LEX-AIRE AUTO-TEN & AUTO-2000 Installation & Maintenance Guide

AUTO-2000 HVLP Spray Gun

AUTO-TEN HVLP Spray Gun

Thank You For Purchasing The Lex-Aire Automatic Gun.

Installing The Gun(s) Will Be Trouble Free Following This Guide.

If You Have Questions Regarding Terms Or Parts, Consult The Owner's Manual.

Remember It Is Better To Use A Proper Sized Wrench Instead Of Adjustables.

Set Guns So That From Surface To Be Sprayed To Air Cap Is 4 1/2 - 10 Inches

Do Not Overtighten !

The Best Way To Use This Manual Is To Read Through It First And Familiarize Yourself With The Procedures And Format. Some Things You May Already Know. You Also Will Learn What Tools And Supplies You May Need Before You Begin

Test All Controls & Settings Before Spraying Valuable Pieces.
Paper Or Cardboard Is Cheaper To Practice On!

If You Run Into A Problem Or Question, Call Us At 800-539-2473, 781-646-1102 (outside U.S.A.).

Automatic Gun Operating Theory

Automatic spray guns are used to provide consistent repeating application of coatings to a wide range of materials.

There are several operating methods:

Stationary subject, mobile guns - This type of operation usually has a robot programmed to move in a defined path to coat a complex object.

Mobile subject, stationary gun(s) - In this operation the object(s) to be spayed are on a conveyor that passes beneath a number of stationary guns mounted above.

Mobile object(s), mobile guns - This operation has the objects to be sprayed passing beneath spray guns which are moving in a straight or circular motion above the subject

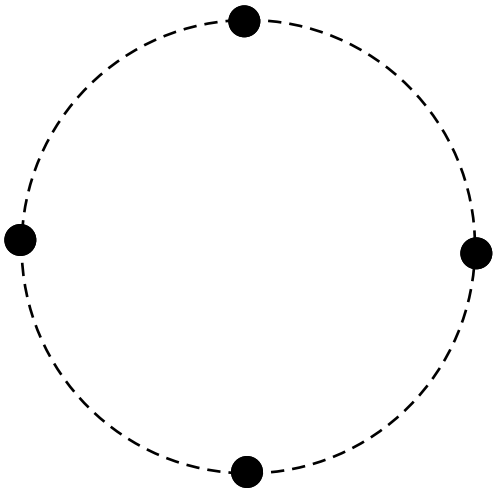
The automatic gun is designed to continually repeat a certain pattern as set by the operator.

In order for automatic spray guns to perform to their potential they must be properly installed and calibrated.

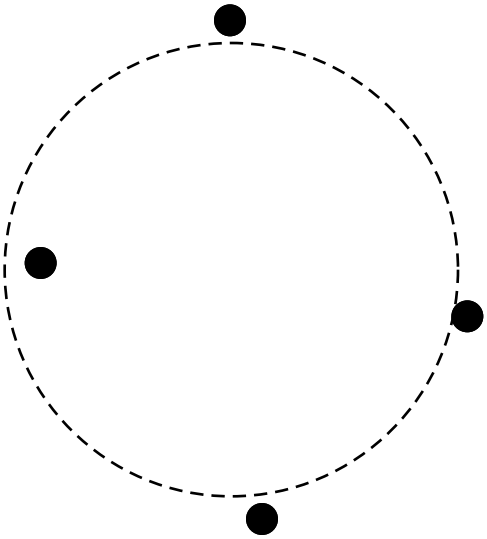
The automatic gun is subject to the same rules of spraying as a hand gun, but does not have the ability to adapt to uneven or changing conditions as does a human operator. While the automatic gun does not to eat lunch and does not get tired during the day, if it is not set up properly it will repeat the same mistakes all day long.

To perform properly automatic guns need to be installed so that they spray perpendicularly to the subject and, in multiple gun stations, operate in a parallel plane.

Top View Of Rotary Gun s



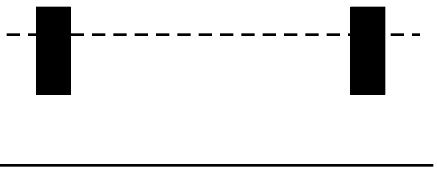
Top View Of Rotary Gun s



The guns on the left are installed correctly. They are equally spaced around a cirlce and they are located on the circle not inside or outside it.
The guns on the right are not placed on a circle and are not equally spaced along the path.

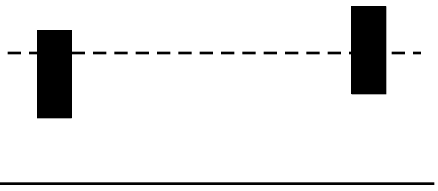
Correct

Side View Of Rotary or Reciprocating guns



Wrong

Side View Of Rotary or Reciprocating guns

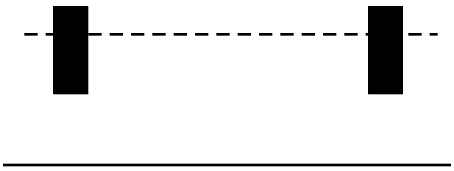


The guns on the left are installed correctly. They are perpendicular and equally distant to the conveyor surface.

The guns on the right are incorrectly installed. The gun on the right is not the same distance from the conveyor as the one on the left.

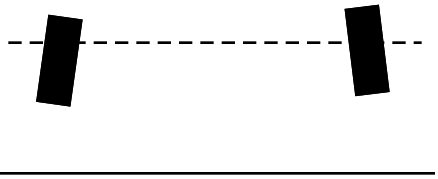
Correct

Side View Of Rotary or Reciprocating guns



Wrong

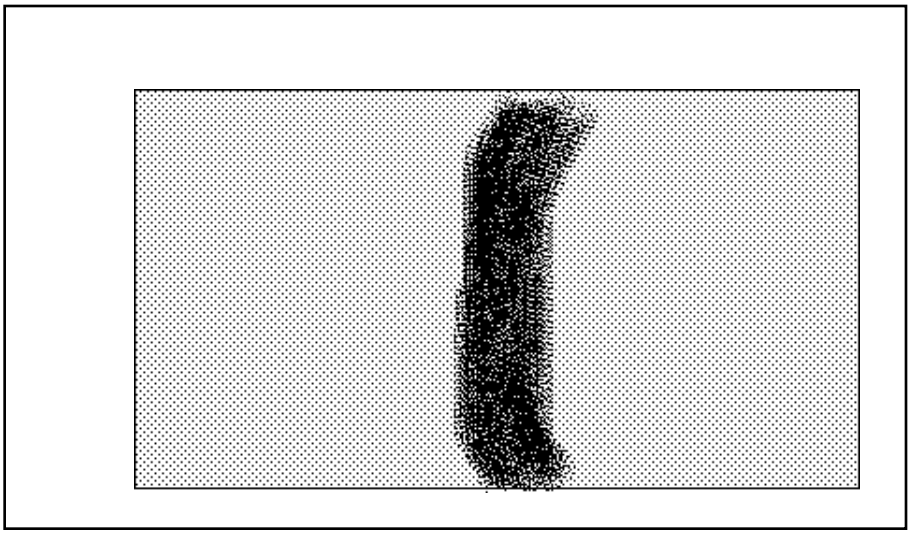
Side View Of Rotary or Reciprocating guns



The guns on the left are installed correctly. They are perpendicular and equally distant to the conveyor surface.

