

# Fusion<sup>®</sup> FX Spray Gun

3A9329C

EN

Plural component, impingement mix air purge spray gun with FX ProConnect<sup>®</sup> fluid cartridge for dispensing non-flammable foam and polyurea. For professional use only.

**Not approved for use in explosive atmosphere or hazardous (classified) locations.**

## Model: See page 3

Maximum Fluid Working Pressure 3500 psi (24.5 MPa, 245 bar)

Maximum Fluid Temperature 200°F (94°C)

Air Inlet Pressure Range 90-130 psi (0.56-0.9 MPa, 5.6-9.0 bar)

See page 4 for model information.



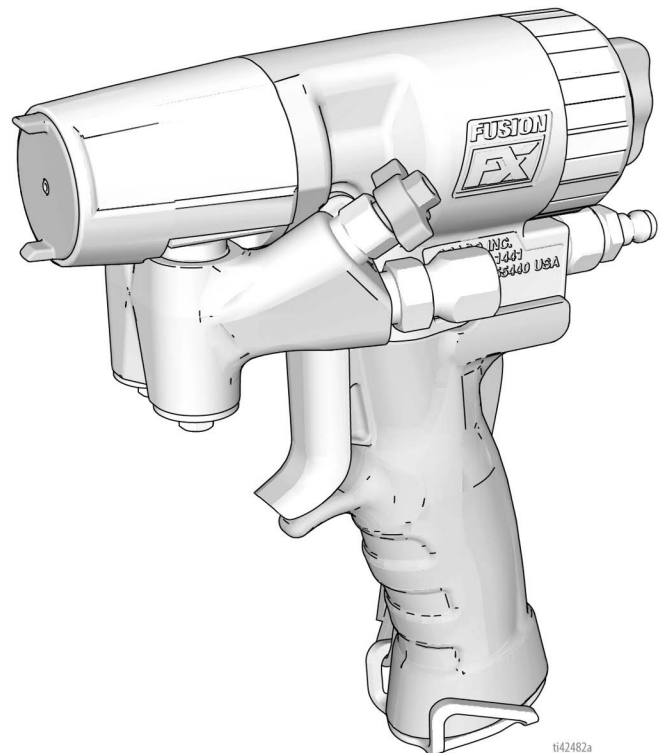
### Important Safety Instructions

Read all warnings and instructions in this manual and in all related manuals before using the equipment. Be familiar with the proper control and useage of the equipment. Save these instructions.



### Important Medical Information

Read the medical alert card provided with the gun. It contains injection injury treatment information for a doctor. Keep it with you when operating the equipment.



 <p><b>SERVICE</b> to every customer, every time</p>	<p><b>Questions?</b> Des questions? ¿Tiene preguntas? <b>844-241-9499</b> <a href="http://www.graco.com/techsupport">www.graco.com/techsupport</a></p>		
---	--	---	---

# Contents

<b>Models</b> .....	<b>3</b>	Test FX Fluid Cartridge Restriction.....	30
<b>Warnings</b> .....	<b>4</b>	Store the FX Fluid Cartridge.....	31
<b>Important Isocyanate (ISO) Information</b> .....	<b>6</b>	Clean Gun Surface.....	31
Isocyanate Conditions.....	6	Lubrication.....	31
Material Self-Ignition.....	7	Clean Passages.....	31
Keep Components A and B Separate.....	7	Clean Muffler.....	31
Moisture Sensitivity of Isocyanates.....	7	Inspect the Piston.....	32
Foam Resins with 245 fa Blowing Agents.....	8	Inspect the Air Valve.....	33
Changing Materials.....	8	Supplied Tool Kit.....	34
<b>Theory of Operation</b> .....	<b>9</b>	<b>Troubleshooting</b> .....	<b>35</b>
Gun Triggered (Fluid Spraying).....	9	<b>Parts</b> .....	<b>38</b>
Gun Detriggered (Air Purging).....	9	Fusion FX Gun.....	38
<b>Component Identification</b> .....	<b>10</b>	Detail Views.....	40
<b>Installation</b> .....	<b>11</b>	Mix Chamber Kits.....	41
Grounding.....	11	Check Valve Filter Screen Kits.....	42
Install the Mix Chamber.....	11	Cleanout Drill Kit.....	42
Setup.....	11	Acceptable FX Fluid Cartridge Storage Liquids.....	42
Convert Gun to Air Purge.....	13	FX Fluid Cartridge Kits.....	42
<b>Operation</b> .....	<b>14</b>	Fusion FX Fluid Cartridge Clean-Out Tool.....	42
Pressure Relief Procedure.....	14	Metal Handle Kit.....	42
Piston Safety Lock.....	15	Handle CS Plug Kit.....	42
Shut Off Gun with Loss of Air Pressure.....	15	Fusion FX Spare Parts.....	43
ClearShot™ Liquid Cartridge		Fusion FX Air Section Cleanout Drills.....	43
Installation/Removal.....	16	Shuttle Valve Kits.....	43
Daily Shutdown.....	17	Drill Bit Kits.....	44
<b>Maintenance</b> .....	<b>18</b>	<b>Accessories</b> .....	<b>46</b>
Preventative Maintenance.....	18	Extension Tip Kits.....	46
Clean Mix Chamber Nozzle.....	18	Gun Cleaning Kit.....	46
Remove the Mix Chamber.....	19	Pour Nozzle Kit.....	46
Clean the Mix Chamber Impingement Ports.....	19	Lubricant for Gun Rebuild.....	46
Mix Chamber Weep Hole.....	19	Grease Cartridge for Gun Shutdown.....	46
Replace Mix Chamber Seal.....	20	Flush Manifold.....	46
Clean the Air Cap.....	20	Solvent Flush Canister Kit.....	46
Clean Fluid Manifold.....	20	ClearShot Liquid.....	46
Inspect Manifold Check Valves.....	21	Tip Clean-out Tool.....	47
Remove the FX Fluid Cartridge.....	21	Circulation Manifold.....	47
Check FX Fluid Cartridge Yoke		Fusion AP Manifold Adapter Block.....	47
Position for Install.....	22	<b>Technical Specifications</b> .....	<b>48</b>
Install FX Fluid Cartridge.....	23	Air Flow by Mix Chamber.....	49
Install FX Fluid Cartridge with Pushed in Yoke		<b>California Proposition 65</b> .....	<b>49</b>
Position.....	23	<b>Graco Standard Warranty</b> .....	<b>50</b>
Replace FX Fluid Cartridge Shuttle Valves.....	24		
Grease the FX Fluid Cartridge.....	26		
Flush Gun.....	27		
Reinstall or Replace the FX Fluid Cartridge.....	28		
Inspect FX Fluid Cartridge.....	29		

## Related Manuals










Manual in English	Description
309963	Fusion Solvent Flush Kit
3B0000	Circulation Manifold Kit

## Models

Gun Part Number, Series	Description	Mix Chamber	
		Part Number	Impingement Port Size in. (mm)
FX9000, A	Fusion FX Spray Gun	--	--
FX9001, A	Fusion FX Spray Gun with mix chambers included	FX37RD, FX42RD, FX47RD	0.037 (0.94), 0.042 (1.00), 0.47 (1.2)

# Warnings

The following warnings apply throughout this manual. Read, understand, and follow the warnings before using this equipment. Failure to follow these warnings can result in serious injury.

 <h2 style="margin: 0;">WARNING</h2>	
	<p><b>TOXIC FLUID OR FUMES HAZARD</b></p> <p>Toxic fluids or fumes can cause serious injury or death if splashed in the eyes or on skin, inhaled or swallowed.</p> <ul style="list-style-type: none"> <li>• Read Safety Data Sheets (SDSs) for handling instructions and to know the specific hazards of the fluids you are using, including the effects of long-term exposure.</li> <li>• When spraying, servicing equipment, or when in the work area, always keep work area well-ventilated and always wear appropriate personal protective equipment. See <b>Personal Protective Equipment</b> warnings in this manual.</li> <li>• Store hazardous fluid in approved containers, and dispose of it according to applicable guidelines.</li> </ul>
	<p><b>PERSONAL PROTECTIVE EQUIPMENT</b></p> <p>Always wear appropriate personal protective equipment and cover all skin when spraying, servicing equipment, or when in the work area. Protective equipment helps prevent serious injury, including long-term exposure; inhalation of toxic fumes, mists or vapors; allergic reaction; burns; eye injury and hearing loss. This protective equipment includes but is not limited to:</p> <ul style="list-style-type: none"> <li>• A properly fitting respirator, which may include a supplied-air respirator, chemically impermeable gloves, protective clothing and foot coverings as recommended by the fluid manufacturer and local regulatory authority.</li> <li>• Protective eyewear and hearing protection.</li> </ul>
    	<p><b>SKIN INJECTION HAZARD</b></p> <p>High-pressure fluid from dispensing device, hose leaks, or ruptured components will pierce skin. This may look like just a cut, but it is a serious injury that can result in amputation. <b>Get immediate surgical treatment.</b></p> <ul style="list-style-type: none"> <li>• Engage piston safety lock when not spraying.</li> <li>• Do not point gun at anyone or at any part of the body.</li> <li>• Do not put your hand over the spray tip.</li> <li>• Do not stop or deflect leaks with your hand, body, glove, or rag.</li> <li>• Follow the <b>Pressure Relief Procedure</b> when you stop spraying and before cleaning, checking, or servicing equipment.</li> <li>• Tighten all fluid connections before operating the equipment.</li> <li>• Check hoses and couplings daily. Replace worn or damaged parts immediately.</li> </ul>
	<p><b>BURN HAZARD</b></p> <p>Equipment surfaces and fluid that is heated can become very hot during operation. To avoid severe burns:</p> <ul style="list-style-type: none"> <li>• Do not touch hot fluid or equipment.</li> </ul>



# WARNING



## FIRE AND EXPLOSION HAZARD

Flammable fumes, such as solvent and paint fumes, in **work area** can ignite or explode. Paint or solvent flowing through the equipment can cause static sparking. To help prevent fire and explosion:



- Use equipment only in well-ventilated area.
- Eliminate all ignition sources; such as pilot lights, cigarettes, portable electric lamps, and plastic drop cloths (potential static sparking).
- Ground all equipment in the work area. See **Grounding** instructions.
- Never spray or flush solvent at high pressure.
- Keep work area free of debris, including solvent, rags and gasoline.
- Do not plug or unplug power cords, or turn power or light switches on or off when flammable fumes are present.
- Use only grounded hoses.
- Hold gun firmly to side of grounded pail when triggering into pail. Do not use pail liners unless they are anti-static or conductive.
- **Stop operation immediately** if static sparking occurs or you feel a shock. Do not use equipment until you identify and correct the problem.
- Keep a working fire extinguisher in the work area.



## EQUIPMENT MISUSE HAZARD

Misuse can cause death or serious injury.



- Do not operate the unit when fatigued or under the influence of drugs or alcohol.
- Do not exceed the maximum working pressure or temperature rating of the lowest rated system component. See **Technical Specifications** in all equipment manuals.
- Use fluids and solvents that are compatible with equipment wetted parts. See **Technical Specifications** in all equipment manuals. Read fluid and solvent manufacturer's warnings. For complete information about your material, request Safety Data Sheets (SDSs) from distributor or retailer.
- Turn off all equipment and follow the **Pressure Relief Procedure** when equipment is not in use.
- Check equipment daily. Repair or replace worn or damaged parts immediately with genuine manufacturer's replacement parts only.
- Do not alter or modify equipment. Alterations or modifications may void agency approvals and create safety hazards.
- Make sure all equipment is rated and approved for the environment in which you are using it.
- Use equipment only for its intended purpose. Call your distributor for information.
- Route hoses and cables away from traffic areas, sharp edges, moving parts, and hot surfaces.
- Do not kink or over bend hoses or use hoses to pull equipment.
- Keep children and animals away from work area.
- Comply with all applicable safety regulations.



## PRESSURIZED ALUMINUM PARTS HAZARD

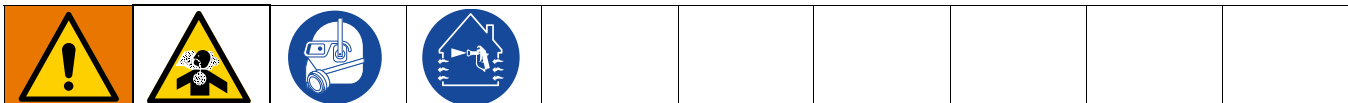
Use of fluids that are incompatible with aluminum in pressurized equipment can cause serious chemical reaction and equipment rupture. Failure to follow this warning can result in death, serious injury, or property damage.

- Do not use 1,1,1-trichloroethane, methylene chloride, other halogenated hydrocarbon solvents or fluids containing such solvents.
- Do not use chlorine bleach.
- Many other fluids may contain chemicals that can react with aluminum. Contact your material supplier for compatibility.

# Important Isocyanate (ISO) Information

Isocyanates (ISO) are catalysts used in two component materials.

## Isocyanate Conditions





Spraying or dispensing fluids that contain isocyanates creates potentially harmful mists, vapors, and atomized particulates.




- Read and understand the fluid manufacturer’s warnings and Safety Data Sheets (SDSs) to know specific hazards and precautions related to isocyanates.
- Use of isocyanates involves potentially hazardous procedures. Do not spray with this equipment unless you are trained, qualified, and have read and understood the information in this manual and in the fluid manufacturer’s application instructions and SDSs.
- Use of incorrectly maintained or mis-adjusted equipment may result in improperly cured material, which could cause off gassing and offensive odors. Equipment must be carefully maintained and adjusted according to instructions in the manual.
- To prevent inhalation of isocyanate mists, vapors and atomized particulates, everyone in the work area must wear appropriate respiratory protection. Always wear a properly fitting respirator, which may include a supplied-air respirator. Ventilate the work area according to instructions in the fluid manufacturer’s SDSs.
- Avoid all skin contact with isocyanates. Everyone in the work area must wear chemically impermeable gloves, protective clothing and foot coverings as recommended by the fluid manufacturer and local regulatory authority. Follow all fluid manufacturer recommendations, including those regarding handling of contaminated clothing. After spraying, wash hands and face before eating or drinking.
- Hazard from exposure to isocyanates continues after spraying. Anyone without appropriate personal protective equipment must stay out of the work area during application and after application for the time period specified by the fluid manufacturer. Generally this time period is at least 24 hours.
- Warn others who may enter work area of hazard from exposure to isocyanates. Follow the recommendations of the fluid manufacturer and local regulatory authority. Posting a placard such as the following outside the work area is recommended:



## Material Self-Ignition

				
<p>Some materials may become self-igniting if applied too thick. Read material manufacturer's warnings and Safety Data Sheets (SDSs).</p>				

## Keep Components A and B Separate

				
<p>Cross-contamination can result in cured material in fluid lines which could cause serious injury or damage equipment. To prevent cross-contamination:</p> <ul style="list-style-type: none"> <li>• <b>Never</b> interchange component A and component B wetted parts.</li> <li>• Never use solvent on one side if it has been contaminated from the other side.</li> </ul>				

## Moisture Sensitivity of Isocyanates

Exposure to moisture (such as humidity) will cause ISO to partially cure, forming small, hard, abrasive crystal that become suspended in the fluid. Eventually a film will form on the surface and the ISO will begin to gel, increasing in viscosity.

<i>NOTICE</i>
<p>Partially cured ISO will reduce performance and the life of all wetted parts.</p> <ul style="list-style-type: none"> <li>• Always use a sealed container with a desiccant dryer in the vent, or a nitrogen atmosphere. <b>Never</b> store ISO in an open container.</li> <li>• Keep the ISO pump wet cup or reservoir (if installed) filled with appropriate lubricant. The lubricant creates a barrier between the ISO and the atmosphere.</li> <li>• Use only moisture-proof hoses compatible with ISO.</li> <li>• Never use reclaimed solvents, which may contain moisture. Always keep solvent containers closed when not in use.</li> <li>• Always lubricate threaded parts with an appropriate lubricant when reassembling.</li> </ul>

**NOTE:** The amount of film formation and rate of crystallization varies depending on the blend of ISO, the humidity, and the temperature.

## Foam Resins with 245 fa Blowing Agents

Some foam blowing agents will froth at temperatures above 90 °F (33 °C) when not under pressure, especially if agitated. To reduce frothing, minimize preheating in a circulation system.

## Changing Materials

### **NOTICE**

Changing the material types used in your equipment requires special attention to avoid equipment damage and downtime.

- When changing materials, flush the equipment multiple times to ensure it is thoroughly clean.
- Always clean the fluid inlet strainers after flushing.
- Check with your material manufacturer for chemical compatibility.
- When changing between epoxies and urethanes or polyureas, disassemble and clean all fluid components and change hoses. Epoxies often have amines on the B (hardener) side. Polyureas often have amines on the B (resin) side.



# Theory of Operation

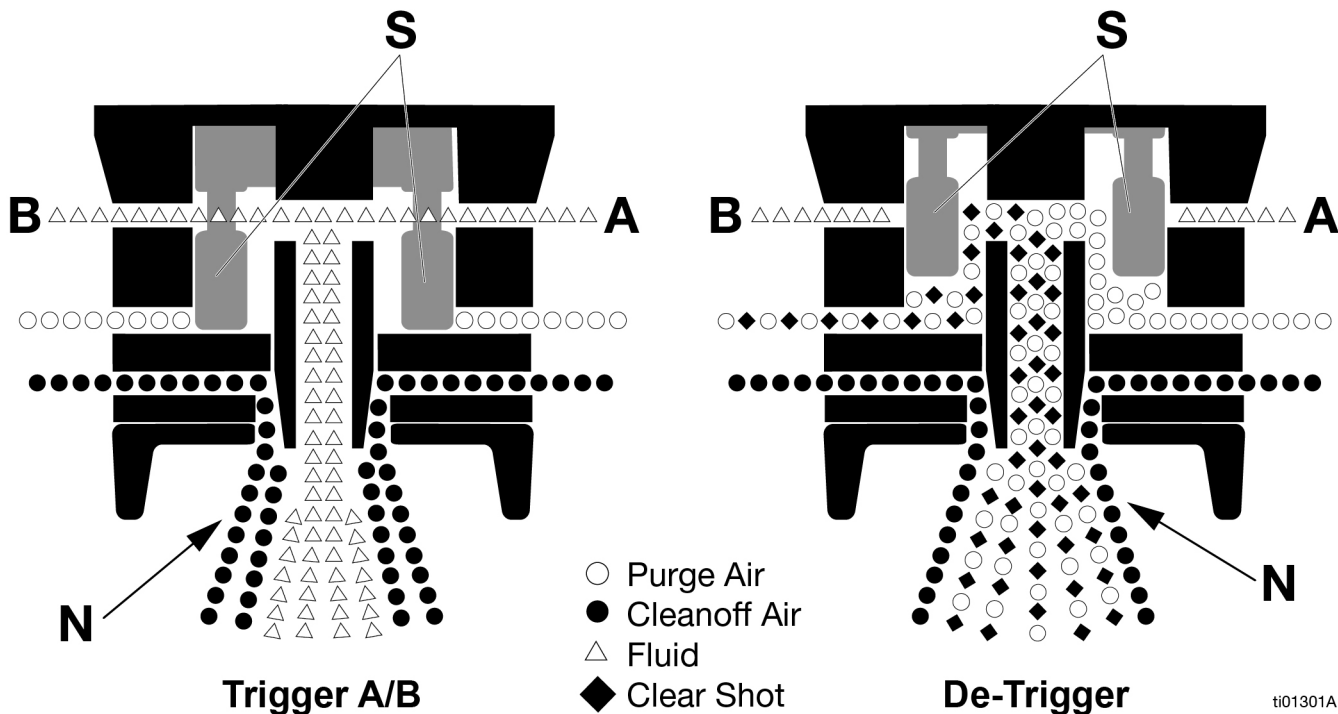
## Gun Triggered (Fluid Spraying)

Shuttle valves (S) move forward, shutting off purge air flow. This opens up fluid flow, allowing fluid to flow through mix chamber nozzle (N).

