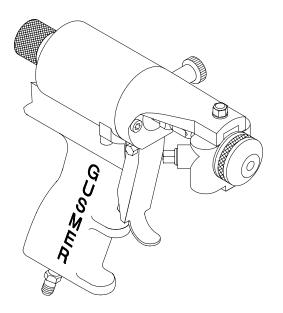


"Teamwork & Communication"





# Model GX-8 Spray Gun

Operating Manual 32943-1

April 21, 1999

Issue 1

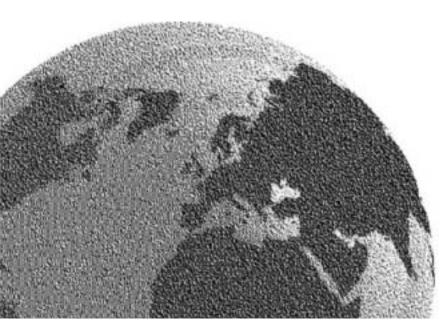
### **GUSMER CORPORATION**<sup>®</sup>

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NOTICE: This manual contains important information for your GUSMER equipment. Read and retain for future reference.

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# WARRANTY

Gusmer Corporation (Gusmer) provides a limited warranty to the original purchaser (Customer) of Gusmer manufactured parts and equipment (Product) against any defects in material or workmanship for a period of one year from the date of shipment from Gusmer facilities.

In the event Product is suspected to be defective in material or workmanship, it must be returned to Gusmer, freight prepaid. If Product is found to be defective in material or workmanship, as determined solely by Gusmer, Gusmer will issue full credit to Customer for the freight charges incurred in returning the defective Product, and either credit will be issued for the replacement cost of the Product or a replacement part will be forwarded no-charge, freight prepaid to Customer.

This warranty shall not apply to Product Gusmer finds to be defective resulting from: installation, use, maintenance, or procedures not accomplished in accordance with our instructions; normal wear; accident; negligence; alterations not authorized in writing by Gusmer; use of "look alike" parts not manufactured or supplied by Gusmer; or Product used in conjunction with any other manufacturer's pumping or proportioning equipment. Further, the terms and conditions of this warranty shall not apply to services or repairs made to Product by any third party not authorized in writing by Gusmer. For such Product, a written estimate will be submitted to Customer at a nominal service charge, itemizing the cost for repair. Disposition of Product will be done in accordance with the terms stated on the written estimate.

The warranty provisions applied to product that are not manufactured by Gusmer will be solely in accordance with the warranty provided by the original manufacturer of the product.

GUSMER MAKES NO WARRANTY WHATSOEVER AS TO THE MERCHANTABILITY OF, OR SUITABILITY FOR, ITS PRODUCT TO PERFORM ANY PARTICULAR PURPOSE. CREDIT FOR, OR REPLACEMENT OF, PRODUCT DEFECTIVE IN MATERIAL OR WORKMANSHIP SHALL CONSTITUTE COMPLETE FULFILLMENT OF GUSMER OBLIGATIONS TO CUSTOMER. NO OTHER WARRANTY, EXPRESSED OR IMPLIED ON ANY PRODUCT IT MANUFACTURES AND/OR SELLS, WILL BE RECOGNIZED BY GUSMER UNLESS SAID WARRANTY IS IN WRITING AND APPROVED BY AN OFFICER OF GUSMER.

Under no circumstances shall Gusmer be liable for loss of prospective or speculative profits, or special indirect, incidental or consequential damages. Further, Gusmer shall have no liability for any expenses including, but not limited to personal injury or property damage resulting from failure of performance of the product, use of the product, or application of the material dispensed through the product. Any information provided by Gusmer that is based on data received from a third source, or that pertains to product not manufactured by Gusmer, while believed to be accurate and reliable, is presented without guarantee, warranty, or responsibility of any kind, expressed or implied.

Gusmer through the sale, lease, or rental of Product in no way expresses or implies a license for the use of, nor encourages the infringement of any patents or licenses.

To insure proper validation of your warranty, please complete the warranty card and return it to Gusmer within two weeks of receipt of equipment.

Revised 11/12/98



# **GENERAL SAFETY INFORMATION**

It is necessary to understand and follow the instructions in this manual to insure proper and safe operation of the equipment.

As with most mechanical equipment, certain safety precautions must be taken when the equipment discussed in this manual is operated or serviced. Severe bodily injury or damage to equipment and property may result if the instructions and precautions listed throughout this manual are not followed.

Needless to say, sufficient guidelines cannot be developed to eliminate the need for good common sense in the use and servicing of this equipment, and in the use and application of the products, this equipment has been designed to process. Users of this equipment must therefore, make their own determination as to the suitability of the information contained in this manual to their specific operation and requirements. There should be no assumption made that the safety measures and instructions contained herein are all-inclusive, and that other safety measures may not be required for specific use or application.

The following safety guidelines are generally applicable to the safe and efficient use of the equipment.

# Acceptable Equipment Uses

The equipment is designed for the dispensing of polyurethane foams, two-component coating systems, and some two-component epoxy systems, specifically polyureas. Under no circumstances should any acid or corrosive chemicals be used in the unit. Consult GUSMER if there is any doubt about the compatibility of the chemical system to be used in this equipment.

Any use of this equipment other than as indicated above constitutes misuse unless express written approval is obtained from GUSMER.

# **Operational Safety Procedures**

This safety information will not be repeated in the text of this manual. The symbols pertaining to this information will appear where appropriate to alert the operator to potential hazards.



Solvents and Chemicals



High Voltage



High Pressure



Personal Protective Equipment



High Temperature



Warning

**WARNING:** The sovents and chemical used with this equipment expose the operator to certain hazards. Adequate personal protective measures must betaken so as to avoid exceeding the Threshold Limit Value (TLV) of the products being used, as established by the Occupational Safety and Health Administration (OSHA) or other qualified agency. Information concerning personal protection and proper handling from the supplier of such chemicals.

**WARNING:** TO PREVENT SERIOUS BODILY INJURY FROM ELECTRICAL SHOCK, NEVER OPEN THE ELECTRIC CONSOLES OR OTHERWISE SERVICE THIS EQUIPMENT AND/OR EQUIPMENT USED WITH IT BEFORE SWITCHING OFF THE MAIN POWER DISCONNECT AND INTERRUPTING SUPPLY VOLTAGE AT THE SOURCE. THE ELECTRICAL SERVICE MUST BE INSTALLED AND MAINTAINED BY A QUALIFIED ELECTRICIAN.

**WARNING:** This equipment has or is used with equipment that has hydraulic components capable of producing up to 3500 psi. To avoid serious bodily injury from hydraulic injection of fluid, never open any hydraulic connections or service hydraulic components without bleeding all pressures to zero.

WARNING: TO AVOID SERIOUS BODILY INJURY, PROPER PROTECTIVE GEAR MUST BE WORN WHEN OPERATING, SERVICING, OR BEING PRESENT IN THE OPERATIONAL ZONE OF THIS EQUIPMENT. THIS INCLUDES, BUT IS NOT LIMITED TO, EYE AND FACE PROTECTION, GLOVES, SAFETY SHOES, AND RESPIRATORY EQUIPMENT AS REQUIRED.

