

# Fusion<sup>®</sup> FX Spray Gun

3A9329G

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.



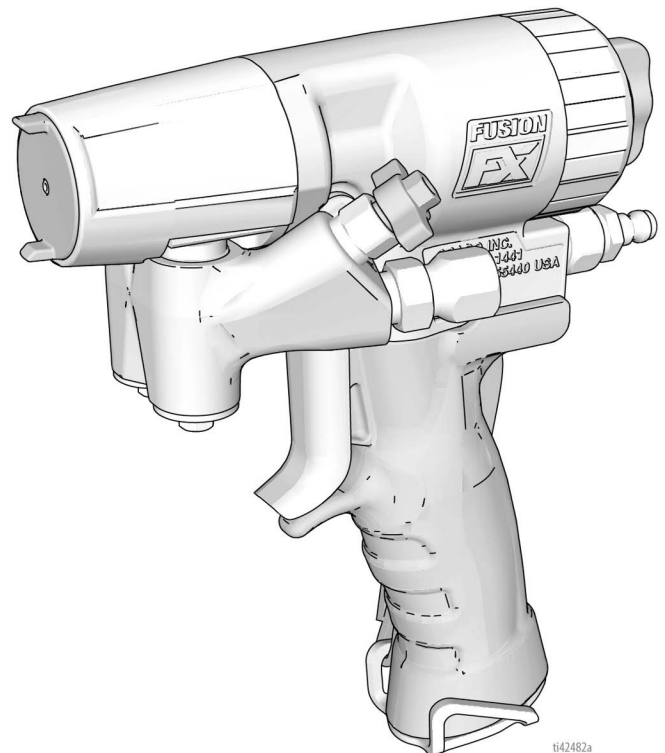
### Important Safety Instructions

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.



 SERVICE to every customer, every time	<b>Questions?</b> Des questions? ¿Tiene preguntas? <b>844-241-9499</b> <a href="http://www.graco.com/techsupport">www.graco.com/techsupport</a>		
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## 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 Foam Gun. Includes CS and AP parts. No mix chambers included.	--	--
FX9001, A	Fusion FX Spray Foam Gun. Includes CS and AP parts. Mix chambers included.	FX37RD, FX42RD, FX47RD	0.037 (0.94), 0.042 (1.00), 0.47 (1.2)
FX9011, A	Fusion FX Polyurea Gun. Includes AP parts. Mix chambers included	FX29RD, FX34RD, FX37RD	0.029 (0.74), 0.034 (0.86), 0.037 (0.94)

# 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.

 <b>WARNING</b>	
	<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

									
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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:

 **WARNING**





**TOXIC FUMES  
HAZARD**

**DO NOT ENTER DURING  
SPRAY FOAM APPLICATION  
OR FOR \_\_\_\_ HOURS AFTER  
APPLICATION IS COMPLETE**




**DO NOT ENTER UNTIL:**

**DATE:** \_\_\_\_\_  
**TIME:** \_\_\_\_\_

## Material Self-Ignition

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

## Keep Components A and B Separate

				
Cross-contamination can result in cured material in fluid lines which could cause serious injury or damage equipment. To prevent cross-contamination:				
<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.

### NOTICE

Partially cured ISO will reduce performance and the life of all wetted parts.

- Always use a sealed container with a desiccant dryer in the vent, or a nitrogen atmosphere. **Never** store ISO in an open container.
- 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.
- Use only moisture-proof hoses compatible with ISO.
- Never use reclaimed solvents, which may contain moisture. Always keep solvent containers closed when not in use.
- Always lubricate threaded parts with an appropriate lubricant when reassembling.

**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**

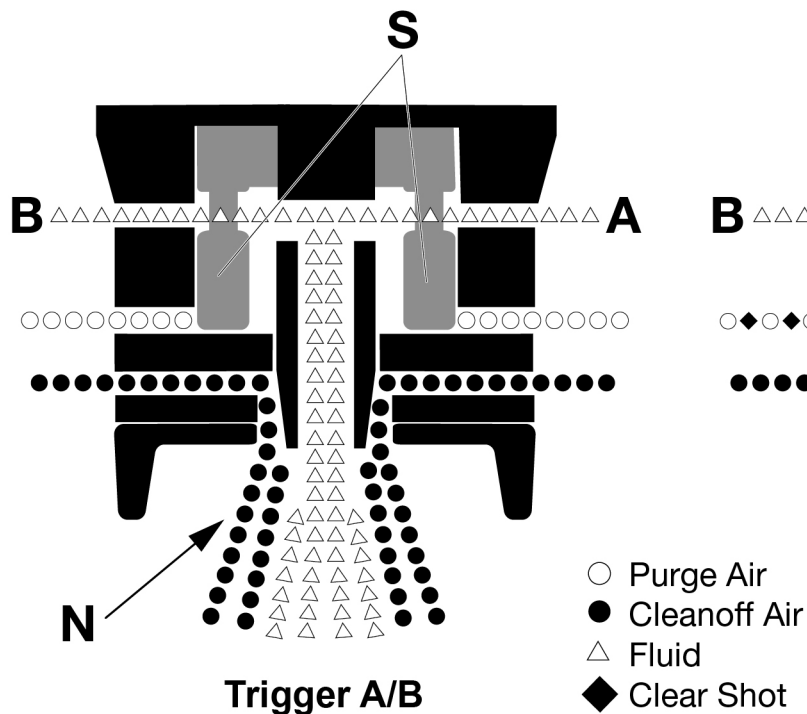
Changing the material types used in your equipment requires special attention to avoid equipment damage and downtime.

- 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)

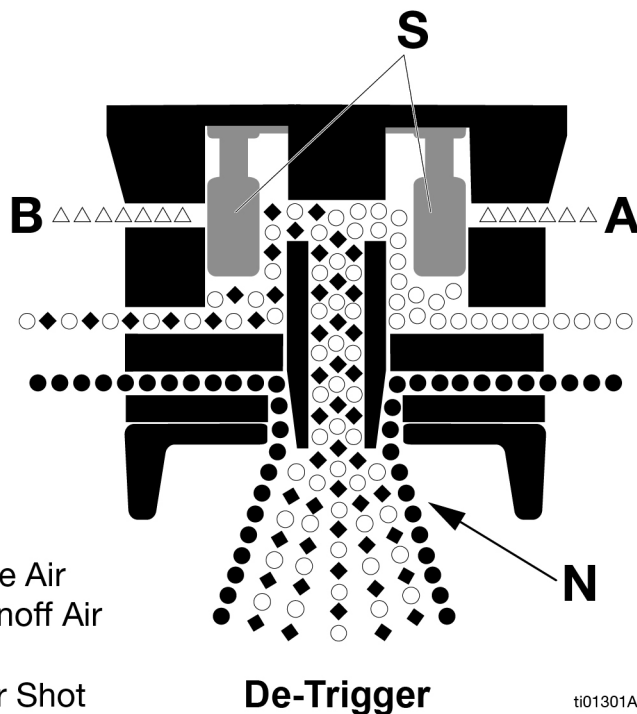
Shuttle valves (S) move forward, shutting off purge air flow. This opens up fluid flow, allowing fluid to flow through mix chamber nozzle (N).



## Gun Detriggered (Air Purging)

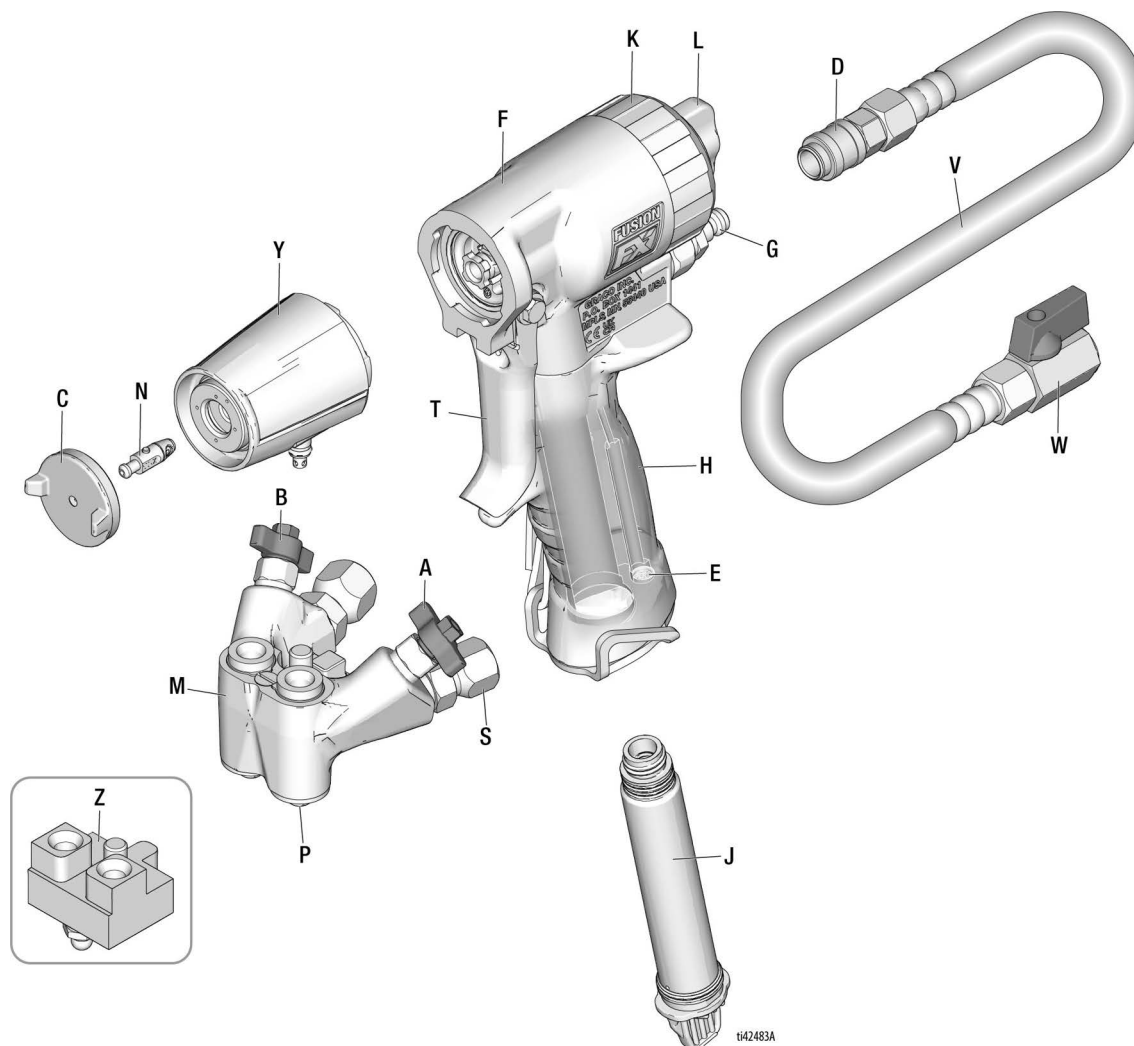
Shuttle valves (S) move back, shutting off fluid flow. This opens up purge air flow, allowing purge air to flow through mix chamber nozzle (N).

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



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# Component Identification



## Ref. Description

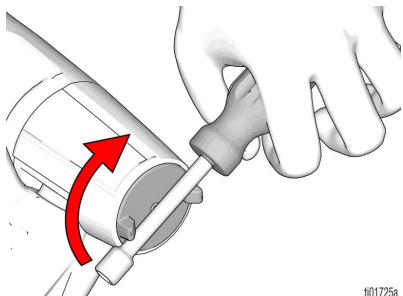
A	A Side Fluid Valve (ISO)
B	B Side Fluid Valve (RESIN)
C	Air Cap
D	Air Hose Quick Coupler
E	Muffler
F	Gun Body
G	Air Hose Connector
H	Handle
J	ClearShot Liquid Cartridge
K	Air Cylinder Cap

## Ref. Description

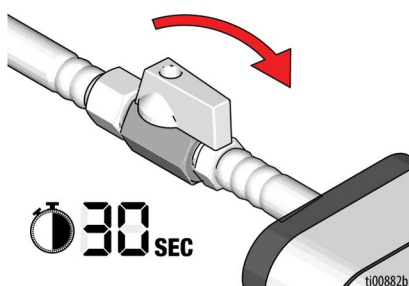
L	Piston Safety Lock
M	Gun Fluid Manifold
N	Mix Chamber
P	Manifold Check Valves
S	Fluid Inlet Swivels (A Side Shown)
T	Trigger
V	Gun Air Whip Hose
W	Air Valve
Y	FX Fluid Cartridge
Z	Flush Manifold

# Best Practices

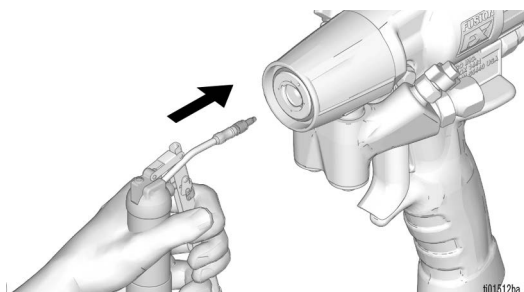
1. Using a tool, tighten air cap beyond hand tight to properly seal mix chamber.



2. Allow purge air to run for at least 30 seconds at the end of the day with air pressure set to a minimum of 90 psi.






3. Grease front of cartridge daily using new clear Fusion Grease.



4. Use new blue drill bits to keep mix chamber clean.
5. Don't force the FX Fluid Cartridge onto gun body if it does not easily lock into place. If having trouble, adjust air piston or DuroFlo valve/yoke position.

# Installation

## Grounding

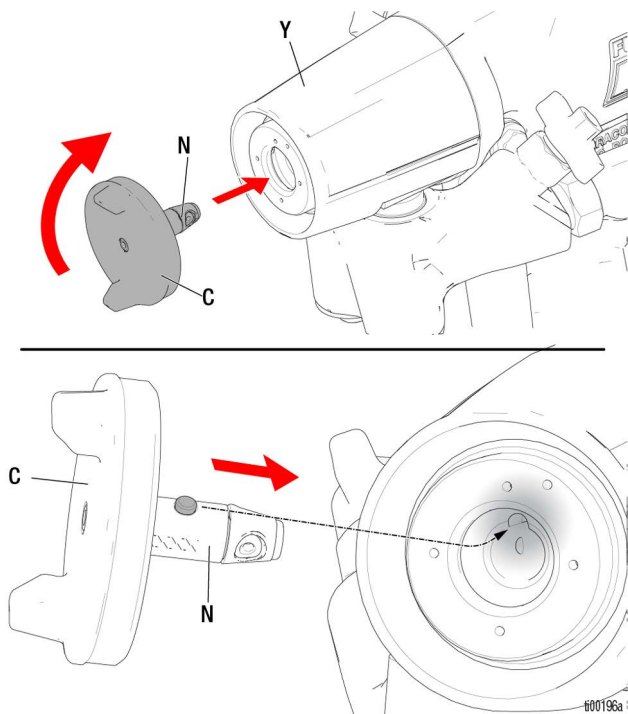
				
<p>The equipment must be grounded to reduce the risk of static sparking. Static sparking can cause fumes to ignite or explode. Grounding provides an escape wire for the electric current.</p>				

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

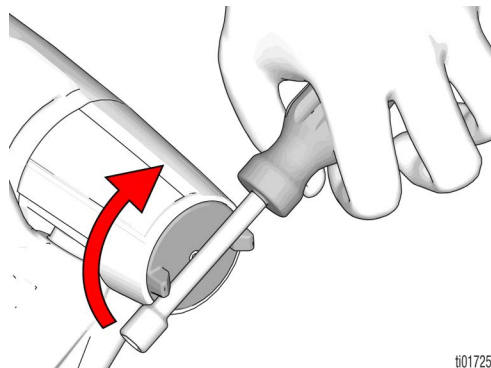
**Proportioner:** Follow the instructions in your proportioner manual.

## Install the Mix Chamber

6. Thread the Mix Chamber into the Air Cap. The Mix Chamber is left-hand threaded.
7. 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.



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



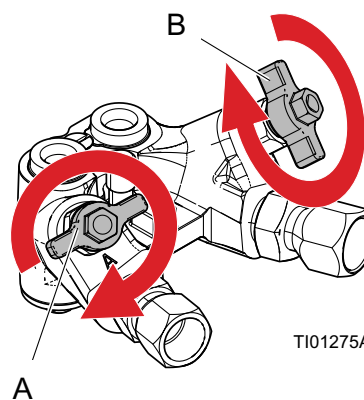
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**NOTE:** To ensure proper seating of Mix Chamber with the FX Fluid Cartridge, ensure the end of the mix chamber nozzle is flush with the face of the Air Cap.