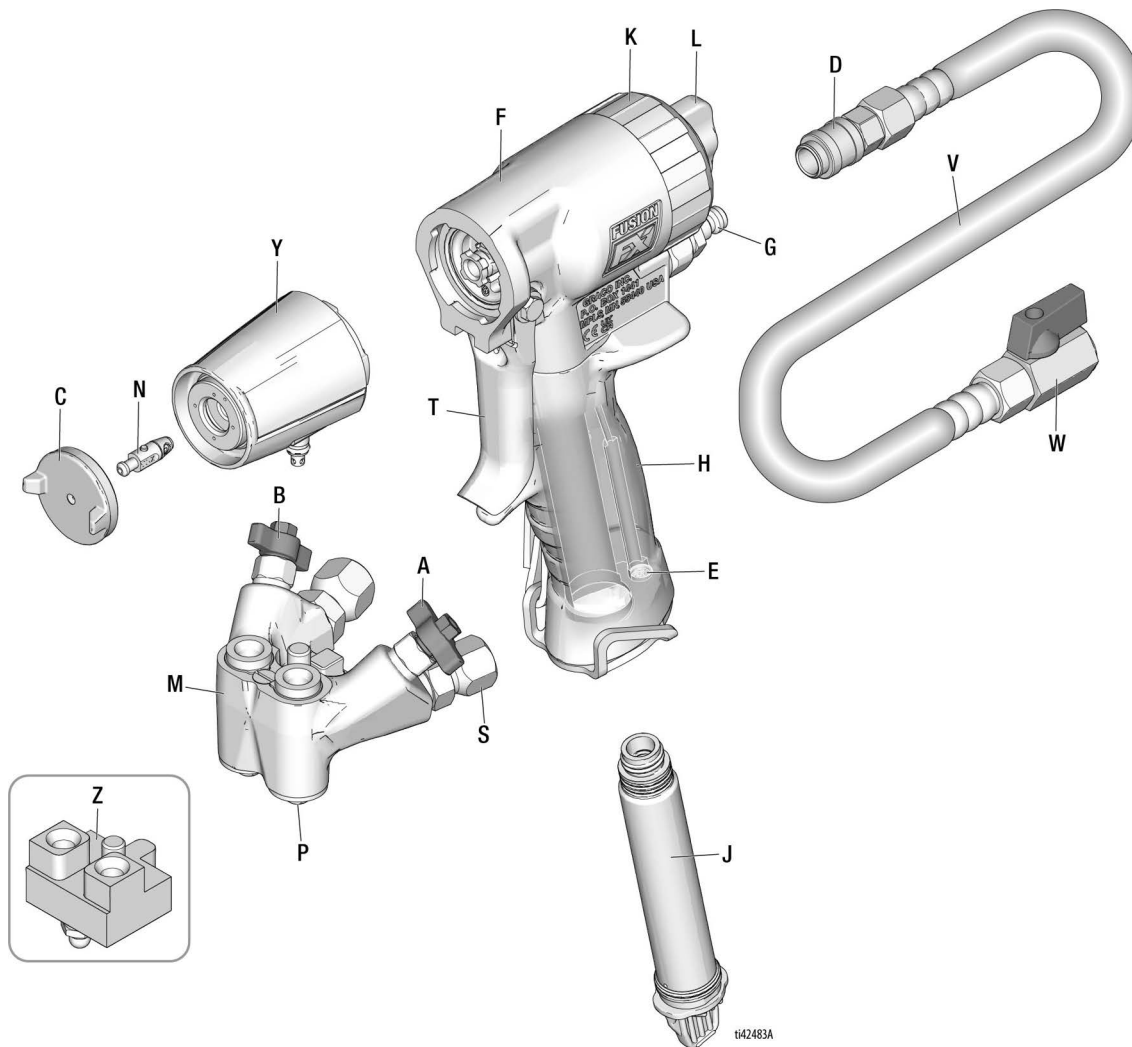
## Gun Detriggered (Air Purging)

Shuttle valves (S) move back, shutting off fluid flow. This opens up purge air flow, allowing purge air to flow through mix chamber nozzle (N).

If gun is configured for solvent purge, Clear Shot is dosed into purge air on the RESIN side only.



# Component Identification



**Ref. Description**

- A A Side Fluid Valve (ISO)
- B B Side Fluid Valve (RESIN)
- C Air Cap
- D Air Hose Quick Coupler
- E Muffer
- F Gun Body
- G Air Hose Connector
- H Handle
- J ClearShot Liquid Cartridge
- K Air Cylinder Cap

**Ref. Description**

- L Piston Safety Lock
- M Gun Fluid Manifold
- N Mix Chamber
- P Manifold Check Valves
- S Fluid Inlet Swivels (A Side Shown)
- T Trigger
- V Gun Air Whip Hose
- W Air Valve
- Y FX Fluid Cartridge
- Z Flush Manifold

# Installation

## Grounding



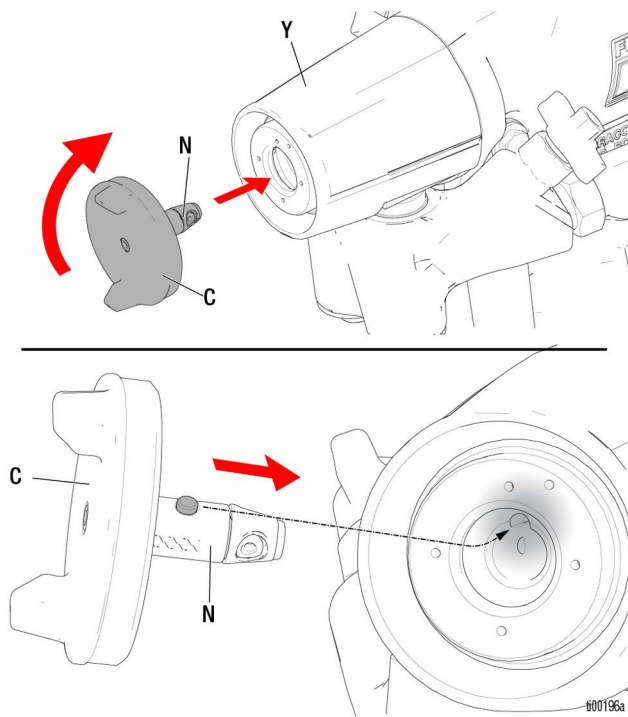
The equipment must be grounded to reduce the risk of static sparking. Static sparking can cause fumes to ignite or explode. Grounding provides an escape wire for the electric current.

**Spray gun:** Ground through connection to a properly grounded fluid hose and pump.

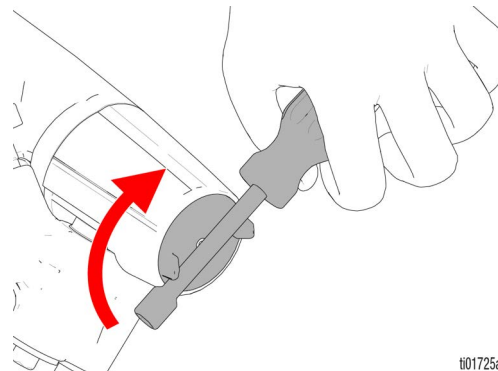
**Proportioner:** Follow the instructions in your proportioner manual.

## Install the Mix Chamber

1. Thread the Mix Chamber into the Air Cap. The Mix Chamber is left-hand threaded.
2. Insert mix chamber and air cap assembly into FX Fluid Cartridge by aligning pin on mix chamber with the notch in the receiver of the FX Fluid Cartridge. Thread air cap onto FX Fluid Cartridge.



3. Tighten air cap with nut driver to fully seat mix chamber.

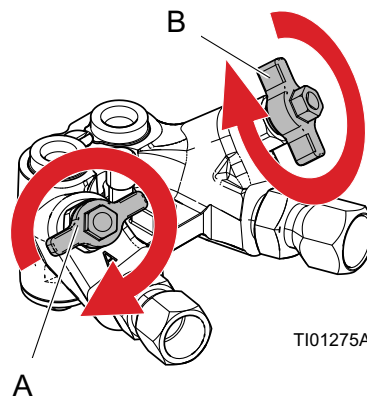


**NOTE:** To ensure proper seating of Mix Chamber with the FX Fluid Cartridge, ensure the end of the mix chamber nozzle is flush with the face of the Air Cap.

## Setup

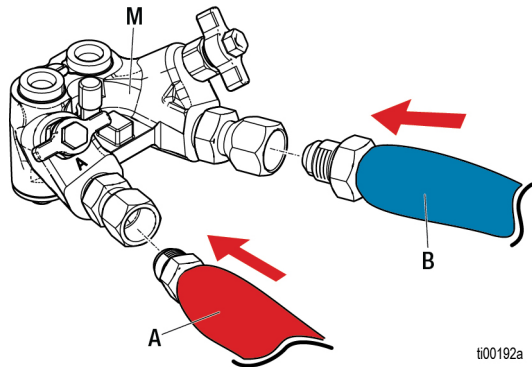


1. Remove the fluid manifold from the gun.
2. Close fluid valves A and B

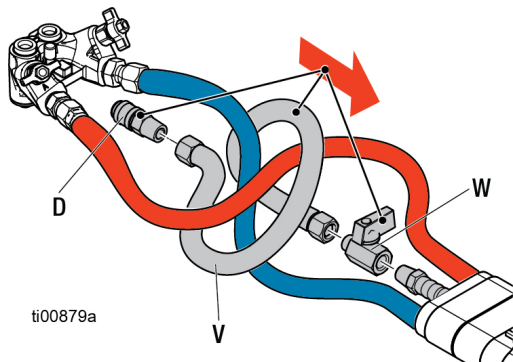


Installation

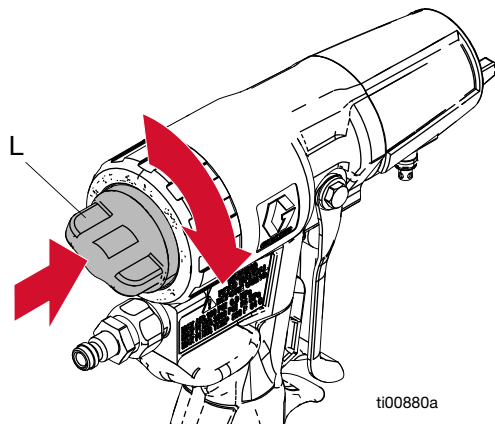
3. Connect A (ISO) and B (RESIN) fluid hoses to Fluid Manifold (M).



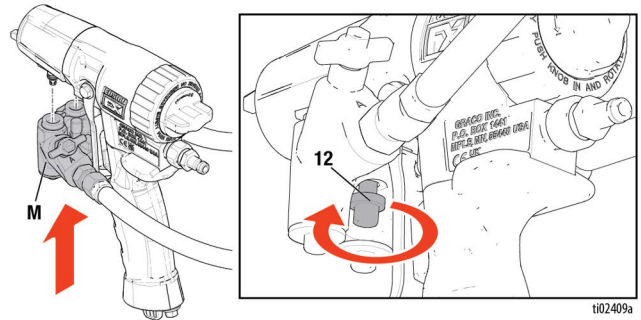
4. Connect the Air Whip Hose (V), Air Hose Quick Coupler (D), and air valve to the air hose.



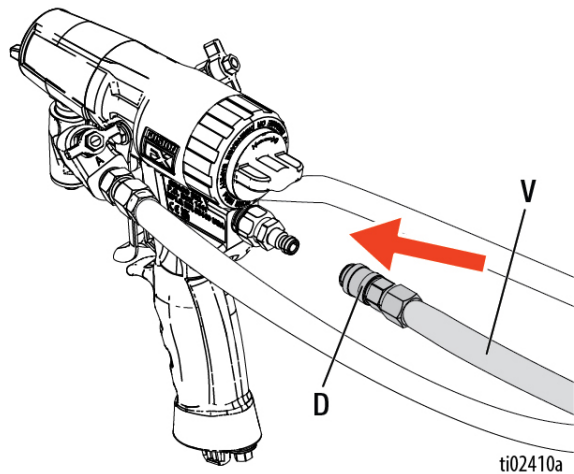
5. Engage the Piston Safety Lock (L). See **Piston Safety Lock**, page 15.



6. Connect the Fluid Manifold (M) to the gun and tighten bolt (12) to secure the manifold.

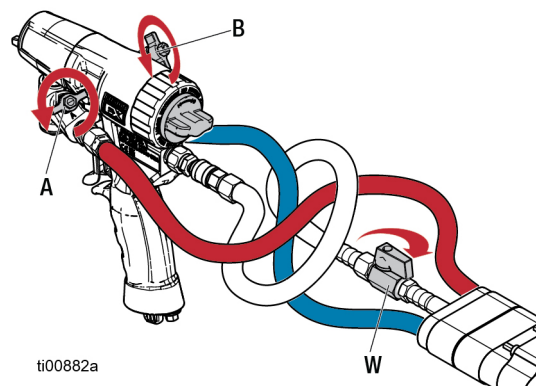


7. Connect the Air Whip Hose (V) to the gun by attaching the Quick Coupler (D).



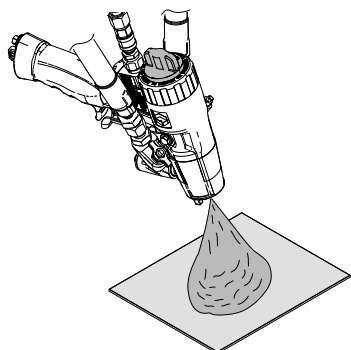
8. Turn on proportioner.

9. Open the Fluid Manifold Valves (A and B) and open the Air Valve (W).



10. Disengage the piston safety lock (L). See **Piston Safety Lock**, page 15.

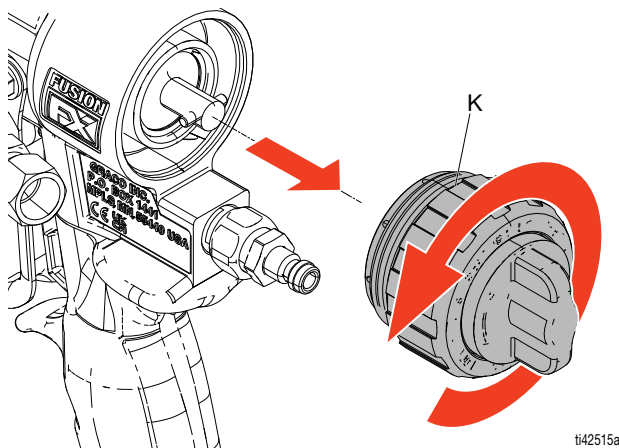
11. Test spray onto cardboard. Adjust pressure and temperature to get desired results.



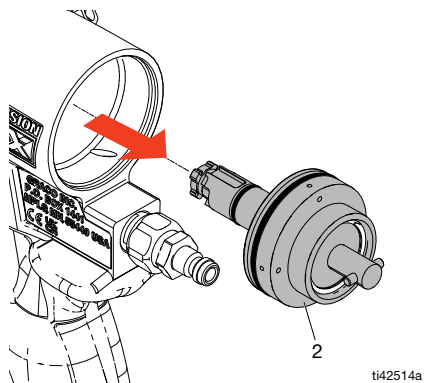
12. The gun is ready to spray.

## Convert Gun to Air Purge

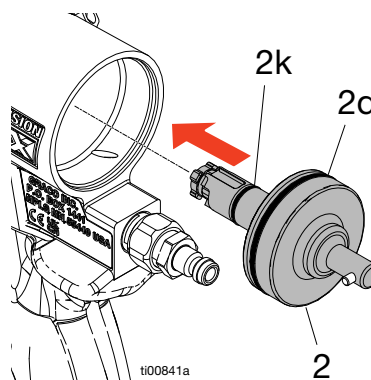
1. Remove the FX Fluid Cartridge from the gun. See **Remove the FX Fluid Cartridge** on page 21.
2. Disengage the piston safety lock (L). See **Piston Safety Lock**, page 15.
3. Unscrew the air cylinder cap (K).



4. Remove the CS air piston (2) from the gun.

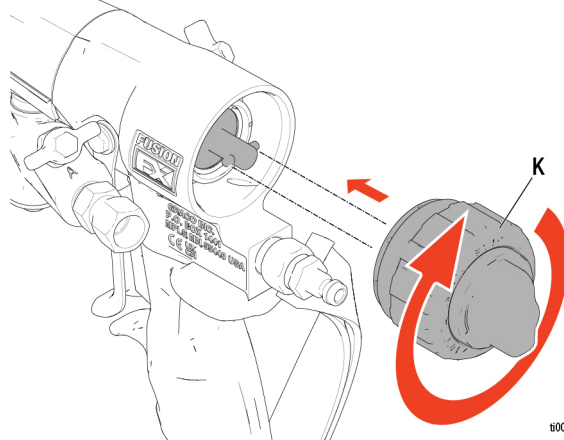
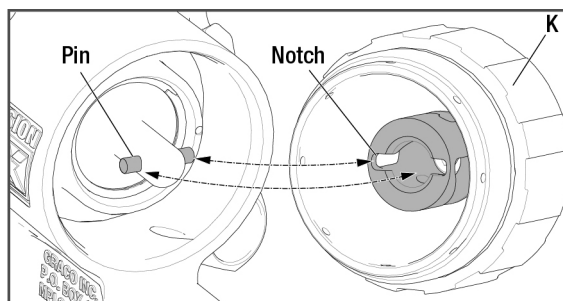


5. Make sure the o-rings (2k) and (2d) are installed on the air purge air piston and lubricated. Install the air purge air piston. The piston shaft is keyed for proper assembly.



6. Install the FX Fluid Cartridge onto the gun. See **Install FX Fluid Cartridge**, page 23.

7. Align the pin on the back of the air piston with the notches in the safety stop of the cylinder cap. Thread the air cylinder cap onto the gun body.



8. The gun is ready for service as an air purge gun.

# Operation

## Pressure Relief Procedure

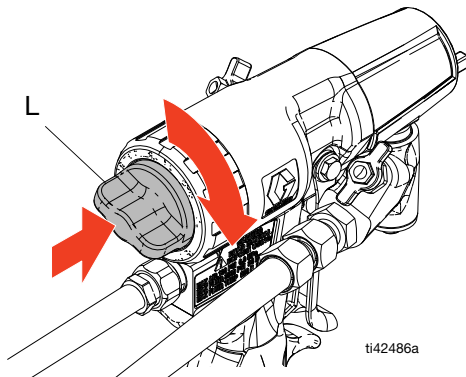


Follow the Pressure Relief Procedure whenever you see this symbol.

