: This is not a toy and should be used only under adult supervision. Misuse or careless use may cause serious injury - **especially to the eyes**. Users and observers must wear approved eye and face protection!!!

Do not insert fingers into action when the gun is cocked or gas supply is attached. This gun is powered by CO2 gas under very high pressure. Extreme care should be taken when any gas source is attached to the gun!!!! May be dangerous up to 100 yards. (91 meters) Use a barrel plug when not on the playing field. Always assume that this paintgun is loaded and potentially dangerous.

When handling, always CHECK to make sure that it is not loaded. NEVER leave the CO2 gas supply attached to any paintgun when it is not in use. NEVER use a CO2 bottle that is over heated. Follow DISCHARGE PROCEDURE immediately after playing! Point only at things that you INTEND to shoot!

SPECIAL CAUTION!! Use only D.O.T. approved CO2 cylinders with a high quality pin-type screw-in valve that is properly installed and torqued (tightened) into the cylinder. A loose bottle valve can be extremely dangerous. A CO2 bottle could become a deadly, high velocity, projectile!!!!

The use of LIQUID CO2 should be reserved for very cold weather conditions; 32 degrees or below! This paintgun is tolerant of liquid, but a steady diet of liquid CO2 will cause erratic behavior and may shorten the effective lifespan of any paintgun.

Do Not use an expansion chamber on this equipment; especially in cold weather. Over expansion of CO2 greatly reduces its natural potential energy and you will find it difficult, if not impossible, to reach and maintain effective and consistent velocities.

Maximum Velocity is 300 feet per second. - 205 miles per hour- Velocities over 300 fps must be avoided as Injuries may result or you could make somebody very angry!!! (275 fps to 285 fps should give you the best results).

BECOME FAMILIAR WITH YOUR EQUIPMENT

The Items you will need:

1. Paintgun
2. CO2 Bottle
3. Hex Wrench(s) (Allen type) 3/16" and 5/64"
4. Operating Instructions
5. a Feed System
6. lubricating Oil
7. Desire to learn

VELOCITY ADJUSTMENT

This adjustment is to set the speed (velocity) that you want to fire a paintball A HEXagon wrench (Allen type wrench) is required and supplied, 5/64 for back-bottle style or 3/16 for other styles. The VELOCITY ADJUSTING SCREW is located at the very rear of the lower tube. See photos following this section. Turn the adjusting screw CLOCKWISE to INCREASE the velocity or COUNTER-CLOCKWISE to DECREASE the velocity. What this adjustment does is change the spring tension behind the hammer. This determines how hard the hammer hits the valve open, to let air out, and push the ball down the barrel. For best results, adjust velocity to approximately 280 f.p.s..

USE A CHRONOGRAPH, DON'T GUESS!!!

SAFETY

The Safety is a functional part of this equipment and should be engaged whenever the paintgun is not in use. The Safety blocks the trigger from being pulled accidentally. On pistols it is a sliding pin located behind the trigger. Move the pin to the right for Safe and to the left for Fire. A red ring around the pin will be visible on the left when in the Fire position. On wooden stocked rifles the Safety is a rocker type switch located above the trigger at the rear of the gun and is marked with F & S. (Fire & Safe)

SAVE THE EYES... USE THE SAFETY and a BARREL PLUG

BOLT CONNECTING PIN

This is the retractable pin with the knurled silver knob that passes through and is affixed to the rear of the bolt. It allows for ultra quick removal of the bolt when cleaning is needed (which should not be very often). To remove the bolt: Pull out on the knob to retract the pin from the connecting link. While holding the knob out, rotate it clockwise from the 2 o'clock position to the 4 o'clock position then pull straight to the rear. To reinstall the bolt, reverse the previous procedure. There is a stud located in the bottom center of the bolt that must travel through a slot machined into the lower left rear of the barrel. Be certain that the pin is engaged fully with the connecting link before operating. Note: The removal of the bolt may be different on some conversions if a "strip notch" had previously been machined into the gun.

GAS SUPPLY RECEIVER

The gas supply receiver (also known as A.S.A. Air System Adapter) will accept only standard Pin-Valve type tanks or appropriate hose adapters that have an O-ring seal around the front end. NOTE: STANDARD PIPE FITTINGS WILL NOT WORK! The pin valve is opened by a stud in the bottom of the gas supply receiver. To charge the gun, screw in the tank only far enough to open the valve and stop

there. This will help to prolong the life of the 0-ring. If you continue to turn the valve into the receiver under pressure, damage to the 0-ring may result. A little oil or light grease on the threads of the valve and receiver will also reduce wear. **IMPORTANT---**Keep the gas supply receiver and tank valves clean!! Grit in the gas supply will damage seals and moving parts.

