# What’s New

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Released April 2017

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## ProNest 2017 v12.0
Released April 2016

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New Features and Enhancements in v12.1
The following enhancements are available in the ProNest 12.1 release:

Productivity Modules

Dynamic Align

Create a connected column or row of rectangular parts, aligned on one side. Aligned parts can be connected with a common line or bridge. This feature requires the Chain and Bridge Cutting or Common Line Cutting module.

Parts can be quickly bumped together manually on the nest into dynamic align columns or rows. Dynamic align parts can also be created during automatic nesting.

Common Line Cutting

Dynamic align for common line cut parts is fast and easy, reducing programming time needed to create CLC nests.

Benefits include:

- Manually bump parts together to create dynamic align CLC groups, without the intermediate step of creating working CLC clusters.
- Unlike CLC array, dissimilar parts can be combined in dynamic align CLC rows and/or columns.
- Dynamic align CLC parts created during automatic nesting can have sub-columns of parts (rows of smaller parts common line cut in the same column as a larger part).
Bridge Cutting

Bridge cutting with dynamic align is a special bridging technique designed to do several things:

- Move bridged parts very close together, to maximize material utilization. The kerf typically overlaps partially into previously cut kerf.
- Extend a negative bridge past the aligned part edges. Negative bridges that extend past the part edge reduce blemishes left by bridge tabs.
- Complete the final cut along the alignment edge to drop all parts. The negative bridge is consumed by the kerf on the final cut. This final cut also ensures that parts will drop as the cutting head moves away from them, reducing the chance of collisions.

Additionally, plate processor machines (such as Peddinghaus) can complete the final cut across multiple parts on the alignment edge. Parts are completed in vertical zones on the nest.
Negative Bridge Extensions

Negative bridges applied at the corners of parts can overlap the part edge. This reduces blemishes on part edges left by bridge tabs. Negative bridge extensions can be used for dynamic align bridges and bridges created in Bridge mode, when the bridge is snapped to the corners of parts.

Common Line Cut Paths

Cut rectangular parts by column

A new cut path approach is available for rectangular common line cut parts. Designed for grids of rectangular CLC parts with vertically-aligned edges, the vertical column lines are cut in single passes across multiple parts instead of part-by-part.

Parts are completed in columns. The cutting head moves away from the parts as they drop, reducing the chance of collisions. This technique can be used for common line cut groups created via advanced CLC, dynamic align, or CLC array.

Plate processor machines (such as Peddinghaus) can make the final cut across multiple parts on the alignment edge, so that parts are completed in vertical zones on the nest.
Sequencing of surrounded CLC parts

In CLC groups where parts are surrounded by other parts, the cut sequence now starts with the innermost parts and moves outward. This reduces traverse distance and production time, while ensuring the correct drop order.

Output for Multiple Machines

You can create NC output files for one or more additional machines at the same time you create output for the current ProNest machine. This is useful in cases where the current real-world machine is down or unavailable but there are other machines in your operation with similar processes that can cut the nest. You can quickly shift jobs between similar machines to remain agile and maximize production, without having to rebuild the part list and nest again.
Enterprise Modules

Data Sync

Export data

Export ProNest job data in the format needed by your ERP system as nests are completed. Data Sync Manager now includes export tasks, which can be configured to send nest history data from ProNest back to the ERP system via XLS, XLSX, CSV, or XML file. Benefits include:

- Create and configure Export tasks
- Customize data reported using SQL query builder
- Schedule export
- Send nest data about work orders, inventory consumed, and remnants/skeletons created
- Browser-based viewer shows import and export logs by date
- View database connection on main screen of Data Sync Manager

Import XML

Work order and plate inventory import tasks can now use XML files for source data.

STRUMIS

Support for StruMIS v10.1 has been added. Previously-created nests can be recalled through StruMIS to be re-nested with part list changes or be filled with additional parts.

SureCut™ Technology and Built-in Process Expertise

Class Selection

For certain Hypertherm plasma setups that support it, the Class selector (that appears when you click the Class box for a material) now shows a cut quality indicator. This indicates the predicted cut quality for each choice.

Cut Sequence by Part

When Cut Sequence Rules are in use, a new setting allows all cut profiles on a part to be completed before the sequence moves on to the next part. Even if cut profiles are contained in different tasks in a cut sequence rule, they will still be processed part-by-part.

