Hypertherm®

Text Marking with ProNest® and Phoenix

Application Note

809850 | Revision 2 | August 2020

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General information

Background

In ProNest, scribe text is applied as a series of line segments. This happens across all fonts, whether the scribe text is brought in with the CAD source file or added to the part in Advanced Edit.
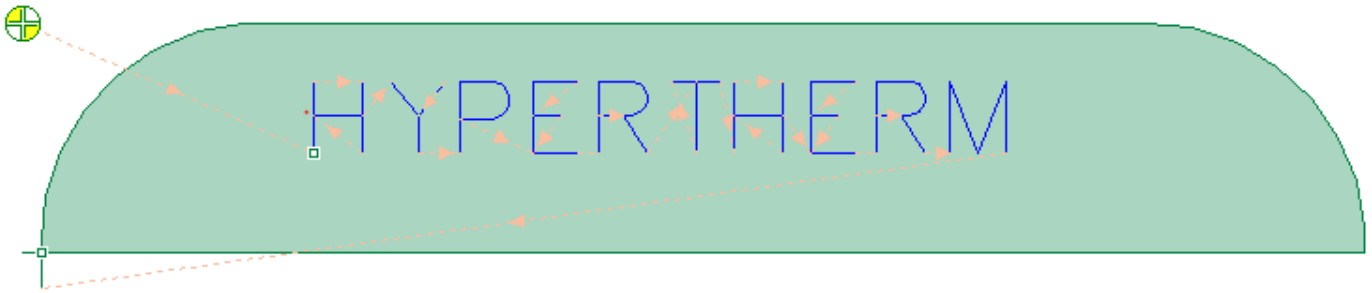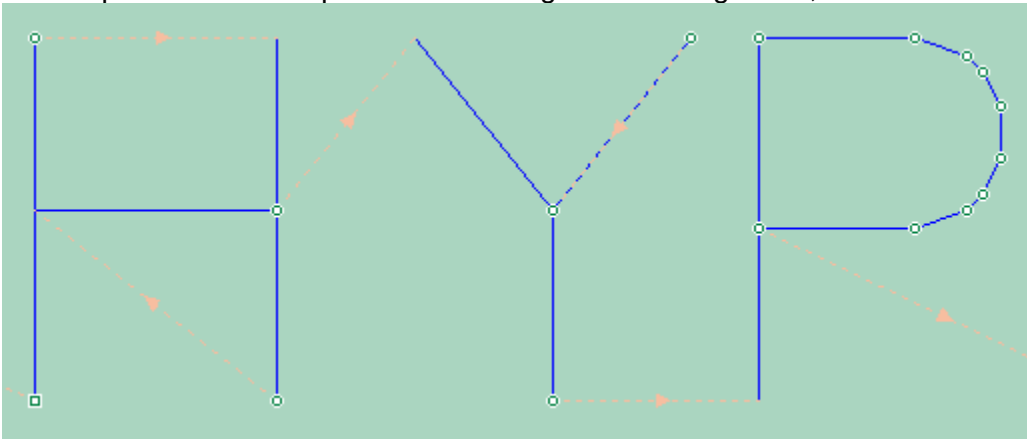

Arc shapes are broken up into small contiguous line segments, as seen with the letter "P" below:

The small circles (▫) are the intersection points between line segments.

When this type of mark text is output, each entity is included as an individual motion in the part program.

