AMERICANMARKING, INC.

OWNER´S MANUAL

USM-103DS, USM-104DS & USM-105DS
MICRO-SPRAY MARKER CONTROLLERS

INSTALLATION - OPERATION - MAINTENANCE

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USM-103-07362

IMPORTANT NOTE

UNIVERSAL products are manufactured to exacting standards and every available step has been taken to assure your complete satisfaction. It is most important, however, that the instructions contained in this manual are read and carefully followed for best results. Failure to do so may result in unsatisfactory performance, damage to the equipment and personal injury.

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- LIMITED WARRANTY -

UNIVERSAL Micro-Spray Marker Controllers are guaranteed to be free from defects in materials and workmanship for a period of 90 days from the date of purchase. Components found to be defective during this time will be repaired free of charge if returned to the factory. Damage resulting from improper installation, or operation is not covered under the scope of this warranty. For warranty service please contact our Customer Service Department.

PREFACE

The Universal USM-103DS, USM-104DS & USM-105DS Micro-Spray Marker Controllers are designed to control the function of one or more USMR-20 or USMR-20AF Micro-Spray Markers. These controllers have been configured to accept direct solenoid control signals from an outside source such as a PLC or the logic control of a parent machine. These controllers include two electrically activated solenoid valves, one for control of the low pressure atomizing air supply and one for the control of the trigger air supply.

These controllers also contain pressure regulators and gauges for both the atomizing air and the trigger air signals required by the USMR-20 and USMR-20AF Micro-Spray Markers.