**WARNING:** This equipment has or is used with equipment that has high temperature components such as primary heaters and heated hoses. To prevent serious bodily injury from hot fluid or hot metal, never attempt to service the equipment before allowing it to cool.

**WARNING**: Failure to read and follow this safety information may result in personal injury and/or damage to the equipment from one or more of the above listed hazards



# DESCRIPTION

### **Key Features**

The design and development of the Gusmer Model GX-8 Spray Gun represents the next step in the evolution of spray coating technology that Gusmer originated over 35 years ago. We believe the GX-8 Spray Gun is the only mechanical purge gun in the world that allows the spraying of polyureas and hybrids at outputs in the 1-2 pound per minute range. Its lower output, lighter weight, fewer parts, and reduced air consumption are just a few of its innovative enhancements. Yet, the GX-8 maintains many of the unique design characteristics of its direct predecessor, the GX-7. These unique characteristics include mechanical purge, a variety of durable mixing modules, interchangeable Pattern Control Discs (PCD), and Gusmer quality.

The GX-8 design has successfully combined the proven concepts of other Gusmer mechanical purge, direct impingement guns with exciting new enhancements that provide a completely new gun that delivers:

- Unmatched low output capabilities
- Smaller gun dimensions with a 37% reduction in weight
- Increased maneuverability specifically for open mold applications
- Easy operation
- Less expensive operation

The gun is available with a variety of PCD options designed to meet most applications that require the spraying of fast chemical systems at low outputs. Both your authorized Gusmer Distributor and Gusmer Sales Engineers are available to help determine what configurations are best for your specific application. Please contact either for additional information.

The GX-8 is a combination of new concepts and existing Gusmer spray gun technology. For example, the mixing module that is contained in the GX-8 is similar in function to the GX-7 mixing module. However, it is very different in its final design. The module's modified geometry supports the mixing requirements of the extremely fast chemistries found in polyureas and hybrid polyurethanes/polyurea. This coupled with a smaller mechanical purge valving rod and smaller PCD insure proper mixing and timely delivery of mixed product to the work surface. The PCD now comes standard with Gusmer's proprietary "gold tip" finish. This space age coating improves the non-sticking characteristics of the tip, while simultaneously improving its durability. With improved tip durability maintaining the spray pattern, whether round or fan shaped, for longer periods is possible. This equates into longer tip life for the user.

The Mixing Module is the only part that requires routine replacement to insure proper gun operation. This inexpensive plastic component will wear out through normal use. The module incorporates a small alignment pin, which insures proper chemical port alignment during insertion into the Gun Block. The Mixing Module is a precision-machined component made of a proprietary engineering thermoplastic. It is cleaned using an air pressurized Gun Cleaning Kit. However, even if irregularly serviced it can still be cleaned using the appropriate drill bit. The Valving Rod is precision ground and made from hardened tool steel. It is designed for long life and under normal use, will not require routine replacement.



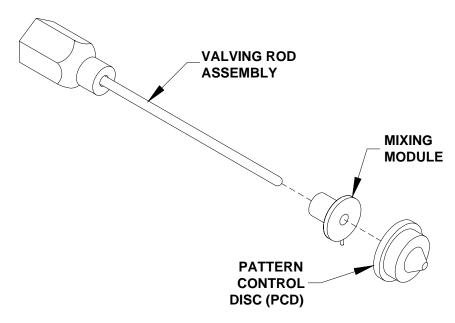


Figure 1. Mixing Module

The GX-8 has been designed for low output spraying performance, durability, reliability, and serviceability. In order to enable the gun to dispense extremely low levels of chemical, the Mixing Module has precision-machined chemical ports incorporated into it. To protect these ports from clogging extremely fine screen mesh filters are used. Special material coatings and material finishing techniques were also incorporated into the design. A thorough understanding of this manual is essential to completely insure that this gun provides the best service possible. In addition, the experience gained through daily use of the gun will sharpen your operational and service skills. Functional problems can be significantly reduced by following the techniques and service recommendations described in this manual.

Gusmer and our Authorized Distributors have experienced, highly qualified, technical representatives who are always available to help if a problem does occur. In most cases, a simple telephone call to our technical representatives will provide you with a solution to your problem. Be sure to take advantage of their experience and expertise.

**IMPORTANT:** Substitution of parts not designed manufactured, or recommended by Gusmer could result in harm to the user and/or damage to the GX-8 Gun. Any alterations to or substitutions for Gusmer parts will void the warranty provisions set forth elsewhere in this manual

### Major Components

In keeping with the need to gain a complete and thorough understanding of the equipment, please take time to become familiar with the major components of the GX-8 Gun (Figure 2) and its Centerline Components (Figure 3). This will be helpful later when these items are covered in the manual.

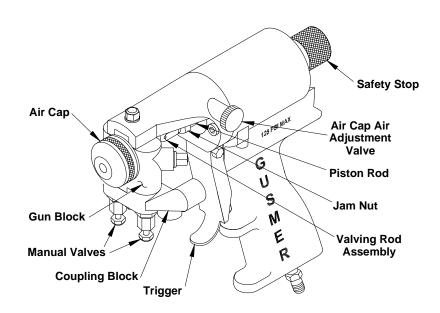


Figure 2. Major Components

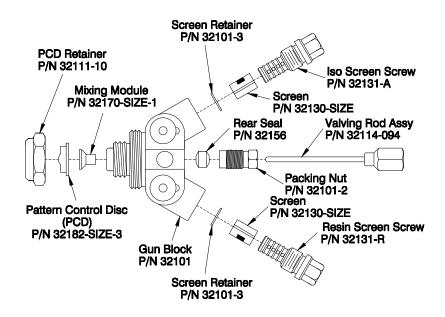
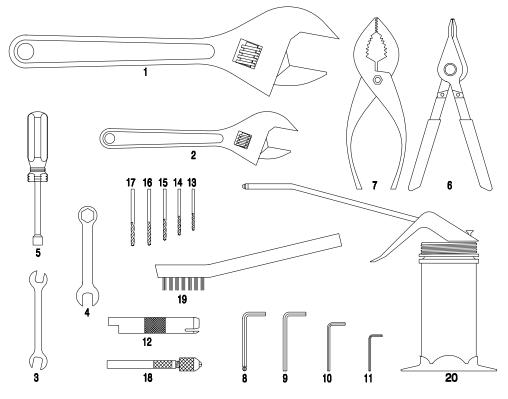


Figure 3. Centerline Components

NOTE: Both Round and Fan Mixing Modules are available. The Round Module provides a round spray pattern and is identified by a groove in its cylindrical body. The Fan Module provides a fan spray pattern and is identified by its smooth cylindrical body.

### **Equipment Supplied**



The Standard Tool Kit includes the following tools for use in servicing the GX-8.