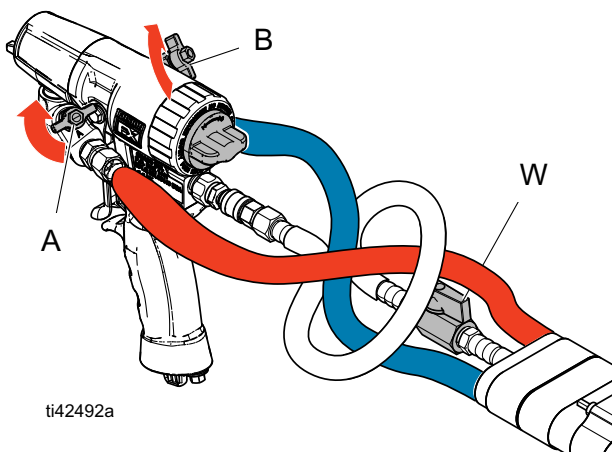


This equipment stays pressurized until pressure is manually relieved. To help prevent serious injury from pressurized fluid, such as skin injection, and splashing fluid, follow the Pressure Relief Procedure when you stop spraying and before cleaning, checking, or servicing the equipment.

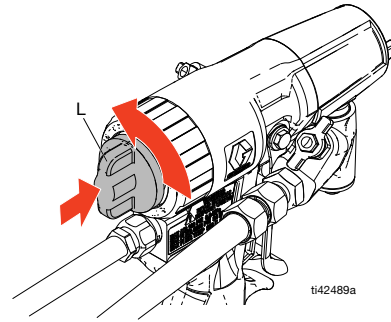
1. Engage the piston safety lock (L). See **Piston Safety Lock**, page 15.



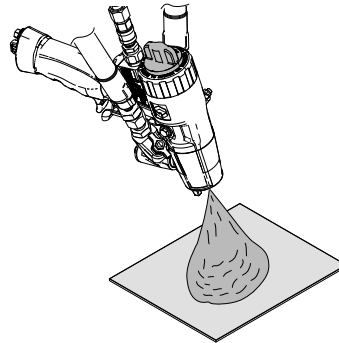
2. Close fluid valves A and B. Leave air valve (W) open.



3. Disengage the piston safety lock (L). See **Piston Safety Lock**, page 15.

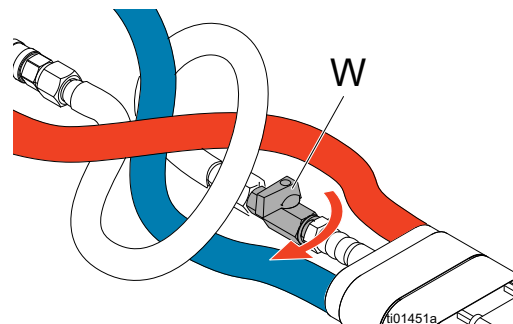


4. Trigger the gun onto cardboard or into a waste container to relieve pressure.



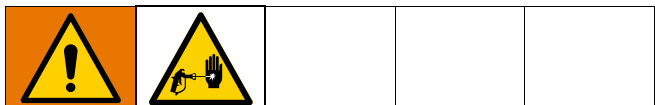
5. Engage the piston safety lock (L). See **Piston Safety Lock**, page 15.

6. Turn the air valve (W) off.



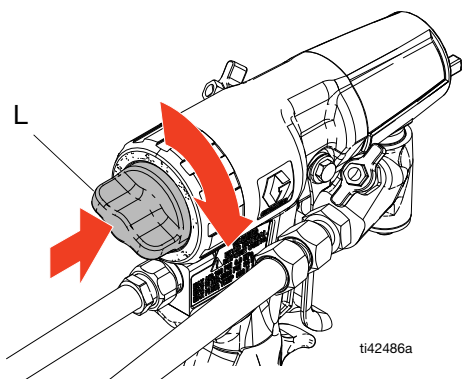
**NOTE:** After the pressure in the spray gun is relieved, the fluid in the hose and proportioner remains under pressure. Follow the **Pressure Relief Procedure** in your proportioner manual to relieve pressure in the system.

## Piston Safety Lock

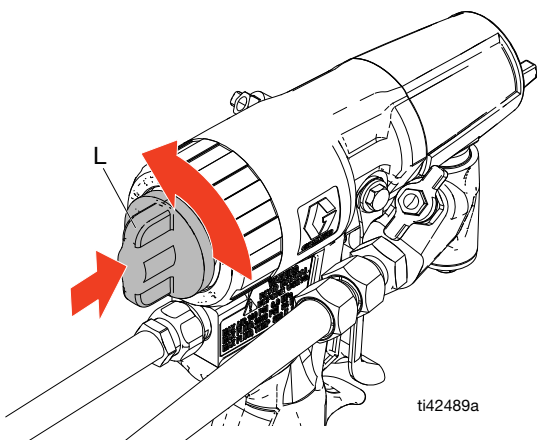


High pressure fluid from dispensing devices can pierce skin. To help prevent serious injury from pressurized fluid, always engage the piston safety lock and close the material shutoff valves to avoid accidental triggering whenever you stop spraying.

**To engage the piston safety lock:** Push the piston safety lock (L) in and turn it clockwise. The piston safety lock is engaged when the knob locks into place and won't rotate. If the piston safety lock is engaged, the gun will not actuate.



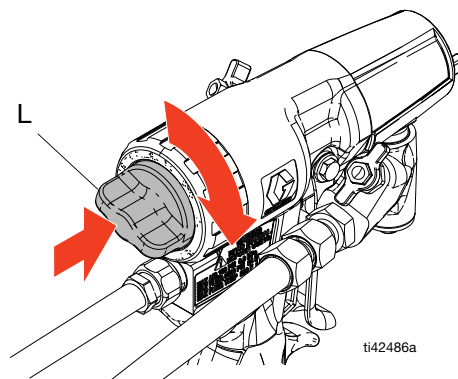
**To disengage the piston safety lock:** Push the piston safety lock (L) in and turn it counterclockwise until the knob stops in the vertical position.



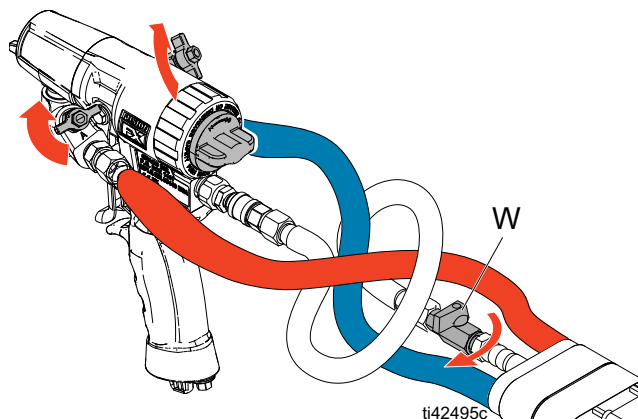
## Shut Off Gun with Loss of Air Pressure

In the event of loss of air pressure, the gun will continue to spray. To shut the gun off, perform the following steps:

1. Engage the piston safety lock. See **Piston Safety Lock**, page 15.



2. Close both fluid valves (A&B) and close the air valve (W).



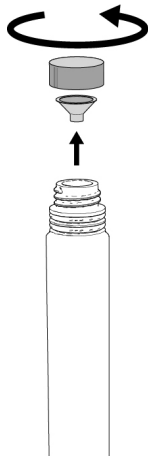
## ClearShot™ Liquid Cartridge Installation/Removal

**NOTE:** If ClearShot Liquid cartridge removal or installation is difficult, lubricate cartridge o-rings and/or cartridge bore with a few drops of ClearShot Liquid. Water-based lubricants can be used as well.

**NOTE:** Do not use Fusion grease or other petroleum- or vegetable-based lubricants. They will cause cartridge o-rings to swell and stick inside gun handle.

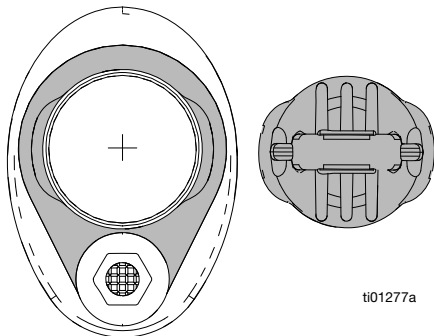
### Install ClearShot Liquid Cartridge

1. Follow the **Pressure Relief Procedure** on page 14.
2. Turn off air valve (W).
3. Remove the plastic cap from the new ClearShot Liquid cartridge.

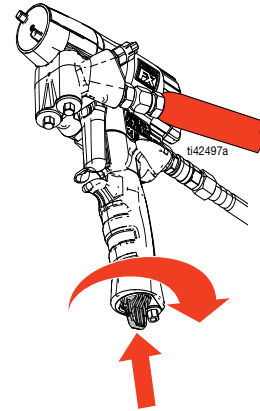


**NOTE:** When removing the plastic cap, make sure the secondary inner plastic cap is also removed.

4. Insert the cartridge into the gun handle. Ensure the cartridge tabs are aligned correctly with the cartridge tab recesses in the gun handle.



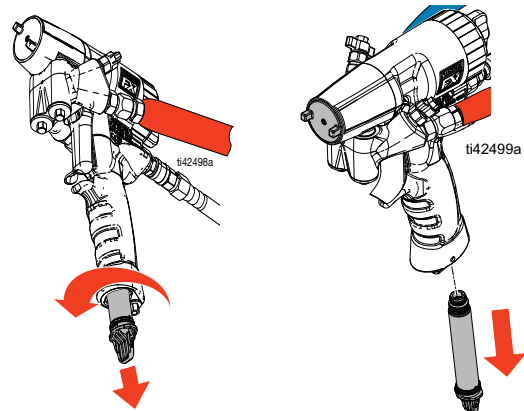
5. After the cartridge is fully inserted, turn the cartridge 1/4 turn clockwise to lock it into the gun handle.



6. Turn the air valve (W) ON and prime the gun with ClearShot Liquid.
  - a. Trigger the gun 40 times to prime the pump.
  - b. Trigger the gun onto scrap cardboard to see dosed ClearShot Liquid.
7. Resume Spraying.

### Remove ClearShot Liquid Cartridge

1. Follow the **Pressure Relief Procedure** on page 14.
2. Turn the air valve (W) OFF.
3. Push in and turn cartridge 1/4 turn counterclockwise (viewed from the bottom). Then pull the cartridge out of the gun handle.



### Troubleshooting

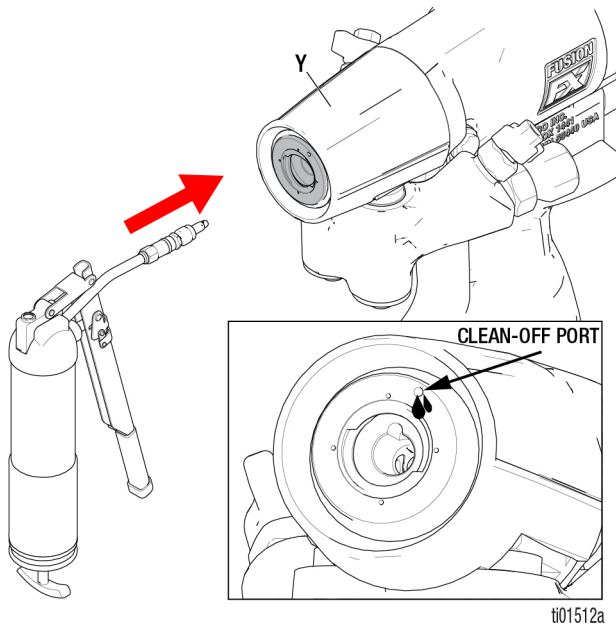
For ClearShot Liquid cartridge troubleshooting, see **Troubleshooting** on page 35.



## Daily Shutdown



1. Follow the **Pressure Relief Procedure** on page 14.
2. Remove the Air Cap and Mix Chamber from the gun.
3. Apply grease to FX Fluid Cartridge outlet using the FX fluid cartridge outlet grease tool. Apply grease until grease comes out of the FX fluid cartridge clean-off air port.



4. Re-install the Air Cap and Mix Chamber assembly onto gun.

# Maintenance

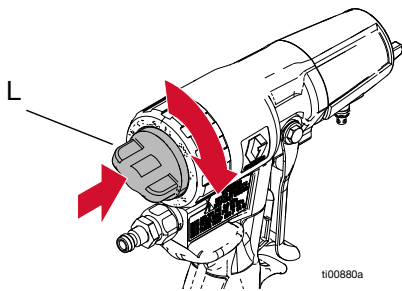
## Preventative Maintenance

Recommended Schedule	Maintenance Procedure
Daily	Clean the Air Cap, page 20
Weekly	Inspect Manifold Check Valves, page 21
As Needed	Clean Mix Chamber Nozzle, page 18
	Clean the Mix Chamber Impingement Ports, page 19
	Replace Mix Chamber Seal, page 20
	Grease the FX Fluid Cartridge, page 26. It is recommended to grease the FX Fluid Cartridge for a short term shutdown during which the gun won't be operated for three days to a week.
	Flush Gun, page 27. It is recommended to flush the FX fluid cartridge for a long term shutdown during which the gun won't be operated for longer than a week.
	Inspect FX Fluid Cartridge, page 29
	Lubrication, page 31.
	Clean Passages, page 31
Inspect the Piston, page 32	
Inspect the Air Valve, page 33	

### Clean Mix Chamber Nozzle

**NOTE:** Refer to **Table 1: Nozzle Drill Bit Sizes**.

1. Follow the **Pressure Relief Procedure** on page 14.
2. Engage the Piston Safety Lock (L).



3. Use the pin vice with an appropriate size drill bit to clean Mix Chamber (N) nozzle . If necessary, clean Air Cap (C) gently with stiff brush.

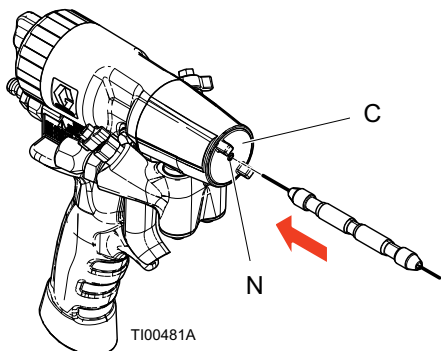
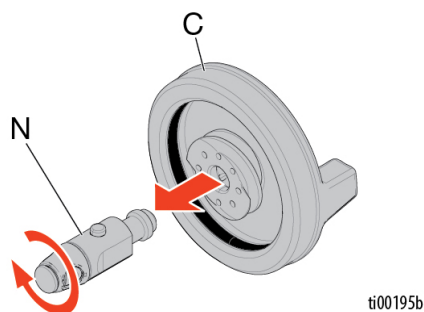


Table 1: Nozzle Drill Bit Sizes	
Round Spray	
Mix Chamber Part Number	Drill Size in. (mm)
FX20RD	#58, 0.042 (1.07)
FX29RD	#55, 0.052 (1.32)
FX34RD	0.057 (1.45)
FX37RD	#52, 0.0635 (1.61)
FX42RD	0.065 (1.65)
FX47RD	#49, 0.073 (1.85)
FX52RD	0.0785 (1.99)
FX60RD	#42, 0.0935 (2.38)
FX70RD	0.0984 (2.5)

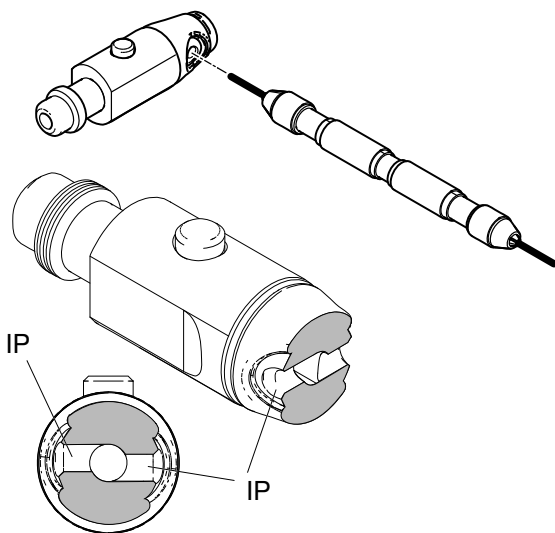
## Remove the Mix Chamber

1. Follow the **Pressure Relief Procedure** on page 14.
2. Remove the Air Cap (C) from the FX Fluid Cartridge by turning the air cap counterclockwise.
3. Unthread the Mix Chamber (N) from the Air Cap (C).



## Clean the Mix Chamber Impingement Ports

1. Follow the **Remove the Mix Chamber**, page 19.
2. Using the provided pin vice, drill impingement ports (IP).

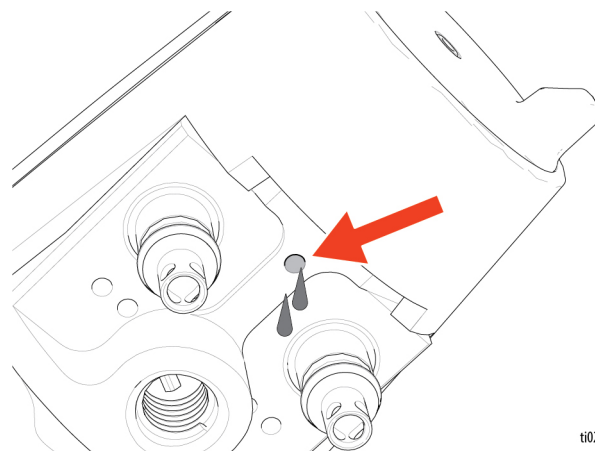


Mix Chamber Part Number	Impingement Port (IP) Drill Bit Size in. (mm)
FX20RD	#76, 0.020 (0.51)
FX29RD	#69, 0.0292 (0.74)
FX34RD	#66, 0.032 (0.81)
FX37RD	#63, 0.037 (0.94)
FX42RD	#59, 0.041 (1.00)
FX47RD	#56, 0.0465 (1.18)
FX52RD	0.0492 (1.25)
FX60RD	0.0531 (1.35)
FX70RD	0.061 (1.55)

3. Follow the **Install the Mix Chamber**, page 11.
4. Return the gun to service.

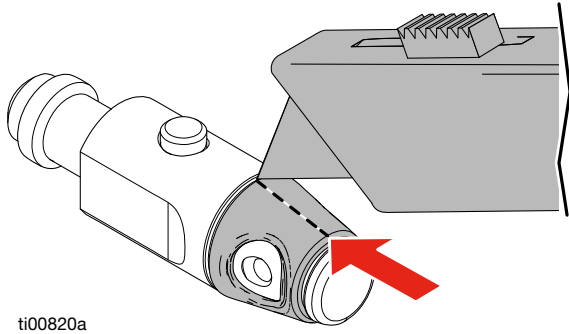
## Mix Chamber Weep Hole

If chemical is observed coming out of the mix chamber weep hole, it is an indicator of a poor mix chamber seal. To ensure proper mix chamber sealing, make sure to tighten air cap completely during assembly and inspect the mix chamber seal for damage. If mix chamber seal is damaged, see **Replace Mix Chamber Seal**, page 20.



## Replace Mix Chamber Seal

1. Follow the **Pressure Relief Procedure** on page 14.
2. Follow the **Remove the Mix Chamber**, page 19.
3. Cut the mix chamber seal off the Mix Chamber. Cut the seal in the middle between the two impingement ports on the Mix Chamber.



