



PUSMAK[®]



SPRAY GUN

User Manual

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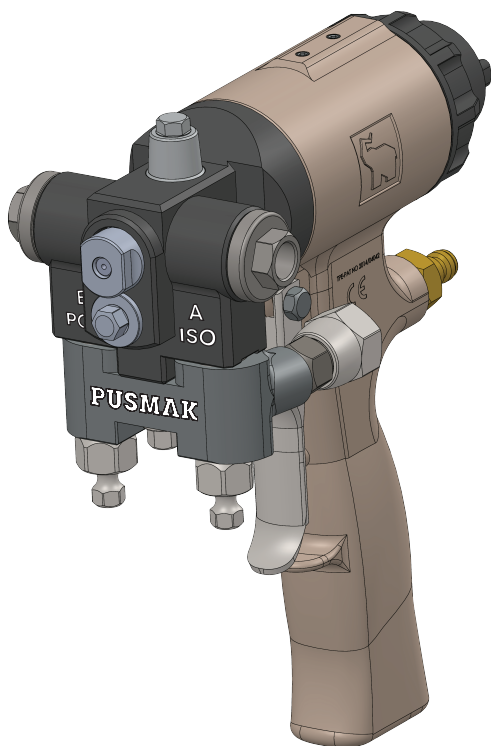


Figure 1: General view

SP2 SPRAY GUN

Please read all the instructions on this User's Manual before starting to use the gun. All the instructions on this manual is prepared to prevent the probable accidents and errors because of misuse.

Please keep this manual in case you may need in future.

Warnings

The following warnings are for the installation, use, maintenance, and repair of this equipment. The exclamation point symbol provides a general warning, while the hazard symbol indicates a procedure-specific risk. Refer back to these warnings. Additional product-specific warnings may appear throughout this manual, where appropriate.

TOXIC FLUID OR FUMES HAZARD



- Toxic liquids or fumes can cause respiratory irritation, permanent health problems, or death if splashed in the eyes or on skin or inhaled.
- Read MSDSs to learn the specific hazards of the liquids you use.



- Store hazardous liquids in properly manufactured containers and dispose of them according to applicable regulations.
- Always wear protective gloves during application and when cleaning equipment.

PERSONAL PROTECTIVE EQUIPMENT



Appropriate protective equipment is required to protect against serious health risks such as eye injuries, inhalation of toxic fumes, burns, and hearing loss during gun operation, maintenance, or application in the work area where the equipment is located.

- Recommended protective equipment includes (but is not limited to):
- Protective eyewear,
- Protective clothing and respirator recommended by the fluid and solvent manufacturer,
- Protective gloves,
- Hearing protection (earplugs or earmuffs).

SKIN DAMAGE RISK



High-pressure fluid from gun, hose leaks, or ruptured components can puncture skin or cause serious injury. If the material comes into contact with your skin, do not hesitate to seek medical attention for treatment.



- Do not direct the gun at anyone or any part of your body.
- Do not place your hand over the spray tip.
- Do not attempt to stop leaks with your hand, body, glove, or cloth.
- After spraying, turn off the material valves and air supply.



- When you stop spraying and before performing maintenance, follow the Pressure Relief Procedure in this manual.

BURN HAZARD



Equipment surfaces and the raw material fluids used during handling can reach high temperatures. To avoid serious burns, do not touch hot equipment or fluids. Allow equipment and fluids to cool completely before performing any work.

EQUIPMENT MISUSE HAZARD



- Improper use can cause death or serious injury. Follow these safety instructions:
- Do not operate your unit while fatigued or under the influence of drugs or alcohol.
- Never exceed the rated maximum working pressure or maximum temperature of the weakest component of the system. See the Technical Data section of all equipment manuals for details.
- Use fluids and solvents compatible with the equipment. Read the fluid and solvent manufacturer's warnings. Ask your distributor for a complete material information MSDS (Safety Data Sheet).
- Inspect the equipment daily. Repair or replace worn or damaged parts only with original manufacturer spare parts.
- Do not modify or alter the equipment. Use the equipment only for its intended purpose; if in doubt, ask your distributor.
- Keep hoses and cords away from sharp edges, moving parts, and hot surfaces. Do not use hoses to pull equipment, and do not excessively bend hoses.
- Keep children and animals away from the work area.
- Comply with all applicable safety and occupational health regulations.