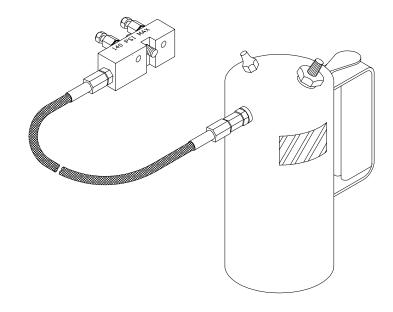
#### Figure 4. Standard Tool Kit

- 1. 10" Adjustable Wrench (P/N 909A)
- 2. 6" Adjustable Wrench (P/N 0908)
- 3. **3/8" x 5/16" Open End Wrench** (P/N 1982A)
- 4. 1/2" Combination Wrench (P/N 1986)
- 5. 5/16" Spintite (P/N 0904A)
- 6. Retaining Ring 45° Pliers (P/N 32982)
- 7. 6" Pliers (P/N 0906)
- 8. **9/64" Ball Point Hex Key** (P/N 0902-9/64)
- 9. **5/32" Hex Key** (P/N 0902-5/32)
- 10. **3/16" Hex Key** (P/N 0902-3/16)
- 11. **5/64" Hex Key** (P/N 0902-5/64)
- 12. Check Valve Removal/Cleaning Tool (P/N 1948)

- 13. **#80 Clean Out Drill** (.0135 Dia.) (P/N 0941-45)
- 14. **#68 Clean Out Drill** (.031 Dia.) (P/N 0941-22)
- 15. **#60 Clean Out Drill** (.040 Dia.) (P/N 0941-29)
- 16. **1/8" Dia. Clean Out Drill** (P/N 0927-1/8)
- 17. **21/64" Dia. Clean Out Drill** (P/N 0927-21/64)
- 18. Pin Vise W/Collets (P/N 6902A)
- 19. Brush (P/N 1945)
- 20. Flush Can (P/N 0919A)
- 21. Lubriplate Grease (P/N 0553-2) Not Shown

### **Gun Service Kits**

Cleaning the GX-8 with the 1 Quart Gun Service Kit (P/N OP205) or the 3 Gallon Gun Service Kit (P/N OP206) is essential to the proper operation of the GX-8. Both kits are available separately.



NOTE: For more information concerning the 1 Quart Gun Service Kit consult the Parts Identification Manual (P/N OP205-ID).

Figure 5. 1 Quart Gun Service Kit (P/N OP205).

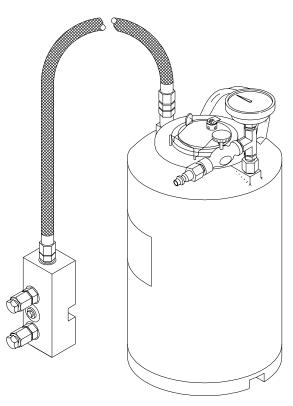


Figure 6. 3 Gallon Gun Service Kit (P/N OP206)

NOTE:

For more information concerning the optional, 3 Gallon Gun Service Kit (P/N OP206) consult the Parts Identification Manual (P/N OP206-ID).





# **OPERATION**

**WARNING:** Never point the gun at or near other personnel or place any part of the body in the path of the material spray and DO NOT at any time look into the dispensing end of the gun. When the gun is not being used, always set the rear stop to the safety or service position, and close both manual valves. Do this to avoid the possibility of property damage or bodily injury from the accidental operation of the gun.

# Safety Position of Gun

The GX-8 has a two position Safety Stop. When engaged, it prevents accidental triggering of the gun during servicing or down time. When disengaged, it allows the gun to dispense.

1. ENGAGE THE SAFETY STOP-Push in and turn the Safety Stop knob clockwise to place the gun in the Safety detented position.

**IMPORTANT**: Always engage the Safety Stop when the gun is not in use.

2. DISENGAGE THE SAFETY STOP-Push in and turn the Safety Stop knob counterclockwise to place the gun in the Open detented position.

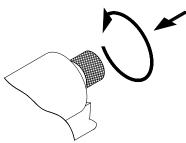


Figure 7. Engage the Safety Stop

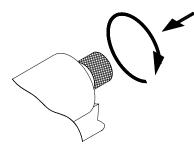


Figure 8. Disengage the Safety Stop

### Manual valves

#### TOOLS REQUIRED

• 5/16" Spintite (P/N 0904A)

The GX-8 Coupling Block is equipped with two Manual Valves which control the flow of each chemical component to the gun.

- 1. OPEN BOTH MANUAL VALVES-Using the 5/16" Spintite, turn each Manual Valve fully counterclockwise.
- 2. CLOSE BOTH MANUAL VALVES-Using the 5/16" Spintite, turn each Manual Valve fully clockwise.

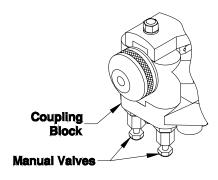


Figure 9. Manual Valves

NOTE:

Unnecessary triggering of the gun with the manual valves closed may cause crossover if there is any residual chemical in the gun ports. **IMPORTANT:** To avoid accidental gun operation determine that the coupling block manual valves have been closed before attempting to service the gun, or any time the gun is not in use.

## Air Line Configuration

#### TOOLS REQUIRED

- 3/16" Hex Key (P/N 0902-3/16)
- 6" Adjustable Wrench (P/N 0908)

The GX-8 air line connection can be configured in two different ways. The standard configuration has the air connection at the base of the handle. The optional configuration has the air connection at the rear of the gun. To change to the optional configuration proceed as follows:

- 1. REMOVE THE 4" LONG PIPE NIPPLE- Using the 6" Adjustable Wrench, remove the 4" long pipe nipple from the base of the Gun.
- 2. REMOVE THE 1/8" PIPE PLUG- Using the 3/16" Hex Key, remove the 1/8" pipe plug from the rear of the gun.
- 3. INSTALL THE 1/8" PIPE PLUG- Using the 3/16" Hex Key, install the 1/8" pipe plug in the location previously occupied by the 4" long pipe nipple.
- 4. INSTALL THE (OPTIONAL) SUPPLIED BRASS 1/8" NIPPLE- Using the 6" Adjustable Wrench, install the supplied brass 1/8" nipple in the location previously occupied by the 1/8" pipe plug.

### Start-Up

#### TOOLS REQUIRED

• 5/16" Spintite (P/N 0904A)

**IMPORTANT**: Before attempting the following procedures, make sure the gun is attached to the coupling block and air hoses, the proportioning unit is at the desired temperature and pressure, and the system is ready for operation.

1. ADJUST THE AIR VALVE AIR ADJUSTMENT CAP CONTROL- The Knurled knob on the Air Cylinder controls the amount of air that passes over the PCD. This flow of air helps keep the PCD free of sprayed chemical. Too much air can adversely effect spray pattern shape and create undesirable amounts of over-spray. However, the airflow can be used to modify the spray pattern. Experiment to determine what works best for the application. Turn the knob Counter clockwise to open the valve and clockwise to close it.

- 2. OPEN BOTH MANUAL VALVES- Using the 5/16" Spintite, turn each valve fully counterclockwise.
- 3. DISENGAGE THE SAFETY STOP- Push in and turn the Safety Stop knob counterclockwise to place the gun in the Open detented position.
- 4. TEST SPRAY OFF TARGET

NOTE: If the GX-8 is shipped from the factory without the Mixing Module and PCD installed the Valving Rod will require adjustment. See the Valving Rod Adjustment section of the manual.



