DEPOT 53

HELPFUL INFORMATION – TOPICS LISTED ALPHABETICALLY

Introduction

Everything contained in this document is also available on our website at depot53.com under the Tech Support/FAQ's link. Should you have questions or need additional information, please contact sales@depot53.com, or call us toll free at (888) 351-6494, Monday thru Friday from 8:30 am to 5:30 pm Central Time.

Battery Basics

Voltage, or 'V' determines the rate of fire of an electric gun and how strong a spring can be installed in the weapon. Battery voltage (V) is determined by the number of cells in a battery pack. To determine a battery's voltage, multiply the number of cells by 1.2 volts. For example; 7 cells X 1.2V = 8.4V, or 8 cells X 1.2V = 9.6V.

Battery milliamperage (mAH) should be printed on the battery cell. The milliamperage rating, or mAH of a battery determines how long a gun will fire and take to recharge.

Cold temperatures reduce battery effectiveness and life dramatically.

There are two basic types of rechargeable batteries suitable for use in Airsoft guns . . . Nickel Cadmium (NiCad) and Nickel Metal Hydride (NiMH) batteries. The following is a comparison of the features of these two different battery types:

NiCad	NiMH
Prone to battery 'memory' effect	No battery 'memory' issues
Discharging required	Discharging not required
High output rates, high rate of fire	Rate of fire lower than a NiCad
Can be fast charged	Must be charged at 3A, or less
Less milliamp capacity than NiMH's	Higher milliamp capacity than NiCad's

The 'memory' effect described above occurs when a battery 'remembers' its usual discharge point and superficially 'needs' a charge whenever it hits that point. In other words, if you have a NiCad that routinely gets discharged to only 50% of its capacity; it will eventually not provide power below that mark. Many people who do not know about memory effects simply throw away the battery away because they think it is dead. More than likely, the battery can revived (providing that the battery isn't completely damaged from years of memory buildup).

Also, keep in mind all batteries have an expected life. NiCad's have a life of approximately 1000 cycles with proper care. So, if your battery is really old and no longer holds a charge, chances are it's not memory, but simply a tired battery that should be replaced.

Battery Care

Never pull batteries by their plugs and be careful not to damage the wiring insulation.

Exposing the battery wires to contact with another battery wire or other metallic objects can cause the battery to short out, damage the weapon, and/or create a potential fire hazard.

Unplug batteries from the weapon whenever it is not in use.

Store batteries in a cool, dry place when not being used.

Never expose batteries to open flame, or break open the cells.

The easiest way to prevent battery memory is to discharge it to 1.0 volt per cell (VPC) on a minimal load, then fully charge it. Repeat this procedure until you notice the battery lasting longer in the field and on the discharger. At this point it should hold its correct capacity and no longer be 'memorized'.

Unfortunately, unless you have a battery discharger, it is hard to discharge to 1.0 VPC without accidentally 'reversing' a cell. A reversed cell is one that begins to accept a 'backward' charge from the other better cells around it. This is really bad for a battery if you don't catch it, because chances are it won't charge again while in the pack. Charge the pack fully for 24 hours on a trickle charge to make sure that the reversed cell(s) have recovered fully. Also note that a once-reversed cell will never be the same. It will always be the first one to reverse in the pack, so you might want to be aware of that when you try to discharge and cycle it in the future.

Remember . . . if you treat your battery well from the beginning by never letting it acquire memory, you won't have to worry about any of these procedures.

Dispose of batteries in the proper manner.

Battery Charging

WARNING: NEVER OVERCHARGE A BATTERY! If a battery overheats, it can cause irreparable damage to the battery and create a potential fire hazard!

Be sure to read the charger instructions thoroughly before charging any battery.

Not all chargers are created equal. Be sure to use the proper charger for your battery type, i.e. if charging a 9.6V NiMH battery, make certain the charger is designed to charge both 9.6V and NiMH batteries.

Use only the proper connectors to attach a battery to the charger.

Calculate the proper amount of time required to charge a battery by dividing the battery's milliamp capacity by the chargers charge rate, e.g. it would take a 250 mAH-rated charger 6 hours to charge a completely drained 1500 mAH battery. Every charger is different, so be certain to read the charger's manual thoroughly before charging any battery.

Here is how to calculate the charging settings (current & time) based on the capacity of any NiCad battery.

