UDDER GUN™

Manual

US Patent No. 9,072,274
Other Patents Pending

UG19B-MAN-EN

Table of Contents

Safety

Anyone operating, maintaining, or servicing this system should read and understand this manual completely. Westar LLC will not be liable for damages or injuries caused by the use or misuse of the system.

The Udder Gun should only be used for it's intended purpose and should be operated, maintained, and serviced properly by trained personnel for safety concerns and maximum working efficiency.

Always wear safety glasses and proper personal protective equipment when operating, performing maintenance, or servicing the Udder Gun System.

Do not run the gun onto a teat if the gun has worn out, broken, or completely missing teat belts, teat damage will occur.

Teat damage could occur if the gun is left running on a cow's teat longer than 3 seconds wet, or 2 seconds dry. Periodically check that an adequate amount of water/chemical is being sprayed onto the teat belts.

Do not operate the system without covers and guards secured in place.

Remove both air and water pressure before maintaining or servicing system.

Pre-dip should include emollients for lubrication, do not run water only or damage to teat may occur

CAUTION Do not ingest, inhale, or get chemical in your eyes or on your skin. If this happens, clean or wash off immediately, and follow your safety warnings on your chemical's MSDS sheets. Westar is not liable for damages or injuries caused by third party chemicals.

CAUTION Wear appropriate clothing for the working environment to prevent loose articles of clothing from getting entangled in the gun or damaged.

CAUTION Do not have, carry, or wear any loose items which can become entangled or broken: i.e. watches, necklaces, bracelets, rings, cellphone, wallet, keys, long hair, baggy sleeves etc.

CAUTION The Udder Gun is for cleaning a cow's teat only. Do not stick foreign objects into Udder Gun, such as fingers, hands, hair, or other items.

CAUTION Operators should be aware that cows may kick while using the Udder Gun, damage to the gun or personal injury may occur if not used properly.

CAUTION The Udder Gun System should be inspected for proper working condition before and during use.

CAUTION Properly install and maintain system hosing at all times to minimize tripping or entanglement hazards.

CAUTION Properly train operators to obtain your desired level of cleaning, sanitizing, and stimulation.

CAUTION Do not set guns down where cows or people walk. If operators are not using the gun, it should be placed in the flush holsters.

CAUTION Do not use the Udder Gun to prod cows or their legs.

Introduction

Congratulations on your purchase of the Udder Gun System. To realize the full benefits of the Udder Gun, we encourage all people that will be operating, maintaining, and servicing this system to read this manual. Please visit our support page on our website www.uddergun.com. The support page has additional information, pictures and videos to aid you in the use of your Udder Gun.

What it does

The Udder Gun System improves your milking efficiency by maximizing let down and shortening milking times. It allows your cows to be cleaned, prepped, and milked faster with it's specifically designed elastomer teat belts, which mimic a calf's natural suckling action, only much faster.

How it works

There are four main parts to the Udder Gun System: Prep Station, Primary hoses, Udder Guns, and Flush stations.

The Prep Station uses incoming water pressure to mechanically mix water and pre-dip chemical to a desired ratio. It also regulates the incoming compressed air that powers the system. It is usually mounted in a utility room near the parlor.

The Primary Hoses are used to deliver the pre-dip solution and air supply to the guns, from the prep station to the parlor.

The Udder Guns connect to the primary hoses and are the handheld devices that clean and stimulate the cows teats. The guns have air motors that use air pressure to power the teat belts. A two stage trigger activates both the air and the pre-dip solution spray.

The Flush Holsters are mounted in the parlor and are used to holster the Udder Guns, and flush with fresh water when not being used. DO NOT submerge the gun in a bucket of water.

Compatible pre-dip chemicals

WARNING Pre-dip should include emollients for lubrication, do no run water only or damage to teat may occur

- Iodine
- Lactic Acid
- Hexidine
- Peroxide

CAUTION Do NOT use with strong oxidizing chemicals such as:

- Hypochlorous Acid
- Sodium Hypochlorite
- Any other chemical that damages stainless steel

What's Included in a System

2 Gun System

- (1x) Prep Station
- (2x) Udder Guns with 33' gun hose
- (2x) Flush holsters w/ mounting hardware
- (1x) 50' Primary hose assembly
- (2x) 25' Primary hose assemblies

1 Gun System

- (1x) Prep Station
- (1x) Udder Gun with 33' gun hose
- (1x) Flush holster w/ mounting hardware
- (1x) 50' Primary hose assembly
- (1x) 25' Primary hose assemblies

2 Gun System Components

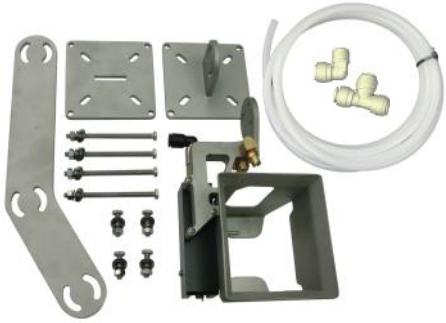
Prep Station

Udder Gun w/gun hose

Udder Gun w/gun hose

50' Primary hose assembly

25' Primary hose assembly (2x)



Flush holster w/ mounting hardware (2x)

Installation Planning

CAUTION Only knowledgeable, skilled personnel should perform the installation of the Udder Gun System.

Plan Your Installation First

The four categories are:

1. Prep Station Location
2. Primary Hose Routing
3. Gun Zone and Connection Point
4. Flush Holster Location

Prep Station

1. Prep Station Location

- Requires ample wall space for the unit to have daily access.
  - 8” around all sides and 4' above floor is suggested.
- Must never freeze.
- Requires floor space nearby for a pre-dip chemical barrel.
  - chemical suction hose is only 6' long and needs to reach the bottom of the barrel.
- Must consider primary hose routing.
  - Primary hoses need to reach from the prep station to the parlor.
  - See Primary Hose Routing
- Must have dry compressed air supply, 90-100 psi at 16 cfm, ideally nearby.
- Must have fresh water supply, 35-60 psi at 50°-100° F, ideally nearby.
  - Do not need water if you are going to run RTU (ready to use) chemical.
- Should be close to a floor drain or bucket for periodic chemical priming.


50’ Primary Hose

2. Primary Hose Routing

- See Sample Primary Hose Layouts (Page 9)
- Must never freeze.
- Must not be kinked or walked on.
- Must reach from the prep to the gun connection point.
- Should be routed cleanly, connection points accessible, and tied or supported every 5’.

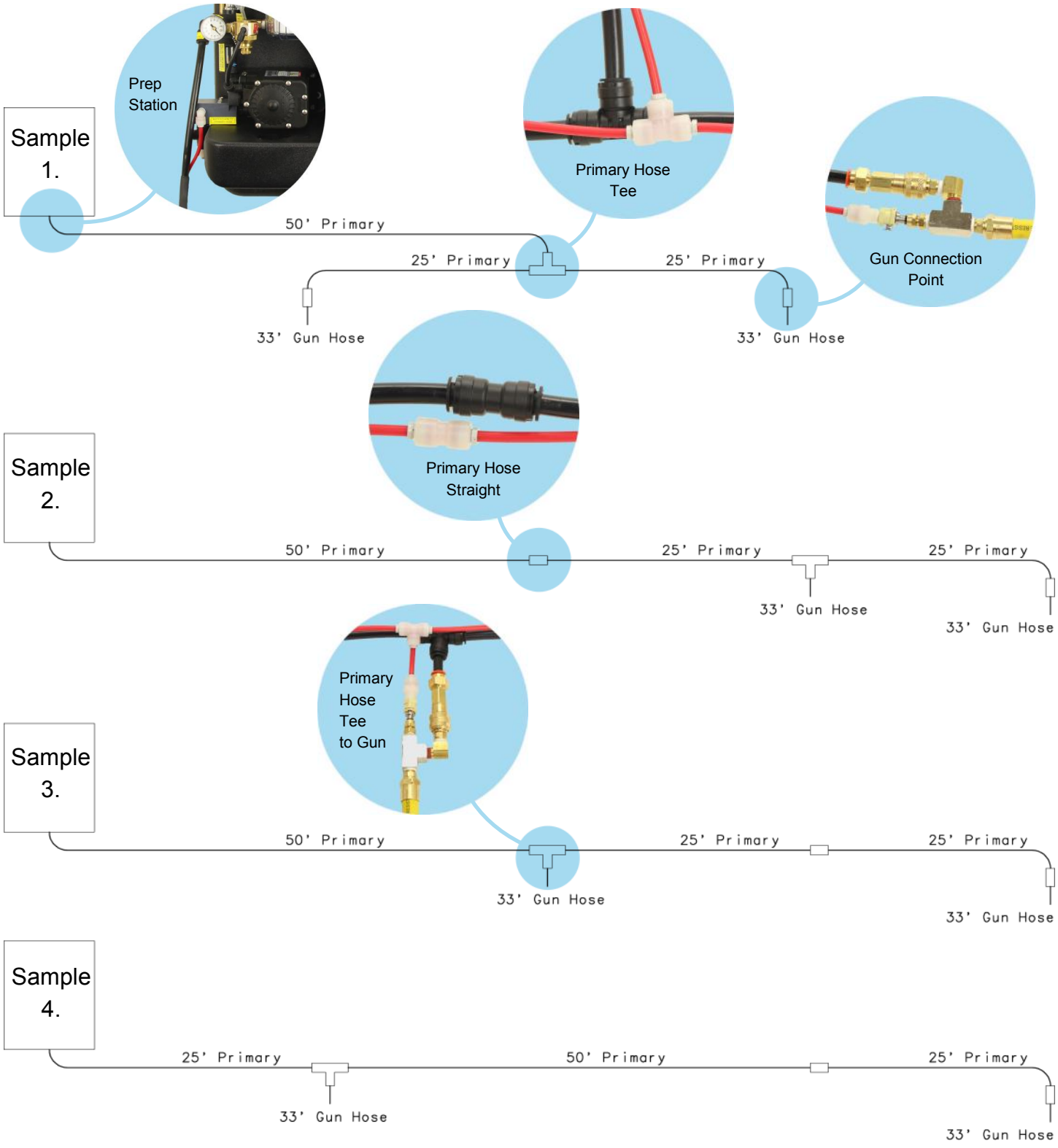

25’ Primary Hose

Sample Primary Hose Layouts

Included in 2 Gun System | 1x - 50’ Primary Hose
2x - 25’ Primary Hose

All primary hoses consist of two tubes.

- The larger black tube is for air
- The smaller red tube is for pre-dip chemical.

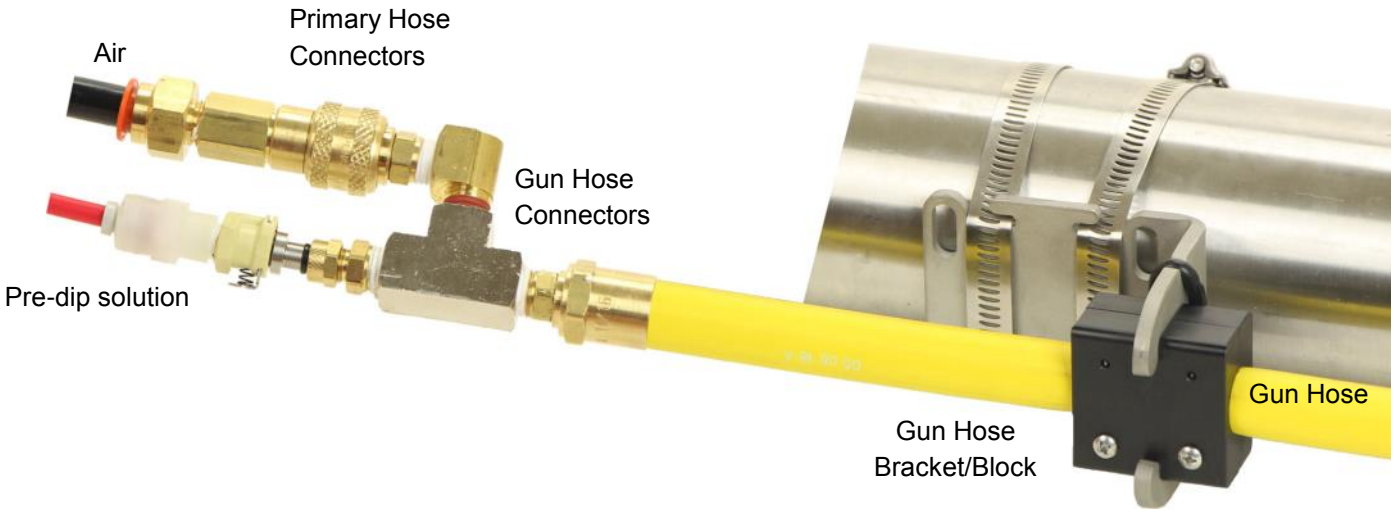


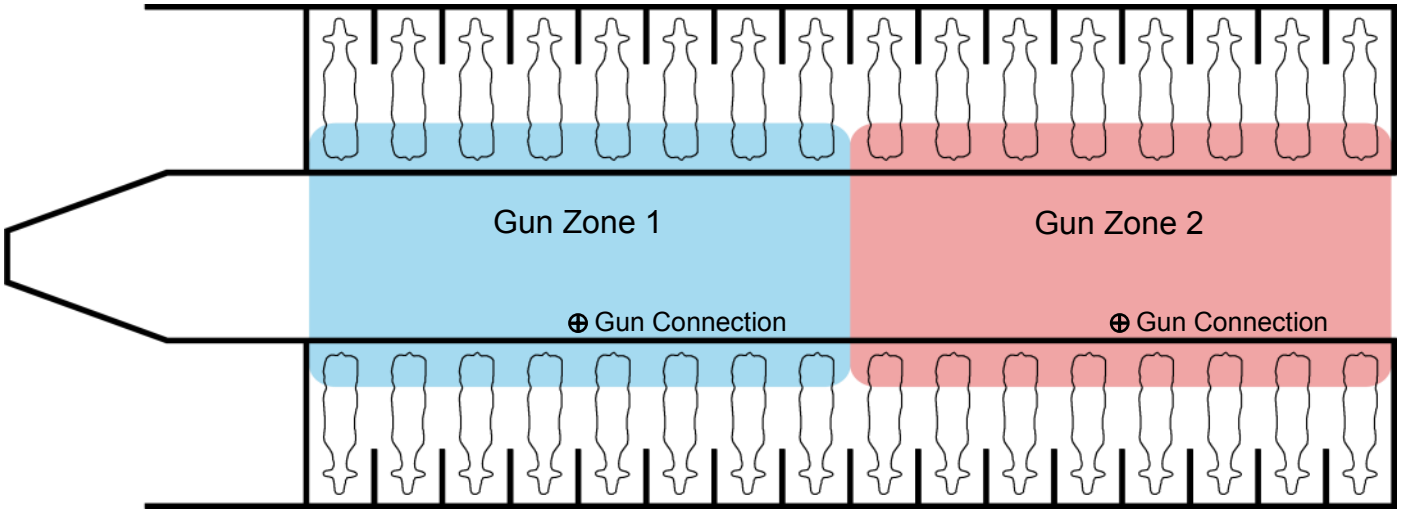
Installation Planning

3. Gun Zone and Connection Point

Udder Gun w/gun hose

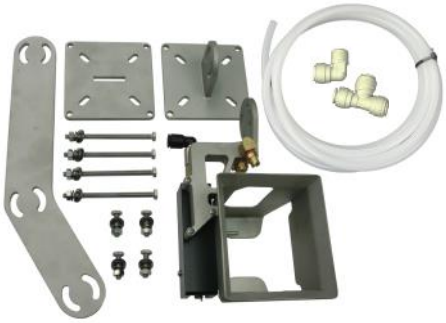
- Must never freeze.
- Must be able to reach desired amount of stalls.
  - 1 gun commonly services 8-12 stalls in length.
  - Gun connection should be in the middle of that gun zone.
  - From connection point, a gun can reach about 28' in either direction.
- Bracket on inlet end of gun hose must get mounted to a rigid surface.