### Shutdown

#### TOOLS REQUIRED

• 5/16" Spintite (P/N 0904A)

**IMPORTANT**: Follow this procedure whenever the gun is out of service for any length of time. For mid/end of day, service see the Cleaning Procedure section of this manual.

- 1. ENGAGE THE SAFETY STOP- Push in and turn the Safety Stop knob clockwise to place the gun in the Safety detented position.
- 2. CLOSE BOTH MANUAL VALVES- Using the 5/16" Spintite, turn each valve fully clockwise.
- 3. CLEAN AS REQUIRED- See the *Cleaning Procedure* section of the manual.

NOTE: Disassembling the gun daily for cleaning is not recommended if it has been operating properly. However, experience will determine whether disassembly is necessary

**IMPORTANT**: As an additional safety precaution, the GX-8 air line has quick disconnect air coupling. Disconnect the air line when transporting the gun with the chemical hoses connected



# **CLEANING PROCEDURE**

#### TOOLS REQUIRED

- 5/16" Spintite (P/N 0904A)
- 1 Quart Gun Service Kit (P/N OP205)
- Flush Can (P/N 0919A)

The Gun Block must be thoroughly cleaned with Gun Cleaner before removing the Valving Rod or mixing components from the Gun Block. In this way, the residue left from the two components will be completely diluted with Gun Cleaner and will not react with one another when the Gun Block components are removed.

This procedure makes use of the **1 Quart Gun Service Kit** (P/N OP205) and is the recommended procedure for several reasons:

- 1) The cleaning is more efficient and uses less Gun Cleaner.
- 2) The gun does not have to be disassembled.
- 3) It can be used as a quick and efficient end of day procedure.

The **3 Gallon Gun Service Kit (P/N OP206)** is also available for cleaning the GX-8.

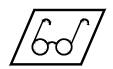


WARNING: PROPERLY GROUND ALL EQUIPMENT INVOLVED IN THE CLEANING OPERATION TO AVOID STATIC SPARKING WHICH COULD RESULT IN FIRE OR EXPLOSION. DO NOT CLEAN ON OR NEAR FOAMED OR COATED SURFACES.

WARNING: WHEN SERVICING OR OPERATING THE GX-8, SUFFICIENT PROTECTIVE CLOTHING MUST BE WORN TO PREVENT PROLONGED SKIN CONTACT WITH THE CHEMICALS OR SOLVENTS USED IN OR WITH THE GUN.

Always wear approved safety glasses or goggles, Gloves, and Respiratory equipment when servicing or operating the GX-8.

- 1. CLOSE BOTH MANUAL VALVES- Using the 5/16" Spintite, turn each Manual Valve fully clockwise.
- 2. ENGAGE THE SAFETY STOP- Push in and turn the Safety Stop knob clockwise to place the gun in the Safety detented position.
- 3. REMOVE THE GUN FROM THE COUPLING BLOCK- Using the 5/16" Spintite; remove the Coupling Block Mounting Screw. Separate the gun from the Coupling Block. Using a rag soaked with Gun Cleaner wipe clean the face of the Coupling Block to prevent material build-up.
- ATTACH THE SERVICE BLOCK OF THE GUN SERVICE KIT TO THE GUN– Using the 5/16" Spintite; fasten the Service Block to the gun. Pressurize the container to 100 psi.





NOTE: Opening one manual valve at a time will allow flushing of individual chemicals. This is useful when flushing high viscosity materials and insures maximum effectiveness in purging the gun of chemical.

#### 5. CLEAN THE GUN

- a) Open either one of the Manual Valves on the Service Block
- b) Disengage the Safety Stop by pushing in and turning the Safety Stop Knob counterclockwise to place the gun in the Open detented position.
- c) Trigger the Gun Service Kit and the Gun simultaneously catching the Gun Cleaner in an appropriate container.
  (A fine, unobstructed mist of cleaner should exit the Tip.)
- d) Release both triggers and close the Manual Valves on the Service Block.
- e) Repeat the Procedure for the other side of the Gun.
- 6. REMOVE THE SERVICE BLOCK OF THE GUN SERVICE KIT FROM THE GUN– Using the 5/16" Spintite; disconnect the Service Block from the gun.
- CLEAN SCREENS AND SCREEN SCREW- Using the Flush Can, flush out the Screens and the Screen Screw Cavities <u>completely</u>. See the Screen Screw Service Procedure section of this manual

*Important:* At this time it is a good idea to inspect the Air Cap, PCD, Module, and Gun Block for build up of material and clean them as required.



# SERVICING PROCEDURES

### Screen Screw Removal And Service Procedure

#### **TOOLS REQUIRED**

- 3/8" x 5/16" Open End Wrench (P/N 1982A)
- 1/8" Dia. (P/N 0927-1/8) Clean Out Drill
- 21/64" Dia. (P/N 0927-21/64) Clean Out Drill
- Pin Vise W/Collets (P/N 6902A)
- Flush Can (P/N 0919A)



WARNING: BE SURE TO CLEAN THE "CENTER LINE COMPONENTS" USING THE GUN SERVICE KIT PRIOR TO REMOVAL FOR SERVICING AS THEY ARE EXPOSED TO THE CHEMICAL. SEE THE CLEANING PROCEDURES SECTION OF THIS MANUAL.

- 1. REMOVE THE SCREEN SCREW ASSEMBLY- Using the 3/8" x 5/16" Open End Wrench, unthread the Screen Screw from the Gun Block. Remove the Screen Screw retainer, the small ring-like part at the bottom of the screen, before removing the screen. Remove the Retainer by hand. Now, slide off the Screen. If there are solid particles attached to the Screen, attempt to soak the screen in Gun Cleaning Solvent. However, if the screen is especially dirty and clogged, it is better to replace it.
- 2. CLEAN THE SCREEN SCREW CAVITY- Inspect the cavity, if <u>any</u> particles are visible remove them with a combination of the Clean Out Drills mentioned above and Cleaning Solvent.



WARNING: ANY MATERIAL LEFT IN THE CAVITY ON THE DOWNSTREAM SIDE OF THE SCREEN WILL GO DIRECTLY INTO THE MODULE AND PROBABLY CLOG IT.

- 3. REPLACE THE SCREEN SCREW- Using the 3/8" x 5/16" Open End Wrench, replace the Screen Screw. Make sure the screw is tight to insure the integrity of this metal to metal seal.
- 4. CLEAN THE GUN- Clean the gun after cleaning the Cavities and Screens. See the *Cleaning Procedure* section of this manual. In this case, flush the gun with the module removed. This insures that all particles are expelled from the gun block and prevents blockage of the module ports.