In the following example, the scribe text is output for the N2 Marking process for an XPR plasma system. If we were to view this part on the Hypertherm CNC, you would see that each segment is included as a separate G01 command, on its own line:
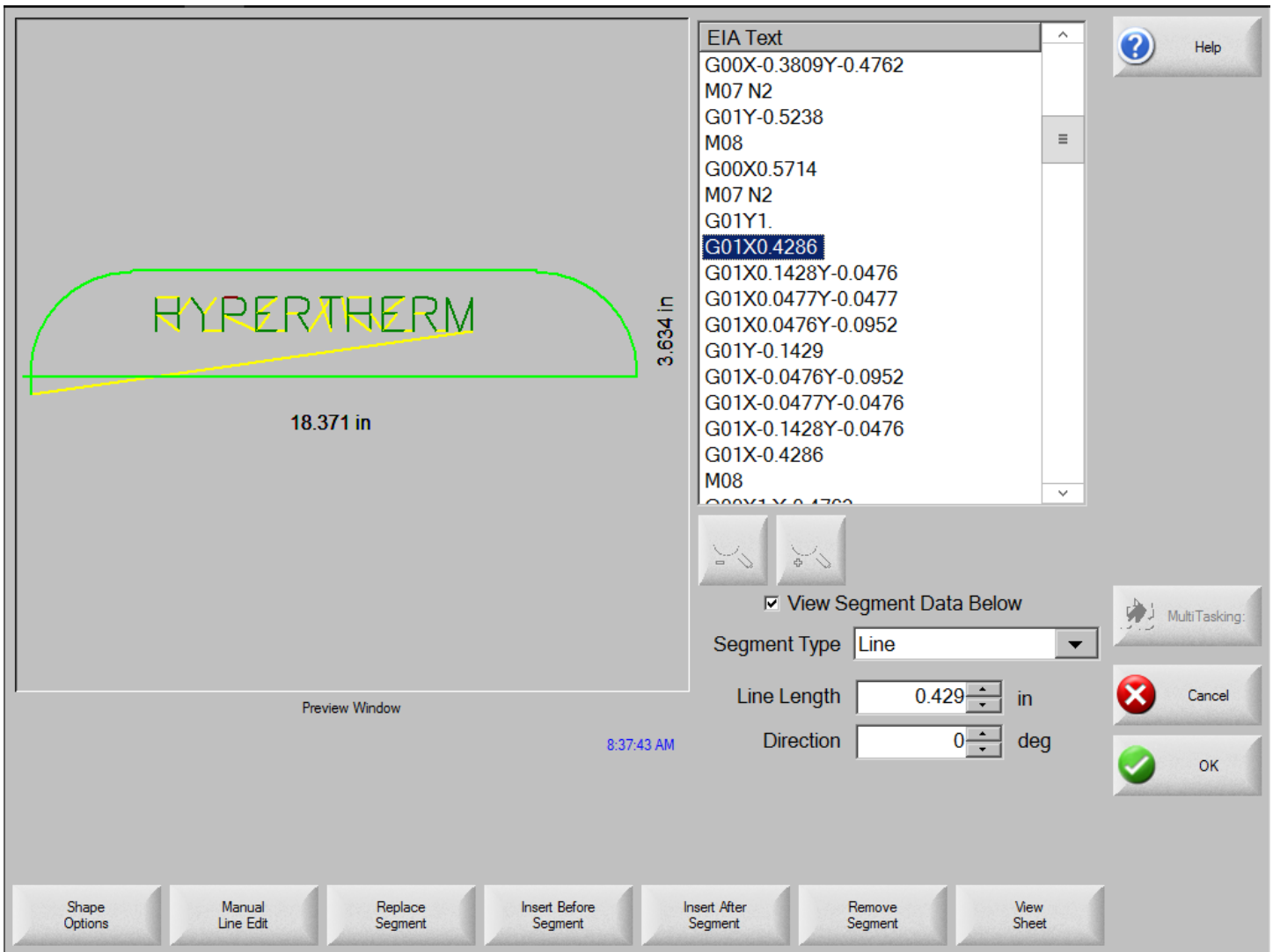
For plasma marking processes, this can result in jagged-looking results with pooling at the intersection points between entities when the program is cut at the machine.

The following shows the results (for a different part) with scribe text that was added in ProNest:

This is due in part to the limitations of the mechanics of the table.

Marking text enhancements in Phoenix version 10.4

There are two major enhancements that are available in ProNest to improve results for plasma text marking:

- Text marker
- Smoothing on scribe text

Text marker

Phoenix software on the Hypertherm CNC has the ability to stroke out text using its own parametric font set. The font is embedded on the CNC and optimized for use with plasma marking. This provides clear text with fewer blemishes in most cases.

ProNest now has the ability to leverage this capability and convert all scribe text to the Phoenix text marker during output.

