## SATCO<sup>™</sup> 700

#### .68 CALIBER PRECISION PNEUMATIC PAINTBALL GUN OWNER'S MANUAL

Sport Arms Technology CO. 2721 White Settlement Rd. Ft. Worth, TX 76107 (817) 335-1147

WARNING:

THIS GUN IS NOT A TOY.

RECOMMENDED ONLY FOR ADULT USE.

OBSERVE ALL WARNINGS AND

CAUTIONS STATED IN THIS MANUAL.

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#### CONTENTS

#### INTRODUCTION

#### **SPECIFICATIONS**

#### WARNINGS AND LIABILITIES

#### SAFETY PRECAUTIONS

#### OPERATING PROCEDURES

- 1. Safety
- 2. Type and Installation of CO2
- 3. Loading
- 4. Shooting
- 5. Bolt Return Button
- 6. Paintball Velocity Adjustment
- 7. Using Nitrogen Instead of CO2
- 8. Agitator

#### MAINTENANCE PROCEDURES

- 1. Cleaning and Lubrication
- 2. Bottle O-ring
- 3. Bolt Assembly Removal and Installation
- 4. Bolt Assembly Disassembly and Reassembly

#### ASSEMBLY DRAWINGS (Separate Manual)

- 1. Trigger and Receiver Assembly
- 2. Bolt Assembly
- 3. Timing Valve Assembly
- 4. Ball Feed Tube and Bolt Return Button Assembly
- 5. Pressure Regulator Assembly

#### TOOLS

#### PARTS LIST

#### TROUBLESHOOTING

- 1. Gun Failing to Cycle
- 2. Paintball Velocity to Low
- 3. Paintball Velocity to High
- 4. Multiple Paintballs Feeding into Chamber
- 5. Pinching or Chopping Paintballs
- 6. Bolt Jams in Forward Position
- 7. Excessive Paintball Breakage

#### WARRANTY AND REPAIR INFORMATION

#### INTRODUCTION

The SATCO $^{\text{M}}$  700, a .68 caliber precision pneumatic paintball gun, is made of the finest materials to ensure reliability, durability and longevity. All aluminum parts are plated with Nituff\*, a process which gives parts a hard anodized, Teflon impregnated coating, which creates a slick, hard and corrosion resistant surface. Internally, nonaluminum moving part is made of either a heat treated stainless steel or nonheattreated stainless steel, depending on the amount of dynamic momentum encountered. springs are also made of stainless steel and the screws are made of stainless steel or case hardened.

CNC milling the receiver from a single piece of aluminum, creates a solid body devoid of the ramifications caused by loosening in multipiece receivers. This same process allows for a trigger that is dirt resistant and machined from a solid piece of stainless steel.

\*NITUFF is a registered trademark of Nimet Industries, Inc. \*TEFLON is a registered trademark of DuPont Fluorocarbon resins. All filtration of compressed air in the SATCO™ 700 is achieved by the use of a stainless steel sintered filter, which prevents any contaminates from coming in contact with the To prevent dramatic internal parts. fluctuations in paintball velocity due to pressure changes in the CO2 bottle, the SATCO™ 700 has been equipped with a pressure regulator. In the event of failure to recock, a push button was installed for a pneumatic bolt return, thereby maintaining the sealed quality of the bolt and qun. In an effort to maintain low ball breakage, the following features exist. One, to minimize distortion and breakage of the ball upon contact with the bolt, the front end of the bolt has been radiused to match the contour of a paintball. Two, multiple holes have been drilled in the front end of the bolt to ensure more even distribution of air impacting the Three, due to the ball being paintball. positioned in the barrel, by the bolt, most ball breakage will occur in the barrel; this allows for quick and easy cleaning. Lastly, assisted feeder tube augments successive rapid chambering of the paintballs.

paintball After researching the competition, many hours were spent conceiving a way to improve the paintball gun. Knowing the materials that existed, the finest were selected for construction. Preference for CNC milling was given priority over the less costly multipiece way of mass production. Also built into the design of the SATCO™ 700, is a removable in-line bolt assembly as well as a removable trigger plate, which allows the entire trigger mechanism to be exposed. These are just a few of the features that give the SATCO™ 700 its ease of access for dismemberment and reassembly.