DISCHARGE PROCEDURE

As soon as possible after using your paintgun, you should always remove the gas supply. NEVER leave a pressurized gun unattended!!! The best way to clear your gun is to unscrew the tank, ONLY 1/8 to 1/4 turn counter clockwise, then fire the gun in a safe direction until no gas remains in the gun. Then remove the tank completely. If you unscrew the tank while under pressure, the high pressure gas escaping past the 0-ring can and will damage the 0-ring. (A small stream of high pressure gas can cut like a knife.)

BALL FEED DETENT

This is a small but important part of the proper operation (feeding and loading) of your paintgun. It consists of a C-shaped spring and a 1/4" delrin ball. The delrin ball protrudes into the feed port area of the barrel to maintain proper positioning of the paintball, so it can be pushed smoothly into the barrel by the bolt. In other words, the ball feed detent stops double feeding. Removal of the ball feed detent must be done carefully. Take care not to stretch the C-shaped spring out of shape. Squeeze in on the "C" to tighten the spring when reinstalling the detent.

!!! MAINTENANCE !!!

Lack of proper maintenance can cause the early death of any machine!! You paid good money for this equipment; now, take care of it!!! **MAINTENANCE = Regular CLEANING and LUBRICATION** Keep your equipment clean and properly lubricated and you can expect many years of trouble free operation.

LUBRICATION

A necessary parts of proper maintenance!

If you want your paintgun to enjoy a long and trouble free life, proper lubrication is essential. There is a bottle of oil included with this gun; use it frequently but sparingly. Use only approved lubricants!! **AIR TOOL** oil or **Light Machine oil** (IE. Sewing machine oil, 3 in 1 oil etc.) **Air Tool** oil is provided with your gun and is available at Palmer's or your local Hardware or Tool Supply. **DO NOT USE SPRAY ON LUBRICANTS OR WHITE LITHIUM GREASE.** Most spray lubricants contain solvents that can be harmful to seals. CO2 and Lithium grease combine to become something close to chewing gum. Only about 7 to 9 drops of oil are required to lubricate your paintgun completely. One drop of oil on each of the 0-rings of the bolt (3). Two or three drops to the hammer and mainspring (applied through the slot in the rear of the barrel, under the bolt... and two or three drops into the firing system. To lubricate the system internally, apply oil into the depression in the face of the tank valve or apply directly into the gas supply receiver, then charge the gun up and fire several times. CO2 moving through the gun will distribute the oil as needed. Any excess oil will pass through the gun and some excess oil will be deposited in the barrel, reducing accuracy if not removed. Internal lubrication of the system is only needed every 2000 to 3000 shots or after thorough cleaning Remember, only 3 or 4 drops of oil at a time.

CLEANING

The best thing that we have found to thoroughly clean your paintgun with is **WARM WATER** and lots of it. At the field, a spray bottle with a strong stream will do. At home, try the kitchen sink. Save water and take your paintgun into the shower with you. Remove the bolt for cleaning. The bolt is the only

part that you should have to remove, even for the most thorough cleaning. Flush the gun thoroughly with warm water. This will remove any dirt, paint, gelatin and most of the oil. Shake out any excess water. Compressed air or a home blow dryer, on WARM only, will help to get the water out. After drying the outside, charge up the gun and fire (in a safe direction with no paint) several times to get the moisture out of the internals. Remove the CO2 supply and lubricate as directed (next section). Recharge the paintgun and fire several more times to spread the lubrication throughout the system. Now its clean and ready for action or storage. Before shooting, swab the barrel with a clean, dry swab, cloth or paper towel. Accuracy depends on a clean and dry barrel. Any thing less than immaculate will not allow the accuracy that you expect. On field cleaning can be done in just a few seconds by removing the bolt and pushing a swab through from the rear. A double ended swab works best. A mixture of water and alcohol helps speed up the drying process when at the field. Water will cause no harm to this paintgun because of the corrosion resistant materials used in it's manufacture. Even the most thorough cleaning should not take more than 5 to 10 minutes.

TROUBLE SHOOTING

Our paintguns and this manual are products of many years of research and development, heavy use and abuse, severe testing and critical evaluation. We have strived to provide our customers with the most trouble free equipment possible. What you will read here comes from our experience over the years of trying to fulfill our goal of superior and lasting performance. Your understanding of this equipment will help us to meet these goals. If you should discover ways to improve on the product and/or this manual, please let us know so we can pass it on for others.