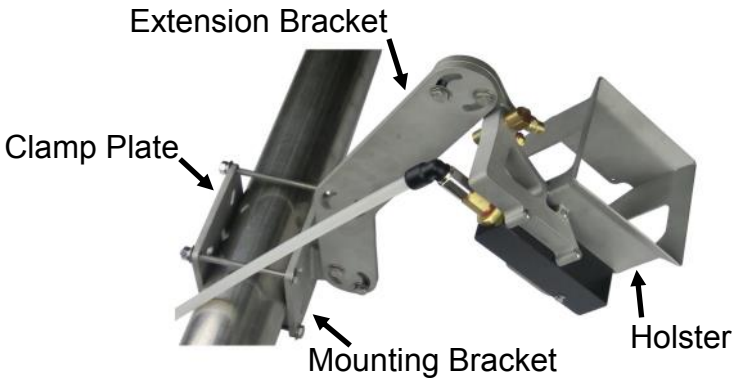


4. Flush Holster Location

- Must have a fresh water supply, 35-60 psi, no chemical or plate cooler water.
- Should be connected to water supply with the provided 1/4” npt fitting and 100’ of tubing.
- Should be mounted near the beginning of a gun's working zone.
- Needs to be easily reached by the gun.
- Should be set at a comfortable height for the operators.
- Should not be in the way of operators normal movement.
- Requires something solid to mount the bracket to.
  - The bracket can be mounted to a pipe with supplied clamp hardware.
  - Can also be bolted to concrete or panels.
  - The bracket is stainless steel and can be welded directly to a panel, pipe, tube, etc.



Flush holster w/ mounting hardware



Installation

Prep Station Installation - For Mixing water and pre-dip chemical

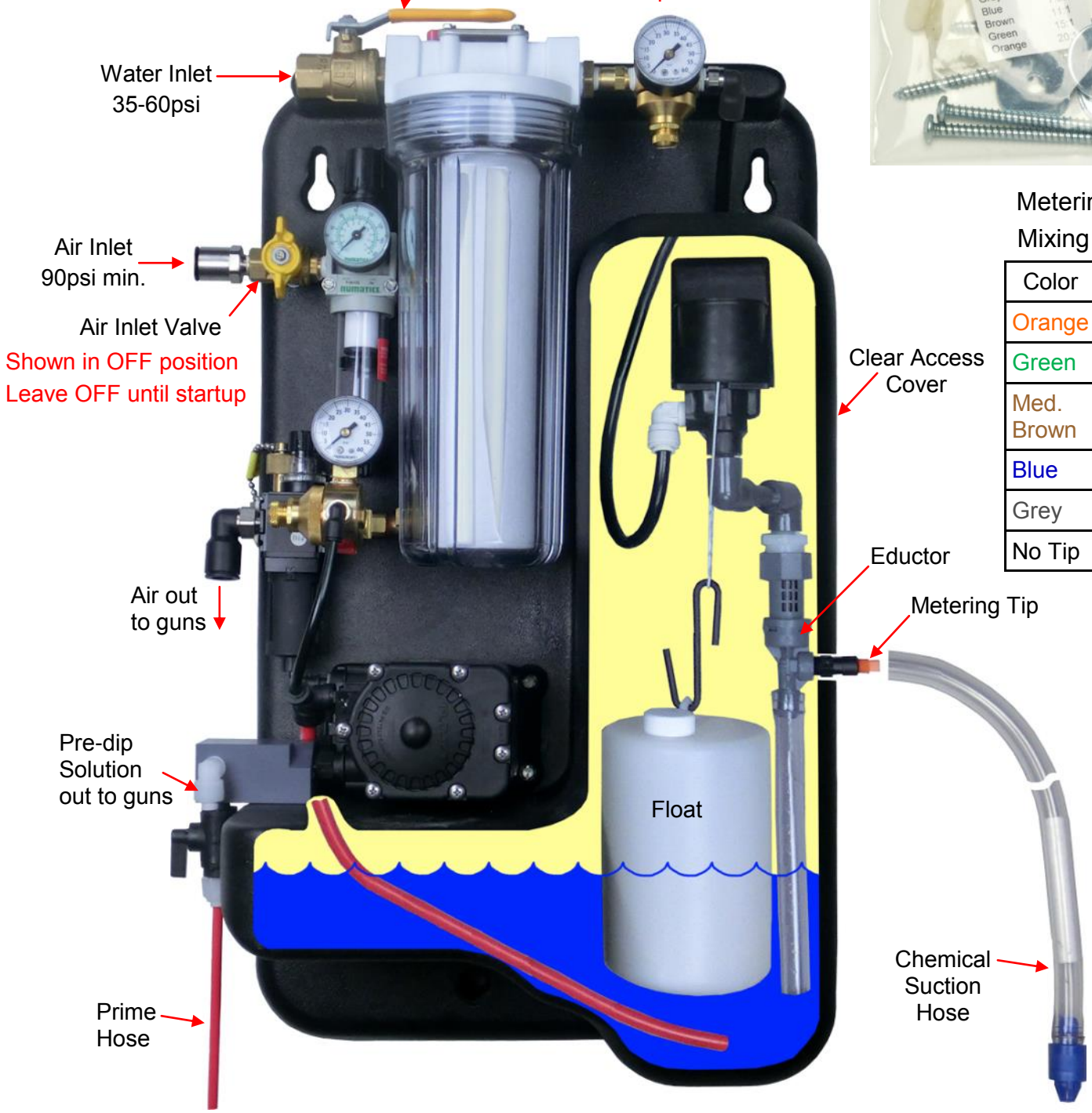
NOTICE Make sure your installation planning is complete before starting to install your system.

Skip to page 14 if you are running RTU (ready to use) chemical.

1. Secure a screw with a washer into one of the upper mount holes on the prep.
2. Level the prep and install the other 2 screws with washers.
3. Make sure the Air and Water Inlet Valves are off until startup procedure.
4. Connect your 35-60 psi water to the Water inlet of the Prep Station.
   - Water inlet is 1/2” npt. Use thread sealant on all threaded joints.
   - Our example shows a 1/2” npt barb fitting to pex tubing which is not included in the system.
5. Connect your 90 psi min. air to the Air Inlet of the Prep Station.
   - Pushlock Air Inlet accepts 1/2” tubing or 3/8” with the use of the included adapter.
     - Or remove the pushlock fitting and add your own 1/4” npt fitting to the air inlet valve.
6. Take off the clear access cover on the right side of the Prep Station.
   - The cover is needed, do not lose the screws that hold it on.
7. Push the gray Eductor to the side and hang the Float on the internal wire hanger.
8. The prep comes with the orange metering tip installed.
   - If necessary, screw the tip out and install the tip that will give you the desired mixture stated on your pre-dip chemical barrel.
   - If the exact mixture cannot be made, use the metering tip with a slightly richer ratio.
9. Install the suction hose with hose clamp. The hose and clamp should be pushed fully past the metering tip, clamping to the black fitting on the eductor.
10. Reinstall clear cover.
11. Insert suction hose into pre-dip barrel all the way to the bottom.

* Leave all valves off until startup

Prep Station



Metering Tip
Mixing Ratio

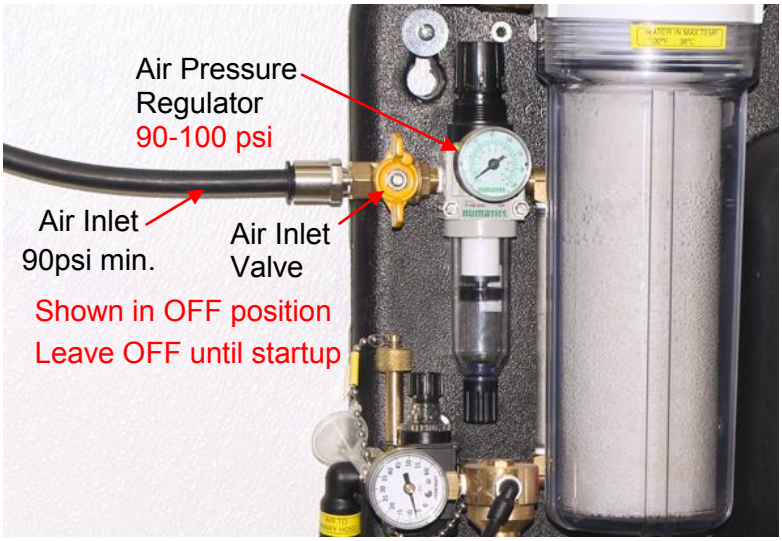
Color	Ratio
Orange	20:1
Green	15:1
Med. Brown	11:1
Blue	7.5:1
Grey	3:1
No Tip	2.5:1

Prep Station Installation - For RTU (ready to use) chemical

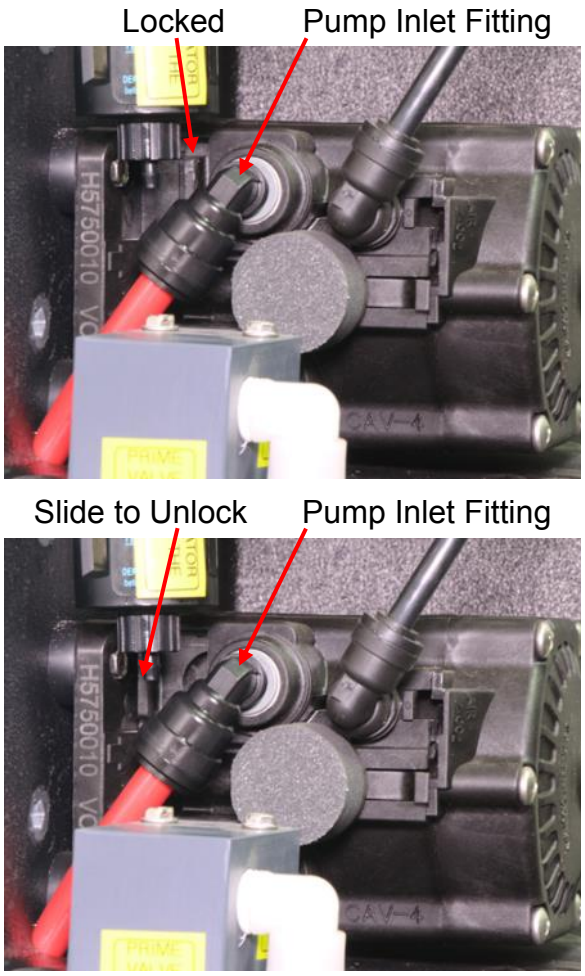
Make sure your installation planning is complete
before starting to install your system.

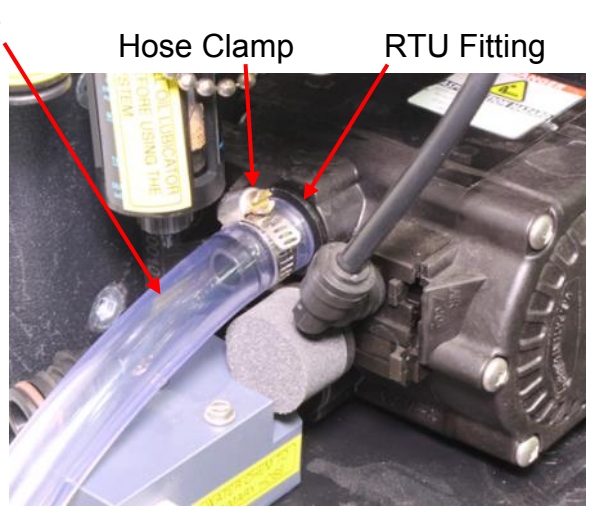
If you are NOT running RTU (ready to use) chemical, do the Prep Station Installation on page 12 and 13. Then skip to page 16.

1. Secure a screw with a washer into one of the upper mount holes on the prep.
2. Level the prep and install the other 2 screws with washers.
3. Make sure the Air Inlet Valve is off until startup procedure.
4. Connect your 90 psi min. air to the Air Inlet of the Prep Station.
   - Pushlock Air Inlet accepts 1/2” tubing or 3/8” with the use of the included adapter.
     - Or remove the pushlock fitting and add your own 1/4” npt fitting to the air inlet valve.



5. Unlock the Pump Inlet Fitting.
   - Slide the Lock fully back and pull out the Pump Inlet Fitting



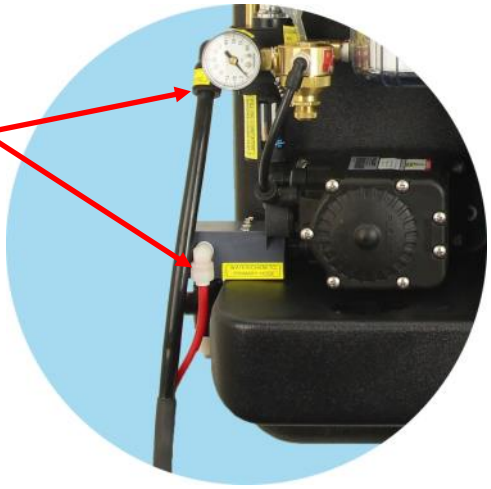


6. Replace the Pump Inlet Fitting with the RTU Fitting.
7. Install the Chemical Suction Hose with Hose Clamp onto the RTU Fitting.
8. Insert the Chemical Suction Hose into pre-dip barrel all the way to the bottom.

* Leave all valves off until startup

Installation

Primary Hose Installation

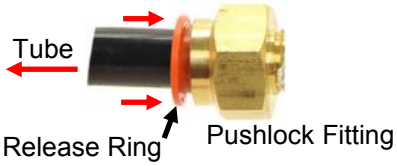


1. Connect the black tube of the Primary Hose to the air outlet and the red tube to the pre-dip solution outlet pushlock fittings on the prep station.
   - The red tube may need to be cut shorter, so install the black tube first, then cut the red tube with a square cut.

How to use a Pushlock fitting

Connect: Push tube into fitting. Light pull test to see that it is locked in.

Release: Push tube and release ring in. Then, while still holding the release ring in, pull the tube out.

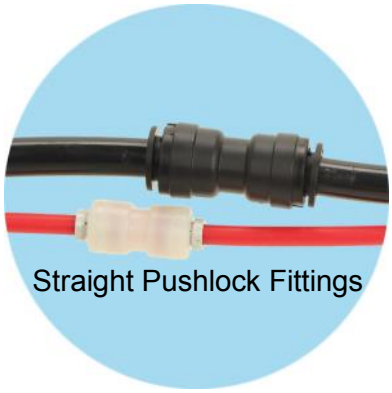


2. Secure the primary hose to wall, pipe, etc., so that it is not pulling on the prep fittings.

3. Fully route the primary hoses to their connection points.
   - Keep the hose caps on while routing so that dirt and debris does not get inside. It is a good idea to tape them on to ensure they don't fall off.
   - Do not kink the hose or bend in a radius smaller than 6”.
   - If you have excess hose, we recommend to coil it neatly by the prep station in case you end up moving components and need the extra length.
   - You should use zip ties or other fasteners to secure the hose, max. 5’ apart.

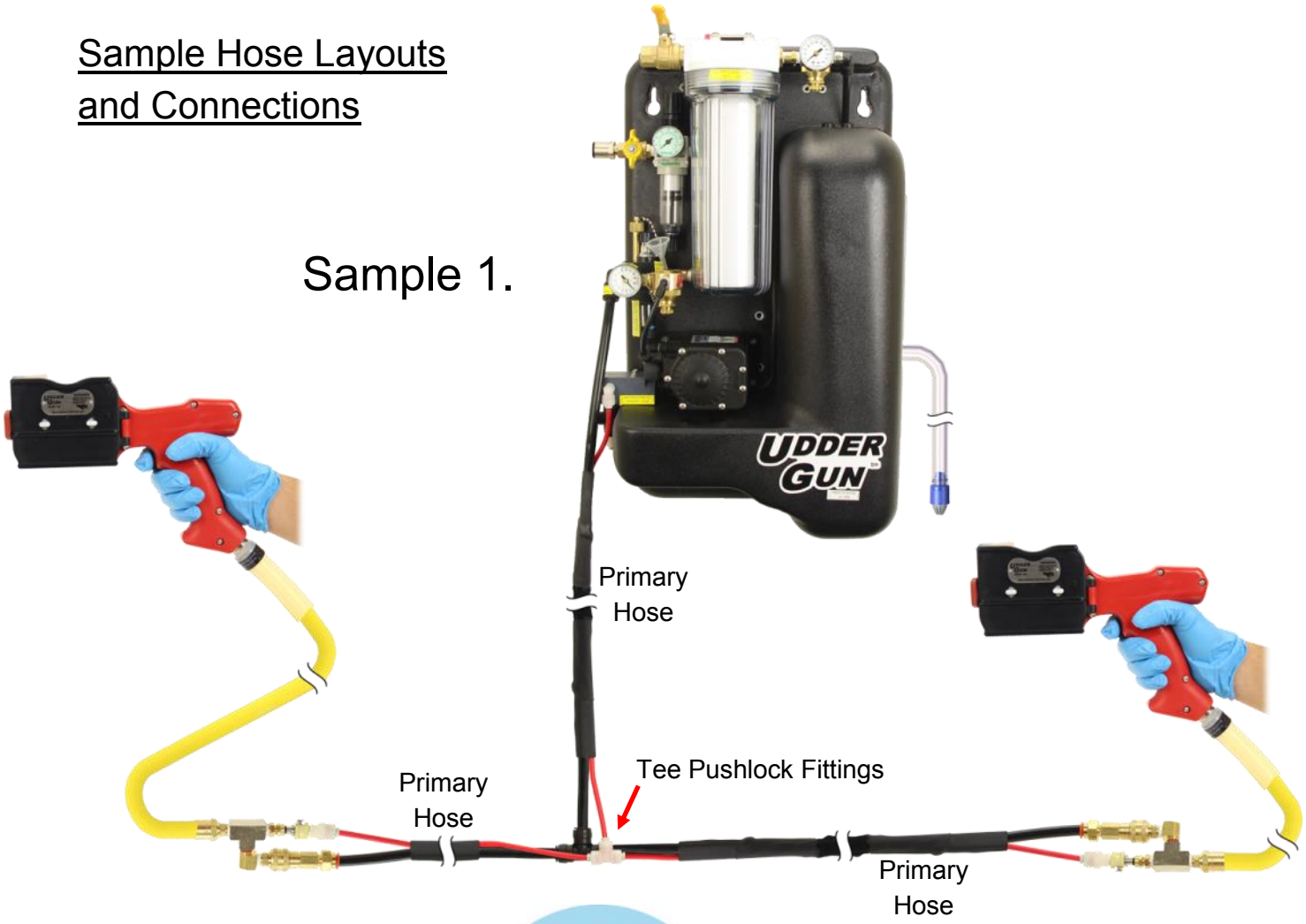
4. Use the Tee and Straight Pushlock Fittings to connect the Primary Hoses together.
   - A one gun system only uses the Straight Pushlock Fittings.
   - You can use the 2” long black and red tubes provided to connect the Gun Hose straight to the Tee Pushlock Fittings like in layout 2 and 3 on the next page.

