



Model 36210

Patents Pending

The **INVERTED Router**

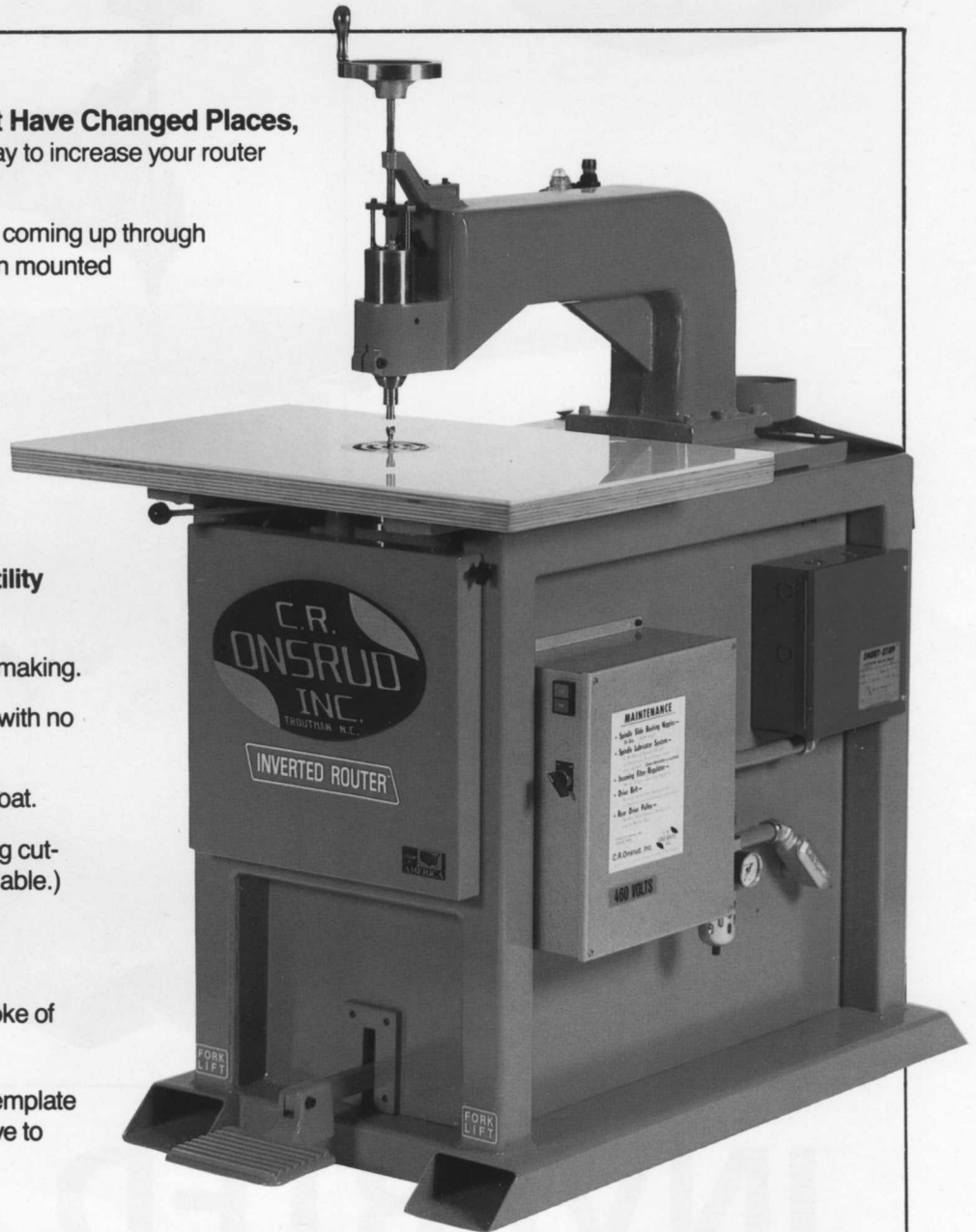


Presents ...

Our new

The Guide Pin and Router Bit Have Changed Places, providing a better, safer, cleaner way to increase your router production.

Our Inverted Router has the cutter coming up through the table, with a retracting guide pin mounted on the over arm.



Productivity through Versatility

- Quick set up.
- Greatly simplified template making.
- Inexpensive light templates with no clamping necessary.
- Rout curved parts without float.
- Power and rigidly for shaping cutters ($\frac{3}{4}$ " shaper arbors available.)
- Greatly simplifies vacuum templates.
- Fast cycle through short stroke of cutter and guide pin.
- Fast plunge cut cycle with template on top. Operator doesn't have to search blindly for template openings.