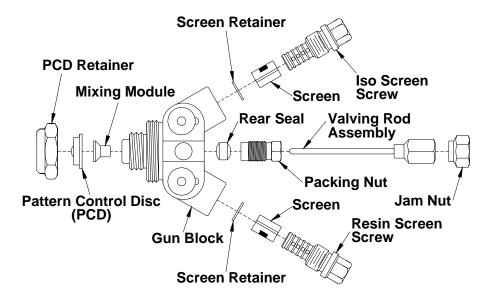


### **Centerline Component Removal**

#### TOOLS REQUIRED

- 10" Adjustable Wrench (P/N 909A)
- 3/8" x 5/16" Open End Wrench (P/N 1982A
- 1/2" Combination Wrench (P/N 1986)
- 5/16" Spintite (P/N 0904A)
- Lubriplate Grease (P/N 0553-2)

The Center Line Components consist of the following:



#### Figure 10. Centerline Component Removal



**WARNING:** DISCONNECT THE CHEMICAL HOSES AND AIRLINE BEFORE SERVICING THE GUN. IN ADDITION, BE SURE TO CLEAN THE "CENTER LINE COMPONENTS" WITH THE GUN SERVICE KIT PRIOR TO REMOVAL FOR SERVICING AS THEY ARE EXPOSED TO THE CHEMICAL

- 1. CLOSE BOTH MANUAL VALVES- Using the 5/16" Spintite, turn each Manual Valve fully clockwise.
- 2. ENGAGE THE SAFETY STOP- Push in and turn the Safety Stop knob clockwise to place the gun in the Safety detented position.
- 3. REMOVE THE AIR CAP- Remove the Air Cap by hand.
- 4. REMOVE PCD RETAINER-Use the 10" Adjustable Wrench, to remove the PCD Retainer.
- 5. REMOVE THE PATTERN CONTROL DISC (PCD)- Lift the PCD off the nose of the Gun Block.

*Important:* To free a PCD that appears to be stuck, set the Safety Stop to the Open position, then depress and release the gun trigger to unseat it.

6. REMOVE THE MIXING MODULE- Reconnect the air line. Disengage the Safety Stop and depress the trigger and release. The Mixing Module should unseat itself from the Gun Block. Lift the Mixing Module off the end of the Valving Rod. Engage the Safety Stop and disconnect the air line.

Important: Do not attempt to dig out the Module using knives or sharp objects.

- 7. LOOSEN THE PACKING NUT-Using the 5/16" Wrench, back out the Packing Nut three or four turns.
- **NOTE:** 8. REMOVE THE GUN BLOCK- Using the 5/16" Spintite, remove the Gun Block **king Nut al can be eplaced.** 8. Retaining Screw. Carefully slide the Gun Block away from the Valving Rod and Air Cylinder. If dried chemical has built up on the Gun Block removal may be difficult. Removing the dried chemical will make removal easier. Be careful not to lose the small "O" Ring seal located in the top if the Gun Block.
  - 9. REMOVE THE VALVING ROD- Using the 3/8" Wrench, on the hex shaped Valving Rod Shank and the <sup>1</sup>/2" Wrench on the Jam Nut loosen the Jam Nut by turning it clock wise. (As viewed from the front of the gun.) Continue to back the Jam Nut away from the Valving Rod Shank by three or four full turns. Remove the Valving Rod by unthreading it from the Piston Assembly.
  - 10. CLEAN ALL COMPONENTS THOROUGHLY BEFORE REASSEMBLY- Using the appropriate Brass Brushes, Clean Out Drills, etc. remove residual chemical. Use Cotton Swabs soaked with Gun Cleaner if necessary. When finished, coat the threads and the <u>mating surfaces</u> of the Gun Block, Gun Block Bracket, and Gun with Lubriplate Grease. Do not get any grease in the chemical ports located in the Gun Block or Mixing Module as this could interfere with chemical flow.
  - 11. INSPECT THE GUN BLOCK- It is important to keep the Gun Block clean and free from damage to insure proper operation of the Spray Gun. It has been coated with a proprietary coating to help protect it from damage and make it more difficult for chemical to adhere to it. However, it still requires periodic attention.

NOTE: By removing the Packing Nut entirely the Rear Seal can be removed and replaced.

# **Centerline Component Installation**

#### TOOLS REQUIRED

- 10" Adjustable Wrench (P/N 909A)
- 3/8" x 5/16" Open End Wrench (P/N 1982A
- 1/2" Combination Wrench (P/N 1986)
- 5/16" Spintite (P/N 0904A)

The Center Line Components consist of the following:

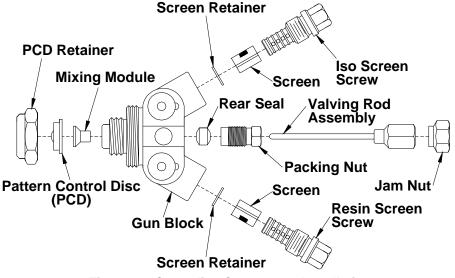


Figure 11. Centerline Component Installation

- 1. INSTALL THE VALVING ROD- Thread the Jam Nut as far back on the Piston Rod as possible. Screw the shank end of the Valving Rod onto the threaded end of the Piston Rod.
- INSTALL THE GUN BLOCK- Carefully slide the Gun Block onto the Valving Rod towards the Air Cylinder. Using the 5/16" Spintite, install the Gun Block onto the Gun Block Mounting Bracket.
- 3. INSTALL THE MIXING MODULE- With the air line connected, depress the Gun Trigger Lever and slide the Mixing Module over the end of the Valving Rod while making sure its alignment pin enters the alignment slot in the Gun Block. Keep the Gun Trigger Lever depressed and proceed to Step 4.

**Important:** It is extremely important that these parts align properly. If they do not the chemical flow from the Gun Block ports will not enter the Mixing Module when triggering the gun

4. INSTALL THE PATTERN CONTROL DISC (PCD)- Maintain the Gun Trigger Lever in the depressed position and place the PCD over the Mixing Module while making sure the slot in the tip aligns with the Mixing Module alignment pin. If installing a fan tip decide what orientation the fan spray pattern needs (vertical or horizontal), and orient the PCD appropriately. Keep the Gun Trigger Lever depressed and proceed to Step 5.



the PCD Retainer in place by hand. Using the 10" Adjustable Wrench carefully tighten the PCD Retainer until it is "snug" to insure no leaking will occur when pressurized chemical is introduced in to the gun. Release the Trigger.

INSTALL THE PCD RETAINER- With the Gun Trigger Lever depressed, thread

WARNING: OVER TIGHTENING, THE PCD RETAINER WILL CAUSE DAMAGE TO BOTH THE MODULE AND THE GUN BLOCK.

**Important:** When installing the Mixing Module and/or the PCD a space approximately the thickness of a business card should be between the PCD and the tip of the Gun Block.

6. INSTALL THE AIR CAP- Thread the Air Cap in place by hand.

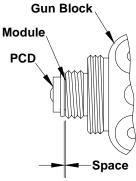


Figure 12. PCD Spacing

7. ADJUST THE VALVING ROD- See the *Valving Rod Adjustment* section of this manual

# Valving Rod Adjustment

#### TOOLS REQUIRED

5.