Primary Hose Pushlock Fittings

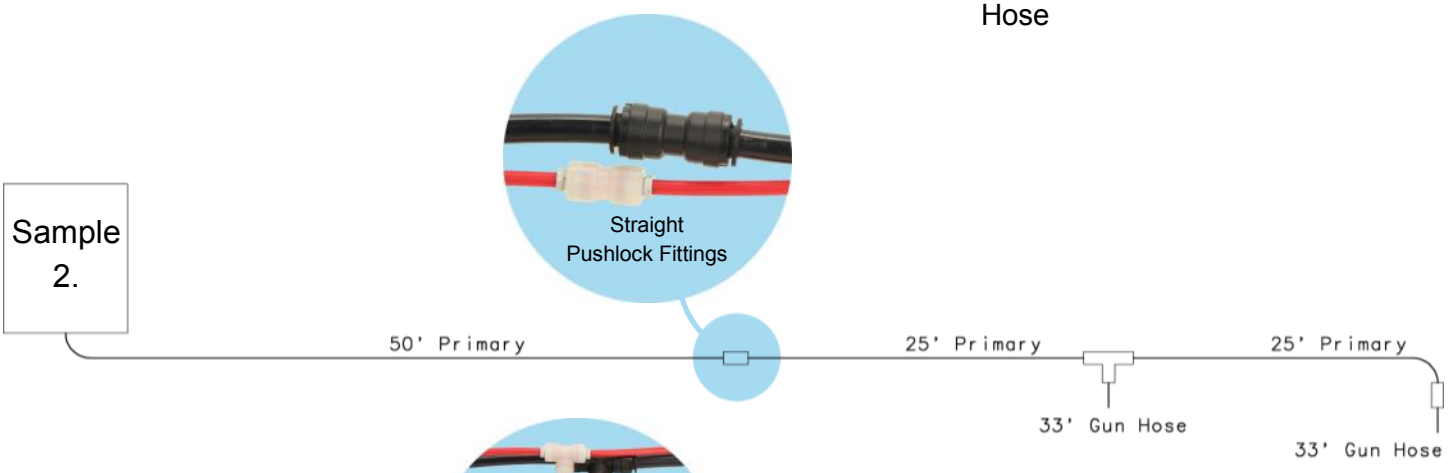


Sample Hose Layouts and Connections

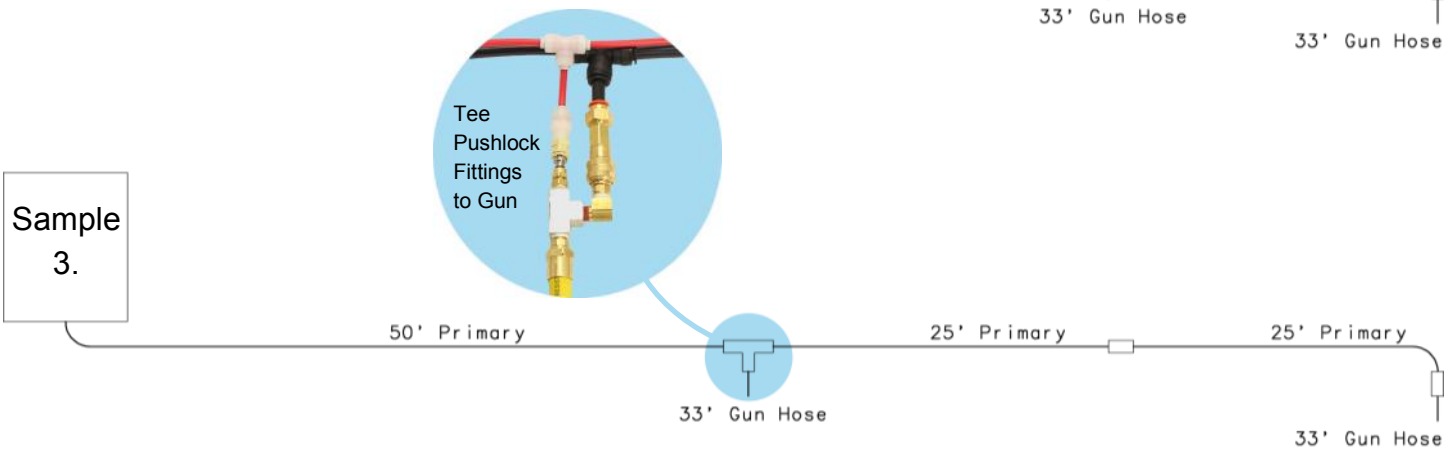
Sample 1.



Sample 2.



Sample 3.

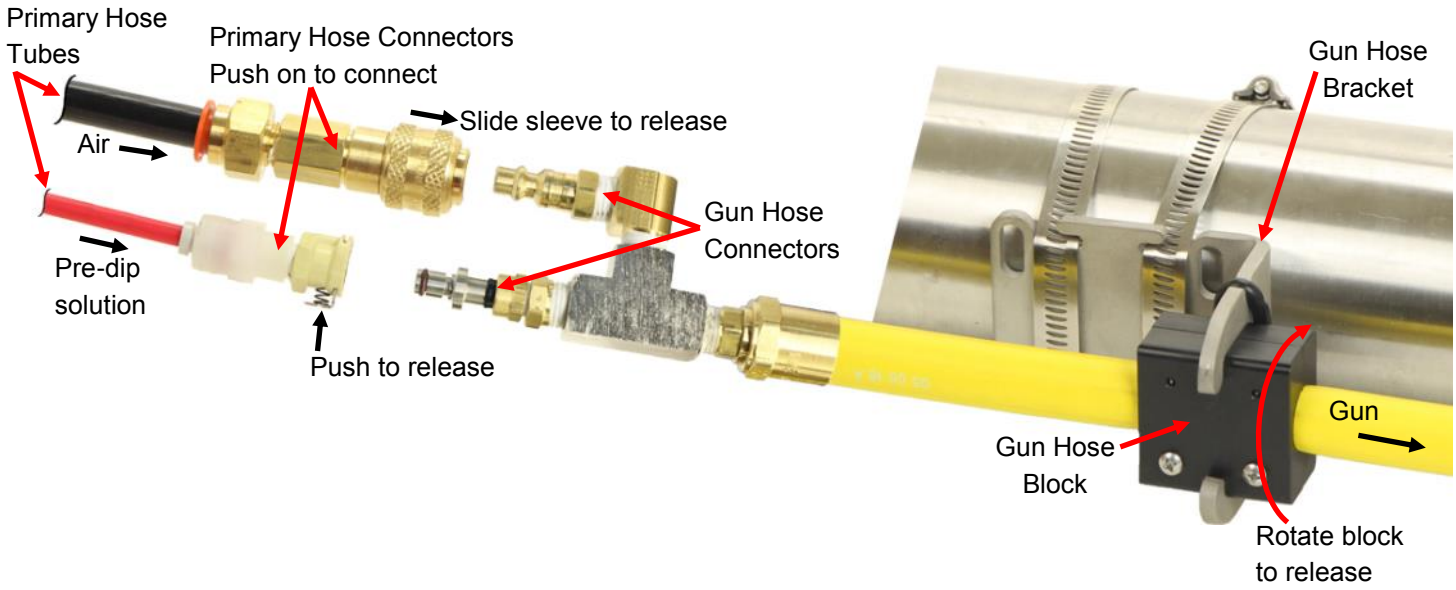


Gun Hose Installation

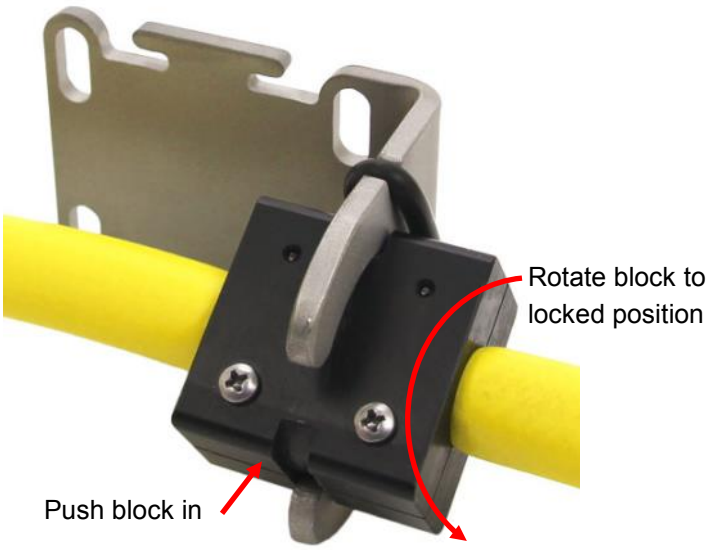
1. Set the gun in a safe place and unroll the gun hose.

2. Mount the Gun Hose Bracket.
   - The purpose of this mount is to keep the strain off of the primary hose and connection fittings so they do not get pulled on or broken.
   - Fasten the gun hose bracket with the 2 large band clamps, or bolt the bracket to a solid surface.
   - If you're using the band clamps, attach them to the bracket before mounting to a tube.

3. Connect the Primary Hose Connectors to the Primary Hoses and the Gun Hose Connectors.



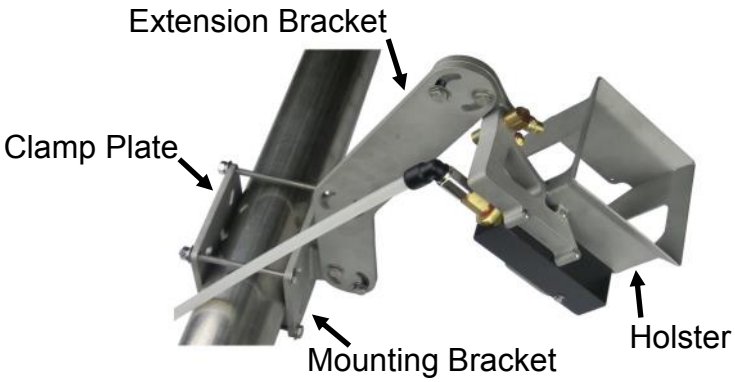
4. Lock the gun hose block onto the bracket.
   - Push the block into the ring of the bracket until the ring sits in the groove on the block and rotate to locked position.

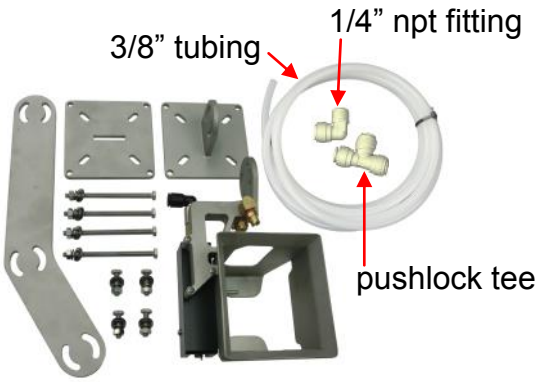


Flush Holster Installation

1. Mount the bracket in the location you preplanned.

   A. If you are mounting to a pipe, the clamp bolts and plate are supplied.





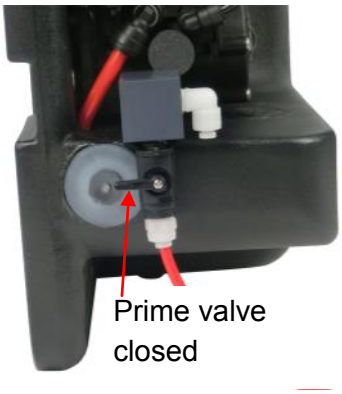
   B. If you are mounting to the wall, fasteners are not included.

   C. If you are using the extension bracket, use the provided hardware to position the holster in a ergonomic position, then tighten the extension bracket bolts.

2. Use the included 1/4” npt to 3/8” pushlock fitting to connect the 3/8” tubing to your 35-60 psi fresh water supply.
   - You can add a shut off valve which helps when servicing the flush holster later.

3. Neatly route the included 3/8” tubing from your fresh water supply to the flush holster pushlock fitting.

Start Up



Once your system is properly installed, you may begin the start up procedure.

Skip steps 2,3, and 6a if you are running RTU (ready to use) chemical.

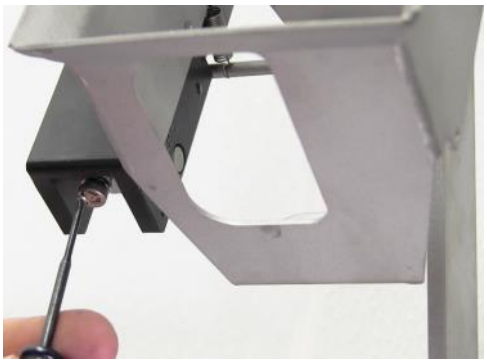
1. Close the Prime Valve.
2. Crack open the Water Inlet Valve.
   - The water will start to fill the Mixing Tank and draw pre-dip chemical up the Suction Hose.
   - When the Mixing Tank is full, the Float will shut the water off.
   - If there are no leaks, you may open the valve fully.
3. The Water Pressure Regulator should be 35 psi when water is filling the Mixing Tank.
   - If it isn't, loosen the lock nut on the bottom. Turn the bottom knob until the pressure is 35 psi while running. Then tighten the nut back up.
   - Lower pressure can cause inconsistent chemical mixtures.