## Setup

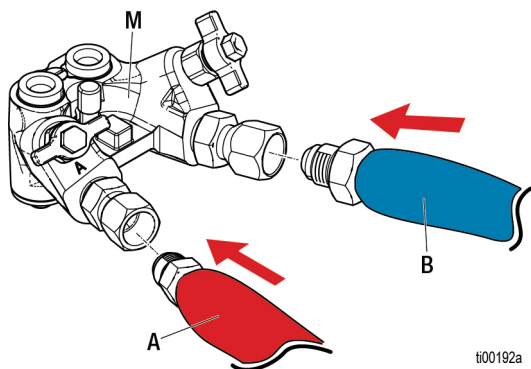
				
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1. Remove the fluid manifold from the gun.
2. Close fluid valves A and B

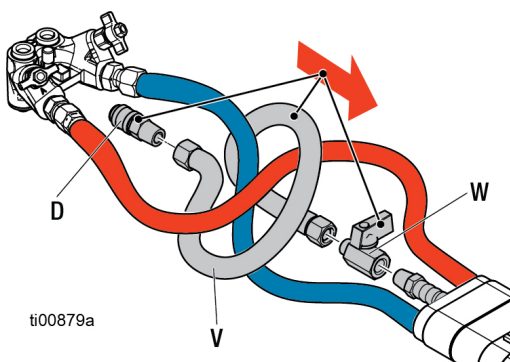


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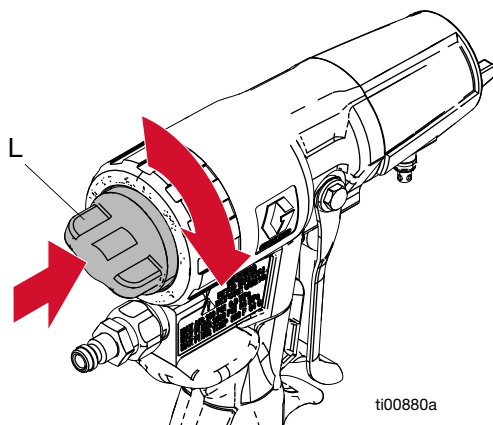
3. Connect A (ISO) and B (RESIN) fluid hoses to Fluid Manifold (M).



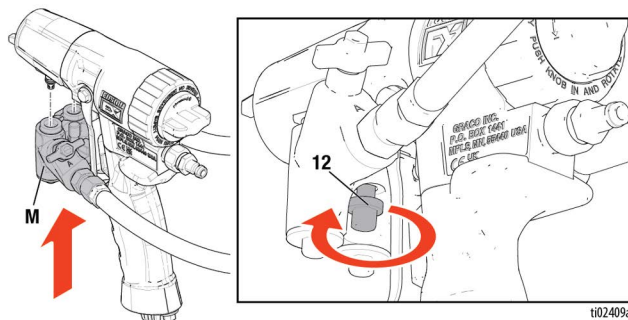
4. Connect the Air Whip Hose (V), Air Hose Quick Coupler (D), and air valve to the air hose.



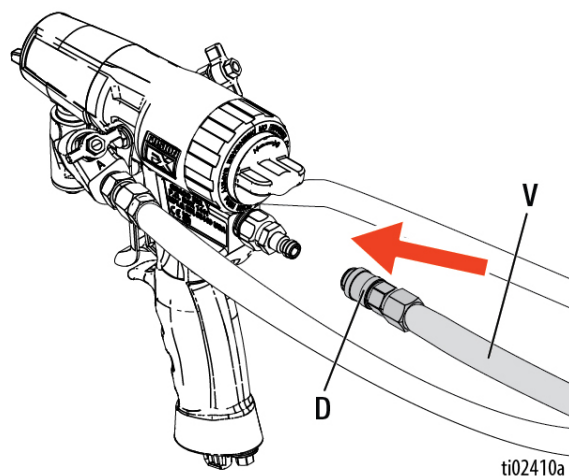
5. Engage the Piston Safety Lock (L). See **Piston Safety Lock**, page 17.



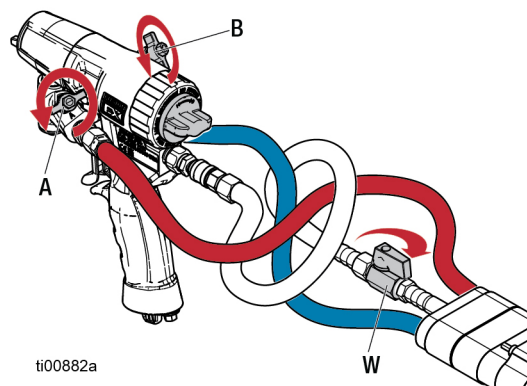
6. Connect the Fluid Manifold (M) to the gun and tighten bolt (12) to secure the manifold.



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

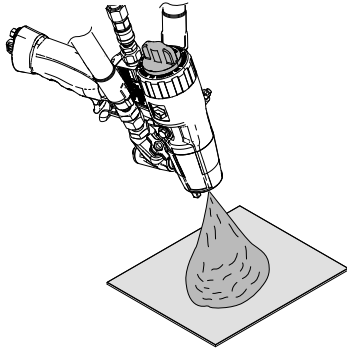


8. Turn on proportioner.
9. Open the Fluid Manifold Valves (A and B) and open the Air Valve (W).



10. Disengage the piston safety lock (L). See **Piston Safety Lock**, page 17.

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

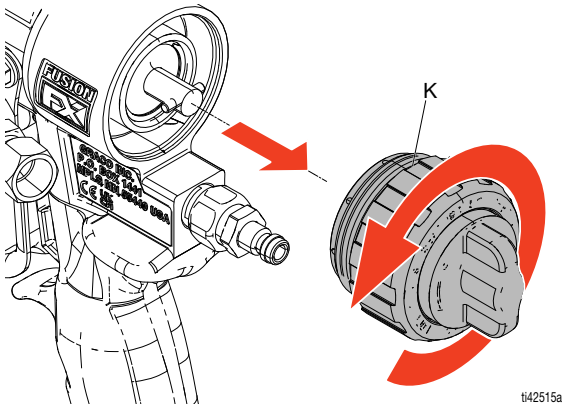


12. The gun is ready to spray.

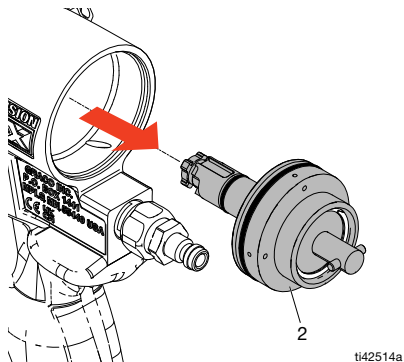
## Optional Configurations

### Convert Gun to Air Purge

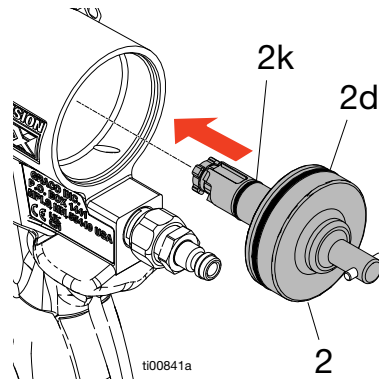
1. Remove the FX Fluid Cartridge from the gun. See **Remove the FX Fluid Cartridge** on page 24.
2. Disengage the piston safety lock (L). See **Piston Safety Lock**, page 17.
3. Unscrew the air cylinder cap (K).



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

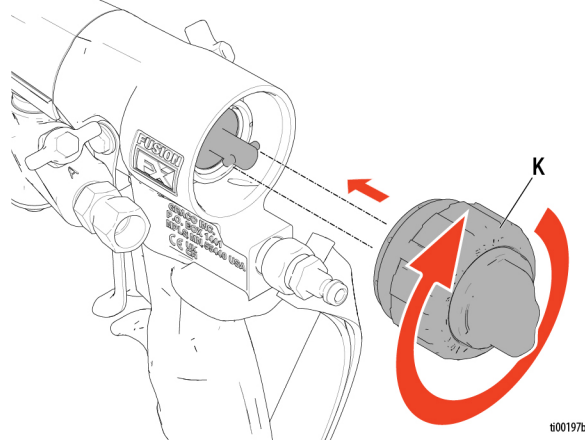
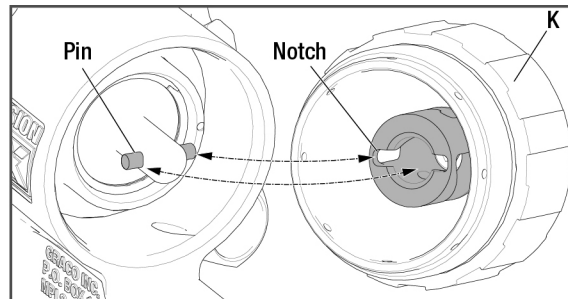


5. Make sure the o-rings (2k) and (2d) are installed on the air purge air piston and lubricated. Install the air purge air piston. The piston shaft is keyed for proper assembly.



6. Install the FX Fluid Cartridge onto the gun. See **Install FX Fluid Cartridge**, page 26.

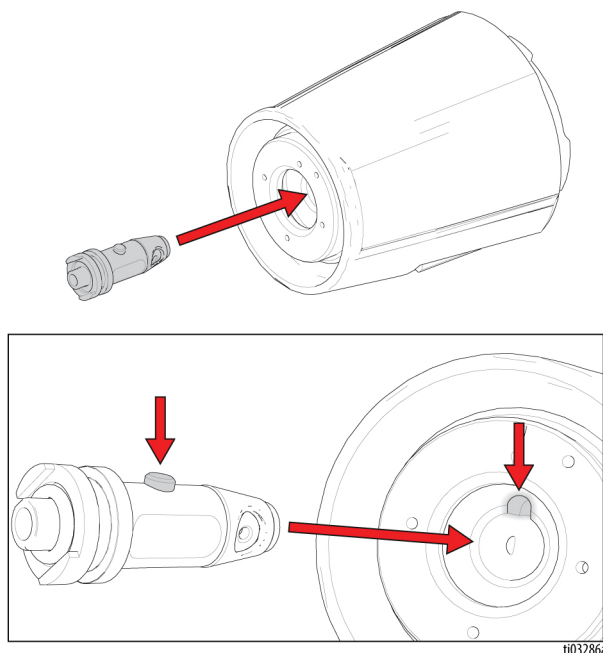
7. Align the pin on the back of the air piston with the notches in the safety stop of the cylinder cap. Thread the air cylinder cap onto the gun body.



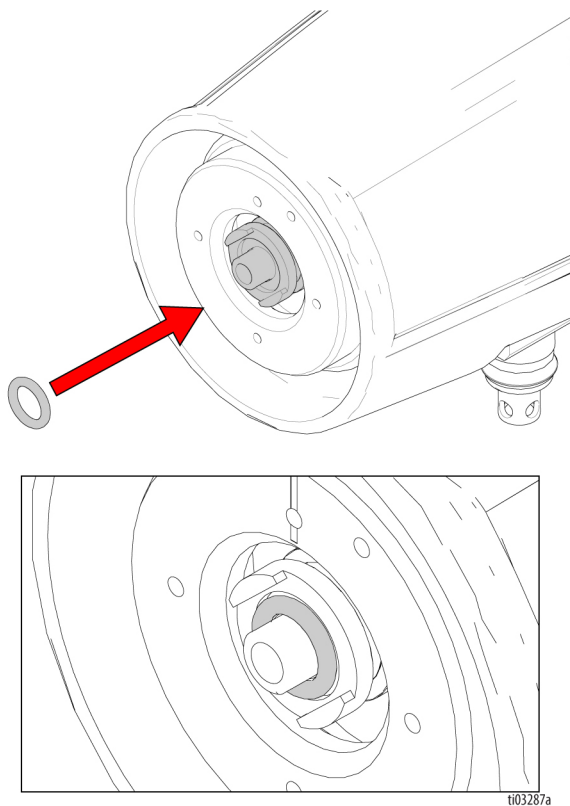
8. The gun is ready for service as an air purge gun.

## Install Flat Mix Chamber

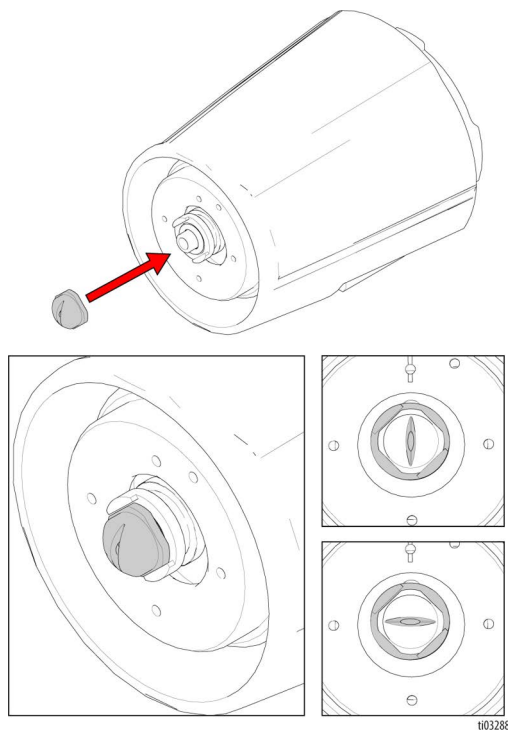
1. Insert flat mix chamber into the FX Fluid Cartridge by aligning pin on the mix chamber with the notch in the receiver of the FX Fluid Cartridge.



2. Install o-ring onto the flat mix chamber.

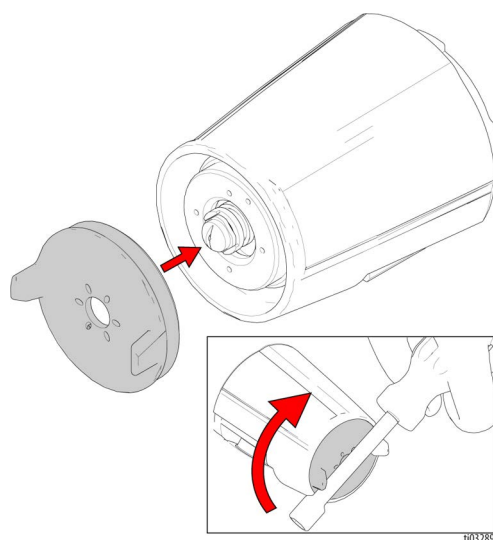


3. Install the flat spray tip onto the flat mix chamber. The flat mix chamber and the flat spray tip are keyed to position spray tip horizontally or vertically.



**NOTE:** Flat spray tips are marked on back with the last three digits of the part number. See **Flat Tip Part Reference Guide**, page 46.

4. Thread the flat air cap onto the FX Fluid Cartridge. Tighten the air cap with a nut driver to fully seat the mix chamber.



**NOTE:** The alignment of the clean off air ports on the air cap does not affect operation.

# Operation

## Pressure Relief Procedure

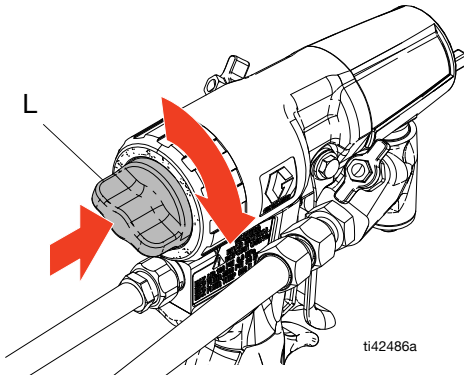


Follow the Pressure Relief Procedure whenever you see this symbol.

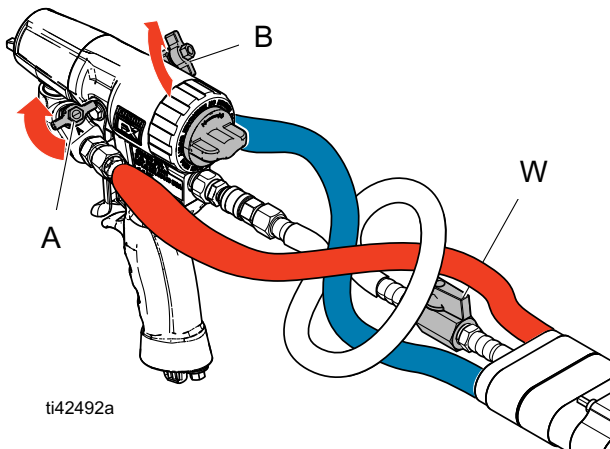


This equipment stays pressurized until pressure is manually relieved. To help prevent serious injury from pressurized fluid, such as skin injection, and splashing fluid, follow the Pressure Relief Procedure when you stop spraying and before cleaning, checking, or servicing the equipment.

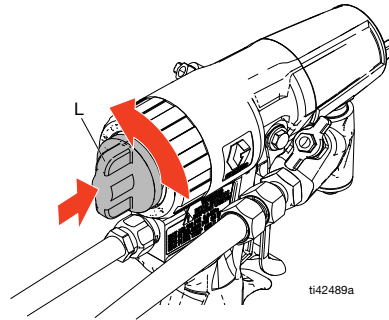
1. Engage the piston safety lock (L). See **Piston Safety Lock**, page 17.



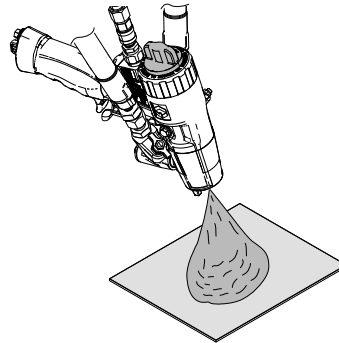
2. Close fluid valves A and B. Leave air valve (W) open.



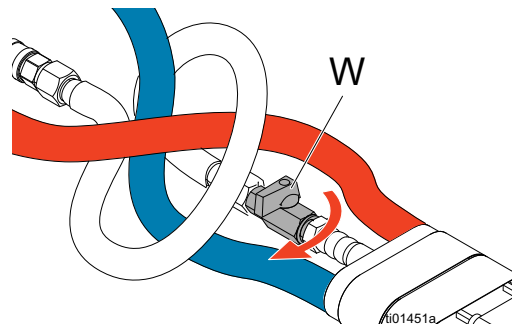
3. Disengage the piston safety lock (L). See **Piston Safety Lock**, page 17.