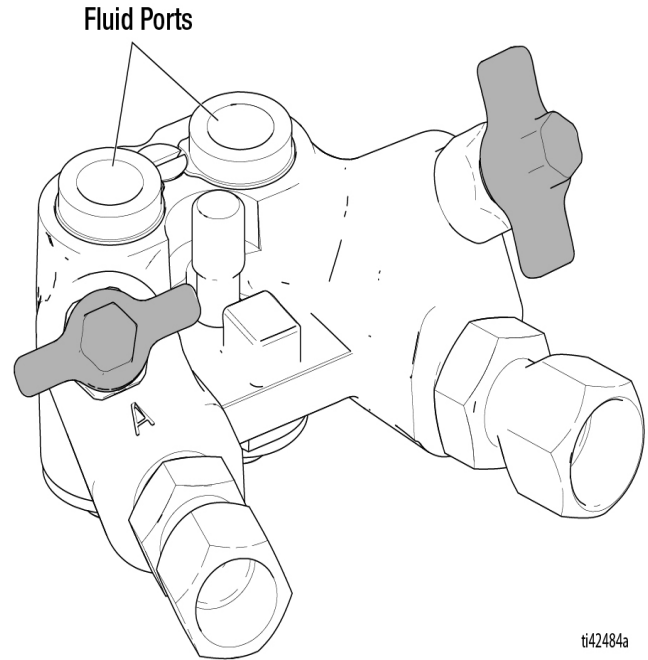
4. Install new seal onto Mix Chamber, making sure to line the holes on the seal up with the impingement ports on the mix chamber.
5. Follow the **Install the Mix Chamber** on page 11.

## Clean the Air Cap

Soak the front Air Cap (C) in compatible solvent. Brush or wipe the Air Cap clean. Clean holes with #65 (.035) drill bit.

## Clean Fluid Manifold

Clean the fluid manifold fluid ports with compatible solvent and brush whenever they are removed from the gun. Do not damage the internal sealing surfaces. To seal out moisture, fill the fluid ports with grease when left exposed.



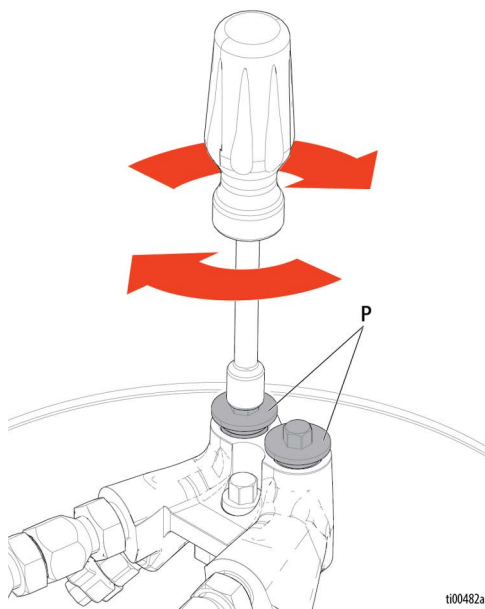
## Inspect Manifold Check Valves

1. Follow the **Pressure Relief Procedure** on page 14.



To help prevent injury from splashing fluid, very slowly open the Manifold Check Valves (P) 1 to 1-1/2 turns to bleed pressure.

2. Relieve pressure in the Fluid Manifold (M) after the gun is removed.
  - a. Place the Fluid Manifold (M) over a container with the Manifold Check Valves (P) facing up.
  - b. Make sure the Fluid Valves are closed.
  - c. Very slowly open the Manifold Check Valves (P) 1 to 1-1/2 turns to bleed any residual pressure. Fluid may spray from the fluid ports.



3. Remove the Manifold Check Valves (P) by unthreading them from the fluid manifold.

### NOTICE

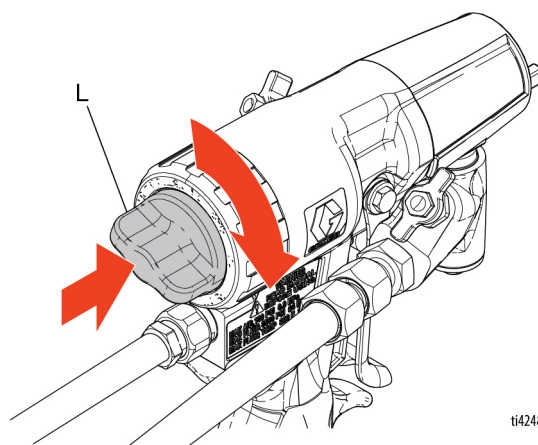
To prevent cross-contamination of the check valves, do not interchange A component and B component parts. The A component check valve is marked with an A.

4. Clean or replace fluid screens. See, **Check Valve Filter Screen Kits**, page 42.

5. Carefully inspect o-rings. Replace if worn or damaged.
6. Liberally lubricate o-rings and reassemble. Use a hex nut driver to tighten.

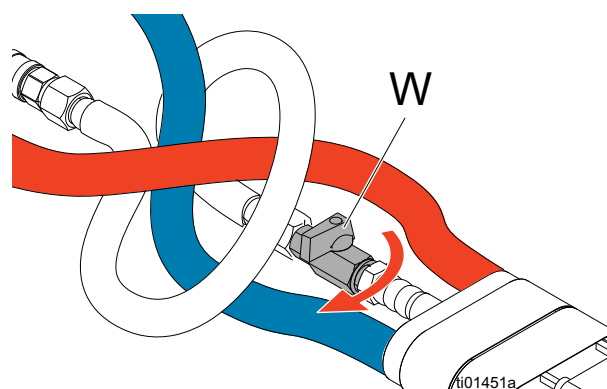
## Remove the FX Fluid Cartridge

1. Follow the **Pressure Relief Procedure**, page 14.
2. Verify that A and B-side Fluid Valves are closed.
3. Engage the piston safety lock (L). See **Piston Safety Lock**, page 15.



ti42486a

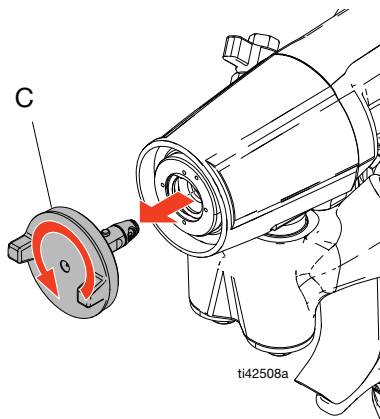
4. Turn off the Air Valve (W).



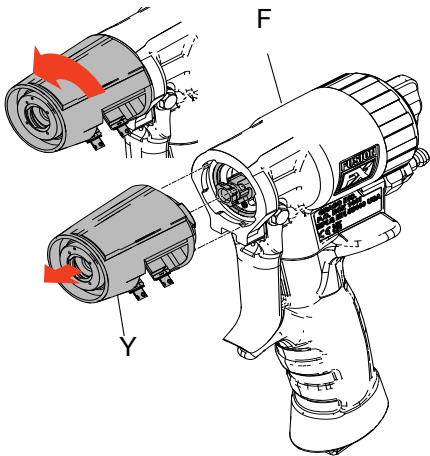
ti01451a

5. Remove gun from Gun Fluid Manifold (M).

6. Remove the air cap (C).

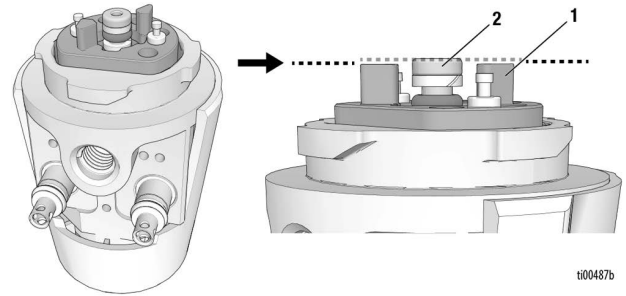


7. Turn the FX fluid cartridge (Y) counterclockwise 1/8 turn and pull out to remove FX fluid cartridge from gun body (F).



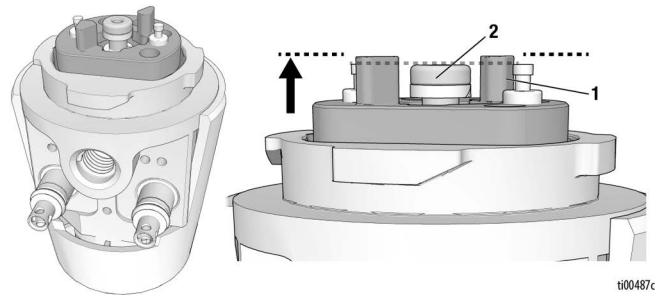
## Check FX Fluid Cartridge Yoke Position for Install

1. Check the FX Fluid Cartridge for proper yoke position prior to installing FX fluid cartridge onto gun. Proper yoke position is when the tabs on the yoke (1) are flush or slightly lower than cartridge air check housing (2).

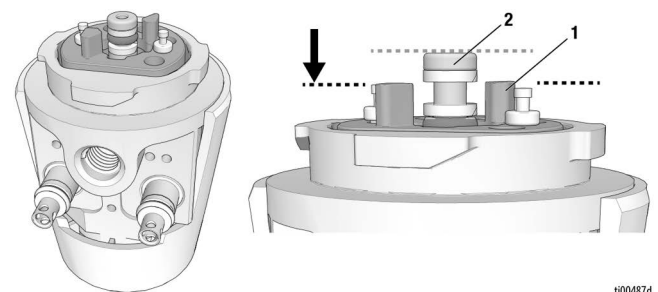


2. If yoke is properly positioned, follow **Install FX Fluid Cartridge**, page 23.

3. If the yoke is positioned where the yoke tabs (1) are higher than the air check housing (2), push the yoke until the yoke tabs are flush with the air check housing. Follow **Install FX Fluid Cartridge**, page 23.

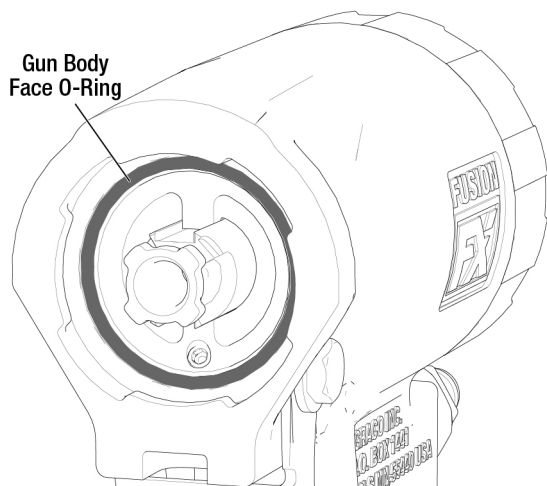


4. If the yoke is positioned where the yoke tabs (1) are lower than the air check housing (2), follow **Install FX Fluid Cartridge with Pushed in Yoke Position**, page 23.



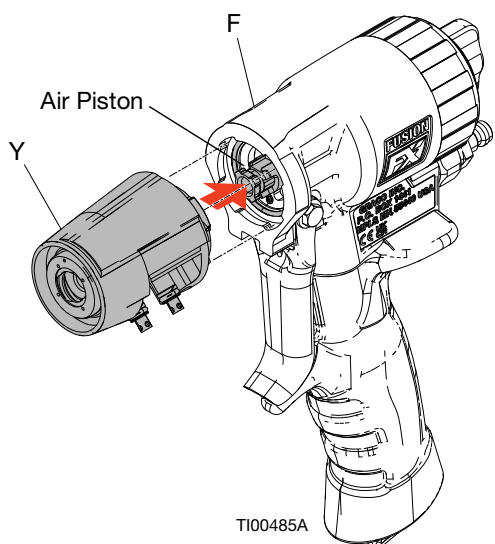
## Install FX Fluid Cartridge

1. Ensure gun body face o-ring is installed and well lubricated.



ti00880b

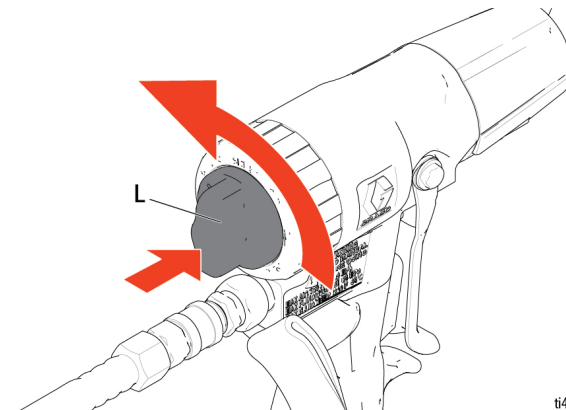
2. Disengage the Piston Safety Lock (L). See, **Piston Safety Lock**, page 15.
3. Align tabs on FX fluid cartridge yoke with the Air Piston and push the FX Fluid Cartridge (Y) onto the gun body (F).



TI00485A

4. Rotate FX Fluid Cartridge (Y) 1/8 turn clockwise to upright position.

5. Install Air Cap and Mix Chamber assembly.

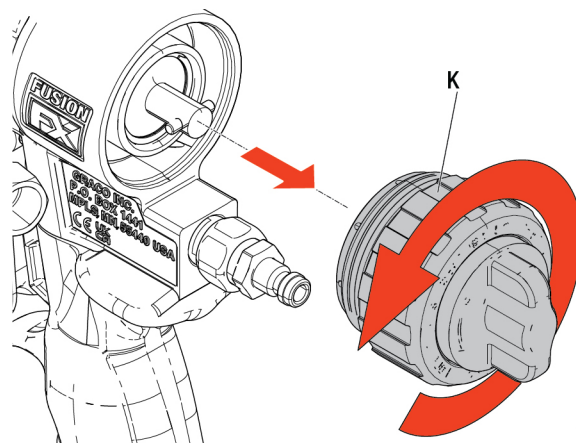


ti42489b

6. Engage the piston safety lock (L). See **Piston Safety Lock**, page 15.

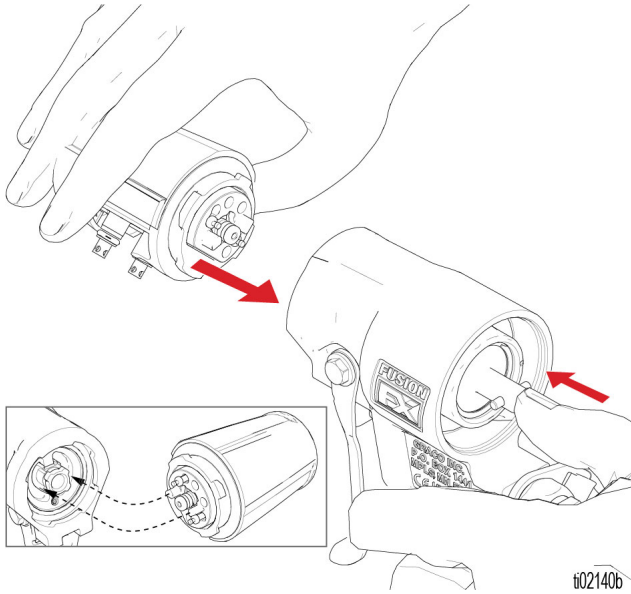
## Install FX Fluid Cartridge with Pushed in Yoke Position

1. Ensure gun body face O-ring is installed and well-lubricated.
2. Disengage the Piston Safety Lock (L). See, **Piston Safety Lock**, page 15.
3. Unscrew the air cylinder cap (K).

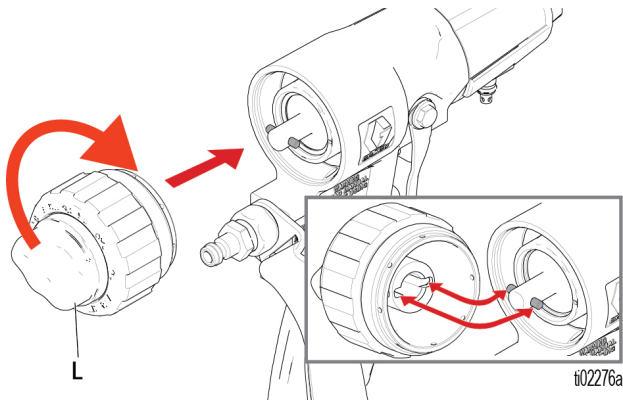


ti42515b

4. Apply pressure pushing the Air Piston forward with thumb. Align the tabs on the FX Fluid Cartridge Yoke with the Air Piston and push the FX Fluid Cartridge onto the gun body.



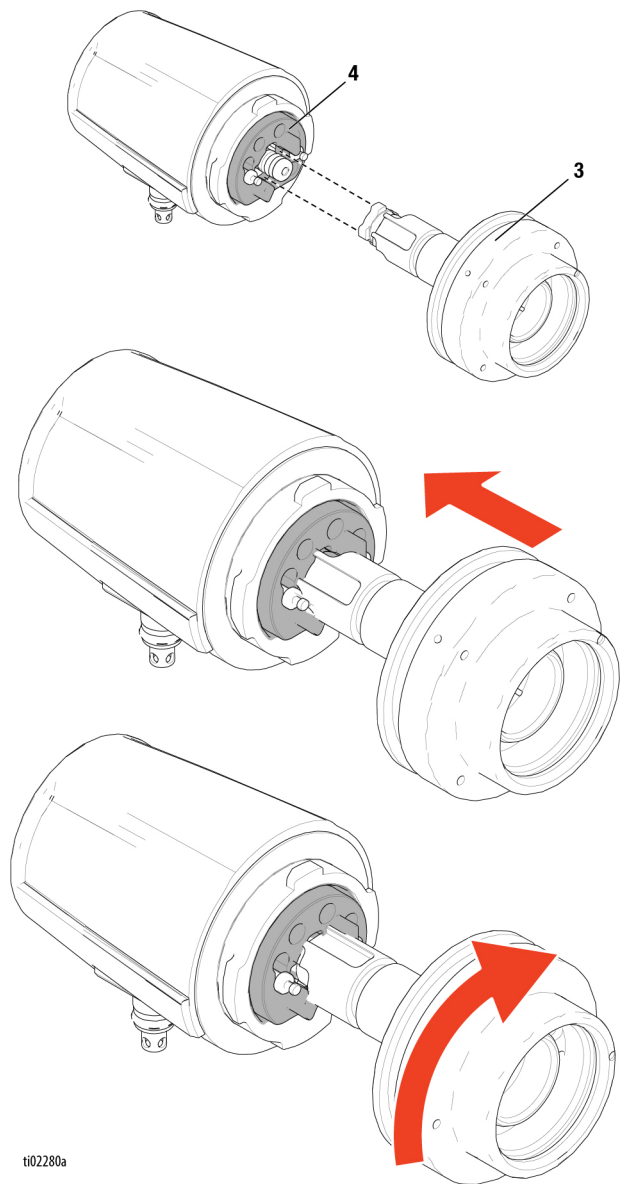
5. Rotate FX Fluid Cartridge 1/8 turn clockwise to upright position.
6. Align the pin on the back of the Air Piston with the notches in the safety stop of the Cylinder Cap. Thread the Air Cylinder Cap onto the gun body



7. Install the Air Cap and Mix Chamber assembly.
8. Engage the Piston Safety Lock (L). See **Piston Safety Lock** on page 15.

