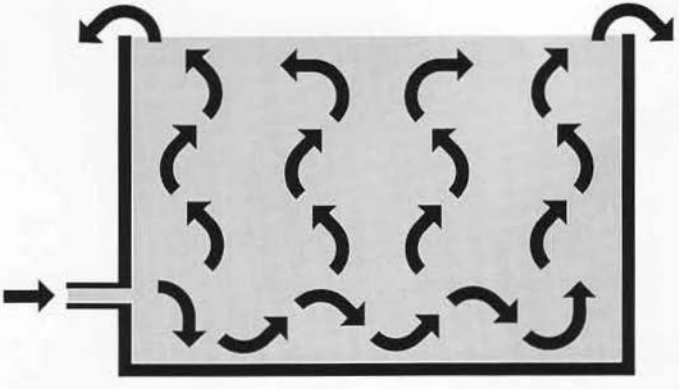
SALTHILL
PHOTOGRAPHIC INSTRUMENTS

Cross Current ™ Archival Washer PAT. PEND.

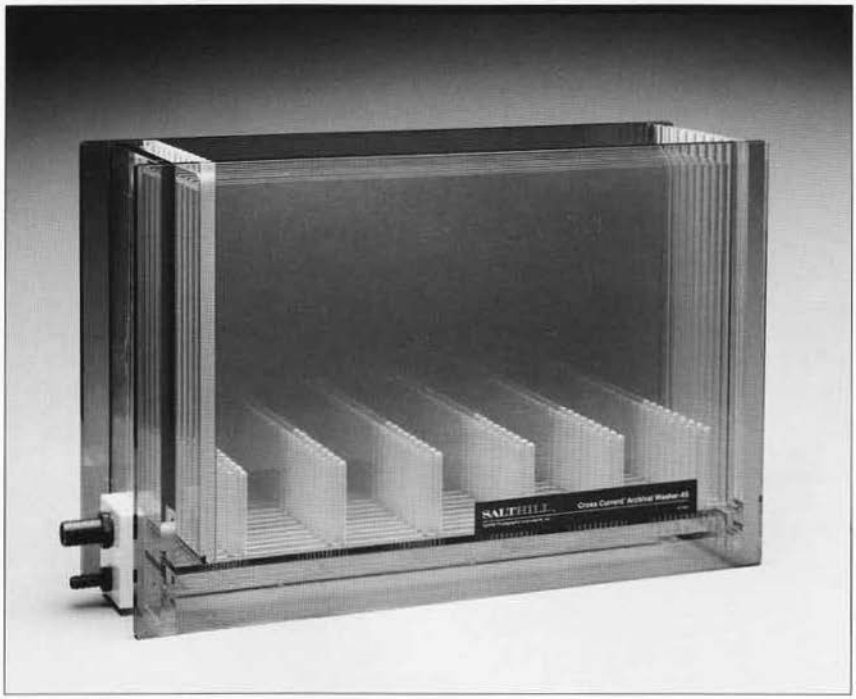
Overview: In the late 1960's, a small commune in Iowa designed and produced the first print washer capable of simultaneously washing many prints to a hypo residual level that could be called "archival". The unit produced by ***East Street Gallery*** introduced the twin concepts of the separation of prints by dividers and the introduction of air into the water intake (the Venturi principle[1]) in order for prints to be washed in turbulated water. Today, all of the "archival" print washers use the compartmentalized system of print separation; a few, but not all, use the air-turbulated method to wash the print as well.

Archival Processing: The measurements of residual hypo levels has been the subject of some debate. From a technical view point the ANSI definition (PH 4.8-1978) provides a level for film of $2\mu g/cm^2$ ***(see note 2)***. The practical consequences of the term "archival processing" has not been so easily defined, for it suggests that the archivally processed print should last indefinitely, for this, even the level suggested by ANSI would still be too high. While the permanence of the image, in purely photographic terms, can be quantified, the issue becomes moot, since the relative worth of a photograph is decided by the individual photographer. Should the print last 25 or 250 years? What level of permanence is sufficient? The significance of this decision has been compounded by the introduction of print whitening agents now being incorporated into most papers. With prolonged washing times these agents can leach out with a noticeable loss of brilliance in the print. This suggests that the dual concerns of hypo removal to "archival standards" as defined by the photographer and the shortest possible wash time (to preserve the whiteners) are a goal that can only be achieved by the use of a washer specifically designed to meet these ends.