CHEMICAL REACTION HAZARD WITH ALUMINUM



Do not use trichloroethane, methylene chloride, other halogenated hydrocarbon solutions, or fluids containing these solvents in pressurized aluminum equipment. This can cause serious chemical reactions, equipment rupture, death, serious injury, and property damage.

FIRE AND EXPLOSION HAZARD



Flammable gases, such as solvent and paint fumes, in the work area can ignite or explode. To prevent ignition and explosion, follow these safety precautions:



- Use equipment only in a well-ventilated area.
- Eliminate all ignition sources: Keep items such as cigarettes, portable electric lamps, spark-producing ignition devices, and plastic sheets that can generate static electricity away from the work area.
- Keep the work area clear of solvents, gasoline, and other flammable debris.
- Do not plug or unplug power cords or turn power or light switches on and off when flammable fumes are present.
- Properly ground equipment and work surfaces.
- Use only grounded hoses.
- When cleaning a gun for maintenance, ensure that no material residue can escape from the cleaned bucket.
- Stop the operation immediately if you see static sparks or feel a shock. Do not use the equipment until you have identified and corrected the problem.
- Keep a working fire extinguisher in the work area.

Isocyanate Hazard



Spraying materials containing isocyanates can create harmful mists, vapors, and atomized particles. Exposure to these substances can cause respiratory irritation, skin and eye damage, or long-term health problems.

- For safe work, follow these precautions:
- Carefully read the material manufacturer's warnings and the Material Safety Data Sheet (MSDS) to learn the specific hazards and precautions associated with isocyanates.
- Ensure adequate ventilation in the work area to prevent inhalation of isocyanate mists, vapors, and atomized particles.
- In cases where ventilation is inadequate, everyone in the work area must wear a suitable respirator.

To prevent contact with isocyanates, everyone in the work area must wear the following personal protective equipment (PPE):

- Chemical-impermeable gloves,
- Protective boots,
- Chemical protective apron,
- Protective goggles, or face shield.

Material Self-Ignition



Some materials may spontaneously ignite if applied too heavily. Read material manufacturer's warnings and material MSDS.

Moisture Sensitivity of Isocyanates

Isocyanates (ISO) are catalysts used in two-component foam and polyurea coatings. ISO reacts with moisture to form small, hard, abrasive crystals that remain suspended in the liquid. As a result, a layer forms on the surface, increasing the isocyanate's viscosity. Isocyanate in contact with moisture will gradually reduce performance and lifespan, both on the surface and within the machine.

NOTE

Humidity and temperature play an important role in the interaction of Isocyanate and Polyol.

Preventing Exposure of Isocyanate to Moisture

- Ensure that desiccant equipment is connected to the isocyanate drum. Store the isocyanate in a sealed drum (or tank) that prevents moisture and air from entering inside.
- Use the moisture-resistant hoses specifically designed for isocyanate that come with the machine kit.
- Do not use solvents that may contain moisture. Always keep solvent containers closed when not in use.
- Always keep the transfer pump valves closed when the machine is off and not in use.
- Always lubricate the parts connected to isocyanate and polyol with grease when reassembling.

Keep Components A and B Separate

Do not combine, relocate, or allow any parts, equipment, screws, or fasteners that have been exposed to any of the ISO and Polyol substances. Doing so may result in loss of performance or malfunction of these parts. Damage to other related parts may also occur. Parts related to ISO and Polyol are marked, labeled, or labeled as A (ISO) B (POLYOL). Clean parts A and B in separate containers and with separate solvents. Never reuse solvent used on one side of the other.

Foam Resins with 245 fa Spraying Agents

Some gases can foam at temperatures above 90°F (33°C) when not under pressure, especially when agitated. To reduce foaming, you can reduce preheating by using a recirculation system.

Raw Material Substitution

Changing the material types used in your equipment requires special care to prevent equipment damage and downtime.

- When changing materials, ensure the equipment is thoroughly cleaned by repeatedly cleaning it.
- Always clean the fluid inlet filters after cleaning.
- Consult your material manufacturer for chemical compatibility.
- When switching between polyureas or polyurethanes, remove and clean all fluid components and replace hoses. Some raw material brands contain amines on the A (hardener) side, while others have amines on the B (resin) side.

INTRODUCTION

Before you run any Pusmak product read all the instructions and follow these instructions carefully.