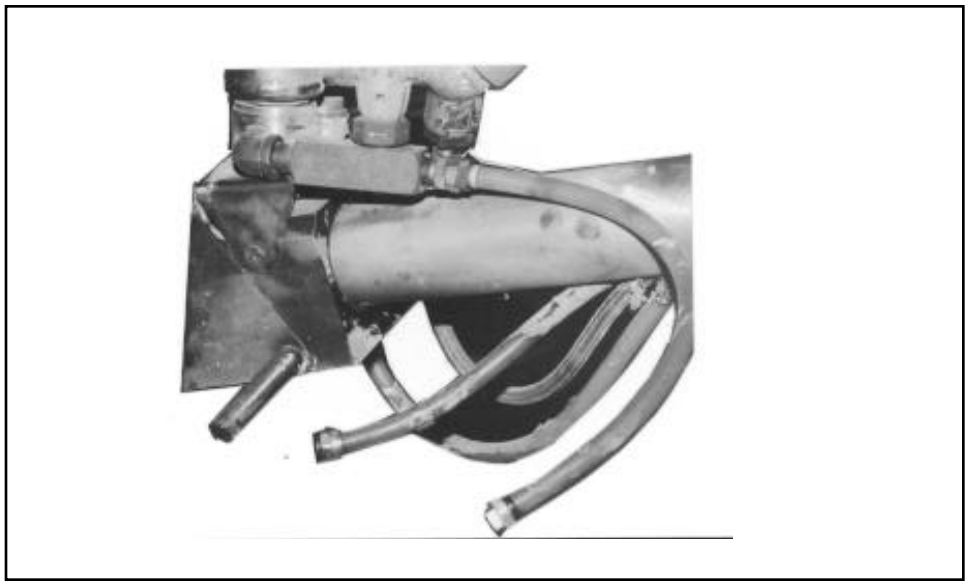
The guns on the right are not perpendicular to the surface. They are installed crooked.

If the automatic guns are installed in any of the incorrect ways shown they would produce uneven patterns of marks, striping, wet spots, dry spots,



1. **Place a large sheet of paper on the conveyor or under your existing spray gun and spray a sample stroke. The fan width and material output will be seen on the sheet. This will be your guide for adjusting the AUTO-TEN or AUTO-2000 Automatic Gun. Often, new users of the AUTO-TEN or AUTO-2000 think that the fan is not wide enough because they do not see the large overspray cloud. However, your AUTO-TEN or AUTO-2000 gun will give you at least as wide a pattern and better coverage.**

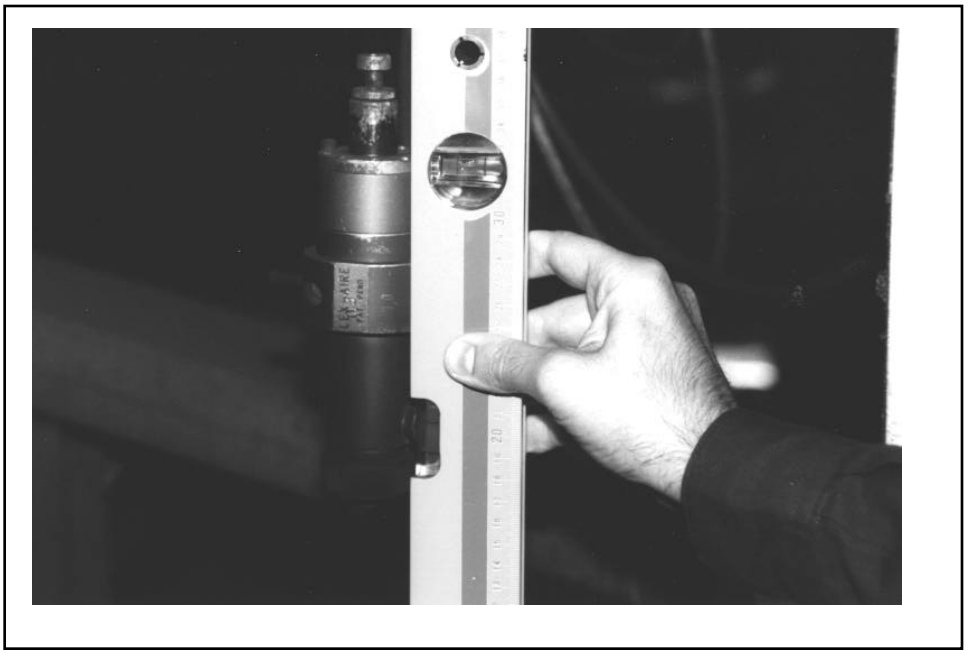
   An alternative method is to do the same thing with the atomizing air pressure off. This will give stream marks across the paper.



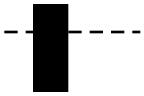
2. **Run solvent or water through the line to clean them and your old guns. Shut off the compressed air, signal line pressure, and fluid lines to your automatic guns.**
   Now remove and mark the fluid, air and signal lines from one of your automatic guns. Remove the old automatic gun from the mount.
   Fluid lines can remain the same size. Air lines should be at least 5/16" i.d. or 12 mm i.d.

3. **Clean the mounting rod thoroughly with sandpaper (80 - 100 grit) to remove foreign material, surface imperfections, and/or corrosion.**
Slide the AUTO-TEN or AUTO-2000 Automatic gun into position. If the gun does not slide on, sand the arm again. For dirty or scraped mounting rods it will be much faster to use an air mini-grinder to clean the rod. Don't force the gun on.
Check to see if the air hose will screw onto the gun without hitting any obstructions, such as a rod behind the gun. If there is a lack of clearance, use a 45 degree elbow.

4.



