

## NOTES ON A SMALL SUCTION BOX

by Stuart A. Kohler

In the past, conservators wishing to fabricate a spot suction table were advised to make the working surface from sintered material, fritted glass, or porous ceramic.<sup>1</sup> While these materials apparently work quite well, they are not inexpensive and often difficult to locate. An article by Roy Perkinson describes building a suction table using a Hexcel honeycomb panel and 1/4" hardware cloth.<sup>2</sup> After having visited Cathy Baker's lab in Cooperstown and inspecting her homemade vacuum table, the author decided to attempt fabrication of a spot suction box at the New York State Archives from a cigar box, some metal grid, and duct tape.

### Construction

The top of the cigar box was cut off and a piece of 1/16th" thick perforated aluminum sheet stock was cut to rest on top of the cigar box base. A hole was cut in one end of the cigar box to accommodate the rigid end of the wet/dry vacuum hose.<sup>3</sup> Figure 1.

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<sup>1</sup>Linda Shaffer, "Footnote: On the Weidner Vacuum Method for Use in Paper Conservation," *AIC Bulletin* 15, no. 2 (Summer 1975): 128-29.

<sup>2</sup>Roy L. Perkinson, "Design and Construction of a Suction Table," *Journal of the American Institute for Conservation* 20 (1981): 36-40.

<sup>3</sup>The wet/dry vacuum used initially was borrowed from the Archives's janitorial staff. But ultimately a Sears 16 gallon wet/dry vacuum (cat. no. 9K 1978N, approximately \$160 with extension hoses and attachments in 1984) was purchased. The selection of this particular model was due to an exhaust port feature which enables the vent-

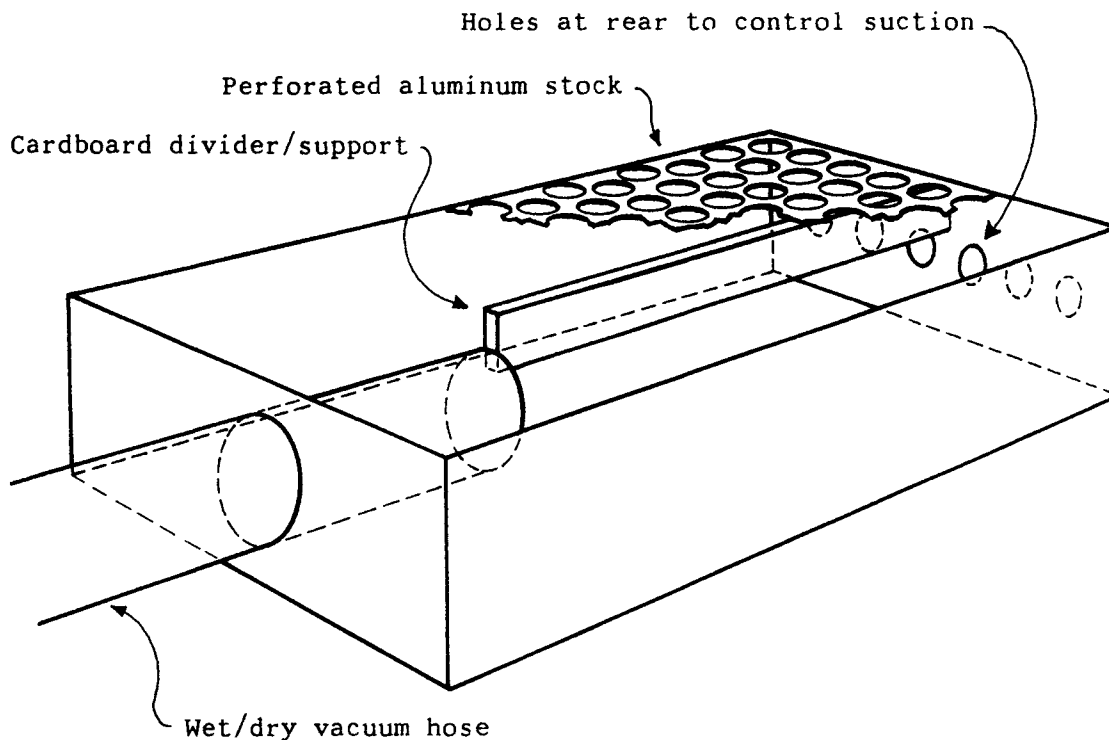


Fig. 1. Small suction box design (cutaway drawing)

Holes were punched into the opposite end of the box to permit variation of the strength of suction by covering or uncovering these holes with a piece of cardboard. The cigar box base was covered with aluminum duct tape to seal unwanted air leaks. A divider was prepared from a piece of bookbinder's board to serve the dual function of splitting the air stream for more even interior air flow and helping to prevent collapse of the metal grid at its center. The metal grid was then duct taped onto the cigar box base.

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ing of solvent vapors via the lab fume hood through an extension hose.

Initially it was thought that a filter of some sort would be needed to distribute the suction across the top of the box more evenly, and a piece of 70 micron etched polypropylene screening was cut to the size of the metal grid. Two layers of blotter paper were placed on top of this and the suction box was used as a standard spot suction unit. In use, it was found that the polypropylene screening was not noticeably more effective than several layers of blotter alone and has since been omitted.

#### Summary

There remain two problems with this unit. First, due to the light weight of the box, the strength of the suction from the wet/dry vacuum, and the use of flexible vacuum hose, when the unit is turned on to full suction the hose contracts and pulls the suction box off the work table. Securing the box with weights reduces the problem but it becomes a bit cumbersome. A better solution would be to use rigid hose in place of the flexible hose.

Another solution would be to build a larger, heavier suction box. The author is presently completing a suction box which is 24" x 18" x 3.5" made of multiple layers of bookbinder's board. Even if this unit requires weights on the corners, this would be unlikely to interfere with pressure-sensitive tape removal procedures. Additionally, having a larger work surface eliminates the need for rigging supports for paper objects which cannot tolerate being flexed over the edge of the unit. It is anticipated that the air stream in

this larger suction box will be split by three dividers fanned out, instead of a single divider.

The second problem is one common to many suction tables: noise. It is hoped that the excessive noise from the wet/dry vacuum will be diminished by locating the vacuum in a mechanical space behind the lab fume hood and running extra lengths of hose to and from the unit. An alternative is the construction of some type of sound baffling box which would reduce the noise level but still permit sufficient air exchange around the motor.

Despite these problems, this small suction box is a simple, inexpensive way to meet the specific need for spot suction during pressure-sensitive tape removal, some types of stain reduction, and other similar procedures.

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