Figure 1



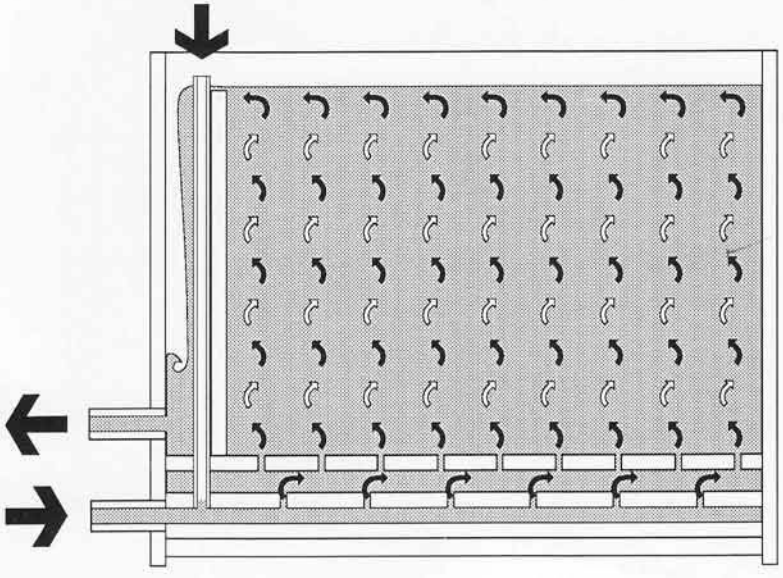
Design: All photographic authorities favor washing techniques stressing a complete change of water every five minutes, with frequent agitation (as provided by our washer by the mixture of air into the water flow[3]) during the wash cycle; the ***Eastman Kodak Company*** recommends, as well, that the water inlet be placed at the bottom of the unit for the most efficient circulation[4](See Figure 1). While the rate of water change is dependant on physical factors such as flow rate and the size of the washing container, the injection of air into the water stream presents a design/engineering challenge. An aerated mixture is very difficult to control, causing an unevenness in the distribution and circulation of the water in the print cell. To this end, we have devised a system of six



venturi mixing chambers fed by a single air supply, directing the water-air mixture to specified points within the washer while greatly increasing the turbulence (See Figure 2). This design also enables us to direct the aerated water to each of the corners of the print cells, thereby eliminating the "boundary layer" effect, (a water flow in the square corners of an object tends to remain static; the same principal that causes dust to settle in corners). The effectiveness of this method also permits a decrease in water flow rate so our washer is fully efficient at a rate of less than 2 gallons per minute. Our last concern was to stabilize the prints in the middle of their washing cell. We again exploited our basic design and placed the water injectors underneath grooves within the partition panels. The water comes through the mixing chamber flowing directly into the groves and radiating up against the panel walls. By placing these groves on both sides of the cell the pressure formed by the radiated water forces the print to the middle of the cell, thereby preventing the prints from touching the partition walls; insuring that both sides of the print get a maximum supply of air-turbulated water.(See Figure 3)

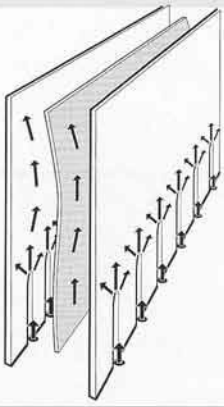
Construction: The SaltHill Archival Washer is expertly crafted of first grade cast acrylic material. The half-inch sides, brass fittings and slow bonding solvent used to construct the unit, will provide for an unlimited life. The gray tinted plastic does not exhibit the cloudy, yellowing that is characteristic of clear plastic. The unit will be as beautiful ten years from now as it is today. The washer has an integral draining chamber, enabling the units' use out of a wet sink, without the need for an auxiliary water collection base. The grooved side panel that separates the partitions raises, so that the unit can be quickly drained, without the need to lift and empty the washer.

Figure 2



Testing For Permanence: The traditional Kodak HT-2 spot test for the removal of hypo involves the application of a silver nitrate solution to a small area of the print. We package with each washer a hypo-stain kit as supplied to us by the ***Photographers' Formulary***. The print is considered "archival processed" if the tested area does not show any visible stain. We prefer, however, to test the entire print (both emulsion and paper base). This is more in accordance with the American National Standards Institute (ANSI) Standard PH4.8-1978. By testing the entire print the effectiveness of the evenness of the wash over both print surfaces can be measured. We have made an agreement with ***Photographers' Formulary*** to assemble a kit for our customers that would provide one liter of this solution; sufficient to test the entire print. The cost of this kit, ordered directly from ***Photographers' Formulary*** is $20.00. (1 800 777-7158)

Figure 3



There are many factors which determine the length of the proper wash time, including the quality and temperature of the wash water, the paper and chemicals used for processing etc.. Therefore, we can not offer any specific recommendations as to the rate for an archival wash. We can suggest that testing begin at 40 minutes with a good flow of water (1-2 gallons a minute, for double weight paper). For a detailed overview of the proper testing for permanence we suggest that you refer to Ansel Adams, ***The Print***, published by Little Brown and Company: Boston 1983 Pages 202-203.

Specifications:

	Model-4S	Model-4L	Model-4XL
Method:	Turbulated Water Air	Turbulated Water Air	Turbulated Water Air
Capacity:	20 - 8 x 10" 10 -11 x 14" or Equivalent	20 -11 x 14" 10 -16 x 20" or Equivalent	20- 11 x 14" 10- 20 x 24" or Equivalent
Dimensions: L.H.D.	21½.14¼. 7"	27½.19¼.7"	28½.23½.7"
Weight:	40 lbs	60 lbs	80 lbs