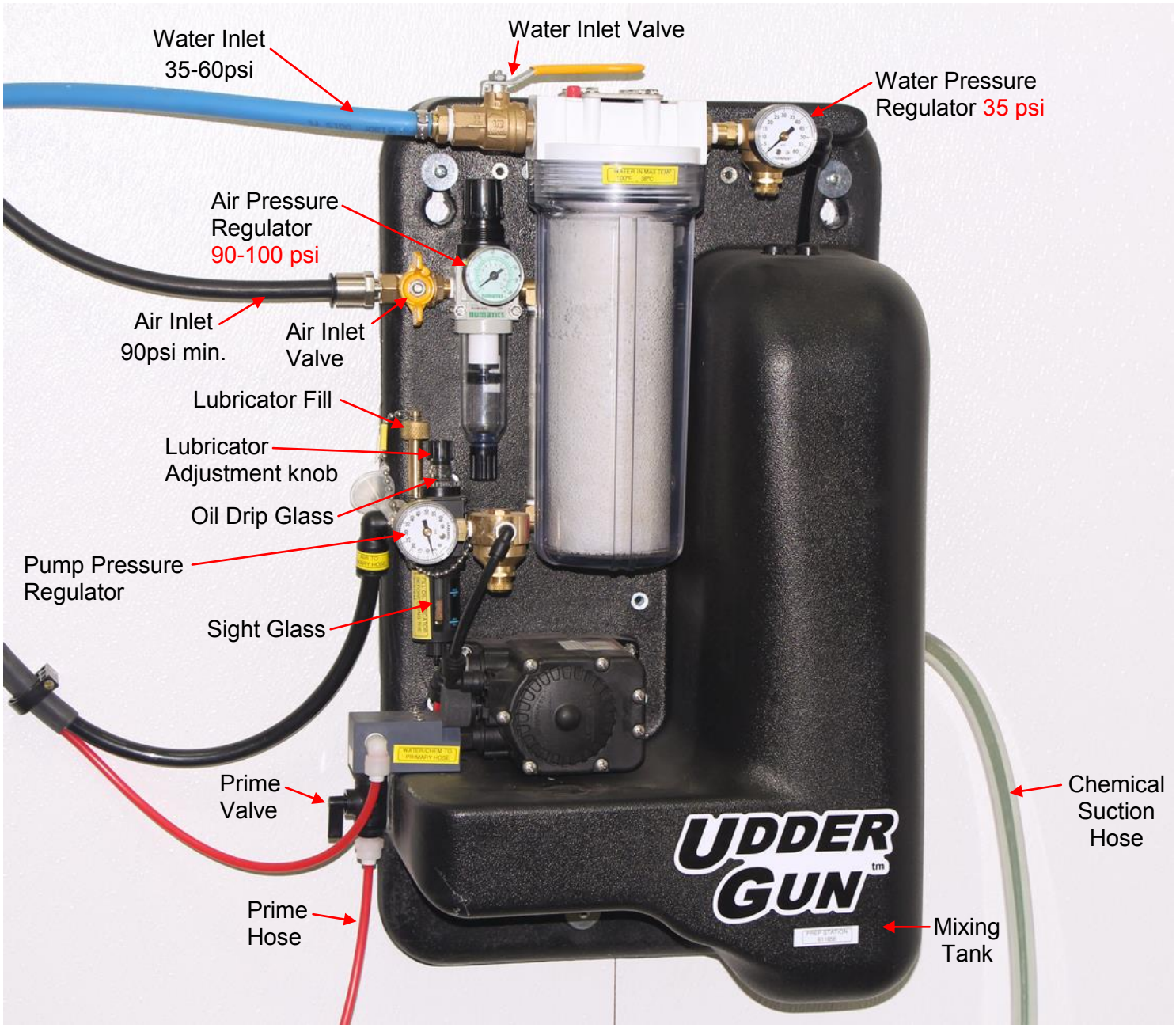
4. Fill the oil Lubricator with 3 in 1 air tool oil.
   - Do not fill above the Sight Glass or it will be hard to see the level during daily maintenance checks.
5. Crack the Air Inlet Valve open.
   - Check for air and fluid leaks at all connection points on the Prep Station, Primary Hoses, and Gun Hoses.
   - If there are no leaks then you can open the valve fully.
   - The air pressure regulator should be 90-100 psi.
     - If it isn't, pull the top knob up and rotate until 90-100 psi. Then push the knob down.
6. Prime the prep and check the Pump Pressure Regulator.
   - Point the Prime Hose into a bucket or drain and open the Prime Valve.
   - With the Prime Valve open the Pump Pressure Regulator should be 25 psi.
     - If it isn't, loosen the lock nut on the bottom. Turn the bottom knob until the pressure is 25 psi while the Prime Valve is open. Then tighten the nut back up.

   a. Continue to prime the system to empty the first mixed batch from the Mixing Tank until the second batch starts to mix. The pre-dip chemical should be fully up the suction hose.
7. Prime the guns.
   - The Primary Hoses and Gun Hoses still do not have pre-dip solution in them so you must depress the gun trigger fully until pre-dip solution begins to spray from the guns.
   - While the gun is running, check the Oil Drip Glass for one drop of oil every 5-8 minutes. Adjust the Lubricator Adjustment Knob accordingly.

⚠ WARNING If the Udder Gun dose not receive enough air tool oil, the air cell will be damaged.

8. Set the spray time on the Flush Holsters.
   - On a typical insertion of the gun, the spray should last at least 6 seconds.
   - To Adjust timing, loosen the set screw on the adjustment knob on the back of the hydraulic shock.
   - Turn adjustment knob clockwise to increase spray time, counter clockwise to decrease.
     - Tiny adjustments on the knob can make large changes to the timing.
   - Keep re-inserting gun and turning knob until the spray turns off at the right time.
   - Tighten the set screw back in.





2 Stage Trigger

The Udder Gun utilizes a 2 stage trigger. This allows you to clean and stimulate with pre-dip solution spray, then by backing off the trigger the belts continue to run without spray.

Cleaning stage: trigger all the way back
(normal operation)

- A fully depressed trigger runs the teat belts and sprays the pre-dip solution into the teat belts and onto the teat. This is your cleaning stage.

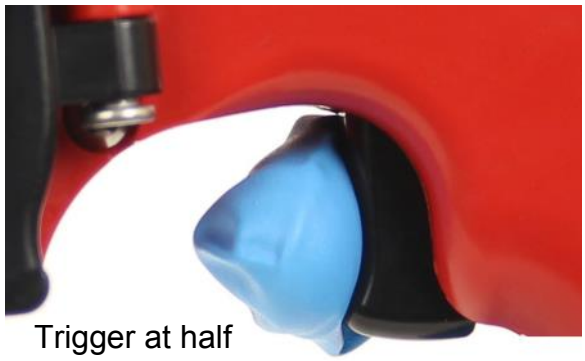
Trigger back full

Teat Belts and pre-dip solution spray

Drying Stage: if you want to use.

- The trigger at half position runs just the teat belts without pre-dip solution spray. This is where you would wick off excess solution allowing the teats to air dry faster.

⚠ CAUTION Do not keep the Udder Gun running on a teat longer than 2 seconds using the drying stage.



Trigger at half

Teat Belts running only (no spray)

NOTE: If you are intending to use the Udder Gun to dry, workers should practice trigger control to prevent errors being made, do not run the gun onto the teats dry.

Teat Cleaning Procedure

- With your installation and system start up completed, you can now begin cleaning and stimulating your cow's teats.

- The gun should be used on each teat for 1.5 - 2 seconds or 6 - 8 seconds per cow.

CAUTION Do not exceed three seconds per teat or you may damage the teats. If the belts are not cleaning fast enough, ask for maintenance to look it over for possible problems.

- Make sure the trigger is pulled back fully before moving the gun up onto the cow's teat.

CAUTION If the trigger is not fully depressed, you will be running onto teats dry and may damage teats.

- Between cleaning individual teats, the trigger should remain pulled with the gun running and spraying pre-dip solution. This allows the gun to self clean during the small amount of time between teats.

- Between cows, it is recommended to release the trigger so there is less chemical and compressed air waste.

- Continue this process for your remaining cows, making sure the gun is running before contact is made between the teat belts and teats, but off between cows.

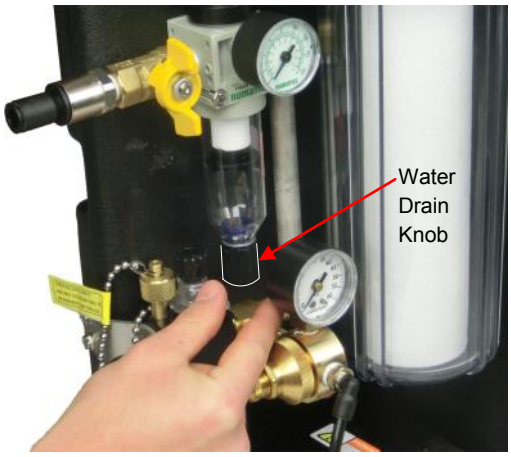
NOTE: Leaking of water/chemical or foaming around gun grip is normal.

NOTE: When finished using the Udder Guns, make sure they are inserted fully into the flush holster to wash out debris and keep the guns from being stepped on by workers or cows.

- The Udder Gun should be rinsed in the flush holster as often as possible (every 6-20 cows) to keep clean and prevent excessive wear.

Daily Maintenance

Prep Station



- Check that incoming air is dry and at the correct pressure.
- If water is in the air filter bowl, loosen the bottom knob to drain out the water, then retighten.
- Check incoming water line for correct pressure.
- Check oil level in oil lubricator, fill accordingly with the attached funnel and recommended oil. (3-IN-ONE air tool oil)
- Make sure there are no visible leaks on any fitting/hose connection.
- Check the chemical ratio is where you want it for the particular chemical being used.
- Check that chemical is being drawn up the suction hose when the float valve turns the water on.

Primary Hoses and Gun Hoses

- Check hose couplers and push lock fittings for leaks.
- Make sure hoses are properly secured to the wall/ceiling/floor.
- Check that hoses are not trip hazards and will not entangle other machinery/people/cows.
- Look over hoses for leaks, excessive wear, or splitting.

Udder Guns

- Make sure guns are clean and free of debris before and after each shift.
- Open up all covers and look for wear or damage.

NOTE: Excessive wear will usually occur on the teat belt cover where the tracking clips are or around the spray nozzle slot on the main housing.

- With covers open, look over teat belts for wear on the ribs of the flaps or any broken off flaps.

NOTE: Teat belts are reversible to extend the life of the ribs and maintain short cleaning times.

- Look over the spindles to see if they still have a rough traction surface and check that they rotate freely, in their bearings.

NOTE: Rotating the spindle modules, to the other position weekly will extend the life of the spindles, module blocks and main housing.

- Check tracking clips for wear and replace if needed.
- Make sure drive belts still have tension and traction on the pulleys.
- Take off drive belts and look over all five pulleys for excessive amounts of wear that could reduce traction.

Rotating Modules

Good Drive Pulley

Worn Drive Pulley

NOTE: A worn pulley will have the bottom of the groove look shiny and allow the drive belt to bottom out in the groove.

- Re-assemble the gun and test that the trigger functions correctly and that the air motor sounds up to speed.
- Check that the spray nozzle is spraying water/chem, the deflector is not clogged and the spray is fanned out properly.

Flush Station

- Check that the flush station brackets are all tightened and in the correct position.
- Insert a gun fully into the flush station to activate the valve and see that water sprays out.
- Make sure all three spray nozzles are spraying correctly and un-restricted.
- See that the flush stations turn off after being activated for 5-20 seconds.

Basic Service

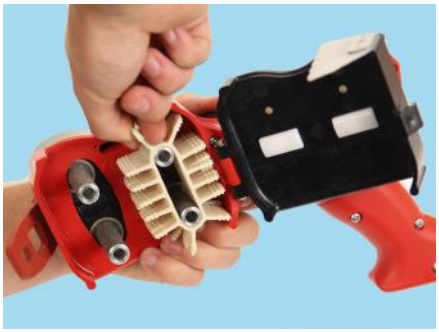
Recommended Spare Parts

- Teat belts (611860)
- Drive belts (611850)
- Spindle modules (611938)
- Tracking clips (611760
- Drive pulleys (611723)
- 3-IN-ONE air tool oil
- Pulley tool (611977)
- Splash shield (611766)

Basic Service Items

Teat Belts should be replaced or reversed whenever teat cleaning times increase and/or teats are not being cleaned well enough.

- They are easily replaced by opening up the teat belt cover and by pulling on the flaps, working both sides back and forth until they come off. Reinstalling is just in reverse order.



To get more life from your Teat Belts

After running the Teat Belts a few days, they tend to stretch, this is normal. When they stretch to the point where they are slipping too much on good spindles, the set of Teat Belts should be replaced with different belts, then set aside the stretched belts.

After a few days, the stretched set of Teat Belts will shrink back closer to their original size and can be used again on the Udder Gun until their ribs are worn down on both sides.

Drive Belts should be replaced when they are overstretched and are losing traction to the drive or driven pulleys, but the pulleys are not worn out completely.

- To replace drive belts, remove the old ones simply by pulling them off by hand.
- Start the new belts by placing it around the drive pulley then work your way around, this will take some strength. Make sure the back belt is sitting in all the back pulley grooves and the front belt is in the front grooves.



Spindle Modules are designed to be replaced, for easy servicing.

- To replace a module, open up the teat belt cover and pull off the teat belts.
- Open up the drive belt cover and pull off drive belts, then pull out the slide pin. A pliers may help if the slide pin is stuck.
- Pull out the spindle modules. Rotate current modules or replace with new units.

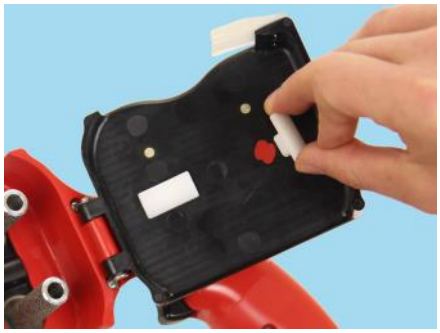
NOTE: Pay attention to wear marks on the main housing where the spindle module's pads rest. You may need to flip the modules around to extend the life of the main housing. Also, be careful not to pinch off the spray nozzle hose, keeping it routed around the rear module.




Basic Service

Tracking Clips are essential to the function and preservation of the teat belt cover. It is worth replacing these often because they keep the teat belts centered, putting less load on the bearings and preventing the teat belt cover from wearing too quickly. You should replace these as soon as they are worn halfway through.

- To replace a tracking clip rotate, the old tracking clip a quarter turn in the direction allowed (one tracking clip gets rotated clockwise, the other gets rotated counterclockwise) and pull inward away from the cover, they should just pop out.
- Place new tracking clips in just like you took the old clips out, you should feel them snap into position when they are fully rotated horizontally.



Good Tracking Clip

Worn Tracking Clip

(Shown as black for contrast)

Drive Pulley should be replaced when it is loosing traction to the drive belts. If it is worn, you will notice the bottom of the groove is shiny and smooth, indicating it needs to be replaced.

- To replace the pulley you need the pulley tool (P/N 611977). Insert the pins of the pulley tool into the two small holes on the pulley, then with the included 5/32 Allen wrench take off the button head screw holding the pulley to the output shaft.

NOTE: You must hold the pulley tool stationary and turn the Allen wrench counterclockwise to loosen the screw.

- With the screw out, you can pull off the pulley, but keep track of the 3/32 brass dowel pin key.

NOTE: A pulley might be corroded onto the output shaft. Two small flathead screwdrivers prying on either side of the pulley will help get it off.

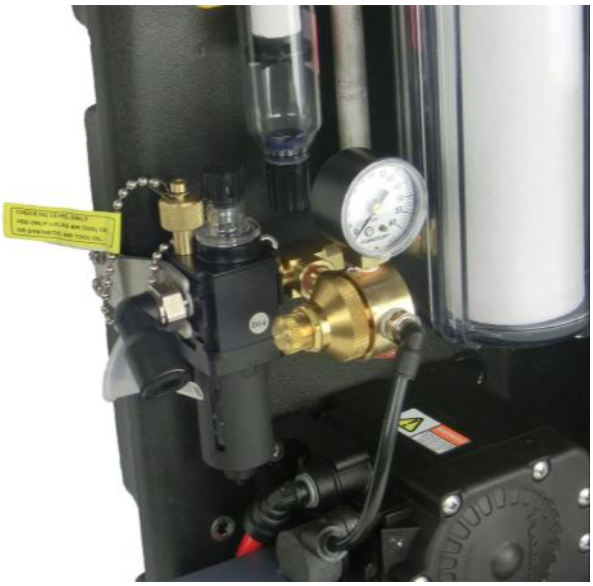
- Slide the new pulley onto the shaft along with the small pin. Tighten the screw down to hold it in place using the pulley tool.

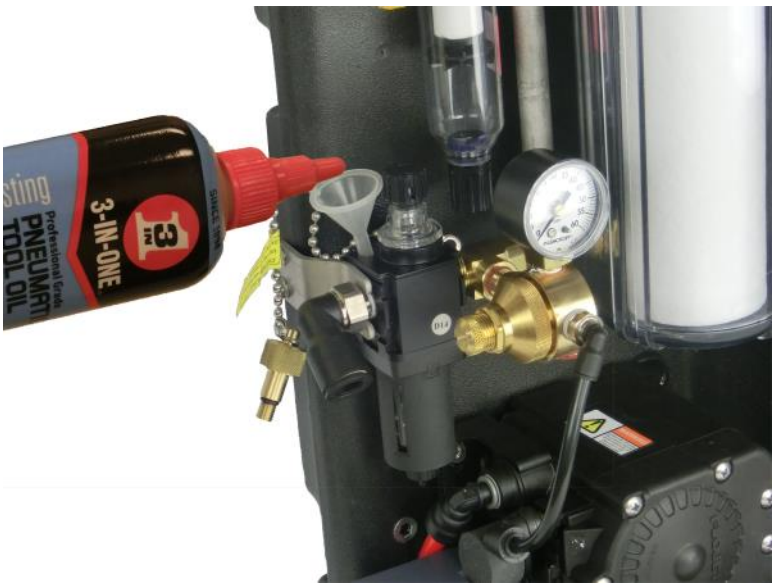
Splash Shield is mounted to the teat belt cover, with the purpose of reducing the amount of chemical/water being flung upwards and back towards the operator. If the splash shield is damaged or missing it needs to be replaced with a new one.

NOTE: Make sure not to overtighten splash shield screws.