Fast Charging Formula

20-minute Charge: Battery Capacity (milli amps) X .003 = Charging Current Setting (amps)
30-minute Charge: Battery Capacity (milli amps) X .002 = Charging Current Setting (amps)
60-minute Charge: Battery Capacity (milli amps) X .001 = Charging Current Setting (amps)

For example, if you want to charge a 2000 mAH NiCad battery in 30 minutes, this is how it would work:

2000 mAH X .002 = 4 amp (setting on the charger)

If you are not certain of the remaining charge in a depleted battery, check it every 5-10 minutes while charging. If the battery is warm to the touch, assume it is fully charged. If it is hot to the touch, remove the battery from the charger IMMEDIATELY! Another recommendation to prolong battery life is to keep a fan blowing on batteries (NiCad & NiMH) during charging to keep damaging heat build-up to a minimum.

NiCad batteries must be completely discharged before charging again. Use the appropriate discharger to deplete the battery of any residual charge, or completely drain the battery through normal use before recharging.

BB's

Only use premium BB's in any Airsoft gun. Using cheap BB's can cause damage to a gun and barrel due to seams, burrs, or deformation of a BB that results from poor manufacturing.

Most AEG's and GBB's were designed to use 0.20 gram (.2g) weight BB's, or heavier. BB's lighter than 0.2g can jam, or break the firing mechanism.

WARNING: NEVER reuse BB's. Reusing BB's that are dirty, or cracked from impact may also jam, or break the gun.

If you are not sure about what BB's to use, call our Customer Service Department regarding what type of BB's your gun was designed to use.

Electric Guns (AEG's & EBB's)

An Automatic Electric Gun (AEG or EBB) gearbox should cleaned and re-lubricated approximately every 6 months, depending on how heavily the gun is used. If you are unfamiliar with disassembling the weapon, this should only be performed by a trained professional or other experienced individual.

DO NOT soak the gun in any sort of lubricants or water. Liquids and AEG's do not mix well!

AEG fuses prevent a sudden discharge from your battery into the gun that could potentially damage the motor or other electrical contacts in the gearbox.

If the gun stops firing for any reason, the first thing to check is the fuse.

If the metal strip in the fuse is no longer intact, replace it with another one (available at most local hardware stores) and test fire the gun.

The most common reason for a fuse to blow is low battery charge. This occurs when the motor does not turn due to lack of voltage, but the battery still has a sufficient charge to heat up the wiring and blow the fuse. Replace the fuse, recharge the battery, and try again. Should the gun 'lock up', i.e. the gun will not fire even with a fully charged battery, consult with a Depot 53 Tech Rep to help unlock the gearbox and make sure no parts were damaged.

You can replace a blown fuse with any one rated up to 30 Amps.

Field Care

ATTENTION: Treat an Airsoft gun with care when handling. Though they are made mostly of durable, high-quality ABS plastic and metal parts, they will not withstand the same abuses and tolerances of a real firearm. Any type of major impact to an Airsoft weapon can potentially cause damage that will affect the performance, or break it.

Avoid direct impacts to the barrels and stocks. Barrels can bend and render the gun inoperable.

Avoid jamming dirt into the barrel. If a significant amount of dirt and debris travels up the barrel, inspect it and clean it before firing.

Use a sling whenever possible to avoid dropping the gun.

After use, be sure to clean the gun thoroughly as described in the Gun Care FAQ's above.

Many external components of the gun are attached by screws. Before and after use, check to see if any of these screws have loosened. If so, gently tighten them. Do not over torque the screws as that may cause the threads to strip.

If any parts are damaged or broken, contact Depot 53 Customer Service to obtaining replacement parts.

Gas Guns (GBB's & Rifles)

Gas guns fire best in WARM weather. Using a GBB or other gas gun in cold air is not advised. In clod air gas guns will not cycle as well, nor fire good, plus they will use more gas than normal.

Rapid-firing a gas gun in moderate temperatures (i.e. Spring & Fall) can also cause the gun to freeze up, resulting in improper firing. This is usually not a problem in summer months.

Always use high-grade BB's weighing .20g grams or more. For example, in KSC Glocks cheap BB's have a tendency to jam in the magazine, preventing proper firing. Using .12g is not advised.

Gas Magazines

The magazine is the heart of any gas gun. As such, filling the magazine is critical for both performance on the field and protecting your investment.

