

MODIFICATIONS

The following modifications may be made should your application warrant.

A. Using a Switch or Relay for a trigger

Any type of switch or relay may be used to trigger the **CONTROLLER** instead of the **PROXIMITY AND SENSOR** supplied.

This must be done as follows or damage may be done to the Controller. The switch/relay must be used in the "normally open" mode. Install it such that it will be triggered (switched) by the operation of the machinery.

Cut off the connector at the end of the **SENSOR CORD-SET**. Then cut back the jacket to reveal it's wires. Connect the wires to the switch as described below according to it's respective color

a) The Brown Wire

This wire is a 24 Vdc supply. Connect it to one side of the switch/relay.

b) The Blue Wire

This wire is ground and has no purpose when using a switch. Cut this wire off short and insulate it well.

c) The Black Wire

This wire is the sensing lead. When this wire receives 24vdc (shorted to Brown Wire) the **CONTROLLER** is "signaled". Connect it to the other side of the switch/relay.

Most any other type sensor may be utilized to trigger the **CONTROLLER**. The only requirements being that it operates on 12 Vdc and sinks current when triggered. Install the sensor so it trips appropriately. Wire it per it's instructions, and the information found in paragraph "A" above.

C. Using a Power Signal for a trigger

Never use a power source to directly trigger the CONTROLLER. Introducing an outside voltage directly to any of the wires in the **ACTUATOR LEAD** will most probably damage the **CONTROLLER** immediately.

Using a powered output to trigger the **CONTROLLER**, may only be done through a relay. Get a relay of the same voltage as the power output you wish to use, and use the relay to trigger the **CONTROLLER**. See paragraph "A" above for instruction on wiring the relay to the **CONTROLLER**.

D. Using longer than standard CORD-SETS.

If required, the **POWER CORD**, **PROXIMITY SENSOR CORD-SET**, or the **SOLENOID VALVE CORD-SET** may be lengthened without detriment to performance. Doing this on site, however, is not recommended. It is best to contact **LSP Industries** or our distributor to request an extension cord Set.

B. Using another type Sensor for a trigger

TROUBLESHOOTING INSTRUCTIONS

PROBLEMS	SOLUTIONS
I. No lights are lit.	A. Make sure the POWER CORD is plugged into an electrical outlet, and that power is present. B. Check Fuse to see if it is bad
II. Does not count down... or count is erratic.	A. Make sure the SENSOR CORD SET is connected at the PROXIMITY SENSOR and the knurled nut is tight. B. Check the distance between the PROXIMITY SENSOR AND SENSING OBJECT . If this gap is too large, triggering may be erratic or nonexistent and cycles might not be counted. See Figure #2 for illustration and details.
III. Equipment does not respond after count down.	A. Check the SOLENOID VALVE for proper function. This solenoid valve should energize and shift positions each time it is activated (at the end of Delay Time when On Time goes on) and should not leak at any other time. If the SOLENOID VALVE is functioning properly, check the INSTRUCTIONS which were supplied with the equipment being operated by the valve. If the SOLENOID VALVE is not functioning properly, make sure the SOLENOID VALVE CORD SET is connected at the SOLENOID and the knurled nut is tight. Check if the SOLENOID VALVE is being powered (w/ 24Vdc) by the CONTROLLER . If there is power to the SOLENOID VALVE at the appropriate times, replace the SOLENOID VALVE . Use LSP Part No. VAL011

If a **SOLUTION** below does not solve the **PROBLEM**, the **CONTROLLER** is probably at fault. Since it is solid-state, there is little that can be done on site. In such cases, contact LSP Industries for return authorization.

REPLACEMENT PARTS

Actuator Tube TUB-019

3/16" O.D. plastic tubing which is used to install the Actuator at a remote location..

Tube Fittings FIT-020, (2) required.

