

ARTISAN®
TECHNOLOGY GROUP

Your **definitive** source for quality pre-owned equipment.

Artisan Technology Group
(217) 352-9330 | sales@artisantg.com | artisantg.com

Full-service, independent repair center
with experienced engineers and technicians on staff.

We buy your excess, underutilized, and idle equipment
along with credit for buybacks and trade-ins.

Custom engineering
so your equipment works exactly as you specify.

- Critical and expedited services
- In stock / Ready-to-ship
- Leasing / Rentals / Demos
- ITAR-certified secure asset solutions

Expert team | Trust guarantee | 100% satisfaction

All trademarks, brand names, and brands appearing herein are the property of their respective owners.

Visit our website - *Click HERE*

LDS9000

AirFree™ CA Dispenser

Operating Guide



FISHMAN®

Introduction

Thank You for purchasing the Fishman LDS9000 AirFree™ dispenser. Our 9000-line of AirFree dispensers uses a patented positive displacement technology to provide the highest level of repeatability of any dispenser utilizing a syringe as a reservoir. We guarantee it.

Please spend a few moments familiarizing yourself with the LDS9000 dispenser. Our recommended testing procedures provide an interactive tutorial on the dispenser's functions. When complete, review the helpful information we have included based on our 40 years of dispensing experience.

After completing the guide, should you have any additional questions please don't hesitate to contact Fishman or your authorized Fishman dealer.

US & Canada: 800-433-2115

United Kingdom: 1285 644211

Worldwide: 1-508-435-2115

The Fishman Promise

We promise that our products will operate to your complete satisfaction. We strive for the highest standards regarding quality, workmanship and attention to detail.

If for any reason you feel that you are not satisfied with our products or support, I extend the offer to write or call me personally. Our interest is to build partnerships through understanding your needs and incorporating them into our products and services. Your trust in Fishman is our ultimate reward.



Scott Beebe,
President of Fishman Corp.

Table of Contents

Page

Getting Started....4

Specifications....5

Operation....6

Program Control....7

How to Use the Control Panel....8

LDS9000 Gun Assembly....10

Attaching the Syringe....11

Removing the Syringe....13

Program Function....14

How to Make a Bead....17

Operating Tips....18

Loading the Reservoirs....20

Alternative Filling Methods....21

Defining the System....22

How the LDS9000 Works....26

Troubleshooting....27

Glossary....28

Accessories....30

Dispenser Component Selector Guide....31

Two Year Fault Free Warranty....32

Meets applicable CSA and CE requirements.

This manual is for the express and sole use of Fishman dispenser users and purchasers, and no portion of this manual may be reproduced in any form.

Fishman, AirFree, AirPulse, PosiLok, FreeFlow, SafeLok and DripFree are trademarks of Fishman Corporation. © 2004 Fishman Corporation

This manual contains all the information you will need to set up and test the 9000 series AirPulse™ dispensers.

- You will find the hook up for the LDAV on pages 10-15. For the MDAV, review 16-19. For the SDAV review 20-23.
- Next, pages 24-25 will show your how to set up and test a thick paste-like material.
- Finally, pages 26-27 explain how to dispense watery fluids using vacuum control.

The remainder of the manual applies to all 9000 series AirFree™ dispensers.

First Steps

1. Unpack the shipping box and use the supplied checklist to assure all items are present. If an item is missing, please contact us immediately.
2. Make sure the set up area has access to power. No compressed air will be needed. **You are about to experience the world's only AirFree™ fluid dispenser. No compressors, no filtration, no plumbing.**
3. Activate your extended two (2) year no-fault warranty by following the instructions in the enclosed "On Line Warranty" letter to activate online. Once your dispenser is set up, return to this section to familiarize yourself with the multiple functions of the program controls.

Specifications

Input Voltage:	100-240 VAC	
	47-63Hz	
Max Inrush Current:	3.2A/1.8A	
Output Voltage:	5.0VDC	
Output Power:	4.6W	
Fuse Rating:	1.0A/250 VAC	
Initiate Circuit:	Foot Pedal (dry contact), finger switch	
Drive Motor:	LDAV	7.5 Degree 48 Steps/Rev
	MDAV	3.75 Degree 96 Steps/Rev
	SDAV	3.75 Degree 96 Steps/Rev
Axial Movement:	LDAV	.024 Axial Pitch, .0005"/Step
	MDAV	.024 Axial Pitch, .00025"/Step
	SDAV	.012 Axial Pitch, .000125"/Step
Control Circuitry:	CMOS microprocessor	
Interface:	Tactile key pad	
Minimum Dispense Volume:	.23ml	

Control Unit

Size:	7.63 x 8.75 x 3.5in (19.4 x 22.2 x 8.9cm)
Weight:	5.8lbs

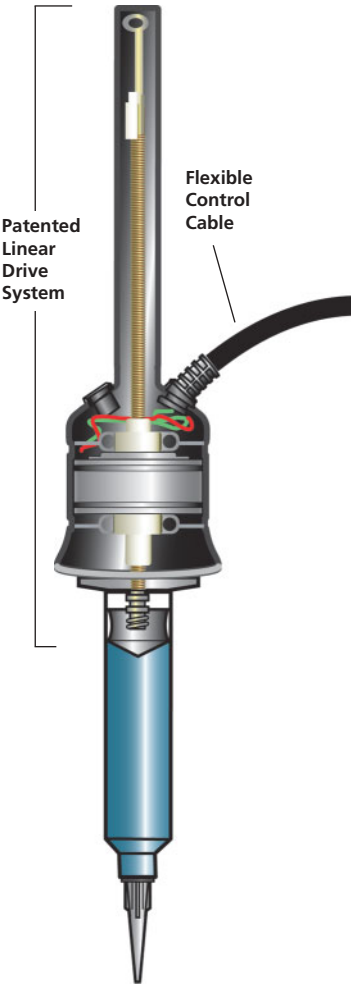
Gun:

Length:	7.15in
Weight:	7.4oz
Cable Length:	3 or 6 feet

Operation

The LDS9000 Dispensing System uses a patented Linear Drive System (LDS) to transfer force from the drive motor to the syringe piston. The motor, lead screw and syringe piston are linked mechanically. Each attachment (gun to reservoir, gun to piston, piston to reservoir) is specifically designed to provide zero flexing in the system during a dispense. Simply put, zero flexing is what makes the LDS9000 the world's most repeatable dispenser.