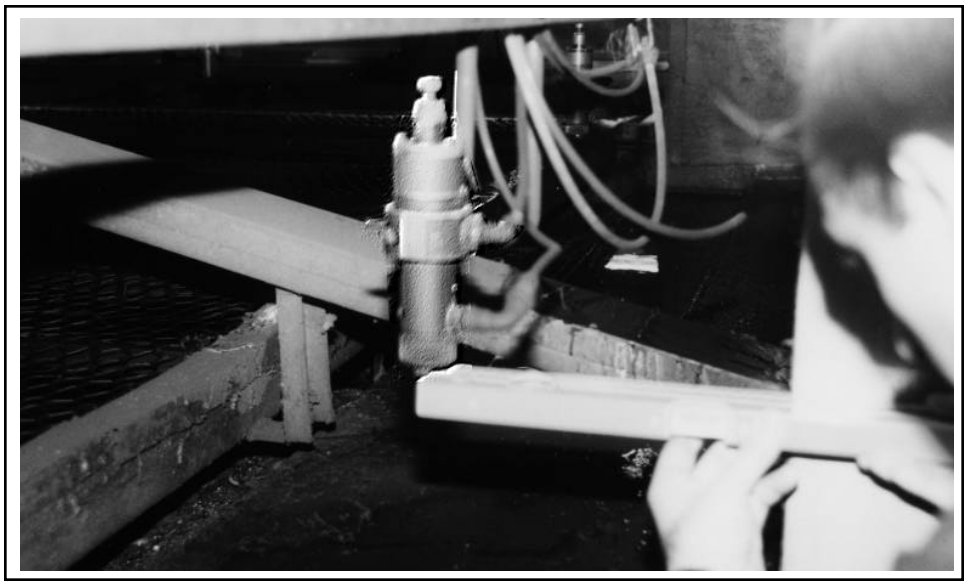
Guns Straight On Rod

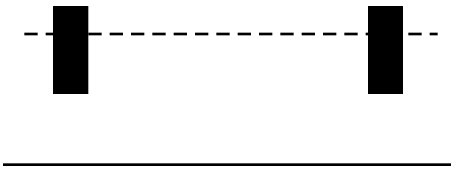


In order to work properly the guns must be installed level.
The first leveling operation is the rod or arm the spray gun mounts on.
Install the gun and determine if it is level in the plane of the mounting rod.

Or, check the mounting rod at the point where the gun will be installed for level.

Correct rod as needed.

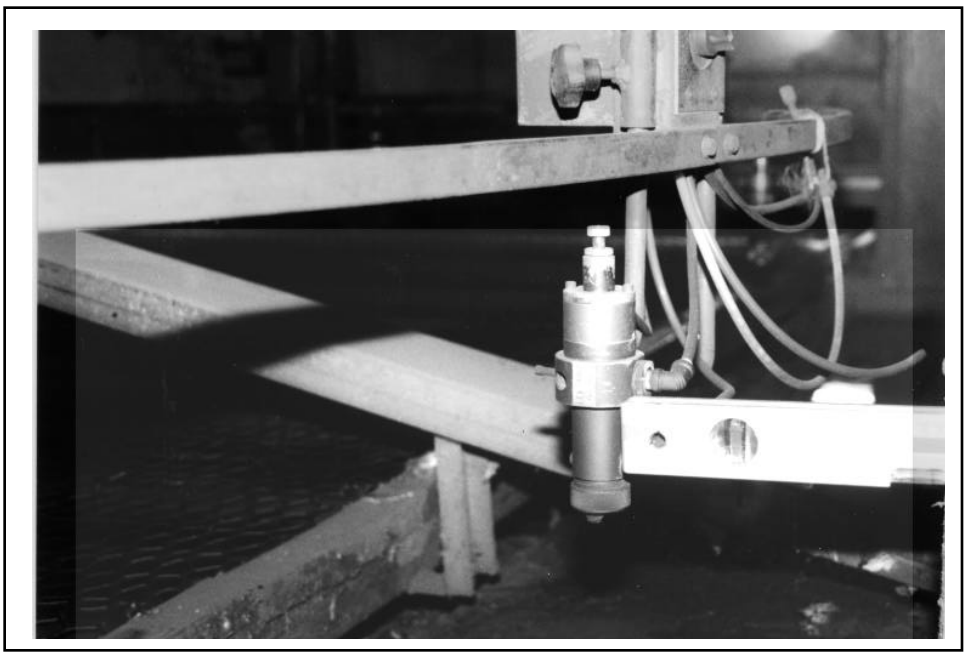


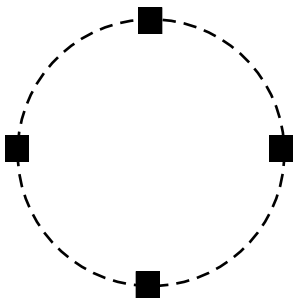


5. **After installing the gun on a level rod it should be set at the same distance from the surface to be sprayed as the other guns. Generally 6 - 10 inches from the surface.**

   Mark a level line on the cabinet side and keep all air caps or other part of the gun at this level. Move gun or arm up or down as needed.

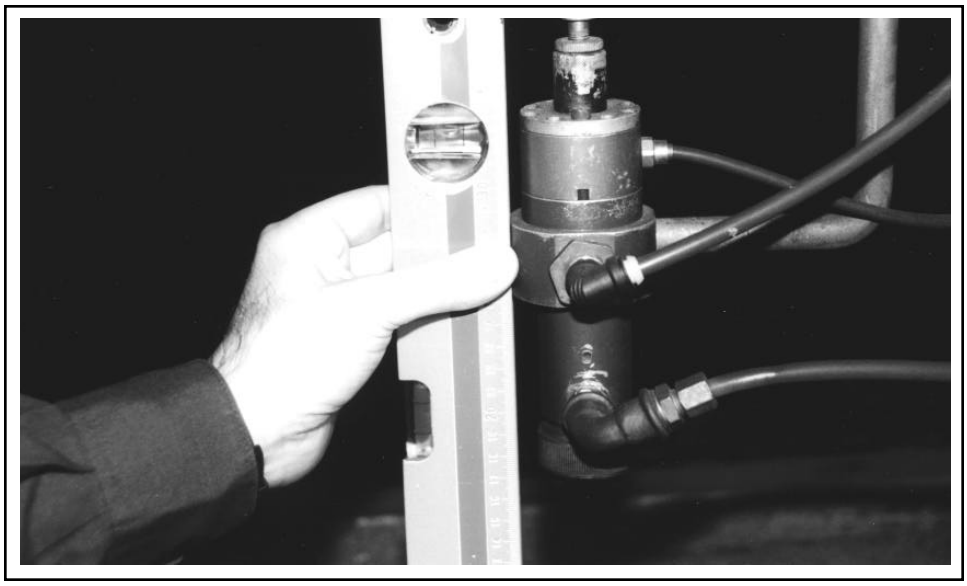
   Or, measure a distance from a reference point on the conveyor or frame to the same part on each gun, air cap for example.



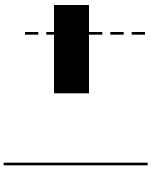


6. **The guns now need to be located in the same circle (with rotary units) or square (with reciprocating or stationary units).**

   To do this, measure from the side of the cabinet to the side of a gun.
   Establish this as a reference and adjust all guns to the same distance from the side.



Even On Rod
Perpendicular To Surface



7. **Finally, the gun needs to be perpendicular to the sprayed surface.**

   This is done by moving the gun on the rod until it is level and securing that position with the set screw on the gun.

   This completes the four leveling operations for the guns.
   All but this last (held by the set screw) will remain correct if you need to remove the gun for maintenance. Be sure to recheck all level measurements if gun is moved.

8. 

