

***Versatility For Short & Long
Production Runs***

“The Classic Gluing Solution”

***Taylor Classic
Clamp Carriers***



Taylor Manufacturing

*108 Parker Avenue
Poughkeepsie, NY 12601
800-952-1320
www.jamestaylor.com*

Made in USA
Poughkeepsie, NY



Classic Semi-Automatic Clamp Carrier



8 1/2' 20 Section with Semi-Automatic Tightener and Panel-Flattener

The Classic Semi-Automatic Clamp Carrier is our most versatile model. Sizes range from 6 to 60 sections with widths from 8-1/2' (2.5 M) to 20-1/2' (6.0 M). A wide range of products from small panels to large laminations can be glued. Most machines are equipped with pneumatic or hydraulic components for operation:

- A motor drive for rotation of the sections.
- A Clamp Tightener for uniform clamping pressure.
- A Panel Flattener for flat components.

And a variety of other accessories for glue application, etc.

As with all Taylor machines, smaller machines can be expanded as production requirements grow. This feature is unique to the industry and permits the most efficient use of investment money.

Operation

The operation is simple using one or two operators.

- 1) Glue is applied with a conveyORIZED Glue Applicator.
- 2) The operator places the material into the clamps.
- 3) The Clamp Tightener and Panel Flattener are used to tighten the Clamps and flatten the material to be glued.
- 4) When all the clamps are tight, a foot valve is used to activate the Motor Drive to rotate the machine to the next section.
- 5) The Clamp Tightener is used to loosen all the clamps, and the cured panels or laminations are removed.
- 6) The loading procedure is then repeated.

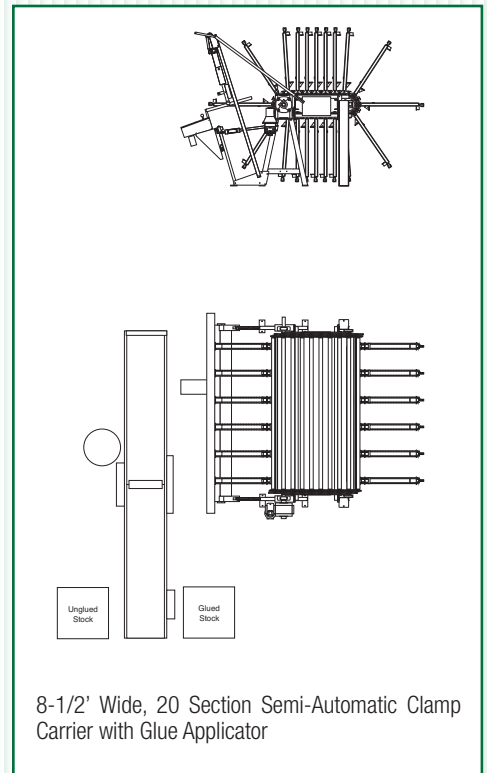
Production

Production is based on cycle time and panel size. Assuming that each section is curing 3 panels whose dimensions are 24" x 24" (60 cm x 60 cm) and assuming a cycle time of 2 minutes, production per shift equals:

One Panel:
= 4 sq. ft. (.36 M2)
One Section:
= 12 sq. ft. (1.1 M2)
One Cycle:
= 2 minutes
= 30 cycles/hour
= 210 cycles/shift

Production output:

= 12 sq. ft. x 210 cycles
or 2520 sq. ft./shift
= 1.1 M2 x 210 cycles
or 231 M2/shift



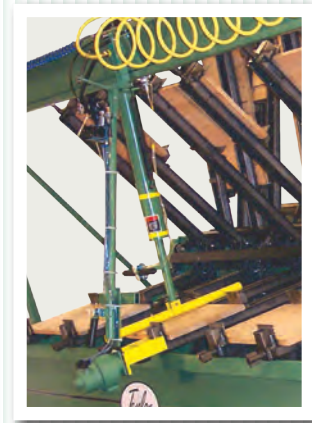
8-1/2' Wide, 20 Section Semi-Automatic Clamp Carrier with Glue Applicator

Component Features

Swing Style Tightener/Flattener

The Swing Style Clamp Tightener/Flattener is the most economical system. The push button controls provide easy and rapid tightening and loosening of the clamps. The carriages ride on an overhead beam. Clamp pressure is fully adjustable up to 3,000 lbs. per clamp.