WARNING

The information in this document is provided solely to illustrate the components and their normal operating relationships.

This manual provides information on the installation, operation, maintenance, and service of this Pusmak product used in a typical configuration. While standard specifications and procedures are listed, some deviations may occur.

We continually improve our products to provide our users with the most up-to-date technology possible. If a technological change occurs after a product's release, we will implement that technology in future production and make it available to existing users as a replacement, update, or supplement. If you find a discrepancy between your unit and the existing documentation, please contact Pusmak Makina to resolve the discrepancy.

Careful review and continued use of this manual will enhance your understanding of the equipment and processes, resulting in more efficient operation, longer-lasting trouble-free service, and faster troubleshooting.

Pistol Working Principle

The trigger, on the gun handle, activates a small valve that controls the airflow to the piston assembly. When the trigger is pulled, air flows through the valve to the front of the piston. Air pressure pushes the piston toward the rear of the gun and simultaneously shuts off the purge air. The mixing head integrates the raw material flow path — check valve, side cartridge, and mixing chamber — into a single system to ensure proper mixing of the raw materials.

Next, the two fluids (isocyanate and polyol) flow into the mixing chamber through the saddle valves, check-valve assemblies, and side cartridges. After the two liquids come into contact, they exit the mixing chamber through the spray module as a swirling, vertically oriented conical jet.

When the trigger is released, the mixing chamber returns to its original position and air begins to flow through the mixing chamber. The O-ring on the

spray-tip cap seals the air passage inside the cylinder, forcing all air through the holes in the mixing chamber and providing a continuous purge.

This air continues to flow through the mixing head until the gun trigger is pulled; when the trigger is pulled, the air is expelled through the discharge port.

Piston Lock

Engage the piston lock when you stop spraying.

To engage the piston lock, push the button inward and turn it clockwise. While the piston lock is engaged, the gun will not operate; that is, spraying cannot be performed.

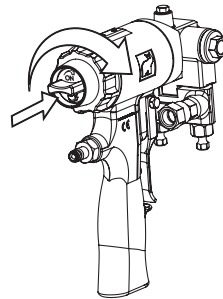


Figure 2: Closing the safety lock

To release the piston lock, push the button inward and turn it counterclockwise until it pops out. There will be a gap between the button and the gun body.

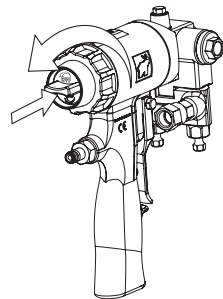


Figure 3: Unlocking the safety lock

If there is no air pressure in the gun, spraying will continue until air pressure reaches the gun. To shut off the gun, do one of the following:

- * Push the piston lock and turn it clockwise.
- * Close the ball valves.
- * Close the saddle valves.

Spray Gun Connections

The air hose has a quick-release air connector of 1/4 NPT.

After installing the fittings, refer to the system operating instructions.

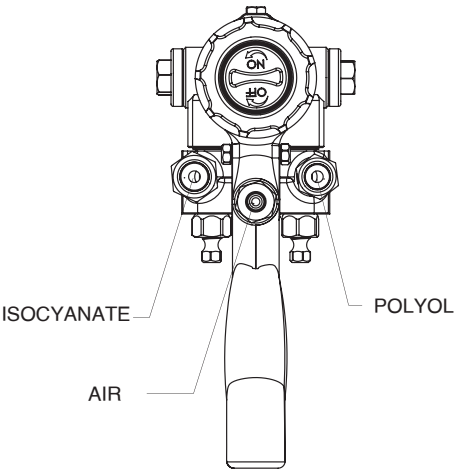


Figure 4: Connection points

The figure shows the isocyanate, polyol and air inlet locations.

WARNING

Do not point the gun at any part of the body. Do not point the gun spray tip at any exposed body part or anyone while the gun ball valve and safety valve are open. Due to the hazardous substances used in this equipment, it is mandatory for the operator to use an air respirator, goggles, protective clothing, and other safety equipment required by current regulations, chemical supplier recommendations, and laws to protect their health.

Operating Requirements

Max. Machine Output Working Pressure
Psi (Bar; MPa): 3481 (240; 24)

Gun Pressure
Psi (Bar; MPa) : 87-116 (6 - 8; 0,6 - 0,8)

Max. Fluid Temperature
(°F, °C): 190, 88

WARNING

When spraying with the gun, make sure the piston lock is in the unlocked position. When spraying is finished, make sure it is in the closed position.