Air Tool Oil is needed to help lubricate the air motor and prevent it from rusting and seizing up.

- Turn off air pressure to the prep station.
- To fill the lubricator unscrew the knurled brass knob on the top left side of the lubricator.
- Insert the funnel attached to the chain into the hole where the brass knob was.
- Then fill funnel with 3-IN-ONE air tool oil checking the glass window on the side of the lubricator until it is about 3/4 of the way up the window.
- Wipe off remaining oil from the funnel and any that might have been spilled.
- Lastly thread the brass knob back into the fill hole making sure not to cross thread the hole and only tighten “finger tight”.
- There is an oil flow adjustment knob on the top of the lubricator. This should be set so there is one drop of oil going in every few minutes of running guns.





Prep Station

CAUTION Wear safety glasses and appropriate PPE when servicing.

WARNING Turn off air and water. Run gun to dump remaining pressure before servicing.

Operation

The Prep Station uses incoming compressed air and water pressure for power. It then mixes water and chemical in batches, by passing water through an eductor which suctions chemical into the stream governed by a metering tip. When the lower reservoir is filled, the float turns off the water. An air driven pump sucks the water/chemical mix out of the reservoir and sends it out to the Udder Guns.

Servicing

1) Replace water filter cartridge as needed by unscrewing the clear bowl.

2) Water pressure regulator should be set to 35 psi.

3) Water float valve should turn off when float is up and turn on when float is down.

4) Main air pressure should be set between 90-100 psi. Drain air filter bowl daily by rotating knob on the bottom of the bowl.

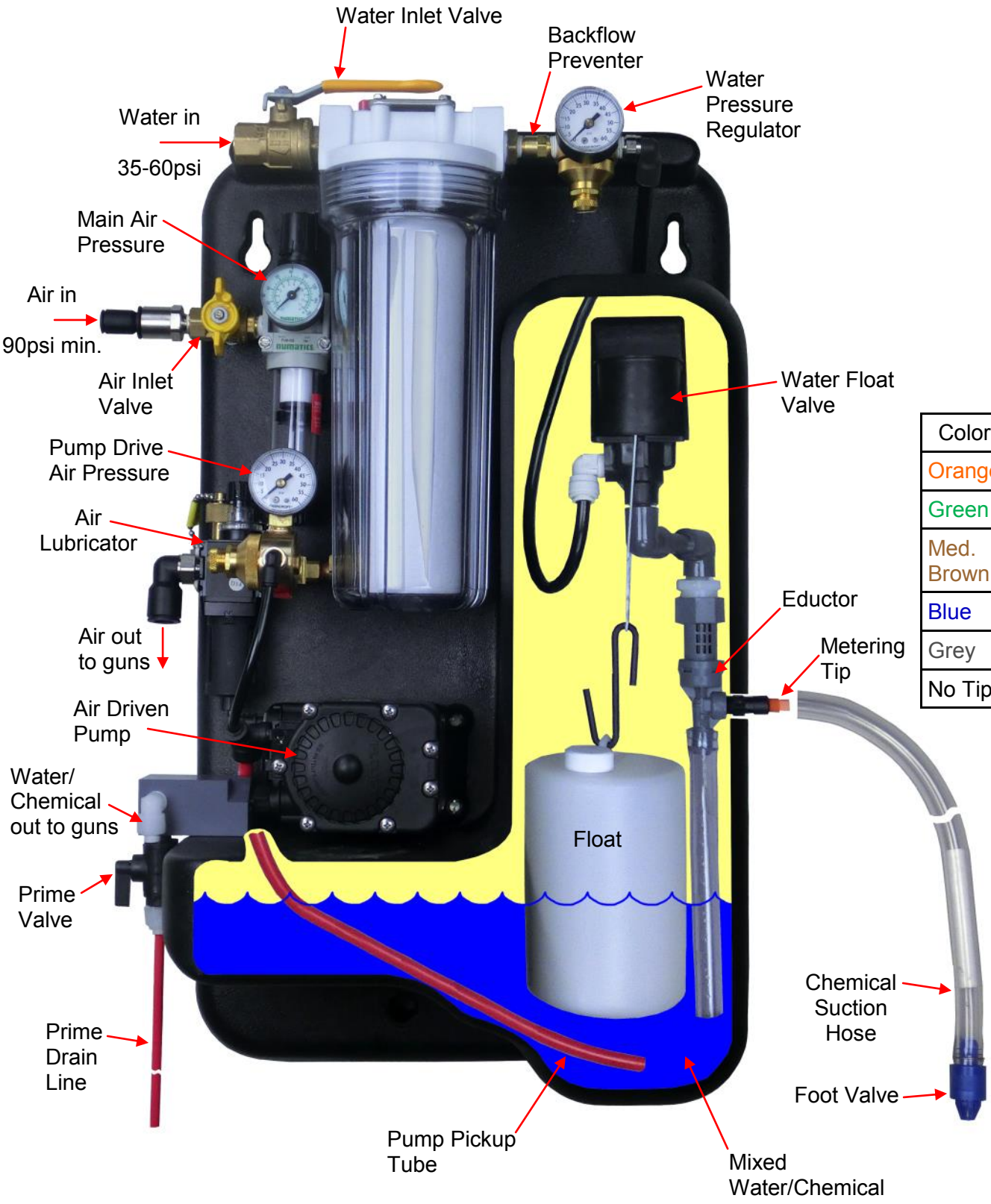
5) Pump drive air pressure should be set to 25 psi.

6) Fill air lubricator through brass knob when needed. Use 3-IN-ONE air tool oil. Lubrication amount knob should be set to have 1 drop of oil for 15 min. of guns running.

7) If the pump does not work with water/chemical in the reservoir, air pressure to the pump and the prime lever open, it needs to be replaced.

8) Keep prime valve closed to send water/chemical to the guns.

9) Clean or descale metering tip or eductor if needed.



Color	Ratio
Orange	20:1
Green	15:1
Med. Brown	11:1
Blue	7.5:1
Grey	3:1
No Tip	2.5:1

Spray Nozzle Service

1) Open the drive belt cover and teat belt cover, remove the teat belts, drive belts and spindle modules.

2) Pull the spray nozzle hose off of the barb fitting.

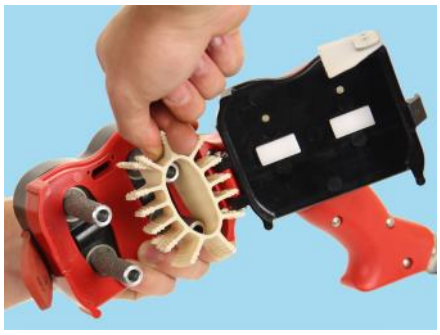
3) Take out the two screws holding the spray nozzle to the main housing and check that the spray deflector is bent at approximately 60 degrees. The deflector should be bent so that the water stream hits it to fan out. If it is bent too little, the water fan will not exit the housing slot. If it is bent too much the water will not be fanned out at all.

4) Disconnect only the air line coupler on the gun hose, then pointing the spray nozzle hose in a safe direction, pull the trigger to allow water to flow out though the spray hose.

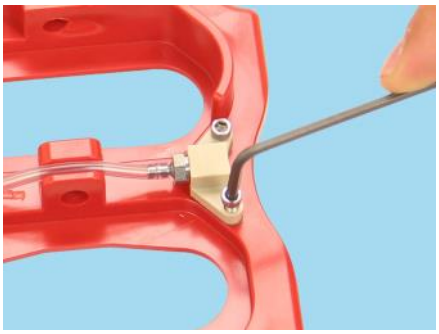
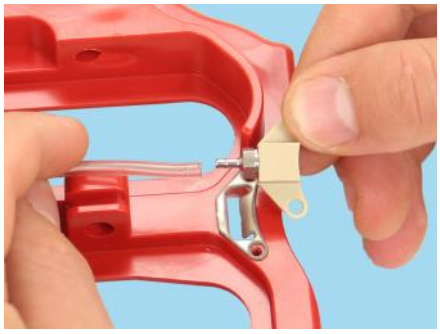
5) If water/chemical comes out, the clog is in the spray nozzle itself.

6) Unscrew the spray nozzle barb fitting and clean out the barb, or the spray nozzle jet. Blowing air back through the small jet hole usually works.

7) Reassemble the spray nozzle, attach hose and check that it sprays.





Accessing the Gun Valve or Air Motor

1) Take off teat belt cover by removing the e-clip on the hinge pin, then slide the pin out to remove the cover. Be careful not to lose the e-clip.

2) Remove all the housing screws (8x) and pull the grip half apart from the main housing.

3) Pull out the trigger and valve pins and set aside for safe keeping.

4) Take gun hose inlet block out of main housing.

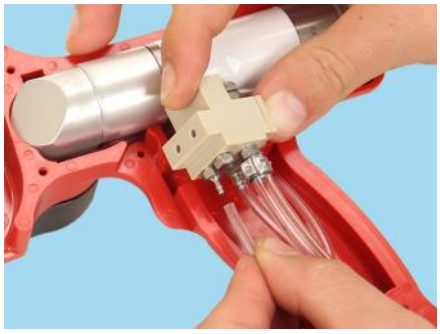
5) Take off the clear, small diameter water hose from the barb on the valve using a small needle nose. This is the outlet hose that runs up to the nozzle.

6) Pull valve out from the housing and while holding the air motor and main housing in your left hand, pull the valve towards the front of the gun which should pull the air line off of the barb at the end of the air motor.

NOTE: This will take some force. It may be best to wear a glove on your right hand so you don't injure yourself when the hose "pops" off of the air motor barb.








Gun Valve Service

- The valve controls both air and water/chemical in one valve body. The air valve and water valve are separate inside the valve body, each actuated by their own pin. The air valve has the larger barb fittings, the water side has the smaller barb fittings.

1) Disconnect the gun hose couplers (air and water) from primary hose.

2) With the valve and gun hose assembly removed from the gun, inspect the valve pins for score marks and see that they move freely within the valve holes, if not replace them.

3) Take off the back two screws holding the valve end plate on.

4) Check the O-rings on the end plate for cracking or flat spots, replace if needed.

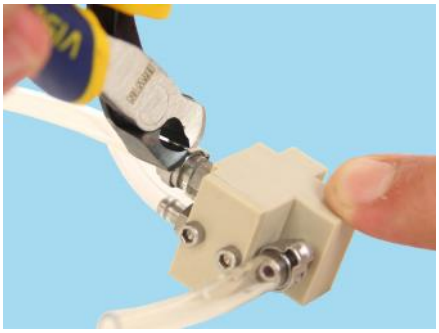
5) Pull out the springs, see that they are not broken or bent, if so replace them.

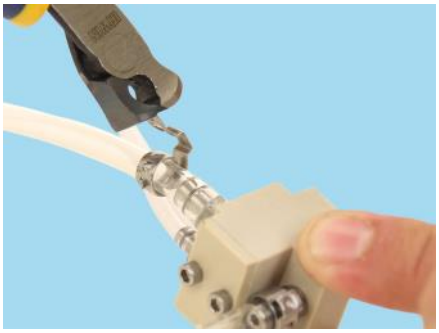
6) Check the stainless steel balls for wear or debris, replace if needed.

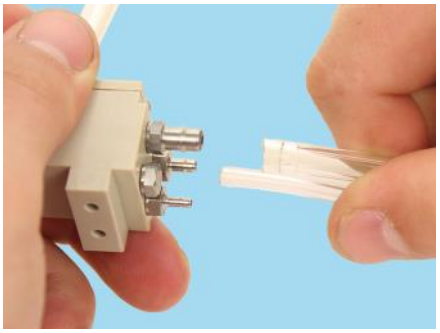
7) Pull out the quad O-ring valve seats. Look for wear, cracks or debris, replace if needed.

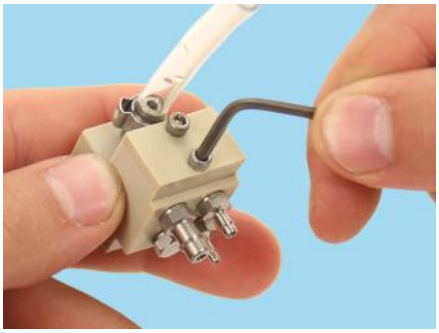
8) Reassemble the valve and gun in reverse order, hook up gun hose couplers and test.

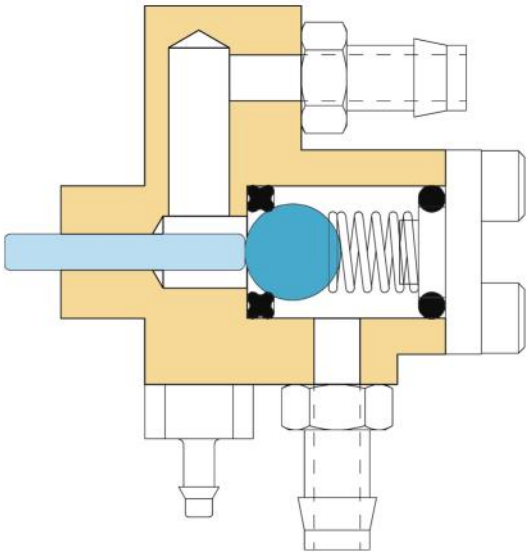
NOTE: Use a small amount of oil on the end plate O-rings to help them slide into the valve body, without pinching or falling off their posts. Hold the back plate in position tightly, until at least one screw is in.











Air Motor Replacement

- Air motor cells can lock up or lose power over time. The life of the air motor can be extended by not submerging the Udder Gun in water and by keeping oil in the airline lubricator.

1) With the valve and gun hose assembly removed, you may now open the drive belt cover to gain access to the drive belts and drive pulley.

2) Take off the drive belts.

3) Remove the drive pulley using the pulley tool included in the service box.

NOTE: If needed, you can use two small flat head screwdrivers to pry on either side of the drive pulley to remove it once the screw is out. Also, do not lose the brass pin key.

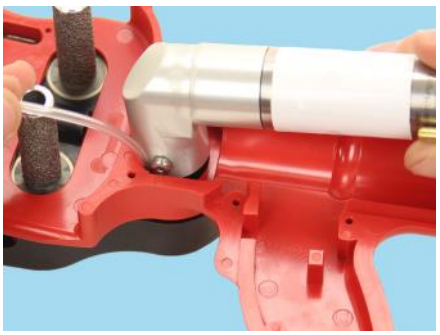
4) Now lift out the air motor from the main housing.

5) Reinstall the gear motor, push in the two muffler elements making sure not to pinch off the small, clear, spray nozzle hose.

6) Reassemble all remaining parts in reverse order.








Flush Station Service

- The flush station serves two purposes. It provides a holster to place the gun into when not using and it sprays water into the gun to flush out debris between uses.

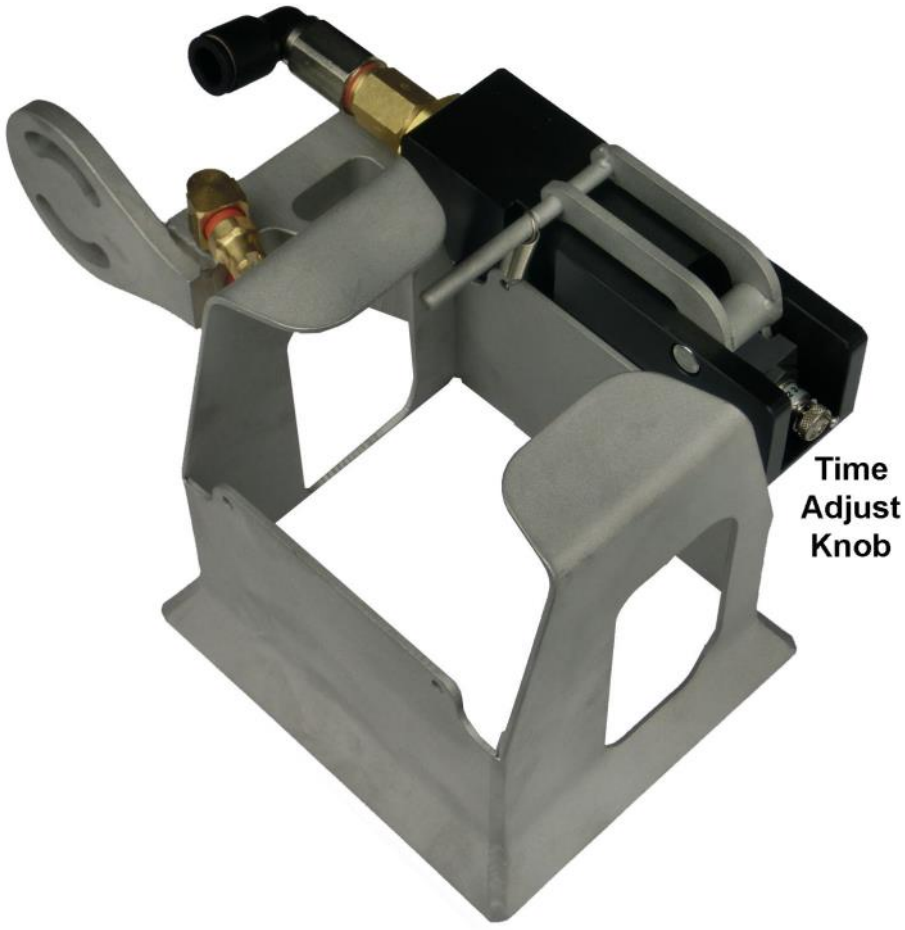
- When placing the gun into the holster, the gun activates a lever connected to the timed valve. Water spray will start, then turn off between 5-20 seconds, depending how the timer shock is adjusted.