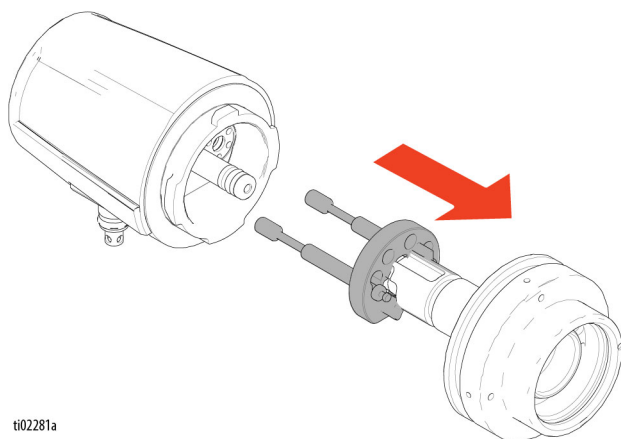
## Replace FX Fluid Cartridge Shuttle Valves

1. Follow the **Pressure Relief Procedure**, page 14.
2. Remove the FX Fluid cartridge from the gun. See **Remove the FX Fluid Cartridge**, page 21.
3. Use a spare air piston (3) and insert it into the shuttle valve yoke (4), lining up the tabs on the air piston with the clearance slots in the shuttle valve yoke. Turn the air piston clockwise to engage shuttle valve yoke.

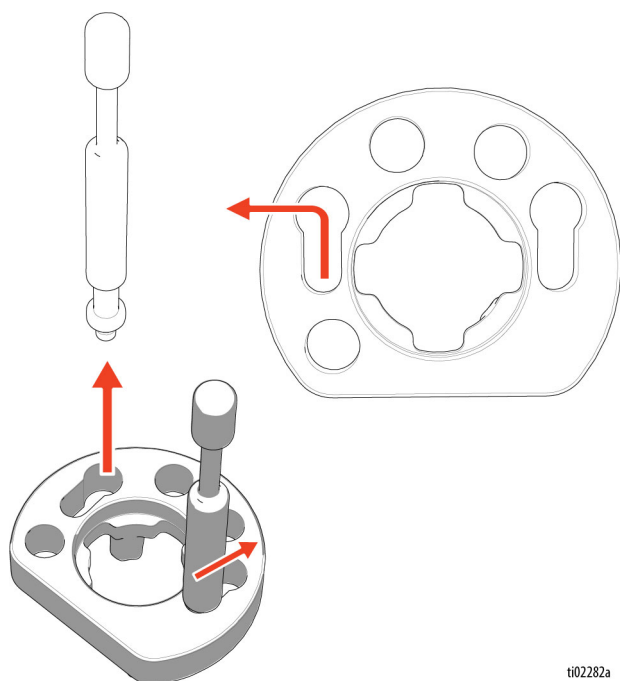




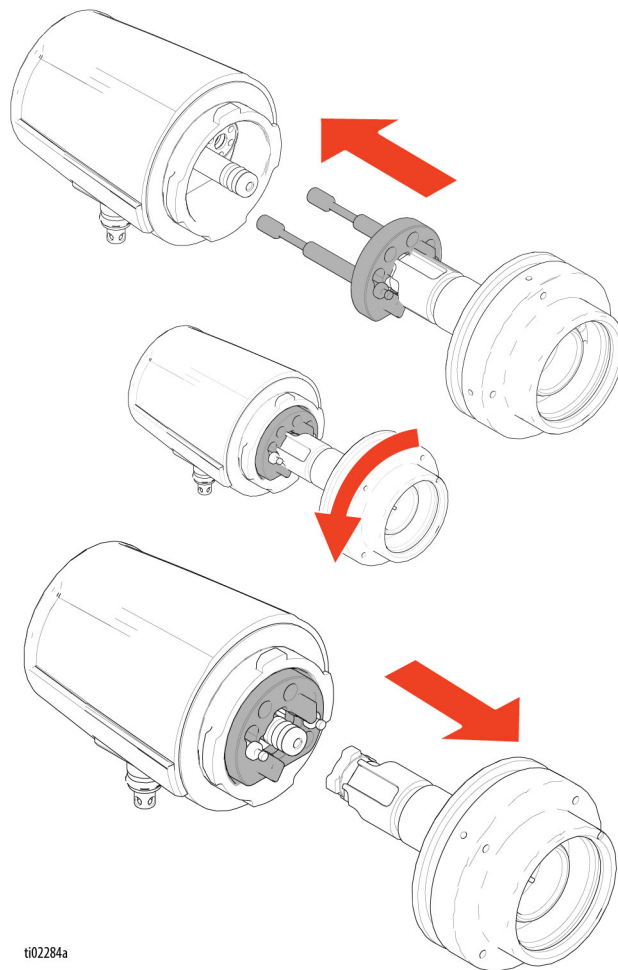
- Remove shuttle valves from the FX Fluid Cartridge by pulling out with the Air Piston.



- Remove shuttle valves from yoke. Assemble replacement shuttle valves onto shuttle valve yoke.



- Liberaly lubricate shuttle valves with Fusion grease.
- Engage shuttle valve yoke with spare Air Piston.
- Install shuttle valve and yoke assembly into FX Fluid Cartridge by pushing shuttle valve and yoke assembly in with spare air piston. Push shuttle valve and yoke assembly in until yoke tabs are flush with the cartridge air check housing.



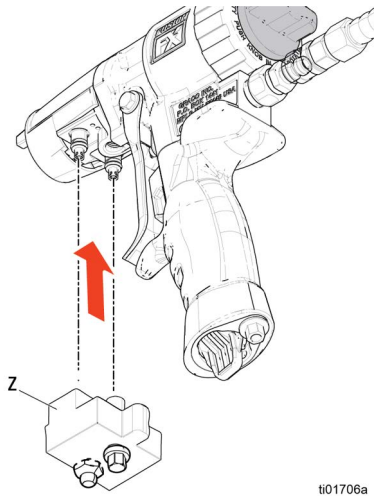
**NOTICE**

Make sure to push squarely on the shuttle valve yoke with the air piston during shuttle valve install to prevent damaging shuttle valves.

- Install the FX Fluid cartridge onto the gun. See, **Install FX Fluid Cartridge**, page 23.

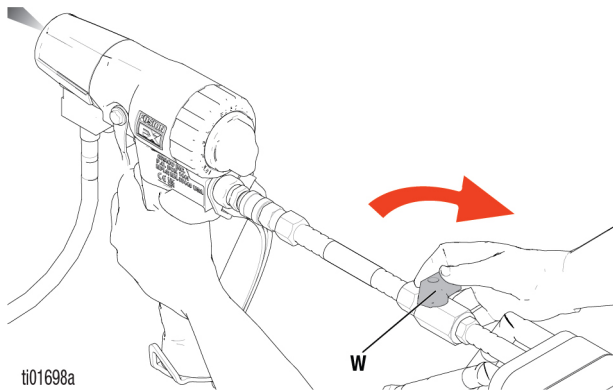
## Grease the FX Fluid Cartridge

1. Follow the **Pressure Relief Procedure** on page 14.
2. Remove the gun from the Gun Fluid Manifold (M). Leave the Air Whip Hose (V) connected to the gun.
3. Install the Flush Manifold (Z) onto the gun.



ti01706a

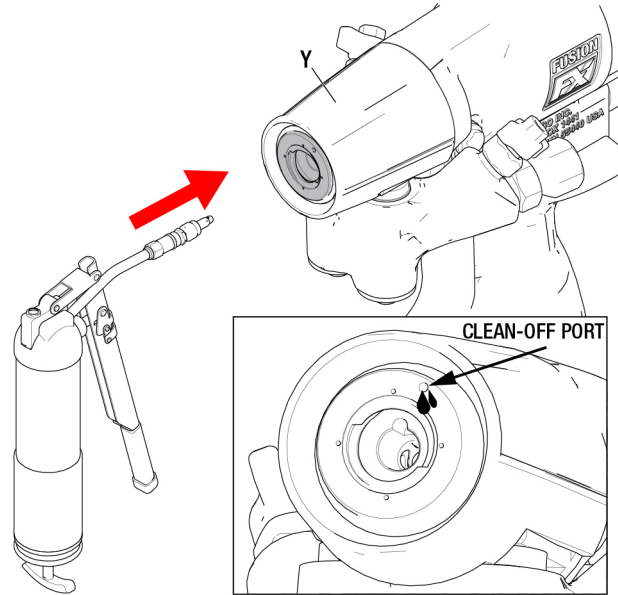
4. Disengage the Piston Safety Lock. See **Piston Safety Lock** on page 15.
5. Trigger gun and while holding gun triggered, turn off the Air Valve so that the internal cartridge valving stays open.



ti01698a

6. Disengage the gun trigger.
7. Pump grease into grease port of the Flush Manifold until clean grease comes out of the Mix Chamber nozzle.
8. Turn the Air Valve (W) on so that the internal cartridge valving closes.

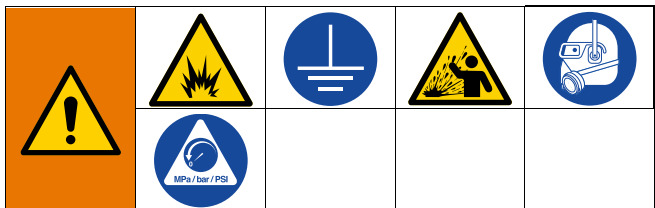
9. Remove the Air Cap and Mix Chamber assembly from the FX Fluid Cartridge.
10. Apply grease to the FX Fluid Cartridge Outlet using the FX Fluid Cartridge Outlet grease tool. Apply grease until grease come out of the FX Fluid Cartridge clean-off air port.



ti01512a

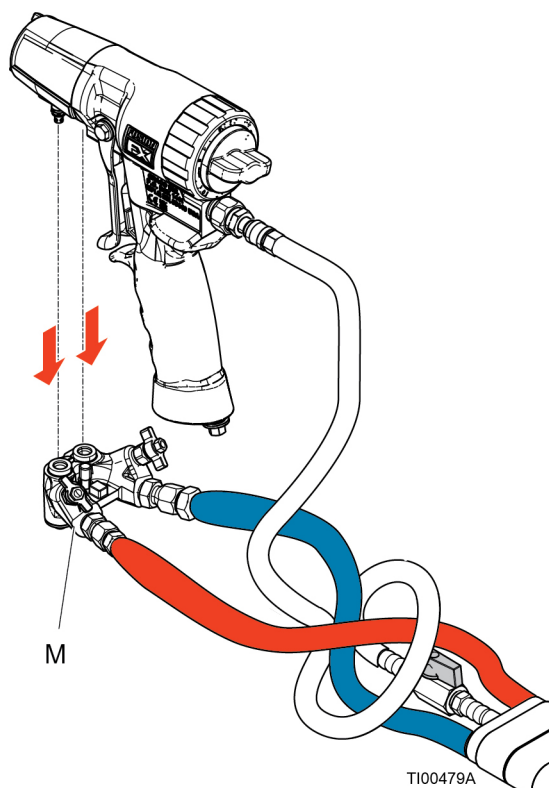
11. Re-install the Air Cap and Mix Chamber assembly onto the gun.
12. The FX Fluid Cartridge is ready for storage.

# Flush Gun

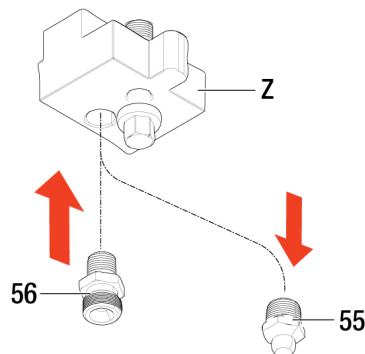


To avoid fire and explosion, always ground equipment and waste container. To avoid static sparking and injury from splashing, always flush at the lowest possible pressure.

1. Follow the **Pressure Relief Procedure** on page 14.
2. Remove the fluid manifold (M) from the gun.

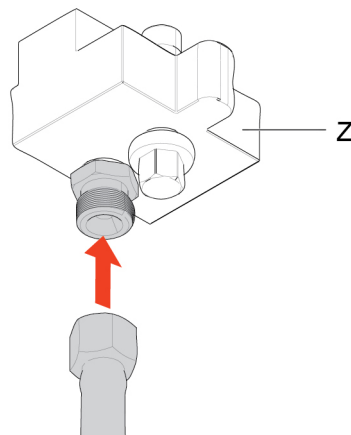


3. Remove grease fitting (55) from Flush Manifold (Z) and install the adapter fitting (56).



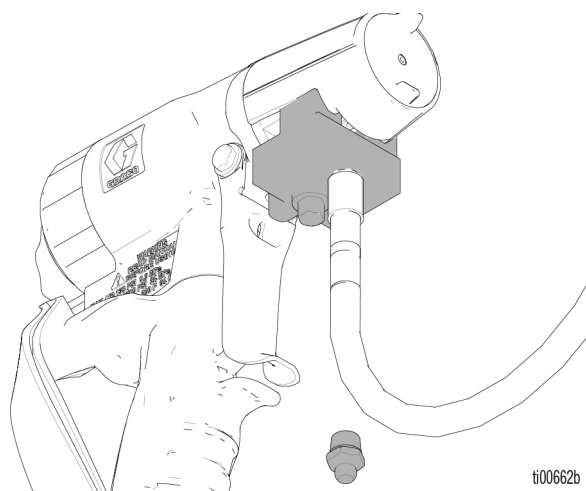
ti01704a

4. Connect the solvent line from the flush pump to the adapter fitting on the Flush Manifold (Z).



ti01705a

5. Connect the gun to the Flush Manifold.



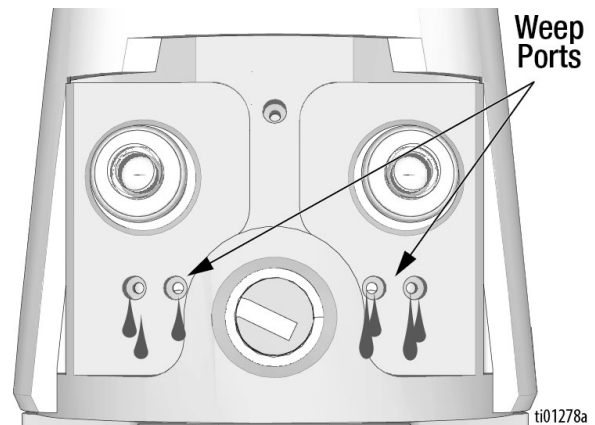
6. Open fluid valves (A) and (B).
7. Disengage the safety lock (L). See **Piston Safety Lock**, page 15.
8. Flush with a compatible solvent into a grounded metal pail while holding a part of the fluid manifold firmly against the side of the pail. Use the lowest possible fluid pressure when flushing.
9. Engage the piston safety lock (L). See **Piston Safety Lock**, page 15.
10. Disconnect the gun from the flush manifold.

**NOTE:** For a more thorough flush, Solvent Flush Kit 2006016 is available as an accessory. This kit includes Flush Manifold 2000660. See you Solvent Flush Kit manual for flushing instructions.

## Reinstall or Replace the FX Fluid Cartridge

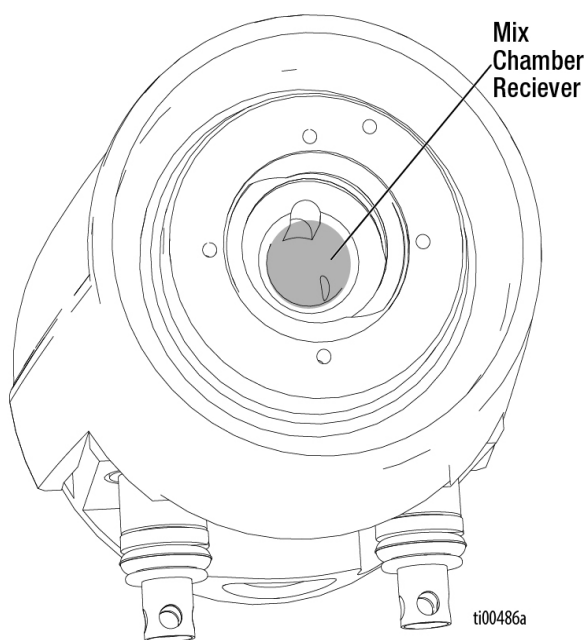
Identify the issue with your FX fluid cartridge and determine next steps.

- If the gun does not spray chemical when triggered: Follow the **Inspect FX Fluid Cartridge** procedure, page 29.
- If the gun sprays only one chemical when triggered: Follow the **Inspect FX Fluid Cartridge** procedure, page 29.
- If the gun leaks chemicals out of the mix chamber nozzle when de-triggered: Replace the FX fluid cartridge. Follow the **Install FX Fluid Cartridge** procedure, page 23.
- If chemical is leaking out of weep ports on cartridge: Replace the FX fluid cartridge. Follow the **Install FX Fluid Cartridge** procedure, page 23.

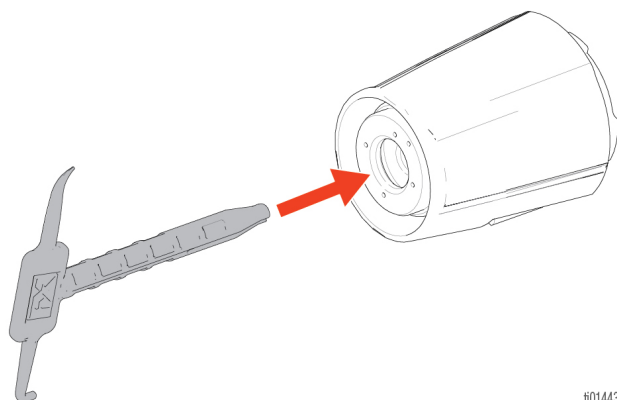


## Inspect FX Fluid Cartridge

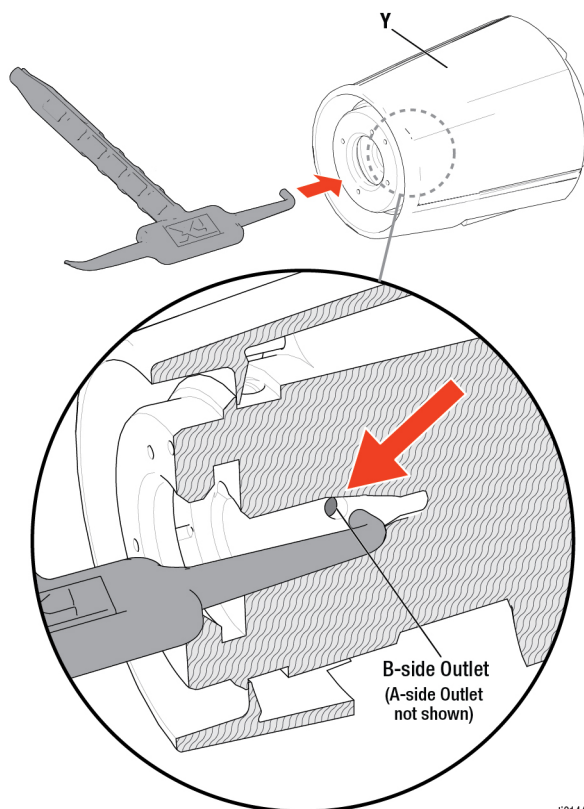
1. Follow the **Pressure Relief Procedure**, page 14.
2. If the gun does not spray chemical, or only sprays one chemical when triggered, inspect the FX Fluid Cartridge for reacted chemical in the mix chamber receiver.



3. If reacted chemical (foam or polyurea) is found in the mix chamber receiver, clean the receiver with the FX fluid cartridge cleaning tool.