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 17.
6. Allow purge air to run for a minimum of 30 seconds.
7. Turn the air valve (W) off.

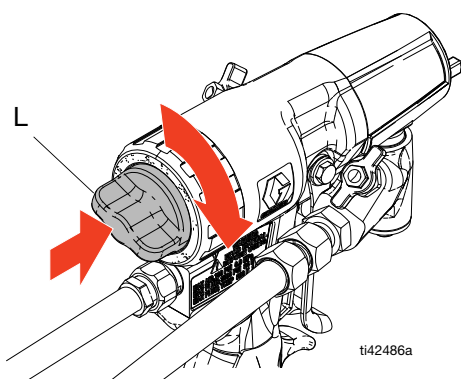


**NOTE:** After the pressure in the spray gun is relieved, the fluid in the hose and proportioner remains under pressure. Follow the **Pressure Relief Procedure** in your proportioner manual to relieve pressure in the system.

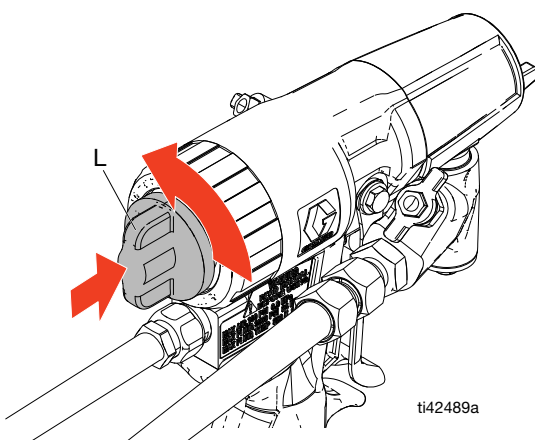
## Piston Safety Lock

				
<p>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.</p>				

**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.



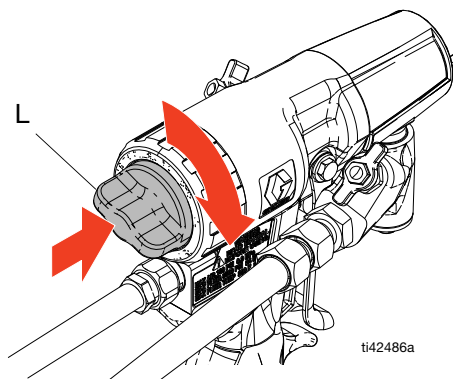
**To disengage the piston safety lock:** Push the piston safety lock (L) in and turn it counterclockwise until the knob stops in the vertical position.



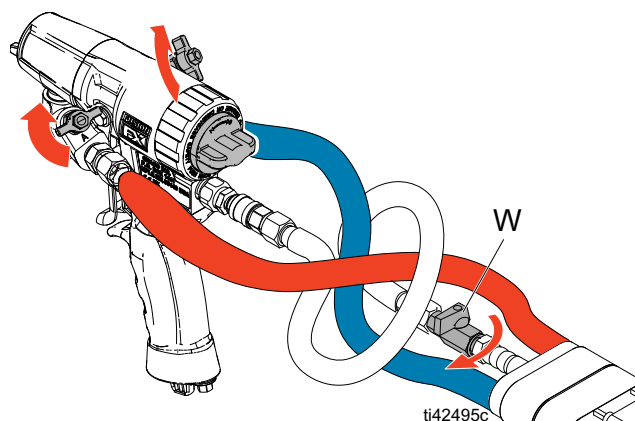
## Shut Off Gun with Loss of Air Pressure

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 17.



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



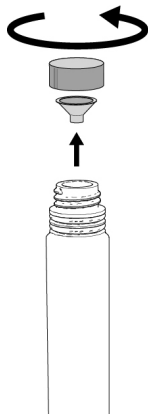
## ClearShot™ Liquid Cartridge Installation/Removal

**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.

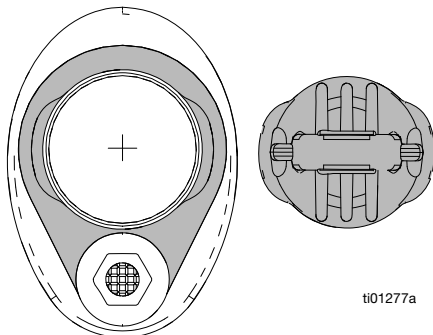
### Install ClearShot Liquid Cartridge

1. Follow the **Pressure Relief Procedure** on page 16.
2. Allow purge air to run for a minimum of 30 seconds.
3. Turn off air valve (W).
4. Remove the plastic cap from the new ClearShot Liquid cartridge.



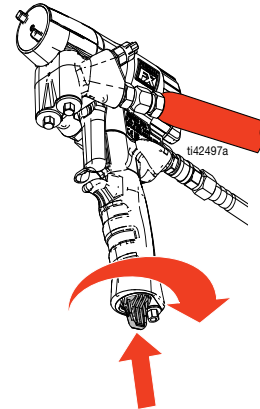
**NOTE:** When removing the plastic cap, make sure the secondary inner plastic cap is also removed.

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



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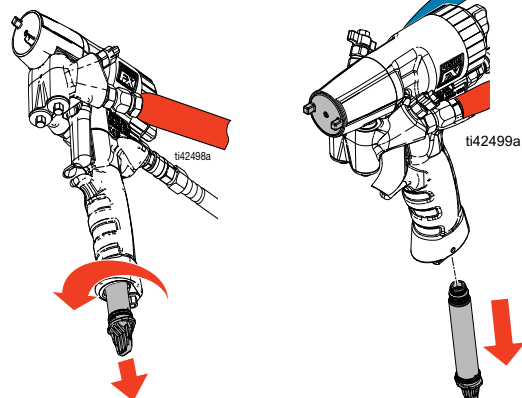
6. After the cartridge is fully inserted, turn the cartridge 1/4 turn clockwise to lock it into the gun handle.



7. 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.
8. Resume Spraying.

### Remove ClearShot Liquid Cartridge

1. Follow the **Pressure Relief Procedure** on page 16.
2. Allow purge air to run for a minimum of 30 seconds.
3. Turn the air valve (W) OFF.
4. Push in and turn cartridge 1/4 turn counterclockwise (viewed from the bottom). Then pull the cartridge out of the gun handle.



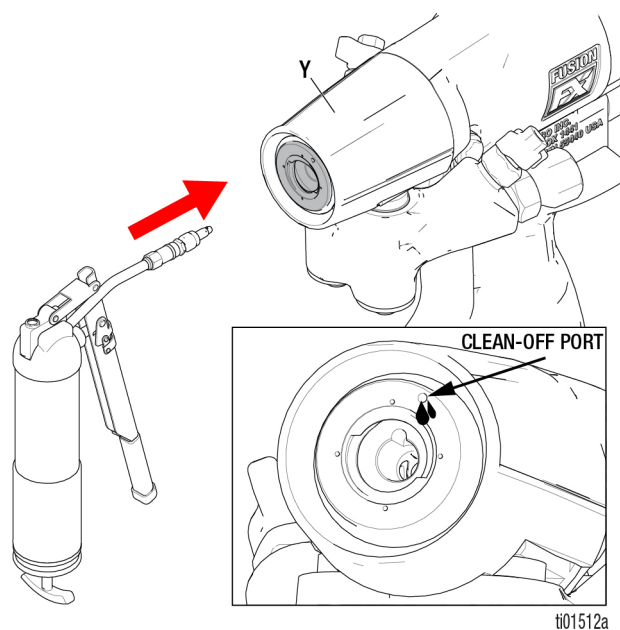
### Troubleshooting

For ClearShot Liquid cartridge troubleshooting, see **Troubleshooting** on page 38.

## Daily Shutdown



1. Follow the **Pressure Relief Procedure** on page 16.
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.

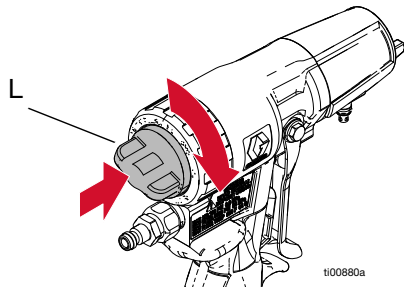
# Maintenance

## Preventative Maintenance

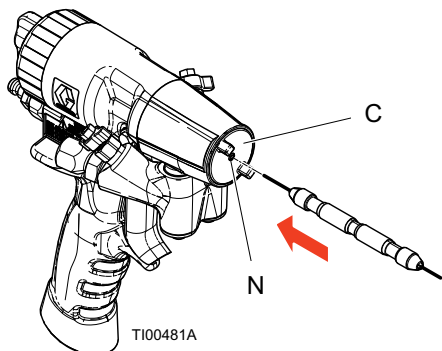
Recommended Schedule	Maintenance Procedure
Daily	Clean the Air Cap, page 23
Weekly	Inspect Manifold Check Valves, page 22
As Needed	Clean Mix Chamber Nozzle, page 20
	Clean the Mix Chamber Impingement Ports, page 21
	Replace Mix Chamber Seal, page 22
	Grease the FX Fluid Cartridge, page 29. It is recommended 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 30. It is recommended to flush the gun for a long term shutdown during which the gun won't be operated for longer than a week.
	Inspect FX Fluid Cartridge, page 32
	Lubrication, page 34.
	Clean Passages, page 34
	Inspect the Piston, page 35
	Inspect the Air Valve, page 36

## Clean Mix Chamber Nozzle

- Follow the **Pressure Relief Procedure** on page 16.
- Engage the Piston Safety Lock (L).



- 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.

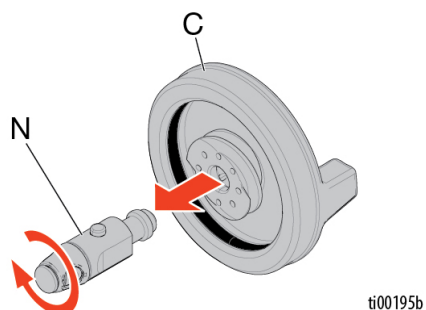


**NOTE:** Refer to **Table 1: Nozzle Drill Bit Sizes**.

Table 1: Nozzle Drill Bit Sizes		
Round Spray		
Mix Chamber Part Number	Drill Size in. (mm)	Drill Part Number
FX20RD	#58, 0.042 (1.07)	2008488
FX29RD	#55, 0.052 (1.32)	2008498
FX34RD	0.057 (1.45)	2006559
FX37RD	#52, 0.0635 (1.61)	2006548
FX42RD	0.065 (1.65)	2006560
FX47RD	#49, 0.073 (1.85)	2006546
FX52RD	#47, 0.0785 (1.99)	2007722
FX60RD	#44, 0.086 (2.18)	2007725
FX70RD	3/32, 0.094 (2.38)	2008487
Flat Spray		
Mix Chamber Part Number	Drill Size in. (mm)	Drill Part Number
FX20FL	3/32, 0.094 (2.38)	2008487
FX29FL	3/32, 0.094 (2.38)	2008487
FX42FL	3/32, 0.094 (2.38)	2008487
FX52FL	3/32, 0.094 (2.38)	2008487

## Remove the Mix Chamber

1. Follow the **Pressure Relief Procedure** on page 16.
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 21.
2. Using the provided pin vice, drill impingement ports (IP).

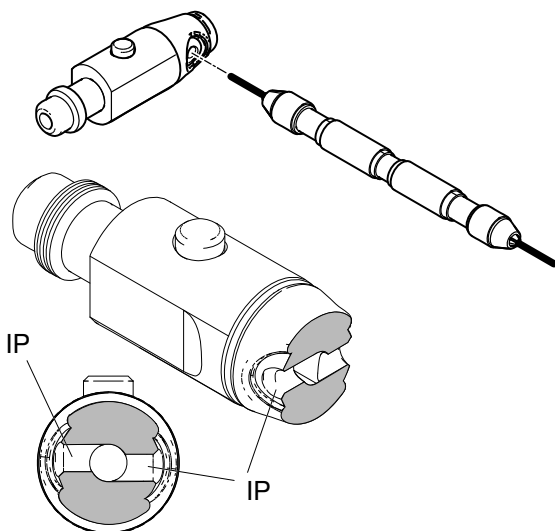
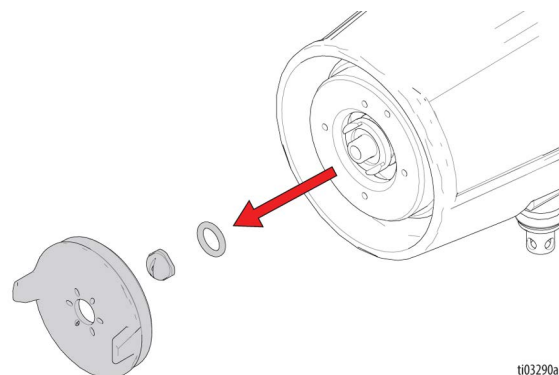


Table 2: Impingement Port Drill Bit Sizes		
Round Spray		
Mix Chamber Part Number	Impingement Port (IP) Drill Bit Size in. (mm)	Drill Part Number
FX20RD	#76, 0.02 (0.51)	2007298
FX29RD	#69, 0.029 (0.74)	2006557
FX34RD	#67, 0.032 (0.81)	2006555
FX37RD	#63, 0.037 (0.94)	2006553
FX42RD	#59, 0.041 (1.04)	2006552
FX47RD	#56, 0.0465 (1.18)	2006550
FX52RD	0.049 (1.25)	2007723
FX60RD	#54, 0.055 (1.40)	2008486
FX70RD	#53, 0.0595 (1.51)	2008489
Flat Spray		
Mix Chamber Part Number	Impingement Port (IP) Drill Bit Size in. (mm)	Drill Part Number
FX20FL	#76, 0.02 (0.51)	2007298
FX29FL	#69, 0.029 (0.74)	2006557
FX42FL	#59, 0.041 (1.04)	2006552
FX52FL	0.049 (1.25)	2007723

3. Follow the **Install the Mix Chamber**, page 12.
4. Return the gun to service.

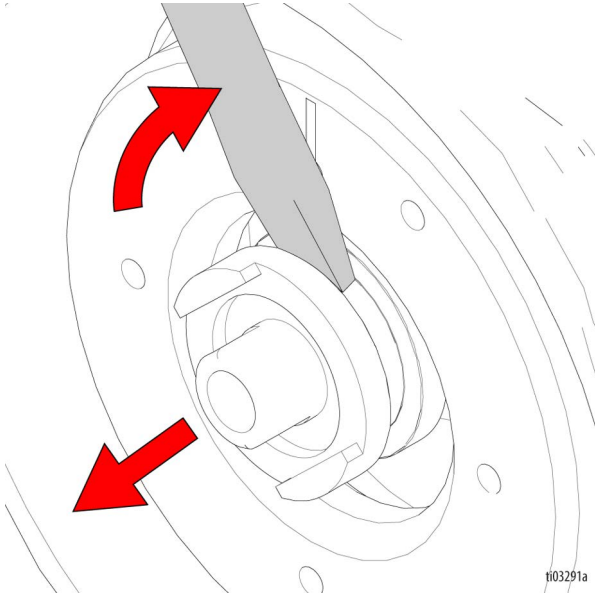
## Remove Flat Mix Chamber

1. Follow the **Pressure Relief Procedure**, page 16.
2. Remove the flat air cap, flat spray tip, and o-ring.



**NOTE:** If flat spray tip is stuck, pry-off with a small screwdriver or pull-off with pliers. The flat spray tip is hardened to resist damage.

3. Remove flat mix chamber from the FX Fluid Cartridge. If required, use a flat screwdriver to pry the chamber out using the groove feature in the flat mix chamber.

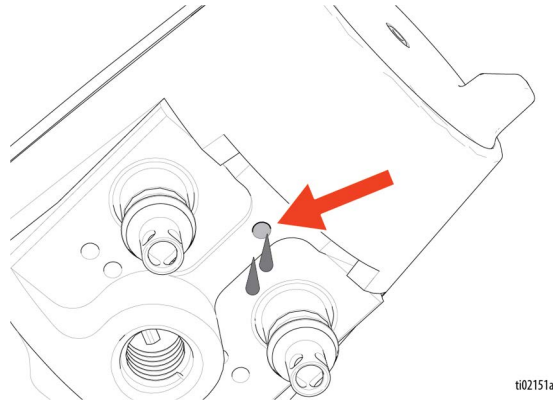


## Clean Flat Mix Chamber

1. Follow the **Pressure Relief Procedure**, page 16.
2. Follow the **Remove Flat Mix Chamber**, page 21.
3. Clean the flat spray tip. To clean, soak in a compatible solvent. Clean gently with cleanout tool (15D234). See, **Cleanout Drill Kit**, page 46 to fit tip configuration.
4. Clean the flat mix chamber nozzle. Use a pin vice with the appropriate size drill bit to clean the flat mix chamber nozzle.
5. Follow, **Install Flat Mix Chamber**, page 15.
6. Return the gun to service.

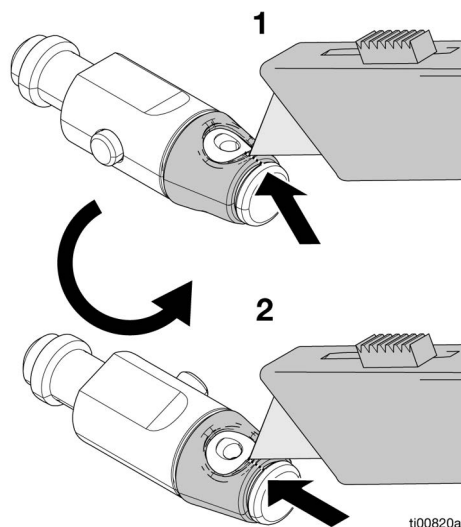
## Mix Chamber Weep Hole

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 22.



