Vacuum Laminating Technology Inc.

# Introduction

Vacuum Laminating Technology, Inc. was founded by an experienced woodworker with a vision of developing alternative methods for veneering and laminating. Through the years this vision proved to be very valuable for many woodworkers.

In our times of diminishing wood supplies, veneering enables us to use less of our precious natural supplies, while maintaining the beauty and feel of solid wood. At VLT we are a team of skilled craftspeople and engineers who are dedicated to make veneering and laminating technology easy and accessible to everyone. It is our philosophy to stay in constant touch with the woodworking community and schools. This is one of the reasons why VLT has the best reputation among woodworkers.

Our products are manufactured using the finest quality materials and will provide years of heavy-duty service. We have been manufacturing vacuum presses since 1989, so we have a proven history of service, reliability, and customer satisfaction.

We pride ourselves on our commitment to quality, both in our products and our service. ***That is why we guarantee it - period!*** We understand your needs and we speak your language because our products are designed by, and for woodworkers.

We invite you to contact us for assistance in selecting a system suitable for your needs. We have the most versatile and broad line of systems available to support the needs of individuals and major corporations. We have the ability and the knowledge to find solutions to veneering or laminating projects in any scale, using vacuum press technology. If you can't find what you need in the following pages we can custom build it to your specifications at very reasonable cost. Contact us for a quote.

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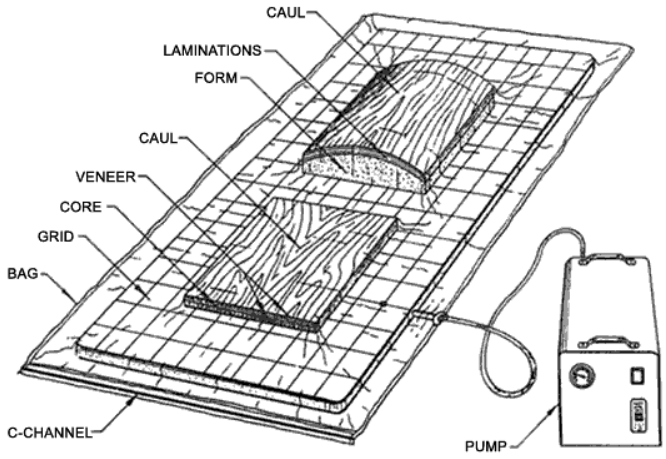
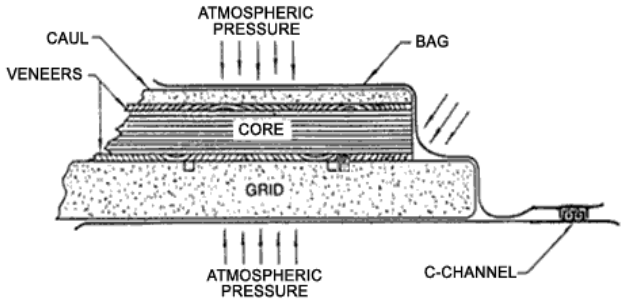
# Process

## How does it work?

The process of vacuum pressing is very simple. Atmospheric pressure is used to clamp glue-coated laminates or veneers inside a vacuum bag or under a membrane. Atmospheric pressure is the actual weight of the air around us, about 14.7 pounds per square inch (PSI), this equates to 1 ton per square foot! The system includes a vacuum press that is connected with a hose to a powerful regulated vacuum pump- that's all. To use the system place your glue-coated panel and veneers inside the press, and turn on the pump. Within seconds your work will be perfectly vacuum pressed without any hassle at all. Your veneer will be pressed smooth and wrinkle-free every time. The uniform pressure eliminates shifting veneers and air pockets, creating perfectly smooth panels and bent laminations providing consistently predictable results. Air is drawn out of the wood's cells, allowing deep glue penetration. This creates thin, even glue lines and an excellent bond with minimum squeeze out. Pressing cycles are reduced to 30-45 minutes when using PVA glue and working at room temperature or 5-10 minutes if the press is heated.