Engagement is smooth and easy. The Flattener operation is also push button and pressures are adjustable. The two units are moved to the left or right side of the machine when rotating to the next row of clamps. The front rest is manual and the rotation is pneumatic. (This system is only available in a pneumatic version.)



Semi-Automatic Clamp Tightener

The Semi-Automatic Clamp Tightener provides rapid and uniform clamping force up to 3,000 lbs. (at 90 psi) on each clamp.

The tightener is offered in either pneumatic or hydraulic. It uses a motor which provides more uniform pressure than an impact type tool.

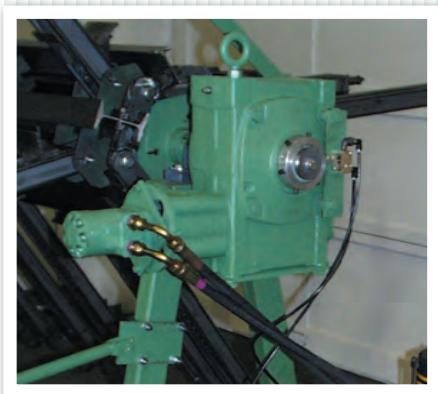
The Semi-Automatic Tightener's ergonomic design reduces operator effort and increases productivity. The tightener carriage rides on ball bearings for quick and easy positioning to any clamp on the front rest. A simple push or pull of the lever allows the tightener to engage the clamp for tightening or loosening.

Panel-Flattener

The Taylor Panel Flattener is designed to hold the stock flat while each clamp is tightened.

The flattener rides on ball bearings on an overhead beam and is activated by a 3" air cylinder and is interlocked with the Semi-Automatic Tightener for a rapid safe operation. The flattener stays energized until the operator lifts up on the lever.

At 90 psi, the downward force on the stock exceeds 625 lbs. which produces high quality flat panels.



Motor Drive

The motor drive rotates the Clamp Carrier from section to section. It is offered with a pneumatic or hydraulic motor. The Motor Drive with a worm gear reducer insures controlled indexing even when rotating an unbalanced load. The Motor drive is controlled by two foot valves and can rotate forward or reverse. The Motor Drive speeds indexing with precise control and minimizes operator fatigue.

Match your machine...



8 1/2' wide Carrier with 3' panels, Swing Style Tightener, Flattener and Motor Drive. (Pneumatic only.)

The Classic Line has the Most Options for:

- Component length 20+'
- Component width 50+''
- Component Thickness 1/2" to 8"
- Squaring Bar
- Holddowns
- Thick Stock Adapters
- Multiple Tighteners and Flatteners
- Casket Tops



16 1/2' wide Carrier with 16' moulding blanks, Semi-Automatic Tightener, Flattener, and Motor Drive. (Pneumatic and Hydraulic.)

with your products

Table Tops

Butcher Block

Stair Treads

Turnings

Mouldings

Waste Recovery

Lumber Banding

Cabinet Doors & More

15'-5"

12'-7"

11'-2"

Unglued Stock

Plate Spreader

Glued Stock

Semi-Automatic Clamp Tightener

Air Motor Drive

- 8-1/2' Clamp Carrier w/ 12 Sections of 44" Opening Clamps
- Pneumatic Semi-Automated Clamp Tightener
- Pneumatic Panel Flattener
- Air Motor Drive
- Plate Spreader

Choosing the Right Size

- Maximum component length determines carrier width.
- Maximum component width determines clamp size.
- Maximum component thickness determines clamp style and options.
- Loading time, curing time and production needs determine the number of sections.