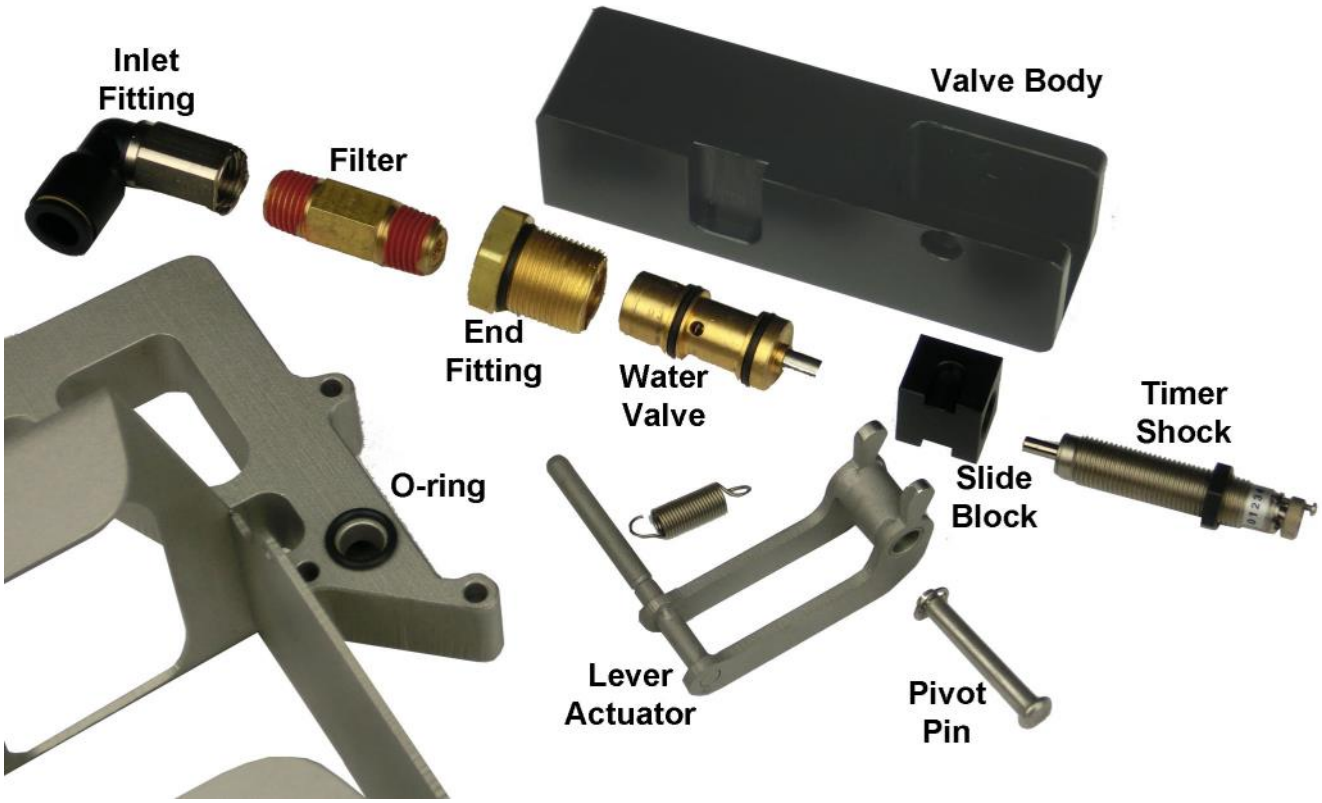
- The timer shock is an oil filled dampener. The rate of dampening is controlled by the adjustment knob. When the lever is pressed the whole shock moves towards the stem of the water valve. The shock stem, having stiff movement, pushes in the water valve stem. After some time, the water valve stem pushes the shock stem backwards enough that the water turns off.

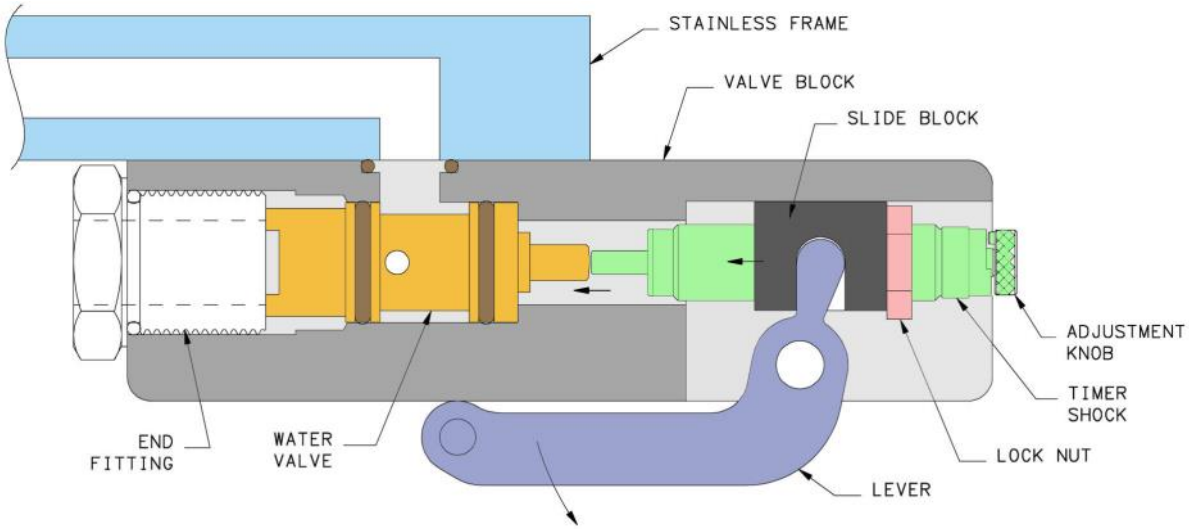
1) If spray time is too short or too long, turn adjustment knob a small amount and test. Loosen the lock screw on the knob before moving the knob, lightly tighten lock screw after setting.

2) If removing valve assembly from stainless frame, keep track of the O-ring that is between the two parts. Confirm that the O-ring is in the pocket of the valve block when reassembling.

3) If the timer shock is screwed into the slide block too far, the water may not stop. If the shock is not far enough, that water may not start.

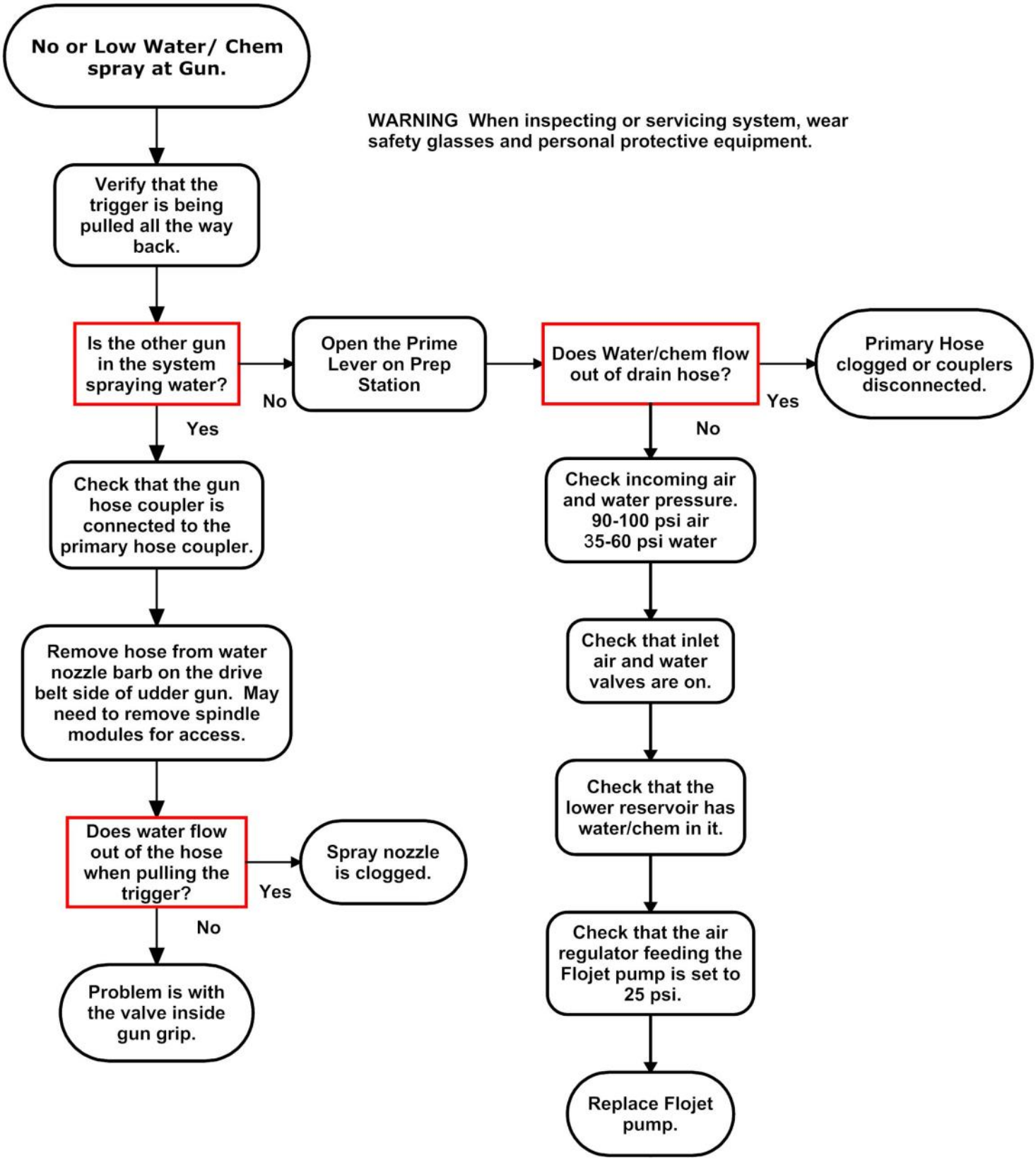



Inlet Fitting
Filter
Valve Body
End Fitting
Water Valve
Timer Shock
Slide Block
O-ring
Lever Actuator
Pivot Pin

