

EN100 Tube Notcher: A Practical Handrail Production System

Cut. Bend. Notch. Fit.

Super Brown cold saw + Top Bender or Super Bender + EN100

Cut. Bend. Notch. Fit. A productive handrail shop does not always need a complex CNC cutting system. For suitable tube sizes and joint designs, a Pedrazzoli Super Brown cold saw, an Ercolina Top Bender or Super Bender, and an Ercolina EN100 tube notcher form a practical three-machine preparation system.

The [Ercolina EN100 pipe and tube notcher](#) offers a hands-on, “old-school” approach with purpose-built features: clamp the workpiece, set the angle and produce a controlled end notch using an abrasive belt and correctly selected roller. No CAD/CAM part program is needed for a basic notch. It is a straightforward option for shops that want to reduce freehand fitting and repeated grinding without investing in a CNC profiling cell.

Why notch the end of a handrail tube?

When a round tube meets another round tube, a square cutoff alone does not follow the curved surface of the mating member. A fishmouth or saddle notch shapes the end so it fits around that surface. Common applications include uprights meeting rails, crossmembers joining posts, and angled connections on stair railings.

A consistent notch can reduce trial fitting and corrective grinding, helping the welder position and tack parts more efficiently. Joint fit-up must still meet the drawing and welding procedure, including any required root gap. The aim is the specified fit—not automatically a zero-gap joint.

A shaped cope that follows the mating tube

The EN100 forms a contoured notch, also called a cope or fishmouth, that follows the outside surface of the mating tube. With the correct roller, angle and setup, it can produce a close, consistent fit instead of leaving the operator to shape the connection by repeated freehand grinding.

Change the roller to suit a different mating diameter. The tube being notched does not have to be the same diameter as the tube it joins. Select the appropriate roller for the mating member's actual outside diameter and required joint geometry, then adjust the vise, angle and feed for the workpiece. The quick-change roller system makes moving between suitable diameter combinations straightforward; confirm roller availability and machine clearances for the application.

Better-fitting copes can reduce extra grinding and trial fitting before welding. They can also reduce the corrective buildup and subsequent dressing associated with poorly matched joints, helping produce a cleaner-looking finished railing. Post-weld finishing is not eliminated: results depend on the welding process, operator technique and finish specification. Maintain the required weld size and joint preparation, and never grind away sound weld metal merely to hide a poor fit or achieve a flush appearance.

A wide choice of notch angles—not an unlimited angle range

Ercolina publishes a **graduated vise adjustment from 0 to 60 degrees** for the EN100, with vertical adjustment for offset applications. The listed tube capacity is **1 to 3 inches**. Confirm the actual outside diameter, wall thickness, material, mating diameter and required joint geometry with CML USA; nominal pipe size is not the same as outside diameter.

These adjustments cover many straight and angled handrail connections. They should not be described as “any angle”: vise travel, part clearance, roller selection and the actual joint determine what can be produced. Check how the machine’s angle scale relates to the included angle on your drawing before setting up a batch.

Features that make repetitive notching easier

- **Controlled infeed and crossfeed:** The EN100’s patented simultaneous action is designed to spread the work across the belt, extend belt life and reduce heat compared with concentrating the cut in one area.
- **Graduated, adjustable vise:** Secure positioning helps replace improvised freehand grinding with a repeatable setup.
- **Quick-change rollers:** The published range includes more than 25 roller options. Select the roller for the required notch and mating-member geometry—not simply the nominal size of the tube being notched.
- **Tool-free belt changes:** Belt replacement and selection can be handled without a complex changeover.
- **Top-mounted deburring surface:** Supports appropriate edge cleanup as part of the workflow.
- **Optional grinding capability:** An accessory converts the EN100 to an abrasive belt grinder; confirm what is included in your quotation.

Ercolina lists belts for a range of materials, including carbon steel, stainless steel and aluminum. The correct abrasive and operating procedure depend on the alloy. For stainless work, manage abrasive and handling contamination; changing material also requires reviewing dust and fire precautions.

Why consider the EN100 instead of improvised notching?

A hole-saw fixture, freehand grinder or other method may be adequate for occasional work. When repeated joints consume time in layout, cutting, test fitting and correction, a dedicated belt notcher becomes worth comparing. The EN100 provides a fixed workholding and roller-based process intended for this task, rather than relying on the operator to shape every saddle by hand.

Its appeal is **simple setup and a potentially lower-cost route to dedicated notching** than a full CNC profiling installation. Compare current equipment quotations, required rollers, belts, electrical installation and labor per acceptable part. There is no universal payback period or guaranteed seconds-per-notch figure: material, wall thickness, notch depth and belt condition all affect production time.

Cost-effective notching for small shops, job shops and mid-volume production

For suitable end-notching applications, the EN100 can be a highly cost-effective choice: a dedicated machine that reduces repeated hand shaping and fitting without requiring a CNC profiling system. Its value is best measured in the total cost of an acceptable joint, including setup, operator time, belts, rollers and rework—not purchase price alone.

- **Small fabrication shops:** A straightforward, hands-on way to prepare handrail and frame connections without adding CAD/CAM programming to basic notching work.
- **Job shops:** Adjustable workholding and quick-change rollers help accommodate varied mating diameters and joint angles within the machine's capabilities.
- **Mid-volume production shops:** Documented setups and repeatable workholding can reduce corrective grinding and support consistent batches of uprights, crossmembers and rail connections.