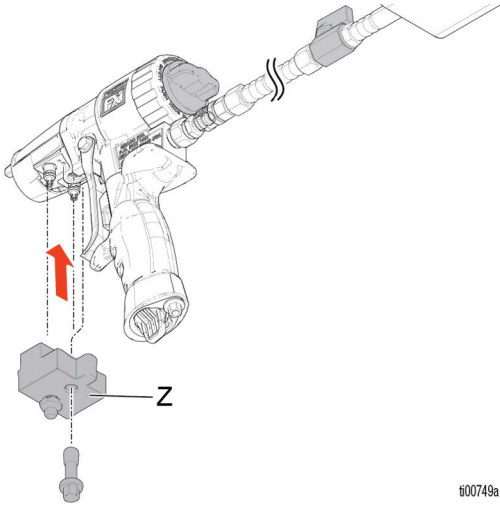
4. Check for obstruction on the A side and B side outlets of the FX Fluid Cartridge (Y) with the obstruction check tool. The FX Fluid Cartridge is obstructed if check tool does not go into the A or B side outlet.



- If obstruction is found: soak FX Fluid Cartridge (Y) in compatible solvent for 24 hours and check again after soak to see if obstruction has cleared. If FX Fluid Cartridge outlet is still obstructed, Replace the FX Fluid Cartridge. If obstruction is cleared, Follow **Test FX Fluid Cartridge Restriction**, page 30.
- If no obstruction is found: Follow **Test FX Fluid Cartridge Restriction**, page 30.
- If no reacted chemical (foam or polyurea) is found in the mix chamber receiver: Follow **Test FX Fluid Cartridge Restriction**, page 30.

## Test FX Fluid Cartridge Restriction

1. Follow the **Pressure Relief Procedure**, page 14.
2. Disconnect the gun from the Fluid Manifold (M).
3. Connect the gun to the Flush Manifold (Z).

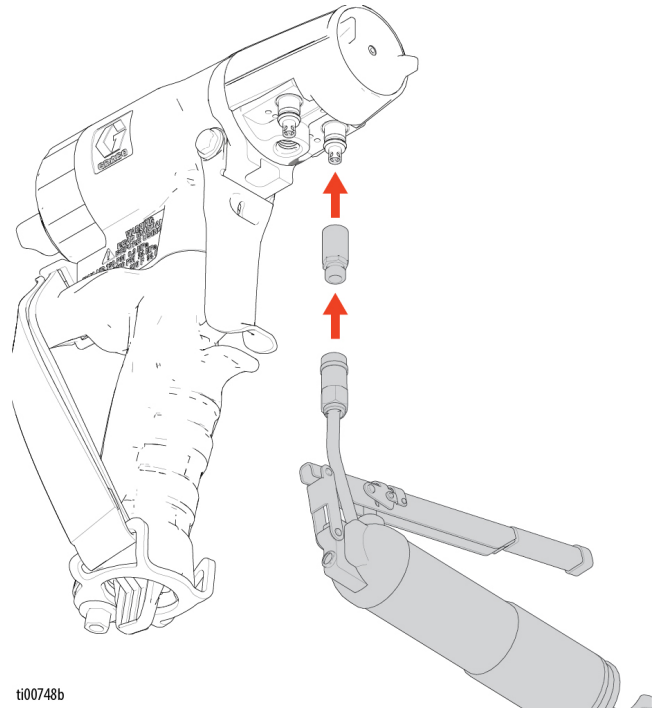
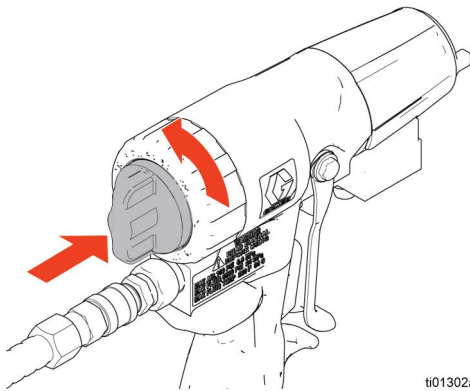


**NOTICE**

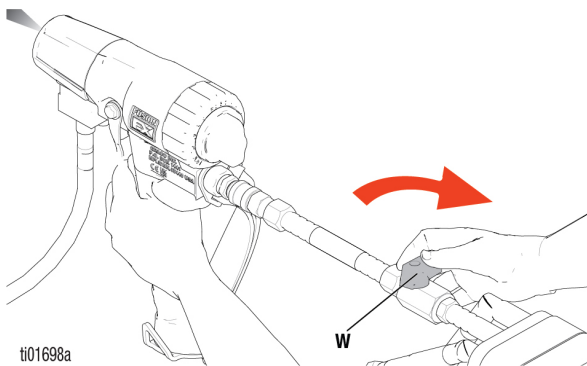
To prevent possible seal damage in the cartridge, the gun must be in the triggered position before pumping grease into the flush manifold. If the gun is not in the triggered position, grease will not flow out of the mix chamber nozzle.

6. De-trigger the gun.
7. Pump grease into the grease port of the Flush Manifold. Continue pumping grease until clean grease is coming out of the mix chamber nozzle.
8. Remove Flush Manifold from gun.
9. Connect the FX Fluid Cartridge greasing tool to the A side fluid inlet of the FX Fluid Cartridge and pump grease through the A side of cartridge.

4. Disengage the Piston Safety Lock (L).



5. Trigger the gun and keep the gun triggered, shut off the Air Valve (W) so that the gun stays in the spray position when de-triggered.



- **If grease purges out of the front of the FX fluid cartridge:** No obstruction is in the flow path and the FX fluid cartridge should not be replaced.
  - **If the grease does not purge out of the front of the FX fluid cartridge:** The flow path is restricted and the FX fluid cartridge should be replaced.
10. Repeat step 9 with the B side of the FX fluid cartridge.
  11. Remove cartridge inlet grease tool. Clean and store for next use.

## Store the FX Fluid Cartridge

1. Follow **Flush Gun** on page 27.
2. Follow **Grease the FX Fluid Cartridge**, page 26.
3. The fluid cartridge is now ready for storage.

## Clean Gun Surface

- Applying a light coat of lubricant will make cleaning easier.
- Wipe off outside of gun with compatible solvent.
- Use N Methyl Pyrrolidone (NMP), Dynaloy®-brand Dynasolve (CU-6, SB Veraflex-brand DzolV®, or equivalent to soften cured material.

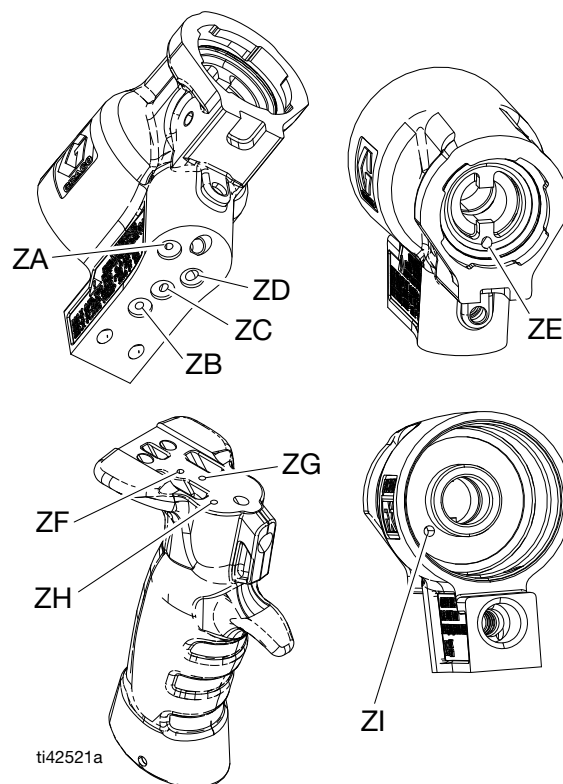
## Lubrication

Liberalily lubricate all o-rings, seals, and threads. See **Lubricant for Gun Rebuild** on page 46 to order lubricant.

## Clean Passages

If necessary, clean out passages in gun body and handle with drill bits. Refer to #Table 3 for diameter and location of passages. All drill bits are available in an accessory kit. See **Accessories** on page 46.

Passage Description	Ref. Letter	Diameter in. (mm)
CS Cartridge Air	ZB, ZF	3/32, 1/8 (2.35)
Air Exhaust	ZC,ZG	3/32 (2.35)
Piston Air	ZD, ZI	1/8 (3.1)
CS Fluid Supply	ZA, ZH	3/32 0.04 (1.0)
CS Gun Purge Air	ZE	#57, 0.043 (1.1)
AP Gun Purge Air	ZE	1/8 (3.1)

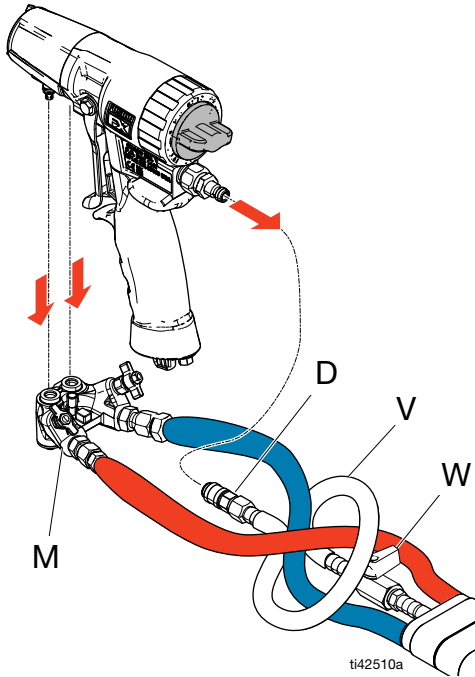


## Clean Muffler

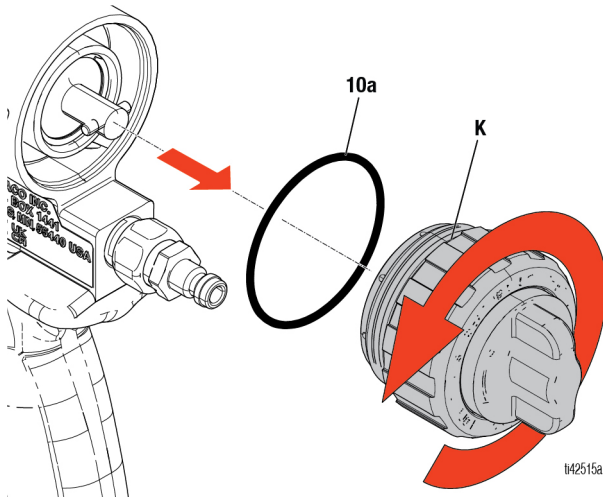
Remove and clean Muffler (E) with compatible solvent.

## Inspect the Piston

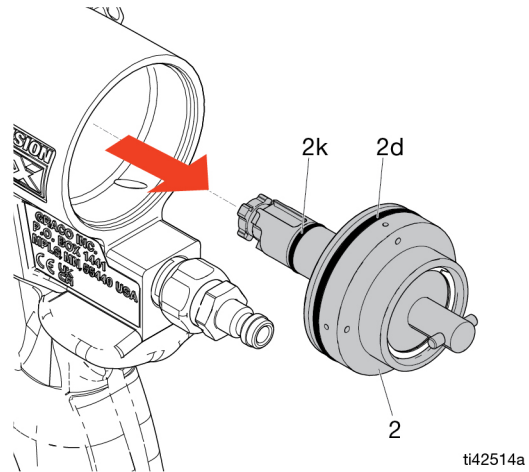
1. Follow the **Pressure Relief Procedure**, page 14.
2. Disconnect Air Hose Quick Coupler(D) and remove Fluid Manifold (M).



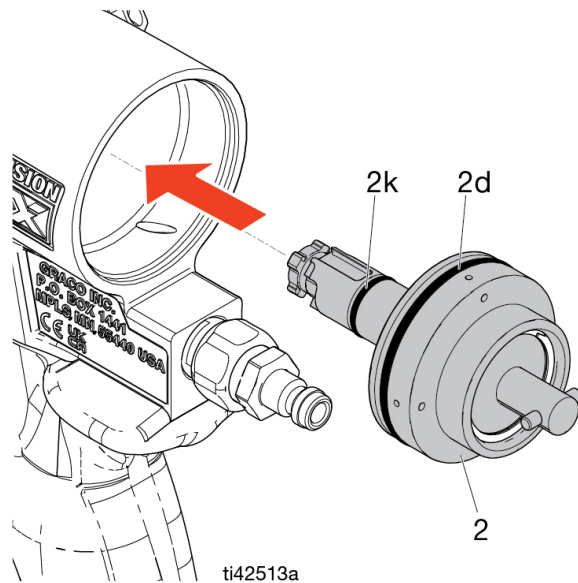
3. Follow the **Remove the FX Fluid Cartridge** procedure on page 21.
4. Disengage Piston Safety Lock (L). See **Piston Safety Lock**, page 15.
5. Unscrew the Air Cylinder Cap (K) and inspect o-ring (10a).



6. Remove the Air Piston (2). Inspect the piston o-ring (2d) and shaft o-rings (2k). Replace o-rings if worn or damaged.



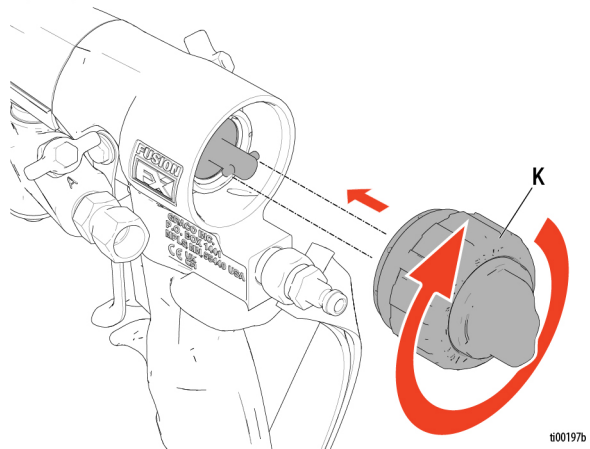
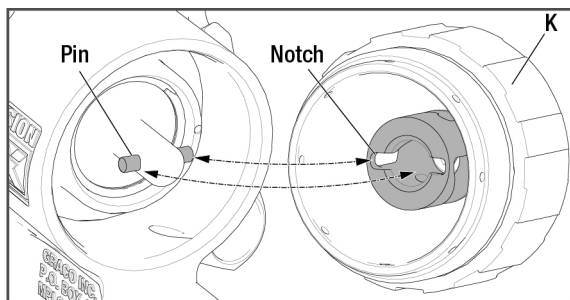
7. Liberally lubricate piston o-rings (2d and 2k). Reinstall piston (2). Shaft is keyed for proper assembly. Push firmly to seal piston.



8. Install the FX fluid cartridge (Y) onto the gun body (F).



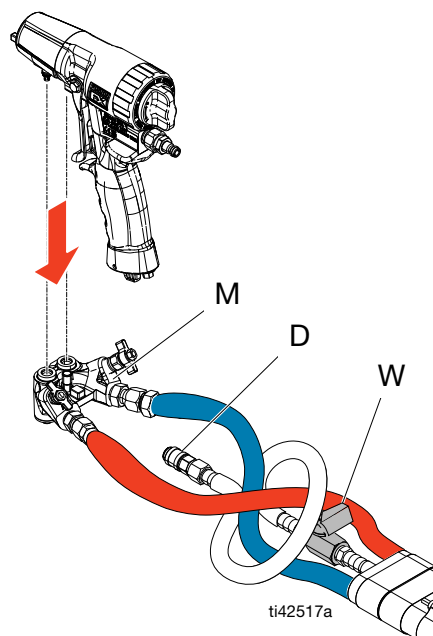
- Align the Pin on the back of the Air Piston with the Notches in the safety stop of the Air Cylinder Cap and thread Air Cylinder Cap onto the gun body.



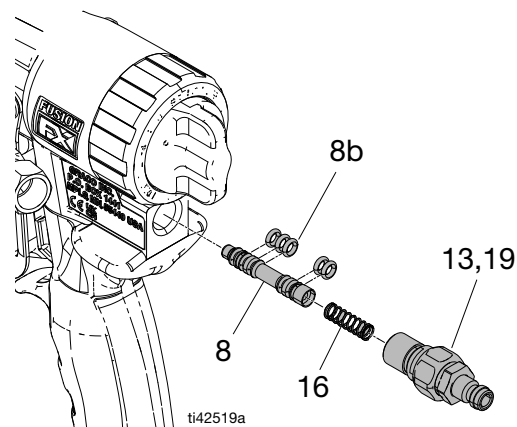
- Attach the gun to the Fluid Manifold.
- Connect the Air Hose Quick Coupler (D) to the gun.
- Return the gun to service.

## Inspect the Air Valve

- Follow the **Pressure Relief Procedure**, page 14.
- Disconnect Air Hose Quick Coupler (D) and remove Fluid Manifold (M).



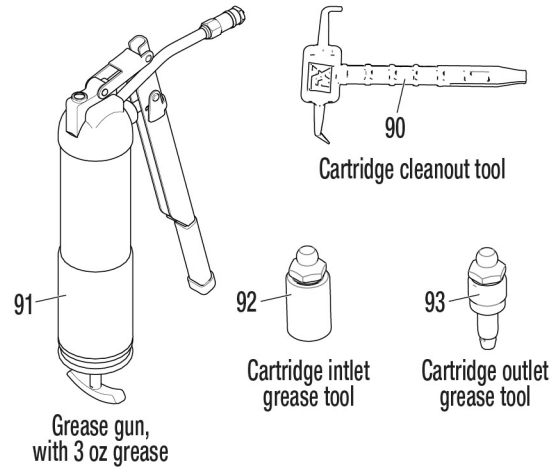
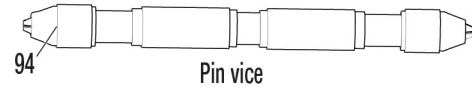
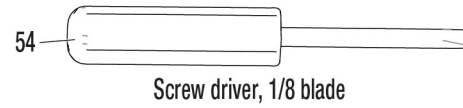
- Unscrew Air Valve Fitting (13,19) and remove Spring (16). Use a small diameter tool that fits through the slot in the trigger to push the air valve spool (8) out of gun. Inspect air valve spool o-rings (8b). Replace any damaged or worn o-rings.



- Liberalily lubricate o-rings and reassemble. Torque plug (19) to 125-135 in-lb (14-15 Nm).
- Attach the gun to the fluid manifold.
- Connect the Air Whip Hose (V) to the gun.
- Return gun to service.

## Supplied Tool Kit

- Hex nut driver, 5/16
- Screwdriver, 1/8 blade
- Pin vice
- Grease gun, with 3 oz grease
- Flush manifold
- FX fluid cartridge outlet grease tool
- FX fluid cartridge inlet grease tool
- FX fluid cartridge cleanout tool



t13870b

# Troubleshooting



1. Follow the **Pressure Relief Procedure**, page 14, before checking or servicing the gun.
2. Check all possible problems and causes before disassembling the gun.

**NOTICE**

To prevent cross-contamination in the gun, do not interchange A component (isocyanate) and B component (resin) parts. Cross-contamination can result in cured material in the gun. Cured material may damage the sealing surfaces, block fluid passages, and prevent gun function.