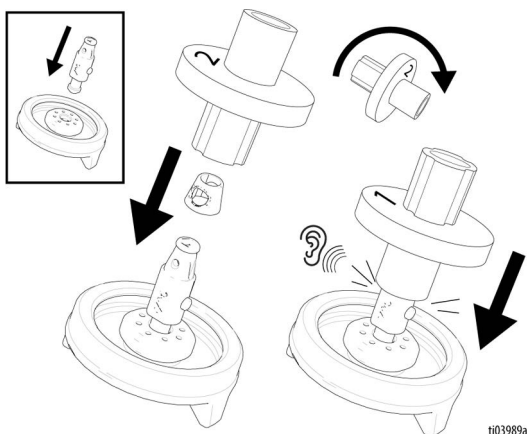
## Replace Mix Chamber Seal

1. Follow the **Pressure Relief Procedure** on page 16.
2. Follow the **Remove the Mix Chamber**, page 21.
3. Cut the mix chamber seal off the Mix Chamber. For easy removal, cut the seal on both sides near the two impingement ports on the Mix Chamber.



4. Install new seal onto Mix Chamber making sure to line the tabs on the seal up with the grooves on the mix chamber.

**For high temperature (clear colored) seals:** once aligned, use side 1 of the provided installation tool to press the seal on, until it clicks. Then, use side 2 to fully press the seal onto the mix chamber. It will audibly click when properly seated.



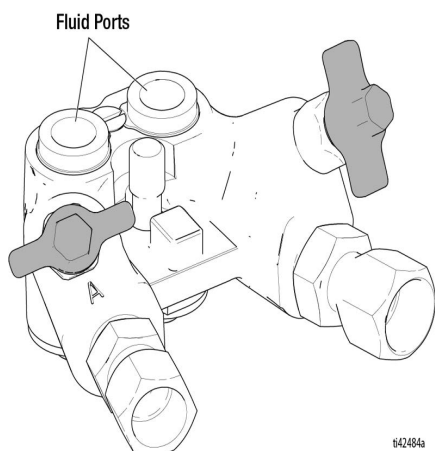
5. Follow the **Install the Mix Chamber** on page 12.

## Clean the Air Cap

Soak the front Air Cap (C) in compatible solvent. Brush or wipe the Air Cap clean. Clean holes with #65 (.037) drill bit.

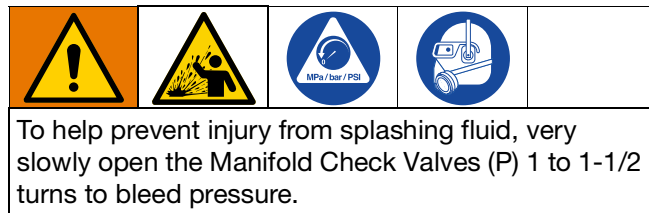
## Clean Fluid Manifold

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.

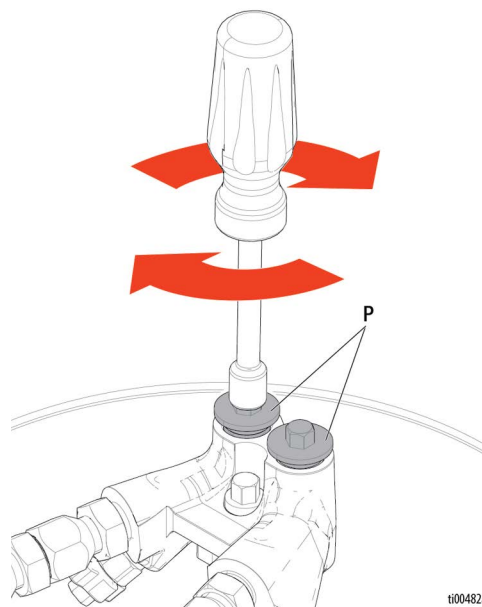


## Remove Manifold Check Valves

1. Follow the **Pressure Relief Procedure** on page 16.



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

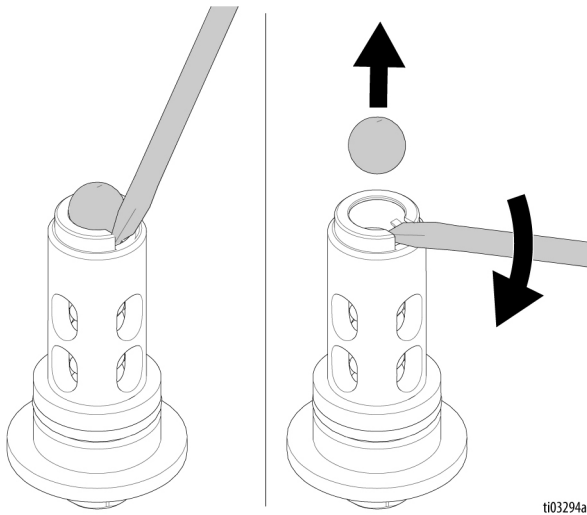
To prevent cross-contamination of the check valves, do not interchange A component and B component parts. The A component check valve is marked with an A.

## Clean Manifold Check Valves

1. Follow the **Remove Manifold Check Valves**, page 23.
2. Remove the fluid screens.
3. Clean check valve housings.
4. Clean or replace the fluid screens. See, **Check Valve Filter Screen Kits**, page 45.
5. Carefully inspect o-rings. Replace if worn or damaged.
6. Liberally lubricate o-rings and reassemble. Use a hex nut driver to tighten.

## Re-Build Manifold Check Valves

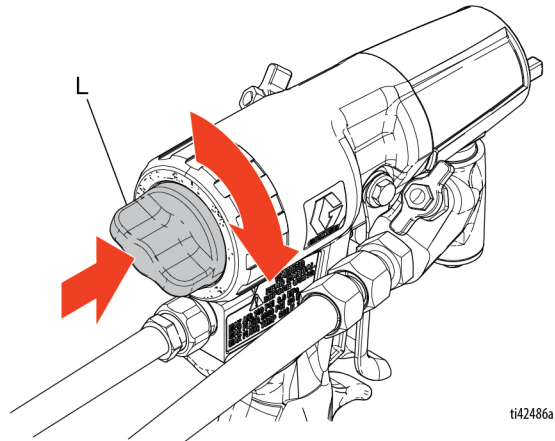
1. Follow **Remove Manifold Check Valves**, page 23.
2. Remove the fluid screen.
3. Remove the check ball from the manifold check valve housing inserting small flat screw driver in notch of housing. Then pry the check ball out the top of housing.



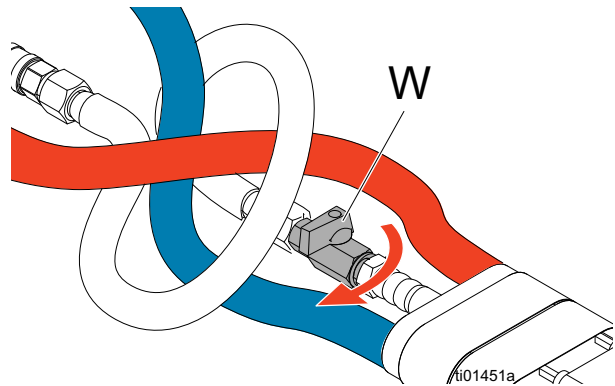
4. Replace the check valve spring.
5. Install new check ball.
6. Install fluid screen.
7. Liberally lubricate o-rings and reassemble. Use a hex nut driver to tighten.

## Remove the FX Fluid Cartridge

1. Follow the **Pressure Relief Procedure**, page 16.
2. Verify that A and B-side Fluid Valves are closed.
3. Engage the piston safety lock (L). See **Piston Safety Lock**, page 17.

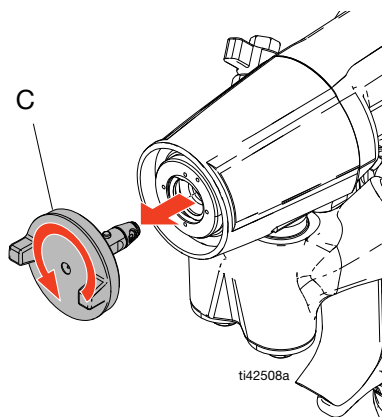


4. Turn off the Air Valve (W).

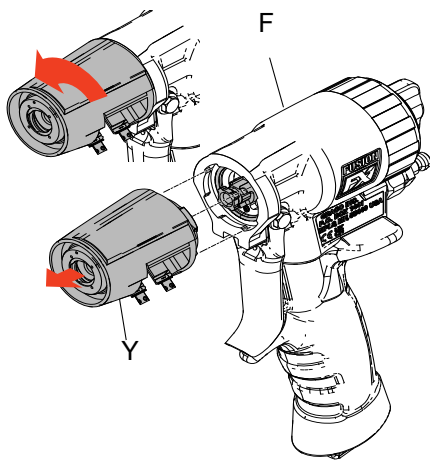


5. Remove gun from Gun Fluid Manifold (M).

6. Remove the air cap (C).

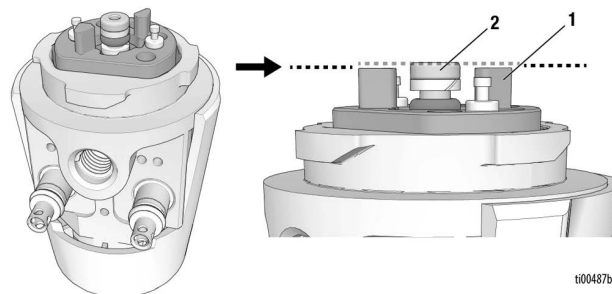


7. Turn the FX fluid cartridge (Y) counterclockwise 1/8 turn and pull out to remove FX fluid cartridge from gun body (F).

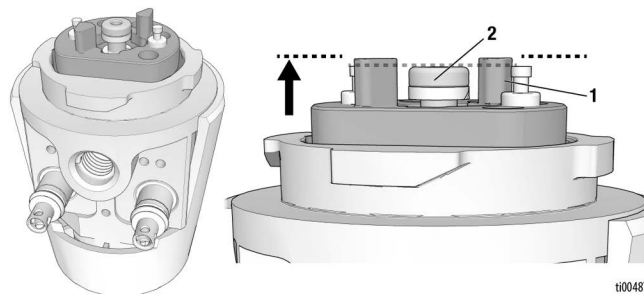


## Check FX Fluid Cartridge Yoke Position for Install

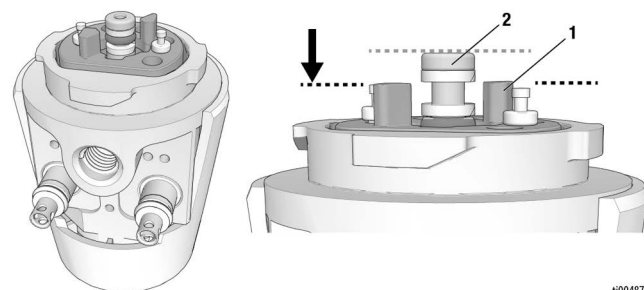
1. Check the FX Fluid Cartridge for proper yoke position prior to installing FX fluid cartridge onto gun. Proper yoke position is when the tabs on the yoke (1) are flush or slightly lower than cartridge air check housing (2).



2. If yoke is properly positioned, follow **Install FX Fluid Cartridge**, page 26.
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 26.

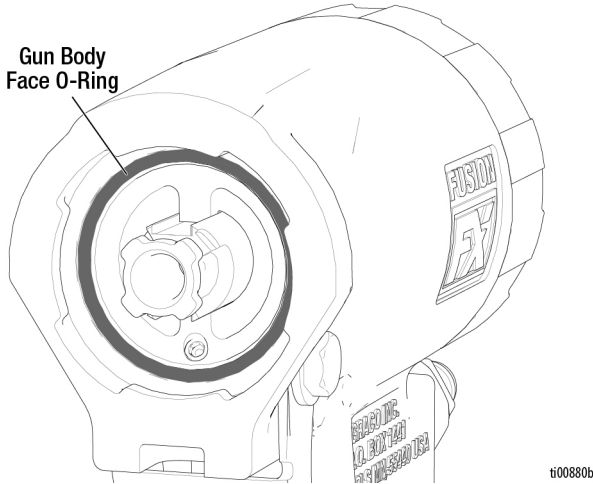


4. If the yoke is positioned where the yoke tabs (1) are lower than the air check housing (2), follow **Install FX Fluid Cartridge with Pushed in Yoke Position**, page 26.

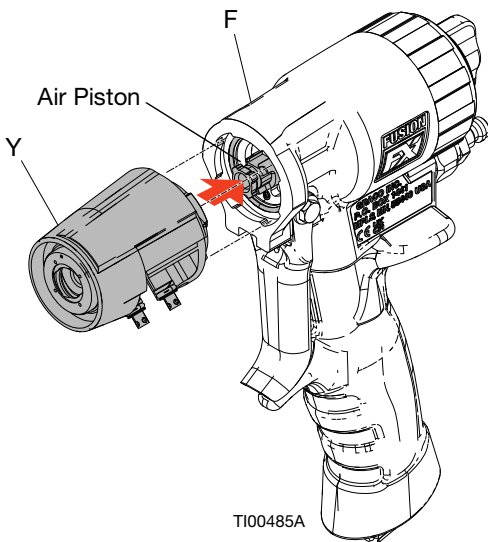


## Install FX Fluid Cartridge

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

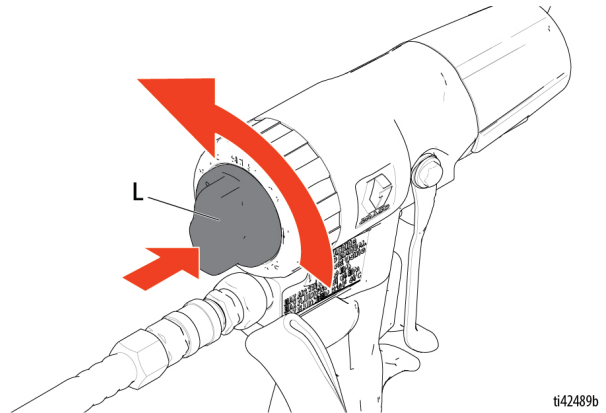


2. Disengage the Piston Safety Lock (L). See, **Piston Safety Lock**, page 17.
3. Align tabs on FX fluid cartridge yoke with the Air Piston and push the FX Fluid Cartridge (Y) onto the gun body (F).



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

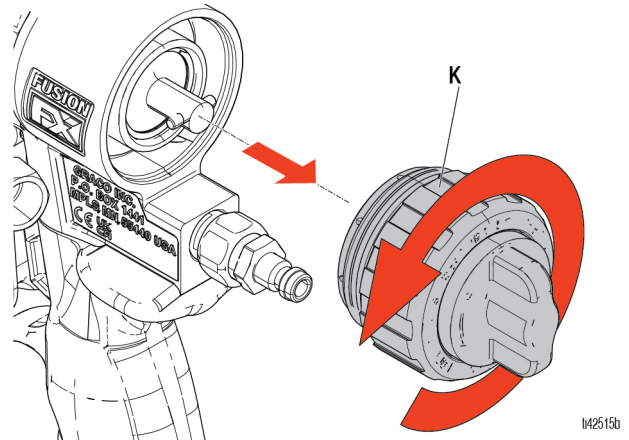
5. Install Air Cap and Mix Chamber assembly.



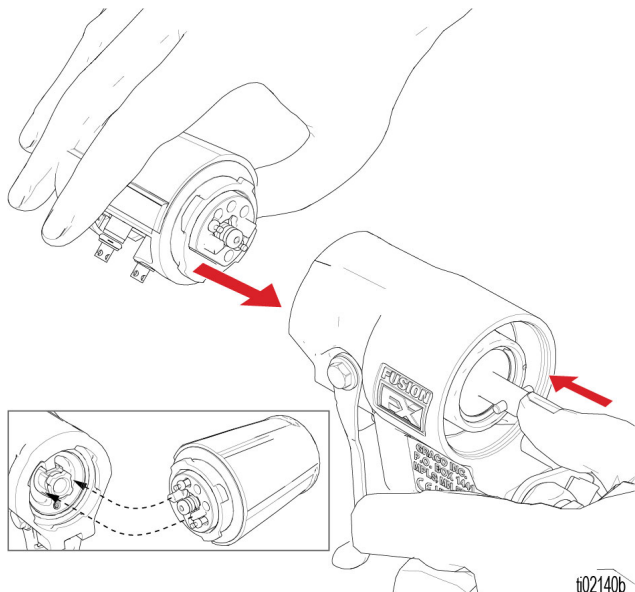
6. Engage the piston safety lock (L). See **Piston Safety Lock**, page 17.

## Install FX Fluid Cartridge with Pushed in Yoke Position

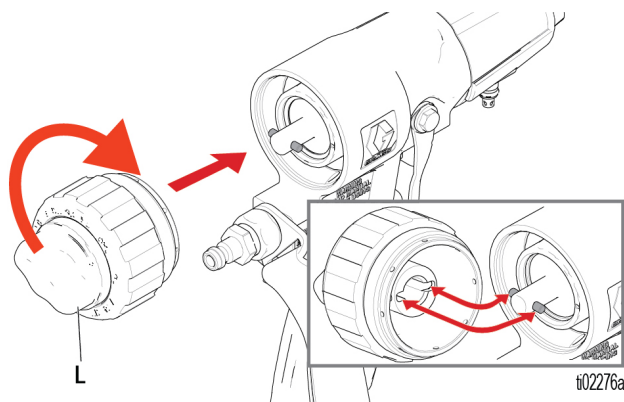
1. Ensure gun body face O-ring is installed and well-lubricated.
2. Disengage the Piston Safety Lock (L). See, **Piston Safety Lock**, page 17.
3. Unscrew the air cylinder cap (K).