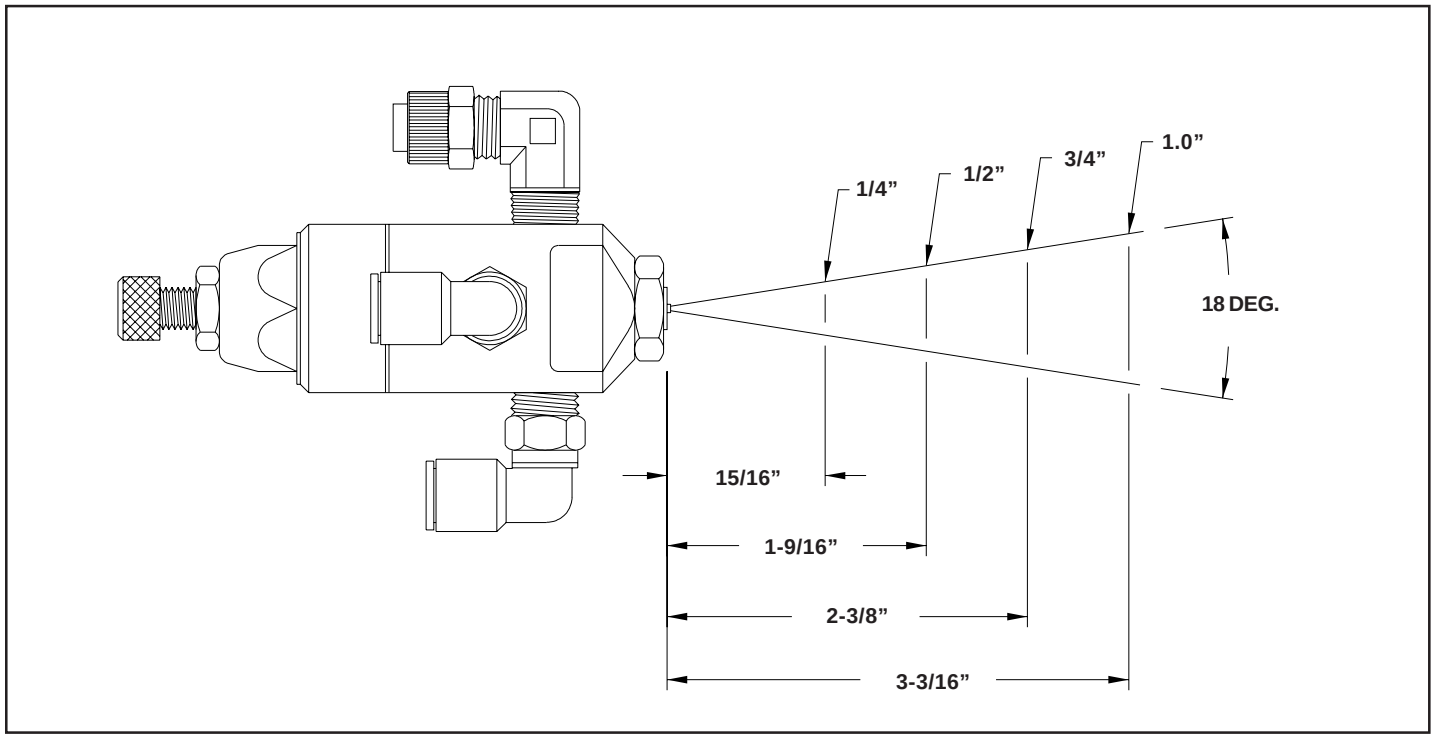
QUICK START

PAGES 5 THRU 8

This manual was written with a full understanding that very few people like to read manuals or have the time to do so. To accommodate those who have little time to spare, we have included a Quick Start section which will get you operating in just a few minutes.