To enable the Phoenix text marker capability in ProNest:

1. Open ProNest with an XPR-capable setup loaded.
2. In **Settings**, double-click the **CNC Output** page on the left, then click **Post Processor Settings**.
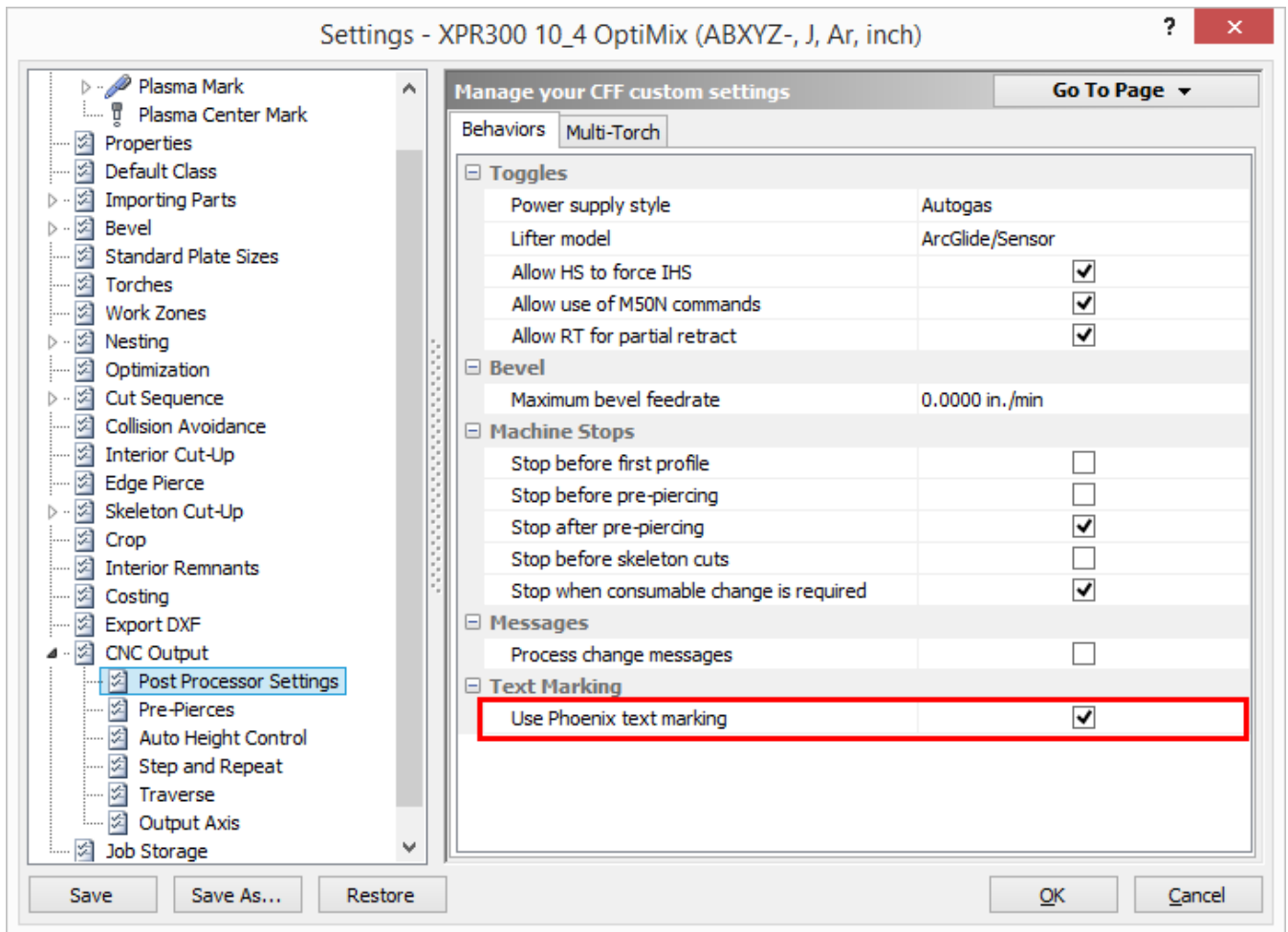
3. Select the **Use Phoenix text marking** box.
4. Click **Save** to permanently keep your changes.