Model 2408

*Challengers Award
Winner 1980*

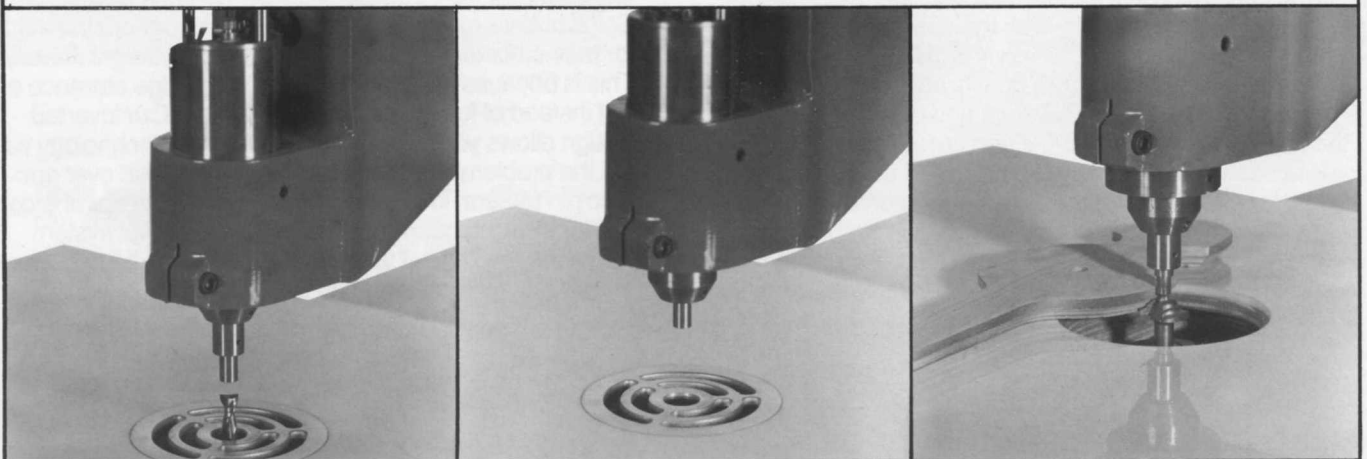
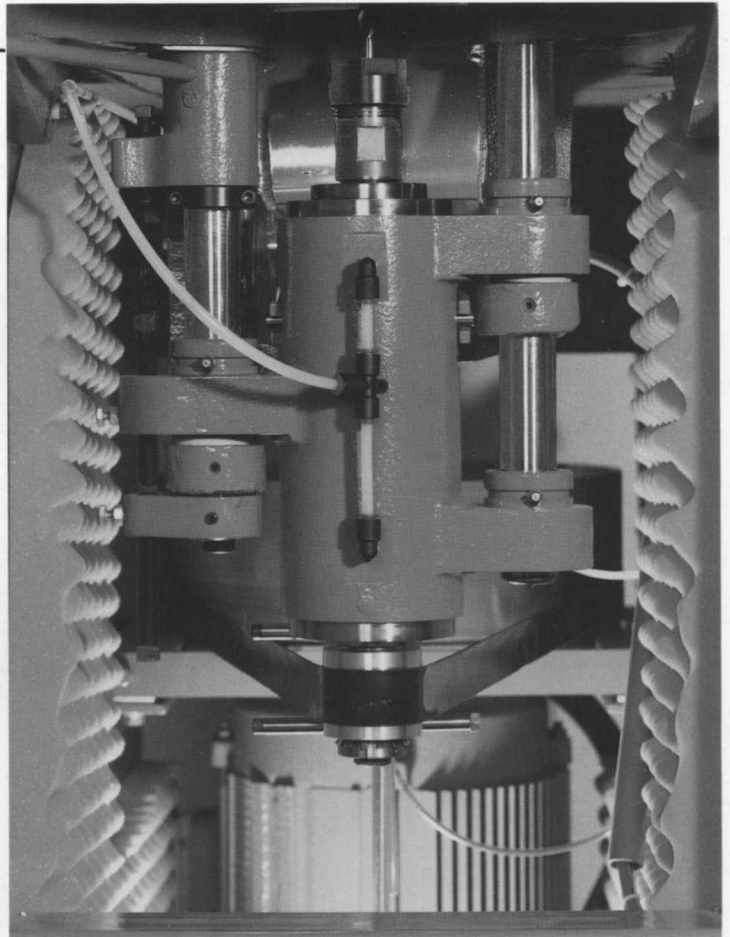
Inverted Router

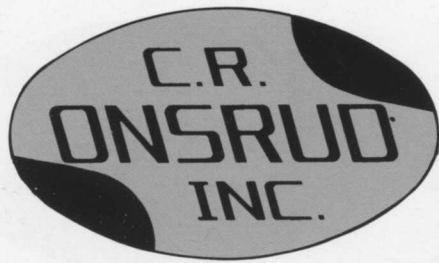
Better quality work

- Part cut face down for exact depth register
- Smoother cuts due to rigidity of spindle and mount. Elimination of overarm and extended quill vibration problems.
- Spiral bits hold workpiece firmly against table and result in smoother cleaner, freer cutting. (Uses all types of standard router bits and shaped cutters.)