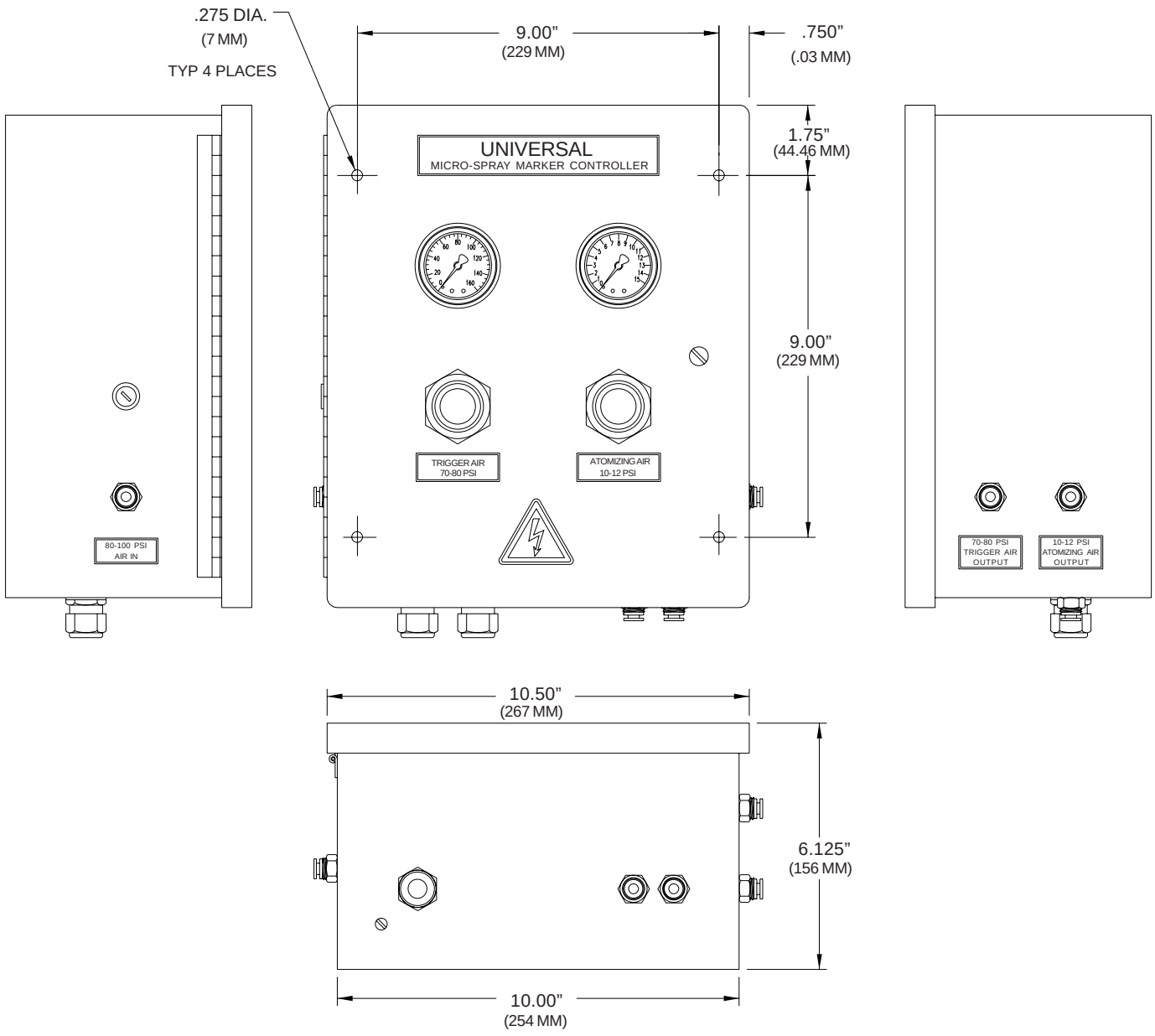
The following installation instructions apply to the USM-103DS, USM-104DS and USM-105DS Micro-Spray Marker Controllers only. Please refer the the manual included with the USMR-20 Series Micro-Spray Markers for detailed installation and operating instructions for that product.