- 3/8" x 5/16" Open End Wrench (P/N 1982A)
- 1/2" Combination Wrench (P/N 1986)
- 5/16" Spintite (P/N 0904A)

The GX-8 Valving Rod should not require adjustment if it was shipped from the factory with the Mixing Module and Spray Tip installed. The Valving Rod will require adjusting in the following instances:

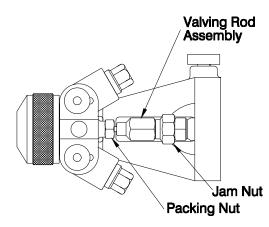
- Changing a Piston/Rod assembly/replace O-Ring
- Changing a Valving Rod
- Installing or changing a Spray Tip
- Installing or changing a Mixing Module



**WARNING:** DISCONNECT THE CHEMICAL HOSES AND AIRLINE BEFORE SERVICING THE GUN. IN ADDITION, BE SURE TO CLEAN THE "CENTER LINE COMPONENTS" WITH THE GUN SERVICE KIT PRIOR TO REMOVAL FOR SERVICING AS THEY ARE EXPOSED TO THE CHEMICAL

- 1. ENGAGE THE SAFETY STOP- Push in and turn the Safety Stop knob clockwise to place the gun in the Safety detented position.
- 2. CLOSE BOTH MANUAL VALVES- Using the 5/16" Spintite, turn each Manual Valve fully clockwise.

- 3. REMOVE THE GUN FROM THE COUPLING BLOCK- Using the 5/16" Spintite; remove the Coupling Block Mounting Screw. Separate the gun from the Coupling Block. Using a rag soaked with Gun Cleaner wipe clean the face of the Coupling Block to prevent material build-up.
- 4. PRESSURIZE THE AIR CYLINDER- After making sure that the Safety Stop is engaged, connect the air line from the gun to the air source.
- 5. LOOSEN REAR PACKING NUT-Using the 5/16" Open-End Wrench, back out the Packing Nut three or four turns. This will eliminate the contact pressure between the Seal, located inside the Packing Nut, and the Valving Rod. With the pressure relieved, the Valving Rod will move freely making the adjustment procedure easier to perform.



#### Figure 13. Valving Rod Adjustments

- 6. LOOSEN THE JAM NUT- Using the 3/8" Wrench, on the hex shaped Valving Rod Shank and the <sup>1</sup>/<sub>2</sub>" Wrench on the Jam Nut loosen the Jam Nut by turning it clockwise. (As viewed from the front of the gun.) Continue to back the Jam Nut away from the Valving Rod Shank by three or four full turns. Now move the Valving Rod towards the Gun Cylinder by turning the Valving Rod Shank 2 or 3 full turns clockwise.
- 7. ADJUST VALVING ROD CLEARANCE- Slowly turn the Valving Rod counter clockwise, moving it forward towards the Spray Tip until resistance is felt. Go no further. The Valving Rod Tip contacting the inside spherical surface of the PCD causes this resistance.
- 8. LOCK ADJUSTMENT IN PLACE- While carefully maintaining the position of the 3/8" Wrench; tighten the Jam Nut up against the Valving Rod Shank.
- 9. RETIGHTEN THE PACKING NUT- Using the 3/8" x 5/16" Open End Wrench, retighten the Packing Nut.
- 10. CHECK THE REAR SAFETY STOP- Disengage the Safety Stop by pushing in and turning the knob counter clockwise. If the knob will not turn, the Valving Rod is adjusted too far forward. Repeat step 6 and 7 making sure not to adjust the Valving Rod past the point where resistance is felt. Once the Safety Stop moves freely, proceed to step 11.
- 11. CONFIRM REAR SEAL ADJUSTMENT- With the Safety Stop disengaged trigger the gun. Make sure the Valving Rod moves freely. If it does not, loosen the Packing Nut slightly until it does. Once spraying has started, make sure there is no chemical weeping from the Packing Nut. If there is, retighten it slightly.

# Air Piston O-Ring and Cup Seal Replacement

#### TOOLS REQUIRED

- 3/8" x 5/16" Open End Wrench (P/N 1982A)
- 1/2" Combination Wrench (P/N 1986)
- Retaining Ring 45° Pliers (P/N 32982)
- 6" Pliers (P/N 0906)
- 9/64" Ball Point Hex Key (P/N 0902-9/64)
- 5/32" Hex Key (P/N 0902-5/32)
- 3/16" Hex Key (P/N 0902-3/16)
- 5/16" Spintite (P/N 0904A)

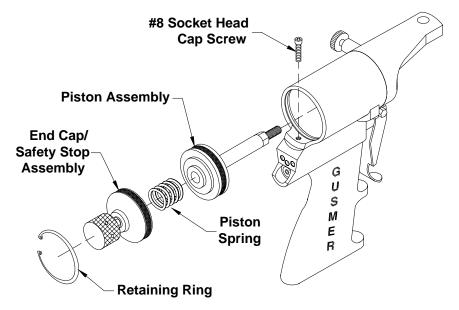


WARNING: DISCONNECT THE CHEMICAL HOSES AND AIRLINE BEFORE SERVICING THE GUN. IN ADDITION, BE SURE TO CLEAN THE "CENTER LINE COMPONENTS" WITH THE GUN SERVICE KIT PRIOR TO REMOVAL FOR SERVICING AS THEY ARE EXPOSED TO THE CHEMICAL

NOTE: If only the End Cap O-Ring requires replacement see the End Cap O-Ring and Cup Seal Replacement section of this manual.

- 1. CLOSE BOTH MANUAL VALVES- Using the 5/16" Spintite, turn each Manual Valve fully clockwise.
- REMOVE THE GUN FROM THE COUPLING BLOCK- Using the 5/16" Spintite, remove the Coupling Block Mounting Screw. Separate the gun from the Coupling Block. Using a rag soaked with Gun Cleaner, wipe clean the face of the Coupling Block to prevent material build-up.
- 3. CLEAN THE GUN- See the *Cleaning Procedure* section of this manual.
- 4. DISCONNECT AIR SUPPLY FROM GUN
- 5. LOOSEN PACKING NUT- Using the 3/8" x 5/16" Open End Wrench, loosen the Packing Nut.
- 6. REMOVE GUN BLOCK SCREW- Using the 5/16" Spintite, remove the Gun Block Screw.
- 7. REMOVE GUN BLOCK- Pull Gun Block off Valving Rod being careful not to bend the Valving Rod.
- 8. REMOVE THE VALVING ROD- Using the 3/8" Wrench, on the hex shaped Valving Rod Shank and the ½" Wrench on the Jam Nut. Loosen the Jam Nut by turning it clock wise. Continue to back the Jam Nut away from the Valving Rod Shank by three or four full turns. Remove the Valving Rod by unthreading the Valving Rod from the Piston Rod. Remove the Jam Nut from the Piston Rod
- 9. DISENGAGE THE SAFETY STOP- Push in and turn the Safety Stop knob counterclockwise to place the gun in the Open detented position.

10. REMOVE SCREW- Using the 9/64" Ball Point Hex Key remove the rear #8 Socket Head Screw that connects the Air Cylinder to the Handle. Remove only this screw.