#### SPECIFICATIONS

#### WARNINGS AND LIABILITIES

The owner/operator assumes all responsibility for any damage, injury or death resulting from improper, intentional, reckless or accidental use of this weapon, beyond its intended use. This gun is not a toy therefore, should not be used by persons under 18 years of age. The information in this manual is subject to change without notice. Sport Arms Technology Co. reserves the right to change, improve or modify products without obligation to change, improve or modify any previously sold products.

#### SAFETY PRECAUTIONS

1. Do not pressurize or load this gun until you have read this manual thoroughly and are familiar with the SATCO™ 700.

- 2. Use of this gun while under the influence of alcohol or drugs constitutes a criminal disregard for public safety.
- 3. Do not disassemble this gun in any manner while it is pressurized, except for the barrel and the ball feed tube and only for the purpose of cleaning.
- 4. Do not modify this gun or any of its parts in any manner. Modification of this gun or of any of its parts could result in injury or death and will void the warranty.
- 5. Always point the gun in a safe direction when pressurizing. Avoid pulling the trigger when the gun is not pressurized. If the trigger was pulled, upon pressurizing the gun may discharge.
- 6. Never load or shoot any objects other than .68 caliber paintballs.
- Do not look directly into the barrel, accidental discharge may occur.
- Do not point the gun at objects not intended to be shot.
- Never shoot towards individuals who are closer than 20 ft. and/or not wearing approved eye, face and body protection.
- 10. Treat this gun as if it is always loaded.
- 11. This gun can fire if dropped. Keep unloaded and unpressurized when not in use.
- 12. Never store this gun while it is pressurized.
- 13. Install the barrel plug when not shooting the gun. One is provided, please use it.
- 14. Avoid CO2 escaping from the gun or bottle. It is very cold and may cause frostbite.
- 15. Paintballs can stain or damage surface finishes, never shoot the property of others.

#### OPERATING PROCEDURES

NUMBERS IN PARENTHESIS REPRESENT PART NUMBERS

- 1. SAFETY
  The pushbutton safety (41) is located above the trigger. A narrow red band is exposed on the left side of the gun when it is ready to be shot.
- 2. TYPE, INSTALLATION AND REMOVAL OF CO2
  Use only standard CO2. Liquid CO2 should
  not be allowed to enter the gun. If this
  should occur, the gun will continue to
  operate, but ball velocity may fluctuate
  dramatically.

To install the CO2 bottle, point the gun in a safe direction, place one hand on the gun grip and the other hand on the bottle, clockwise screw the bottle on to the rear end of the gun until snug. Do not overtighten the bottle, the O-ring creates the seal, not the threads on the bottle. During this procedure, you may hear a snap as the CO2 enters the bolt assembly.

If CO2 is leaking from the rear end of the gun, check the O-ring on the bottle.

To remove the bottle from the gun, simply hold the gun and bottle as done during the installation process, unscrewing the bottle in a counter-clockwise direction until it is free from the gun. During this procedure CO2 gas escaping from the gun may be heard.

### 3. LOADING Attach the magazine/adapter combination to the ball feed tube (135) and fill with

paintballs. To ensure proper feeding of paintballs, do not over fill the magazine.

#### 4. SHOOTING

To shoot the gun, point in a safe direction, with the safety off (a narrow red band exposed on the left side of the gun), squeeze the trigger. Make sure your hands are clear of the ball feed tube. The ball stop in the ball feed tube could break if it is not allowed to exit the bolt chamber.

#### 5. BOLT RETURN BUTTON

In the event the gun fails to cock, due to poor lubrication, low CO2 pressure or some other problem, the gun is equipped with a pneumatic bolt return button on the left side which should be pushed to return the bolt to the cocked position. Frequent use of this button is an indicator of a possible problem and the troubleshooting section should be consulted.