20'-9"

12'-6"

18'-2"

26'-0"

29'-4"

3'-0"

HPU

26" Wide 12" Infeed, 18" Outfeed Conveyorized Glue Applicator

Glue Supply w/ Pump

- 16 1/2" Clamp Carrier w/ 20 Sections of 32" Opening Clamps
- Hydraulic Semi-Automated Clamp Tightener
- Pneumatic Panel Flattener
- Conveyorized Glue Applicator

Taylor Glue Applicators



**Optional 5'
Infeed Roller**

Plate Spreader. Inset: glue spread from Plate Spreader

Attaining the proper glue spread thickness is very important. Too much or too little glue spread will weaken glue joints. Also, too much glue wastes money, slows production and creates more "clean up time" for both the applicator and the Clamp Carrier.

For small and mid-size operations, we offer two styles of glue application machines, the manual Plate Spreader and the Roller Spreader.

The Plate Spreader provides an accurate and efficient glue spread. It works well with our Clamps to quickly apply glue to multiple boards. A perforated aluminum grid, 8" x 48", rises from the stainless steel glue container by a foot activated pedal to provide the correct amount of adhesive. Boards over 48" can be 'dipped' twice. An aluminum cover for the glue container extends glue use. It is fast, convenient, easy to use and clean.

The Roller Spreader is a compact yet versatile Glue Applicator. We have incorporated many of the features of our full size Glue Applicator.

- Live doctor roll for precise and adjustable glue spread

- Overnight glue storage system
- Removable glue roll
- Expandable with infeed roller conveyor
- Felt covered glue roll

This compact machine is also well suited for coating stock for longer panels and laminations using the infeed conveyor to help guide the pieces over the glue roll.

For Higher Production:

The Taylor Automatic Conveyor-Type Glue Applicator is available in lengths from 16' to 60'.

The felt roll model is designed for use with PVA type adhesives. It is equipped with a stainless steel glue pan, doctor roll, and outfeed cross bars. The glue roll is felt covered to provide even glue spread and is quickly removed for easy cleaning.

The length of the Glue Applicator depends on the loading area of the Clamp Carrier. For instance, an 8 1/2' wide Clamp Carrier is usually equipped with a 16' (8' infeed, 8' outfeed) Glue Applicator. Conversely, a 14-1/2' Clamp Carrier is usually equipped

with a 28' (14' infeed, 14' outfeed) Glue Applicator.

The width of the Glue Applicator depends on the thickness of the panel. Generally, 3/4 and 4/4 stock only require a 13' wide glue roll. Thicker material, 5/4, 6/4 and above, require our 26" or 39" machines. To produce the best Glue Applicator on the market, we have concentrated our efforts in three key areas:

A) Precise and adjustable glue spread:

The Taylor Glue Applicator is equipped with a fully adjustable live doctor roll. The doctor roll spins in the opposite direction (from the glue roll) which provides a controllable even spread. Thumbscrews and locking nuts are used to independently adjust both ends of the doctor roll.

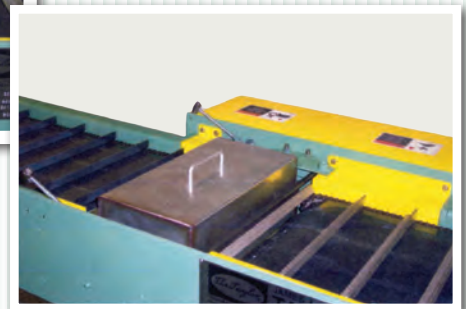
With each machine, Taylor provides a wet film thickness gauge for measuring glue thickness. More importantly, it is our Live Doctor Roll design that allows each customer to fine tune the spread to their specifications.