Attach the air line, signal / pilot line, and fluid line to the AUTO-TEN or AUTO-2000 Gun. The signal and air inlets are 1/4" pipe. The fluid inlet fitting is a 3/8" fluid fitting. It may be necessary to transfer the adapter from your old gun to the AUTO-TEN or AUTO-2000 Gun if your fluid lines have a different type connector.

Be sure to back up the gun fluid fitting with an 11/16" wrench to prevent distortion of the internal fluid block !
Tape or tie lines to the arm as desired. Repeat steps 1 - 4 for each additional gun.
The next step is to set the adjustments on the gun.

Adjusting Guns

1. **Set your system so that you can trigger air only to come out of the stationary gun. Activate the gun and set your air line pressure so that the gauge on the gun reads 4 psi. Important: Signal / Pilot air pressure should be 60 psi or higher!**

2. **Make sure air cap retaining ring is secure and air cap is properly aligned.**

3. **Turn the fluid adjustment knob in all the way and then back it out three turns, using the index scribed into the knob as a guide.**
   First loosen the brass nut, turn the small knob in all the way, back out three turns, then hand tighten the brass nut. This style knob will retain your setting even if you remove the fluid knob assembly.
   Start the fluid pump, activate the signal, and wait for the gun to start spraying. Stop the signal, let the gun sit and watch to see that there is no leakage from the needle or packing. If there is, adjust per instructions in the owner's manual or maintenance section here.

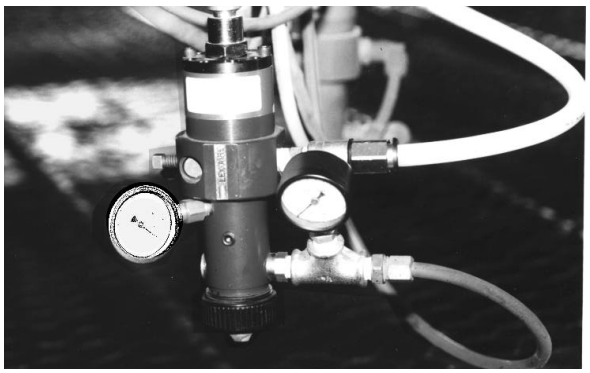
4. **While the gun is stationary, activate the signal line.**
   Adjust the fluid knob as required for proper flow.
   Adjust gun height for needed fan width.
   Adjust air pressure for proper atomization.
   Repeat for each gun

Note: LEX-AIRE has optional parts to allow you to adjust the fan width of the spray gun. Please call or ask your representative for details.

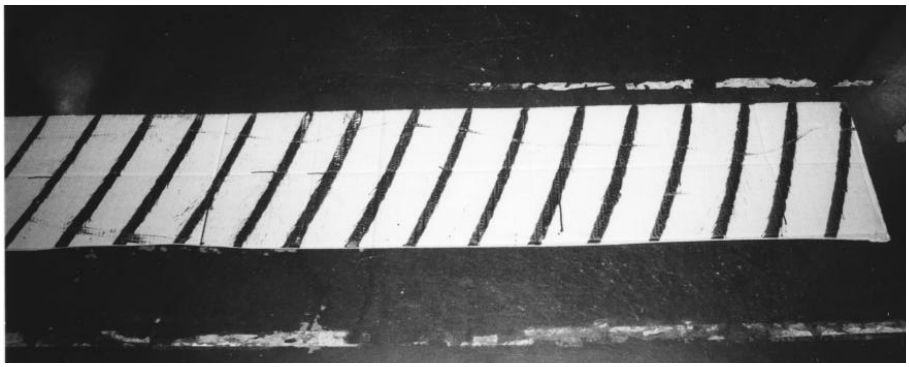
An alternative, easier, way to calibrate your guns is to:

1. Open fluid knob 5 turns to full open.
2. Remove or turn the air pressure regulator on the gun (if used) all the way up, full clockwise.
3. Use your fluid pump regulator to regulate fluid delivery to all guns.
4. Use your master air regulator to regulate atomizing air pressure.

This easier method will work if you have clean, open air and fluid lines, so that each gun gets identical flows of air and fluid.



This illustration shows the Automatic gun with the air pressure and a fluid pressure gauge installed.
The air pressure gauge is supplied with your gun and should be used to determine and verify that the air pressure is at a correct pressure and is the same for each gun.
The fluid pressure gauge is installed using a “T” fitting and is especially useful if you do not use a recirculating pump and the fluid pressure varies with the number of guns spraying and the pressure shown on your pump is not the same as is at the gun.
For those with recirculating pumps, set your pump pressure to desired amount and verify with gun gauge.
For those without recirculating pumps, turn on the number of guns that normally spray simultaneously and adjust pump pressure until you reach the desired fluid pressure at the gun.
The air pressure gauge can remain permanently on the gun, though it should be covered with a protective “baggie” or saran wrap to protect the face.
The fluid gauge should be removed after setting because the gauge will become plugged with paint and will no longer provide an accurate reading.



After you have the guns installed level and square, and your pressures are where you think they should be, it is time to test the guns.
Turn the atomizing air pressure **off** and run a piece of cardboard through your spray area.
The guns will produce streams across the cardboard. Note which gun goes across first or last so you can number each stream.
Check that the stream patterns are evenly spaced and are of similar widths.
Stream Spacing:
If the stream patterns are unevenly spaced, adjust the guns corresponding to the uneveness.
The unequal spacing could be caused by a gun being on the rod crooked, a different distance from the side of the cabinet, or having a crooked fluid stream caused by a clog, bent needle, or misadjusted needle travel.
Stream Width:
For guns streaming differently than the others, check for clogged nozzle, fluid knob adjustment different from the other guns, needle travel that does not allow full pullback, or a bent needle.

After you have the fluid streams equally distant and the same size, it is time to make sure the spray patterns are the same size and evenly sprayed.

To do this you need to run a piece of cardboard for each gun, or as we did here, one for two guns. The idea is to be able to identify the spray pattern that each gun makes.

Run a set through so you can see how each gun is spraying compared to the others.

The goal is for them to be spraying the same width pattern with an even distribution and atomization of material.