USMR-20AF MICRO-SPRAY MARKER SPRAY PATTERN



SPECIFICATIONS

USM-103DS, USM-104DS & USM-105DS



Dimensions: 12.5" (317mm) Tall x 10.5" (266mm) Wide x 6.25" (158mm) Deep
Net Weight: 15 Lbs. - 2.5 Oz. (6.87 Kg)

USM-103DS Controller: Contains 2 each 115 VAC 60 Hz. (110 VAC 50 Hz.), 5.4 Watt Solenoids

USM-104DS Controller: Contains 2 each 12 VDC, 5.4 Watt Solenoids

USM-105DS Controller: Contains 2 each 24 VDC, 5.4 Watt Solenoids

QUICK START

INSTALLATION

1 - The control box should be mounted on a vertical surface as close as possible to the location of the USMR-20 Series Micro-Spray Marker. To ensure fast response time of the Micro-Spray Markers, the air tubes from the controller to the marker should be kept to the shortest length possible. Maximum tube lengths of 6 to 7 feet are recommended. Longer tube lengths can be used but the response time of the marker will be slower.

2 - Insert the end of a length of 1/4" O.D. poly tubing into the Atomizing Air Output fitting on the bottom right side of the Control Box.

To connect the tubes to the fittings, push the end of the tube into the fitting as far as it will go. Pull back slightly on the tube to lock it in place. If removal of the tube is necessary, disconnect the control from the compressed air source to ensure the line is not under pressure. Push in on the plastic flange and hold it in while pulling the tube out of the fitting.

FIGURE 1

3 - Insert the other end of the Atomizing Air tube to the port on the marker body marked “AIR”.

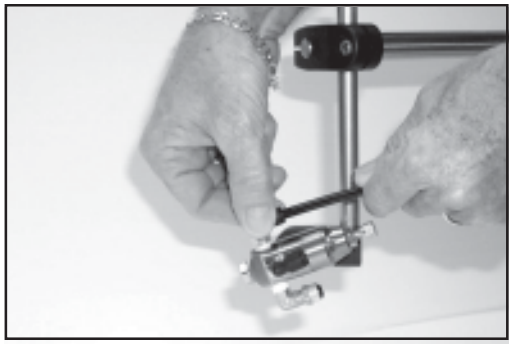


FIGURE 2

4 - Insert the end of a second length of 1/4" O.D. poly tubing into the Trigger Air Output fitting on the bottom right side of the Control Box.

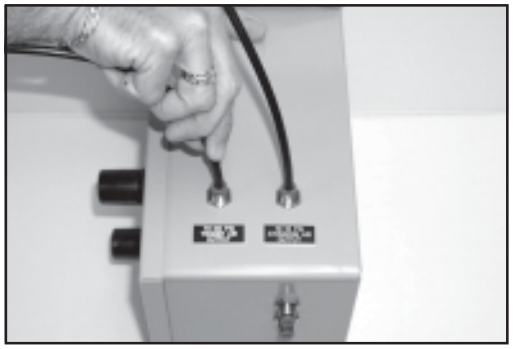


FIGURE 3

5 - Insert the other end of the Trigger Air tube to the port on the marker body marked “CYL”.