With this setting selected, instead of including individual motions for each line segment in text that is output, ProNest relies on Phoenix to process text. Marked text is included in output code as a single line. If we were to look at the same "HYPERTHERM" text from the previous example, it would appear in the part program as follows:

> <F1 S1. A0. M0 O0 R1 G2 V250. <HYPERTHERM>

If you were to select the line on the control, the **Segment Type** would be set to **Marker Text.**
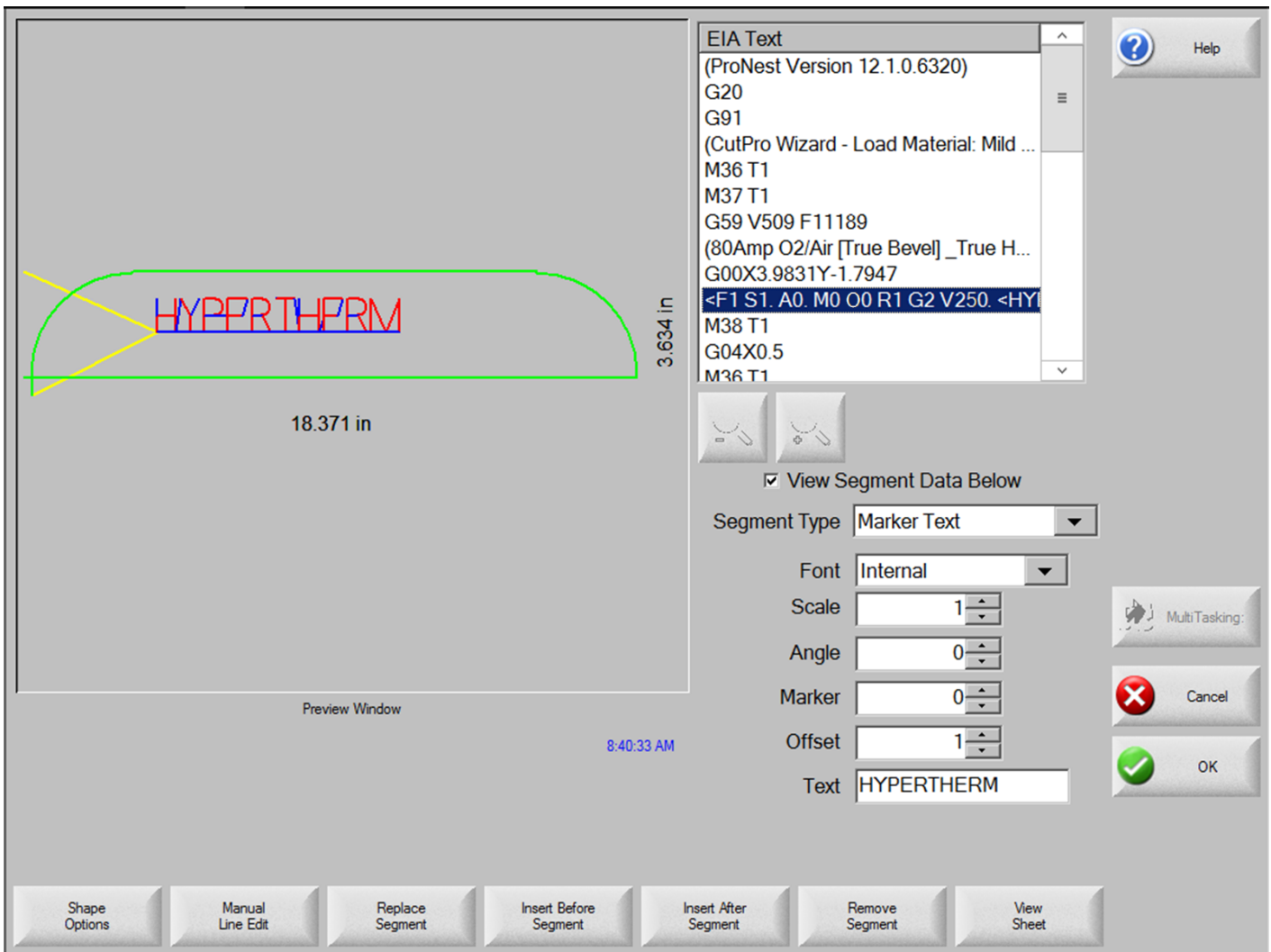
When using this Phoenix Hypertherm text marker feature in ProNest, please note:
- Asynchronous stop is not used
- Only English text is supported, ASCII character set only
- Text is in ALL CAPS
- No current overrides are available
- Different font styles are not supported
- Text is always left justified. The outcome may look different from what was seen in ProNest.