Features

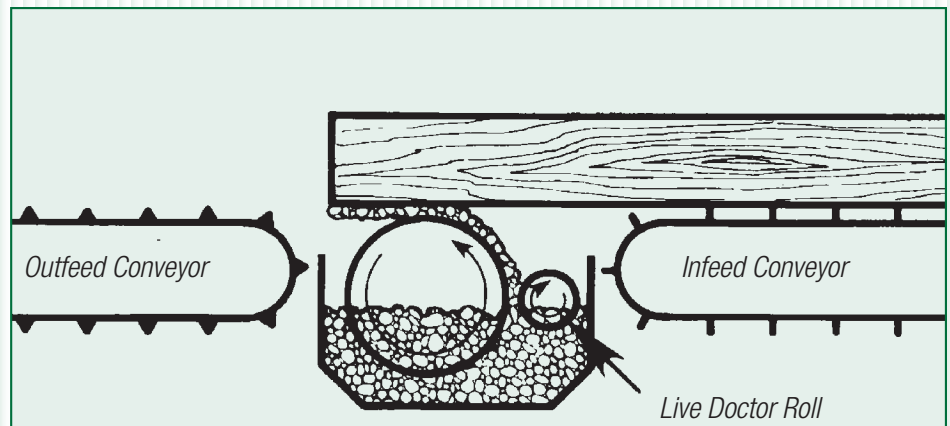


13" Wide, 16' Conveyorized Glue Applicator

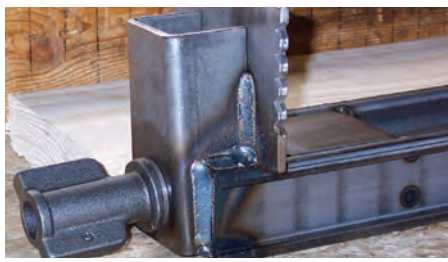
B) Easy and fast clean up: We have equipped the Glue Applicator with a nightly storage system to save glue and clean up time. The glue pan cover fits tightly over the top of the glue pan and a large sponge is fitted to the roof of the cover. When soaked with water, the sponge keeps the cavity of air moist and prevents skimming of the glue during the night. During weekends and vacations, the glue pan and glue roll should be removed and cleaned. This job is completed quickly because the glue pan drops out with the removal of two pins. The glue roll slides out of the top of the Glue Applicator for cleaning.



C) Durability: The machine is designed with components which stand up to the rigors of a high production gluing operation. In addition, an adjustable safety clutch protects the conveyor chain against damage when careless operation results in wood jamming in the conveyor. This feature reduces down time and is self-healing so the machine returns to normal function once the jammed stock is removed.



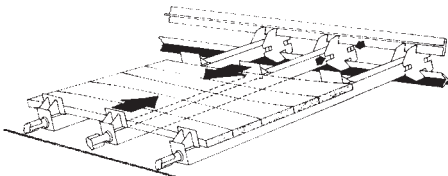
Clamps & Accessories



Front jaw



Rear jaw and roller



Equalizer™ Clamp
Patent No. 4,489,925

#202 Clamp

The #202 Clamp has a 2-1/2" (65 mm) high jaw and with accessories will laminate up to 4" (100 mm).

#302 Clamp

The #302 Clamp has a 3-1/2" (90 mm) high jaw and with accessories will laminate up to 6" (150 mm).

Standard clamps open 32" (800 mm). Clamps up to 44" (1100 mm) are available on special order.



Holddown Bars

Holddown bars are designed for edge gluing thin panels (less than 3/4"). They prevent the boards from springing out of the clamps during tightening and curing. They are easily removed when not needed.



Rocker Plates

Rocker Plates are used for laminating. First, they extend the height of the jaws to cover the full thickness of the material. Second, because our clamp have "toe-in", rocker plates are necessary to evenly distribute the clamping force from top to bottom. They can be installed or removed in seconds.

