

**ELECTRONIC METERING SYSTEM (EMS)  
MODEL EMS-1  
OPERATION AND INSTALLATION MANUAL**

Rev. 8/05

### **SAFETY INSTRUCTIONS**

- ✓ Do not operate system with a damaged electrical supply cable or if the system has been damaged until it has been examined by a qualified service person.
- ✓ Never jerk the power supply cable from an electrical outlet.
- ✓ The system must be plugged into a grounded electrical outlet. All wiring must be approved under local electrical codes.
- ✓ Do not operate when solution is on the floor or leaking from tubing.
- ✓ Unplug the power cable of system before servicing.
- ✓ All service or repair work should be done by a qualified service technician.
- ✓ Restriction of solution flow from outlet of pump or column will result in pressure build up, which could rupture the columns. All columns have a 7 psi operating limit. The metering pump is designed to stall when pressure exceeds the operating limit. However, the pumps used on the EMS systems are capable of pumping in excess of the operating limit for functionality.
- ✓ Neither The Pump NOR The Column Negates The System Requirement For Both Devices.

### **OPERATIONAL NOTES**

- ✓ Monitor system on a scheduled basis with the SILVRINDICATOR<sup>®</sup> Field Test Kit included with system.
- ✓ Always fill column with cold water before introducing silver bearing solution. The MIEC-8 columns are very heavy when filled with water or fixer. Use a hand-truck when moving full columns to prevent possible injuries.
- ✓ Always leave column full of liquid and plugged between uses. Store in a cool place
- ✓ Fixer that has been stored for 6-8 weeks should be filtered through a cheesecloth before processing to remove precipitated solids. Fixer stored for more than 8 weeks may not be process-able.
- ✓ Never introduce systems cleaner or developer to EMS or feed lines.

## **SYSTEM DESCRIPTION**

The EMS-1 is a complete system for the precision delivery of solution to Ion Exchange Columns for recovery of dissolved silver generated in the development of photographic materials. Used as a primary recovery system or as a secondary recovery system following an electrolytic, the EMS will process a wide variety of fixers, bleach fixers stabilizers, stop baths and rinse waters.

Controlled solution flow through the Ion Columns has been determined to improve, by a factor of 3 to 5, silver yield, core life, and discharge levels for silver. Discharged solutions will typically contain less than 5 PPM silver when used according to manufacturer's directions. Direct discharge to drain of desilvered solution is permitted in most sewer systems. The EMS-1 comes standard with a LCD display timer for volume tracking. The timer should be used as a tool for column monitoring.

## **SYSTEM APPLICATION**

The EMS is normally installed in a location convenient to receive the fixer overflow from one or more automatic processors while allowing manual pouring of other solutions required desilvering. The EMS has been engineered to process a wide variety of fixers, bleach fixers, stabilizers, stop bath, and rinse waters normally used in the development of photographic materials. The suitability of the product for any particular application however, is the responsibility of the purchaser/user.

## **SYSTEM WARRANTY**

The EMS comes with a one year parts and factory labor warranty.

## **EMS SYSTEM AND COMPONENTS**

EMS-1 metering station  
SILVRINDICATOR<sup>®</sup> Field Test Kit  
Hose clamps, threaded elbow hose connectors and plugs  
One MIEC-8 Ion Column

## **ASSEMBLY AND INSTALLATION**

1. Remove any packaging material.
2. Remove the protective red caps from the column and screw on the elbows.
3. Pre fill the column with cold water. If pre-filling column with water prior to connection with the EMS is not practical, fill the EMS tank with water to fill column via the metering pump.
4. Place the system in a convenient location to received fixer from processor(s), meter solution, and discharge treated solution to drain.
5. Tubing to be used should be clear 3/4 inch inside diameter vinyl food grade.

6. All connections with the exception of the column outlet tubing connection to the drain should be secured with hose clamps.
7. Fill EMS holding tank with enough water to start the metering pump pumping. Plug EMS into a grounded receptacle and let it pump and fill the pump output line so to remove excess air prior to connecting it to the inlet of the column.
8. Connect the metering pump delivery tubing to the column inlet elbow.
9. Connect drain line tubing to the outlet of the column.
10. Connect the tubing from fixer overflow of processor(s) or output line from an electroplater to EMS inlet located on the side of its tank.
11. Optionally, connect a safety overflow tube from EMS safety overflow connection to the drain.
12. Check routing of all tubing to be sure there is free flow throughout system and check all connections on the system and tighten as appropriate.
13. The system is now operational.

## **PUMP ACTIVATION**

The pump is a self priming bellows pump operating on a non adjustable stroke, positive displacement principle. The pump is designed to deliver 20 ml per minute. To activate the pump for operation, the solution level in tank must be sufficient, approximately 20, to cause the level control sensors to activate the pump for delivery of solution to the Ion Column.

Note: If pump delays in priming, check all clamps, fittings, and metering pump connections for seal integrity.

## **PARTS LIST**

EMS-1 Metering station  
MIEC-8 Ion Column  
SILVRINDICATOR<sup>®</sup> Field Test Kit  
Silver test log  
EMS-1 Metering Pump  
EMS Controller  
Operation manual