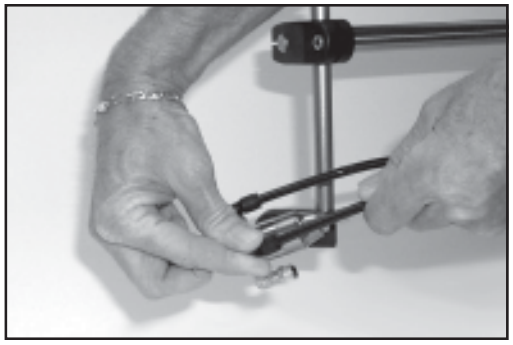


FIGURE 4

QUICK START

Note: The Micro-Spray Marker Controllers require a source of 80 - 100 psi compressed air for proper operation. The source of compressed air used for this controller should be clean and dry. Refrigerated dryers are notrequired for the operation of this control or the Micro-Spray Marker. However, if your plant's compressed air system contains a high volume of water vapor or particulate debris, a good quality compressed air filter should be installed between the supply line and the controller to prevent damage to the control system and the marker.

5 - Connect a 1/4" O.D. Poly Tube from the source of compressed air to the fitting on the left side of the Controller marked "80 - 100 PSI AIR IN".

FIGURE 5

6 - Adjust the Trigger Air pressure regulator to a setting of approximately 70 PSI.

To adjust the regulator, pull out on the knob to unlock. Turn the knob in a clockwise direction to increase pressure. When the desired pressure is reached, push the knob in to lock it in place.

Note: To reduce the pressure setting, turn the knob counterclockwise. It will be necessary to cycle the solenoid valve for a few seconds before the pressure gauge will display an accurate pressure reading.

FIGURE 6

7 - Adjust the Atomizing Air pressure regulator to a setting of approximately 10 PSI.

FIGURE 7

QUICK START

ELECTRICAL CONNECTIONS

Warning: The USM-103DS, USM-104DS and USM-105DS Micro-Spray Marker Controllers are designed for direct solenoid control using appropriate voltage signals from a parent machine. Before making any electrical connections to this control, verify that the voltage from the parent machine matches the voltage of the electrical solenoids in this controller. The solenoids in the Micro-Spray Marker Controllers are not internally fused. The output signals from the parent machine should be properly fused for the operation of the controller solenoids. An appropriate ground wire should also be connected to the ground terminal located at the bottom of the panel in the Micro-Spray Marker Controller.