Taylor's **patented "Equalizer" clamps** float axially (in-and-out) approximately 3/16" to **eliminate induced stress** that otherwise results from bending boards to conform to non-"Equalizer" clamps that are locked in a fixed axial position.

| USE | CLAMPS | ACCESSORIES | REDUCES CLAMP OPENING |
|--|--------------|-----------------------|-----------------------|
| Edge Gluing less than 3/4" (20 mm) | #202 | Holddown Bar | 0 |
| | #202 | None required | 0 |
| | #302 | None required | 0 |
| Laminating* 2" (50 mm) to 4" (100 mm) | #202 or #302 | 2" - 4" Rocker Plates | 2" (50 mm) |
| | #302 | 4" - 6" Rocker Plates | 2" (50 mm) |

* Rocker Plates are required for all laminating. When gluing stock with a thickness greater than 3-1/2", clamps must be used on alternate sections only. (Except the G section where all sections can be used.)

Modular Design

In its simplest form, the Clamp Carrier has a ferris wheel design with 6 sections (rows of clamps). The clamps are tightened by hand and the machine is rotated from section to section by hand. Though the components in this small machine are manually operated, they are identical to the components in the larger machines. This modular design allows you to expand the capacity of the machine at anytime.

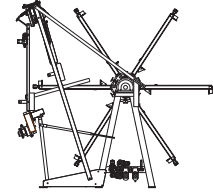
The original investment in the smaller machine is not lost. Components from the original machine are used as a base onto which the components of a "conversion kit" are added. The original, smaller machine now becomes a larger, more productive one.

For example, a 6 section wheel can be expanded to a 20 section caterpillar type Clamp Carrier. A conversion kit is purchased which includes chain, runways, cross-bars, rear legs, and a rear shaft. Instructions are supplied with the kit,

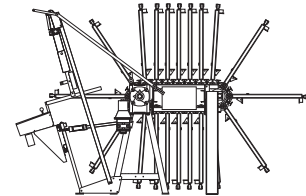
and the conversion can be accomplished in-house with ordinary tools. Additional clamps are installed to fill out the new sections. This is done with no cost penalty to the end user. The price of buying small and expanding is the same as the price of buying a larger machine.

Another method of expansion is to purchase a Clamp Carrier frame with more capacity than is initially required, and with clamps mounted on alternate sections only. As production requirements increase, additional clamps can then be added to fill the vacant sections.

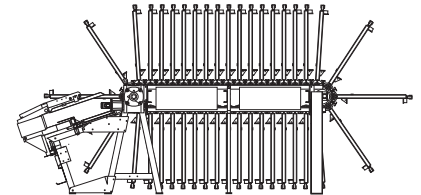
6 Section Standard Clamp Carrier



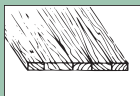
20 Section Semi-Automatic Clamp Carrier



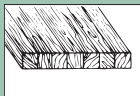
40 Section Automated Clamp Carrier



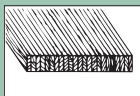
Component Features



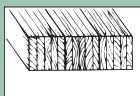
Flat Stock is the most common product glued on the Taylor machines. Since our clamps are individually adjustable, panels of various sizes can be glued simultaneously.



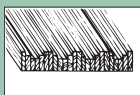
Butcher Block is also commonly glued. With rocker plates installed, our standard clamps can be used to produce butcher block tables, counter tops, knife holders, etc. Rocker plates are installed in seconds, and must be used for all laminating.



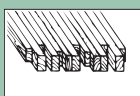
Rails and Posts can be glued. 16' long handrails are often glued on wide (14 1/2' 16 1/2') Clamp Carriers.



Turnings and other laminates up to 8" thick can be glued with our standard clamps, using our Rocker Plates or our special #401 clamps



Top Profile Stock including mouldings and window frame components and door components.



Waste Recovery is a common application for the Taylor machines. Stock of varying shapes sizes, and thicknesses can be glued for waste recovery.

Fundamental Gluing Information

Introduction

The Clamp Carrier is essentially hand clamps mounted on a revolving conveyor chain in a moving storage configuration. The glue in each panel dries as its section (row of clamps and panels) makes one revolution around the frame. Room temperature glues and the Taylor Clamp Carrier have long been recognized as the most versatile and reliable edge gluing process ever developed for the woodworking industry.