Improved working conditions

- Operator has much less exposure to the cutting tool as it is either below the table or engaged in the workpiece.
- Noise of the spindle, belt and drive motor is contained in the sound insulated machine base.
- Operator can see the exact shape of the cut since the template is on top of the work.
- Clean. Chips and dust are removed from the cut by a built in dust collection chamber.
- Retracting cutter and guide pin allow operator to slide workpiece and template from cut to cut without lifting.





A Different

Greater Precision due to exact Depth Register — By cutting the part face down with the cutter coming up through the table, the table gives an absolute depth register. This feature eliminates the problems of controlling depths on shaping, grooving or veining

cuts on a conventional over head router. This also enables an operator to run parts with similar cut depths but varying material thicknesses together without having to change the cutter height.

Less Scrap

On conventional routing machines if the cutter grabs the work-piece for some reason, it lifts the piece into the cutter gouging the work and ruining expensive wood. On the inverted design, since the cutter is in the table, the table will act as a positive stop so the piece cannot be pulled into the cutter. On Pneumatic Plunge machines the guide pin has a unique feature whereby it must be all the way down before the cutter will come up to engage the work. When routing a small hole or narrow slot it can be difficult to get the pin down in exactly the right spot.

No problem! If the operator misses the hole and the pin comes down on the template, he simply slides the template over to the hole, the pin drops in, and the cutter comes up. On mechanical plunge machines, the operator controls the plunge via a mechanical foot pedal, after the guide pin has engaged the template correctly.

Cuts smoother and deeper — Problems such as chatter, bit load up, and burn caused by chip packing are often encountered when making deep cuts with overhead routers. This is because chips are cut over and over again before being thrown from the cut. With the C. R. Onsrud Inc. Inverted Router, however, a very efficient under-the-table vacuum chamber, along with gravity and the inherent pulling action of spiral bits, pulls sawdust and chips down through the cutter opening in the table and out via plant dust collection system. Now much faster feeds and deeper cuts per bit diameter are attainable because troublesome chips are virtually eliminated from the cut. The occasional problem of a spiral router bit lifting the work up off the table as it is removing the chips is also eliminated. In the inverted design, the

pulling action of the bit helps pull the workpiece down solidly against the table thereby preventing workpiece chatter. Also since the cut off part is supported by the table instead of cantilevered over the template, this also reduces chatter marks. Spiral cutter heads are widely known throughout the industry for their smoother cutting as compared to straight knives. This is because of their shearing cutting edge entrance and exit instead of full line contact of the edge. Our inverted design allows you to make full use of spiral technology without the problems sometimes encountered with over arm type pin routers. With all types of cutters, both spiral & conventional, the vacuum and gravity chip removal system increases feed rate of tool life by allowing the bit to cut new material rather than recutting the waste.

Cleaner — The highly efficient exhaust system also has another side benefit. **Much less sawdust!** A comfortable operator produces more parts.

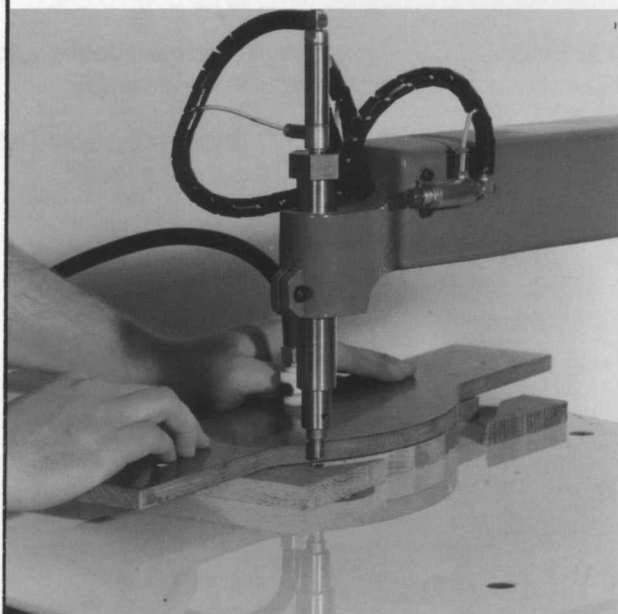
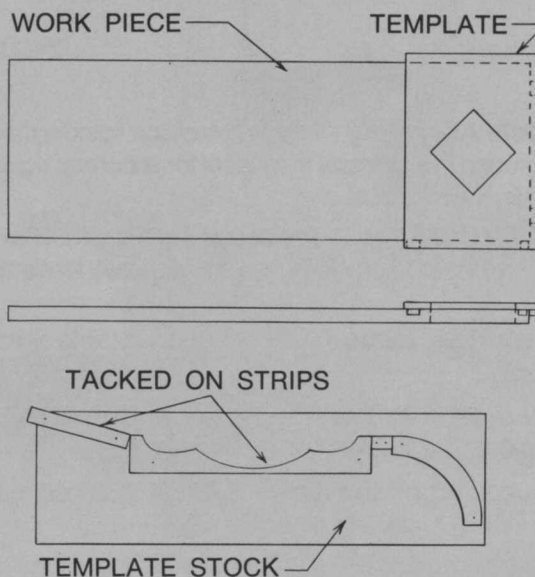
Approach

