

Mechanical vs. Vacuum: Pros and Cons

by Chris A. Paschke, CPF, GCF

When I first wrote about the pros and cons of mechanical and vacuum presses there were fewer players on the field than there are today. Regardless, the question on the tip of the tongue of a new shopper is still “Which is best?” True to form (for me), I can’t give you the answer to that, because it isn’t up to me or to any statistics. The answer lies entirely within the specific needs and limitations of your business alone. I will, however, in light of this month’s equipment issue, take a closer look at the two types of heat mounting systems and their individual pros and cons.



Basic TTPM Differences

There are two basic types of heat-producing dry mount presses, mechanical and vacuum. There is not one that is better than the other; only different. The most obvious differences may best be explained through the elements of time, temperature, pressure, and moisture also referred to as TTPM.

Time is how long it takes to heat up everything within the press to activate the adhesive and complete the mounting. Temperature is (yes, manu-

ally) setting the press to manufacturer’s specifications for the selected adhesive for the mounting. Pressure is the force required to squeeze the air from between all mounting layers to ensure a uniform bond. Moisture is the demon that can prevent the above three elements from completing their given mission.

Mechanical presses were designed to control only two of these elements (Time and Temperature) with the other two remaining totally manual (Pressure and Moisture) with each mounting. Vacuum presses will help control all four of them during each successive mounting without manual alterations.

Mechanical Presses

The time and temperature variables might change slightly with the selection of lower temperature adhesives, or larger, thicker substrates, but generally there will be a standard setting of 185° to 190°F for 2 to 4 minutes. The standard correctly set pressure in a mechanical press will run 2 to 4 psi (pounds per square inch).

The pressure within the mechanical press must be adjusted to accommodate the particular size and thickness of a mounting project. The lever arm should always be set at 45° to the table surface with all the layers of the

mounting project sitting inside. Too high, it will be too tight and the press can create dents in a multiple bite project. Too low, and it will be too loose to give adequate pressure to make an airtight bond.

Hot Vacuum Presses

A heat vacuum system applies uniform heat and pressure as the vacuum is drawn and the project is mounted. Normal pressure will be approximately 10-14 psi in a vacuum press, though some presses do have manual valve pressure adjustments. Regardless of the press brand or press size, once the time has been selected and the temperature has been set, both the pressure and moisture variables will be automatically taken care of by the pulling of the vacuum.

A great many more vacuum presses and brands have surfaced since my original article on mechanical vs. vacuum presses back in [PFM](#), 1993. This article is not meant to compare the vacuum presses themselves, but rather the system of vacuum mounting to mechanical mounting.

The basic differences to research when looking at vacuum presses will include structure, technical service, and mechanical variations that effect the press TTPM.

Major variations will be found in depth of drop, or the relaxed space between the diaphragm in the base of the press and the platen (heat source) in the top, which will effect the draw time. A shallow drop as found in the Hot Press allows for a quicker evacuation of the air within the unit during the vacuum draw, hence a shortened time prior to the application of pressure. A deeper drop such as a VacuSeal will slow the pressure activation because more air must be sucked out during the vacuum draw. I believe the deepest drop is found in the Corona press, with maybe the longest draw time of the three. Better or worse, your call.

The other major thing that will be noticed is the glass top vs. opaque lid. One is said to conduct better uniform heat and won't bow, but the fact that all heat sources will in the end mount the project as specified, is the real issue. All things considered, uniformity must be evident in every system or there would never be consistent well mounted results. In any event, the appropriate pressure will indeed be applied without adjustment and any existing moisture will be sucked out upon vacuum

draw.

Major System Differences

Since neither pressure nor moisture needs individual attention, many people feel a vacuum system is the most user friendly of the two types of presses. But this is not necessarily the case.