Spray Technique

Always operate safely and follow all safety procedures outlined.

To achieve the optimum spray pattern for each application, the appropriate mixing chambers are available in several sizes.

The standard mixing chamber supplied with your gun pack will be adequate for most of the applications.

Foam rising and hardening time varies depending on the material and surface temperature. Higher material or surface temperature will increase rising and hardening times. Low material temperature or high surface temperature reduces formation and hardening times. Consult your chemical manufacturer's technical data sheets for recommended spray temperatures. In most cases, both components will be used at the same temperatures.

Different pressure and temperature values are available to reduce the formation time of the material. For hose lengths greater than 15 meters or when the material viscosity is high, the hydraulic pump pressure setting can be changed.

The gun air valve should be opened prior to spraying and purge the air mixing chamber when the trigger is released.

When spraying, the gun trigger may be kept pressed continuously, or triggered at the end of each stroke. A smooth and even layer can be achieved by moving the gun back and forth in a slow motion. Do not spray on rising foam. The appropriate gun-surface distance is approximately 45 to 60 cm. Be careful to hold the gun directly and perpendicular to the surface to be sprayed. Spraying at an angle that is not perpendicular to the surface will cause the foam to be rough and uneven.

SP2 Spray Gun Specifications

Maximum Fluid Working Pressure
240 bar, 24 MPa

Minimum Air Inlet Pressure
6 bar, 0.6 MPa

Maximum Air Inlet Pressure
8 bar, 0.8 MPa

Maximum Fluid Temperature
88°C

Air Inlet Size
1/4 npt

A Component (ISO) Inlet Size
-5 JIC; 1/2-20 UNF

B Component (Resin) Inlet Size
-6 JIC; 9/16-18 UNF

Dimensions
170 x 200 x 8,5 mm

Weight
1,05 kg

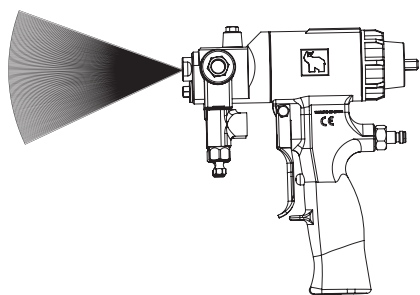


Figure 5: Representative spray image

General Information

Exploded View of the Gun

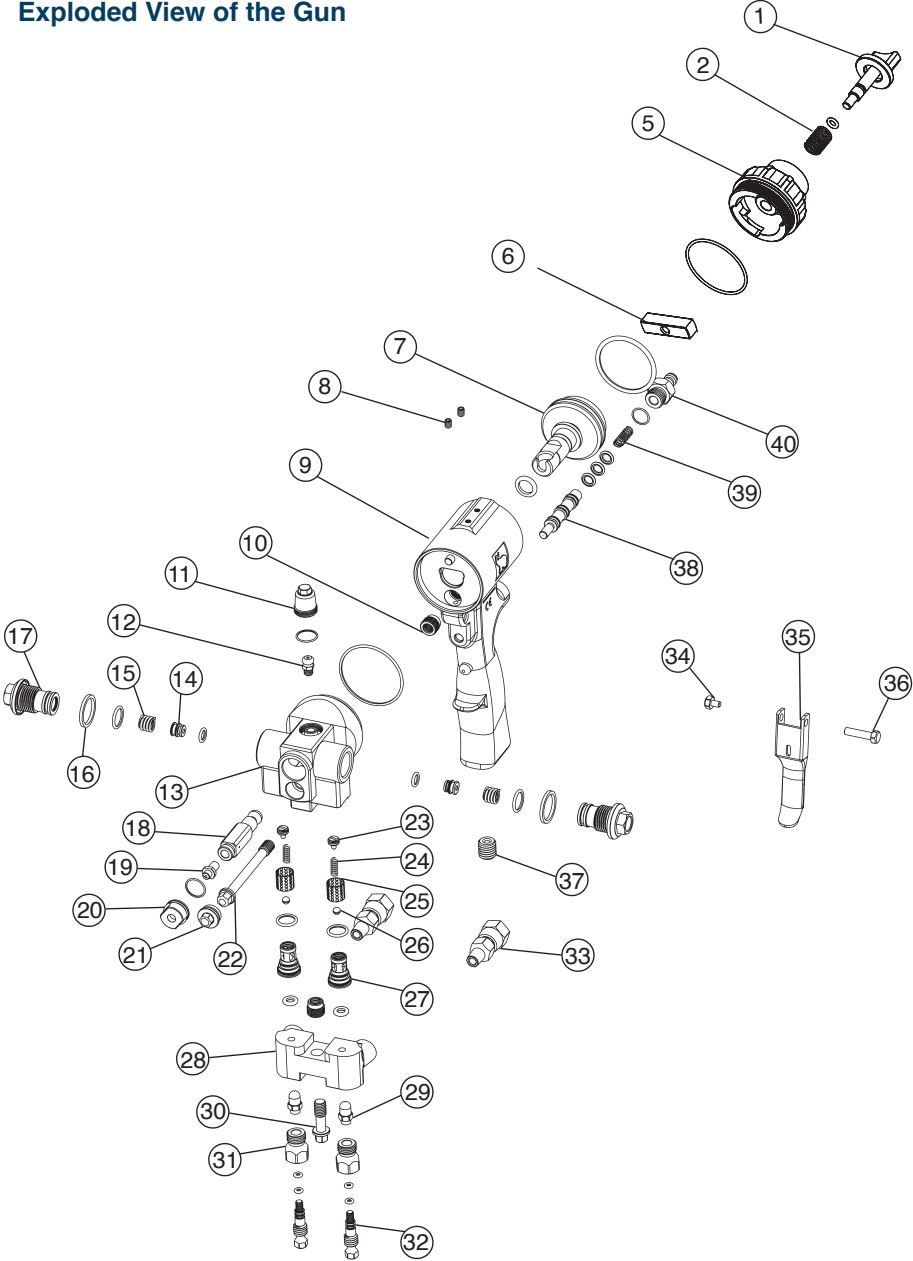


Figure 6: Exploded view of the gun

SP2 SPRAY GUN PARTS

SP2 PART NUMBERS	PART NAMES	PIECES
1	ON-OFF LOCK	1
2	LOCK STRING	1
5	GUN GRIP BACK CAP	1
6	LOCK PLATE	1
7	AIR PISTON	1
8	GUN GRIP SET SCREW	2
9	GUN GRIP	1
10	IMBUS BOLT	1
11	GREASE CAP	1
12	GREASE NIPPLE	1
13	GUN HEAD	1
14	CARTRIDGE	2
15	CARTRIDGE STRING	2
16	TEFLON SEAL	2
17	CARTRIDGE BOLT	2
18	NOZZLE (MIXING CHAMBER)	2
19	NOZZLE NIPPLE	1
20	NOZZLE CAP	1
21	GUN HEAD FIXING NUT	1
22	GUN HEAD FIXING BOLT	1
23	CHECK VALVE BOLT	2
24	CHECK VALVE STRING	2
25	CHECK VALVE FILTER	2
26	CHECK VALVE BALL	2
27	CHECK VALVE BODY	2
28	MANIFOLD	1
29	MANIFOLD VALVE TIP	2
30	MANIFOLD BOLT	1
31	MANIFOLD VALVE NUTS	2

SP2 SPRAY GUN PARTS

SP2 PART NUMBERS	PART NAMES	PIECES
32	MANIFOLD VALVE BOLT	2
33	RAW MATERIAL INPUT NIPPLE	2
34	TRIGGER BOLT NUTS	1
35	TRIGGER	1
36	TRIGGER BOLT	1
37	GUN GRIP BOTTOM STOPPER	1
38	TRIGGER SHAFT	1
39	TRIGGER STRING	1
40	AIR JACK	1