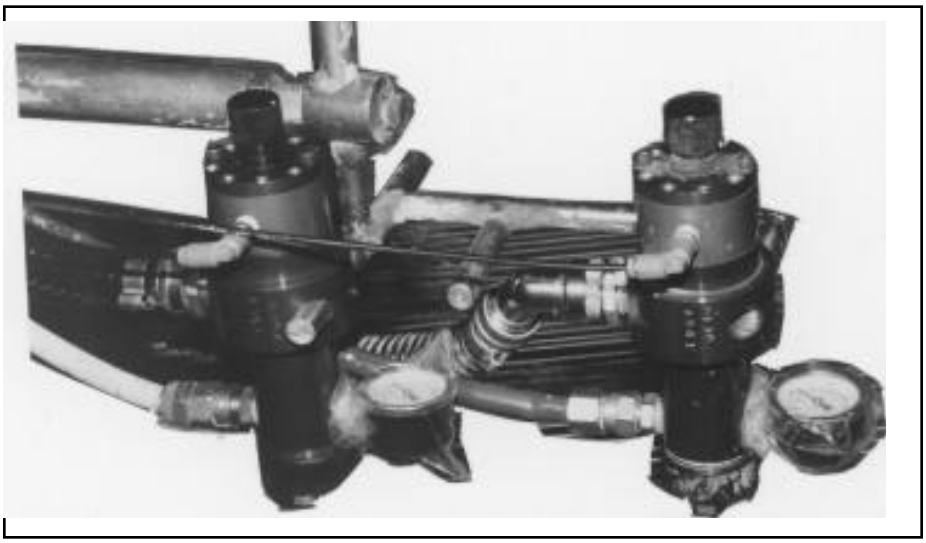
Adjust the fan size, fluid pressure, and air pressure until the guns are all spraying the same. In the illustration above, from an 8 gun rotary unit, the gun patterns are numbered and you can see they are spraying similar patterns. Now we can move on to the next step.

Turn all the guns on and send a piece of cardboard through.
The goal is for the cardboard to be evenly sprayed without gaps, light, or heavy spots.

To achieve the even coverage you may need to adjust:

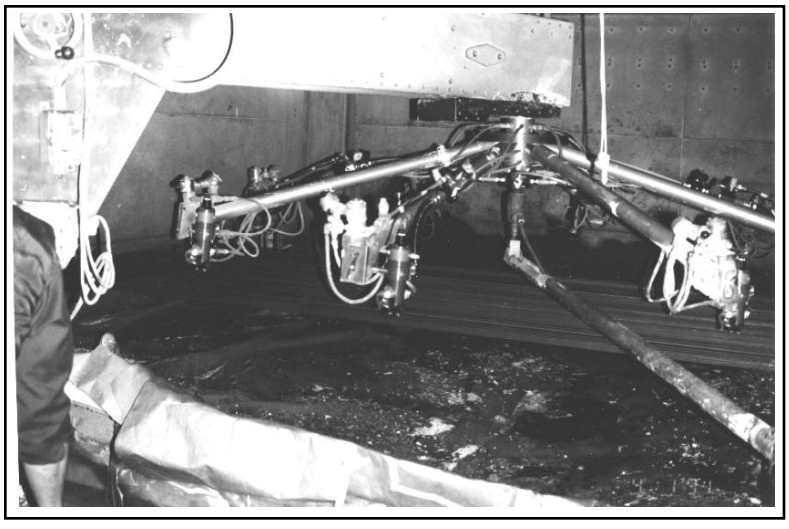
Carousel speed
Conveyor speed
Fan Size
Fluid pressure or output
Air pressure

Turn on your conveyor, set the system for automatic and send a piece of paper, cardboard, etc through to test and calibrate the guns. Watch for proper overlap, atomization and coverage. Adjust as needed.



Dual gun installation on reciprocating arm. Note 45 degree elbow on front gun to clear second rod.

Installed Guns on Rotary Unit



Tips To Make Set-Up Easier

Solve spraying problems or adjustment the same as you would a conventional air spray gun.
Examples: If you are not getting good enough atomization,
turn air pressure up.
If fluid output on one gun is different than others, check for dirty nozzle, dirty line, or that fluid knob is adjusted the same as other guns.

Try to keep fluid pressure lower than air pressure. This way the atomizing air does not have to overcome high fluid pressure.
Example: If air pressure on gun gauge is 5 psi, your fluid pump should be set to less than 5
Once you know you can atomize the fluid properly, you can gradually increase fluid pressure as needed.

If you have sufficient air pressure you can increase fluid pressure over air pressure, but be aware of heavy spray at the center of the pattern which means the air cannot atomize the fluid.

If you need more output, but that would mean increasing fluid pressure over air pressure, use a larger needle / nozzle set.

Practice on paper or cardboard, not costly production pieces.

Turn atomizing air pressure off and watch fluid streams on the paper or cardboard for evenness of output.

The guns are simple and rugged. More often than not you will be better off leaving them alone. If they are working properly do not fiddle with them.

Do not clean air cap or nozzle with hard metal objects (screwdriver, nail, etc).This will damage the precision of the hole causing distorted fan pattern or crooked fluid stream.

Gun Cleaning and Periodic Maintenance

If You Have Never Used An HVLP Gun Before Please Note:

An HVLP Gun spraying at 3 - 7 psi, cannot overcome a dirty needle, nozzle, or air cap, like a high pressure gun spraying with 40 -80 psi.

HVLP Guns will spray properly only if kept clean.

A little time spent keeping your gun clean will result in beautiful finishes, reduced material use, and almost no overspray to clean off anything else.
The AUTO-TEN & AUTO-2000 are external mix guns. Unless paint has entered the gun body through a loose fitting, or misadjusted needle packing, there is only paint in the line, the nozzzle holder and the nozzle.

After Each Use, At End Of Work Day Or Shift:

1. Run solvent or water througn line.
2. Remove air cap, clean if needed.
3. Check for leaks

Total Estimated Time: 3 - 5 Minutes

Once A Week:

1. After normal cleaning, remove needle assembly by unscrewing fluid regulator assembly.
2. Lubricate needle and threads on fluid regulator with Vaseline, and re-assemble.
3. Remove Pattern Control Ring, Air Cap, and Nozzle. Soak in solvent until clean. Reinstall with fresh lube on pattern control ring threads.

Total Estimated Time: 4 Minutes

Read **Important** note below !

Once A Month:

1. Remove Air Cylinder Cover and inspect bore for any paint or solvent residue, clean if necessary. Lube “O” Rings with small amount of Magnalube (supplied with gun) and reinstall cylinder.
2. Remove and lube needle as above.
3. Check and adjust packing as required.
4. Reinstall needle.

Total Estimated Time: 7 - 10 Minutes

Read **Important** note below !

These time intervals are not set in stone ! You can increase or decrease intervals as your experience shows.

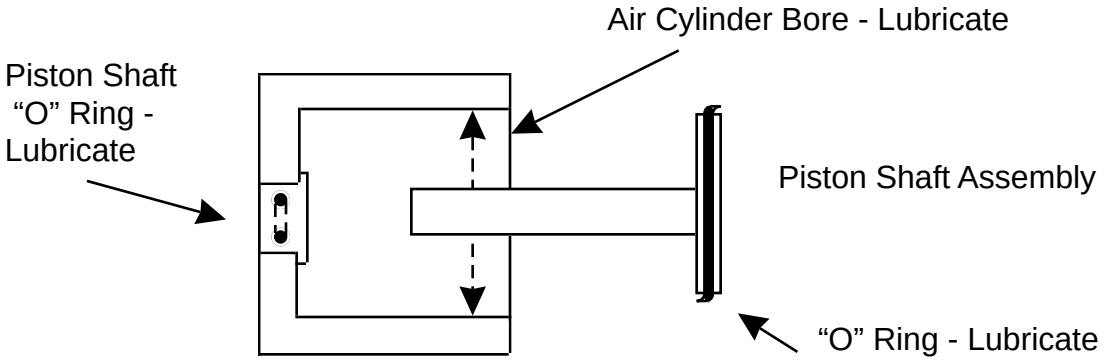
! Important !