This is particularly useful for machines with multiple cut processes. You can set a specific order for different cut processes while also using a part-by-part sequence.
Cutting Techniques: Kerf Crossing

New cutting techniques are available to control what happens when the cutting head crosses a previously-cut kerf width during common line cutting, bridge cutting, and skeleton cut-up. This can be used to disable automatic height control at kerf crossings, in order to prevent the cutting head from diving. For oxyfuel machines, it can be used to perform a dwell prior to crossing the kerf width, in order to pre-heat the opposite side for cutting. For waterjet machines, ramping down the feedrate prior to crossing the kerf is used when cutting thicker material to prevent the jet from skipping, leaving uncut material behind.

3D Process Modules

SOLIDWORKS Interface: Bevel Detection

Identify beveled edges on SOLIDWORKS® parts and automatically assign ProNest beveling to them during import. This method doesn't require any special bevel layer naming in CAD, simply import the part and ProNest will apply beveling instructions to the part's edges. Single and multi-pass beveling is supported.

Inventor Interface: Bevel Detection

Identify beveled edges on Inventor® parts and automatically assign ProNest beveling to them during import. This method doesn't require any special bevel layer naming in CAD, simply import the part and ProNest will apply beveling instructions to the part's edges. Single and multi-pass beveling is supported.
Machine Interface Modules

Drill Machine Interface

Several new enhancements are available for drill-capable machines (originally introduced in ProNest v12.0.2).

Advanced Edit

• Change drill tool assignment
  You can change the drill tool assigned to any hole, regardless of the hole’s size. If the intended tool was not matched to a hole during part import, the correct drill tool can now be assigned in Advanced Edit after the part is imported.

• Change profile to any process
  Any round interior cut or scribe profile can be converted to a drill hole. If the interior was originally imported as a cut or scribe profile, you can change it to a drill hole in Advanced Edit. Likewise, drill profiles can be converted to the cut, scribe or punch process.

  Additionally, as part of this feature, cut profiles of any shape can be converted to scribes or punches. Scribe profiles can be converted to cut or punch profiles.

• More tool attributes now displayed
  When a drilled interior profile is selected in Advanced Edit, additional tool information is now displayed in the Properties pane. This includes tool diameter, whether the tool has a pilot tool and whether it is a compound or missing tool. You can also use Select Profiles mode to view all the individual tool hits for compound tools.

Countersinking

For machines that support countersink drilling (enlarging a hole at an angle to accommodate the conical head of a bolt or screw), ProNest can bring in countersinking information from a CAD drawing, assign countersinking tools from the tool library at the required depth and include countersink instructions in output code.

Turret

A new setting is available which automatically sorts tools in the turret from smallest to largest, so that the smallest diameter tool hits are sequenced first, followed by the next smallest tool hits, and so on. This can be set nest-by-nest on the Turret pane. A default value for all nests can also be set on the Turret settings page.
Reorder stations in the turret

Stations can now be reordered in the turret. The purpose of this feature is to control the drill sequence when there are default tools which can’t be moved to different stations.

Tool matching

If there are multiple tools of the same diameter, a default tool in a station (specified on the Turret settings page) will be selected before any other tool of that diameter. This helps resolve situations where more than one tool may qualify to drill a hole.

Job setup

Assembly

From the part list, you can quickly add one or more parts to an existing assembly or create a new assembly from them.

Jobs and Machines

Significant speed improvements have been made for starting new jobs, opening existing jobs, changing machines, and saving settings. Larger ProNest setups often contain several different settings spreadsheets with thousands of records. Loading settings spreadsheets has been optimized, making job and settings-related operations faster than in previous versions.
New Features and Enhancements in v12.0
The following enhancements are available in the ProNest 12.0 release:

Manual Nesting Improvements

Drag Array

With drag array, you can quickly place parts in a pattern array inside of a rectangular region on the nest. You can create different array configurations as you drag the mouse around and see the results on the nest instantly.

Simply click the yellow handle on top of a selection and drag in the direction that you want to place the parts.

Benefits:

- Fast manual nesting
- Greater control over the size and direction of the array (compared with traditional pattern array)
- Visualize nesting results in real time as you drag
- Number of parts to be nested in the array box is shown on screen
- Ability to make quick stacks or boxes of tightly nested parts anywhere on the nest, such as in a corner or along the plate edge
Anchor Part

When manually nesting parts, dragging, double-clicking, or pressing ENTER to add a part to the nest can be time consuming if you have many copies of the part to nest. A new setting on the Part List pane called Anchor part to cursor will affix the currently highlighted part to the mouse cursor, enabling you to repeatedly drop and intelligently bump the part with a single click.