Used to connect the Actuator Tube (above) to another piece of equipment

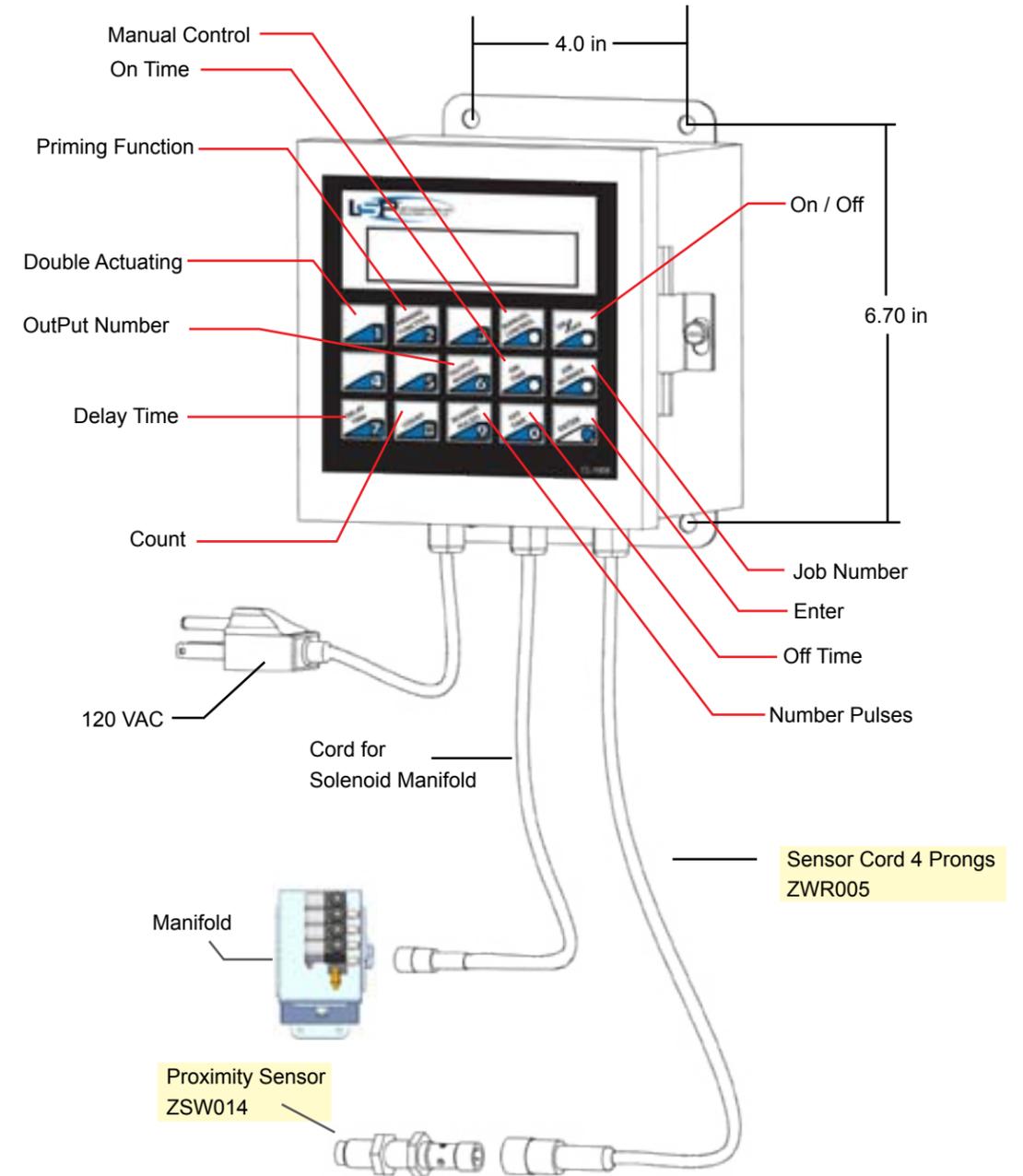
Actuator Bracket 459BRK01 Union Nipple Fitting used to mount the Actuator assembly (above) directly to another piece of equipment.

INSTALLATION, OPERATION, and TROUBLESHOOTING

with **REPLACEMENT PARTS LISTING** for
MaxaMizer
Model Nos. MX-1004, 1006, 1008, 1110 & 1112
Reservoir Model Nos. FC-7314, 7318, & 7320



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INSTALLATION INSTRUCTIONS

MAXAMIZER is available as a partially assembled system or as individual components that can be assembled into a personalized lubricating system. The above drawing shows the partially assembled system. The Operating Instructions are written so that it should be clear which how the system functions no matter which system has been acquired.

Items called out in the **ILLUSTRATION** are identified in the **INSTRUCTIONS** by **ALL CAPITAL LETTERS**

A. INSTALLING THE CONTROLLER

1. Locating the MaxaMizer Controller

Consider the following when locating the Controller.

- Insure that lines to be connected to the **Controller** will not interfere with work, and will not be caught by or rub against moving parts.
- Controller comes with 6' of Power Cord. The Controller must be located within 6' of a grounded 110V junction box.
- Manifolds come with 12' of Cable. Controller is to be located within 12' of the Manifold unless an Extender Cable is used. If an extender Cable is used then Controller can be located as far as 24' away from the Manifold.
- Proximity Sensor comes with 12' of Cable. Controller is to be located within 12' of the Proximity Sensor.