#### Figure 14. End Cap/Safety Stop Assembly and Piston Assembly Removal

- 11. REMOVE THE RETAINING RING- Using the Retaining Ring 45° Pliers remove the Retaining Ring, which maintains the End Cap position in the Air Cylinder.
- NOTE: 12. 1 Removing the End Cap will i require some force since the 1 O-Ring is tightly compressed
- 12. REMOVE THE END CAP/SAFETY STOP ASSEMBLY- Pull the Safety Stop until it, and the attached End Cap come free from the Air Cylinder. Be sure to retain the Piston Spring located inside of the Air Cylinder for future use.
  - 13. INSPECT THE END CAP O-RING- Inspect the O-Ring. If necessary remove it and install a new O-Ring after lightly coating it with Lubriplate Grease.
  - 14. REMOVE THE PISTON/ROD ASSEMBLY- A second function of the Gun Block Screw (the screw that holds the Gun Block to the Bracket) is to aid in the removal of the Piston. The Piston is visible from the rear of The Air Cylinder. Thread the Gun Block Screw into the hole in the center of the Piston at least four full turns. Using the 6" Pliers take hold of the Gun Block Screw and pull the Piston/Rod Assembly out of the Air Cylinder. Inspect the O-Ring for damage and remove it if required. Carefully reinstall the new O-Ring after applying Lubriplate Grease, taking care not to damage it.
  - 15. REPLACE CUP SEAL- Remove and replace the Cup Seal located in the front of the air cylinder if air is escaping around the piston rod during operation. Lubricate the new cup seal and install it making sure to that the "cup" is facing towards the rear of the air cylinder.
  - 16. REASSEMBLY OF THE PISTON INTO THE AIR CYLINDER Insert the Piston and Rod Assembly into the Air cylinder. Be careful not to damage the cup seal in the front face of the Air Cylinder as the rod passes through it. Remove the Gun Block Mounting Screw from the Piston.

- 17. REASSEMBLE THE END CAP/SAFETY ASSEMBLY/PISTON SPRING- Center the Piston Spring over the raised portion of the Piston. Line up the raised portion of the End Cap with the inside diameter of the Piston Spring and insert the End Cap into the Air Cylinder. Press the End Cap until it moves past the undercut groove in the Air Cylinder. This groove is where the Retaining Ring nests. Maintain pressure on the End Cap, making sure the groove remains visible, and install the Retaining Ring using the Retaining Ring 45° Pliers. Reinstall the #8 Socket Head Screw.
- 18. REASSEMBLE VALVING ROD ASSEMBLY TO AIR PISTON SHAFT- Thread Jam Nut as far as it will go onto the threaded end of the Piston Shaft. Make sure hex end of the nut is facing rear. Thread the Valving Rod as far as it will go onto the threaded portion of the Piston Rod.
- 19. RECONNECT THE GUN BLOCK TO GUN BRACKET- Carefully slide the Gun Block onto the Valving Rod towards the Air Cylinder. Using the 5/16" Spintite, install the Gun Block onto the Gun Block Mounting Bracket.



WARNING: INSERT THE RETAINING RING COMPLETELY INTO THE GROOVE SO THAT THE END CAP WILL REMAIN IN THE AIR CYLINDER WHEN THE GUN HAS AIR PRESSURE APPLIED TO IT. KEEP CLEAR OF THE CAP WHEN FIRST REAPPLYING AIR PRESSURE OR TRIGGERING THE GUN AFTER REASSEMBLY IN CASE OF IMPROPER RETAINING RING INSTALLATION.

20. READJUST THE VALVING ROD- See the *Valving Rod Adjustment* section of this manual.

### End Cap O-Ring and Cup Seal Replacement

#### **TOOLS REQUIRED**

- Retaining Ring 45° Pliers (P/N 32982)
- 6" Pliers (P/N 0906)
- 9/64" Ball Point Hex Key (P/N 0902-9/64)
- 5/16" Spintite (P/N 0904A)
- 5/64" Hex Key (P/N 0902-5/64)



WARNING: DISCONNECT THE CHEMICAL HOSES AND AIRLINE BEFORE SERVICING THE GUN. IN ADDITION, BE SURE TO CLEAN THE "CENTER LINE COMPONENTS" WITH THE GUN SERVICE KIT PRIOR TO REMOVAL FOR SERVICING AS THEY ARE EXPOSED TO THE CHEMICAL

- 1. CLOSE BOTH MANUAL VALVES- Using the 5/16" Spintite turn each Manual Valve fully clockwise.
- 2. REMOVE THE GUN FROM THE COUPLING BLOCK- Using the 5/16" Spinite remove the Coupling Block Mounting Screw. Separate the gun from the Coupling Block. Using a rag soaked with gun cleaner wipe clean the face of the Coupling Block to prevent material build-up.
- 3. DISCONNECT AIR SUPPLY FROM GUN
- 4. DISENGAGE THE SAFETY STOP- Push in and turn the Safety Stop knob counterclockwise to place the gun in the Open detented position.

5. REMOVE SCREW- Using the 9/64" Ball Point Hex Key remove the rear #8 Socket Head Screw that connects the Air Cylinder to the Handle. Remove only this screw.

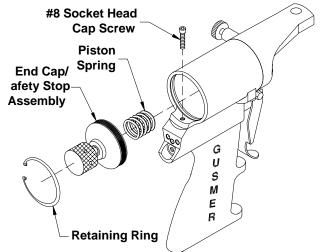


Figure 15. End Cap/Safety Stop Assembly Removal

- 6. REMOVE THE RETAINING RING- Using the Retaining Ring 45° Pliers remove the Retaining Ring, which holds the End Cap in place in the Air Cylinder.
- 7. REMOVE THE END CAP/SAFETY ASSEMBLY- Remove the End Cap and retain the Piston Spring located inside of the Air Cylinder for future use.
- 8. INSPECT THE END CAP O-RING- Inspect the O-Ring. If necessary remove it and install a new O-Ring after lightly coating it with Lubriplate Grease.
- 9. REMOVE THE SAFETY STOP MECHANISM- Using the 5/64" Hex Key remove the two set screws from the knurled knob. Slide the knob off the shaft and retain the shaft spring. Pull the shaft out of the End Cap.
- 10. REPLACE CUP SEAL- Remove and replace the Cup Seal located in the End Cap if necessary. Lubricate the new cup seal and install it making sure to that the "cup" is facing the air cylinder.
- 11. REINSTALL THE SAFETY STOP MECHANISM- Insert the shaft into the hole in the End Cap. Slide the shaft spring and knob onto the shaft. Using the 5/64" Hex Key reinstall the two set screws in the knurled knob. Make sure the knob is secure.
- 12. REASSEMBLE THE END CAP/SAFETY STOP ASSEMBLY/PISTON SPRING-Center the Piston Spring over the raised portion of the Piston. Line up the raised portion of the End Cap with the inside diameter of the Piston Spring and insert the End Cap into the Air Cylinder. Press the End Cap until it moves past the undercut groove in the Air Cylinder. This groove is where the Retaining Ring nests. Maintain force on the End Cap, making sure the groove remains visible, and install the Retaining Ring using the Retaining Ring 45° Pliers. Reinstall the #8 Socket Head Screw.