Once the dispense cycle is complete, a programmed mechanical pullback retracts the drive rod which is mechanically attached to the AirFree™ piston. The combined action of the plunger with the preprogrammed forward steps, and pullback feature produces a highly repeatable deposit with no post-dispense ooze. A pause between forward and reverse motion can be programmed in for use with compressible fluids.



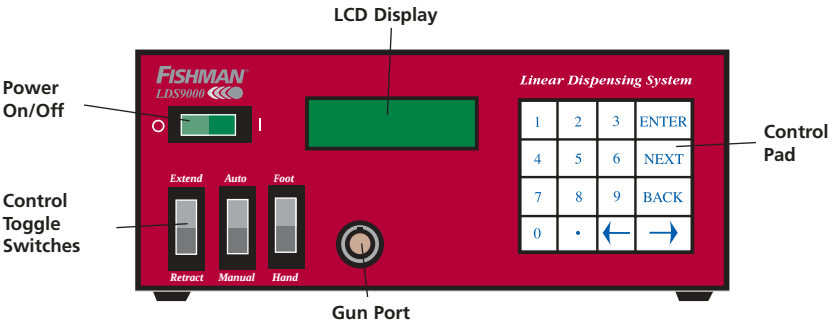
The inner diameter and length of the syringe barrel are used to calculate dispense volume. For example, the inner diameter of a 10cc syringe barrel measures 1.63cm. One forward step of the motor moves the drive rod/piston .00127cm, resulting in .0026cc of fluid being displaced. With a 5cc barrel, it takes two steps to displace the same amount of fluid.

Flexible Control Cable

An electronic signal is sent via the electronic control cable that connects the dispense gun to the control box. The signal energizes the motor pushing the drive rod, attached to the piston, into the syringe barrel. The forward motion forces the fluid out to make a deposit.

Power Supply

The LDS9000 features a universal power supply. It automatically adjusts for input voltages ranging from 100 VAC to 240 VAC. There is no adjustment required by the user.



Manual/Auto Dispense

- Each mode provides you access to different features on the liquid crystal display. Use the Auto/Manual switch to move back and forth from manual mode to automatic mode.
- In manual mode, you can use the foot pedal to dispense a deposit or bead "by eye". You are in manual mode when the Auto/Manual toggle switch is in the downward position.
- In Automatic Dispense mode, you can set several variables, including program number, syringe barrel size, deposit volume, dispense rate, pullback, delay. You are in automatic dispense mode when the Auto/Manual toggle switch is in the upward position.

Reverse Motion—Drawback

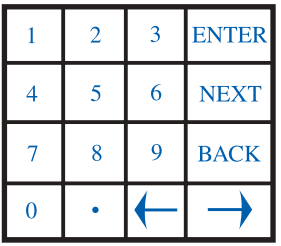
In manual mode, flip the Extend switch, located on the control panel, from Extend to Retract to engage the motor in reverse direction. This will draw fluid back into the reservoir stopping any ooze.

Hand Control

In both manual and auto mode, flip the Foot/Hand switch, from Foot to Hand to operate the dispenser with a finger switch. Finger switches are sold separately.



Wait 3-5 seconds for on-screen instructions



On Screen Instructions

When in program mode, if you are not sure what to do wait approximately 3-5 seconds and rolling instructions appear. If you missed them, not to worry, they will repeat until you make an entry.

New or Saved Program

In Auto Mode hit the **NEXT** key. Hit the left arrow to enter a new program or hit the right arrow to enter a saved program.

Edit the existing program

In Auto mode hit the **BACK** key once to enter the program manager. Each time you hit the **BACK** key it shows a different program parameter. Find the one you wish to edit, make your edit and hit the **ENTER** key. Hit the **NEXT** key as many times as needed to return to program mode. Follow on-screen instructions.

Enter a Volume

In Auto mode when entering a new program or editing an existing one, when prompted for a dispense volume press the digit keys to type the amount you require. Press the **ENTER** key to save your input.

Skip forward/back through the menu

In Auto mode, press the **NEXT** key to skip one slot forward in the programming menu. Use the **BACK** key to skip back one slot in the programming menu.

Erase an Input or Make a Selection

In Auto mode when entering a new program or editing, use the left and right arrow keys to erase and input or skip between choices such as multiple saved programs. Use the **ENTER** key to select a choice.

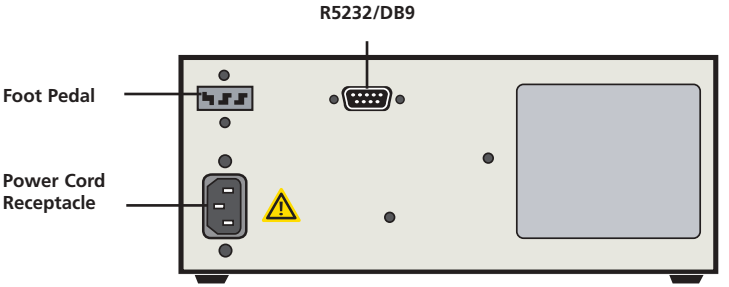
Confirming a Choice

In auto or manual, always use the **ENTER** key to save an input or selection. The **NEXT** or **BACK** keys do not save—they only skip to the next choice. The **ENTER** key saves your data.