Quick Simple Templates — With the template on top, the workpiece is sandwiched between the table and the template. Therefore, it is only necessary to keep the workpiece from slipping laterally in relation to the template. This can normally be done with a few short spurs, or some locator blocks to trap the part.

On large parts where a little routing is required on the end or in the middle of a part, it is only necessary to make a template large enough for that section which is being routed. This is possible since the template does not support the workpiece.

Pattern Work — With a little imagination most anything can be used to ride against the overhead guide pin to route the initial shape for the shaper or router form.

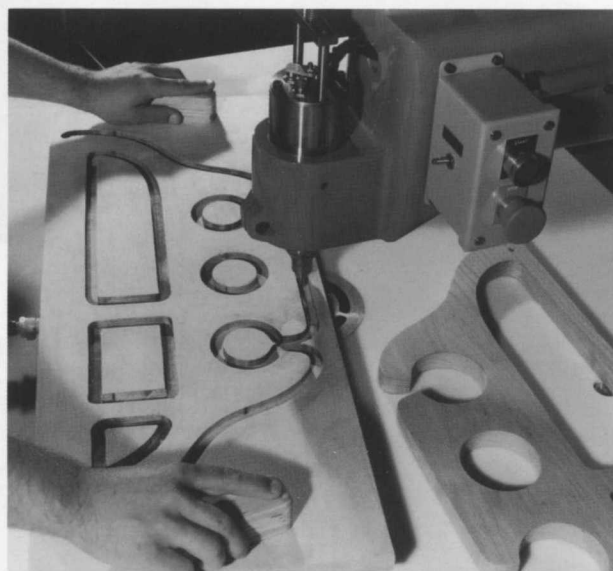
The Inverted Router is extremely useful for making all kinds of templates and fixtures. Shapes can be generated by tacking strips to a piece of plywood. Or if any size sample part has the shape or a portion of the shape to be reproduced, simply tack it to the form stock at the desired location.



Safety — Overhead routers expose the operator to the cutter at all times. While **any machine must be treated with great respect**, the inverted design offers some very distinct advantages over the overhead design.

- The cutter is normally retracted under the table when not buried in a cut.
- The operators hands are on top of the template instead of on top of the work, exposed to the cutter.
- Efficient dust collection improves visibility.

Less training time for operators — Since the operator can see the template, he knows when he is approaching a curve or a corner, instead of having to blindly feel his way around the template. This also helps experienced operators when routing new styles which means less scrap. Think of the advantage in being able to see the template when routing many small inside cut outs.



Inverted Router Construction

2400 & 3600 Series Machines

Spindle Assembly — Super precision spindle machined and ground from special alloy steel for accuracy, rigidity and long life.

Spindle Bearings — Preloaded, high speed, heavy duty ball bearings for extreme rigidity under heavy loads and deep cuts.

Spindle Lubrication — Lubricated by visible oil mist feeder.

Table — 24" x 36" x 1½" Acrylic topped. Will not mar the workpiece and absorbs cutting vibrations.

Dust collection system — Grill and chamber built into table for highly efficient dust collecting.

Throat Clearance — Crotch of C frame to center of spindle and guide pin 24". (36" optional.)

Spindle speed — 25,000 RPM Max., variable with optional quick change pulleys or optional "High Cycle" solid state drive.

Spindle travel — 0" to 3" by pneumatic valve. (or mechanical pedal)

Drive Motor — totally enclosed fan cooled electric, three phase heavy duty motor. 3600 RPM, 230 or 460 Volt, 60 cycle.