Ask for a demonstration on your parts and compare total preparation time with your current method. The EN100 is particularly worth evaluating when manual fit-up is consuming labor, but part complexity and production volume do not justify a more elaborate automated system.

Build a practical handrail production system

1. Cut blanks with a Pedrazzoli Super Brown cold saw

Use the saw to establish consistent blank lengths and clean reference ends. The [Super Brown 350/60 MRM manual cold saw](#) suits varied work with direct operator control. The [Super Brown 350/60 SA semi-automatic cold saw](#) adds powered head movement and pneumatic clamping for repeated cycles. Automatic material feeding is a separate configuration or accessory, not an assumed feature of every semi-automatic saw.

A properly set up cold saw can reduce burring and cleanup, but inspect and deburr the cut as needed. The saw also handles suitable straight and miter cutoffs for assemblies that do not require bending. Read our [cold saw and tube preparation buyer's guide](#).

2. Form the rail with a Top Bender or Super Bender

Consider the [TB60-TC Top Bender](#) or [SB48-TC Super Bender](#) for suitable rotary-draw bending applications. Their touchscreen controls support stored bend programs, bend-angle settings and springback compensation, helping operators repeat approved jobs rather than estimate every bend by eye.

Choose the machine and tooling from the material, actual diameter, wall thickness, centerline radius and finished-part requirements. These are non-mandrel benders: thin-wall material or tight-radius work may require a different bending solution. The EN100's maximum capacity does not establish the capacity of the entire three-machine system.

3. Fit the joints with the EN100

Use the EN100 to prepare the saddle or angled end notch where a rail, upright or crossmember meets another member. Set the appropriate roller, clamp position and angle, make a sample, and inspect it against the actual mating tube or a suitable fixture. Record the approved setup for repeat parts.

The exact sequence is part-dependent. Some parts are easier to notch while straight; others should be bent and trimmed first. Preserve required bend-clamping lengths and check that the finished part will clear the notcher and its vise. Do not remove material from a region needed for secure clamping without an approved process.

How the three machines can reduce labor and increase production

The benefit comes from assigning each operation to suitable equipment: the saw controls cutoff, the bender repeats the bend, and the notcher prepares the joint. That can reduce repeated measuring, inconsistent freehand grinding and trips back to correct poor fit-up.

- Use approved cut lengths and stops for repeated blanks.
- Recall proven bend settings while checking springback on the current material batch.
- Keep roller sizes, vise settings and notch orientation documented.
- Arrange material supports and staging areas to reduce unnecessary handling.
- Check the first complete assembly before producing the batch.

Together, the Super Brown saw, Top Bender or Super Bender, and EN100 provide the core cutting, bending and notching equipment for many handrail jobs. **They are a complete preparation workflow, not a turnkey finished-handrail factory.** Welding equipment, assembly fixtures, finishing, inspection and installation remain necessary. Fabricate to the applicable drawings, structural requirements and handrail codes.

What to check before buying

1. **Bring representative parts.** Provide the stock and mating-member diameters, material, wall, bend radii, joint angles, offsets and quantities.
2. **Confirm roller and belt selection.** Ask which sizes and abrasives are included and what additional consumables your jobs require.
3. **Check electrical service.** The EN100 product page lists 220V or 480V three-phase options. Confirm the supplied voltage and phase before ordering; do not assume the entire system uses the same service as a single-phase bender.
4. **Review safe grinding arrangements.** Provide guarding, trained operators, suitable eye and hearing protection, ventilation and material-appropriate dust/spark management. Abrasive notching can generate heat, sparks and hazardous dust. Never assume a general shop vacuum is suitable for metal grinding dust or mix incompatible metal dusts.
5. **Demonstrate the complete cycle.** Time setup, loading, cutting, bending, notching, inspection and fit-up on your part. Use those results to compare labor and output with your current process.

Frequently asked questions

Can the EN100 notch at any angle?

No. The published vise range is 0-60 degrees, with vertical adjustment for offset work. Confirm the requested joint geometry, roller and workpiece clearance with CML USA.

Is it useful for handrails that are not bent?

Yes. Straight rails, posts and crossmembers may still need saddle notches where round members intersect. A flat miter joint is normally a sawing operation; a saddle follows the mating tube's curved surface.

Does a belt notcher need CNC programming?

No CAD/CAM program is required for the EN100's basic notching workflow. It still requires correct roller selection, clamping, angle setting and operator training.

When should a shop consider CNC profiling instead?

Compare CNC profiling when the work includes many different holes, slots, complex contours or automated multi-feature processing. For repetitive end notches within its capacity, the EN100 offers a direct, dedicated approach without that programming workflow.

Ask CML USA to match the system to your handrail work

[Request a handrail cutting, bending and notching application review](#). Ask us to compare an EN100, the appropriate Top Bender or Super Bender, and a manual or semi-automatic Pedrizzoli Super Brown saw using your actual parts and production targets.

Product references: [EN100 specifications, catalog and demonstration](#); [handrail shop automation buyer's guide](#).

Read the [current online guide](#). Contact CML USA at ercolina-usa.com/get-a-quote/ or 563-391-7700. Confirm current specifications and supplied equipment before ordering.