Table 1: Gun part codes

The Exploded View of SP2 O-Rings

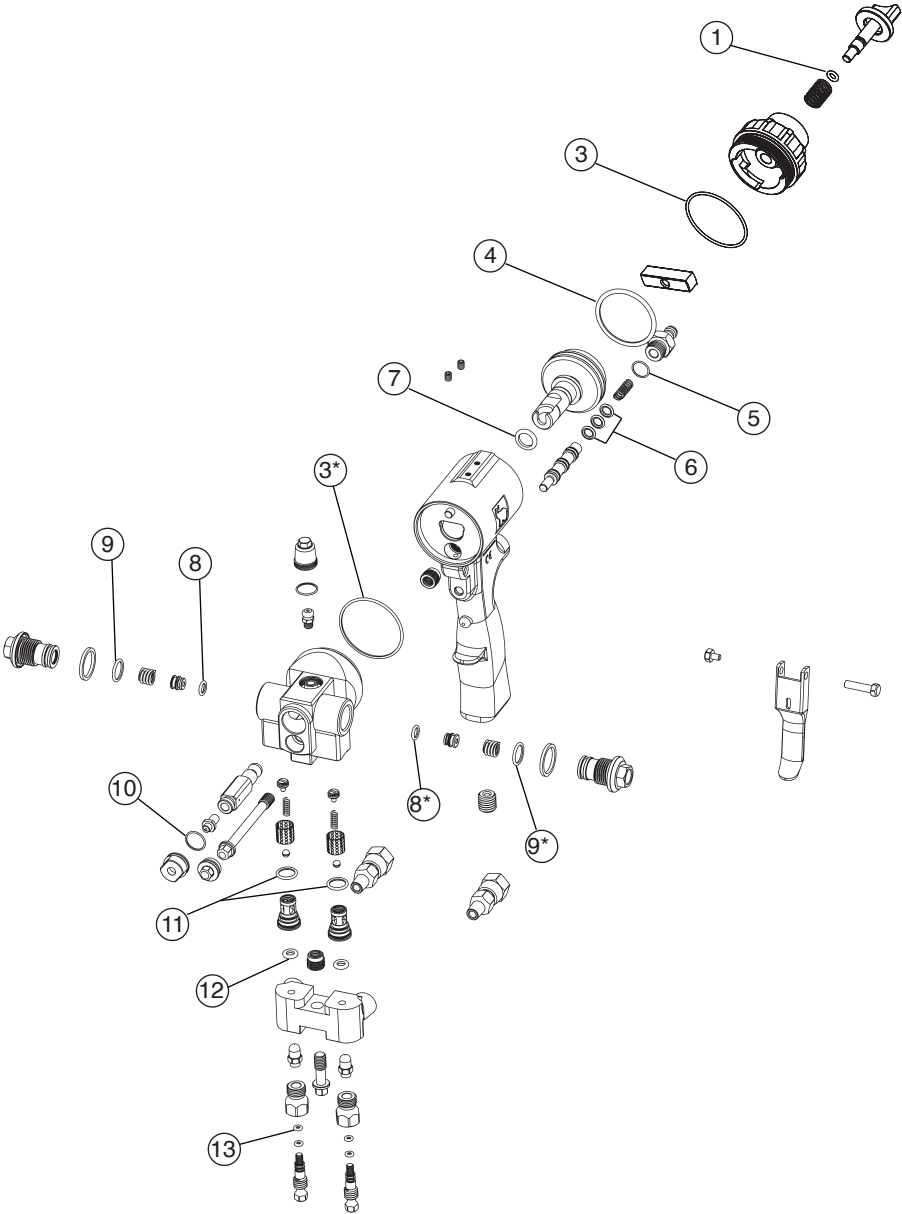


Figure 7: Technical representation of gun o-rings

CODES OF GUN O-RINGS

O-RING NUMBER	O-RING NAMES	PIECE
1	SAFETY LOCK	1
3	BACK COVER & MIXING CHAMBER	2
4	PISTON BACK	1
5	AIR CONNECTON FITTING	1
6	TRIGGER SHAFT	1
7	PISTON FRONT	1
8	CARTRIDGE CORE	2
9	CARTRIDGE BOLT	2
10	NOZZLE CAP	1
11	CHECK VALVE TOP	2
12	CHECK VALVE BOTTOM	2
13	MANIFOLD VALVE	4

Table 2: Gun o-ring table

Maintenance of the Gun

Before performing any maintenance on the gun after application, shut off all fluid and air pressure! Take all safety precautions.

Before starting maintenance:

- Close the saddle valves.
- Trigger the gun until all fluid pressures are reduced, or reduce the pressure in the system in the purge position. This will relieve the trigger and the reactor, placing it in the free position.
- Close the air valve coming from the air source to the gun.
- Trigger the gun until all air pressure is removed from the gun.

Maintenance Phases Of The Gun

After each application, the spray gun must be maintained. Otherwise the gun clogging and freezing may occur when fluid is not maintained from the input channels. This may shorten the lifespan of the gun. Gun maintenance our procedure is as follows.