Power Transmission — oversized pulleys transfer more usable horsepower to the cutter by increasing belt wrap (inches of contact area) and torque ratio of the spindle pulley to cutter. Pneumatic belt tensioner automatically maintains optimum belt tension.

Main Frame — Stress relieved cast iron.

Electrical controls — magnetic push button stop/start with built in over load protection.

Model 24210 and 36210 — also include ambient temperature compensated circuit breaker type overload protection, under and over voltage protection and single phasing protection for the drive motor.

24210 and 36210 also have interlocks which require pre-lubrication of the spindle bearings, sufficient air pressure to operate lubricator and appropriate drive belt tensioner setting before the spindle may be started. Low spindle oil alarm/shutoff optional.

Pneumatic Controls — 24210 and 36210 — Foot valve retracts guide pin and spindle. Simple and reliable, with plug in air piloted valves. Safety feature will not allow cutter to engage work piece until guide pin is its full down position.

Guide Pins — A full range of simple and inexpensive guide pins is available for the retracting guide pin assembly.

Three position Depth Stop — Infinitely adjustable and conveniently located for quick and exact cutter height adjustment.

Standard Accessories — Full set of set-up wrenches, instruction manual, lubrication gun, ¼", ⅜", ½" guide pins and ½" collet.



INTRI-SHAPER™ OPTION (PATENTED)

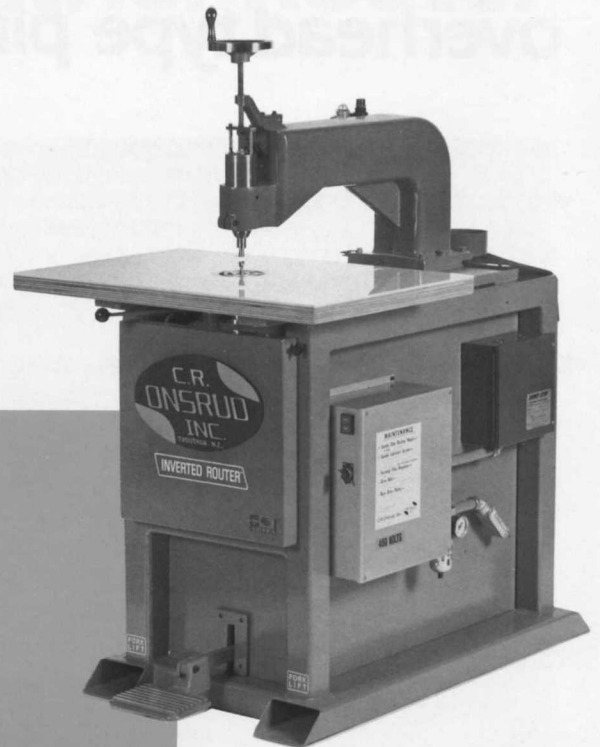
Cutter Support Spindle — Super precision spindle machined, hardened and ground from special alloy steel mounted in super precision high speed ball bearings with fog mist lubrication. Female taper nose spindle with draw bolt to fit Intri-Shaper cutter adapters.

Pneumatic Controls — Pneumatic switch for shifting to Intri-Shaper air controls also includes push buttons for set up and applying tensional load on Intri-Shaper cutters.

Made in the U.S.A.

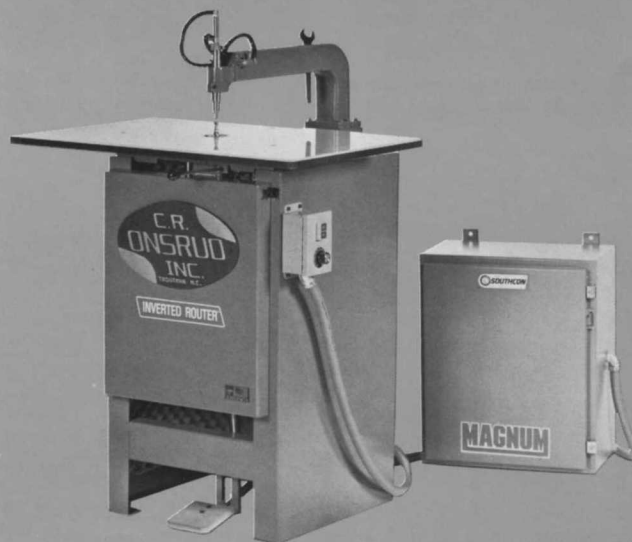


Model 2003
Options available:
3,9
Requirements:
Dust collection 300 CFM
Compressed air: 100 psi
.1 CFM
Shipping weight: 300 lbs.



Model 2004
Options available:
8,9
Requirements:
Dust collection 300 CFM
Compressed air: 100 psi
.1 CFM
Shipping weight: 400 lbs.