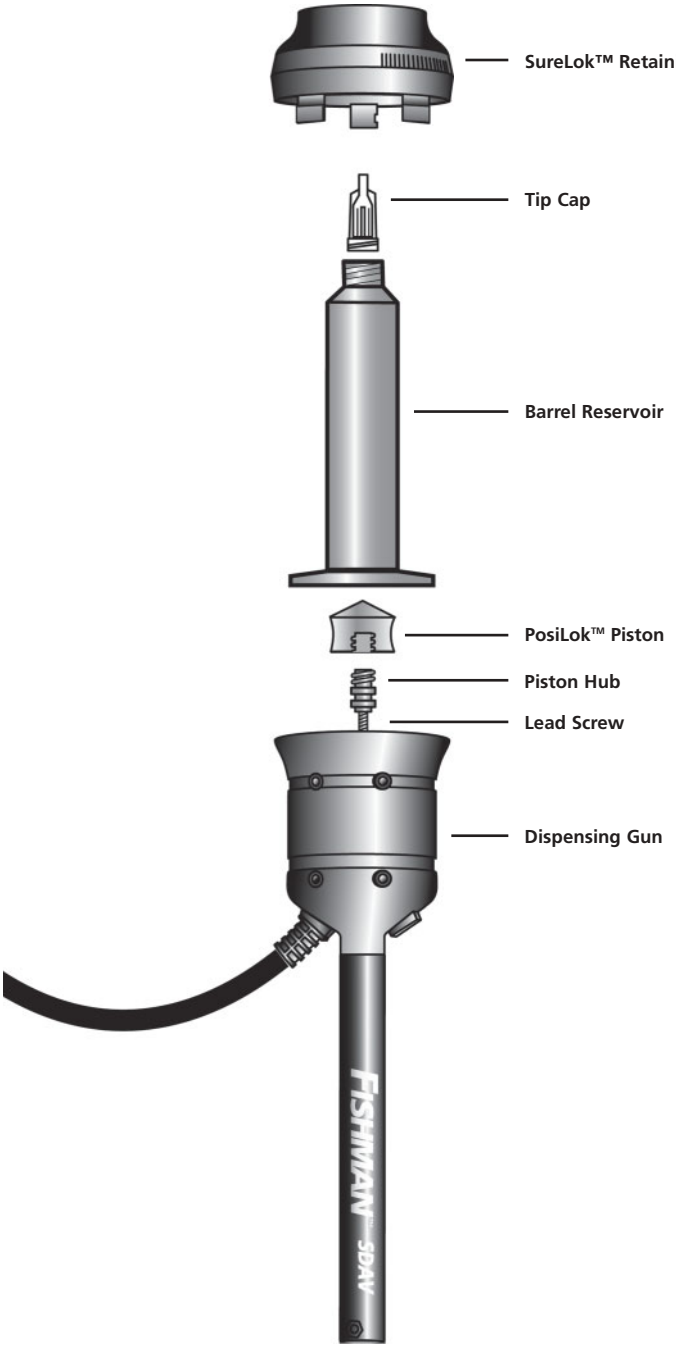
Jog Between Menu Choices

In auto or manual, always use the left or right arrow to move between menu selections.

Back Panel

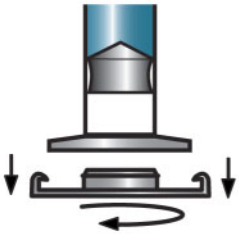


LDS9000 Gun Assembly



Attaching the Syringe

1. Remove the end cap from the barrel reservoir.
   - Make sure a tip cap is on the barrel.



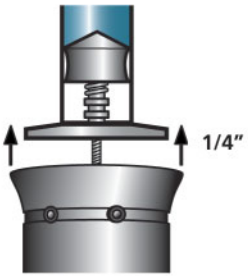
2. Remove the retaining ring from the dispense gun.



3. Holding the dispensing gun with the piston hub pointed upward, place the barrel over the piston hub of the dispense gun.



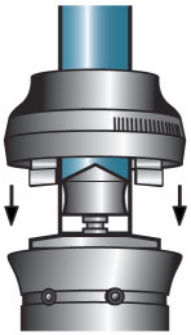
4. Holding both loosely. Step on the foot pedal until the barrel ears are raised at least 1/4" (.635mm) above the plate.



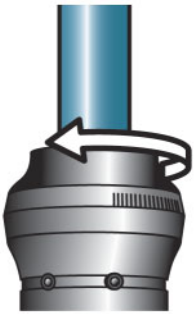


5 Manually twist the barrel in a clockwise direction until the luer lock connector is finger tight and the ears of the barrel are flush against the retaining plate. It may be necessary to set the **EXTEND/RETRACT** switch to **RETRACT** and step on the foot pedal to bring the barrel ears completely flush to the retaining plate. If you set the switch to **RETRACT** be sure to set it back to **EXTEND** before proceeding.

Note: *Do not over-tighten the barrel. It is only necessary to make a loose connection to bring the barrel flush. The Retaining Ring holds the barrel in place. Over tightening can damage the piston hub. Also, do not over retract the barrel ears. Over retraction will cause air pockets between the piston and material.*



6 Slide the retaining ring cover over the syringe and rotate the cover in a clockwise direction.



7 The syringe should be firmly connected to the dispensing gun.

Removing the Syringe

1. At the end of a dispense program the control unit will display a message: "Remove syringe and press enter."



2. Remove the retaining ring cover by turning clockwise.



3. Slide the retaining ring cover over the barrel reservoir.



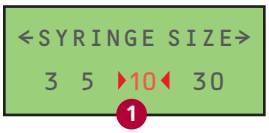
4. Twist the barrel reservoir clockwise to remove it from the piston hub.
   - Discard the barrel reservoir.
   - Press **ENTER**.