## 6. PAINTBALL VELOCITY ADJUSTMENT Provided in the grip of the gun is an 1/8" Allen wrench. Insert the Allen wrench in the pressure regulator set screw (89) on the left side of the gun. A clockwise movement of the Allen wrench will increase the paintball velocity, while a counterclockwise movement of the Allen wrench decreases paintball velocity. When descreasing the paintball velocity, it will take at least one shot before the pressure regulator will decrease the paintball velocity.

INDOOR PAINTBALL VELOCITY (Refer to Bolt Assembly Drawing) For velocities ranging from 220-260 feet

per second, the bolt assembly must be removed and the black set screw (237) in the bolt tube (87) must be exchanged for a longer, stainless steel set screw with a nylon tip, which can be found in the plastic parts bag in the gun grip. Use the proper Allen wrench from the parts bag to make this exchange. Screw the set screw with the nylon tip down until the tip makes contact and is snug. This will decrease the velocity to around 230 fps. Use the velocity adjustment screw (89) on the outside of the gun to adjust the velocity between 220 and 260 fps. return to velocities between 270 and 300 fps, the set screw with the nylon tip must be exchanged for the black set screw The black set screw must be (237). screwed down flush with the outside diameter of the bolt tube (87). Failure to exchange the set screws for the increased velocities between 270 and 300 fps will result in a higher operating pressure to obtain these velocities and may damage the gun.

# 7. USING NITROGEN INSTEAD OF CO2 Compressed Nitrogen gas offers several advantages over CO2. CO2 is in a liquid state and converts to a gaseous state. The change in physical states is subject to the surrounding temperature. As the temperature increases, the pressure inside the CO2 bottle will increase and as the temperature decreases the pressure inside the bottle will decrease. During long rapid shooting sessions, the CO2 bottle cools, this means the pressure in the bottle has decreased. Finally, there is always the threat of liquid CO2 entering the gun. All of the factors described

above can affect the velocity of the paintballs and the performance of the gun, especially if the gun is not equipped with a pressure regulator. Compressed Nitrogen is always in a gaseous state therefore, the pressure will not be affected by surrounding temperature fluctuations. Nitrogen will give more consistent velocity shots and will not lose pressure during long rapid shooting sessions. The only problem with Nitrogen is the need to be carried in a larger volume and at a higher pressure than CO2. It is recommended that any Nitrogen system used with the SATCO™ 700 have its own pressure regulator. The regulator serves as a buffer between the high pressure of the Nitrogen and the pressure needed to supply the SATCO™ 700. The pressure regulator in the gun will reduce the supplied pressure to the amount that is needed to operate the gun properly, approximately 450 PSI.

#### 8. AGITATOR

(Refer to the Trigger Assembly Drawing) The gun comes equipped with its own agitating system called the Pneumatic Tonque Agitator (PTA). This agitator uses exhausted air from the gun to inflate a bladder thereby agitating the paintballs everytime the gun is shot. The black hose that comes attached to the gun will need to be attached to the fitting on the bottom front of the loader. agitator is not wanted it can be removed. The air transfer plate (147) contains a fitting (149) that will need to be replaced with a #10-32 X 3/16 long set screw (not provided). This will prevent exhausted air from being directed into the shooter's face.

#### MAINTENANCE PROCEDURES

MAKE SURE THE GUN IS DEPRESSURIZED BEFORE DOING ANY MAINTENANCE OR REPAIRS

#### NUMBERS IN PARENTHESIS REPRESENT PART NUMBERS

- 1. CLEANING AND LUBRICATION
  Before every use, cleaning and lubricating
  the gun is recommended. KC Trouble Free
  Gun Oil is the choice lubricating agent.
  A few drops on the O-rings and in areas
  noted on assembly drawings will do the
  job.
- BOTTLE O-RING
   Using Silicone or Lithium grease on the
   CO2 bottle O-ring will prevent it from
   being cut when inserted into the gun.
- 3. BOLT ASSEMBLY REMOVAL AND INSTALLATION (Refer to Trigger Assembly)
  To remove the bolt assembly, unscrew the rear plug (69) at the rear of the gun and pull the entire bolt assembly straight out, it is important to pull straight from the rear of the gun.