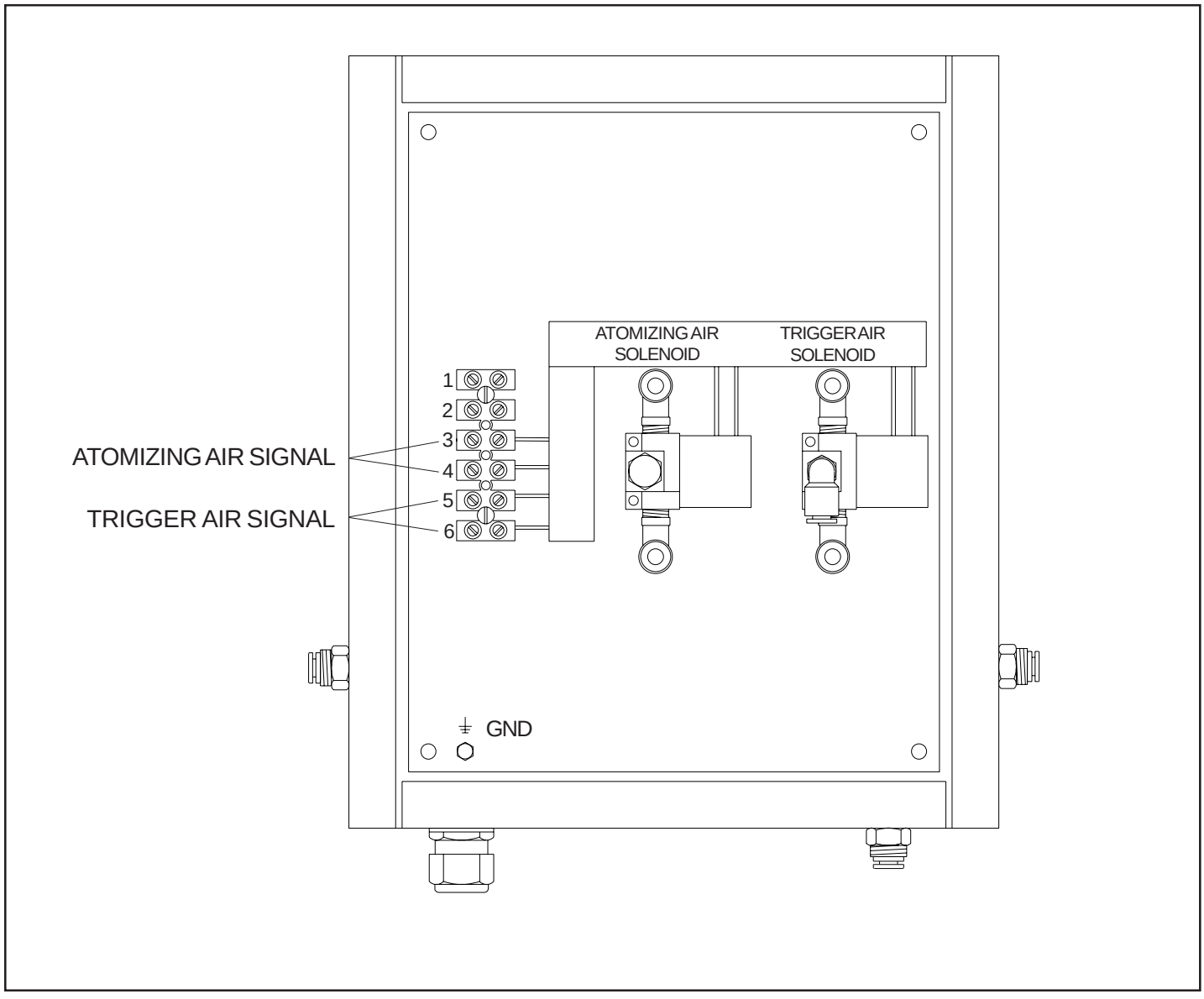


FIGURE 8

1 - Connect the two leads for the control of the Atomizing Air Solenoid from the parent equipment to terminals 3 & 4 in the Controller.

2 - Connect the two leads for the control of the Trigger Air Solenoid from the parent equipment to terminals 5 & 6 in the Controller.

CONTROL SIGNALS

To achieve a good spray pattern when the USMR-20 Series Micro-Spray Markers are cycled, the Atomizing Air must be flowing at proper pressure through the marker orifice prior to applying the Trigger Air signal. When the Trigger Air signal is applied, the needle in the markers fluid valve is lifted off its seat and ink begins to flow into the atomizing air stream. If the Atomizing Air is not flowing properly when trigger air is applied, a poorly atomized spray pattern will result.

When the marking cycle is terminated, the Trigger Air solenoid should be de-energized first and Atomizing Air should be allowed to continue flowing for approximately 100 milliseconds to blow off the last droplet of the ink produced when the cleanout needle pushes back through the orifice. This triggering sequence not only ensures consistent atomization of all the ink but it also helps to prevent ink buildup around the marker orifice.

Refer to Figure 9 for the optimal signal pulse pattern for applying a typical spot mark. For applying line marks on a moving web, the same on-delay and off-delay of the atomizing air signal should be used with longer duration cycles.