WARNING: INSERT THE RETAINING RING COMPLETELY INTO THE GROOVE SO THAT THE END CAP WILL REMAIN IN THE AIR CYLINDER WHEN THE GUN HAS AIR PRESSURE APPLIED TO IT. KEEP CLEAR OF THE CAP WHEN FIRST REAPPLYING AIR PRESSURE OR TRIGGERING THE GUN AFTER REASSEMBLY IN CASE OF IMPROPER RETAINING RING INSTALLATION.

NOTE: Removing the End Cap will require some force since the O-Ring is tightly compressed

# Trigger Valve O-Ring Replacement

- 5/32" Hex Key (P/N 0902-5/32)
- 3/16" Hex Key (P/N 0902-3/16)
- 6" Adjustable Wrench (P/N 0908)
- 6"Pliers (P/N 0906)
- 3/8" x 5/16" Open End Wrench (P/N 1982A)
- Pin Punch of <sup>1</sup>/<sub>4</sub>" diameter or less (Not Included in Tool Kit)
- Ball Peen Hammer (Not Included in Tool Kit)



WARNING: DISCONNECT THE CHEMICAL HOSES AND AIRLINE BEFORE SERVICING THE GUN. IN ADDITION, BE SURE TO CLEAN THE "CENTER LINE COMPONENTS" WITH THE GUN SERVICE KIT PRIOR TO REMOVAL FOR SERVICING AS THEY ARE EXPOSED TO THE CHEMICAL

- 1. CLOSE BOTH MANUAL VALVES- Using the 5/16" Spintite turn each Manual Valve fully clockwise.
- REMOVE THE GUN FROM THE COUPLING BLOCK- Using the 5/16" Spintite, remove the Coupling Block Mounting Screw. Separate the gun from the Coupling Block. Using a rag soaked with gun cleaner wipe clean the face of the Coupling Block to prevent material build-up.
- 3. DISCONNECT AIR SUPPLY FROM GUN
- 4. REMOVE TRIGGER LEVER- Using the 6" Adjustable Wrench and the 6"Pliers remove the Screw and Locknut that hold the Trigger Lever in place. Remove the Trigger Lever.
- 5. REMOVE RETAINER NUT- Using the 3/8" end of the 3/8" x 5/16" Open End Wrench, remove the Valve Retainer Nut. This is the hex shaped nut that surrounds the brass Spool Valve and holds it in place.

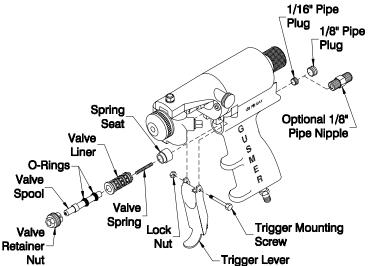


Figure 16. Trigger/Air Valve Assembly

nipple instead of the 1/8" Plug.

(See Figure 16)

- REMOVE THE VALVE SPOOL- In order to replace the O-Rings located on the 6. NOTE: Valve Spool take hold of the end of the Spool and pull it out. Be careful extracting Refer to Figure 16 for steps 6 the Spool as a spring will come out with it. Make sure not to loose this spring as it through 17. belongs in the hole at the end of the Spool. Replace the O-Rings and apply a thin coat of Lubriplate to the O-Rings NOTE: 7. REMOVE THE VALVE LINER- Attempt to pull the Valve Liner out of the gun Follow Steps 8 through 16 to handle through the trigger hole. If successful, proceed to Step11. If the Valve Liner replace the O-rings on the can not be removed, proceed to Step 8. Valve Liner. If they do not need replacing go to step 17. 8. REMOVE REAR 1/8" PLUG- In the rear of the Gun Handle locate the 1/8" Pipe Plug. This plug seals one of the air flow paths located internally in the Gun Handle. NOTE: Using the 3/16" Hex Key, remove the Plug. If the Gun is configured with the air supply entering through the rear of the Gun 9. REMOVE THE REAR INTERNAL 1/16" PIPE PLUG- Deeper in the hole that the Handle, as opposed to the bottom of the Gun Handle, remove the brass 1/8" pipe
  - 10. REMOVE THE SPRING SEAT- Looking into the hole from which both Plugs were removed the brass surface of the Spring Seat can be seen. Using a Pin Punch of 1/4" diameter or less, and a hammer, gently tap the Spring Seat until both it and the Valve Liner are pushed out the opposite end of the hole.
  - 11. REMOVE & REPLACE THE O-RINGS- Remove and replace the four O-Rings on the Liner. Apply a light coat of Lubriplate to the O-Rings.
  - 12. CLEAN THE VALVE HOLE AND REMOVE ANY DEBRIS- After insuring hole is free of any dirt or debris apply a thin coat of Lubriplate to the inside of the hole.
  - 13. REINSTALL THE SPRING SEAT- Slide the brass Spring Seat back into the Gun Handle Air Valve hole tapered end first until it bottoms out in the hole.
  - 14. REINSTALL THE VALVE LINER- Push in the brown Valve Liner as far as it will go. Since there is interference between the O-rings on the Valve Liner and the inside diameter of the hole a fair amount of resistance will be encountered. Once the Liner has been pushed in far enough two or three internal threads will be visible. These threads will allow engagement of the Valve Retainer Nut which when screwed in, will align the Valve Liner and Spool to their proper depth.
  - 15. REINSTALL THE 1/16" PLUG- Using the 5/32" Hex Key screw the 1/16" Pipe plug back in place. Apply a small amount of pipe thread sealant to the threads prior to insertion. This will help seal the threads and prevent air leaks.
  - NOTE:
- If the Gun is configured with the air supply entering through the rear of the Gun Handle, reinstall the brass 1/8" pipe nipple instead of the 1/8" Plug. (See Figure 16)

- 1/8" Plug was removed from locate the 1/16" Pipe Plug. This Plug seals yet another airflow located internally in the Gun Handle. Remove that Plug using the 5/32" Hex Key.

- 16. REINSTALL THE 1/8" PLUG- Apply a small amount of pipe thread sealant to the threads of the Pipe Plug or Hex Nipple. Using the 3/13" Hex Key reinsert the 1/8" Pipe Plug.
- 17. REINSTALL THE VALVE SPOOL- Insert the Valve Spool, with the Valve Spool Spring in place into the Valve Liner. Screw in the Valve Retainer Nut. Be careful not to over tighten it, just tighten until it is "snug".
- 18. REASSEMBLE THE TRIGGER LEVER- Reinstall the Trigger Lever using the Screw and Lock Nut. Tighten using the 6" Adjustable Wrench and the 6"Pliers.



**APPENDIX** 

# Specifications

NOTE: Actual outputs will be dependent on material viscosities, temperatures, pressures, and Air Cap velocity settings.

	US	<u>Metric</u>
Maximum Output:	4 lbs./min	1.8 kg/min
Minimum Output	1 lbs./min	.45 kg/min
Maximum Operating Pressure:	3500 psi	240 bar
Air Supply	100-125 psi	7-9 bar
Mixing	Internal Impingement; Airless Atomization Solvent Free, Mechanically Self-Cleaning	
Weight:	Less than 2.3 lbs.	1.04 kg
Dimensions:	H=7"/W=7.5"/D=2.5"	H=17.8cm/W=19cm/D=6.25 cm



# **INSTRUCTION MANUAL DISCREPANCY REPORT**

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