Properly filling a magazine takes a bit of practice. The first thing to do is turn the magazine upside down, pointing straight at the ground. This will help you align the magazine and canister, plus it lets you see the filler port on the mag. Make sure the magazine and gas canister are both lined up vertically (not tilting sideways). Make sure the canister nozzle gets a firm seal with the magazine before pushing down (firmly) on the gas canister.

Filling time depends on magazine capacity. A typical handgun mag generally requires about 3 seconds to fill completely, while a 50-round mag will take about 5 to 6 seconds. These times ensure you will get a full charge of gas, for the amount of BB's in the magazine. Filling mags is a precise job that requires some skill and patience. However, in time, you'll get the hang of it.

What NOT to do when filling a gas magazine.

NEVER overfill a magazine. If you load it up for 15 seconds, you will probably blow or damage the seals. Do not fill for more than 6 seconds MAX, ever!

DO NOT press the big metal button on the side of the mag to discharge the gas. Doing so can prematurely wear out the seals. Instead the safe way is to fire the gun until it is nearly out of gas.

If gas spills everywhere while filling a magazine STOP! Before proceeding again, let the magazine warm up for about 2 to 3 minutes.

Once you get a tight seal and fill the magazine correctly leave it alone until it warms to room temperature (about another 3 to 5 minutes) before firing.

At the end of the day, leave a little gas in the magazine before storing it. Do not keep them at full charge, nor store them totally empty. Leaving just enough gas (about 1 to 2 shots) in the magazine is perfect. The siliconee lubricant in the gas will help keep the magazine seals tight.

Gas Types

Choosing the proper gas type is critical with a gas gun (GBB). First and foremost, NEVER use a gas that does not contain silicone. The silicone helps keep the magazine seals and GBB internals lubricated while firing.

The two primary types of gas for GBB's are HFC-22 and the higher pressure HFC-134a. Below is a list of recommended types by manufacturer:

HFC-22	HFC-134a
HFC	KSC
KJW	KWA
KWC	Marushin
Maruzen	Maruzen
STTI	Tanaka
Tanaka	Tokyo Marui
Western Arms	Western Arms
Y&P	

Gun Care (General)

Airsoft Guns require minimal cleaning. The most important part that should be cleaned regularly is your barrel.

To clean your barrel, take the cleaning rod that came with the weapon and thread a .22 caliber patch or similar sized piece of cloth through the slit. Spray a small amount of silicone spray to the patch.

Before inserting the cleaning rod into the barrel, turn the Hop-Up off. If you leave the Hop-Up on you run the risk of damaging it, dislodging it, and/or getting the cleaning rod stuck in the barrel.

Insert the cleaning rod into the barrel. Swab the inside of the barrel with a back and forth motion. Remove the silicone soaked patch from the cleaning rod. Insert a new, dry patch onto the rod and repeat the process to clear any remaining residue from the inner barrel.

Once no dirt left in the barrel, test fire the gun and reset the Hop-Up.
Be sure to keep all moving parts slightly lubed with SILICONEE oil. NEVER use anything else. 100% pure siliconee oil (available at any hardware store) is recommended, as it will not damage plastic or rubber parts. Hoppes #9, WD-40, and other petroleum-based lubricants will hurt a gun.

For GBB's lubing the slide is critical. Just like a real weapon, not cleaning and lubing the slide is the most frequent cause of jams and improper functioning. To do this requires field striping the weapon to access the slide and parts.

ALSO, be sure to spray a little siliconee oil into the top nozzle of the magazine after every 5 to 6 magazines worth of BB's. On GBB's this is done, by pressing the big-metal button on the side of the mag all the way down. For AEG's, simply spray into the hole BB's come out of. For both, apply a quick shot of siliconee into the top-part of the mag. This will keep the seals and springs properly lubed for a lifetime of use. NEVER overkill the lubing. Too much lubricant will only gunk up the parts and degrade performance. Just use enough to apply a thin coating to the internal surfaces.

WARNING: Never use petroleum-based solvents or harsh cleansers to clean your gun. Only use a soft, damp cloth to clean the exterior, and 100% siliconee oil spray to clean the internals.

Hop-Up

Be sure to follow the gun manufacturer's directions on how to adjust the Hop-Up of your weapon.

Depending on the weapon's velocity, most guns require a range of at least 30 yards to properly set a Hop-Up and achieve as flat a trajectory as possible.

Most Automatic Electric Guns (AEG's) have very sensitive Hop-Up adjustments. Very little movement of the adjustment wheel, or arm causes large variations in a BB's trajectory.