During the process of installing the bolt assembly, the sear (25) is engaged several times, this is why the trigger (21) must be pulled. If the process described below proves to be difficult, remove the cover plate (15) and watch the sear (25) as the bolt assembly is installed. The sear (25) will be moved forward by the bolt assembly until it engages the trip mechanism (23). It is at this point that the trigger (21) needs to be pulled, this should occur 2-3 times during the course of installing the bolt assembly.

To install the bolt assembly, one hand will need to be on the trigger (21) at all times while the other inserts the assembly. A constant forward and light pressure needs to be maintained during this insertion process. While holding the rear of the bolt assembly, insert it into qun until it stops, then pull the trigger (21). The bolt assembly should move forward and stop, again pull the trigger (21), keeping light pressure on the assembly, again it should move forward and stop. At this point, only one O-ring (179) should be visible on the rear plug (69) of the bolt assembly. The other 0-ring that is not visible on the rear plug (69) of the bolt assembly is what is now preventing it from being installed any deeper. With a firm twisting motion push in the bolt assembly until the threads Begin screwing in the bolt assembly, as the threads start to engage, pulling the trigger (21) once more will allow the bolt assembly to be fully inserted.

4. DISASSEMBLY OF THE BOLT ASSEMBLY
(Refer to Bolt Assembly Drawing)
To begin the disassembly process, unscrew
(by hand) the bolt tube (87) from the bolt
tube cap (77). After removing the bolt
tube (87), pull back on the bolt tube stop
(79), exposing the split rings (81). If
the rings do not fall out by themselves,
remove them by hand. The hole in the
shaft (61) should be visible, if not pull
the bolt tube stop (79) back until the
hole is accessible. The parts bag
contains a drill blank, which should be
inserted through the hole in the shaft
(61). Using an Allen wrench, remove the

crack valve screw (85), this will allow everything up to the rear plug (69) to slide off the shaft (61). Caution should be used when sliding the bolt tube cap (77) over the split ring groove to insure the Quad ring (171) in the bolt tube cap is not damaged. The shaft (61) can be pulled out the rear of the rear plug (69) by removing the plug insert (59), again using caution not to damage the Quad ring (171) in the rear plug (69). Access to the Quad rings in the bolt tube cap (77) and rear plug (69) is obtained by removing the O-ring plugs (71) using a 1/2 inch open end wrench.

Before beginning the reassembly process, check that the plastic washer (67) and brass sleeve (65) remained intact in the rear plug (69) during removal of the shaft (61). Using the oil supplied lubricate the front of the shaft (61) and slide it through the brass sleeve (65), plastic washer (67) and the rear plug (69), again using caution not to damage the Quad ring (171). Pull the shaft (61) through the rear plug (69) until it stops. slide, in order, the plastic washer (73), two sponge washers (75) and plastic washer (73) onto the shaft (61). Next, slide on the bolt tube cap (77), again using caution not to damage the Quad ring (171), this is followed by a plastic washer (67). Now slide the bolt tube stop (79) on the shaft (61) making sure the small hole is next to the plastic washer (67). Using the drill blank and Allen wrench, attach the crack valve (83) to the shaft (61) with screw (85). Turn the screw (85) until it is tight against the inside of shaft (61). The crack valve (83) should

be loose enough to turn and pivot about the shaft (61). The bolt tube stop (79) should be pulled back far enough to expose the split ring groove on the shaft (61). Place the split rings (81) in the split ring groove. Slide the bolt tube stop (79) over the split rings (81), to secure them in the split ring groove. To prevent the split rings (81) from becoming dislodged while the bolt tube (87) is attached, pull the bolt tube cap (77) and plastic washer (67) against the bolt tube stop (79) and then screw on the bolt tube (87). Once assembled the bolt tube and shaft should move freely back and forth.

#### TOOLS

TOOL

USE

Allen wrench 3/32" Remove the ball feed tube screws (143), the crack valve screw (85) and the indoor velocity set screw (237) in the bolt tube.