Joint Preparation

If a panel joint is poorly prepared, it is impossible to make a high quality panel.

There are several requirements of a good joint for gluing.

- 1) The joint should fit as closely as possible. A thin glue line is stronger than a thick one.
- 2) Glue penetration into the wood surface is never more than several thousandths of an inch deep. For this reason, the surface layers of wood being bonded should be sound. Dull or vibrating cutting tools (as, for example, caused by worn bearings) often loosen fibers, but do not remove them, leaving a poor and unsound surface for the glue to adhere to.

Rupture of such a glue line reveals a thin layer of wood fibers covering the glue line.

3) When the cutting edge of a knife becomes worn and rounded off, it beats down the surface fibers, closing them to adequate glue penetration. Sometimes this becomes severe enough with both moulders and saws that the wood turns dark from being burned.

4) The joint should be straight, square and sound. In some cases, plants do not surface at least one side of the board far enough (hit or miss planing) to be flat before making the edge glued joint. If this is not done, a warped board will produce a glue joint which is not square.

Surfacing of lumber for gluing should be done just prior to gluing. Many rough mill operations plan their production so that joints are glued the same day they are made. This produces a surface essentially uncontaminated by wood resins and one which has not deformed from moisture change.

Moisture Content

The glue must be rigid enough to resist the stresses applied to the glue line by moisture change, particularly before this moisture interchange is slowed by the finish. Since wood absorbs and releases moisture faster through the end grain than through the radial or tangential face, a moisture change sets up stresses in the panel. If the glue joint is weaker than the wood, it will open, otherwise, when the stress becomes great enough, the wood may split. Many times inferior quality joints will remain closed until subjected to a moisture change, when the stress will break the joint instead of the wood. This moisture change may occur on exposure to oven heat or with time.

Wood is normally processed for furniture at 6-8% to minimize expansion and shrinkage in service. 6-8% moisture represents a good average between the extremes of summer and winter exposure. It must be remembered, the application of a finish does not stop the moisture interchange only retards it.

Sometimes wood shrinkage is erroneously considered to be negligible. For example, beech shrinks tangentially 1% for every 3% moisture change. In a 50" wide panel, changing from 8% to 5% moisture content will shrink the panel 1/2". Even a 1% moisture change will shrink this panel more than 1/8". Since this will be a differential shrinkage, the stress in the panel is considerable.

Fundamental Gluing Information

Clamping

The purpose of clamps is to bring the members being glued in close enough contact to produce a thin uniform glue line and to hold them in this position until the glue has developed enough strength to hold the assembly together. If the members of a glued construction were to fit together perfectly so that a thin even glue line could be produced, no clamp pressure would be required. But, from a practical standpoint, since machining of stock is never perfect, a certain amount of clamping pressure must be used.

The joint strength of resinous woods, such as pine, is frequently improved by machining the joint to be glued just prior to gluing. It is usually easier to make a straight and square joint than to try to pull it up in a clamp.

Decreasing the glue line thickness increases the strength. Since many woodworking adhesives utilize water to yield a spreadable viscosity, the dried glue film does not fill the space in a thick glue line. A void is left where the water has left the glue line. As the glue line gets thicker, the effect of the voids on strength is more detrimental.

For edge or face gluing, pressures of 50-150 p.s.i. should be used. The minimum is dependent on the resistance of the panel to be brought up tightly. The maximum is limited by the crushing strength of the wood. Pressure serves only to bring up the joint snugly and hold it there until the glue has enough strength. Often in these operations, the uniformity of pressure is more important than the exact amount.

A lack of ample pressure may be due to uneven pressure. Some clamping devices may apply adequate overall pressure, but not distribute it evenly over the entire surface. For example, this may occur in a panel if the edge piece of the panel is too narrow, transmitting little pressure between the clamps. The same thing can occur occasionally when clamping posts from 4/4 stock, with no reinforcement to apply pressure between the clamps.