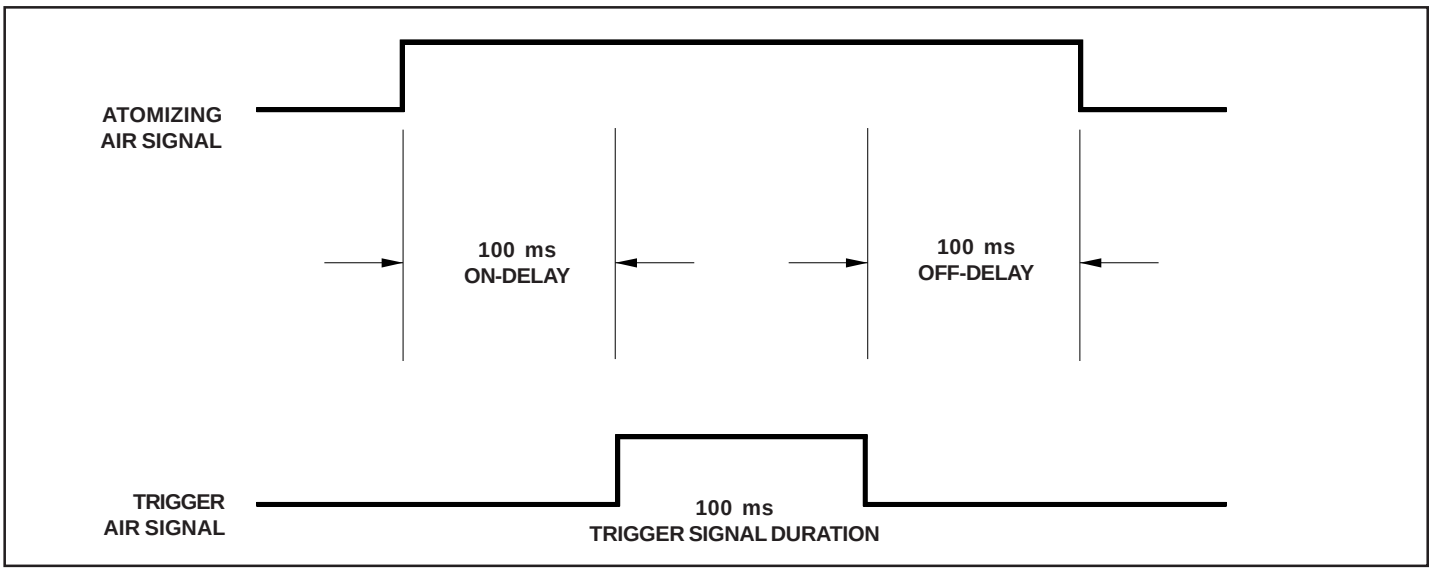
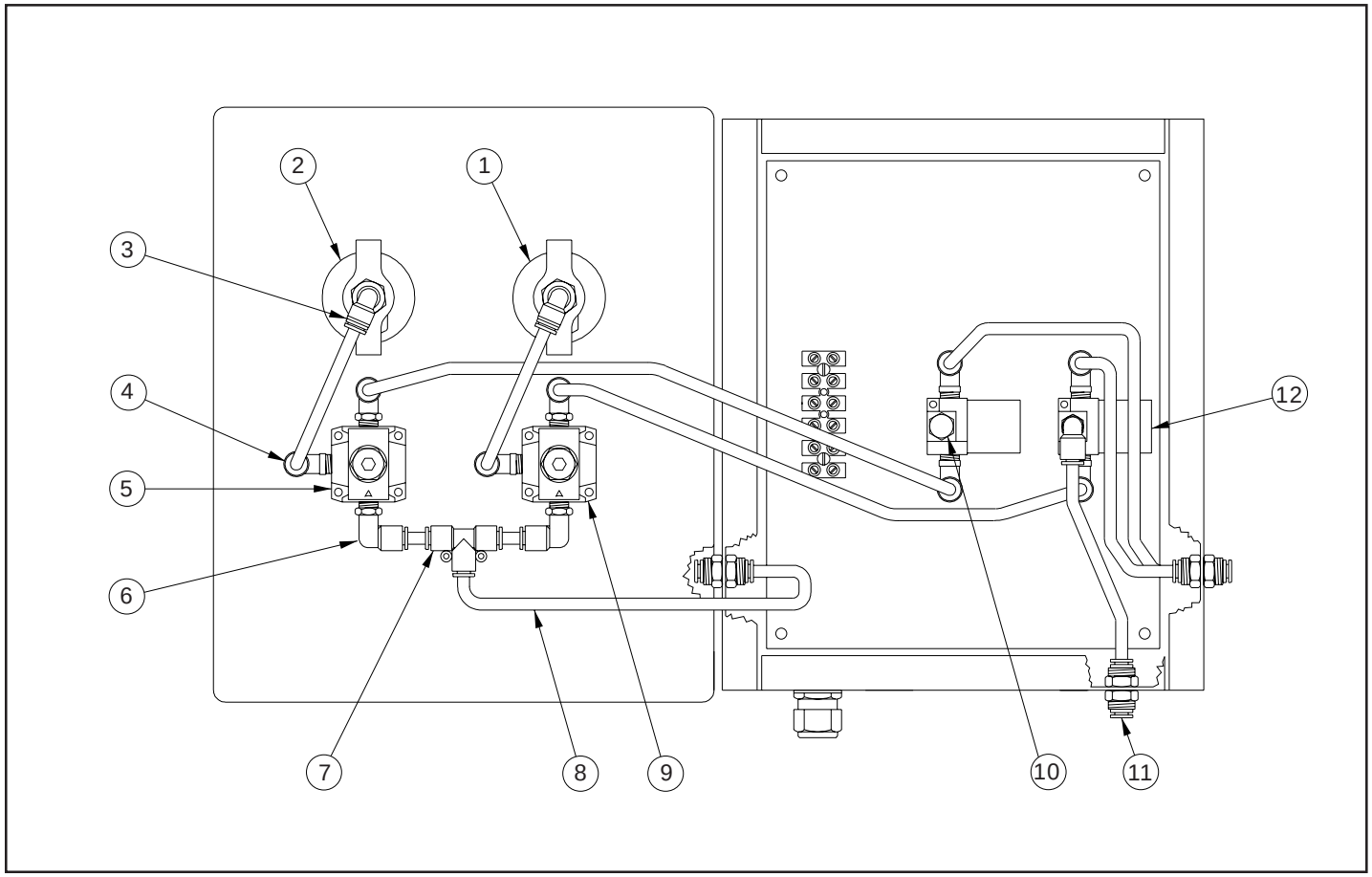