Allen wrench 7/64" Remove the cover plate screws (17).

Allen wrench 1/8" Paintball velocity adjustment set screw (89).

Nutdriver 3/16" Remove the timing valve front plug (131).

Nutdriver 1/2" Remove the pressure regulator cover (91) and outer fitting (111) and bolt assembly plug insert (59).

		assembly				
1/16"	dia.	valve	in	tì	ıe	bolt
	Blank	Disasser	of the		crack	

The Allen wrenches and the drill blank are in a plastic bag in the grip of the gun.

#### PARTS LIST

- 9 Receiver Grip, Stowaway 2 11 Screw, Grip, 1/4-20 X 3/4 Lg. S.S. Socket 13 Head Cap Cover, Plate 15 Screw, Cover Plate, 6-32 X 1/4 Lg. C.H. 17 Socket Head Cap, (2) 19 Barrel 21 Trigger 23 Trip 25 Sear 27 Dowel Pin, Trigger, Hardened S.S. Dowel Pin, Stop, Hardened S.S. 29 31 Dowel Pin, Sear, Hardened S.S. 33 Spring, Compression, S.S. Spring, Extension, S.S., (2) 35 Screw, Trip, Sear, Ball Stop, 2/56 X 1/4 37 Lg. C.H. Socket Head Cap, (3) Roll Pin, 1/16 Dia. X 3/16 Lg., S.S., (2) 39 Safety 41 43 Spring, Extension, S.S. Retaining Ring 47 49 Filter Adapter 51 Rear Swivel Pin 53 Rear Sling Swivel 55 Front Swivel Pin 57 Front Sling Swivel 59 Plug Insert
- 69 Plug, Rear O-ring Plug, (2) 71 73 Washer, Nylon (2) 75 Washer, Sponge, (2) 77 Cap, Bolt Tube 79 Stop, Bolt Tube 81 Split Ring 83 Crack Valve 85 Screw, Crack Valve, 4-40 X 1/2 Lg. S.S. Socket Head Cap with Nylon Pellet 87 Bolt Tube Set Screw, 1/4-28 X 3/8 Lg. S.S. Cup Point 89 91 Cover 93 Washer 95 Spring, Belleville, S.S. (4) 97 Plunger 99 Fitting, Inner 101 Nut 103 Pin 105 Spring, Compression, S.S. 107 Guide 109 Bushing 111 Fitting, Outer 113 Pin, Actuating 115 Washer, S.S., (2) 117 Tank 119 Wave Spring Washer, S.S. 121 Spacer 123 Rod 125 Rod Plunger 127 Plunger Stop 129 Spring, Compression, S.S. 131 Plug, Front 135 Ball Feed Tube 137 Cap 139 Screw, see number 37 141 Ball Stop Screw, Ball Feed Tube, 4-40 X 9/16 C.H. 143 Socket Head Cap, (2) 145 Spring, Compression, S.S.

61

65

67

Shaft

Sleeve

Washer, Nylon, (2)

Air Transfer Plate

147

- 149 Fitting, Transfer Plate
- 151 Button, Bolt Return
- 153 Washer, #4 Lockwasher, S.S. (4)
- 155 Screw, Button, 2/56 X 3/32 Lq. S.S. Socket Head Cap
- 157 Cap, Bolt Return
- 159 Screw, Integral Seal, 6-32 X 1/4 Lg. S.S. Pan Head
- Set Screw, 4-40 X 1/8 Lg. C.H. Cup Point, (6) 161
- 0-Ring 003.5 163 70D Nitrile
- 165 0-Ring 005 70D Nitrile (2)
- 0-Ring 006 70D Nitrile (2) 167
- 169 0-Ring 008 70D Nitrile (4)
- O-Ring 008 Quad 70D Nitrile (2) 171
- 173 0-Ring 013 70D Nitrile
- 175 0-Ring 015 70D Nitrile (3)
- 177 0-Ring 015 Teflon
- 70D Nitrile (2) 179 0-Ring 016
- 70D Urethane 181 0-Ring 016
- 0-Ring 017 183 70D Nitrile
- O-Ring 020 70D Nitrile 185
- 70D Nitrile 187 0-Ring 025
- 189 O-Ring Cord, 3/32 Dia. X 1/4 Lq.
- 191 Washer, Seal
- 235 Felt
- 237 Set Screw, 10/32 X 3/16 Lg. C.H. Cup Point with Nylon Pellet
- Set Screw, 10/32 X 7/16 Lg. S.S. with 239 Nylon Tip
- 241 Hose
- Nut, Jam, 1/4-20, (2) 243
- Lockwasher, 1/4, (2) 245
- 247 Fitting, Loader
- Rubber Bladder 249
  - S.S. = Stainless Steel
  - C.H. = Case Hardened