Mechanicals Press Pros

- Mounts and laminates
- Capable of oversized multiple bite mounting
- Takes up less physical space in the shop
- Uses 110 volt regular wall plug
- Lower initial capital investment
- Easier to position and verify placement of layers during creative applications
- Immediate air compression and pressure application

Mechanical Press Cons

- Cannot cold mount
- Single one-bite mountings limited to 24" x 32"
- Must be manually adjusted for pressure
- Requires predrying of *all* mounting materials
- Top may not be used as an additional work space
- Requires same surrounding area as substrate size being mounted
- No built-in timer

Vacuum System Pros

- Heat mounts, laminates and cold mounts
- Automatically adjusts to substrate thicknesses
- Automatically pulls moisture from mounting materials
- Multiple mounting of pieces of various sizes and thickness at the same time saves time and money
- Most mounting adhesives may be used, including wet
- Top of press may be used as additional work space
- Visual monitoring of mounting projects with glass top units
- Glass top doubles as cutting surface
- Timers are standard on most models

Vacuum System Cons

- Maximum mounting limited to actual press frame
- No oversized multiple bite capabilities

mastering mounting

- Monitoring of vacuum pump, filter, oil levels on some models
- Requires 220 volt, three or four-wire hookup and electrician
- Higher electrical use
- Untacked items can shift during vacuum draw
- Soft substrates can be wrinkled by excess diaphragm compression during vacuum
- Delayed pressure application because of vacuum draw

Some vacuum systems shut the vacuum off when the timer ends. This could be a problem when mounting with removable adhesives that bond as they cool under a weight. Permanent adhesives would work better in a system like this if they aren't going to be monitored constantly.

Selecting a Press or Mounting System

Changes in mounting practices generally only occur when equipment needs replacing due to age, production growth, or there's a general dissatisfaction with the current mounting methods. Time efficiency, mess, cleanup, health hazards, and artwork heat sensitivities may all be reasons to upgrade or select a new mounting method.

By asking yourself a series of questions concerning daily mounting materials, procedures, inventory, and future growth, the most effective piece of equipment or method may be chosen to best fit your needs.

- How much wet or spray mounting is currently being done?
- Is mounting regularly subcontracted to another framer?
- Are mounting or laminating jobs turned away?
- Is there heat mounting competition in my immediate area?
- Have I considered the marketing growth potential involving laminating?
- Am I currently interested in expanding my creative mounting and laminating designs?

The resale value of used equipment is very good, but rather than buying small, it is always best to purchase what you want at the beginning rather than hoping to sell and buy larger later. It is a good idea to purchase a

press in anticipation of business growth five years down the road. Also keep in mind that often what is lusted after most (a huge 4' x 8' vacuum press) may not truly be the correct choice for your particular market or inventory.

How to determine the correct size press and type of press can be helped by considering the following questions.

- How much 24" x 36", 32" x 40", 40" x 60" foam board is purchased in a given month?
- Are poster prints or limited editions sold in the store?
- How many oversized pieces do you frame monthly?
- Is photography a viable market?
- What is the average photo size you frame?
- How many oversized photos are mounted? Laminated?

Final Selection

If your answer's indicate one to two oversized 40" x 60" projects per month and lots of 24" x 30" posters, a mechanical press would probably suit you. The options of laminating and creativity will also be possible and it's very user friendly. If you sell 24" x 36" posters, they will not fit into a 500T-X press in one bite, so a small vacuum press is probably the answer. If you want to grab the brass ring and be prepared for oversized posters, lots of large scale creative applications and commercial laminating the large vacuum system should be your target.

Having begun with a 40" x 60" vacuum press in the mid 80s, I purchased a small 210M-X in the mid 90s, and now I use them about 50/50. I love both of them for different reasons. The mechanical for its secure placement, and immediate pressure...but the vacuum for its speed and oversized capabilities.

The choice is up to you! ■

Chris A. Paschke, CPF, GCF, owns Designs Ink, Oxford, Connecticut, featuring commercial and retail custom framing, product consultation, design and education? Specializing in mounting, matting and design creativity she works with numerous industry leaders, and has just released her first book, The Mounting and Laminating Handbook.