2. Mounting the Controller

- For mounting the **MAXAMIZER** on a **BRACKET** drill and tap for four 1/4" screws (see **ILLUSTRATION** on cover).
- For mounting the **MAXAMIZER CONTROLLER**, *only* drill and tap for four 1/4" screws through it's **MOUNTING FEET**.

B. INSTALLING THE DISTRIBUTION SYSTEM.

1. Mounting the Manifolds

One to two Manifolds can be attached to each Controller.

- Each Manifold comes with 6' of cable to attach to the Controller. Cable Extenders are available if additional length is needed.
 - Insert the Quick Disconnect Plug located on the end of the Cable into the Controller.
 - Mount the Manifold in a convenient location so that the nozzle assemblies can be in close proximity to the Manifolds. Six feet is the recommended distance for Nozzles from the Manifolds.
- D) USE 1/4" SCREWS IF MOUNTING THE MANIFOLDS.

2. Mounting the Nozzles

a) Nozzle Assembly

Various types of **NOZZLE ASSEMBLIES** are available. At least one of these items are required. (See **ACCESSORIES**)

b) Distribution Line

Recommended length of tubing 6' or less. Recommended **DISTRIBUTION LINE** is P-903, 3/16" O. D. in size.

c) Line Fittings

Nozzles are supplied with 3/16" Compression Fittings. Manifold Outlets are supplied with 3/16 Push/Pull Fittings.

2. Mounting a Nozzle Assembly

Do as described per the type of **NOZZLE ASSEMBLY** being used.

a) Spray Nozzle.

This **NOZZLE** requires support. If metal **DISTRIBUTION LINE** is used, it may be stable enough to be used as this support.

If this **LINE** is flexible, a **NOZZLE BRACKET** (see **ACCESSORIES**) or similar support will have to be used.

b) FlexTube.

Drill and tap for 1/8-27 pipe thread. Screw the threaded stud of the **FlexTube** into this hole.

c) MagnaTube.

Simply set the **MagnaTube** into place where desired.

C. INSTALLING THE FLUID SUPPLY

The fluid to be sprayed is supplied under pressure by the **LSP TRANSFER PUMP**. Five feet of, (1/2" braided PVC tubing), Inlet Tubing with Filter is supplied unattached to the TransferPump.

The Transfer Pump will be available in one of two ways. It will either be supplied as a Bracketed System, (Electronic Controller, TransferPump and Regulator) with all components mounted on a plate or it will come as a stand alone item.

Either way that it is received the setup will be the same.

Assemble as described below before the system is used.

1. Installing the Inlet tubing into the LSP TransferPump

- Pull the left tab forward on the underside of the LSP Transfer Pump and remove the fitting.
- Screw the Inlet Tubing Into the fitting.
- Reinsert the fitting into the Inlet Port on the LSP TransferPump and push tab closed.

2. Using a BRACKETED MAXAMIZER

- A **RESERVOIR** of any size or type is placed on the floor under the **BRACKETED MAXAMIZER**.
A cover is recommended to keep solution clean.
- Place the **FILTER** end of Inlet Tubing into the **RESERVOIR**.

3. Using a stand alone MAXAMIZER CONTROLLER

- A **RESERVOIR** of any size or type is placed under the TransferPump, no matter where it is located.
- Place the **FILTER** end of Inlet Tubing into the **RESERVOIR**.
A cover is recommended to keep solution clean.

4. Installing the Outlet tubing between the LSP TRANSFERPUMP and the MANIFOLD

- Single Manifold installation.
 - TransferPump comes with a single Push/Pull fitting for 3/8" ID polyethelyne tubing.
 - Manifold comes with a 3/8" ID polyethelyne tubing. Insert tubing into fitting on the TransferPump and extend it to the Manifold.
 - Cut tubing leaving enough slack so that it is not taught.
- Two Manifold installation.
 - When a two manifold system is used, D a 3/8 Push/Pull T-Adapter is supplied. It is to be used in the tubing from the outlet of the Transfer pump to split the lubricant going to the two Manifolds.
 - Manifolds come with 3/8" Push/Pull Fittings.
 - Extend tubing from the TransferPump to the Manifolds and cut to the proper length leaving enough slack so that it is not taught.

D. INSTALLING THE AIR SUPPLY

The **TransferPump** is operated off of compressed shop air.