When reinstalling the needle / fluid regulator assembly back into the gun, make sure that the red fluid regulator knob is backed out.

If the red knob is turned in too far when the assembly is screwed back into the gun, the needle will be jammed into the nozzle, resulting in damage to both the needle and the nozzle.

Note: See detailed instructions for procedures in maintenance sections

Air Cylinder Cleaning and Lubrication



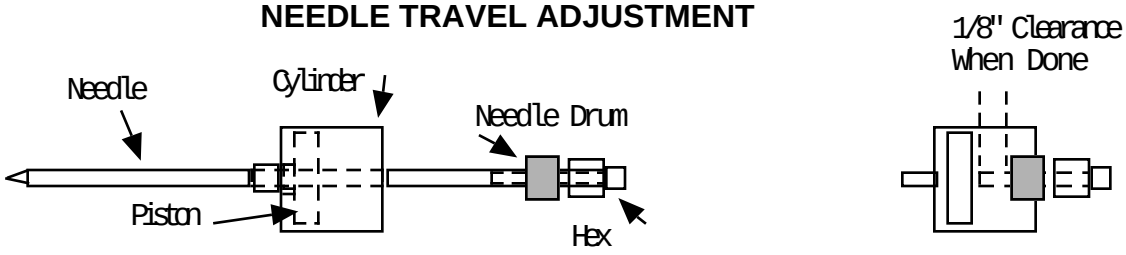
Once a month the air cylinder bore and piston should be cleaned and lubed with Magnalube Grease.

Do Not lube cylinder with Vaseline, which may dry out and cause the piston to stick.

The "O" Ring on the piston assembly rides in the cylinder bore to form a seal when air pressure is applied to the cylinder.

If dirty solvent gets into the cylinder, the residue acts like glue and will stick the piston in the bore, making the gun inoperable. A quick check of the cylinder can be made by removing the needle assembly and triggering the empty gun. Release the trigger and push the piston back through the regulator hole with your finger.
The piston should move freely. If not, clean the cylinder and coat bore and "O" Ring with Magnalube and reasemble.

NEEDLE TRAVEL ADJUSTMENT



The needle travel is necessary so that the needle sets into the nozzle to stop material flow and also so that the air comes on before the material.
This adjustment may have to be made when changing nozzle and needle size or to compensate for wear.

ADJUSTMENT

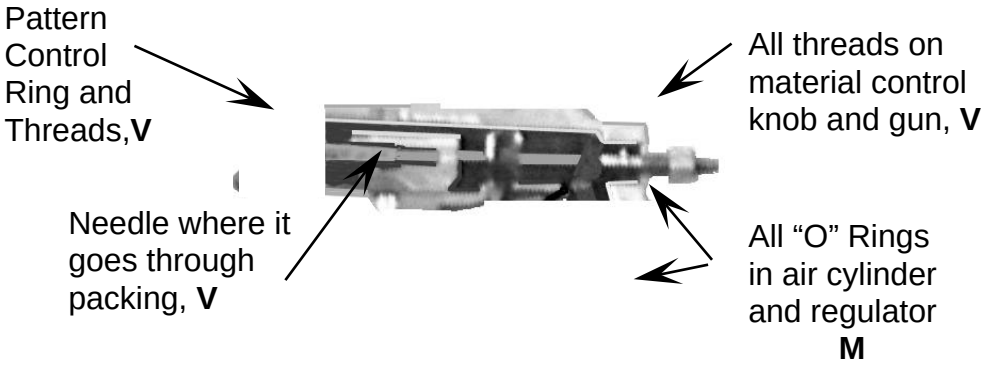
1. With the cylinder fastened to the gun and the fluid knob and needle removed, take your finger and push the piston in to seat it
2. Back off the needle drum and hex, and push the needle into the gun, so that the needle is seated in the nozzle.
3. Now, rotate the needle drum into the gun until it just touches the piston.
4. Pull the needle out and rotate the drum counter-clockwise (away from the gun)1 1/2 - 4 -1/2 turns.
5. Hold the drum in this position and rotate the hex to meet it and tighten the drum and hex against each other.

The needle will now be adjusted to allow the proper clearance from the piston of 1/8".

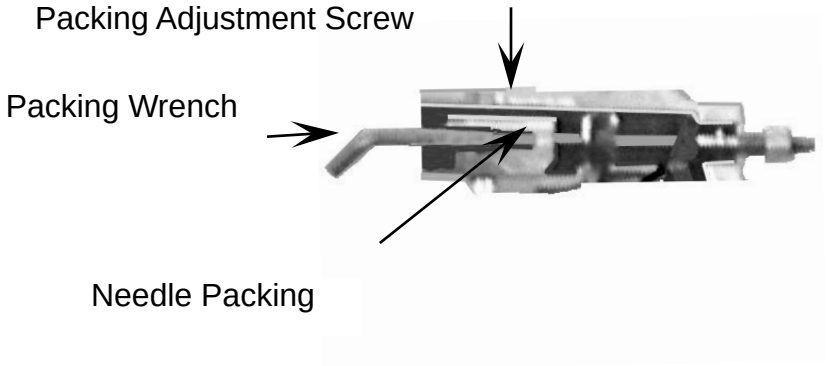
Be sure to tighten needle drum against hex or adjustment will not hold !

AUTO-TEN & AUTO-2000 Maintenance

Lubricate Gun



Lubricate "O" Rings with "Magnalube "O" Ring Lube",shown as **M,** and other indicated parts with Vaseline or Gun Lube, **V**. This will ensure a long gun life, smooth action, and prevent malfunction.
NOTE: If needle is not lubricated it could stick and cause a stream of paint after the button is released.



Needle Packing Adjustment

This adjustment should be checked periodically to insure that material does not leak back through the packing. We suggest you lubricate the packing by rubbing a small amount of Vasoline on the needle periodically or after cleaning.

Adjustment

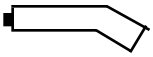
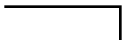
Remove fluid nozzle. Using wrench provided, snug up the packing by turning the wrench, pulling the needle while you tighten. The packing should be just tight enough to feel its grip. The needle should then move freely.

! Important !

When reinstalling the needle / fluid regulator assembly back into the gun, make sure that the red fluid regulator knob is backed out.

If the red knob is turned in too far when the assembly is screwed back into the gun, the needle will be jammed into the nozzle, resulting in damage to both the needle and the nozzle.