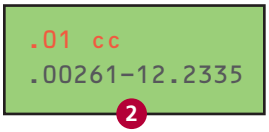


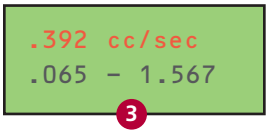
Program Function

The LDS9000 AirFree™ Dispensing system allows 10 user-defined programs to be stored in memory, ranging from 0 to 9. The program stores:

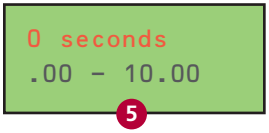
- Barrel reservoir size
- Deposit volume
- Dispense rate
- Backoff or Pullback
- Delay between forward and reverse motion







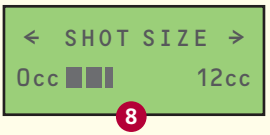




Follow These Steps to Input a Program

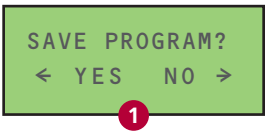
- Press the **NEXT** key

1. Use the left and right arrow keys to select your syringe size.
2. Enter your dispense volume by using the keypad to enter your volume followed by pressing the **ENTER** key or use the left or right arrows to use the SpeedBar™ feature*.
3. Enter your dispense rate by using the keypad to enter the volume followed by pressing the **ENTER** key or use the left or right arrows to use the SpeedBar™ feature*.
4. Enter the amount of back off by using the keypad followed by pressing the **ENTER** key or use the left or right arrows to use the SpeedBar™ feature*.
5. Enter the amount of delay (0-9 seconds) between forward and reverse motion by using the keypad followed by the **ENTER** key.

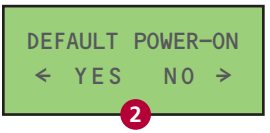


***Speedbar™—This feature is available in the volume input, dispense rate input and backoff input. Hold down the left or right arrow key to make this feature appear. Continue holding to make the bar increase or decrease. The longer you hold, the faster the bar moves. When satisfied, release the key and Speedbar™ will show you your selected volume.**

1. To save program, answer **YES** followed by the program number (0-9) of the location you wish to save your program.



2. If you want the program to automatically load as the default program when the machine is turned on, answer **YES** to the default question.



- Press the foot pedal to dispense the first deposit

Follow These Steps to Edit a Program

- Press the **BACK** key to enter the program manager.

  Tip: The **BACK** key moves through each parameter until you reach the start of the program manager. The **NEXT** key moves you through each parameter to the bottom of the program manager.

- Press the **BACK** key as many times as you need to get to the parameter you wish to edit.
- Use the keypad to make your edit followed by the enter key.
- Use the **NEXT/BACK** keys to make any remaining edits.
- When finished, use the **NEXT** key as many times as needed to get to the Save menu.
- Save your program edits.

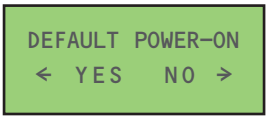
Follow these steps to save a program to a different location.

- Press the **BACK** key to enter the program manager.
- Press the **NEXT** key to enter the Save menu.
- Press the left arrow to make the save.
- Select a location by pressing a digit from 0-9.



Tip: If the program you choose already has a saved program you will be asked if you wish or overwrite the program.

- Decide if you want your saved program to default at start up by choosing yes or no.



Follow these steps to restore a program at Start Up.

- Press the right arrow to enter the Save menu.
- If you know the number of the program you wish to restore, press the number now on the keypad to restore the program.



- If you do not know the program number hit the right arrow to review the saved programs.

Tip: The programs will automatically scroll in order from 0-9. Don't worry if you miss a program, the scroll feature will repeat until you make a selection

- When you see the program you want appear on the screen press the **NEXT** key and the program will restore.

Follow these steps to restore a program while in an active program.

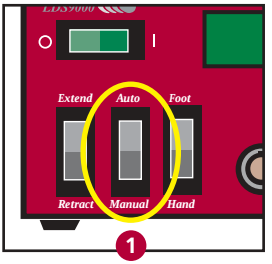
- Press the **NEXT** key.
- If you know the number of the program you wish to restore, press the number now on the keypad to restore the program.
- If you do not know the program number hit the right arrow to review the saved programs.

Tip: The programs will automatically scroll in order from 0-9.

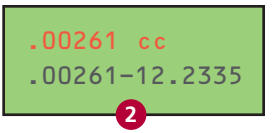
- When you see the program you want appear on the screen press the **NEXT** key and the program will restore.

How to Make a Bead

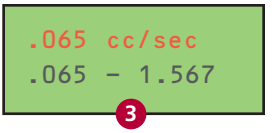
To dispense a continuous bead of fluid instead of a single dot, follow these steps.



1. Switch the **AUTO/MANUAL** switch to **MANUAL**.



2. Set the shot size to the lowest setting.



3. For best results, set the dispense rate to slow, to minimize backpressure in the syringe.

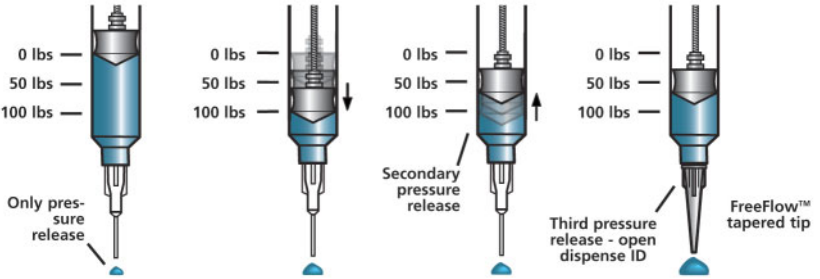


4. As a beginning point, set drawback to 5 steps



5. Keep delay set to zero, then adjust as needed to eliminate any post dispense ooze.

   • Press and hold the foot pedal until the required amount is dispensed.



Suggested Tips

• The faster you dispense the more backoff you will need. That's because the speed at which the piston is traveling exceeds the flow rate of the material out of the dispense tip. Therefore, creating internal pressure. More reverse motion is required to get the internal reservoir pressure back to zero. We recommend you start with a slow rate and progress from there.

• The LDS9000 positively displaces fluids. That means if you program .02cc's of fluid, you will get .02cc's out of a very small tip or a large tip. The only difference is trying to force the fluid through a very small tip will take twice as long. We recommend you increase the fluid flow by using our FreeFlow™ tapered tip.