## Vacuum Pressing Benefits

- Cost effective- cuts your working time to a finished a product in half
- Bent laminations require only a single form, so you get ½ the jigging time
- Versatile - allows pressing large, flat surfaces and curved work
- Even pressure distribution - no wrinkles or bubbles in your veneer
- Absolutely reliable, producing smooth consistent results
- Allows inspection and adjustment of work in process
- Vacuum draws glue into substrate for faster and better adhesion
- Veneer will not be marred or slide out of alignment while pressure is applied
- Wide variety of applications - opens the door to a multitude of design options

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# Vacuum Frame Presses

The latest development from VLT is the Vacuum Frame Press. This press answers the demand from our customers for a top loading vacuum press with easy access. It is designed to make the process of vacuum pressing even faster and easier. Just place the glue-coated parts or laminations on the platen, close the frame over the parts, turn on the pump and within seconds your parts are pressed under the flexible silicone rubber membrane. Nothing can be simpler or faster then this. The press can handle both flat and curved parts with ease and can press different sized and shaped parts at the same time. The heart of the system is a tough yet flexible silicone rubber membrane and a special "V" seal that are attached to a welded aluminum tubular frame. Because we use the frame itself to draw the air from the press, very fast operation is achieved. The frame is hinged to a aluminum platen, which provides an accurate flat reference surface, producing a perfectly smooth and flat veneered panels. Counter-balance gas springs are mounted between the platen and the frame for effortless closing and opening of the frame. A large diameter vacuum hose connects the frame to the vacuum pump. Everything is carefully designed to provide "Free Breathing" of the system to achieve the fastest possible evacuation rates. The high grade silicone rubber membrane permits the use external heat source such as infrared heaters to speed up the drying of glue, cutting pressing cycles time to 5-10 minutes when using PVA glue.

## Advantages:

- Versatile - press both flat panels and bent laminations
- Fast - short set-up time and very fast evacuation
- Uniform pressure provides smooth consistent results
- Easy to operate top loading design
- Precision cast & ground aluminum platen
- No wrinkles due to very flexible silicone membrane
- Silicone membrane allows the use of heaters to speed up the process

## Typical Applications:

- Pressing veneers on flat and curved surfaces
- Bonding aluminum sheets to foam insulation
- Application of plastic laminates to countertops
- Production of veneered table tops
- Manufacturing parts for musical instruments
- Laminating curved chair backs over a form.

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# Vacuum Bags

Our polyurethane vacuum bags offer some unique benefits. Special additives in the formulation of our bags material result in the highest durability and flexibility available anywhere. We offer 20 mil & 30 mil vacuum bags. Our recommended 20 mil urethane bags feature a unique seamless construction for extra durability. They provide the ultimate balance between flexibility and strength. Our other bags are electronically welded, ensuring a hermetic seal. The crystal clear material of our bags enables inspection and adjustment of the work while the air is evacuating. The Snap-On "C" channel clamps provide quick and effective closures for your bag. It is easy to use and has proven to be the best and most reliable system for sealing the bag. Because it is used on both ends of the bag, you can load the work from either end, which makes the use much easier. The hose connects to the side of the bag with a reinforced welded flange, guarantying a leak-proof joint. It is connected to the pump or vacuum generator with a quick disconnect. The large diameter hoses and quick disconnects that we use allow for a restriction free flow of air from the bag to the pump. This is very important for obtaining fast evacuation rates of the air, especially when pressing large bent laminations.

## Why the VLT vacuum bag?

- Special additives in the formulation of the urethane create the highest flexibility and durability available on the market today!
- Seamless construction on our recommended 20 mil urethane bag for extra durability
- Hose flange is reinforced and electronically welded 5 times to the edge of the bag
- Crystal Clear bags allow inspection and adjustment of work

## Material Selection Chart:

| Material | Use | Puncture Resistance | Flexibility | Max. Temperature | Elongation |
|---|---|---|---|---|---|
| 20 mil urethane | Heavy duty | Very Good | Excellent | 180° F | 600% |
| 30 mil urethane | Heavy duty | Excellent | Very Good | 180° F | 600% |

## Features:

- All bags come with snap-on "C" channel clamps on both ends
- 8 feet of large diameter vacuum hose
- Quick disconnects (solid brass) when ordering complete systems