Model 24210
Options available
1,2,4,5,6,7,8,9
Requirements:
Dust collection: 1000 CFM
Compressed air: 100 psi,
7 CFM
Shipping weight: 1600 lbs.



Model 2408
Options available:
1,2,4,5,7,8,9
Requirements:
Dust collection: 1000 CFM
Compressed air: 100 psi
7 CFM
Shipping weight: 1500 lbs.



Model 36210
Options available:
1,2,5,6,7,8,9
Requirements:
Dust collection:
1000 CFM
Compressed air:
100 psi, 7 CFM
Shipping weight:
1750 lbs.



See next page for key to options

More than just another Router

Rout curved parts without float — Cut out curved parts and profile the edge in one operation. Shaping cutters maintain a true shape in the piece part as all cuts are maintained perpendicular to the curved surface. Depth of cut is exact regardless of variations in curvature or material thickness since all cuts are registered off the same surface that is being cut.

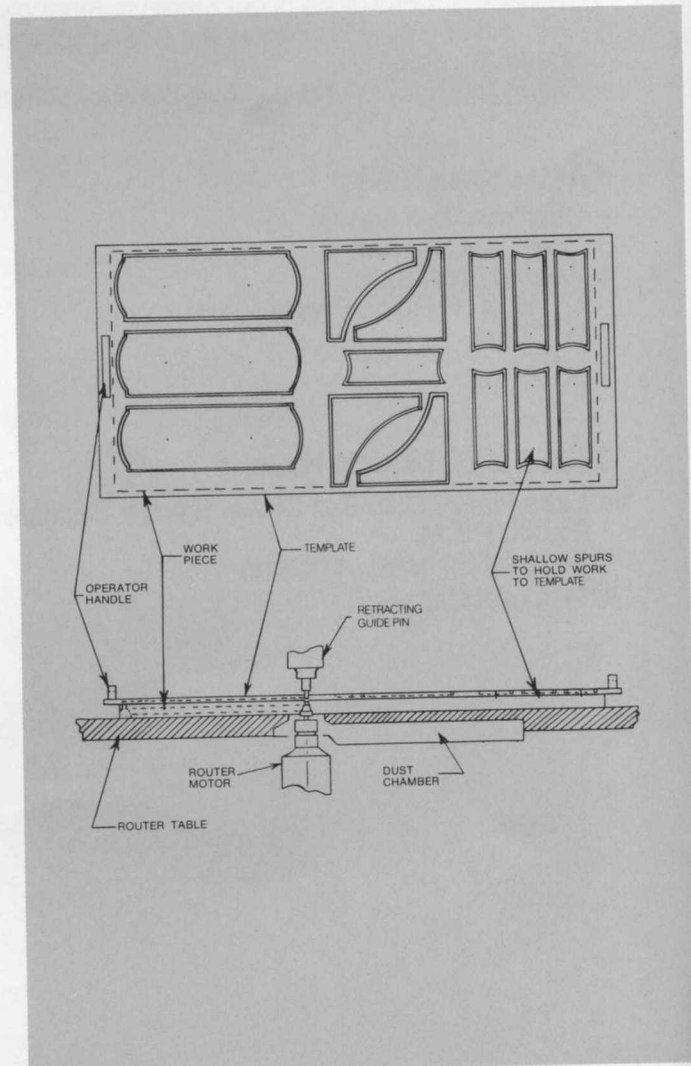
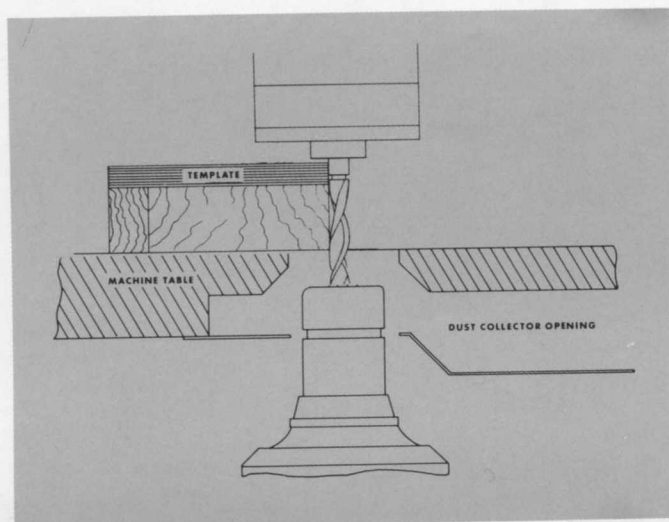
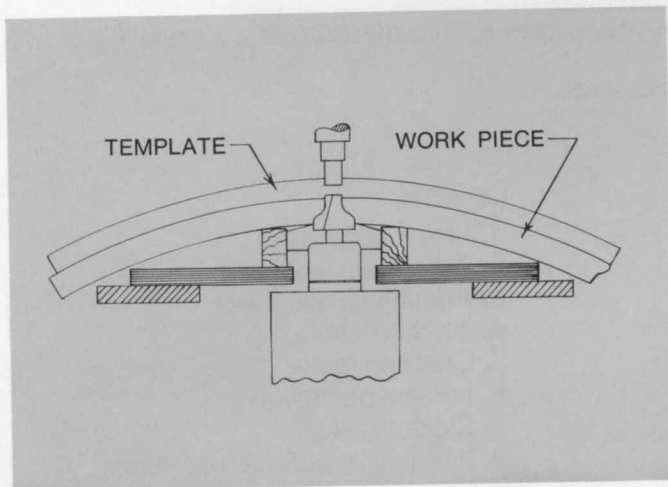
All of these features are standard on our Inverted Router with just the addition of a simple wood fixture in place of the regular machine table. Also these cuts are done without a costly or complicated floating spindle.