Benefits:

- Reduce the number of clicks it takes to manually nest a part.
- Better, more effective automatic bumping method (see Automatic Bumping for more details).
- A drag array can easily be started with the anchored part by simply clicking and dragging on the nest.
- An anchored part appears in conflict when hovering over an unavailable area on the nest.
- The Duplicate feature now anchors the selected parts to the cursor so that you can easily place copies where you want.
- Use Q, W, E, or S arrow keys or press CTRL to rotate anchored parts prior to placing them on the nest.

- For situations where you want to fit a part into a tight spot on a nest, clicking with an anchored part will attempt to fit that part into the available space, even if the part is in conflict when you click it.

This lets you position the part in the approximate area that you want it and click to nest without having to be too precise.
Automatic Bumping

A new, more intelligent automatic bumping method is now used during manual nesting. Automatic bumping is no longer limited to a single corner of the nest with only two bump directions in sequential order (for instance, Left then Up). ProNest now tries several bump directions in various different orders and uses the best result based on fit and material utilization.

The new intelligent automatic bumping is used during all methods of manual nesting, including:

- Anchor part to cursor (new in 12.0)
- Dragging part from the part list
- Double-clicking parts in the part list
- Pressing ENTER

Also, if you have the Automatic Nesting module, double-clicking a part in the part list or pressing ENTER will automatically nest it in an empty area of the nest. See “Single part automatic nesting” for more details.

Color by a Part Property

In the color legend, outline colors and fill colors can now be set separately from one another. Also, parts can be color-filled according to a particular part property. Parts with different values for that property will be filled with different colors. This provides an easy way to visually differentiate parts on the nest based on name, priority, work order number, due date, and so on.

For instance, color-filling by the “Part Name” property will draw each part in the part list in a different color.

You can also highlight every instance of a specific part on the nest, in order to quickly locate it.
Colorized reports

Several standard ProNest reports now show fill colors in part images. These reports also have a color legend/key for your reference. This is particularly useful if you are also using the Color by a Part Property feature in ProNest.

In addition, custom reports can also show colorized part images as well.

Native 64-bit support

ProNest is now available as either a 32-bit or 64-bit application. The 64-bit version of ProNest software can be run on a 64-bit CPU/Operating System and take advantage of the extra accessible memory.

Previously, ProNest was only available as a 32-bit application.
Automatic nesting improvements

Single part automatic nesting

If you have the Automatic Nesting module, double-clicking a part in the part list or pressing ENTER will automatically nest it - rotating and bumping it to fit snugly into an existing empty area of the nest. ProNest will even place smaller parts inside larger parts using these methods of nesting.

Better nesting of v-shaped parts

Using a new diagonal nesting approach, large v-shaped parts (with an acute angle) are now automatically nested with greater plate utilization.

Licensing

When multiple ProNest sessions are running on a single PC, only one network license seat is now required for that PC. Previously, a separate network license seat was required for each instance of ProNest that was open on a single PC.

Costing

- **Text marker time** has been added to ProNest costing settings. This enables bugle text marking to be accounted for in costing calculations.
• A Traverse tab has been added to the Costing settings page with three new settings. This gives you greater accuracy when accounting for rapid motions in production time calculations, particularly for cutting tables with drive mechanisms where X and Y traverse motions have different maximum speeds. New settings include:
  o X rapid rate
  o Y rapid rate
  o Minimum rapid time

History Database views for Data Sync

Several new views have been added to the ProNest History database (PN12History), in order to facilitate data retrieval from ProNest to an ERP/MRP system for Data Sync users. Please consult the Data Sync Help or user manual for detailed information on how to use these views.

Drill Post Integration

For combination plasma or oxyfuel machines that incorporate drilling, tapping, and other spindle operations, all drilling functionality is now fully integrated into the main ProNest interface. The new Drill Machine Interface module is designed to be seamless, intuitive, and easy to use, so that you can efficiently tackle jobs requiring drilling and other vertical machining directly in ProNest. Previously, many drill-enabled setups required a secondary drill post, which involved a second post processor and separate interface that allowed drill-related interaction only after output.

Compatibility with advanced features

• Bevel is compatible with all drill-enabled setups
• True Bevel™ is compatible with drill-enabled setups (with applicable hardware).
• True Hole® and any other CFF based performance applications are fully supported (with applicable hardware).

Previously, drilling using a secondary post was not always fully compatible with features like bevel or True Hole®.