**CUSTOM VACUUM BAGS**: We can make custom bags in any size and shape, contact us for a quote.

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# Pumps

The VLT 50 & the VLT 100 are regulated rotary vane vacuum pumps. They provide the most efficient way for generating vacuum. The heart of the system is a heavy-duty, cast iron, oil-less rotary vane vacuum pump. It is powered either by a 1/4 HP or 3/4 HP, thermally protected motor with sealed bearings. The pump's operation is regulated, and the regulator switch is adjustable and protected by internal power relays. Once the preset vacuum is achieved an internal vacuum switch turns the pump off. It cycles occasionally to maintain constant vacuum level. The vacuum switch can be easily adjusted, allowing the operator to determine the optimum pressure. This feature will allow you to increase or decrease the pressure according to your needs. We use large, easy-to-read vacuum gauges, large diameter hoses, brass fittings and high-end precision check valves so the flow of air through the pumps internal plumbing is not restricted in any way. Special coatings on the inside of the pump's vacuum chamber protect it against corrosion. This gives our pumps the advantage of speed and corrosion resistance. The VLT 50 with 5 CFM evacuation rate is for general use with all standard size bags. Model VLT 100 with 10 CFM evacuation rate is designed for use with larger or multiple bags and in production applications where very fast evacuation of air is required. Our pumps have a record of flawless performance and they meet the highest industrial standards(UL, CAS, CE, TUV). Tested and improved over and over again since 1989, rotary vane pumps have a proven history of reliability and performance. The simple construction as compared to rocking piston pumps offer 75% less wearable parts, and are easier to service. We offer a 5 year warranty on the pump motor, and a 1 year warranty on all other components.


## Advantages:

- Quiet, fast and efficient evacuation of the air
- Internal relay protected circuits
- Self regulated operation
- Adjustable vacuum level
- Maintenance free oilless pump
- Large diameter internal plumbing
- Corrosion resistant
- Compact and portable
- Thermally protected motor
- Independent, self-contained system
- Meets the highest industrial standards: CE, UL, CAS, TUV

## Specifications:

| Model | Evacuation Rate | Maximum Vacuum | Motor (Thermally Protected) | Voltage | Weight (lbs) | Dimensions (inches) |
|---|---|---|---|---|---|---|
| VLT 50 | 4.6 CFM | 27.5 in.Hg | 1/4 HP | 115-230V 60/50Hz | 44 | 10W x 9H x 18L |
| VLT 100 | 10 CFM | 27.5 in.Hg | 3/4 HP | 115-230V 60/50Hz | 85 | 10W x 9H x 18L |

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# Vacuum Generators

The VLG 98 uses shop air to generate vacuum utilizing the Venturi effect. The heart of the system is a highly efficient Venturi vacuum generator that uses the energy in compressed air to create a vacuum and a secondary flow of air. Moderate vacuum flow is achieved with compact and cool operating equipment.

The operation of the VLG 98 is regulated. Once the preset vacuum is achieved, an internal vacuum switch shuts off the airflow from the compressor. The vacuum is constantly maintained at this level by an automatic valve that opens and closes the airflow from the air compressor as needed. The efficient design allows the VLG 98 to be powered by a relatively small air compressor. Two models are available allowing you to match the desired vacuum flow to the air compressor capacity.

The large gauges and the adjustment for the vacuum, air pressure and selector switch are conveniently located on the front panel. Air and vacuum filters are placed on the back for easy cleaning. The air and vacuum hoses are quick connected to the filters. The VLG 98 is easy to operate and requires very little maintenance due to no moving parts. It has a selector switch on the front panel allowing you to use it in either a regulated mode for vacuum pressing or in a continuous mode for vacuum clamping. Due to the moderate vacuum flow it is recommended for use only with small to mid sized systems.

The generators may be used for either pressing or clamping operations.


## Advantages:

- Precision control for delicate work
- Built in Regulator
- Less cycling of compressor vs. manual venturi
- Easier/Less maintenance than manual venturi
- Quiet Operation
- No moving parts
- Low air consumption
- Uses shop air to generate vacuum

## Specifications:

| Model | Vacuum Flow | Maximum Vacuum | Air Consumption | Compressor Motor (min) | Weight (lbs) | Dimensions (inches) |
|---|---|---|---|---|---|---|
| VLG 98L | 2.2 CFM | 27.5 in.Hg | 3.5 CFM @75 psi | 1 HP | 10 lbs | 9.5W x 6H x 11.5L |
| VLG 98H | 4.0 CFM | 27.5 in.Hg | 6.4 CFM @75 psi | 2 HP | 11 lbs | 9.5W x 6H x 11.5L |

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# Vacuum Generators

## Manual Venturi

The manual vacuum generator is a low cost vacuum source. It uses shop air to generate vacuum, utilizing the Venturi effect. A minimum 1 HP compressor is required to generate vacuum effectively. They were designed to provide an alternative low cost solution for those woodworkers who do not have the budget for a fully regulated system.