1. Air Pressure

The TransferPump will operate at maximum shop air pressure but if spray velocity is too heavy reducing the air pressure will reduce the velocity of the spray. A point will be reached where the air pressure is too low to get a decent spray pattern. The pressure where this will happen depends on the viscosity of the lubricant.

2. Air Supply

The shop air should be routed through a Regulator in order to control the air pressure. An Air Regulator is supplied with a 1/4" Push/Pull fitting to accommodate 1/4" Polyethylene tubing.

3. TransferPump

A 1/4" barb fitting is attached to the TransferPump to accept the 1/4" Polyethylene tubing from the regulator

C. INSTALLING THE PROXIMITY SENSOR

Used to trigger the **CONTROLLER**. When a metal object passes by the **SENSOR**, a **Signal** is seen at the **CONTROL BOX** which triggers an action in the **Controller** for an **Operation Cycle**.

NOTE: This is the standard triggering device. For other type switches see the **MODIFICATIONS** area if interested.

Figures 1, 2 and 3 on the following page describes the proper locating of the **PROXIMITY SENSOR** and the versatility and adjustability of the **MOUNTING BRACKET** used with the **PROXIMITY SENSOR**.

Positioning of the Proximity Switch

ROTATING MOTION

A gear, shaft or fly wheel.

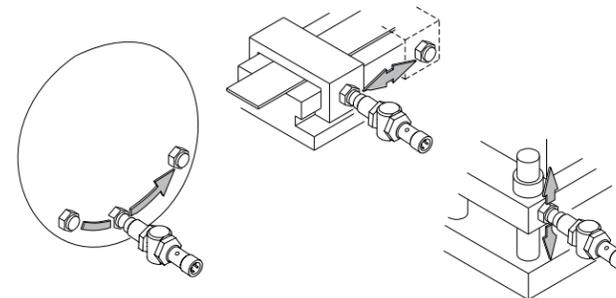
Locate a metal object that sticks up at least 1/8 inch higher than the sub plate so that it completes one full revolution each cycle.

Cam or Shaft shown below.

MIDDLE OF MOTION

Place the metal object so that it passes the **PROXIMITY SENSOR** twice during the cycle. This will give two actuations per cycle.

Use the **DOUBLE ACTUATION** function so that the controller only counts every other pass of the metal object.



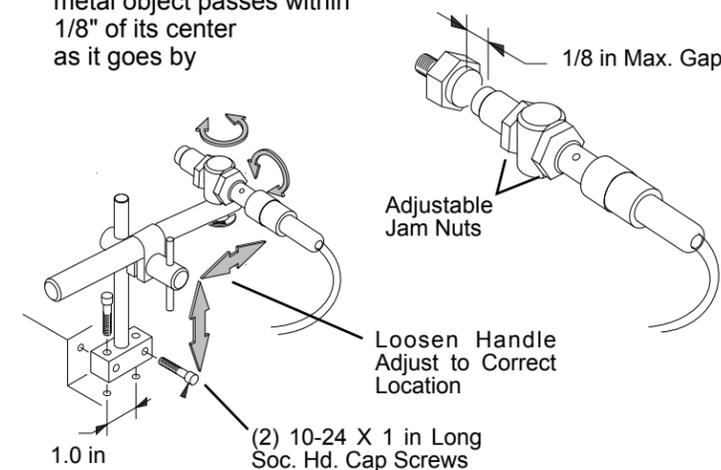
The PROXIMITY SENSOR AND MOUNTING BRACKET

Locate the **PROXIMITY SENSOR** anywhere along the **METAL OBJECTS** travel where there is a surface on which it can be mounted. This surface must be sound enough to insure the **SENSOR** will remain in position during operation. Make sure this location is within reach of the **SENSOR CORD-SET**.

Before mounting the **SENSOR**, assemble it onto its **MOUNTING BRACKET**, and hold this assembly in place to check if the positioning described in **Figure #2** is possible. See **Figure #3** for instruction on using the **MOUNTING BRACKET** to adjust the location of the **SENSOR**.

To mount the **SENSOR**, drill two holes 1 inch apart. If using the screws supplied, tap these holes with #10-24 thread to 3/8" min. depth. Insert the screws thru the holes in the feet of the **MOUNTING BRACKET** and tighten securely.