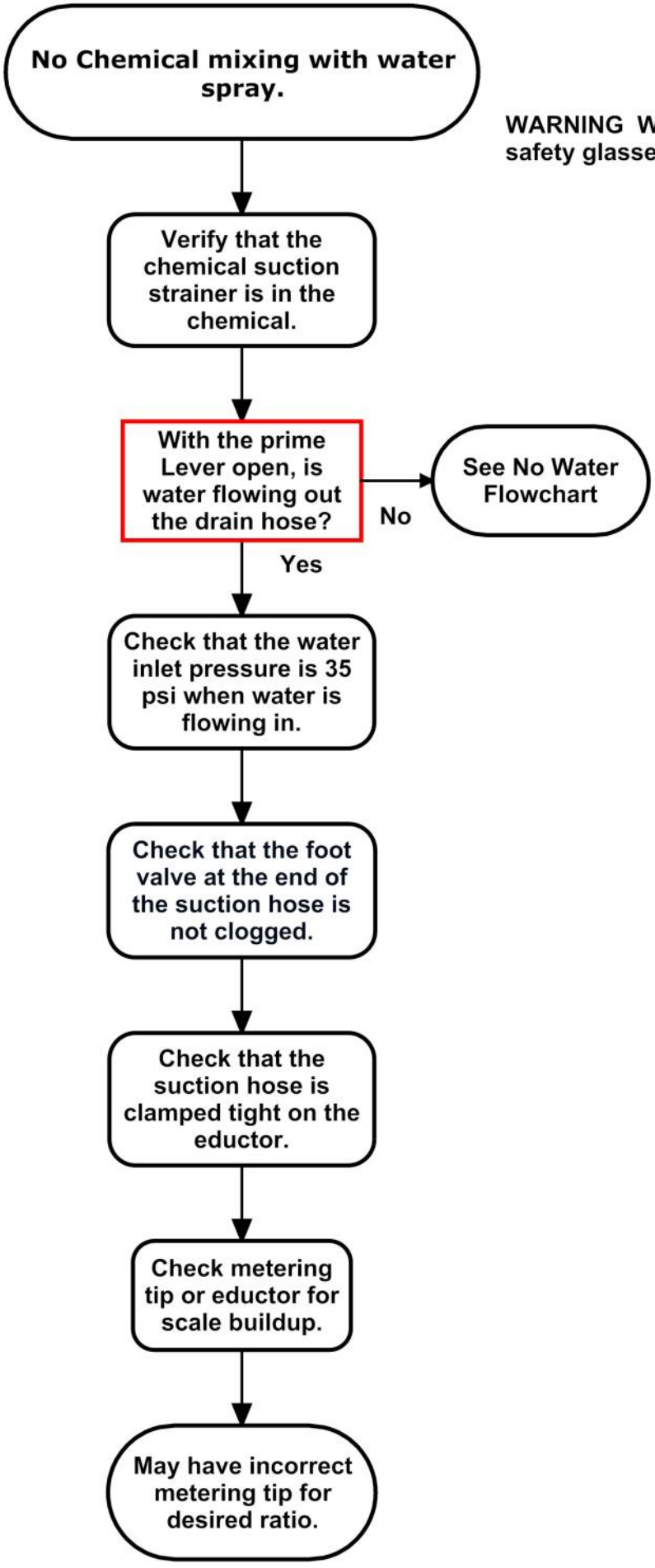

STAINLESS FRAME
VALVE BLOCK
SLIDE BLOCK
ADJUSTMENT KNOB
TIMER SHOCK
LOCK NUT
LEVER
END FITTING
WATER VALVE

Trouble Shooting

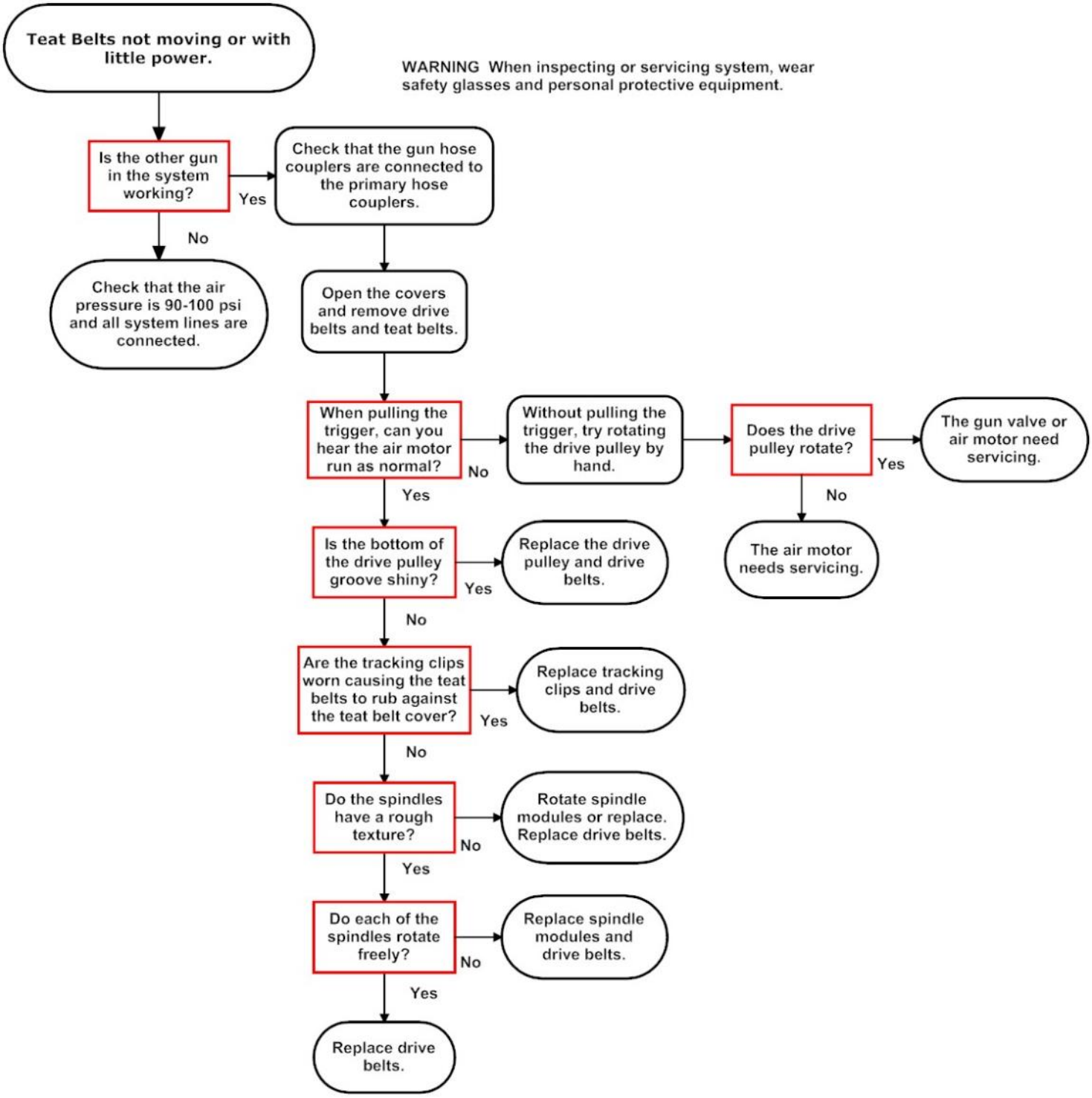
No or low water/chemical spray at gun.	Refer to: No water flowchart, page 39.
No chemical mixing with water.	Refer to: No chemical flow chart, page 40.
Too much or too little chemical mixing with water.	• Clogged chemical pickup hose. • Incorrect chemical metering orifice.
Spray at gun does not stop after releasing trigger.	• Gun valve pins sticking in valve. • Debris on valve seat O-ring. • Valve seat O-ring damaged. • Refer to gun valve servicing, page 34.
Gun not cleaning teats as well.	• Worn teat belts, flip over or replace. • Teat belts not moving or with little power. • No water/chemical spray.
Teat belts not moving or with little power.	Refer to: Teat belts not moving flowchart, page 41.
Teat belts not stopping after releasing trigger.	• Gun valve pins sticking in valve. • Debris on valve seat O-ring. • Valve seat O-ring damaged. • Refer to gun valve servicing.
Flush station does not spray water.	• Push gun all the way into the holster. • Check for water pressure. • Brass inlet filter clogged. • Delay knob on shock set too loose. • Shock not turned into slide block enough. • Damaged shock or valve.
Flush station spray time to short or too long.	• Adjust time delay knob on shock by loosening lock screw and turning knob a small amount. Check spray time and readjust if needed.
Flush station spray does not turn off.	• Delay knob on shock set too tight. • Shock turned into slide block too far. • Valve damaged.


No or Low Water/ Chem spray at Gun.
WARNING When inspecting or servicing system, wear safety glasses and personal protective equipment.
Verify that the trigger is being pulled all the way back.
Is the other gun in the system spraying water?
No
Open the Prime Lever on Prep Station
Does Water/chem flow out of drain hose?
Yes
Primary Hose clogged or couplers disconnected.
Yes
No
Check that the gun hose coupler is connected to the primary hose coupler.
Check incoming air and water pressure. 90-100 psi air 35-60 psi water
Remove hose from water nozzle barb on the drive belt side of udder gun. May need to remove spindle modules for access.
Check that inlet air and water valves are on.
Does water flow out of the hose when pulling the trigger?
Yes
Spray nozzle is clogged.
Check that the lower reservoir has water/chem in it.
No
Problem is with the valve inside gun grip.
Check that the air regulator feeding the Flojet pump is set to 25 psi.
Replace Flojet pump.

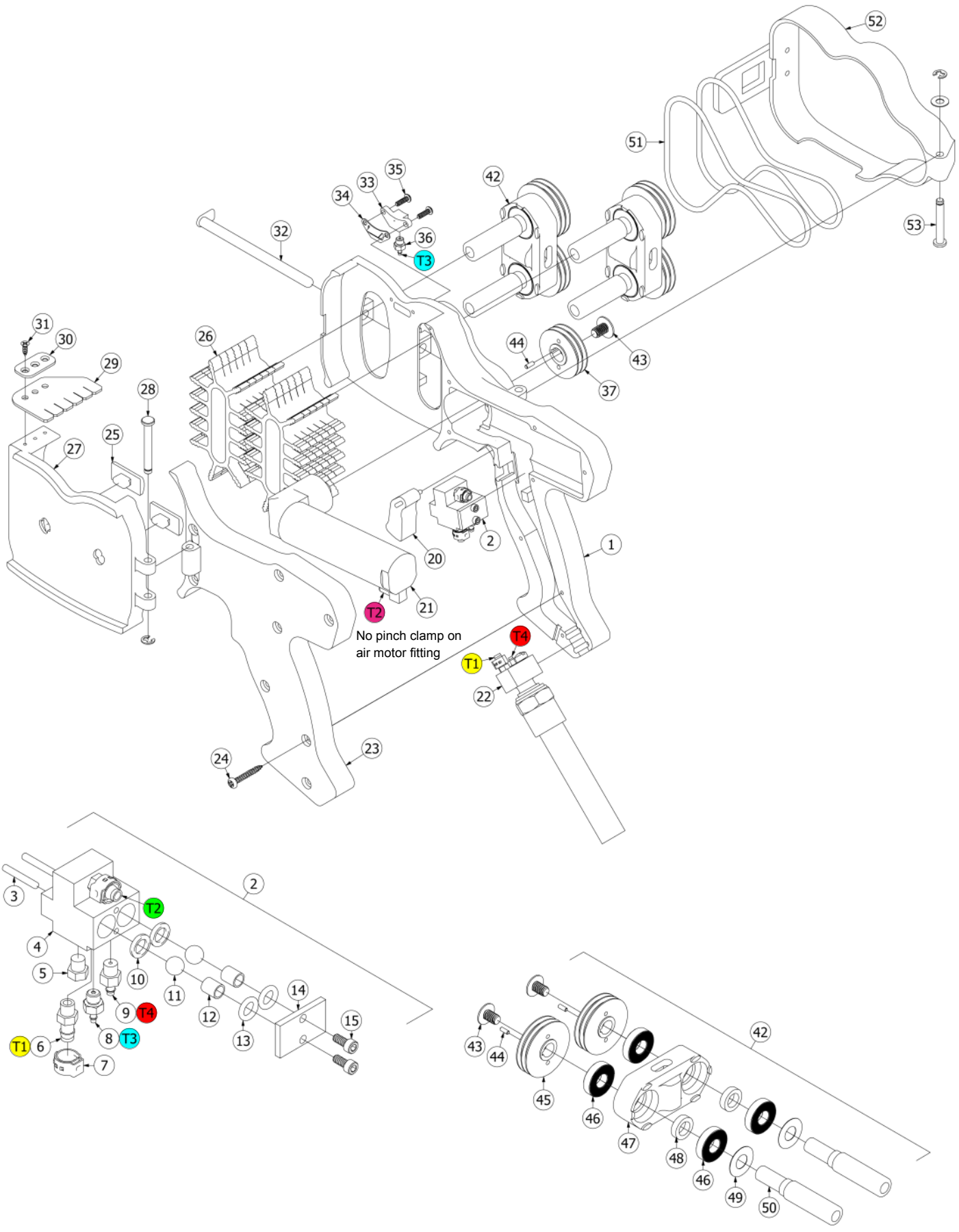
Trouble Shooting



WARNING When inspecting or servicing system, wear safety glasses and personal protective equipment.


Teat Belts not moving or with little power.
WARNING When inspecting or servicing system, wear safety glasses and personal protective equipment.
Is the other gun in the system working?
Yes
Check that the gun hose couplers are connected to the primary hose couplers.
No
Check that the air pressure is 90-100 psi and all system lines are connected.
Open the covers and remove drive belts and teat belts.
When pulling the trigger, can you hear the air motor run as normal?
No
Without pulling the trigger, try rotating the drive pulley by hand.
Does the drive pulley rotate?
Yes
The gun valve or air motor need servicing.
No
The air motor needs servicing.
Yes
Is the bottom of the drive pulley groove shiny?
Yes
Replace the drive pulley and drive belts.
No
Are the tracking clips worn causing the teat belts to rub against the teat belt cover?
Yes
Replace tracking clips and drive belts.
No
Do the spindles have a rough texture?
No
Rotate spindle modules or replace. Replace drive belts.
Yes
Do each of the spindles rotate freely?
No
Replace spindle modules and drive belts.
Yes
Replace drive belts.

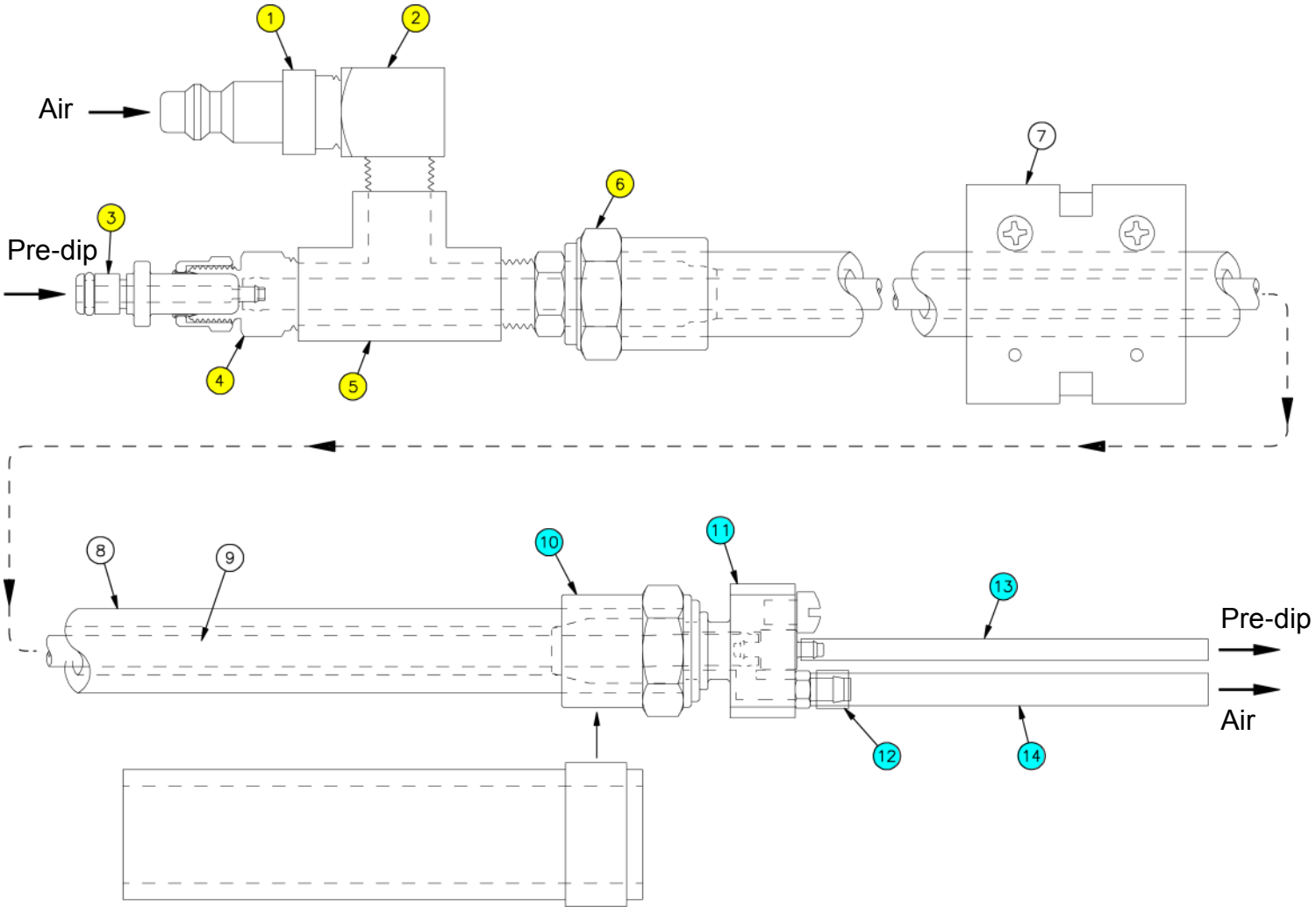
Udder Gun Assembly



	Description	Part #
	Gun Assembly w/Gun Hose	611574
1	Main housing	611843
2	Valve assembly	611829
3	Pin, actuator	
4	Valve body	
5	Fitting, Plug, #10-32 ss	
6	Fitting, .17 Barb, #10-32 ss	
7	Pinch clamp, 15/64-9/32 ss	
8	Fitting, 1/16 Barb, #10-32 ss	
9	Fitting, 3/32 Barb, #10-32 ss	
10	O-ring, quad viton 7/32 ID	
11	Ball, 1/4 dia ss	
12	Spring, .24 dia x .38 lg ss	
13	O-ring, .34 OD x 1/16, viton	
14	End plate, valve	
15	SHCS, 4-40 x 1/4 ss	
20	Trigger	611840
21	Air motor	611813
22	Gun Hose assy. (page 44)	611886
23	Housing, grip half	611844
24	Housing screw	
25	Tracking clip (4 pack)	611760k4
26	Teat belt	611860
	Internal hose kit	611939
T1	Tube .16 ID 1/4 OD clear 3.65”	
T2	Tube .16 ID 1/4 OD clear 2”	
T3	Tube 1/16 ID 1/8 OD pvc	
T4	Tube 3/32 ID 5/32 OD clear 3.75”	

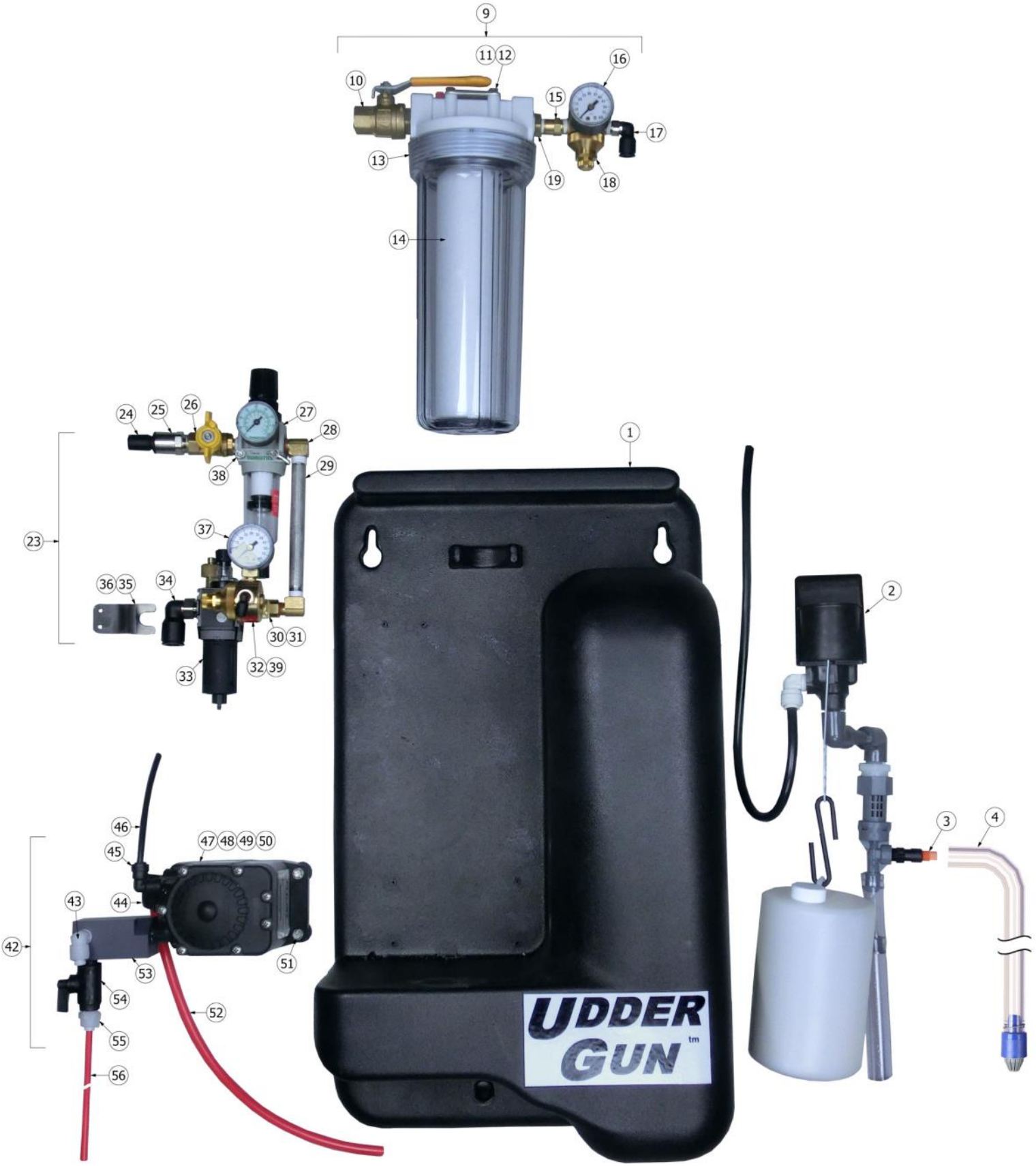
	Description	Part #
27	Teat belt cover assembly	611936
28	Clevis pin, 3/16 x 1.38 ss (4 pack)	193601Pk4
29	Splash shield	611766
30	Shield clamp plate	
31	Screw, #4 x .31 ss fh	
32	Pin, module slide	611838
33	Spray nozzle assembly	611942
34	Spray deflector	
35	Screw, SHCS, 4-40 x 3/8	
36	Fitting, 1/16 Barb, #10-32 ss	
37	Drive pulley, 1.31 dia	611723
42	Spindle module assy.	611938
43	Screw, 1/4-20 BHCS w/flg (10 pack)	193803Pk10
44	Dowel pin 3/32 x .25 brass (10 pack)	193801Pk10
45	Driven pulley, 1.50 dia (4 pack)	611720k4
46	Bearing, 3/8 ID (8 pack)	193802Pk8
46	Bearing, 3/8 ID (27 pack)	193802Pk27
47	Spindle module block	611835
48	Bearing spacer (8 pack)	611943k8
49	Slinger washer (10 pack)	611944k10
50	Teat belt spindle (8 pack)	611837k8
51	Drive belt (10 pack)	611850k10
52	Drive belt cover assembly	611937
53	Clevis pin, 3/16 x 1.13 ss (4 pack)	193701Pk4