Tools Used In Working On The AUTO-TEN & AUTO-2000

Tool	Used On
 7/64" Allen Wrench (Included)	Air Cylinder
 Nozzle Tool (Included)	Nozzle Removal
 Packing Adjustment Tool (Incl)	Packing Adjustment
 7/16" Open End Wrench	Needle Adjustment (Use 2)
 11/16" Open End Wrench	Fluid Inlet Fitting
 3/4" Open End Wrench	Fluid Line Fitting
 5/8" Open End Wrench	Air Cylinder Fitting
 11/32" Open End Wrench	Lower Pressure Tube (BF) & Air Regulator Hex on Handle
 5/32" Allen Wrench	Needle Extension
 1/16" Allen Wrench	Delrin Piston

Troubleshooting Methodology

If you are having a problem with your Automatic Spray Gun, the first thing you want to do is understand how it works. Understanding how it works will allow you to narrow down the source of the problem.
Ninety percent or greater of gun problems are not the gun, but are related to the support equipment, fluid contamination and air contamination.
Your LEX-AIRE Automatic Spray Guns are of a simple, rugged, modular design, engineered to provide long life.

Gun Operation

The gun has atomizing air, fluid, and trigger air inlets.
The gun is activated by the trigger signal.
Air goes into the rear cylinder from the signal / trigger port.
In the cylinder is a double ended piston.
The front end of the piston starts and stops the air. The rear starts the fluid.
When the gun is triggered the piston pulls back, starting air flow. As it continues to pull back it contacts the needle, pulling it out of the nozzle, starting fluid flow.
If you have proper trigger pressure, atomizing air pressure and fluid flow, all should be well.

Sources of Problems

There are four possible sources of problems:

1. Trigger air
2. Atomizing air
3. Fluid
4. Mechanical or adjustment problem with gun

Trigger / Signal Air

A lot of people take the signalling air for granted. However it is a potential source for problems. You should have at least 60 psi at the cylinder for proper operation. If in doubt increase the pressure. To determine if you have proper pressure, put a “T” fitting into signal air inlet and install a pressure gauge. When the gun is triggered the gauge should reach and maintain at least 60 psi.

If it fails to maintain that pressure it is either the gun or the support equipment.
A gun problem would be a failed “O” ring allowing the air to get around the piston, or a cylinder so worn that it will not seal. It will take years to wear out a cylinder, if ever, so check that last. Worn “O” rings are not too likely either, if the cylinder has been properly lubricated. You can check this by removing cylinder and moving piston back and forth checking for seal.

When you are having a trigger air problem the symptoms are usually that you get air but not fluid, or not enough fluid, or the fluid starts ok and then fades away. (this assumes you already know your fluid pump is ok and lines are clean)

The likely area of problem is support equipment.
We have seen this caused by:
Regulator not adjusted properly
Worn regulator

Blocked air lines
Bad solenoid
Computer not sending proper voltage to solenoid.

The solenoid can be tricky. We have seen cases where when guns were set to “purge” they ran fine, but when set to run normally would give intermittent or fading spray.
The problem turned out to be a worn or defective solenoid.

If you think about how the gun works you can figure this out. The fact that you are getting atomizing air, means the piston is starting to pull back but the needle is not coming back or staying back. What makes the piston move? Trigger air! So check that out.

Atomizing air

The inside of the LEX-AIRE Automatic Gun is entirely open for atomizing air, so unless your air cap is clogged the gun is not a source of atomizing air problems. If you look at the inside of the gun and think about how it works you can figure this out. If you get the air to the gun, it is going to come out.

Atomizing air can be controlled by a master regulator or an individual regulator for each gun.
Air problems are usually related to the piping or the compressor.
If your air starts off where you want it but gradually fades away you likely have an inadequate compressed air supply.
If pressure starts ok, then fades rapidly, you have a piping problem or master regulator problem.
The air lines could also be too small making them unable to supply the guns with enough air.

The only potential problem with the individual regulator is if solvent gets inside the regulator and swells the “O” ring on the inner valve. Two problems can arise here. One, if the “O” ring comes out, you will hear a “pop” each time the gun starts. This doesn’t affect the operation much. The other is if the “O” ring swells, but does not come out. This will cause reduced air flow.

Fluid Delivery

This is probably the number one source of problems. We will look at the gun end first.
What is needed from you gun for proper fluid delivery?

Correct needle / nozzle size for the finish you are spraying.

Packing adjusted properly to prevent fluid from getting into the gun body,
but not so tight the needle binds.

Needle travel adjusted properly, so that the air comes on first. If set too close you will get spurts or spits each time the gun turns on and off. If set too far back, the needle will not be able to retract fully.

Clean nozzle, nozzle holder and air cap. If the nozzle is dirty the finish will not be able to come out or its flow will be restricted causing one gun to spray less than others. If the air cap is dirty you will get improper atomization or crooked fan pattern.

Support problems:

Dirty or clogged lines. If the lines are dirty this will cause endless and continuing problems.
We have seen cases where just installing the new guns caused problems. The lines were so dirty that flexing them when the guns were installed caused dried up pieces to break away from the sides continually clogging the gun. The problem was finally solved by replacing the lines.

A clogged gun will either not spray at all or spray differently than the other guns in a multiple gun set up.
A clogged manifold will cause guns to spray differently no matter what you do, check it.

If you are continually having problems with guns clogging you should be sure you are straining your finish and if you already are, consider replacing the fluid lines and cleaning the manifold.

The guns do not cause clogging, they only put out what you give them.

Pumps can be a problem too. If they have internal leaking, they can either fail to develop proper pressure or fail to maintain it.
With internal seal failures, the gauge can read the right pressure but you won't be getting proper fluid delivery to the guns.

As mentioned before, fluid pressure should be set below atomizing air pressure, at least initially . If the fluid pressure is too high, the fluid can actually push its way past the atomizing air. This usually results in a heavy pattern in the middle of the fan, or all around insufficient atomization.
If you need more output, go to a larger needle / nozzle size or gradually increase fluid pressure.