Adjust **SENSOR** such that metal object passes within 1/8" of its center as it goes by



D. THE MAXAMIZER SETUP

The MaxaMizer is a low pressure airless spray system that dispenses lubricant from multiple nozzles upon command. Each nozzle is individually programmed to dispense lubricant independent of the other nozzles

1. Install CompuSpray Controller

- a) Locate within 6 feet of a 110 V plug.
- b) Proximity Sensor should be within 12 feet of the MaxaMizer Controller. This means that there must be a moving part on the machine within 12 feet of the Controller that the Proximity Sensor can use as a signal. If more than 12 feet an extender can be put on the cable.
- c) Manifolds should be within 12 feet of Controller. If further than 12 feet an extender can be put on the cable.
- d) Nozzles should be within 12 feet of the Manifolds. the lubricant.

2. The Manifolds

- a) Houses from four to six valves and are each controlled by the Controller.
- b) Each valve will receive a signal from the Controller each cycle of the machine. The Controller is programmed to open the valve and allow lubricant to pass through and out of the nozzle for a set time or in pulses each cycle of the press.

OPERATING INSTRUCTIONS

A. Power Up

When the POWER CORD-SET is plugged in, the CONTROLLER will go through a Power-Up routine. Briefly, the following information will be displayed.

1. LSP INDUSTRIES, Inc.
2. Model No E-999 (999 is 300, 305, or 310)
3. Version No.

B. Input Signal

When the CONTROLLER receives an Input Signal, it will begin its Operation Cycle. The PROXIMITY SENSOR provides the Input Signal when it sees the Metal Object. At that moment, a small LED will illuminate from the PROXIMITY SENSOR while an asterisk**** illuminates on the CONTROLLER DISPLAY.

C. Operating Modes

During operation, the CONTROLLER will be in one of two Modes, either Run Mode or Set Mode. In Run Mode, the CONTROLLER DISPLAY will be full of CONTROLLER and JOB PARAMETERS. To change to Set Mode, press any named key. In Set Mode, the CONTROLLER DISPLAY will give a prompt to enter a specific CONTROLLER or JOB PARAMETER.

Changes to PARAMETERS are stored immediately after pressing the ENTER key and will effect the current Operation Cycle.

D. Setting CONTROLLER PARAMETERS

The CONTROLLER PARAMETERS are universal settings which take effect during each OPERATION CYCLE regardless of the JOB PARAMETERS.

1. OUTPUT NUMBER KEY

Used to identify the NOZZLE that is going to be programmed with its operating Instructions. Must be activated before any Nozzle programming is initiated.

2. PRIMING FUNCTION Key

Used to help prime equipment during the initial setup. Set to ON to continuously energize all NOZZLES that have been PROGRAMMED on/off at rate of 3 times per second. Press key to toggle setting between OFF and ON.

3. ON TIME Key

Sets the time duration, (ON-TIME), for the NOZZLE that is being Programmed. The range is 1 to 999; in increments of 10m/Sec; giving .01 to 9.99 seconds.

4. MANUAL CONTROL Key

Used to manually energize all the Programmed SOLENOID VALVES. When pressed, the SOLENOID VALVES becomes energized. This function is available at any time and is used primarily to adjust the NOZZLES at SET UP time

5. ON/OFF Operation Key

Used to turn CONTROLLER operation ON and OFF. It is used during setups and other times the machinery is operated. Press key to toggle setting between OFF and ON.

E. Setting JOB PARAMETERS

There are 6 parameters stored with each JOB NUMBER.

1. OUTPUT NUMBER Key

Nozzle Number to be programmed, 1 - 12.

2. JOB NUMBER Key - Memorizing Jobs

Sets the current JOB NUMBER.

4 output unit	51 job memory
5 output unit	40 job memory
6 output unit	34 job memory
8 output unit	25 job memory
10 output unit	20 job memory
12 output unit	17 job memory

3. DELAY TIME Key

Sets a time delay from when the Sensor receives a signal at the end of a Count Cycle to when it allows the Controller to activate the SOLENOID VALVE. Range is 0 to 999; in increments of .01 Second; giving 0 to 9.99 seconds.

4. COUNT Key

Sets the number of Input Signals to receive before continuing Operation. Range is 0 to 999; giving 0 to 999 COUNTS.

5. NUMBER PULSES Key

Sets the number of times to energize the SOLENOID VALVE after reaching the COUNT. Range is 1 to 99 PULSES.

6. OFF TIME Key

Sets the time duration for SOLENOID VALVE to be OFF between PULSES. The range is 1 to 999; incremented at .010 Sec; giving .01 to 9.99 seconds of OFF TIME.

* ENTER Key

After entering values into any of the above JOB PARAMETERS, press the ENTER KEY to save the value.