INTRI-SHAPER™ option (PATENTED) — With the Intri-Shaper option the Inverted Router can be converted into a unique machine for combining marking, band-sawing and handshaping into one fast and easy operation. The Intri-Shaper uses a small diameter helical spiral bit secured at both ends and held in tension to cut up to 2½" thick material with a small diameter cutter. Some of the advantages are:

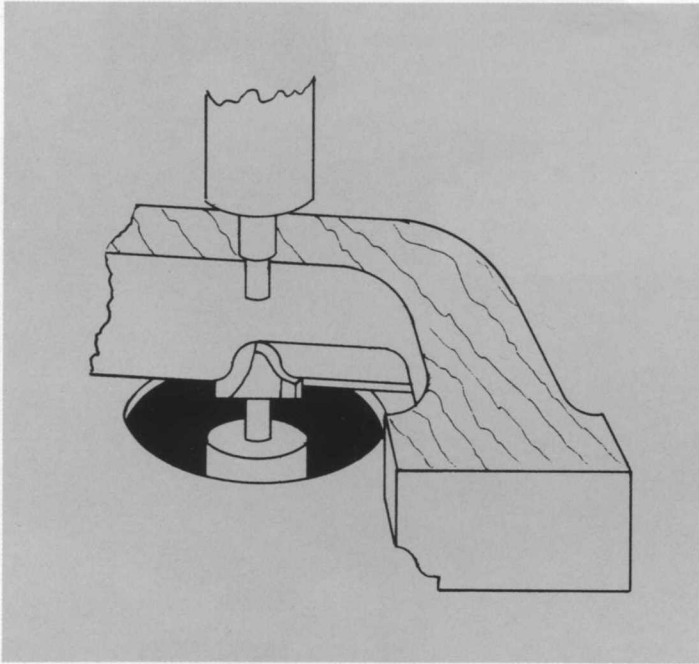
- 360° sawing, shaping capability with inside radius cuts to ⅜". This eliminates secondary notching cuts.
- Template control eliminates need for skilled bandsaw operators. Assures uniformity of parts.
- Cutter action produces complex parts without wood grain tear out even in hard woods. Minimizes or eliminates sanding.

Overlay or Nesting of Parts — Nested parts may be cut from conveniently sized panels to achieve maximum utilization of material, reduce handling time and eliminate pre-sizing of blanks. Since the material to be cut is trapped between the template and machine table, two very short spurs into the back of each part is the only holding device necessary.

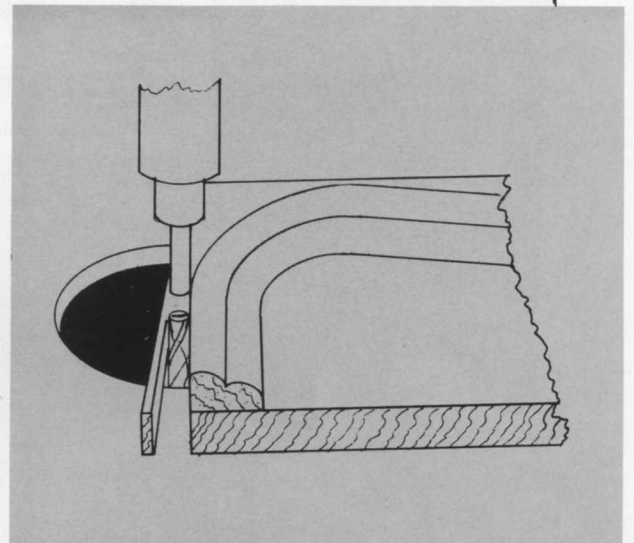
Inverted Router jiggging and set up is so quick and simple, many typical runs can be finished before your expensive CNC router can be programmed and fixtured!