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.



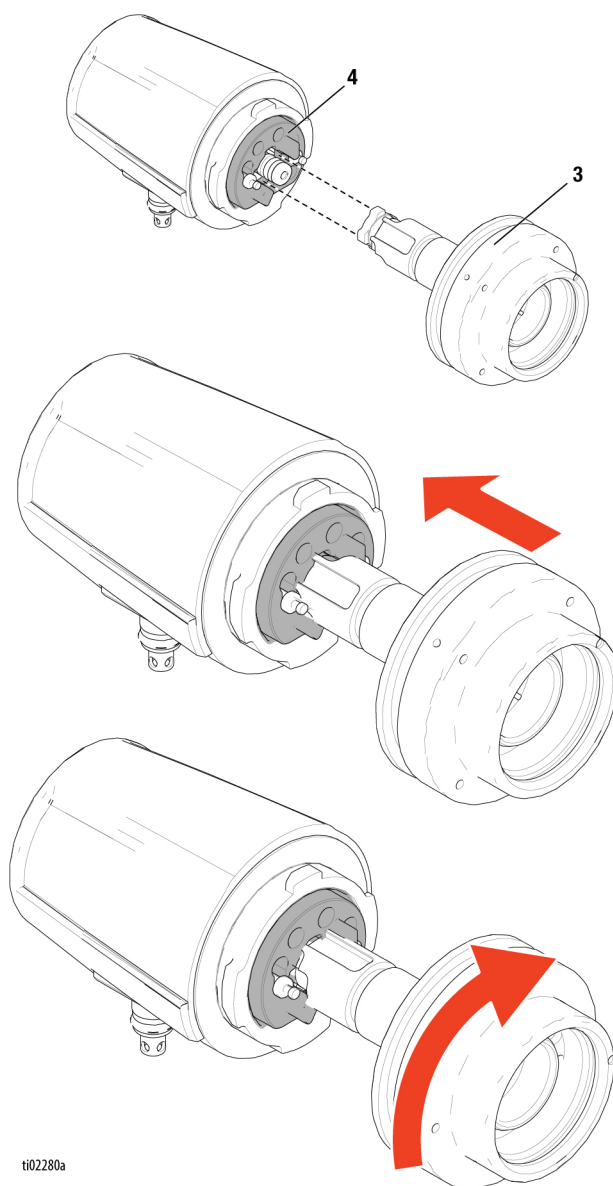
5. Rotate FX Fluid Cartridge 1/8 turn clockwise to upright position.
6. Align the pin on the back of the Air Piston with the notches in the safety stop of the Cylinder Cap. Thread the Air Cylinder Cap onto the gun body



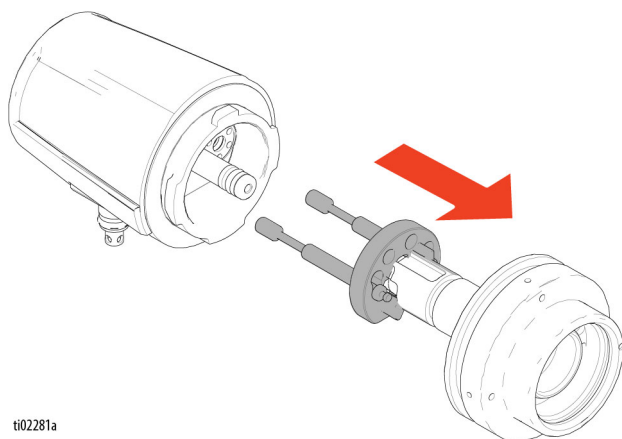
7. Install the Air Cap and Mix Chamber assembly.
8. Engage the Piston Safety Lock (L). See **Piston Safety Lock** on page 17.

## Replace FX Fluid Cartridge Shuttle Valves

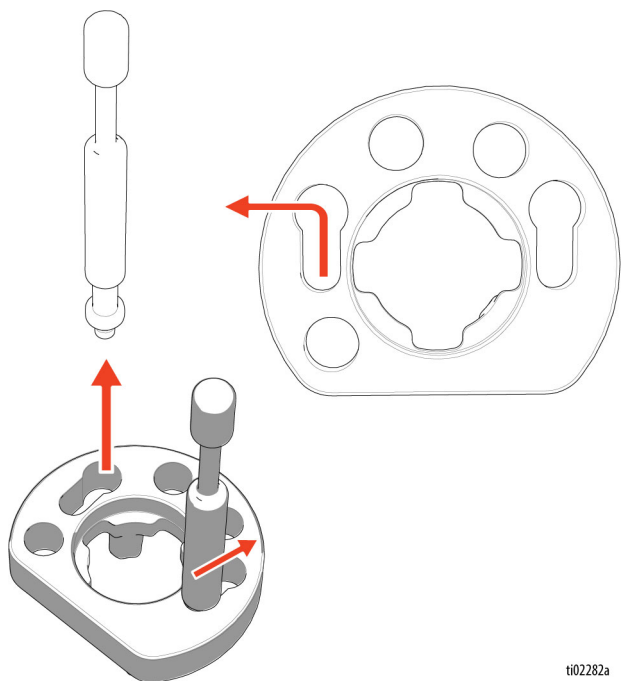
1. Follow the **Pressure Relief Procedure**, page 16.
2. Remove the FX Fluid cartridge from the gun. See **Remove the FX Fluid Cartridge**, page 24.
3. Use a spare air piston (3) and insert it into the shuttle valve yoke (4), lining up the tabs on the air piston with the clearance slots in the shuttle valve yoke. Turn the air piston clockwise to engage shuttle valve yoke.



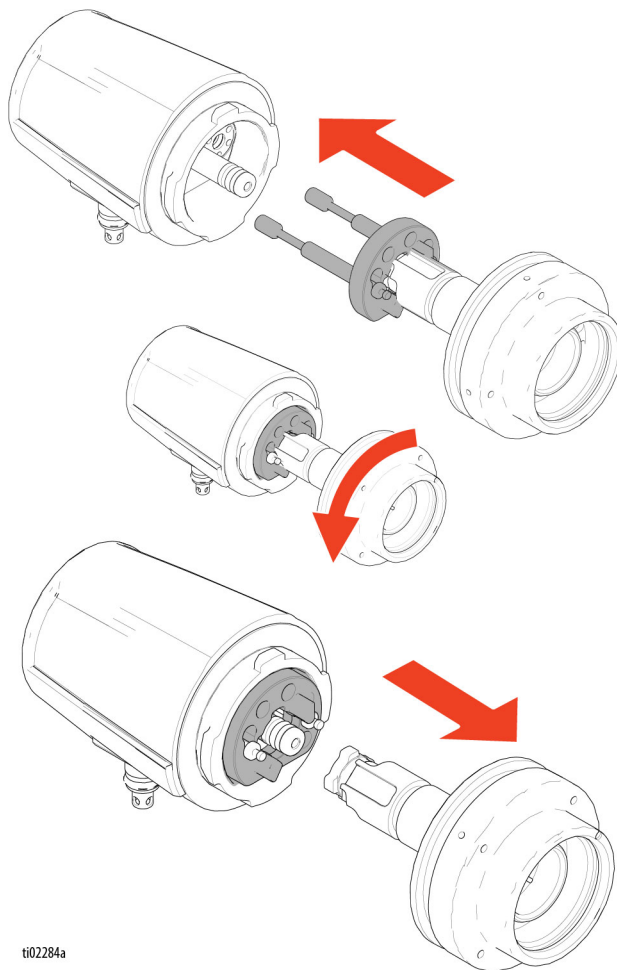
4. Remove shuttle valves from the FX Fluid Cartridge by pulling out with the Air Piston.



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



6. Liberally lubricate shuttle valves with Fusion grease.
7. Engage shuttle valve yoke with spare Air Piston.
8. 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.



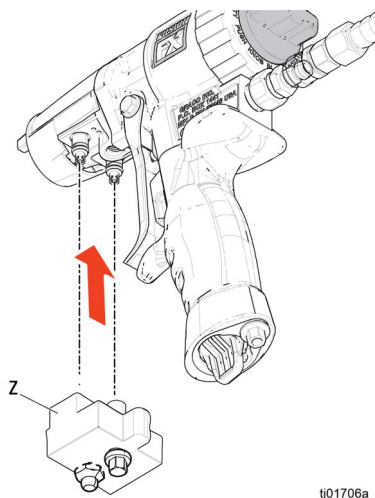
#### NOTICE

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

9. Install the FX Fluid cartridge onto the gun. See, **Install FX Fluid Cartridge**, page 26.

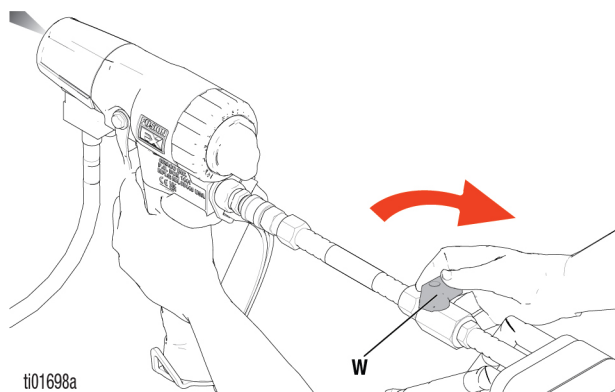
## Grease the FX Fluid Cartridge

1. Follow the **Pressure Relief Procedure** on page 16.
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.



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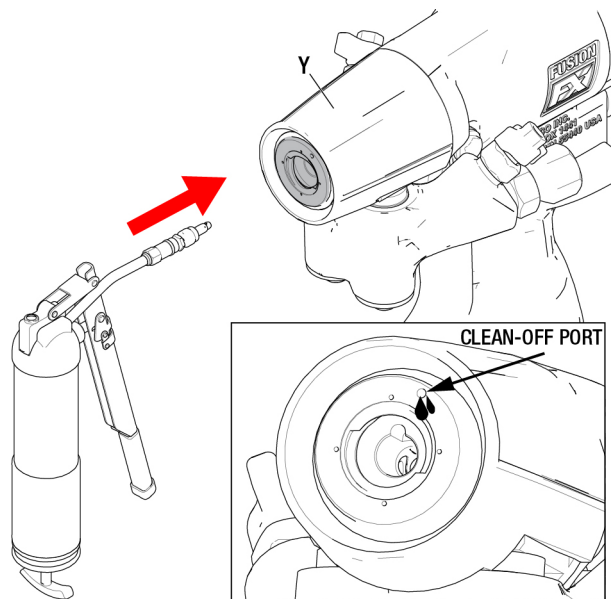
4. Disengage the Piston Safety Lock. See **Piston Safety Lock** on page 17.
5. Trigger gun and while holding gun triggered, turn off the Air Valve so that the internal cartridge valving stays open.



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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.

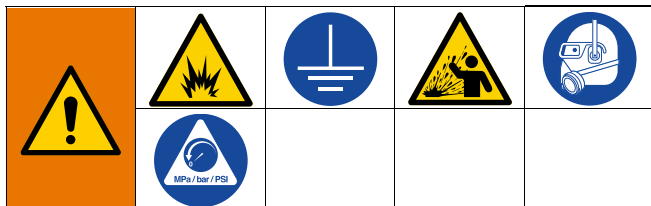
9. Remove the Air Cap and Mix Chamber assembly from the FX Fluid Cartridge.
10. Apply grease to the FX Fluid Cartridge Outlet using the FX Fluid Cartridge Outlet grease tool. Apply grease until grease come out of the FX Fluid Cartridge clean-off air port.



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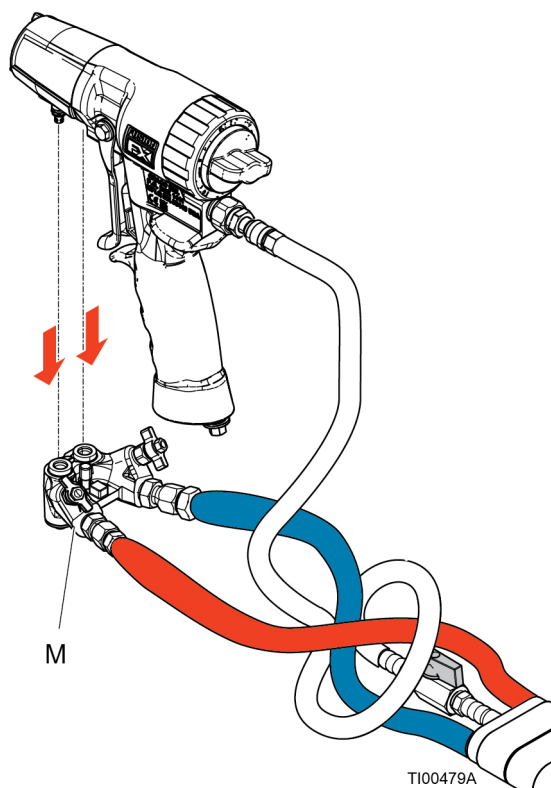
11. Re-install the Air Cap and Mix Chamber assembly onto the gun.
12. The FX Fluid Cartridge is ready for storage.

## Flush Gun

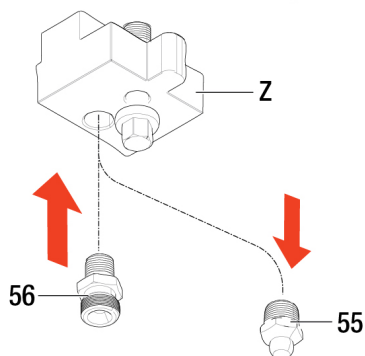


To avoid fire and explosion, always ground equipment and waste container. To avoid static sparking and injury from splashing, always flush at the lowest possible pressure.

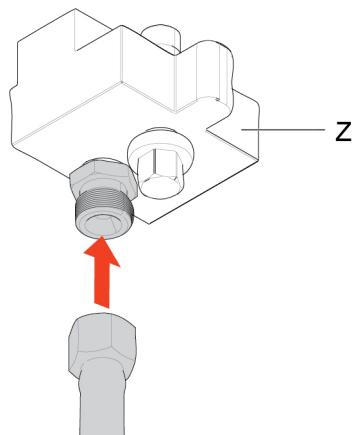
1. Follow the **Pressure Relief Procedure** on page 16.
2. Remove the fluid manifold (M) from the gun.



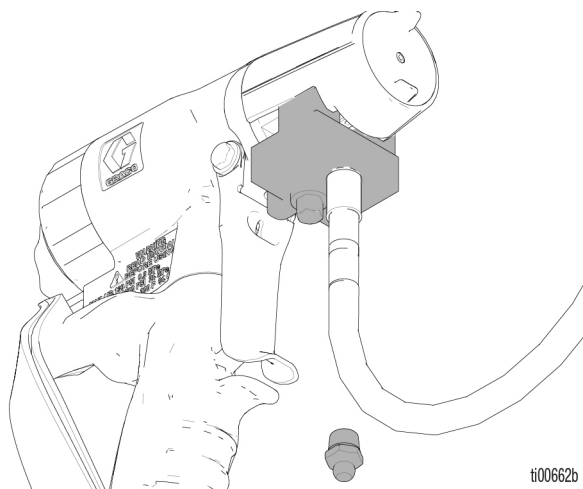
3. Remove grease fitting (55) from Flush Manifold (Z) and install the adapter fitting (56).



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



5. Connect the gun to the Flush Manifold.



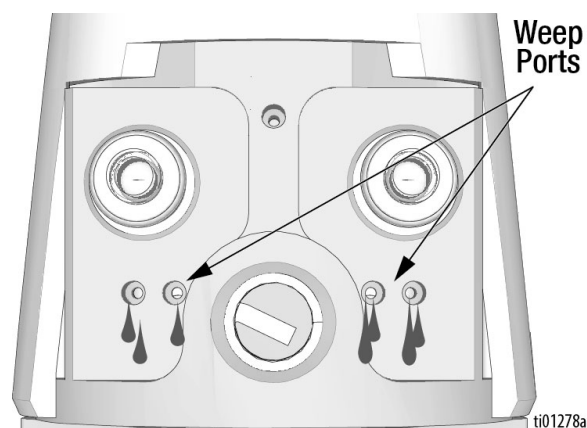
6. Open fluid valves (A) and (B).
7. Disengage the safety lock (L). See **Piston Safety Lock**, page 17.
8. Flush with a compatible solvent into a grounded metal pail while holding a part of the fluid manifold firmly against the side of the pail. Use the lowest possible fluid pressure when flushing.
9. Engage the piston safety lock (L). See **Piston Safety Lock**, page 17.
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 your Solvent Flush Kit manual for flushing instructions.