• A change in the dispense rate will change your deposit size. When the piston moves forward it often exceeds the flow rate of the fluid, thus creating pressure buildup. The best way to rapidly relieve that pressure is to apply reverse motion. When the dispense rate is doubled the fluid has half the time to flow before reverse motion, therefore the deposit size becomes smaller. Conversely, when the dispense rate is cut in half the fluid has twice the time to flow before reverse motion, therefore the deposit size becomes larger. The only way to maintain the same deposit size at all speeds is to adjust all parameters.

First Shot Set Up

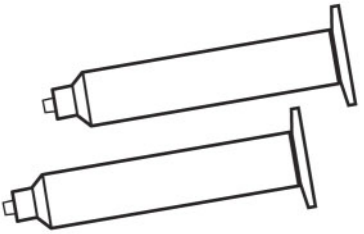
•Follow the steps listed in the LDS9000 Rapid Setup Guide. We recommend you work with the Fishman test fluid provided in your dispenser to establish the first deposit.

•When priming your dispense tip watch how long the fluid flows out of the tip. Little to no ooze, start with a minimum amount of backoff (1-10 steps). Lots of ooze, start with a higher amount of backoff (10-25 steps) and adjust from there.

•Start with a slow dispense rate and adjust your dispense volume and backoff until you achieve the right size deposit. Once your deposit is stabilized try adjusting the speed to your liking, watch the effect on your deposit. Return to volume and backoff to tweak the deposit size. Always allow the deposit to stabilize via 5 or 6 dispenses before making the next adjustment.

Components

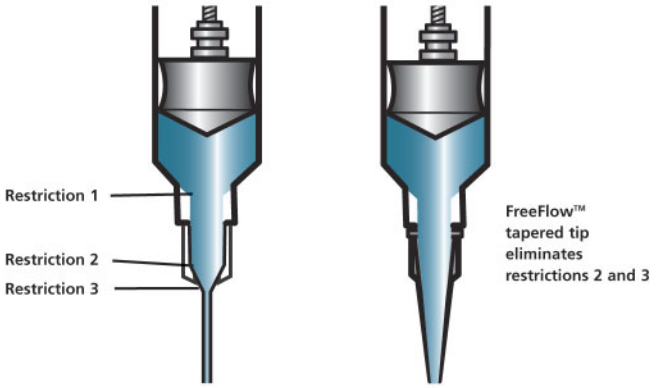
• Always use Fishman AirFree™ barrel reservoirs and dispense tips. Safely dispose after use. This method prevents contamination, ensures proper safety and provides maximum cleanliness.



• The heart of the Linear Drive System (LDS) is the AirFree™ piston. The specially designed luer connection provides a no slip connection assuring the highest deposit repeatability.



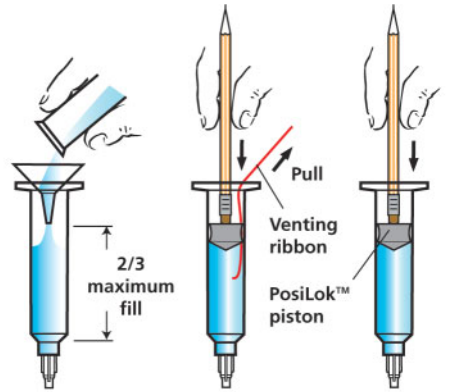
• Use Fishman FreeFlow™ tapered dispense tips. Small gauge tips will only create backpressure, put stress on the fluid and cause ooze. The Linear Drive System will positively displace fluids, which allows the use of larger tips with no effect on performance. The FreeFlow™ taper tips eliminate fluid flow restrictions preventing drooling and ooze.



Avoid Air in the Syringe Barrel

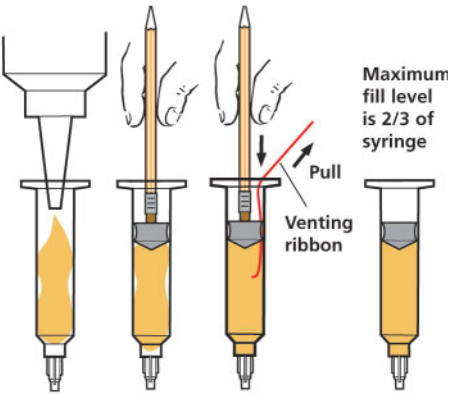
Trapped air in the fluid creates voids that will make the fluid compressible. Although the LDS9000 Linear Drive System is stable enough to handle most compressible fluids excess air will force the user to use a greater amount of pullback. This will create a greater amount of forward and reverse motion in the syringe during a dispense cycle. Excess motion will put more stress on the fluid being dispensed. The goal is to reduce dispense motion as much as possible to protect the fluid and maximize repeatability. Paying attention to minimization during syringe filling will drastically improve performance.

For best results, use a Fishman barrel filing station (see next page). If needed, use a centrifuge or vacuum chamber to eliminate any trapped air.



Pourable Fluid

Twist on a tip cap and pour your fluid into the barrel using a funnel. Insert a Venting Ribbon along the inside edge of the barrel, followed by an AirFree™ piston. Carefully press down until it contacts the fluid. While holding the piston in place gently pull the Venting Ribbon from the barrel.



Thick or Non Leveling Fluid

If the fluid comes packed in a caulking cartridge try loading the reservoir with a caulking gun. If not, spoon-feeding with a spatula often works. Follow the loading by inserting the Venting Ribbon along the inside of the barrel, followed by AirFree™ piston. Carefully press down to move the fluid to the bottom of the barrel and to remove trapped air. While holding the piston in place gently pull the Venting Ribbon from the barrel.