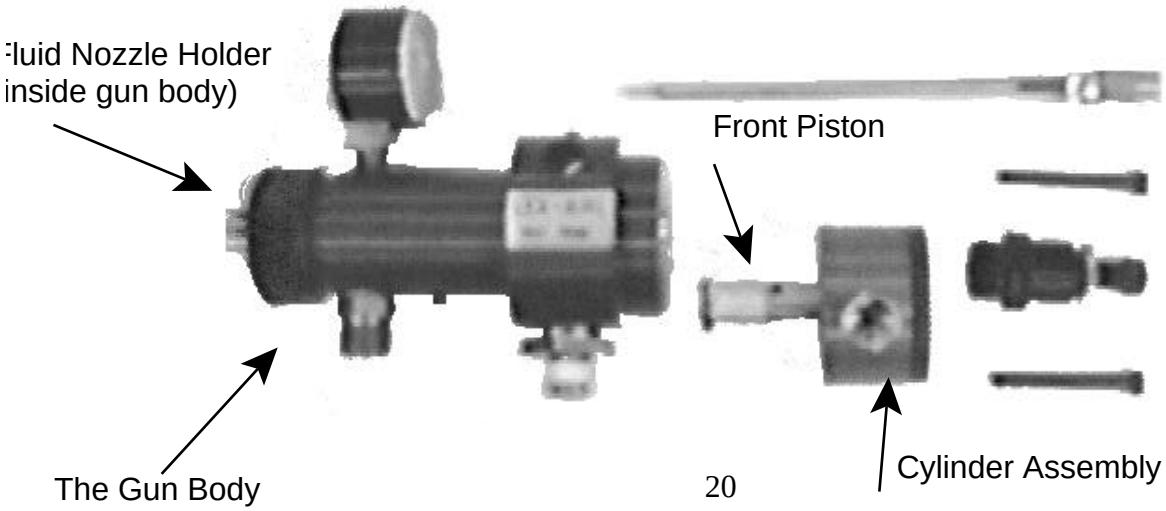
Also, as mentioned earlier, your easiest set-up and operating of the guns can be done by opening the fluid knobs on all the guns all the way (about 5 turns) and regulating their output by varying the fluid pressure. This takes a lot of the work out of set up and operation because you do not need to calibrate each gun individually. As simple as this method is, it only works on **clean** support equipment. Think about it. If each nozzle is the same size and it is being fed the same pressure, it will have the same output. Simple isn't it.

Mechanical Problems

Your LEX-AIRE Automatic HVLP Spray Gun is a simple, rugged modular design to provide years of use and easy maintenance.

There are 3 main components.:
The Gun Body
Fluid Nozzle Holder (inside gun body)
Cylinder Assembly

The gun body can have no problems unless it is physically broken.
The gun body does house the air cap and if it is clogged can cause distorted fan pattern or



inadequate atomization.

Fix - Inspect and clean air cap if needed. **Never clean air cap with a metal tool or holes can become distorted causing uneven fan pattern.**

Fluid Nozzle Holder

The fluid nozzle holder contains the fluid nozzle, the packing, and the needle passes through it. The nozzle holder is easily removed (if needed) form the gun by removing the fluid inlet fitting and the allen screw on top of the gun.

Adjustments made here are the packing adjustment (see Maintenance section) and inspections of needle seating in the nozzle, and leaking.
There are four potential areas for fluid leaking in the gun and they are all in the nozzle holder.

1. The nozzle is not secure in holder and leaks around the threads.
   Fix - Tighten nozzle, replace gasket if needed

2. The needle is not seating in the nozzle, causing dripping from nozzle
   Fix - Check to see if needle is binding in packing preventing return, Check needle travel to make sure needle has room to return. When new the needle sometimes needs to cycle a few time to seat in nozzle. Finally the needle or nozzle is physically damaged. Inspect for bent needle or bent nozzle.

3. The fluid inlet fitting is not sealed.
   Fix - Check that fitting is tight and put thread sealant on threads.

4. Packing is worn or loose and is leaking.
   Fix - Adjust packing and replace if worn beyond adjustment. (Note you should get at least a year and more likely several out of packings before they need to be replaced) Be sure to keep needle lubed with Vaseline or petroleum jelly where it goes through the packing to help seal the needle, prevent the needle from binding or sticking, and prevent premature packing wear.

Cylinder Assembly

The cylinder assembly is the working part of the gun. It is also very simple and easy to diagnose and maintain. The trigger air comes into the cylinder and pushes the piston back. The front end of the piston pulls out of the gun body and releases the atomizing air. The piston moves back further and contacts the needle pulling the needle out of the nozzle, starting fluid flow.
When the trigger signal is released, the air vents out the back of the cylinder. One spring pushes the needle back shutting off the fluid flow. Another spring pushes the piston back the rest of the way stopping the air flow. The air always starts before the fluid and ends after the fluid stops. This prevents the gun from ever “spitting” on start up or shut down.

Potential problems:

1. Piston will not move
   Fix - If you cannot move the piston by hand either the cylinder is so lacking in lubricant that the piston cannot move or the “O” rings have swelled up preventing the cylinder form moving.
   The “O” rings swell if solvent gets into the cylinder.
   Replace “O” rings. the “O” rings can be replace by removing cylinder from gun, loosening the Allen screw which holds the front piston on, removing front piston, pulling piston assembly out of

gun and replacing “O” ring on piston and “O” ring in cylinder that seals the shaft.

2. When gun is triggered you get fluid but no air.
   Fix - The front piston Allen screw may not be holding piston on. The front piston gets held in place by the air pressure in the gun, but the needle is still able to pull back.
   Tighten allen screw on front piston. Do not overtighten or piston shaft will bend and cause needle to bind.

3. Cylinder or piston is worn. This will not happen often and it will take a long time before it does, unless the parts are physically damaged.
   Fix - Inspect Cylinder bore for ridges or elongation, replace if needed.
   Piston - Not subject to wear, but inspect and replace if damage is found.

4. The needle adjustment done within the cylinder. Be sure adjustment drum and hex are tight against each other or they can move up and down the threads changing the needle travel.

The only other mechanical problem is if parts are not installed correctly or are in the wrong place. Refer to owner’s manual for gun breakdown and familiarize yourself with gun assembly before dismantling.

Summary

When you have a problem it can be one of four things:

1. Trigger air
2. Atomizing air
3. Fluid
4. Mechanical or adjustment problem with gun

Think through which it is or isn’t to narrow down your starting point.
If you go through the process methodically it will be straightforward to locate and remedy the problem. Remember, most of the time the problem will not be the gun itself.
Though it is a good idea to have several spare guns on hand to swap out with a problematic gun, if only to determine that the gun is not the problem. A spare gun (5 - 10 % of the number of guns you have should be spares) can turn a crisis situation into a regular maintenance one by getting a line back in operation quickly.
The same problem may crop up again with the spare gun if the original problem was in the support equipment, especially clogs and uneven spraying. But, even if this is the case, you have still narrowed down where the problem is.

Troubleshooting

Air but no fluid

Check to see fluid pump is on.
Check nozzle for blockage
Check lines for blockage
Check for adequate trigger pressure to pull back needle.
Hold gun stationary, remove fluid regulating cap, trigger gun, and see if needle is pulling back.

Fluid but no air

Check to make sure air is on.
Check for kinked line.
Check if front piston is tight on shaft

Air fades away

If air fades quickly, check for low flow regulator, inadequate lines
If air fades slowly check for underpowered compressor.

Fluid fades away

Check for blockage in nozzle
Check for adequate trigger air to hold needle open
Check fluid pump

Uneven fan pattern

Air cap clogged
Air cap holes damaged
Nozzle damaged
Nozzle clogged

One gun sprays different than others

Swap guns, see if problem moves with gun.
If yes, check gun for blockage, damaged parts or misadjustments
If no, check for clogged lines or manifolds, improper signalling solenoid

Heavy Center Of Pattern

Fluid pressure too high or air pressure too low

Heavy Sides of Pattern

Air pressure too high or fluid pressure too low