## Reinstall or Replace the FX Fluid Cartridge

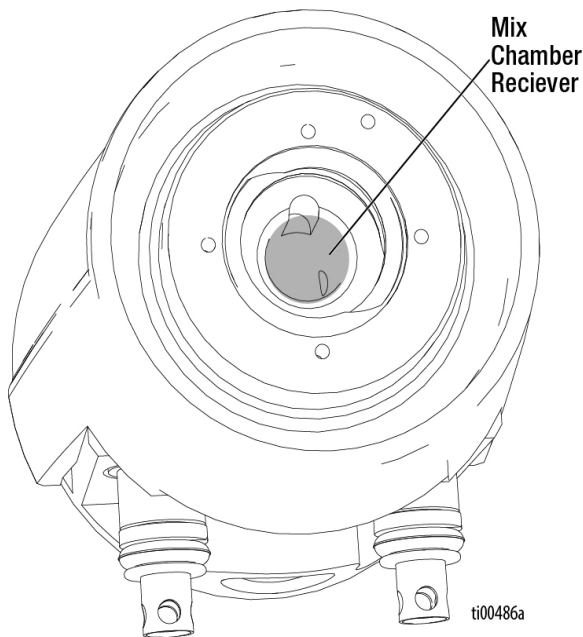
Identify the issue with your FX fluid cartridge and determine next steps.

- If the gun does not spray chemical when triggered: Follow the **Inspect FX Fluid Cartridge** procedure, page 32.
- If the gun sprays only one chemical when triggered: Follow the **Inspect FX Fluid Cartridge** procedure, page 32.
- 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 26.
- If chemical is leaking out of weep ports on cartridge: Replace the FX fluid cartridge. Follow the **Install FX Fluid Cartridge** procedure, page 26.

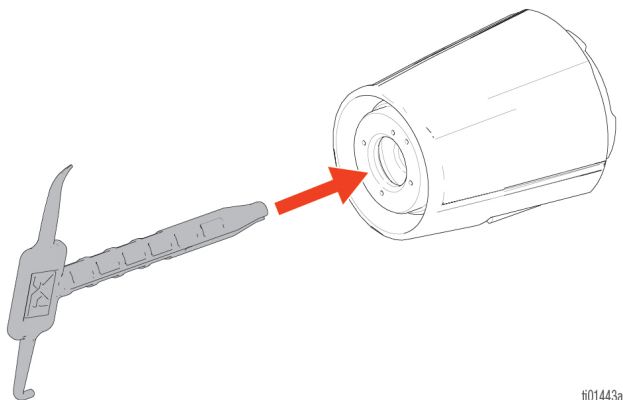


## Inspect FX Fluid Cartridge

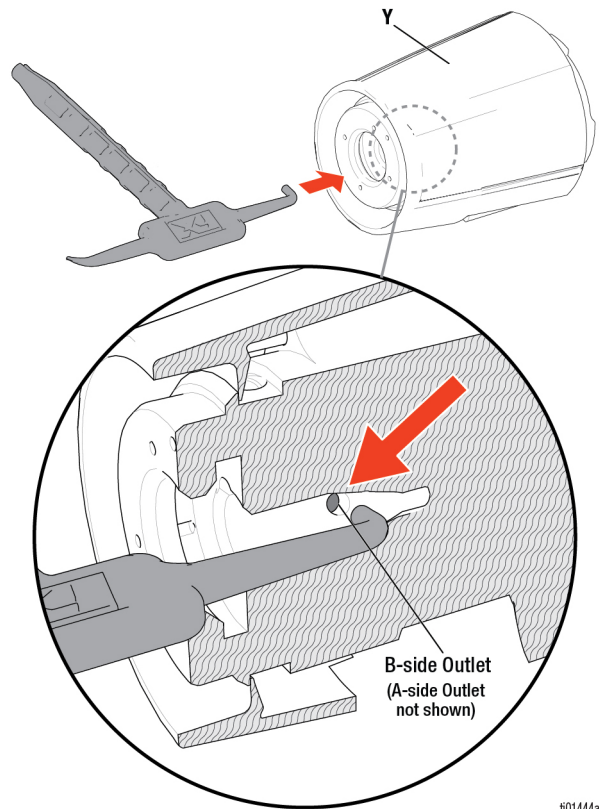
1. Follow the **Pressure Relief Procedure**, page 16.
2. If the gun does not spray chemical, or only sprays one chemical when triggered, inspect the FX Fluid Cartridge for reacted chemical in the mix chamber receiver.



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



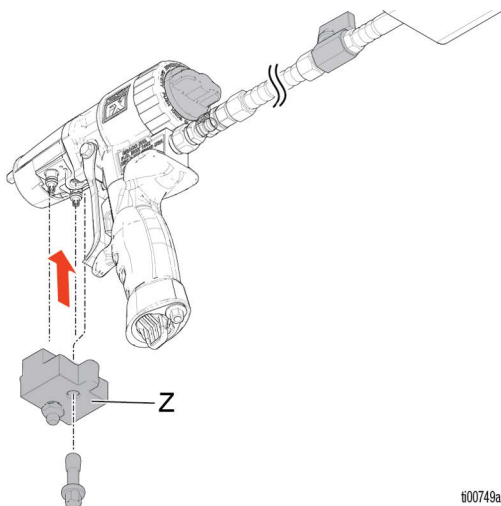
4. Check for obstruction on the A side and B side outlets of the FX Fluid Cartridge (Y) with the obstruction check tool. The FX Fluid Cartridge is obstructed if check tool does not go into the A or B side outlet.



- 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 33.
- If no obstruction is found: Follow **Test FX Fluid Cartridge Restriction**, page 33.
- If no reacted chemical (foam or polyurea) is found in the mix chamber receiver: Follow **Test FX Fluid Cartridge Restriction**, page 33.

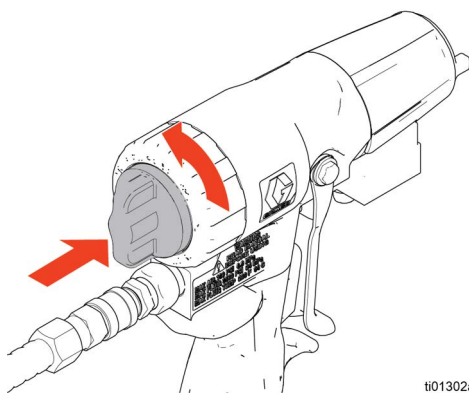
## Test FX Fluid Cartridge Restriction

1. Follow the **Pressure Relief Procedure**, page 16.
2. Disconnect the gun from the Fluid Manifold (M).
3. Connect the gun to the Flush Manifold (Z).



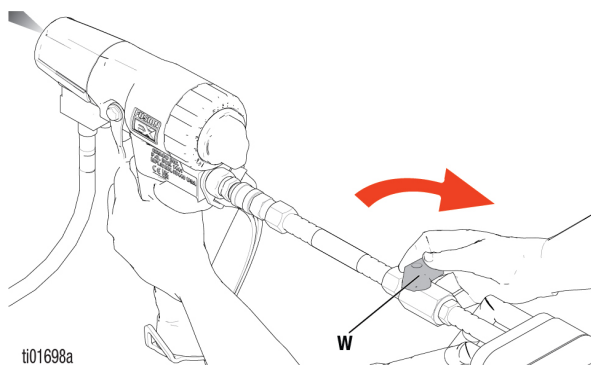
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4. Disengage the Piston Safety Lock (L).



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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.

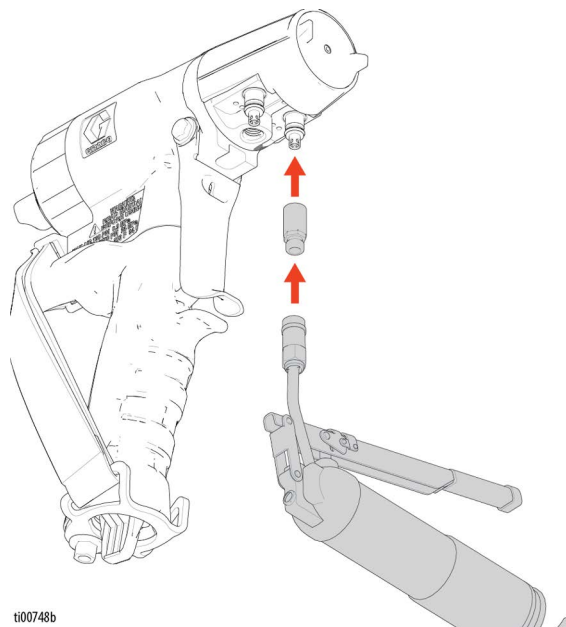


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### NOTICE

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.



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- **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 greasing tool. Clean and store for next use.

## Store the FX Fluid Cartridge

- 1. Follow **Flush Gun** on page 30.
- 2. Follow **Grease the FX Fluid Cartridge**, page 29.
- 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.

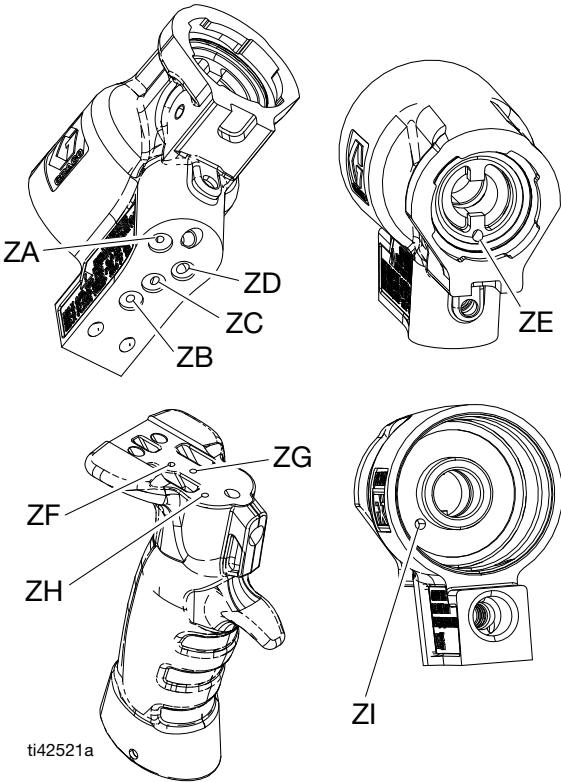
## Lubrication

Liberalily lubricate all o-rings, seals, and threads. See **Lubricant for Gun Rebuild** on page 49 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 49.

Table 3: Passage Diameters		
Passage Description	Ref. Letter	Diameter in. (mm)
CS Cartridge Air	ZB, ZF	3/32 (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)
Purge Air	ZE	1/8 (3.1)

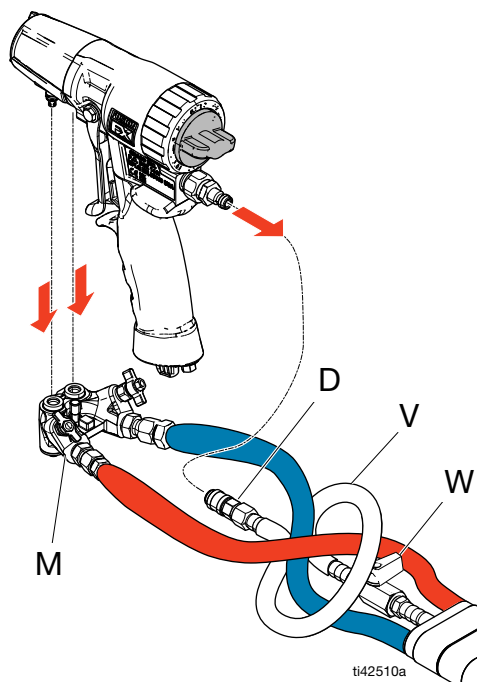


## Clean Muffler

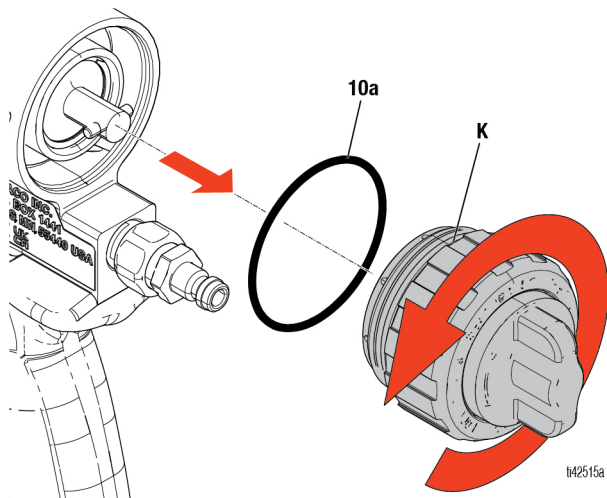
Remove and clean Muffler (E) with compatible solvent.

## Inspect the Piston

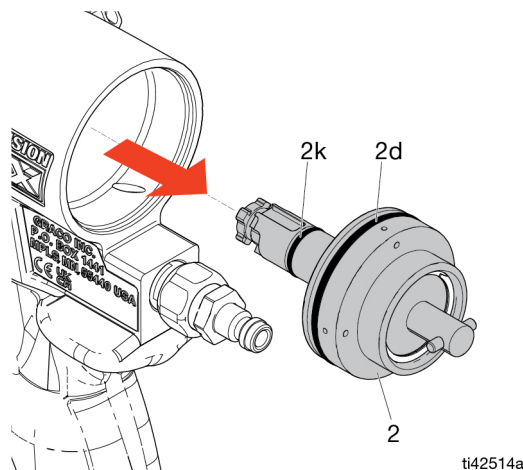
1. Follow the **Pressure Relief Procedure**, page 16.
2. Disconnect Air Hose Quick Coupler (D) and remove Fluid Manifold (M).



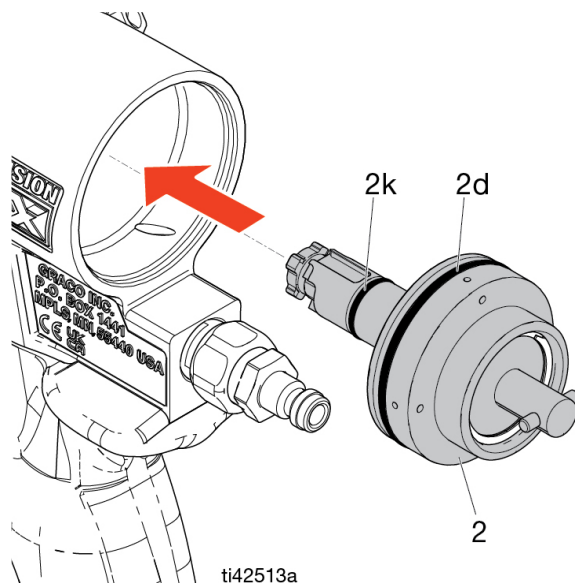
3. Follow the **Remove the FX Fluid Cartridge** procedure on page 24.
4. Disengage Piston Safety Lock (L). See **Piston Safety Lock**, page 17.
5. Unscrew the Air Cylinder Cap (K) and inspect o-ring (10a).



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

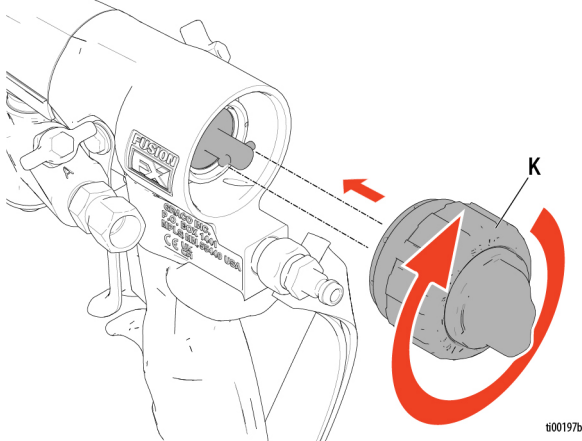
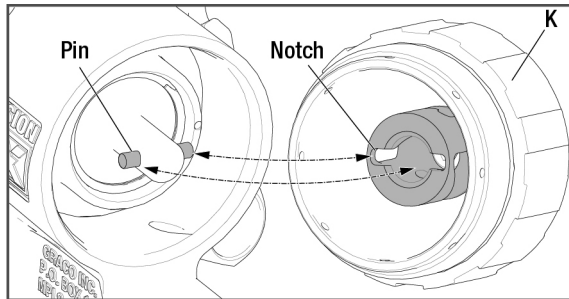


7. Liberally lubricate piston o-rings (2d and 2k). Reinstall piston (2). Shaft is keyed for proper assembly. Push firmly to seal piston.



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

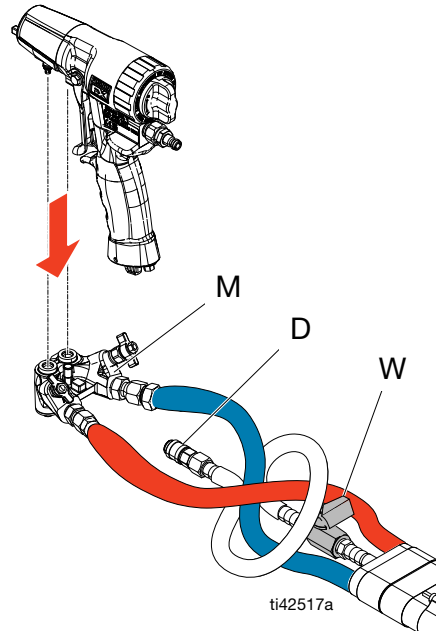
9. Align the Pin on the back of the Air Piston with the Notches in the safety stop of the Air Cylinder Cap and thread Air Cylinder Cap onto the gun body.