F. The Operation Cycle

After the CONTROLLER is Powered Up and starts receiving Input Signals, it will perform according to the Values set for it's Parameters. A description of it's Operation is given below (described as operating in Run Mode). At the start of an Operation Cycle, Input Signals are counted. This count (set by #8 Count Setting) is displayed at VALUE DISPLAY. When an Input Signal is received, this count increases by one. While this count is less than the Count Setting continues, awaiting the next Signal. When the count goes to zero, this Count Cycle ends. When Count Cycle ends, a Time Delay begins. This time's duration (set by #E-3 Delay Time Setting) is displayed in the VALUE DISPLAY. During this wait, the DISPLAY shows a count-up of the Delay Time. When Delay Time ends, either a single Pulse of a set duration or a multiple Pulsing Cycle begins. This Cycle begins with an Output to the SOLENOID VALVE. The duration of this Output Pulse is set by #D-3 On Time. If multiple Pulses are programmed, with the first Output Pulse, the number of Pulses elapsed (set by #E-9 Number of Pulses) is displayed at the VALUE DISPLAY. As the Pulses progress there will be a time delay between Pulses for a given duration (set by #E-6, Off Time Setting) after which there will be another Output Pulse. At each Output Pulse, the number showing at the VALUE DISPLAY will increase by one. When this number equals the Number of Pulses the display goes to zero, the Pulsing Cycle ends. When Pulsing Cycle ends, the value of #E-8 Count Setting is re-loaded and displayed at VALUE DISPLAY, and Operation returns to Count Cycle as described above..

EXAMPLES ON HOW TO PROGRAM THE CONTROLLER

PARAMETERS for NOZZLE #1

1. User gets NOZZLE #1 ready for Programming by
2. User Programs NOZZLE #1 to have a 06/Second Time Delay before starting:
3. User Programs NOZZLE #1 to have Two PULSES:
4. User Programs NOZZLE #1 to have each PULSE have a set ON TIME
5. User Programs NOZZLE #1 to have a Two Second OFF TIME between PULSES

PROGRAMMING NOZZLE #1

Depress OUTPUT NUMBER Key, then depress the #1 Key, designates the 1st NOZZLE. Depress ENTER Key to Set NOZZLE #1 for Programming

Depress DELAY TIME Key then the Number 6 Key to give .06 second Delay Time: followed by the ENTER Key.

Depress NUMBER PULSES KEY and then the Number 2 Key and then the enter Key

Depress ON TIME Key then the Number 10 Key to give .010/second ON TIME followed by the ENTER Key.:

Depress OFF TIME Key and Keys 2 and 0 and 0 for 200 or 2 Seconds OFF TIME followed by the ENTER Key.:

PARAMETERS for NOZZLE #2

1. User gets NOZZLE #2 ready for Programming by:
2. User Programs NOZZLE #2 to have a Time Delay before starting:
3. User Programs NOZZLE #2 to have One PULSE:
4. User Programs NOZZLE #2 to have the PULSE have a set ON TIME:
5. User Programs NOZZLE #2 to have a Two Second OFF TIME between PULSES.

PROGRAMMING NOZZLE #2

Depress OUTPUT NUMBER Key, then depress the #2 Key, designating the 2nd NOZZLE. Depress ENTER Key to set NOZZLE #2 for Programming

Depress DELAY TIME Key then the Number 2 Key and then the Number 5 Key to give .025/second Delay 06/Second Delay Time followed by the ENTER Key.

Depress NUMBER PULSES Key and then the Number 1 Key to give one PULSE per cycle followed by the ENTER Key

Depress ON TIME Key then the Number 5 Key to give .050/second ON TIME followed by the ENTER Key.

Depress OFF TIME Key and Keys 2, 0 and 0 for 200 or 2 Seconds OFF TIME followed by the ENTER Key.

User activates the PROXIMITY SENSOR and the first two NOZZLES run through their cycle.

Change Parameter #3 on Nozzle #1

REPROGRAM NOZZLE #1 for SIX PULSES

1. User gets NOZZLE #1 ready for reprogramming by:
2. User Programs NOZZLE #1 to have Six Pulses.

Depressing OUTPUT NUMBER KEY, then depressing the #1 Key, (designating he 1st NOZZLE).. User now Depresses ENTER Key to Set NOZZLE #1

Depress NUMBER PULSES Key, then the Number 6 Key and then the ENTER Key.

NOZZLE #1 is now set to give Six Pulses per cycle.