FIGURE 9

Note: If longer than 6 to 7 foot connecting air tubes are used between the Controller and the Marker, a longer on-delay time may be required to ensure that the low pressureAtomizing Air is flowing at proper pressure through the marker orifice.

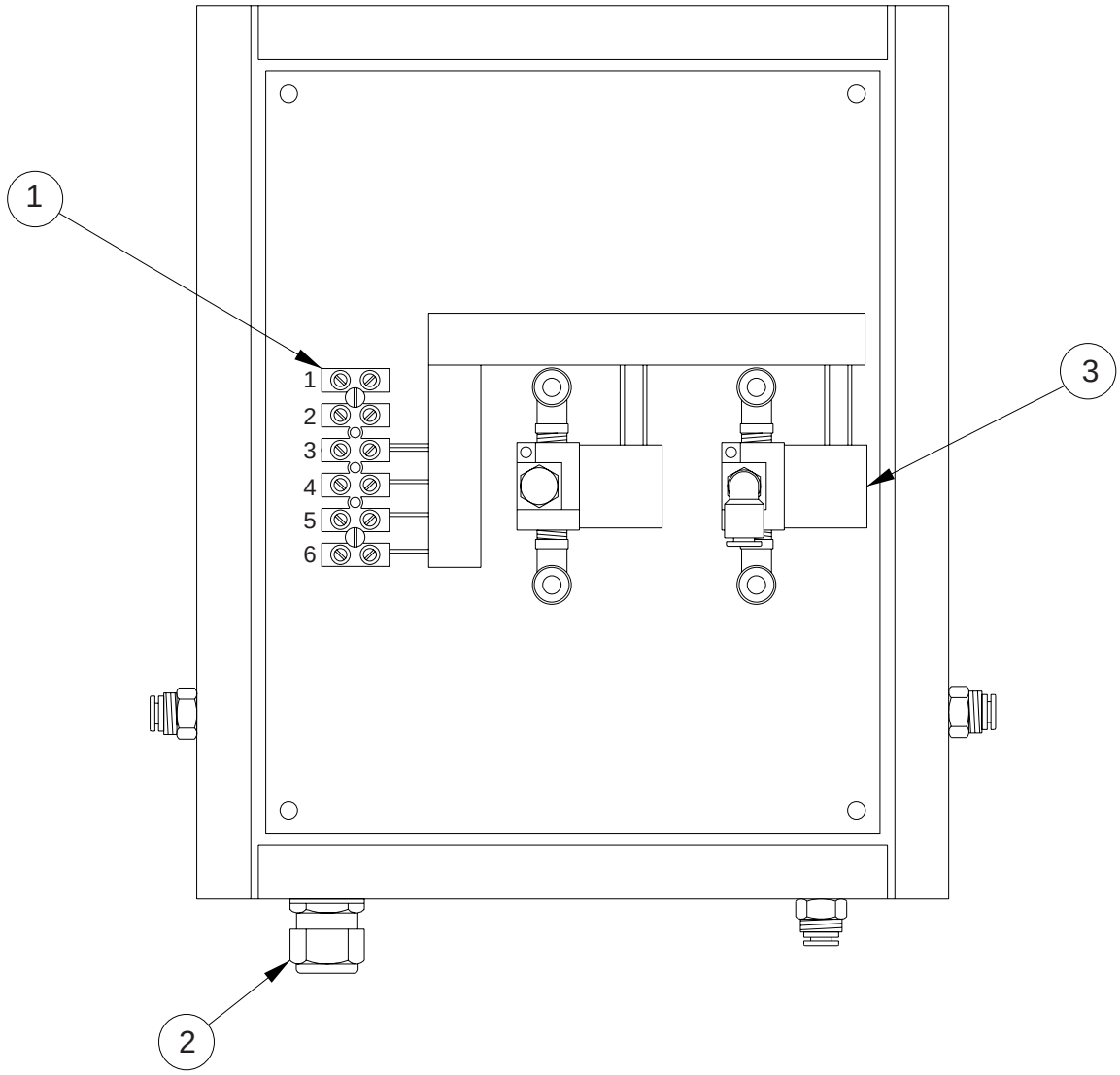
MICRO-SPRAY MARKER CONTROL
PNEUMATIC COMPONENTS ASSEMBLY



PNEUMATIC COMPONENTS PARTS LIST

KEY NO.	PART NUMBER	QTY. REQD.	DESCRIPTION
1	MRM-PC-92	1	GAUGE, PANEL MOUNT 0 - 160 PSI
2	MRM-PC-93	1	GAUGE, PANEL MOUNT 0 - 15 PSI
3	MRM-PC-89	2	FEMALE ELBOW, 1/4" NPT X 1/4" O.D. TUBE
4	MRM-PC-10	8	MALE ELBOW, 1/8" NPT X 1/4" O.D. TUBE
5	MRM-PC-91	1	REGULATOR, PANEL MOUNT 0-15 PSI
6	MRM-PC-11	4	MALE ELBOW, 1/4" NPT X 1/4" O.D. TUBE
7	MRM-PC-30	1	UNION TEE, 1/4" O.D.
8	CT-04	6'- 9-1/2"	1/4" O.D. BLACK POLYURETHANE TUBE - FT.
9	MRM-PC-90	1	REGULATOR, PANEL MOUNT 0-160 PSI
10	MRM-PC-60	1	1/8" NPT PLUG
11	MRM-PC-50	4	BULKHEAD UNION, 1/4" O.D. TUBE
12	USM-SOL1	2	3-WAY SOLENOID VALVE - 115 VAC COIL FOR USM-103DS CONTROLLERS
	USM-SOL2	2	3-WAY SOLENOID VALVE - 12 VDC COIL FOR USM-104DS CONTROLLERS
	USM-SOL3	2	3-WAY SOLENOID VALVE - 24 VDC COIL FOR USM-105DS CONTROLLERS

MICRO-SPRAY MARKER CONTROL
ELECTRICAL COMPONENTS ASSEMBLY



MICRO-SPRAY MARKER CONTROL
ELECTRICAL COMPONENTS PARTS LIST

KEY NO.	PART NUMBER	QTY. REQD.	DESCRIPTION
1	MRM-EC-04	1	TERMINAL BLOCK 6 POLE INTERNATIONAL
2	MRM-EC-10	1	STRAIN RELIEF, STRAIGHT-THRU FITTING
	MRM-EC-11	1	STRAIN RELIEF NYLON LOCKNUT
3	USM-SOL1	2	3-WAY SOLENOID VALVE - 115 VAC COIL FOR USM-103DS CONTROLLERS
	USM-SOL2	2	3-WAY SOLENOID VALVE - 12 VDC COIL FOR USM-104DS CONTROLLERS
	USM-SOL3	2	3-WAY SOLENOID VALVE - 24 VDC COIL FOR USM-105DS CONTROLLERS