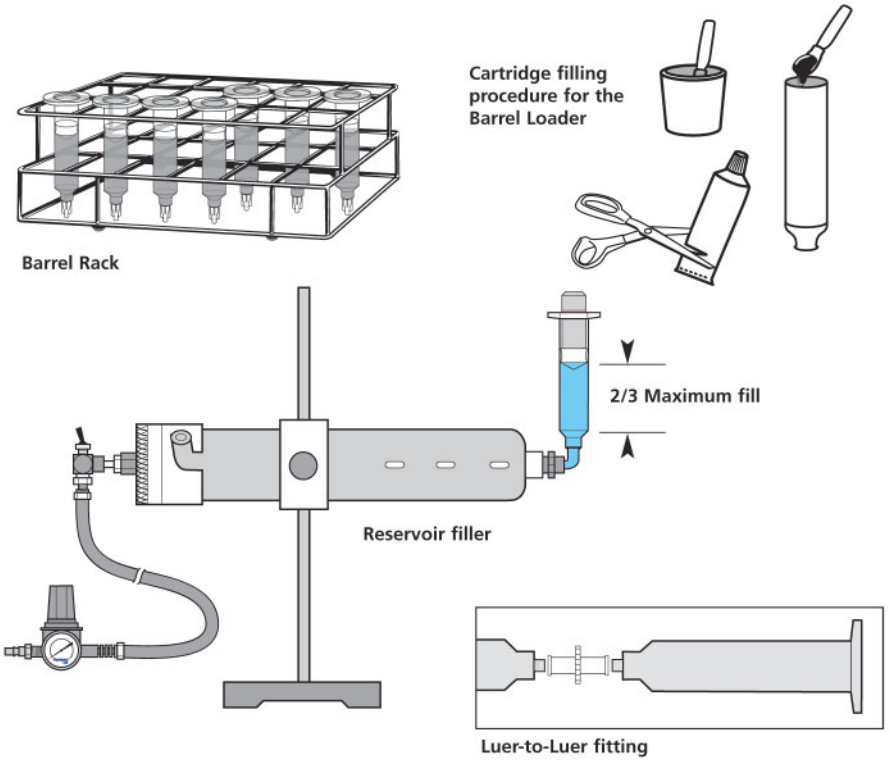
Alternative Filling Methods

• If your fluid comes prepackaged in a medical style syringe use the Fishman B250001 luer-to luer fitting to transfer the material from prepackaged syringe to the Fishman syringe.

• Another option is to use the Fishman C370001 AirPulse™ reservoir filler. Purchase your fluid in a 12oz cartridge or prepack the cartridge yourself. The prepackaged cartridge easily sips into the barrel loader. Air pressure, activated by a finger switch, transfers the fluid from the cartridge to the Fishman syringe (piston inserted), filing from the bottom up.

•If the fluid comes prepackaged in a 1/10 gallon caulking style cartridge use the Fishman B250001 barrel loader. Operation is exactly as above; the only difference is the reservoir is designed to fit the caulking cartridge.

For additional assistance, contact one of our Application Specialists:



Program Mode

Program mode is ideally suited for dot type applications or automated (XYZ system) beads. This mode allows you to program a desired volume of fluid for repeated and consistent output. In the program mode there are two utilities. Program Manager and the Save/Restore Manager.

Utility 1: Program Manager

The Program Manager has five adjustable parameters:

- Barrel Selection
- Dispense Volume
- Dispense Rate
- Drawback
- Drawback Delay

Barrel Selection:

The selection of the proper barrel is critical to positive displacement dispensing. For the best results always select the smallest barrel reservoir that will work for your application. To minimize set up time we preprogrammed the control unit using standard Fishman luer lock barrels. Simply select the proper size (3,5,10,30) and move to the next parameter.

Dispense Volume:

Having the ability to enter a dispense volume is what separates the LDS9000 from traditional pneumatic dispensing systems. Our patented technology allows us to apply a formula based on the syringe's inner diameter and the distance traveled by the PosiLok™ piston to arrive at the desired volume. This method drastically reduces the amount of time consumed by the guesswork of the pneumatic systems.

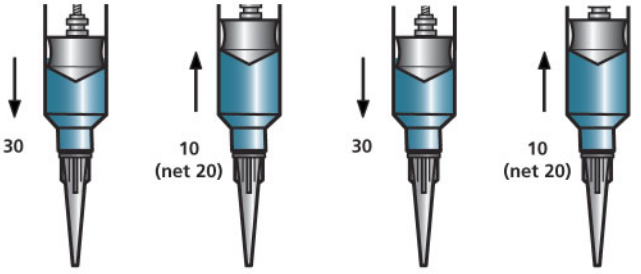
Dispense Rate:

This is an important parameter that allows the LDS9000 to dispense a wide range of material. By altering the speed at which the Linear Drive System travels down the barrel, we can dispense non-compressible to thixotropic materials with little to no impact on rheology. The microprocessor calculates dispense rate in the cc per second.

Drawback:

Upon completion of the dispense cycle, fluid oozing out of the dispense tip is a common problem when dispensing compressible fluids. The Drawback parameter eliminates any oozing by implementing a mechanically reversed action at the end of the dispense cycle. Because the system is intelligent, it knows the distance traveled forward and the distance traveled back. Therefore, on the next dispense cycle, the system will add the distance traveled back to the forward motion, guaranteeing a positive displaced dispense every time.

Example: The system converts dispense volume to motor steps. Assume .02cc equals 20 steps. The following is what happens when 10 steps of reverse motion is added.



Drawback Delay:

This parameter is most useful when potting or beading with a compressible fluid. A delay (in seconds) is applied between the end of the forward motion and the start of the reverse motion when drawback steps are programmed. This allows the entire programmed shot to dispense prior to the reverse motion.

Utility 2: Save/Restore Manager

The Save/Restore Manager has three adjustable parameters:

- Save your program to ten locations
- Recall your program from ten locations
- Set a program as the default on start up.

The Save/Restore Manager allows you to save and recall up to ten different programs, eliminating setup time when changing dispense volumes. Also, you may specify one program as the default program meaning this program will automatically load when the controller is turned on. This is useful when multiple LDS9000 are used on a production line. You are assured all systems will start with the same program.

Manual Mode

Program is ideally suited for priming the dispense tip and manual dispensing such as potting and beads. In manual mode the parameters and function of the parameters are exactly the same as program mode. The only difference is that the system will only dispense fluid for the amount of time the user holds the foot pedal down.