Problem	Cause	Solution
Gun does not fully actuate when triggered	The safety lock is engaged.	Disengage safety lock. See <b>Piston Safety Lock</b> , page 15.
	The muffler (22) is plugged.	Clean the muffler. See <b>Clean Muffler</b> , page 31.
	The air valve o-rings (8b) are damaged.	Replace the air valve o-rings. See <b>Inspect the Air Valve</b> , page 33.
	Cured material is inside the FX fluid cartridge (3).	Inspect the fluid cartridge (3) for cured material. See <b>Inspect FX Fluid Cartridge</b> , page 21.
Fluid does not spray when the gun is fully actuated	The fluid valves (6h) are closed.	Open the fluid valves.
	The mix chamber impingement ports are plugged.	<b>Clean the Mix Chamber Impingement Ports</b> , page 19.
	Manifold check valve assemblies (6d) are plugged.	Clean the check valves. See <b>Inspect Manifold Check Valves</b> .
	The FX fluid cartridge (3) is plugged.	<b>Remove the FX Fluid Cartridge</b> , page 21, then <b>Test FX Fluid Cartridge Restriction</b> , page 30.
Gun actuates slowly	The muffler (22) is plugged.	Clean the muffler. See <b>Clean Muffler</b> , page 31.
	The piston o-rings (2d, 2k) are damaged.	Replace the piston o-rings. See, <b>Parts</b> , page 38.
	The air valve is dirty, or the o-rings (8b) are damaged.	Clean air valve or replace o-rings. See <b>Inspect the Air Valve</b> , page 33.

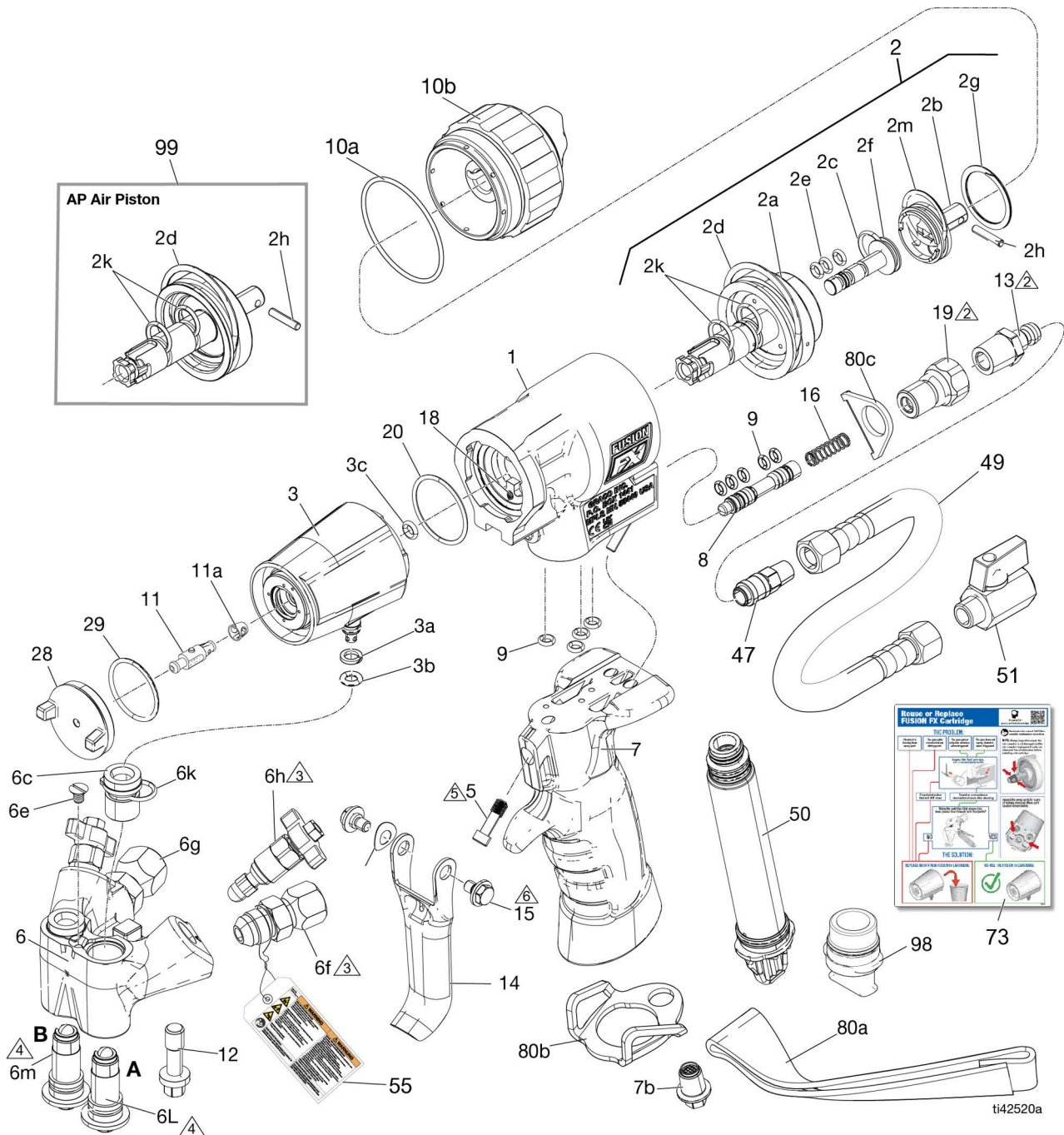
Problem	Cause	Solution
Loss of round pattern.	The mix chamber nozzle is dirty.	Clean the mix chamber nozzle. See <b>Clean Mix Chamber Nozzle</b> , page 18.
	The mix chamber impingement ports are dirty.	Clean the mix chamber impingement ports. See, <b>Clean the Mix Chamber Impingement Ports</b> , page 19.
	Mix chamber seal is obstructing impingement ports.	Replace. See <b>Replace Mix Chamber Seal</b> , page 20.
	Obstruction in FX fluid cartridge	Inspect the FX fluid cartridge. See <b>Inspect FX Fluid Cartridge</b> , page 29.
Leakage between flat tip and mix chamber.	The tip is not seated properly.	Reassemble. See reposition or replace flat spray tips.
	The o-ring (40) is damaged or missing.	Replace the flat spray tip o-ring. See reposition or replace flat spray tips.
Pressure imbalance.	The mix chamber impingement ports are plugged.	Clean the mix chamber impingement ports. See <b>Clean the Mix Chamber Impingement Ports</b> , page 19.
	Manifold check valve assemblies (6d) are plugged.	Clean the check valves. See <b>Inspect Manifold Check Valves</b> , page 21.
	The viscosities not equal.	Adjust temperature to compensate.
	The FX fluid cartridge (3) is plugged.	<b>Remove the FX Fluid Cartridge</b> , page 21, then <b>Test FX Fluid Cartridge Restriction</b> , page 30.
	Mix chamber seal obstructing impingement ports.	Replace. See <b>Replace Mix Chamber Seal</b> , page 20.
A and/or B fluid inside of the FX fluid cartridge.	The fluid seals in the FX fluid cartridge (3) are damaged.	Replace. See <b>Remove the FX Fluid Cartridge</b> , page 21.
	The mix chamber seal is damaged.	Replace. See <b>Replace Mix Chamber Seal</b> , page 20.
	Improper installation of air cap and mix chamber assembly.	Ensure proper assembly by verifying that the mix chamber nozzle is flush with the air cap face when installed.
Fluid mist from mix chamber or air cap.	The fluid seals in the FX fluid cartridge (18) are damaged.	Replace. See <b>Remove the FX Fluid Cartridge</b> , page 21.
Rapid buildup of material on air cap.	The air cap (28) holes are plugged.	Clean the air cap holes. See <b>Clean the Air Cap</b> , page 20.
	The air cap o-ring (29) is damaged or missing	Replace the air cap o-ring. See, <b>Parts</b> , page 38.
Reduced clean-off air.	The air cap o-ring (29) is damaged or missing.	Replace the air front o-ring. See, <b>Parts</b> , page 38.
Fluid does not shut off when fluid valves are closed.	The fluid valves (6h) are damaged.	Replace the fluid valves. See, <b>Parts</b> , page 38.
Burst of air from muffler when gun is triggered.	Normal.	No action required.

Problem	Cause	Solution
Steady air leakage from muffler.	The air valve o-rings (8b) are damaged.	Replace the valve o-rings. See <b>Inspect the Air Valve</b> , page 33.
	The piston o-rings (2d, 2k) are damaged.	Replace the piston o-rings. See, <b>Parts</b> , page 38.
Air leakage from front air valve.	The air valve o-rings (8b) are damaged.	Replace the valve o-rings. See <b>Inspect the Air Valve</b> , page 33.
Excessive air leaking from sides of gun.	The gun body face o-ring (20) is damaged or missing.	Replace o-rings. See, <b>Parts</b> , page 38.
	Handle/Gun body o-rings (9) are damaged or missing.	Replace o-rings. See, <b>Parts</b> , page 38.
	Air cylinder cap o-ring (10d) is damaged or missing.	Replace o-ring. See, <b>Parts</b> , page 38.
Fluid or chemical is leaking from sides of gun.	Manifold outlet o-rings (6k) are damaged or missing.	Replace manifold outlet rings. See, <b>Parts</b> , page 38.
	FX fluid cartridge fluid inlet o-rings (3b) are damaged or missing.	Replace o-rings. See, <b>Parts</b> , page 38.
	The fluid seals in the FX fluid cartridge (3) are damaged and chemical is leaking out of the weep ports.	Replace the fluid cartridge. See <b>Remove the FX Fluid Cartridge</b> , page 21.

# Parts

## Fusion FX Gun

See **Detail Views**, page 40 for additional parts and detail views.



**1** Torque to 30 - 40 in-lb (3.4 - 4.5 N•m).

**2** Torque to 125 - 135 in-lb (14.1 - 15.2 N•m).

**3** Torque to 13 - 15 ft-lb (17.6 - 20.3 N•m).

**4** Torque to 25 - 30 in-lb (2.8 - 3.4 N•m).

**5** Torque to 22 - 26 in-lb (2.5 - 2.9 N•m).

**6** Torque to 28 - 30 in-lb (3.1 - 3.4 N•m).

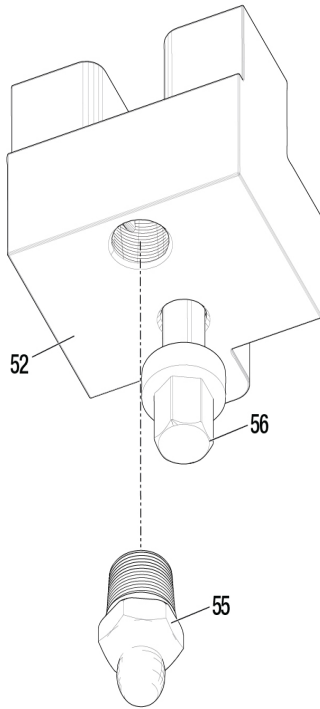
## Parts List - FX Fusion Gun FX9000

Ref.	Part	Description	Qty.	Ref.	Part	Description	Qty.
1	2000973	BODY, air section, fusion fx	1	7	2000972	HANDLE, fusion fx, cs, overmold	1
2	2000978	PISTON, cs, complete assembly	1	7b	2000981	PLUG, breather	1
2a	2001166	KIT, air piston, CS, w/ o-rings	1	8	2000980	VALVE, spool, fusion fx, assy	1
2b	2001032	STOP, stem, safety, fusion fx	1	9❖		O-RING	4
2c❖		PACKING, o-ring	1		119421	QTY: 1	
	2005697	QTY: 5			2991152	QTY: 10	
2d◆❖		O-RING, 129	1		25M239	QTY: 50	
	2006158	QTY: 5		10	2000971	CAP, safety, rear, fusion fx	1
2e❖		O-RING	3	10a★❖	131971PKG	O-RING, 031, fx75	1
	119421	QTY: 1		11	-----	CHAMBER, mix, fusion (See <b>Mix Chamber Kits</b> on page 41)	1
	2991152	QTY: 10					
	25M239	QTY: 50		11a		SEAL, mix chamber	1
2f	2001031	PISTON, dosing, fusion fx	1		2005366	QTY: 10	
2g	2001167	RING, retaining, spiral	1	12	2001170	BOLT, manifold, fusion fx	1
2h	20B210	PIN, dowel, 1/8 in. x 5/8 in.	1	13	117509	FITTING, line, air, 1/4 npt	1
2k◆❖		O-RING	2	14	2000976	TRIGGER, fusion fx	1
	118594	QTY: 1		15	2001153	KIT, bolt, trigger, fusion fx	2
	2005699	QTY: 10		16	117485	SPRING, compression	1
	25M247	QTY: 25		19	2001148	FITTING, air valve, fusion fx	1
2m❖		O-RING	1	20❖		PACKING, o-ring, 024, fx90	1
	117559	QTY: 1			17V093	QTY: 1	
	2005698	QTY: 5			2001150	QTY: 5	
3	2000810	CARTRIDGE, replaceable, fusion fx	1	28	2000788	AIR CAP, front, fusion fx, w/ o-ring	1
3a†		O-RING, back-up, PTFE, 008, non-split	1	29❖		PACKING, O-RING, 022	1
					121370	QTY: 1	
3b†		O-RING	1		256773	QTY: 5	
3c	2007251	KIT, O-Rings, CS check	1	47	117510	COUPLER, line, air, 1/4 npt	1
5	2001151	KIT, bolt, handle	1	49	15B772	HOSE, air, 18 in.	1
6	2000974	MANIFOLD, hose, assembly, fusion fx	1	51	15B565	VALVE, ball	1
				55▲	172479	TAG, warning	1
6c	2001168	KIT, housing check manifold	2	73	-----	LABEL, instructions	1
6d	2001151	FILTER, housing, assembly, fusion	2	80	2000716	KIT, strap with brackets	1
6e	2001169	SCREW, 8-32 x 0.25, flat head	1	80a		STRAP	1
6f	127597	FITTING, swivel, #5 jic x #5 jic, m x f	1		2007692	QTY: 3	
6g	127596	FITTING, swivel, #6 jic x #6 jic, m x f	1	80b	2006912	BRACKET, lower	1
6h	2000975	KIT, valve, fluid, fusion fx	2	80c	2006911	BRACKET, upper	1
6k❖		O-RING	2	98	2000715	CPS PLUG	1
	118594	QTY: 1		99	2000979	PISTON, assembly, <i>includes 2d, 2k, 2h</i>	1
	2005699	QTY: 10					
	25M247	QTY: 25					
6l	2001025	FILTER HOUSING, A-side, fusion fx	1				
6m	2001026	FILTER HOUSING, B-side, fusion fx	1				

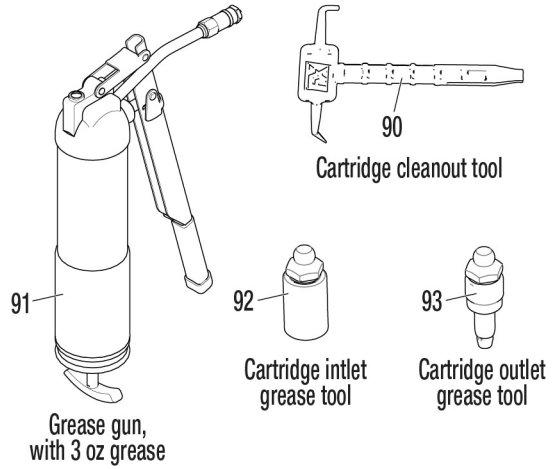
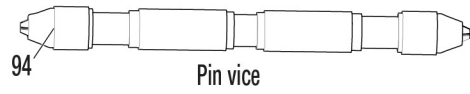
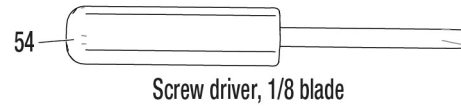
▲ Replacement safety labels, tags, and cards are available at no cost.

Symbol	Kit	Description	Included in Kit: Ref. (Qty.)
★	2000971	ASSEMBLY, safety stop	10a (1)
◆	2001033	KIT, O-ring, air-piston, fusion fx	2d, 2k (2)
†	2001029	KIT, O-ring, inlet check, fusion fx	3a (2), 3b (2)
❖	2001307	KIT, Fusion FX O-ring repair	2c, 2d, 2e, 2k, 2m, 6k, 9, 10a, 20, 29 (1)

## Detail Views



ti42522a



ti3870b

Ref.	Part	Description	Qty.
52	2000660	MANIFOLD, gun flush	1
53	117642	NUT DRIVER, hex, 5/16	1
54	118575	SCREWDRIVER, 1/8 blade	1
55	100054	FITTING, grease	1
56	2001170	BOLT, manifold	1

Ref.	Part	Description	Qty.
90	2005061	TOOL, cleanout, cartridge (Kit quantity 5)	1
91	117792	GUN, grease, 3 oz.	1
92	2004345	KIT, tool, grease	1
93	2004344	KIT, grease, cartridge	1

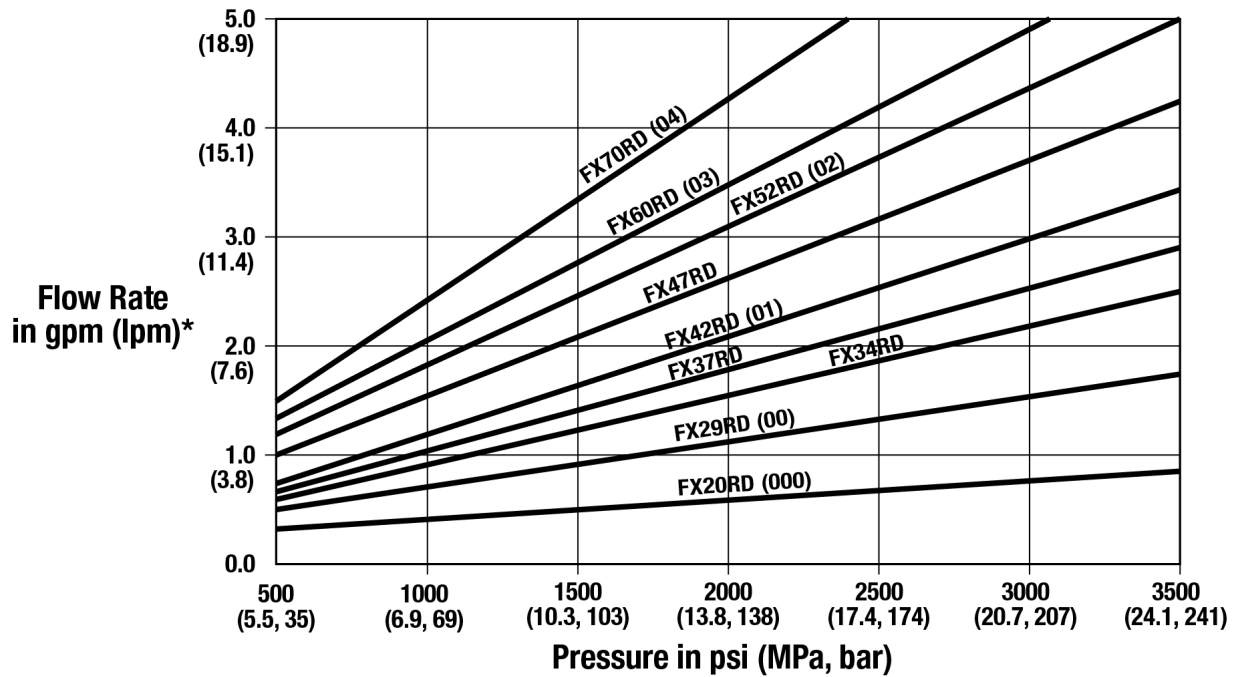


# Mix Chamber Kits

## Round Pattern

Mix Chamber Kit (includes drill bit)	Nozzle Orifice Size	Nozzle Drill Bit Size in. (mm)	Impingement Port Size	Impingement Port Drill Bit Size in. (mm)
FX20RD	0.043	0.042 (1.06)	0.021	0.02 (0.51)
FX29RD	0.053	0.052 (1.32)	0.031	0.0292 (0.74)
FX34RD	0.058	0.057 (1.45)	0.034	0.032 (0.8)
FX37RD	0.065	0.0635 (1.6)	0.038	0.037 (0.94)
FX42RD	0.067	0.065 (1.65)	0.042	0.041 (1.04)
FX47RD	0.074	0.073 (1.85)	0.047	0.046 (1.18)
FX52RD	0.08	0.079 (2.0)	0.052	0.0492 (1.25)
FX60RD	0.094	0.0935 (2.38)	0.055	0.0531 (1.35)
FX70RD	0.100	0.0984 (2.5)	0.062	0.061 (1.55)

## Round Pattern Mix Chambers by Pressure and Flow Rate



\* To calculate flow rate in lb/min., multiply gpm rate by 10.  
 Example: 2 gpm x 10 = 20 lpm

ti02458a

## Check Valve Filter Screen Kits

Each kit includes ten filter screens.