Output

• Output all nests at once. Creating output files for drilled nests no longer has to be done one nest at a time.
Turret

- Model your machine’s automatic tool changer directly in the ProNest Settings dialog. Any type of automatic tool changer, whether turret/drum or chain style magazine, can be easily set up using the new Turret settings page.
- Full support for station types lets you limit tools to compatible stations.
- A new Turret pane in the main nesting window shows you available stations and tool assignments. Simply drag and drop to re-order tools to get the layout that you want for any nest.
- The Tool Library can now be opened directly from the Turret pane.
- Default tools can be locked into turret stations, so that ProNest creates new tool layouts for nests with specific tools already fixed in stations.
- Any fixed tool can be manually cleared from a station for a given nest.

Tool Library

A completely redesigned Tool Library editor is available right in the Settings dialog. Add all available drill and other spindle tools that can be used by your machine.

- Data entry is now very easy and handles inch or metric tools. Fractional tool sizes (such as 29/64”) can be entered directly and saved to the library. When entering drill tool sizes, simply type a size in inches or metric units and ProNest will automatically store the tool correctly.
- Compound/multi-op tools are now entered on a separate tab in the tool library using a new interface.
- Compound tools can now have a user-defined nominal diameter that doesn’t match an actual tool size. This is useful for tool-matching.
- The tool library is now stored as XML file instead of XLS.
- Any individual tool in a compound tool can have a depth value, which can be used to drill blind (non-through) holes. This value serves as an override for any depth that may be specified in the Drill Parameters XLS.
- Any individual tool in the tool library can now have an associated pilot drill/pre-drill tool. Whenever that individual tool is assigned during import, the pilot tool is also automatically assigned along with it.
- Tap tools can have a pilot drill (tap pre-drill), which is automatically assigned whenever the tap tool is assigned. Drawing tapped holes using CAD colors is fully supported.
- Tooling settings can be configured to sequence pilot drills together, sequence them separately, or ignore pilot drills entirely during tool assignment.
- Missing Tools can now be converted to individual drill tools in the tool library. Missing Tools can be added all at once to the library or added one-by-one.
- An indicator appears next to any tool that has unsaved changes.
- An indicator appears next to any tool that is in use in the current job.
- A new tool library can be easily started from scratch or using an existing tool library.
**Importing Parts**

- Drill tools are assigned to holes when a part is imported.
- After import, you can inspect the tool assigned to each hole in the part from Advanced Edit.
- If multiple tools are within tolerance for a hole, now the closest size tool is assigned.

**Nesting**

- Reorder tools that are loaded in the turret layout from the main window. Change the tool that is loaded in a given station to get the layout that you want for any nest.
- Immediate feedback if parts can't be nested due to tooling constraints.
- A new setting called **Allow multiple turret layouts for a nest** lets you allow/disallow nests that would require turret stations to be reloaded.

**Sequencing**

Drill sequencing settings have moved in the main Settings dialog. After editing drill sequence settings, the results are visible immediately upon exiting settings. Previously, editing the drill sequence had to be done in the secondary post, which involved frequently re-creating output and opening the Drill Preview window after making changes.

**Cut simulation**

Verify the drill sequence immediately at the profile level using Cut Simulation mode in the main nesting window.

**Collision Avoidance**

The Collision Avoidance module is now compatible with drill-capable machines. Collision avoidance paths are now established after drill sequencing settings are applied, resulting in a much more direct traversals. Previously, the cut sequence and traverse paths established by collision avoidance were not honored when using a secondary drill post.

**Reports**

A new standard Tooling Layout report shows nest properties, an image of the nest, and details each tool that must be loaded into a respective turret station in order to complete all tooling on the nest.

**Costing**

**Drilling** process settings are now available as a separate tab in the Costing settings page.
• Use Activation Cost to set a “Cost per hit” for a tool by material based on the tool’s estimated life expectancy.

Pre-piercing

• User-defined pre-pierce drill tool can be assigned nest-by-nest using the Turret pane.
• Pre-pierced lead-ins are now trimmed so that the start of lead-in begins right at the edge of the pre-pierce hole.

Documentation

The ProNest Help has moved from HTML Help format (CHM) to a new, easier-to-use Help system that opens locally using your default web browser. Searching is much more effective and you can take advantage of all the features your browser has to offer, such as Bookmarks/Favorites, opening links in new tabs, and so on.

Modules and Standard Features

• Bridging and Chain Cutting have been combined into a single optional module. If you own either module, you will now have access to both Chain Cutting and Bridge Cutting.