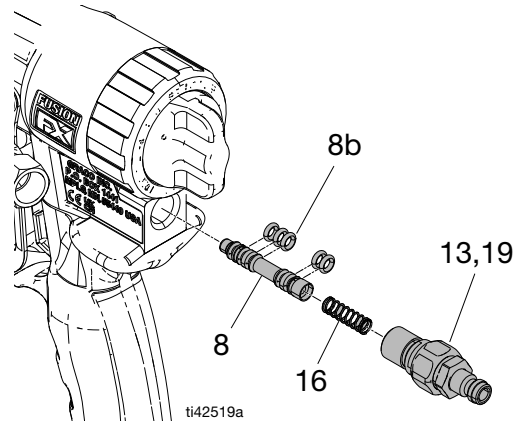
10. Attach the gun to the Fluid Manifold.
11. Connect the Air Hose Quick Coupler (D) to the gun.
12. Return the gun to service.

## Inspect the Air Valve

1. Follow the **Pressure Relief Procedure**, page 16.
2. Disconnect Air Hose Quick Coupler (D) and remove Fluid Manifold (M).



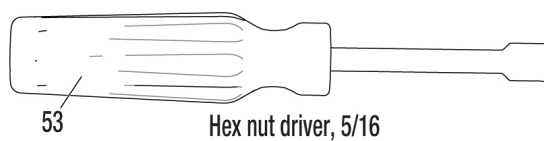
3. Unscrew Air Valve Fitting (13,19) and remove Spring (16). Use a small diameter tool that fits through the slot in the trigger to push the air valve spool (8) out of gun. Inspect air valve spool o-rings (8b). Replace any damaged or worn o-rings.



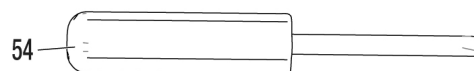
4. Liberally lubricate o-rings and reassemble. Torque plug (19) to 125-135 in-lb (14-15 Nm).
5. Attach the gun to the fluid manifold.
6. Connect the Air Whip Hose (V) to the gun.
7. Return gun to service.

## Supplied Tool Kit

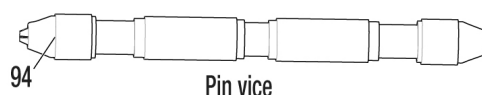
- Hex nut driver, 5/16
- Screwdriver, 1/8 blade
- Pin vice
- Grease gun, with 3 oz grease
- Flush manifold
- FX fluid cartridge outlet grease tool
- FX fluid cartridge inlet grease tool
- FX fluid cartridge cleanout tool



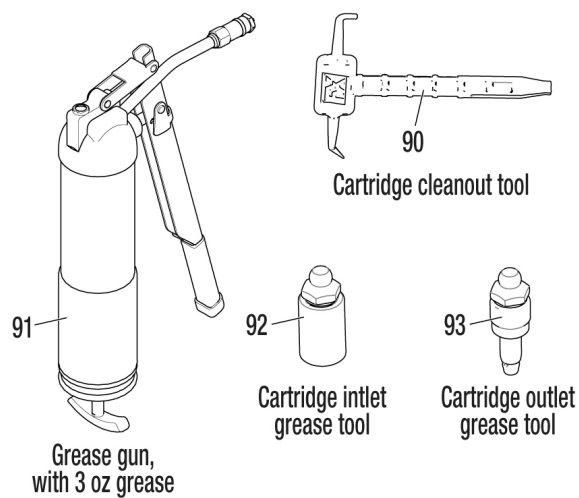
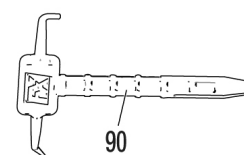
Hex nut driver, 5/16



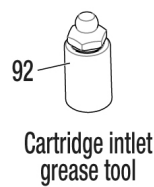
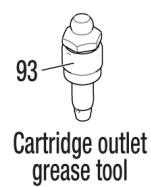
Screw driver, 1/8 blade



Pin vice

Grease gun,  
with 3 oz grease

Cartridge cleanout tool

Cartridge inlet  
grease toolCartridge outlet  
grease tool

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# Troubleshooting



## 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.

1. Follow the **Pressure Relief Procedure**, page 16, before checking or servicing the gun.
2. Check all possible problems and causes before disassembling the gun.

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 17.
	The muffler (22) is plugged.	Clean the muffler. See <b>Clean Muffler</b> , page 34.
	The air valve o-rings (8b) are damaged.	Replace the air valve o-rings. See <b>Inspect the Air Valve</b> , page 36.
	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 24.
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 21.
	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 24, then <b>Test FX Fluid Cartridge Restriction</b> , page 33.
Gun actuates slowly	The muffler (22) is plugged.	Clean the muffler. See <b>Clean Muffler</b> , page 34.
	The piston o-rings (2d, 2k) are damaged.	Replace the piston o-rings. See, <b>Parts</b> , page 41.
	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 36.

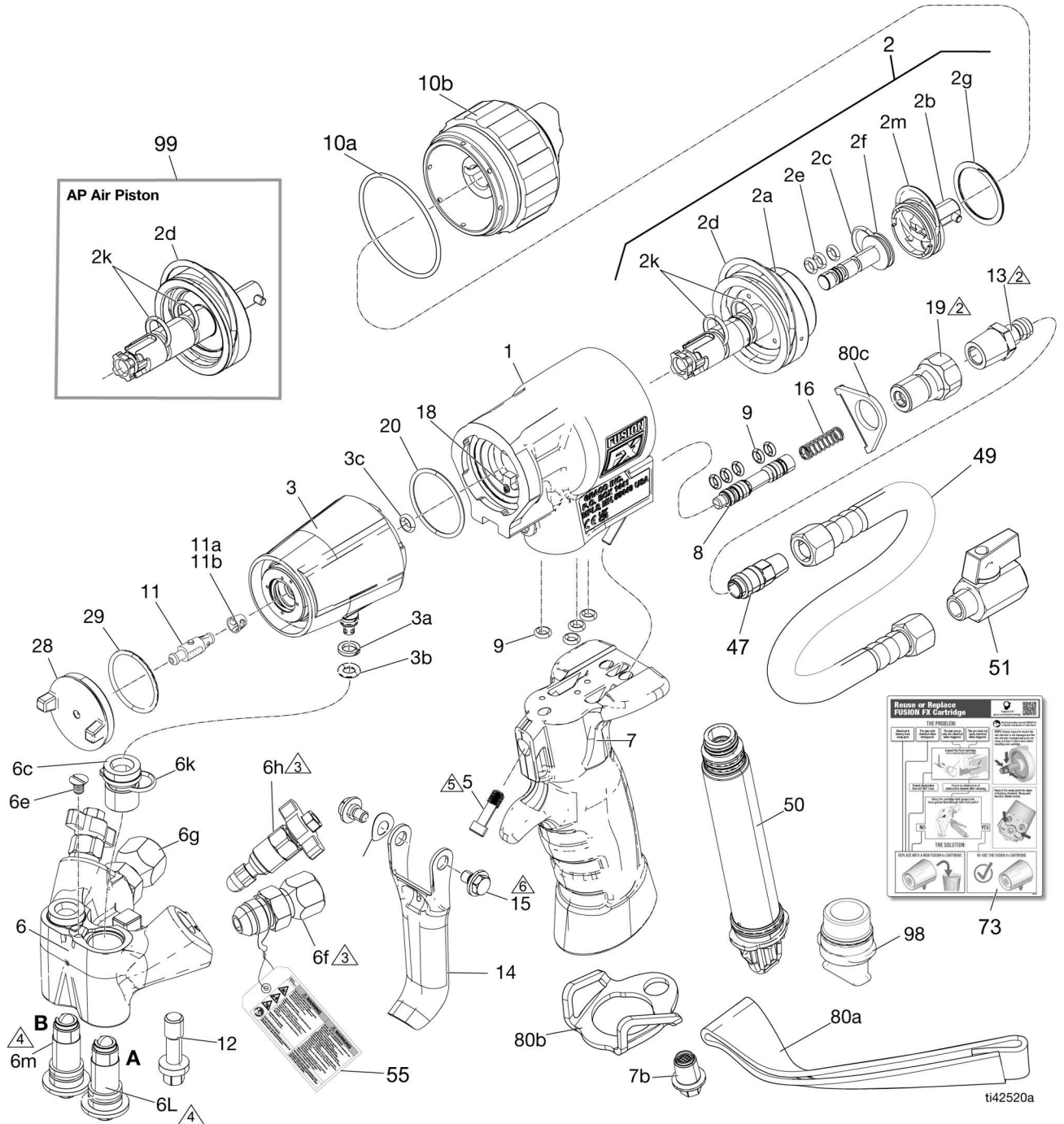
Problem	Cause	Solution
Loss of round pattern.	The mix chamber nozzle is dirty.	Clean the mix chamber nozzle. See <b>Clean Mix Chamber Nozzle</b> , page 20.
	The mix chamber impingement ports are dirty.	Clean the mix chamber impingement ports. See, <b>Clean the Mix Chamber Impingement Ports</b> , page 21.
	Mix chamber seal is obstructing impingement ports.	Replace. See <b>Replace Mix Chamber Seal</b> , page 22.
	Obstruction in FX fluid cartridge	Inspect the FX fluid cartridge. See <b>Inspect FX Fluid Cartridge</b> , page 32.
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 21.
	Manifold check valve assemblies (6d) are plugged.	Clean the check valves. See <b>Inspect Manifold Check Valves</b> , page 22.
	The viscosities not equal.	Adjust temperature to compensate.
	The FX fluid cartridge (3) is plugged.	<b>Remove the FX Fluid Cartridge</b> , page 24, then <b>Test FX Fluid Cartridge Restriction</b> , page 33.
	Mix chamber seal obstructing impingement ports.	Replace. See <b>Replace Mix Chamber Seal</b> , page 22.
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 24.
	The mix chamber seal is damaged.	Replace. See <b>Replace Mix Chamber Seal</b> , page 22.
	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 24.
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 23.
	The air cap o-ring (29) is damaged or missing	Replace the air cap o-ring. See, <b>Parts</b> , page 41.
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 41.
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 41.
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 36.
	The piston o-rings (2d, 2k) are damaged.	Replace the piston o-rings. See, <b>Parts</b> , page 41.
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 36.
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 41.
	Handle/Gun body o-rings (9) are damaged or missing.	Replace o-rings. See, <b>Parts</b> , page 41.
	Air cylinder cap o-ring (10d) is damaged or missing.	Replace o-ring. See, <b>Parts</b> , page 41.
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 41.
	FX fluid cartridge fluid inlet o-rings (3b) are damaged or missing.	Replace o-rings. See, <b>Parts</b> , page 41.
	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 24.

# Parts

## Fusion FX Gun

See **Detail Views**, page 43 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).

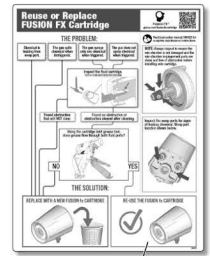
3 Torque to 13 - 15 ft-lb (17.6 - 20.3 N•m).

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).

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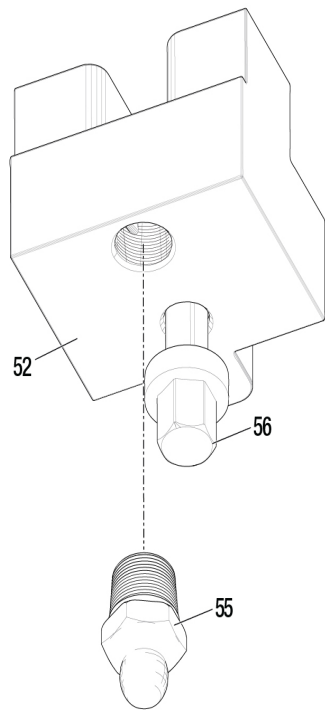
## Parts List - FX Fusion Gun FX9000

Ref.	Part	Description	Qty.	Ref.	Part	Description	Qty.
1	2000973	BODY, air section, fusion fx	1	7b	2000981	PLUG, breather	1
2	2000978	PISTON, cs, complete assembly	1	8	2000980	VALVE, spool, fusion fx, assy	1
2a	2001166	KIT, air piston, CS, w/ o-rings	1	9❖		O-RING	4
2b	2001032	STOP, stem, safety, fusion fx	1		119421	QTY: 1	
2c❖		PACKING, o-ring	1		2001152	QTY: 10	
	2005697	QTY: 5			25M239	QTY: 50	
2d❖❖		O-RING, 129	1	10	2000971	CAP, safety, rear, fusion fx	1
	2006158	QTY: 5		10a★❖	131971PKG	O-RING, 031, fx75	1
2e❖		O-RING	3	11		CHAMBER, mix, fusion (See <b>Mix Chamber Kits</b> on page 44)	1
	119421	QTY: 1		11a	2005366	SEAL, mix chamber, Qty 10	
	2001152	QTY: 10		11b	2010991	SEAL, mix chamber, high temp, Qty 10	
	25M239	QTY: 50					
2f	2001031	PISTON, dosing, fusion fx	1	12	2001170	BOLT, manifold, fusion fx	1
2g	2001167	RING, retaining, spiral	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
3b†		O-RING	1		121370	QTY: 1	
3c	2007251	KIT, O-Rings, CS check	1		256773	QTY: 5	
5	2001151	KIT, bolt, handle	1	47	117510	COUPLER, line, air, 1/4 npt	1
6	2000974	MANIFOLD, hose, assembly, fusion fx	1	49	15B772	HOSE, air, 18 in.	1
				51	15B565	VALVE, ball	1
6c	2001168	KIT, housing check manifold	2	55▲	172479	TAG, warning	1
6d	2001151	FILTER, housing, assembly, fusion	2	73		LABEL, instructions	1
6e	2001169	SCREW, 8-32 x 0.25, flat head	1	80	2000716	KIT, strap with brackets	1
6f	127597	FITTING, swivel, #5 jic x #5 jic, m x f	1	80a		STRAP	1
6g	127596	FITTING, swivel, #6 jic x #6 jic, m x f	1		2007692	QTY: 3	
6h	2000975	KIT, valve, fluid, fusion fx	2	80b	2006912	BRACKET, lower	1
6k❖		O-RING	2	80c	2006911	BRACKET, upper	1
	118594	QTY: 1		98	2000715	CPS PLUG	1
	2005699	QTY: 10		99	2000979	PISTON, assembly, includes 2d, 2k, 2h	1
	25M247	QTY: 25					
6l	2001025	FILTER HOUSING, A-side, fusion fx	1				
6m	2001026	FILTER HOUSING, B-side, fusion fx	1				
7	2000972	HANDLE, fusion fx, cs, overmold	1				

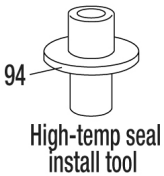
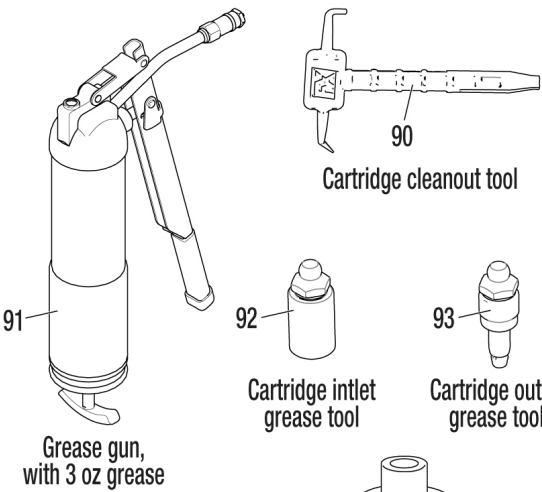
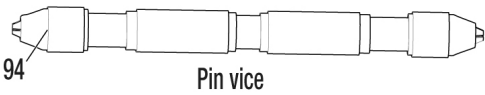
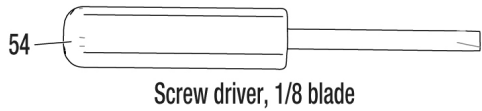
▲ Replacement safety labels, tags, and cards are available at no cost.