The Linear Drive System

AirFree PosiLok™ Piston—
The heart of AirFree dispensing

This unique design has made positive displacement with a barrel reservoir possible. Re-engineering the pneumatic piston concept, the high interference fit of the piston and the luer lock connection with the Linear Drive System enables intelligent dispensing. By increasing the interference between the O.D. of the piston and the I.D. of the barrel, we are able to completely seal the chamber eliminating material leakage. The luer lock connection provides complete control over forward and reverse motion. The intelligent control unit microprocessor knows the barrel I.D., the distance traveled forward and the distance traveled backward. With every dispense cycle the piston moves the exact distance every time, guaranteed. Drip-free dispensing, air pocket venting and all-plastic component dispensing are maintained with the new design.

The Dispense Gun—
The precision of AirFree dispensing technology

The motor used inside the dispense gun is a linear actuator. The linear actuator creates forward motion by rotating nut between electrically charged poles. The drive screw runs through the nut located at the center of the motor. The design of the plastic gun housing captures the top of the drive screw preventing it from rotation. When electrically charged, the center nut will step from one magnetic pole to the other, moving the drive screw forward. It is important to note that the drive screw not rotating allows the attachment of the PosiLok™ piston, creating the linear motion critical to positive displacement. By reversing the charge, we are able to create reverse motion.

Note:
LDAV one electrical pulse (motor step) = .0005"
MDAV one electrical pulse (motor step) = .00025"
SDAV one electrical pulse (motor step) = .000125"

Retaining Ring—
The brawn of the AirFree dispensing technology

The multi-legged stainless steel design locks the syringe in place, making the syringe and gun one. In dispensing, any flexing between the barrel reservoir and surface to which it is secured represents a pressure loss and will change the amount of fluid dispensed. Due to the tight tolerance between the stainless steel retaining ring and the gun, there is no room for barrel flexing when the thrust-of-dispense cycle is applied. This is a key contributor to maintaining positive displacement dispensing.

The Control Unit—
The brains of AirFree dispensing

The control unit gives the user control over volume output; dispense rate, reverse motion and motion delay. By imputing and manipulating these parameters, the microprocessor will calculate the number of steps needed to achieve the requested result. A universal switching power supply automatically adapts to multiple AC inputs. The foot pedal may be removed for automated activation using a dry contact.

Helpful Hints

Priming the System

Removal of the tip cap and introduction of a new needle traps air pockets inside the stem of the syringe and hub of the needle. Because our system positively displaces fluid, it is very important no air is present in any portion of the syringe. Therefore, it is important that any trapped air is pushed out of the syringe prior to dispensing.

Changing Barrels Reservoirs

Same Size Barrels: Simply switch one barrel for the next. The only consideration is to prime the new dispense tip prior to dispensing (page ?). The LDS9000 recognizes barrels of the same size so it is not necessary to reset the system.

Different Size Barrels: When changing to a different size barrel, it is necessary to reset the lead screw, reset the dispense parameters and prime the dispense tip. To reset the lead screw remove the barrel reservoir, flip the Auto/Manual switch to Manual and the Extend/Retract switch to Retract. Hold the foot pedal down until the lead screw retracts all the way into the dispense gun.

With the power ON, here's what happens when you press the foot pedal:

1. The program is engaged, the motor is energized beginning the dispense cycle countdown.
2. The motor pushes the lead screw, with piston attached to the end, down the barrel pushing the liquid out the dispensing tip.
3. At the end of the program, the motor is de-energized—stopping forward movement of the lead screw and stopping all fluid flow.
4. If drawback is programmed, the motor is re-energized and begins a drawback cycle countdown.
5. The motor retracts the lead screw, with piston attached to the end, creating a vacuum that stops any post dispense oozing. The vacuum is controlled by the software program.

When in manual mode the microprocessor switches to direct motor control by the foot pedal. As long as the foot pedal is pressed, the motor remains energized, providing a flow of liquid for filling or beading.

Problem: The fluid continues to ooze long after the dispense, (including drawback) is completed.

Potential Solutions:

•Check the needle size. The unpredictable nature of the pneumatic drive system has forced customers to use the needle as a flow control. What this means is that they use an ultra small (25G) needle to control the flow fluid because the pneumatic drive system can't.

IMPORTANT: *Using an ultra small needle works against our system. Because we positively displace, we can get the same amount out of a 14G as a 25G. Use the needle with the largest I.D. and shortest length possible, preferably a free flow tip, to reduce backpressure.*

•Check that the syringe is packaged air free. The presence of air will cause oozing. It is recommended the syringes be packaged using centrifuge or vacuum when possible.

•Make sure you are using an PosiLok™ piston. Pistons are included in your dispense kit.

Problem: The fluid is blowing by the AirFree™ piston.

Potential Solutions:

•Examine the seal of the piston. Sometimes syringe fillers, either by rushing or attempting to squeeze air out, allow fluid to permeate the front seal of the piston. When the front seal is maintained the piston will not leak. Also, adding a Fishman Piston Stabilizer will help. See Accessories for ordering information.

•Make sure you are using Fishman Syringes. The inner diameter has been preloaded into the software for dispense calculations. Competitor's syringes have different diameters, which will cause problems trying to achieve the dispensed amount.

Glossary

FOOT .....Setting for using a foot pedal to activate dispensing cycle

HAND .....Setting for using finger switch to activate a dispense cycle

SYR.....Syringe— barrel reservoir selection

DIA.....Length—user-defined syringe inside length from ears to bottom in millimeters

V .....Volume—Volume to be dispensed, in cubic centimeters

R .....Dispense Rate—The rate, in cubic centimeters per second, at which you want to dispense the fluid

PRGM.....Program key to enter or exit at AUTO DISPENSE PROGRAM MANAGER

ENTER .....Key to activate desired parameter

NEXT .....Key to advance to the next screen without changing the exiting parameters

SYRINGE ATTACHMENT .....The ideal position for the ears of the barrel reservoir after locking it into place, is flush up against the retaining plate. Note: Always attach a new barrel reservoir with the tip cap on.