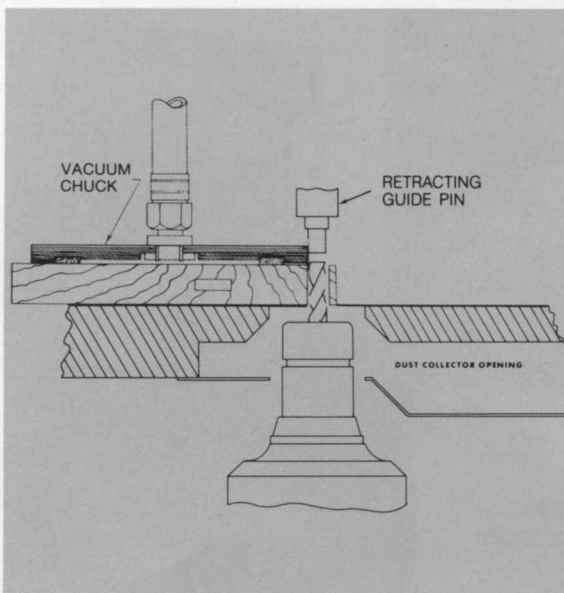
Compare these advantages to your outdated overhead type pin router



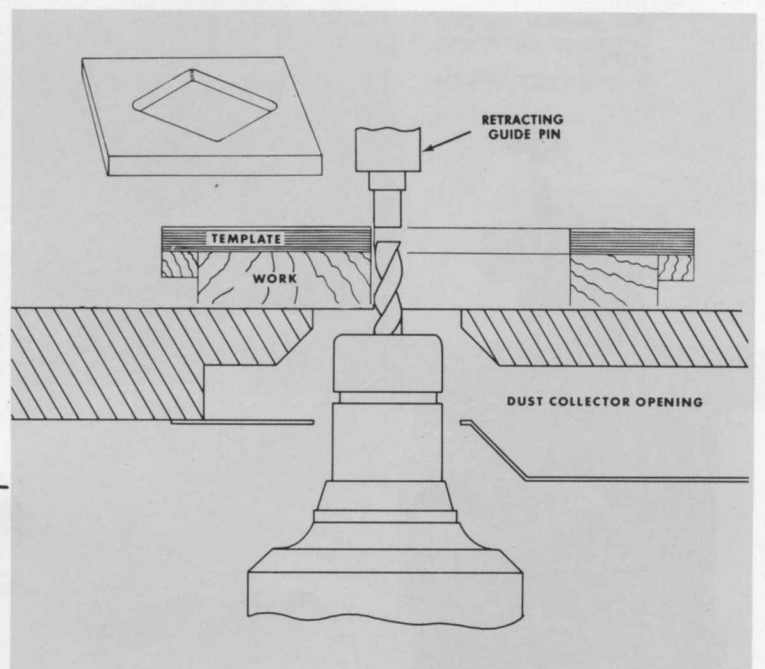
Instead of spindle carving, the cutter coming up through the table and an extra long guide pin makes cuts like these very easy and accurate with no pattern cost.



Trimming flush to an over lay moulding with the guide pin over head, is a very simple, accurate operation guiding directly off the moulding.



Much simpler vacuum chucks can be used. Ability to route 360° around vacuum chuck since template is on top and line can come off of top.



Inside cut outs much easier since operator can see shape in template. Also operator does not have to lift part from cut out to cut out.



C.R. Onsrud, Inc.

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Description of Model Number

- The FIRST TWO digits of our model number give the throat depth in inches.
- The THIRD digit tells whether the cutting spindle is raised and lowered by a mechanical foot pedal (0), or pneumatic pedal (2).
- The FOURTH & FIFTH digit give the approximate horsepower.

All Machines Have:

- Cast Iron Main Frame
- Cast Iron Over Arm
- Welded Steel Base
- 1/4", 3/8" & 1/2" Guide Pins included
- 1/2" Collet

2400 & 3600 Models Have:

- Extra Heavy Duty Belt Driven Spindle Capable of 25,000 R.P.M.
- Fog Mist Spindle Lubrication
- 3/4" Collet Capacity

Options:

1. Lower depth stop
2. Automatic depth stop
3. Pneumatic pedal lock
4. 36" x 48" table
5. Cast iron table
6. Intri-shaper option
7. Electric brake
8. Infinitely variable speed range
9. Vacuum template system.