Assembly time refers to the time lapse between glue spreading and application of pressure. The time between glue spreading and closing the assembly is open assembly time. The time between closing the assembly and pressure application is closed assembly time.

With cold, ready-to-use glues, pressure may be applied immediately after spreading. There is no minimum closed assembly time.

If glue squeeze-out occurs on the application of pressure, the maximum assembly time has not been exceeded. As long as the glue is wet enough to transfer uniformly to the opposite face when pressure is applied, good strength will result.

The minimum clamping time is determined by the time required for the glue to retain its clamped position after pressure is removed.

It, therefore, becomes important to introduce as many factors as possible to speed up this acquisition of strength in the glue joint. Some of these factors may be quite obvious; others may be less apparent.

It should be pointed out here that the squeeze-out on the outside of the joint does not indicate the condition of the glue within the joint, particularly where short clamp times are involved. The bead squeeze-out dries much more slowly than the film in the joint. The thicker or bigger the squeeze-out, the slower the glue will appear to dry.

With cold-setting, ready-to-use glues, the rate of strength development (speed of set) is dependent on how fast the liquid glue can dry to become solid enough to hold the joint in place. Since most of the water sinks into the substrate, the materials being glued are important. Obviously, the choice of adhesive is important. Also the conditions of gluing have an effect. By combining as many favorable conditions as possible, a maximum speed of set can be obtained.

Conclusion

A successful gluing operation requires several fundamental procedures to be followed. Because gluing is still an art and not a science, not all procedures must be followed. However, when defects occur it is often a combination of problems that create the defects.

The best corrective method is a step by step troubleshooting procedure. Identify the symptoms, change one factor at a time and check the results.

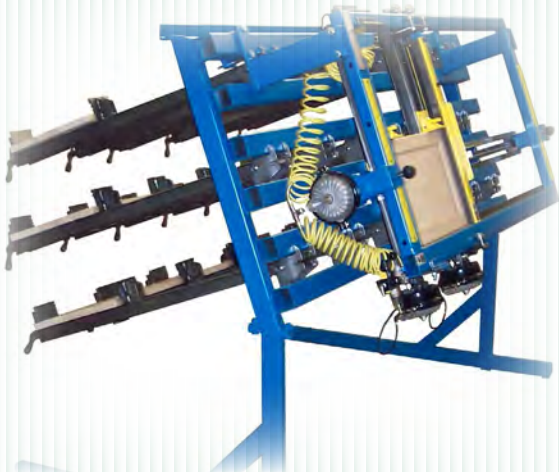
A helpful tool in setting up or monitoring a gluing is a "Gluing Check List". The subjects contained in this booklet and others particular to your operation can be listed and checked on a regular basis. The result will be fewer rejects and lower cost production.



Rip Optimization for the Custom Shop



Custom Shop Clamp Carrier For Long Stock - 16' Rail & Posts



Pneumatic Door Clamp & Panel Clamp Combo System



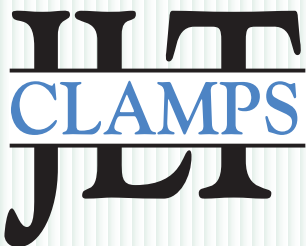
Cameron Rip Optimization System



Taylor Hydraulic Automated Clamp Carrier



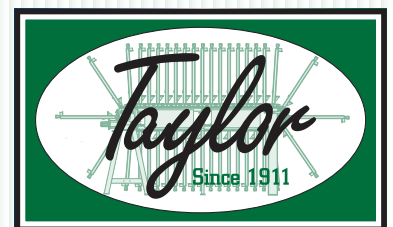
Push Feed Chop Systems



www.jltclamps.com



108 Parker Avenue • Poughkeepsie, NY 12601
800-952-1320



www.jamestaylor.com