PRIMING THE SYSTEM .....Eliminates any trapped air between the barrel reservoir and needle. Always prime the system at start up.

PARAMETER LIMITS .....If you want to know the min., max, or high and low values of parameters for a given syringe, type in 999 at the prompt and press the ENTER key. View the display; it will flash the values on the screen and then return.

RETRACT .....When you are in program mode and you change the EXTEND/RETRACT switch to RETRACT, the system will prompt you to hit the ENTER key or flip the switch back to EXTEND. This is a safety precaution. If you retract with the PosiLok™ piston attached, the barrel reservoir will fill up with air from the open end. Before you use the retract feature, be sure you remove your barrel reservoir. When retracting the lead screw in manual mode, all you have to do is flip the EXTEND/RETRACT switch to RETRACT. The PosiLok™ piston will retract for as long as the foot pedal is depressed.

Glossary

DISPENSE RATE.....Always start with the slowest recommended rate and increase incrementally.

DRAWBACK DELAY.....When using a small needle you can take advantage of the drawback delay feature to give you more control over your output volume. This feature allows the fluid to flow out of the syringe before you drawback the PosiLok™ piston and begin your next dispense cycle.

FACTORY SETTINGS.....The factory settings will be replaced with your settings when you save into location #1 and #2

SAVE.....When you save an application into a location that has a previously stored application, you will be asked to replace the existing application.

RESTORE.....When you restore an application from a location, the parameters will flash on the display. You will then be asked to restore the application.

ACTIVATING A PARAMETER.....if you notice that a parameter that you set didn't take effect, make sure you pressed the ENTER key before proceeding to the next screen. If you did not press the ENTER key, the values you entered will not take effect on the next dispensing cycle.

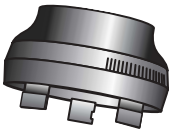
NEEDLE SELECTION ..... When selecting a needle we recommend using the FreeFlow™ tip with the LDS9000. This tip allows the least amount of flow restriction thus allowing positive flow of the fluid from the syringe.

PREPACKAGED SYRINGE .....Must be free of air pockets to receive the full benefits of the LDS9000. Contact your Fishman representative for AirFree™ filling suggestions.

Dispenser Component Selector Guide

The charts below are only a small sample of available Fishman components. Please refer to the complete Fishman catalog to view the entire product line.

Retaining Ring



The unique multi-legged design firmly locks the barrel into place eliminating any possibility of pressure loss during dispense.

Size	Retaining Ring	Quantity Per Pack
3cc	O312291	1
10cc	O314291	1

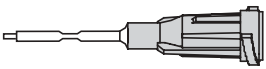
AirFree™ CA Barrels/Pistons



Each package contains same amount of barrels and PosiLok™ engageable pistons.

Size	Clear	Quantity Per Pack
3cc	O502051	50
10cc	O504171	30

PosiLok™ Teflon®-Lined Dispense Tips



ID	1/2" Length	Hub Color
.020"	Z592121	Gray
.006"	Z592125	Pink

PosiLok™ Flexible Dispense Tips



Soft polypropylene burr and flash free tips assure accurate deposit control.

Gauge	ID	.5"	1.5"	Color
15G	.049"	Z532115	Z534115	Brown
18G	.032"	Z532118	Z534118	Dk. Green
20G	.019"	Z532120	Z534120	Pink
25G	.014"	Z532125	Z534125	Red

Accessories

Gun Stand

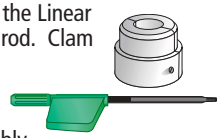
Holds the dispense gun when not in use.

LDS9000 Stand D600001



Piston Stabilizer

Attaches to the end of the Linear Drive System dispense rod. Clam shell design clamps onto the piston hub. Each kit contains a piston stabilizer, assembly tool and instructions

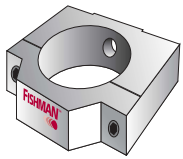


5cc Stabilizer Kit	Y010101
10cc Stabilizer Kit	Y020101
30cc Stabilizer Kit	Y030101

Automation Gun Bracket

Mounts the gun to an XYZ dispense station.

LDS9000 Bracket Y200001



Two Year Fault-Free Warranty

Fishman Corporation (Fishman) warrants its product to be free from defects in materials and workmanship for a period of two years from the date of purchase.

Under this warranty, Fishman will repair or replace any defective part or, at its own option, the complete dispenser regardless of fault. To obtain service under warranty, product must be returned, freight prepaid, to Fishman.

Before use, the customer must determine the suitability of the product for their intended use and therefore customer assumes all risk and liability connected with products use.

At no time under any circumstance shall any liability or obligation of Fishman arising from the warranty exceed the purchase price of the product.

Except as provided herein, Fishman makes no warranties, express or implied, including warranties of merchantability and fitness for a particular purpose. In no event will Fishman be liable for direct, indirect, special, incidental, or consequential damages arising out of use of this product.



FISHMAN®



Fishman Corporation
192 South Street
Hopkinton, MA 01748
800-433-2115 Fax 508-435-2119
www.fishmancorp.com
email: fishman@fishmancorp.com

270264

Artisan Technology Group is an independent supplier of quality pre-owned equipment

Gold-standard solutions

Extend the life of your critical industrial, commercial, and military systems with our superior service and support.

We buy equipment

Planning to upgrade your current equipment? Have surplus equipment taking up shelf space? We'll give it a new home.

Learn more!

Visit us at **artisantg.com** for more info on price quotes, drivers, technical specifications, manuals, and documentation.

Artisan Scientific Corporation dba Artisan Technology Group is not an affiliate, representative, or authorized distributor for any manufacturer listed herein.

We're here to make your life easier. How can we help you today?

(217) 352-9330 | sales@artisantg.com | artisantg.com

ARTISAN® TECHNOLOGY GROUP