The most common causes of trouble are:

- Lack of proper maintenance (Too much dirt, not enough oil): Refer to MAINTENANCE and LUBRICATION sections.
- Improper gas supply: Empty or nearly empty CO2 bottle, an over filled bottle, or an improperly operating bottle valve will cause a wide range in velocity variation. (The gas supply is the first thing we check when a problem occurs).
- Improper re-assembly: Usually indicated by leaking air fittings and seals or complete lack of operation at all (If you simply must take it apart, be sure you know what you are doing, have replacement seals and gaskets handy and use the proper tools with a firm but gentle hand). If you have ANY doubts, call for assistance. Seek the help of a QUALIFIED PROFESSIONAL!!
- Breaking or cutting paintballs: Most commonly caused by improper feeding; Check the loader and fittings for free flowing movement of the paintballs. Also be sure that the Ball Feed index unit is in proper position and that you are making a full stroke with the pump!
- AIR LEAKS: Air (CO2) heard escaping down the barrel suggests a damaged or contaminated exhaust valve(aka: cup seal) that probably should be replaced. This requires the same special tools as used in Sheridan/PMI paintguns. SPECIAL NOTE: There is a set screw into the bottom of the lower receiver tube, under the grip frame, which must be removed before you can remove the valve components.
- Other air leaks can be easily located by applying soapy water to the suspect area, and can often be cured by the gentle tightening of a fitting or the replacement of a gasket.
- Contact PALMER'S PURSUIT SHOP for assistance if you should encounter any leaks. (Especially any internal ones that you cannot locate with soapy water.)
- High temperature weather conditions, (above 90 degrees F.) may cause some erratic behavior due to the nature of CO2. At these temperatures CO2 just does not want to be a liquid anymore, and pressures will change quite noticeably and quickly with just a few degrees in temperature

change! This is really not a problem if you accept it as the nature of things, and adjust as needed.

- Unstable velocity conditions are usually a result of gas supply source conditions. Conditions such as an overfilled or overheated tank or a nearly empty or very cold tank at start-up will cause wide variations in velocities during use. It is important to use a properly filled, tank that has been allowed to warm up to present air temperature, at start-up. Ideally, a tank that is filled to slightly less than max. capacity should be used. (Example: 11oz. in a 12oz.tank) Here is why: If you use a tank that is overfilled or overheated, the pressure inside the gun will be higher than normal which means that there is higher pressure holding the valve closed. This then makes it necessary to increase the tension on the hammer spring to generate enough force to drive the valve open against the higher pressure. Then, as the gas is consumed the pressure in the tank and the gun goes down and there is less pressure holding the valve closed. With less resistance, the hammer will now drive the valve open farther and hold it open longer causing the velocity to noticeably rise. Just the opposite happens with a freshly filled, very cold tank. Lower pressure holding the valve closed = less hammer force needed to drive the firing valve open. Then the pressure goes up and there isn't enough hammer force to get the valve open far enough and the velocity goes down. Although, if you start out with the gun, the tank and the air all at the same temperature, you will see very little change in velocity during use.
- Velocity drops when using QuikFire auto-trigger: Usually a result of improper adjustment of the auto-trigger itself. Be sure that it is set so that the gun is not allowed to fire until the bolt is in the full forward position. This setting is checked by first cocking the gun by pulling the pump handle all the way to the rear and move the pump handle forward slowly while holding the trigger back. The hammer should not be released to fire the gun until the bolt is in the full forward position. If the gun fires before the bolt reaches the full forward position it is necessary to adjust the position of the trigger control arm collar that is on the pump rod. If the gun fires too soon, the collar must be moved to the rear slightly to delay firing. If the collar is moved too far to the rear, the hammer will not be released at all. Any adjustments needed should be made in very small amounts at a time.

REPAIRS AND SERVICE

THERE ARE SOME THINGS THAT ARE BETTER LEFT TO A PROFESSIONAL!!!

We at Palmer's Pursuit Shop take great pride in offering to you, the customer, a high quality and a highly dependable piece of equipment. We want you to have that same pride and confidence, allowing you the highest levels of enjoyment and accomplishment in your game. To achieve this, we thoroughly test and very critically inspect each and every piece of equipment before delivery. As of yet, none of us here are able to walk on water! So, it is possible that you may find yourself in need of advanced service and/or repair to your paintgun. If so, we will be here to help keep your paintgun performing at the highest levels of effectiveness. We don't just stand behind our products; we stand WITH our products! Palmers Pursuit Shop warrants this paintgun to be free from defects in materials and/or workmanship, to the original purchaser, for one year. [See enclosed warranty sheet.] Any needed service/repair under Palmer's warranty will be done at Palmer's Pursuit Shop only, unless otherwise directed by Palmer. Any and all warranty work needed will be done IMMEDIATELY upon arrival at our shop and returned ASAP. You may be shooting it but "it is still my baby, and I don't mind taking care of it" is the way GLENN PALMER feels about it. Always seek the help of a QUALIFIED PROFESSIONAL for service and repair of any equipment! "If it isn't broke, don't fix it!" If you mess with it you may find yourself responsible for it. Refer to the TROUBLE SHOOTING SECTION.