The VG 2 and VG 4 are manually controlled. They incorporate a manual air valve which controls the air flow from the compressor and a check valve that prevents back-flow of air into the bag once the air is turned off. A cleanable in-line air filter protects the unit and a silencer muffles exhaust noise.

When vacuum is achieved the operator may close the air valve. This eliminates excessive use of shop air and frequent cycling of the shop's air compressor. To maintain the vacuum level inside the bag the operator occasionally opens the air valve or leaves the air valve slightly open to let air bleed continuously through the venturi.

## Specifications:

| Model | Vacuum Flow | Maximum Vacuum | Air comsumption | Compressor Motor (min) | Noise level |
|---|---|---|---|---|---|
| VG 2 | 2.2 CFM | 27.5 in. Hg | 3.5 CFM @75 psi | 1 HP | 68 db |
| VG 4 | 4.0 CFM | 27.5 in. Hg | 6.4 CFM @75 psi | 2 HP | 68 db |

## Time to evacuate one cubic foot of air:

| Pump | VLT 50 | VLT 100 | VLG 98L/VG 2 | VLG 98H/VG 4 |
|---|---|---|---|---|
| **Time (seconds)** | 18 | 9 | 34 | 22 |

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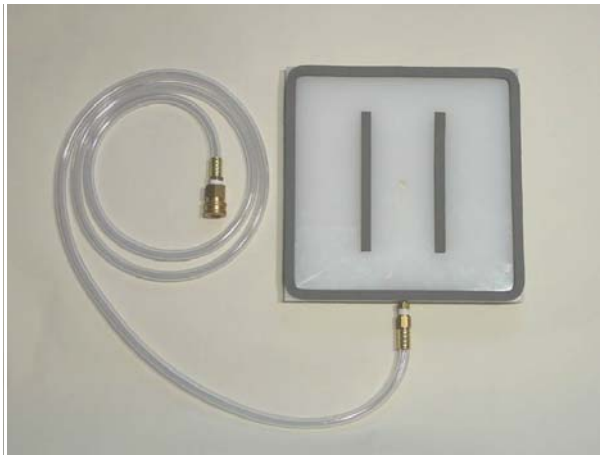
# Accessories

## Vacuum Clamp

The Vacuum Clamp connects to the vacuum pump or generator and provides a quick way to clamp flat panels in any shape and size to your workbench or to other surfaces. It may be used for unobstructed routing, sanding, plaining and other work holding applications. It clamps your work to the workbench with a force of 1 ton per square foot, yet the soft gasket does not mar the work. The clamp simplifies complex clamping operations, reducing clamping time to seconds. The system includes a tough plastic baseplate with a gasket on both sides, hose, and a quick disconnect fitting making it easy to set up and use. The gasket is easily reshaped to accommodate various sizes and shapes of work. The clamp is available in two sizes and can be used with any of our vacuum pumps or generators. If the clamp is used with our regulated vacuum pumps we recommend adding our portable vacuum tank (VT 10) to the system to prevent frequent cycling of the pump.



### Advantages:

- Fast - less than 1 second clamping time
- Powerful – 12.5 pounds per square inch
- Gentle - does not mar work
- Portable - can be used on top of any smooth workbench
- Versatile - use it to plain, route, sand, finish and other holding applications

| Model | Baseplate Size (in) | Tank Capacity | Clamping Force |
|---|---|---|---|
| VC 12 | 1 x 12 x 12 | 10 gal | 1800 lbs |
| VC 24 | 1 x 24 x 24 | 10 gal | 7200 lbs |

## Bag Manifolds

The use of bag manifolds allows the operation of two or three bags or Vacuum Frame Presses with one pump or vacuum generator. A manifold with extra bags increases productivity and makes optimum use of the vacuum source. They are easily attached to the pump and bags with quick disconnect.

| Model | Description |
|---|---|
| MB 2 | 2 bag brass manifold, high flow |
| MB 3 | 3 bag brass manifold, high flow |