Hop-Up mechanism can be moved and shifted even as the gun is being fired.

Many factors can affect your gun's trajectory: cleanliness of the barrel, brand of BB's, weight of the BB's, wind, humidity, and air density. Never assume your gun will fire the same way anywhere, anytime! Expect to reset the Hop-Up periodically.

Loading Magazines

Be sure to thoroughly read the owners manual before loading magazines. Make sure BB's are new and clean. Dirty, or deformed BB's can cause the magazine, or firing mechanisms to jam.

Keep foreign objects, debris, and dirt away from BB's and magazines.

Always remove and throw away the staple from a bag of BB's! They are notorious for jamming magazines.

Occasionally lubricate your magazines by spraying a small amount of 100% siliconee lubricant (**NOT** petroleum-based oil) into the magazine. If the magazine has been subjected to significant amounts of dirt and dust, disassemble it magazine and clean out all of the dirt and dust. Consult with Depot 53 on how to do this.

High capacity magazines are fairly complex mechanisms. In order for them to feed reliably, they require a load of at least 50 BB's, and there will always be at least 20 BB's left in the magazine when it quits firing. A fully wound magazine will typically shoot 50%-75% of the magazine's full capacity before requiring rewinding. You can over wind high capacity magazines; if the winding wheel is clicking, it is over wound. If a high capacity magazine jams, tap the side of the magazine sharply against a solid, flat surface. That will generally un-jam the winding wheel.

Motor Adjustment

On weapons with this feature, a key component of proper functioning is the Motor Height Set-Screw. This small hex screw (typically 1.5mm in width) is located at the end of motor housing, typically located in the grip of the gun. This screw ensures that the motor is set the proper distance from the gears in the gearbox. If the motor is too close, or too far from the 'Bevel Gear' in the gearbox, the gun will produce a whining sound. In extreme cases, an improperly setscrew will cause the gun to jam, break the gear, or strip the pinion gear on the head of the motor.

Motor height is set in place by the factory, however after use, the spinning of the motor may cause the setscrew to tighten or loosen from its original position. If unusual noises begin coming from the gearbox adjust the Motor Height Set Screw into its proper position.

A high-pitched whining sound generally indicates the motor height is too low. To correct this, turn the setscrew clockwise to raise the motor up. Do this slowly while firing the gun in semi-automatic mode. Listen for a flat, consistent sound similar to the one the weapon made when it was new. Once this sound is achieved this, leave the screw in place.

A high-pitched, grinding sound generally indicates the motor is too high, or has been adjusted too far. Turn the screw counterclockwise to lower the motor while firing in semi-automatic mode. Again, listen for a flat, consistent sound coming from the motor and gears.

The key to adjusting the motor height is to minimize any sounds coming from the motor and gearbox.

Repair & Upgrades

Gun repairs not described in these FAQ's should only be performed by a skill individual or experienced Airsoft technician. Contact Depot 53 for repair services, or a referral to an experienced professional who specializes in repairs. Airsoft guns are designed to perform within certain parameters and tolerances. Changes made to these parameters and tolerances are not recommended and are done at the owner's own risk. Alteration to the gun's internal parts may cause excessive wear and tear, and possibly breakage. Alteration to the gun's internals voids all factory warranties. Consult with us for more information regarding gun upgrades.

Un-jamming

Airsoft guns typically jam due to excessive dirt in the barrel, dirty BB's, deformed BB's, foreign objects in the magazine/barrel, or overly tight Hop-Up. In extreme cases, a gun can jam due to a damaged or deformed Hop-Up bucking, damaged nozzle, or broken tappet plate.

If a BB jams in the gun stop firing immediately. Continued firing may result in a broken gear or piston.

To remove a jammed BB, remove the magazine and use the opposite end of the cleaning rod (the tip with the slanted angle) that came with the weapon. Turn the Hop-Up off and insert the slanted end of the cleaning rod into the barrel. Turn the gun upside down, look into the magazine slot, and gently force the BB back into the area of the magazine well. DO NOT use excessive force to un-jam a BB as this can cause the Hop-Up rubber to dislodge.

Once the BB(s) have been cleared from the barrel, test fire the gun without any BB's, or a magazine in it. If the gun sounds fine, test fire it again with BB's. If jamming persists, consult with a Depot 53 Tech Rep regarding repairs.

Questions & Other Help

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