The gun is shipped with 40 mesh filter screens.

Part	Description
24R894	40 mesh (0.015 in., 375 micron)
2001433	60 mesh (0.010 in., 238 micron)
2001434	80 mesh (0.007 in., 175 micron)

## Cleanout Drill Kit

### 2001346

Kit includes all 4 drill bits of extra long length needed to clean out the air passages.

## Acceptable FX Fluid Cartridge Storage Liquids

Storage Liquid	Part
TSL	206994, 206995, 206996
ISO Pump Oil	217374, 218656

## FX Fluid Cartridge Kits

Part	Description	Qty.
2000810	KIT, Fusion FX. cartridge, 1 pack	1
2000811	KIT, Fusion FX, cartridge, 3 pack	3
2000812	KIT, Fusion FX, cartridge, 5 pack	5

## Fusion FX Fluid Cartridge Clean-Out Tool

### 2005061

Kit includes a quantity of five clean-out tools.

## Metal Handle Kit

### 2001045

Kit includes aluminum handle, handle bolt, muffler, and handle air port o-rings.

## Handle CS Plug Kit


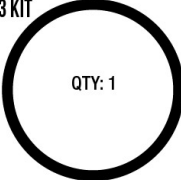


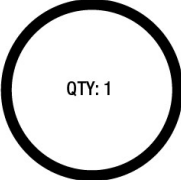



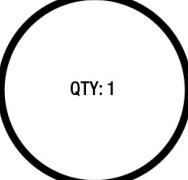







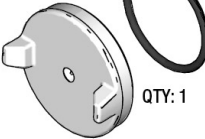









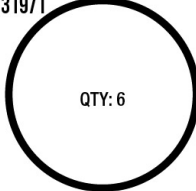




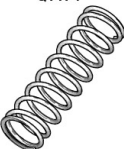

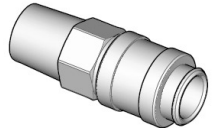


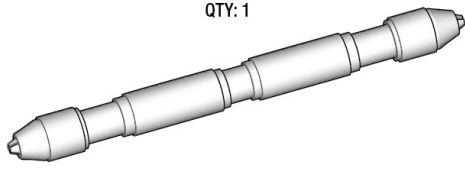


### 2000715

Kit includes CS plug for handle with o-ring assembled.

# Fusion FX Spare Parts

## 2006566

Kit includes:

<b>2001033 KIT</b> QTY: 2  QTY: 1 	<b>2001307 KIT</b> QTY: 7  QTY: 6  QTY: 3  QTY: 1  QTY: 1  QTY: 1  QTY: 1  QTY: 1  QTY: 1  QTY: 1  <b>2007251 KIT</b> QTY: 1  QTY: 1  <b>25E647 KIT</b> QTY: 6 																				
<b>2001150 KIT</b> QTY: 1 	<b>2000788 KIT</b> AIR CAP QTY: 1 	<b>2001026</b> QTY: 1 	<b>24R894</b> QTY: 1 	<b>2001152</b> QTY: 1  QTY: 10 	<b>2001025</b> QTY: 1 	<b>2005697</b> QTY: 1 	<b>20B488</b> QTY: 1 	<b>2001029</b> QTY: 2 	<b>19C499</b> QTY: 1 												
<b>131971</b> QTY: 6 	<b>256773</b> QTY: 6 	<b>2007204</b> QTY: 2  	<b>20B217</b> QTY: 1 	<b>117485</b> QTY: 1 	<b>117509</b> QTY: 1 	<b>117510</b> QTY: 1 															
<b>21A011</b> QTY: 1 	<b>20B336</b> QTY: 1 	<b>117661</b> QTY: 1 		<b>2001346</b>  <table border="1"> <thead> <tr> <th>DRILL SIZE</th> <th>DECIMAL EQUIVALENT</th> <th>QTY</th> </tr> </thead> <tbody> <tr> <td>#60</td> <td>0.0400</td> <td>1ea</td> </tr> <tr> <td>3/32</td> <td>0.0938</td> <td>1ea</td> </tr> <tr> <td>1/8</td> <td>0.1250</td> <td>1ea</td> </tr> <tr> <td>9/32</td> <td>0.2810</td> <td>1ea</td> </tr> </tbody> </table>		DRILL SIZE	DECIMAL EQUIVALENT	QTY	#60	0.0400	1ea	3/32	0.0938	1ea	1/8	0.1250	1ea	9/32	0.2810	1ea	
DRILL SIZE	DECIMAL EQUIVALENT	QTY																			
#60	0.0400	1ea																			
3/32	0.0938	1ea																			
1/8	0.1250	1ea																			
9/32	0.2810	1ea																			

ti02610a

## Fusion FX Air Section Cleanout Drills

### 2006569

## Shuttle Valve Kits

### 2001028

Kit includes 10 shuttle valves.

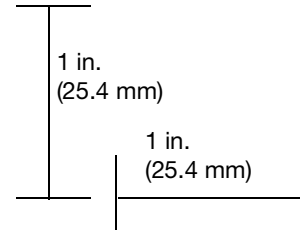
### 2001027

Kit includes 2 shuttle valves and 1 shuttle valve yoke.



## Drill Bit Kits

For cleaning gun ports and orifices. Illustrations are for diameter comparison. Actual length may vary.

**NOTE:** Not all sizes are used with your gun.



Kit Part	Qty.	Drill Bit Size			Illustration
		nominal	in.	mm	
249115	6	1/8	0.125	3.18	
2007726	6	.0945 mm	0.0945	2.40	
246624	3	3/32	0.094	2.39	
2007725	6	#44	0.086	2.18	
2007722	6	#47	0.0785	1.99	
2006546	6	#49	0.073	1.85	
2006548	6	#52	0.64	1.63	
2007723	6	1.25 mm	0.049	1.25	
2007300	6	1.35 mm	0.053	1.35	
2006559	6	1.45 mm	0.057	1.45	
2007725	6	#55	0.052	1.32	
2007724	6	#57	0.043	1.09	
2007301	6	1.55 mm	0.061	1.55	
2006560	6	1.65 mm	0.064	1.65	
2006550	6	#56	0.046	1.18	
2006552	6	#59	0.041	1.04	
2006553	6	#63	0.037	0.94	
2006555	6	#67	0.032	0.81	

Kit Part	Qty.	Drill Bit Size			Illustration
		nominal	in.	mm	
2006557	6	#69	0.029	0.74	
2007298	6	#76	0.020	0.51	

# Accessories

## Extension Tip Kits

Kit includes extension air cap, o-ring, cleanout drill bit, and instructions.

Kit	Hole Diameter x Length, in. (mm)	Recommended Mix Chambers	Spray Distance, ft. (m)	Pattern Diameter, in. (mm)
2005266	0.054 x 1.0 (1.35 x 25.4)	FX34-FX42	12 (3.66)	5 (127)
2005267	0.061 x 1.0 (1.55 x 25.4)	FX37-FX47	12 (3.66)	6 (152)
2005268	0.071 x 1.0 (1.80 x 25.4)	FX52-FX70	8 (2.44)	7 (178)

## Gun Cleaning Kit

### 15D546

Kit includes eleven tools and brushes to clean the gun.

## Pour Nozzle Kit

### 2005269

To convert air purge gun for pour applications. Includes nozzle, tubing, and cleanout drill bits.

## Lubricant for Gun Rebuild

### 248279, 4 oz (113 gram) (Qty. 10)

High adhesion, water resistant, lithium-based lubricant. SDS available at [www.graco.com](http://www.graco.com)

## Grease Cartridge for Gun Shutdown

### 2007352 Cartridge, 3 oz (Qty. 10)

Specially formulated low viscosity grease flows easily through gun passages, to prevent two component curing and keep fluid passages clean.

## Flush Manifold

### 2000660 Flush Manifold

### 2004345 FX Fluid Cartridge Inlet Grease Tool

### 2004344 FX Fluid Cartridge Outlet Grease Tool

## Solvent Flush Canister Kit

### 2006016, 1 qt (0.95 l) Solvent Cup

Complete with 2000660 Flushing Manifold to flush gun with solvent. Portable for remote flushing. Refer to the Solvent Flush Kit manual. See **Related Manuals**.

## ClearShot Liquid

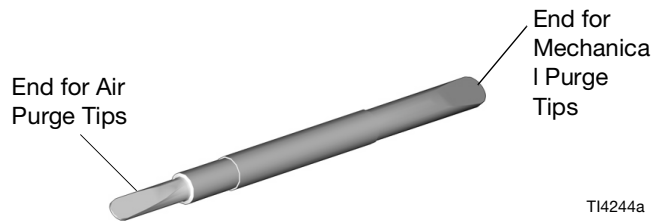
See MSD060

Kit	Description
256385	Package of 25 cartridges
256386	Package of 50 cartridges
256387	Package of 100 cartridges
17X756	Bulk CS fluid, 4 pack, 16 oz. bottles (can fill 100 CS tubes)
17X757	Bulk CS fluid, 12 pack, 16 oz. bottles (can fill 300 CS tubes)

## Tip Clean-out Tool

**15D234**

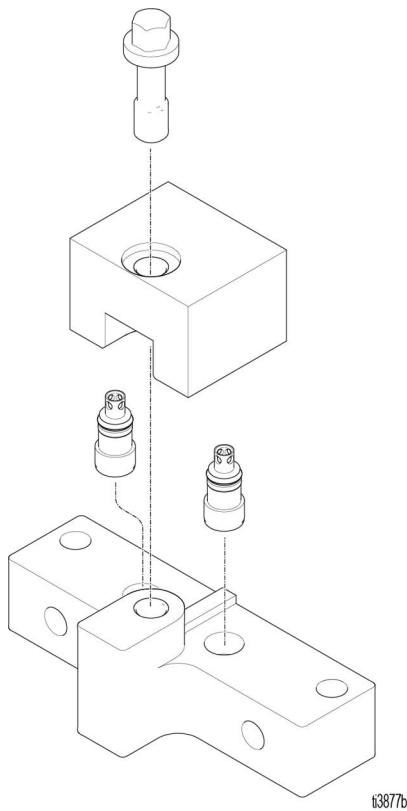
Designed to fit CeramTip™ internal dome and flat tip slits.



## Circulation Manifold

**2002324**

Attach to gun fluid manifold to enable preheating of hose. Refer to Circulation Manifold Kit Instruction Manual. See **Related Manuals**, page 3.



## Fusion AP Manifold Adapter Block

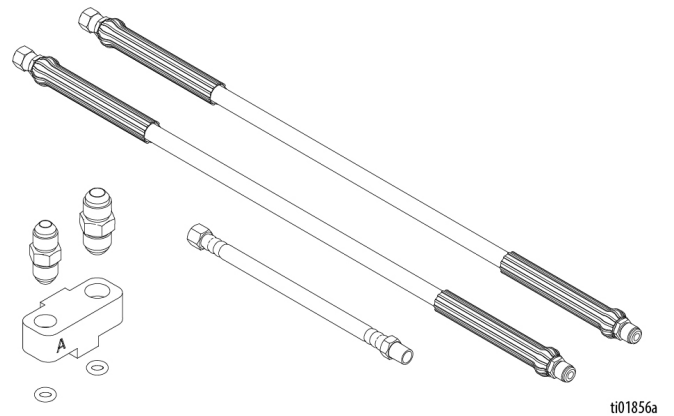
**2002360**

Allows Fusion FX gun to fit onto existing Fusion AP/PC manifold.

## Fusion AP Manifold Adapter Block with Hose Bundle

**2002347**

Allows Fusion FX gun to fit onto existing Fusion AP/PC manifold. Includes both adapter block and 6 ft. hose bundle.



# Technical Specifications

<b>Fusion FX Spray Gun</b>		
	<b>US</b>	<b>Metric</b>
Maximum Fluid Working Pressure	3500 psi	24.5 MPa, 245 bar
Minimum Air Inlet Pressure	90 psi	0.56 MPa, 5.6 bar
Maximum Air Inlet Pressure	130 psi	0.9 MPa, 9 bar
Air Flow Range	See chart below	
Typical Flow Rate of Round Pattern Guns	See, <b>Round Pattern Mix Chambers by Pressure and Flow Rate</b> , page 41.	
Maximum Fluid Temperature	200° F	94° C
Air Inlet Size	1/4 npt Quick Disconnect Nipple	
A Component (ISO) Inlet Size	-5 JIC	1/2-20 UNF
B Component (Resin) Inlet Size	-6 JIC	9/16-18 UNF
Dimensions	8.1 x 8.1 x 3.3 in.	206 x 206 x 84 mm
Weight	2.6 lb	1.2 kg
<b>Wetted Parts</b>		
Gun	Aluminum, stainless steel, carbon steel, carbide, polyethylene chemically resistant o-rings	
FX fluid cartridge air/grease ports	Stainless steel, aluminum, anodized aluminum, polyethylene, chemically resistant o-rings, nylon	
FX fluid cartridge fluid ports	Stainless steel, chemically-resistant o-rings, anodized aluminum, aluminum, nylon, polyethylene	
<b>Noise</b>		
Maximum sound pressure	81.1 dB(A), at 100 psi (0.7 MPa, 7 bar)	
Maximum sound power	91.0 dB(A), at 100 psi (0.7 MPa, 7 bar)	
<i>Sound power measured per ISO-9416-2.</i>		
<b>Notes</b>		
All trademarks or registered trademarks are the property of their respective owners.		



## Air Flow by Mix Chamber

Air Pressure (detriggered) psi (MPa, bar)	Mix Chamber Sizes (scfm (m <sup>3</sup> /min))								
	FX20RD	FX29RD	FX34RD	FX37RD	FX42RD	FX47RD	FX52RD	FX56RD	FX62RD
80 (0.56, 5.6)	4.11 (.0116)	5.24 (0.148)	5.61 (0.159)	5.98 (0.169)	6.36 (0.180)	6.73 (0.191)	7.11 (0.201)	7.48 (0.212)	8.23 (0.233)
100 (0.7, 7)	5.02 (0.142)	6.18 (0.175)	6.57 (0.186)	7.34 (0.208)	7.73 (0.219)	8.50 (0.241)	9.27 (0.263)	9.66 (0.273)	10.43 (0.295)
130 (0.9, 9)	6.07 (0.172)	7.28 (0.206)	7.68 (0.217)	8.09 (0.229)	8.90 (0.252)	9.70 (0.275)	10.51 (0.298)	11.32 (0.321)	12.53 (0.355)

## California Proposition 65

### CALIFORNIA RESIDENTS

 **WARNING:** Cancer and reproductive harm – [www.P65warnings.ca.gov](http://www.P65warnings.ca.gov).

# Graco Standard Warranty

Graco warrants all equipment referenced in this document which is manufactured by Graco and bearing its name to be free from defects in material and workmanship on the date of sale to the original purchaser for use. With the exception of any special, extended, or limited warranty published by Graco, Graco will, for a period of twelve months from the date of sale, repair or replace any part of the equipment determined by Graco to be defective. This warranty applies only when the equipment is installed, operated and maintained in accordance with Graco's written recommendations.

This warranty does not cover, and Graco shall not be liable for general wear and tear, or any malfunction, damage or wear caused by faulty installation, misapplication, abrasion, corrosion, inadequate or improper maintenance, negligence, accident, tampering, or substitution of non-Graco component parts. Nor shall Graco be liable for malfunction, damage or wear caused by the incompatibility of Graco equipment with structures, accessories, equipment or materials not supplied by Graco, or the improper design, manufacture, installation, operation or maintenance of structures, accessories, equipment or materials not supplied by Graco.

This warranty is conditioned upon the prepaid return of the equipment claimed to be defective to an authorized Graco distributor for verification of the claimed defect. If the claimed defect is verified, Graco will repair or replace free of charge any defective parts. The equipment will be returned to the original purchaser transportation prepaid. If inspection of the equipment does not disclose any defect in material or workmanship, repairs will be made at a reasonable charge, which charges may include the costs of parts, labor, and transportation.

**THIS WARRANTY IS EXCLUSIVE, AND IS IN LIEU OF ANY OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO WARRANTY OF MERCHANTABILITY OR WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE.**

Graco's sole obligation and buyer's sole remedy for any breach of warranty shall be as set forth above. The buyer agrees that no other remedy (including, but not limited to, incidental or consequential damages for lost profits, lost sales, injury to person or property, or any other incidental or consequential loss) shall be available. Any action for breach of warranty must be brought within two (2) years of the date of sale.

**GRACO MAKES NO WARRANTY, AND DISCLAIMS ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, IN CONNECTION WITH ACCESSORIES, EQUIPMENT, MATERIALS OR COMPONENTS SOLD BUT NOT MANUFACTURED BY GRACO.** These items sold, but not manufactured by Graco (such as electric motors, switches, hose, etc.), are subject to the warranty, if any, of their manufacturer. Graco will provide purchaser with reasonable assistance in making any claim for breach of these warranties.

In no event will Graco be liable for indirect, incidental, special or consequential damages resulting from Graco supplying equipment hereunder, or the furnishing, performance, or use of any products or other goods sold hereto, whether due to a breach of contract, breach of warranty, the negligence of Graco, or otherwise.

## **FOR GRACO CANADA CUSTOMERS**

The Parties acknowledge that they have required that the present document, as well as all documents, notices and legal proceedings entered into, given or instituted pursuant hereto or relating directly or indirectly hereto, be drawn up in English. Les parties reconnaissent avoir convenu que la rédaction du présente document sera en Anglais, ainsi que tous documents, avis et procédures judiciaires exécutés, donnés ou intentés, à la suite de ou en rapport, directement ou indirectement, avec les procédures concernées.

# Graco Information

For the latest information about Graco products, visit [www.graco.com](http://www.graco.com).

For patent information, see [www.graco.com/patents](http://www.graco.com/patents).

**TO PLACE AN ORDER**, contact your Graco distributor or call to identify the nearest distributor.

**Phone:** 612-623-6921 **or Toll Free:** 1-800-328-0211, **Fax:** 612-378-3505

*All written and visual data contained in this document reflects the latest product information available at the time of publication. Graco reserves the right to make changes at any time without notice.*

Original instructions. This manual contains English. 3A9329

**Graco Headquarters:** Minneapolis

**International Offices:** Belgium, China, Japan, Korea

**GRACO INC. AND SUBSIDIARIES • P.O. BOX 1441 • MINNEAPOLIS MN 55440-1441 • USA**  
**Copyright 2024, Graco Inc. All Graco manufacturing locations are registered to ISO 9001.**

[www.graco.com](http://www.graco.com)  
Revision C, July 2024