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



ti03995a

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

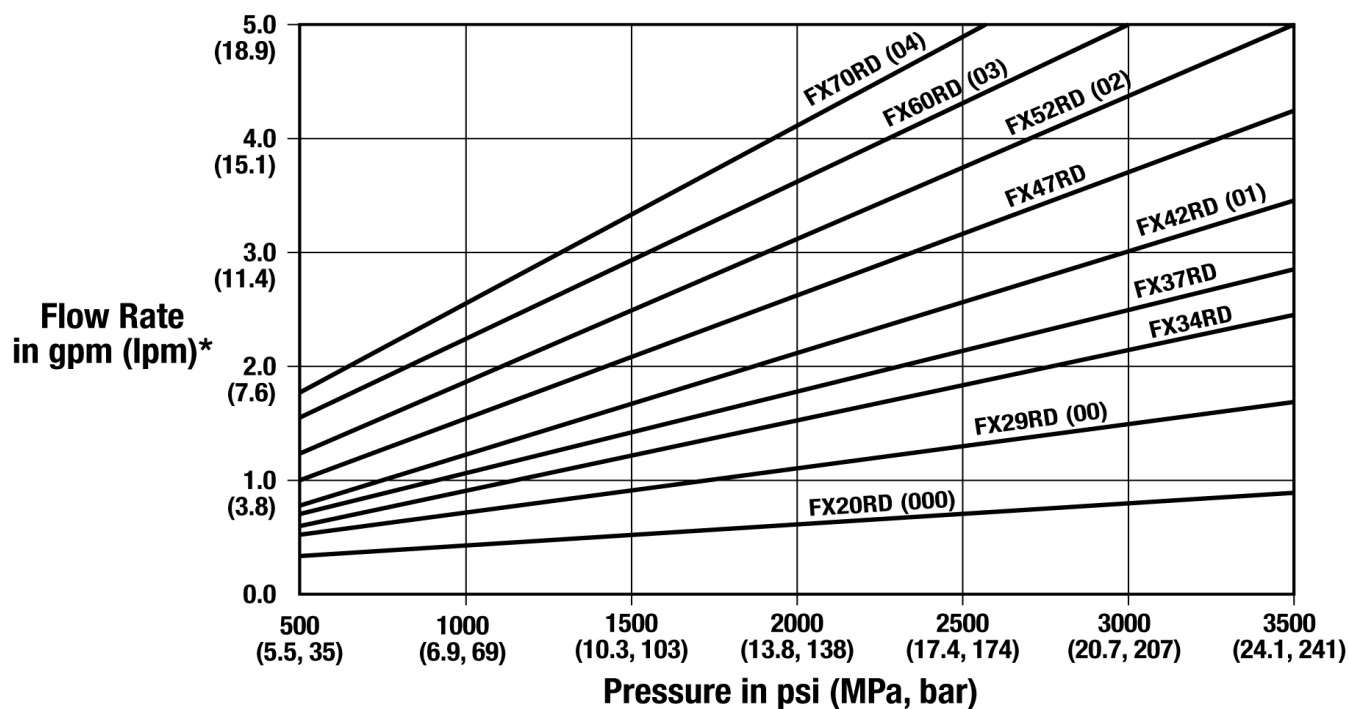
Qty.	Ref.	Part	Description	Qty.
1	90	2005061	TOOL, cleanout, cartridge (Kit quantity 5)	1
1	91	117792	GUN, grease, 3 oz.	1
1	92	2004345	KIT, tool, grease	1
1	93	2004344	KIT, grease, cartridge	1
1	94	2011351	TOOL, install, seal , Qty. 5	1

## Mix Chamber Kits

### Round Pattern

Mix Chamber Kit (includes drill bit)	Nozzle Orifice Size	Nozzle Drill Bit Size, in. (mm)	Nozzle Drill Part Number	Impingement Port Size	Impingement Port Drill Part Number	Impingement Port Drill Part Number
FX20RD	0.043	0.042 (1.07)	2008488	0.021	0.020 (0.51)	2007298
FX29RD	0.053	0.052 (1.32)	2008498	0.031	0.029 (0.74)	2006557
FX34RD	0.058	0.057 (1.45)	2006559	0.034	0.032 (0.81)	2006555
FX37RD	0.065	0.0635 (1.61)	2006548	0.038	0.037 (0.94)	2006553
FX42RD	0.067	0.065 (1.65)	2006560	0.042	0.041 (1.04)	2006552
FX47RD	0.074	0.073 (1.85)	2006546	0.047	0.0465 (1.18)	2006550
FX52RD	0.08	0.0785 (1.99)	2007722	0.052	0.049 (1.25)	2007723
FX60RD	0.087	0.086 (2.18)	2007725	0.057	0.055 (1.40)	2008486
FX70RD	0.0945	0.094 (2.38)	2008487	0.061	0.0595 (1.51)	2008489

### 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

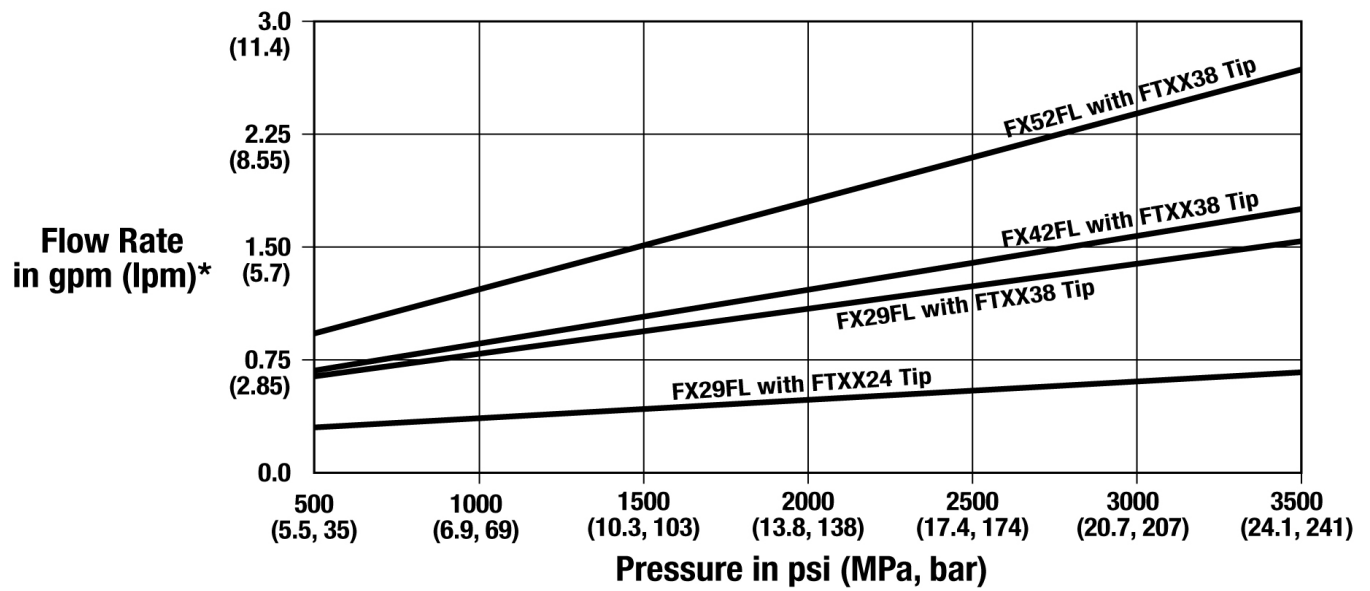
**Note:** Be sure to spray at pressures within your material manufacturer's specifications.

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## Flat Pattern

Mix Chamber Kit (includes drill bit)	Nozzle Orifice Size	Nozzle Drill Bit Size, in. (mm)	Nozzle Drill Part Number	Impingement Port Size	Impingement Port Drill Part Number	Impingement Port Drill Part Number
FX20FL	0.0945	0.094 (2.38)	2008487	0.021	0.020 (0.51)	2007298
FX29FL	0.0945	0.094 (2.38)	2008487	0.031	0.029 (0.74)	2006557
FX42FL	0.0945	0.094 (2.38)	2008487	0.042	0.041 (1.04)	2006552
FX52FL	0.0945	0.094 (2.38)	2008487	0.051	0.049 (1.25)	2007723

## Flat Pattern Mix Chambers by Pressure and Flow Rate



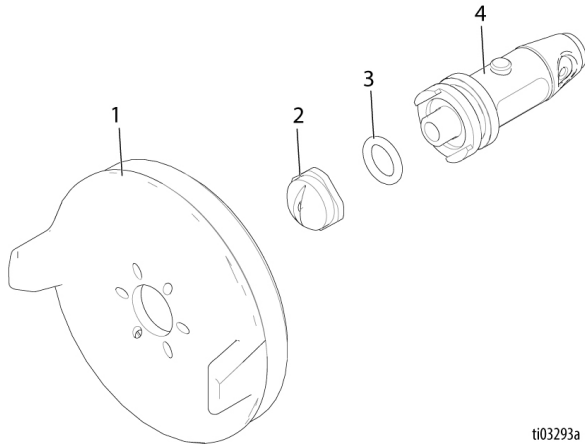
\* To calculate flow rate in lb/min., multiply gpm rate by 10.

Example: 2 gpm x 10 = 20 lpm

**Note:** Be sure to spray at pressures within your material manufacturer's specifications.

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## Flat Tip Kits



Ref.	Part	Description	Qty.
1	2009349	KIT, air cap, flat, Fusion FX	1
2	FTxxxx	TIP, flat, see table below	
3	117768	O-RING	1
4	FXxxxx	MIX CHAMBER, see <b>Mix Chamber Kits</b> , pg. 45	1

Flat Spray Tip	Pattern Size, in. (mm)
FT0424	Low flow, 8-10 (203-254)
FT0438	Medium flow, 8-10 (203-254)
FT0624	Low flow, 12-14 (305-356)
FT0638	Medium flow, 12-14 (305-356)
FT0838	Medium flow, 16-18 (406-457)
FT0848	High flow, 16-18 (406-457)

## Flat Tip Part Reference Guide

Example part number: **FT0848**

FT	08	48
FT= Flat Tip	x2=Pattern length (8x2=16 in.)	Equivalent orifice diameter size (0.048 in.)

## Check Valve Filter Screen Kits

Each kit includes 10 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 four drill bits of extra long length needed to clean out the air passages.

## Mix Chamber Seal Kits

### 2005366

Kit includes 10 mix chamber seals.

### 2010991

Kit includes 10 high temperature mix chamber seals and installation tool.

### 2011351

Kit includes five high temperature mix chamber seal installation tools.

## 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, 1pack	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

### 2001095

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.

# Shuttle Valve Kit

2001028

Kit includes 10 shuttle valves.

# Manifold Check Valve Repair Kit


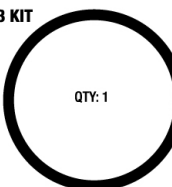



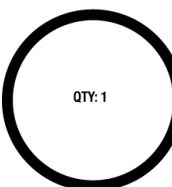



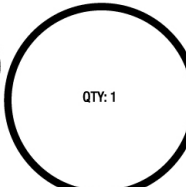





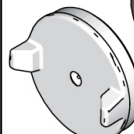




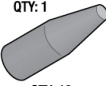







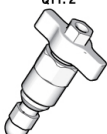
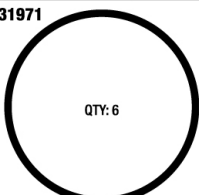


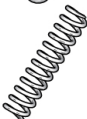

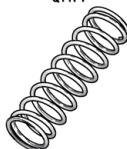
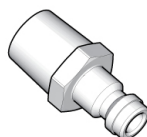
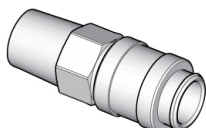


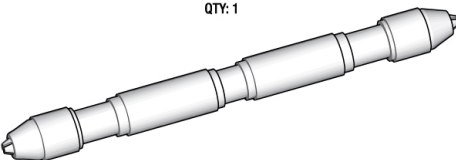


2007204

Kit includes check ball and spring only.

# 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 				<b>2007251 KIT</b>  QTY: 2    QTY: 1 		<b>25E647 KIT</b>  QTY: 6 																
<b>2001150 KIT</b>  QTY: 5 	<b>2000788 KIT</b> Air Cap   QTY: 1 	<b>2001026</b>  QTY: 1  	<b>24R894</b>  QTY: 10 	<b>2001152</b>  QTY: 1   QTY: 10 	<b>2001025</b>  QTY: 1  	<b>2005697</b>  QTY: 5 	<b>2001153</b>  QTY: 1 	<b>2001029</b>  QTY: 2   QTY: 2 	<b>2000975</b>  QTY: 2 															
<b>131971</b>  QTY: 6 	<b>256773</b>  QTY: 6 	<b>2007204</b>  QTY: 2  	<b>2000980</b>  QTY: 1 	<b>117485</b>  QTY: 1 	<b>117509</b>  QTY: 1 	<b>117510</b>  QTY: 1 																		
<b>2000981</b>  QTY: 1 	<b>2001148</b>  QTY: 1 	<b>117661</b>  QTY: 1 				<b>2001346</b>   <table><tr><th>DRILL SIZE</th><th>DECIMAL EQUIVALENT</th><th>QTY</th></tr><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></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																						
																								

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## Fusion FX Air Section Cleanout Drills

**2006569**

## Shuttle Valve Kits

**2001028**

Kit includes 10 shuttle valves.

**2001027**

Kit includes two shuttle valves and one shuttle valve yoke.

## Drill Bit Kits

For cleaning gun ports and orifices. Actual length may vary.

Kit Part	Qty.	Drill Bit Size			Where Used
		nominal	in.	mm	
2007298	6	#76	0.020	0.51	FX20RD, FX20FL Mix Chamber Impingement Bore
2006557	6	#69	0.029	0.74	FX29RD, FX29FL Mix Chamber Impingement Bore
2006555	6	#67	0.032	0.81	FX34RD Mix Chamber Impingement Bore
2006553	6	#63	0.037	0.94	FX37RD Mix Chamber Impingement Bore; Air Cap Clean-Off Air Holes
2006552	6	#59	0.041	1.04	FX42RD, FX42FL, Mix Chamber Impingement Bore
2008488	6	#58	0.042	1.07	FX20RD Mix Chamber Nozzle
2006550	6	#56	0.0465	1.18	FX47RD Mix Chamber Impingement Bore
2007723	6	1.25 mm	0.049	1.25	FX52RD, FX52FL Mix Chamber Impingement Bore
2008498	6	#55	0.052	1.32	FX29RD Mix Chamber Nozzle
2008486	6	#54	0.055	1.40	FX60RD Mix Chamber Impingement Bore
2006559	6	1.45 mm	0.057	1.45	FX34RD Mix Chamber Nozzle
2008489	6	#53	0.0595	1.51	FX70RD Mix Chamber Impingement Bore
2006548	6	#52	0.635	1.61	FX37RD Mix Chamber Nozzle
2006560	6	1.65 mm	0.065	1.65	FX42RD Mix Chamber Nozzle
2006546	6	#49	0.073	1.85	FX47RD Mix Chamber Nozzle
2007722	6	#47	0.0785	1.99	FX52RD Mix Chamber Nozzle
2007725	6	#44	0.086	2.18	FX60RD Mix Chamber Nozzle
246624	3	3/32	0.094	2.38	Gun Body Passages
2008487	6	3/32	0.094	2.38	FX70RD, FX20FL, FX29FL, FX42FL, FX52FL Mix Chamber Nozzle
249115	6	1/8	0.125	3.18	Gun Body Passages

## 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	0.053 x 1.00 (1.35 x 25.4)	FX34-FX37	12 (3.66)	5 (127)
2005267	0.061 x 1.00 (1.55 x 25.4)	FX37-FX47	12 (3.66)	6 (152)
2005268	0.071 x 1.00 (1.80 x 25.4)	FX52	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

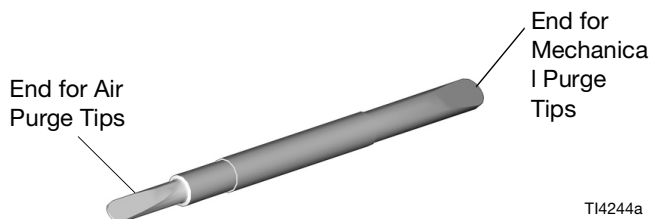
See MSD060

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**

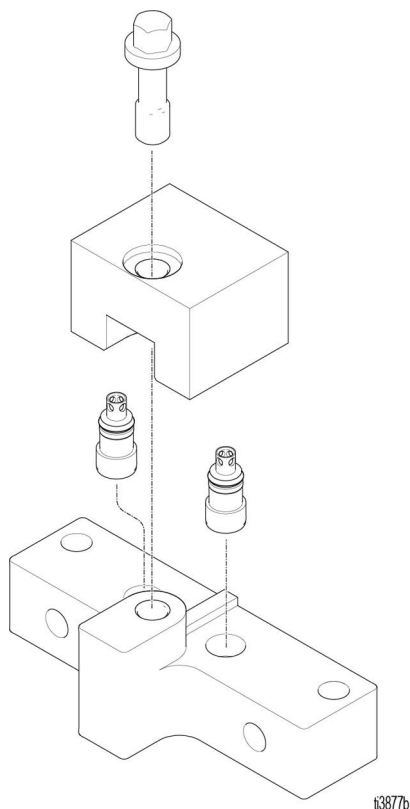
Designed to fit CeramTip™ internal dome and flat tip slits.



## 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

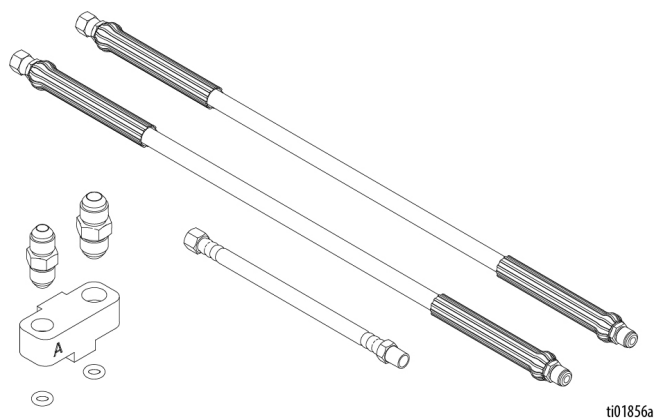
**2002360**

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

Fusion FX Spray Gun		
	US	Metric
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 44.	
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
Wetted Parts		
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	
Noise		
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)	
Sound power measured per ISO-9416-2.		
Notes		
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	FX60RD	FX70RD
80 (0.56, 5.6)	2.33 (0.066)	2.96 (0.084)	3.17 (0.090)	3.38 (0.096)	3.60 (0.102)	3.81 (0.108)	4.02 (0.114)	4.23 (0.120)	4.65 (0.132)
100 (0.7, 7)	3.03 (0.086)	3.72 (0.105)	3.96 (0.112)	4.42 (0.125)	4.66 (0.132)	5.12 (0.145)	5.59 (0.158)	5.82 (0.165)	6.29 (0.178)
130 (0.9, 9)	3.92 (0.111)	4.71 (0.133)	4.97 (0.141)	5.23 (0.148)	5.75 (0.163)	6.27 (0.178)	6.80 (0.192)	7.32 (0.207)	8.11 (0.229)

## 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.

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# 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

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