#### TROUBLESHOOTING

- 1. Problem: Gun Failing to Cycle or Cock Cause: A. Low CO2 pressure. Replenish.
  - B. Needs Lubricating oil on bolt assembly. See bolt assembly drawing.
  - C. O-ring on bolt tube (181) or in the receiver (183) is bad. Replace 0-ring or 0rings.
- 2. Problem: Paintball Velocity to Low. Cause: A. Low CO2 pressure. Replenish.
  - B. Pressure Regulator is out of adjustment, needs to be increased by turning set screw (89) clockwise. This happen can after the pressure regulator has been disassembled and then reassembled.
- 3. Problem: Paintball Velocity to High. Cause: A. Liquid CO2 has entered the gun.
  - B. Pressure Regulator is out of adjustment, needs to be decreased by turning the set (89) counterscrew clockwise. This can happen after the pressure regulator has been disassembled and then reassembled.
  - C. The pressure regulator washer seal (191) is bad. Replace seal.
- Problem: Multiple Paintballs Feeding into 4. Chamber.

- Cause: A. The ball stop (141) is not working because of residual paint liquid from a previously broken paintball or the ball stop is broken and needs to be replaced.
- Problem: Pinching or Chopping Paintballs.
   Cause: A. The gun is not being held upright while shooting.
  - B. Paintballs are feeding too slow due to dirt or residual paint liquid from a previously broken paintball. Clean the ball feed tube (135). To obtain maximum ball feeding it is important to keep the magazine, ball feed tube and paintballs clean.
- 6. Problem: Bolt Jams in Forward Position.
  Cause: A. Chopped paintball. Push the bolt return button. If this does not work, depressurize the gun and push on the front of the bolt. When anything is inserted down the front of the gun be sure that the ball stop (141) is out of the way, otherwise it could be damaged or broken.
- 7. Problem: Excessive Paintball Breakage or Accuracy is deminished.
  - Cause: A. Old or defective paintballs.
    - B. Barrel, ball chamber, ball feed tube or magazine is dirty or has paintball liquid residue. To obtain the best accuracy and

minimum ball breakage the paintballs and anything they come in contact with must be clean.

#### WARRANTY AND REPAIR INFORMATION

Sport Arms Technology Co. warrants the SATCO™ 700 to be free of defects in materials and workmanship for a period of 2 years from the date of purchase by the original owner. Sport Arms Technology Co. will replace or repair any parts found to be defective due to a failure in materials or workmanship. All parts replaced under this warranty become the property of Sport Arms Technology Co.

For warranty repair or non-warranty repair send your gun to Sport Arms Technology Co., with postage or delivery charges prepaid, along with a brief description of the problem or requested repair.

Excluded from the warranty coverage are the valve seats, O-rings, sponge washers, plastic washers and the ball stop. Although these items are excluded from the warranty, some extras have been provided in a plastic bag found in the grip of the gun.

SEND YOUR GUN TO: Sport Arms Technology Co., Inc. 2721 White Settlement Rd. Fort Worth, TX 76107

The information on the warranty card must be completed and the card returned to guarantee warranty coverage.

## SATCO™ 700

## .68 CALIBER PRECISION PNEUMATIC PAINTBALL GUN ASSEMBLY DRAWINGS

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