First, turn the gun's safety lock to the off position after each application is completed. The air coming into the gun must remain open for approximately 1 minute. Thus, the raw material residues inside the gun are cleaned by this air.

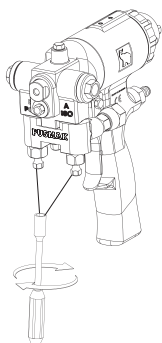


Figure 8: Closing the manifold valves

Close the air valve. Then remove the hoses, along with the manifold.

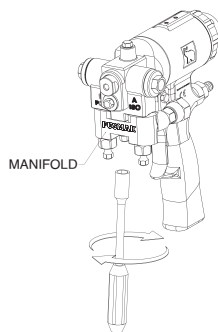


Figure 9: Removing the gun from the manifold

The part of the mixture to be cleared after the end of each application is the gun head, because raw material mixture takes place in this part of the gun.

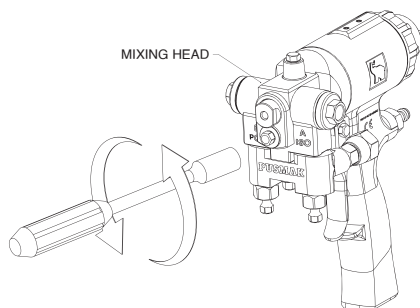


Figure 10: Removing the mixing head

The disassembled mixing head is shown in Figure 10. After removing these parts from the mixing head, they should be washed and cleaned with DMF chemical cleaner.

The nozzle, one of the mixing head components, should be given special attention to cleaning. The nozzle holes where the mixture is delivered should be cleaned with the drill bit provided in the gun box.

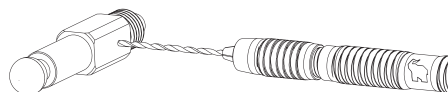


Figure 11: Cleaning the nozzle side holes

The A (isocyanate) and B (polyol) mixing holes of the nozzle are designed to have a difference between the hole centers to provide a homogeneous mixture.

WARNING

While cleaning the nozzle-side holes, do not insert the drill from one side and remove it from the other. The misalignment of the holes can cause the drill bit to break. This can damage the nozzle or the drill itself, rendering it unusable.

While maintaining the nozzle and cartridge, their working surfaces should not be cleaned with sandpaper or a hard object.

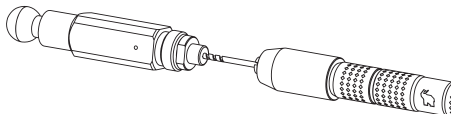


Figure 12: Cleaning the nozzle center hole

- These maintenance must be done after each job to ensure that the gun can be used for a longer time.
- After the end of each application the o-rings need to be replaced on the gun.
- The assembly of the mixture head is shown in Figure 12.

WARNING

Because the gun has an air-purging feature, the working parts must be lubricated at regular intervals. The grease fitting shown in Figure 13 can be used for lubrication.

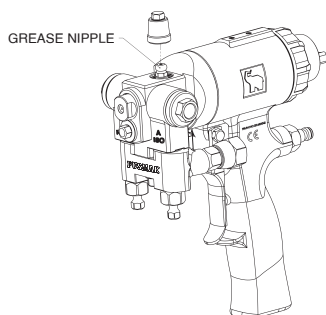


Figure 13: Grease fitting

Common Errors and How to Prevent Them

1. If there are pressure imbalances in the system, this imbalance must be corrected, otherwise, the gun will skip (blockage). In this case, foam will form in the gun.

2. The gun will skip due to the lack of either component. There are various reasons for the gun skipping:

- This can be caused by one of the drums being depleted while the other is not. Check the drums periodically.
- If one of the raw materials is not being delivered. Ensure that the raw materials are being delivered properly.
- If the filter is clogged. Clean the machine's filters regularly.
- If one of the discharge valves is open and the other is closed. Do not start working without ensuring that the discharge valves are in the spray position.

3. The gun operates with an air supply. When we press the gun trigger, the gun sprays. When we release the trigger, the gun's air system is activated. This air system forces air into the system after the gun sprays, clearing the gun channels of raw materials. When this air supply is not functioning, the raw materials inside the gun will cause foam formation, which will cause the gun to clog.

4. Ensure the safety lock is on or off.

Thank You
For Choosing Us.



trust this
power