Gun Hose Assembly



	Description	Part #
	Gun hose assembly	611886
	Inlet End Fitting Kit	613094
1	Brass Air Fitting	
2	Brass 1/4 npt ST Elbow	
3	QC Adaptor	
4	5/16 Compression Fitting	
5	Plated Brass 1/4 npt Tee	
6	Brass Hose End	
7	Clamp block	612069
8	Outer Air Hose 3/8 I.D. x 33’	188652P
9	Inner Tube	188653P
	Gun Side Fitting Kit	613095
10	SS Hose Fitting w/ Sheath	
11	Inlet block	
12	Band Clamp	
13	Tube 3/32 ID 5/32 OD clear 3.75”	
14	Tube .16 ID 1/4 OD clear 3.65”	
16	O-ring, 3/16 x 1.25 I.D.	188614P
17	Mounting bracket	
18	Band clamp, 1/2” x 5”	

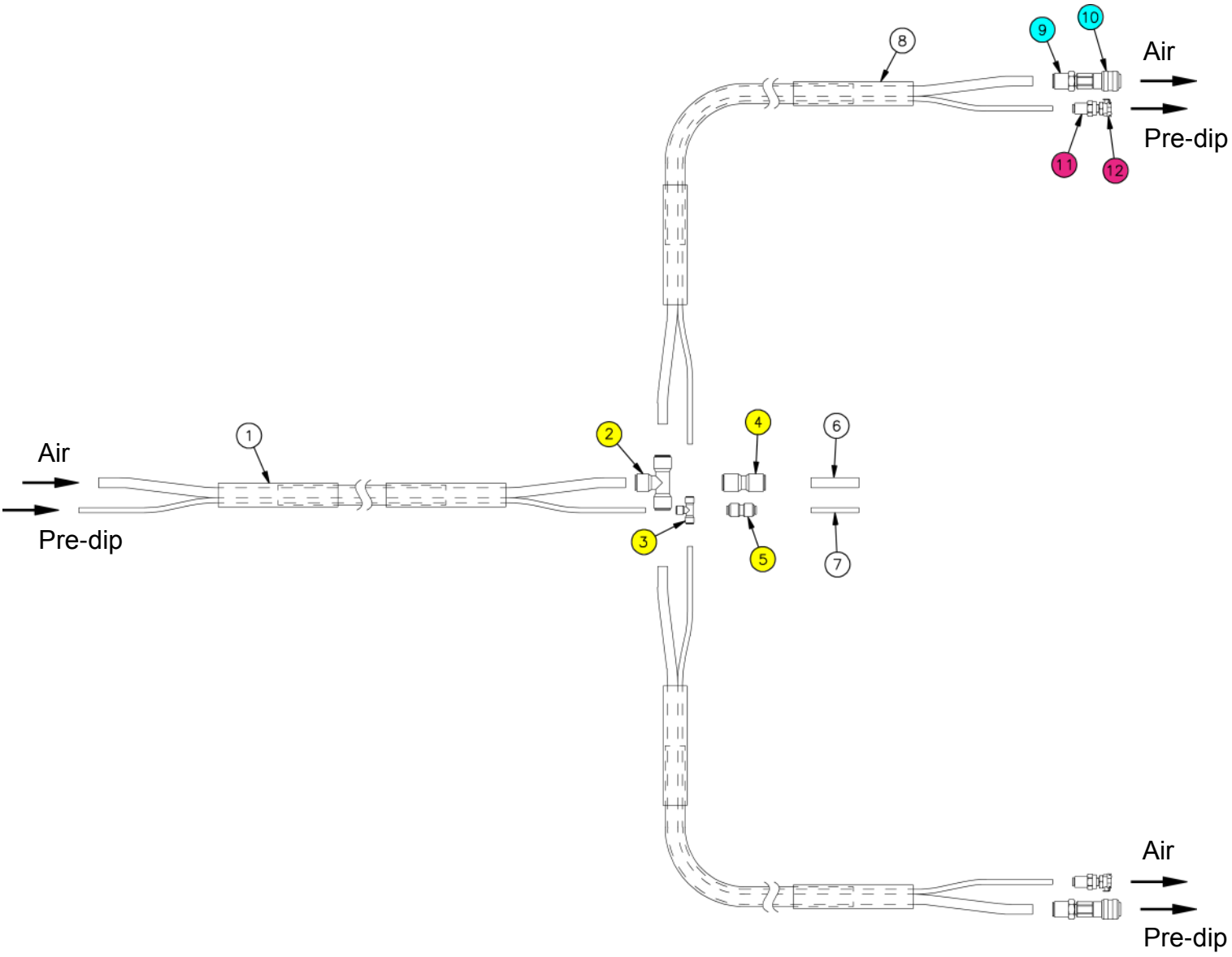
Prep Station Assembly



	Description	Part #
	Prep station assembly	611856
1	Molded shell, with float valve	
2	Water float valve and eductor assy.	185601P
3	Metering tip kit	192731P
4	Suction hose w/ foot valve	10031105
9	Water assembly	612187
10	Valve, ball bnz, 1/2npt f-m	
11	Brkt, mtg filter	
12	Screw, #10 x 3/4, ss hex	
13	Water filter housing and jar	192723P
14	Water filter cartridge	192730P
15	Check valve, 1/4” m-m brass	
16	Gauge, 1.5 dia 1/8npt ctr back mt	192728P
17	Fitting, pshlk 90, 1/4npt-3/8tb	
18	Regulator, 1/4” brass, Watts	192727P
19	Bushing, 1/2npt-1/4 brass	
23	Air assembly	612188
24	Fitting, pshlk adpt., 1/2tb-3/8tb	
25	Fitting, pshlk, 1/4npt-1/2tb	
26	Valve, 1/4npt ball, bnz f-m	
27	Filter/reg, 1/4npt Numatics	192801P
28	Fitting, 1/4 st elbow, brass	
29	Pipe, 1/4 x 6” ss	

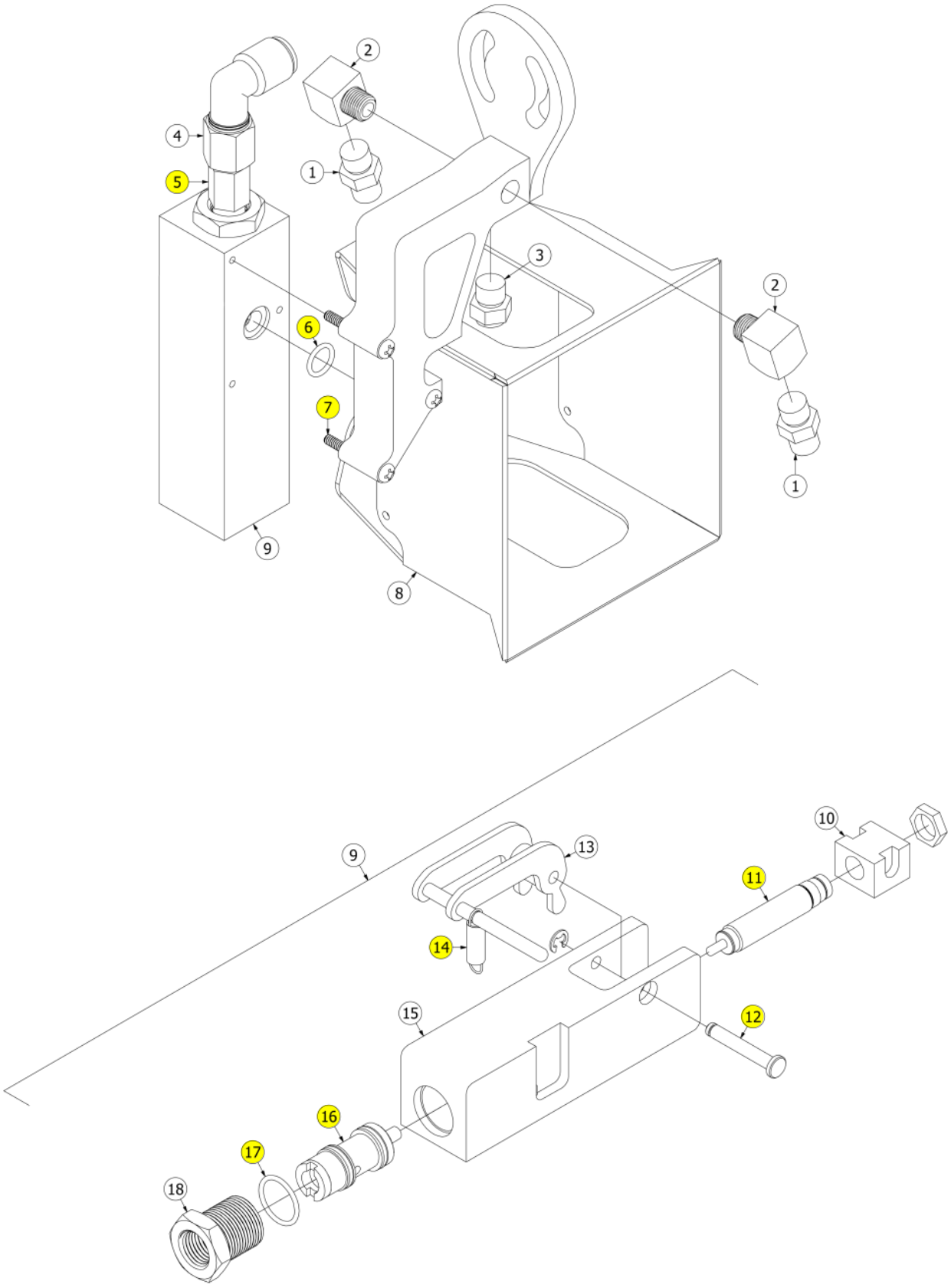
	Description	Part #
30	Fitting, run tee, 1/4npt brass	
31	Pipe nipple, 1/4npt brass	
32	Regulator, 1/4” brass, Watts	
33	Lubricator, 1/4npt Wilkerson 08	192806P
34	Fitting, 1/4npt-1/2tb elbow	
35	Brkt, mtg air outlet	
36	Screw, #10 x 3/4, ss hex	
37	Gauge, 1.5 dia 1/8npt bottom mt	192826P
38	Screw, #8 x 2”, ss hex	
39	Fitting, pshlk 90, 1/4npt-1/4tb	
42	Pump assembly	612189
43	Fitting, 90, 1/4npt-1/4tb kynar	
44	Fitting, 3/8 stem 90 pshlk pp	
45	Fitting, 1/4” 90 pshlk	
46	Tube, 1/4” x 6” hdpe black	
47	Pump, Flojet 5700 santoprene	218901P
48	Fitting, pump air inlet	
49	Fitting, quad, 3/8 pshlk viton	
50	Fitting, quad, 3/8 npt viton	
51	Screw, #10 x 1”, ss hex	
52	Tube, 3/8” x 12” hdpe red	
53	Block, outlet pvc	
54	Valve, 1/4npt ball, nylon m-f	
55	Fitting, 1/4npt-1/4tb kynar	
56	Tube, 1/4” x 6” hdpe red	

Primary Hose Assembly



	Description	Part #
1	50’ Primary Hose assy.	611931
	Primary-Primary Hose Connectors	193130P
2	Fitting, 1/2 pslk tee, polypro	
3	Fitting, 1/4 pslk tee, kynar	
4	Fitting, 1/2 pslk cplr, polypro	
5	Fitting, 1/4 pslk cplr, kynar	
6	Tube, 1/2 O.D. x 2” length	
7	Tube, 1/4 O.D. x 2” length	
8	25’ Primary Hose assy.	611932
	Primary-Gun Hose, Air Connector	193230P
9	Fitting, 1/2 pslk 1/4npt-1/2 tb	
10	Fitting, QC 1/4 npt f brass	
	Primary-Gun Hose, Pre-Dip Connector	193231P
11	Fitting, 1/8npt-1/4 tb pslk kynar	
12	Fitting, QC 1/8 f	

Flush Station Assembly



	Description	Part #
	Flush Station assembly	611881
1	Spray nozzle, flat spray	189901P
2	Fitting, 1/8 npt brass st elbow	
3	Spray nozzle, square spray	189902P
4	Fitting, 1/4 npt f-3/8 90° pslk	188102P
5	Filter, 1/4 npt m 90 micron	188101P
6	O-ring, 1/16 x .50 OD viton	
7	Screw, #6-32 x 1.13 pan hd	
8	Holster weldment	
9	Valve assembly, flush station	611898
10	Slide block	
	Flush Valve Rebuild Kit	612871
11	Hydraulic shock	
12	Clevis pin, .19 x 1.13 lg ss (4 pack)	193701Pk4
13	Actuator lever	
14	Spring, ext, .25 dia x 1 ss	189809P
15	Valve body	
16	Valve, cartridge	
17	O-ring, 1/16 x .75 OD viton	
18	Fitting, inlet, 1/4 npt brass	

LIMITED 3 MONTH WARRANTY

Westar Mfg. warrants to the original purchaser of Udder Gun equipment to be free from defects in material and workmanship under normal use and service, and when properly maintained by the purchaser. Use or service with corrosive chemicals or equipment subjected to freezing temperatures shall not be deemed normal. Westar's obligation under this warranty is limited to repairing at Westar's factory or furnishing a replacement for any part, or correcting any workmanship, which shall be demonstrated to Westar's satisfaction to have been defective at the time of delivery and with respect to which a written claim specifying the particular defect or defects shall have been delivered to Westar within 3 months from the date of delivery of the equipment to the original purchaser or before the system has cleaned 100,000 cows, whichever period is the shorter.

System parts covered by this warranty are: Prep station module, primary hoses and fittings, trigger and gun valve, gun spray nozzle, air gearmotor (except for internal airmotor cell) and flush stations. All other parts not listed are considered wear parts and are not covered by this warranty. Defective parts shall be returned to Westar F.O.B. Westar's factory, and repaired or replacement parts shall be shipped by Westar F.O.B. Westar's factory. The removal by purchaser of parts returned to Westar for repair or replacement and the installation by the purchaser of replacement or repaired parts shall be at purchaser's expense. No work will be done by Westar at the site of the installation unless in Westar's opinion it is impractical for purchaser to remove the defective part and return it to Westar's factory.

Repairs, replacements or adjustments for which Westar is responsible will be made as promptly as possible within the standard working hours of any day. Overtime, if required by purchaser, will be paid for by purchaser.

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UDDER GUN™

By: WESTAR MFG.

US Patent No. 9,072,274
Other Patents Pending

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DISCLAIMER

Although instructions and recommendations are included for installation and operation of your Udder Gun, Westar Mfg. does not assume responsibility for the installation or use of this equipment nor shall we be held liable for the direct or consequential damages resulting from the improper methods, or procedures.