Generally speaking, the **Use Phoenix text marking** option is good if you want to include basic, English, alphanumeric, marking text.

Note: If the **Use Phoenix text marking** option is enabled in ProNest, be sure *not* to explode text into individual line entities in a CAD editor prior to adding the part in ProNest. Any text that you want marked must be left as a text entity in CAD, when this option is enabled.

Offset

The offset code (Letter O followed by a value) in the text marking command string is not included by ProNest with most CFFs. As a result, the Offset value in Phoenix is used, which is set to "1" by default. This may result in text that overlaps with cut profile geometry or is not in the intended location.

For manual workaround, you can edit EIA text directly in Phoenix (Shape Manager > Text Editor) to enter an offset of zero (O0) in the text marking command string.
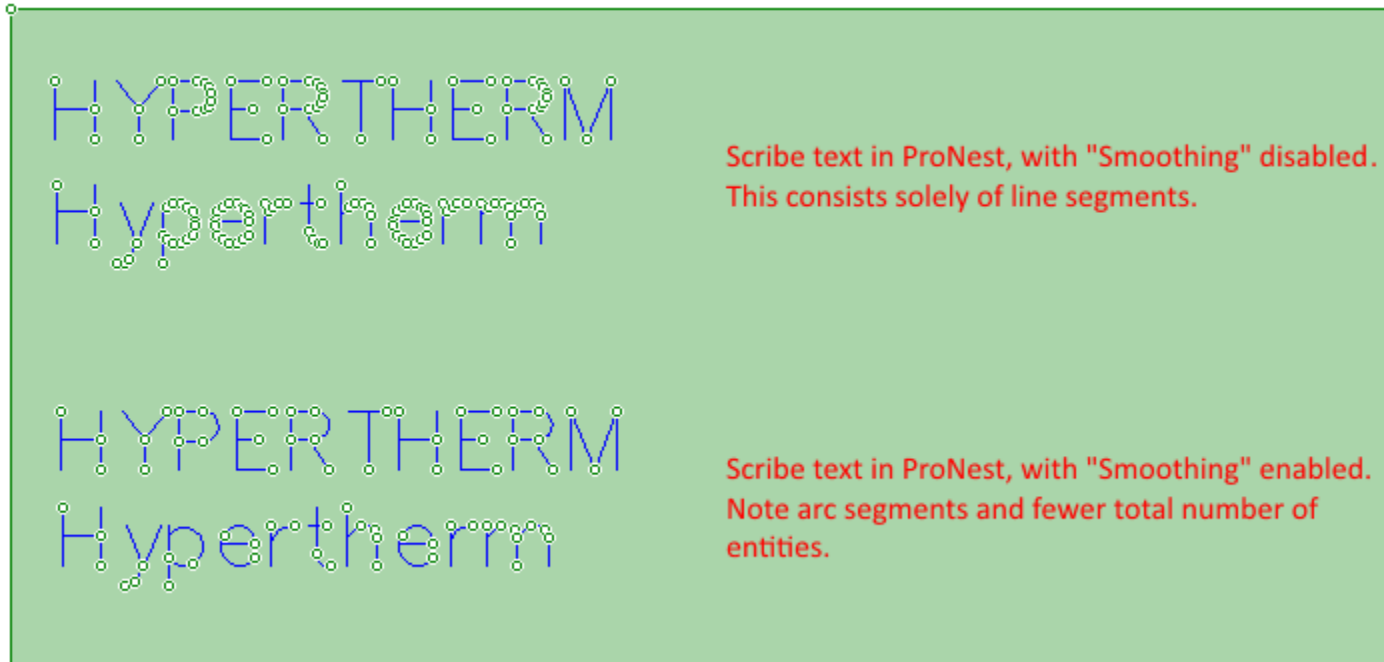
For a permanent fix, please contact Hypertherm for a new ProNest CFF that includes offset commands for the text marker.
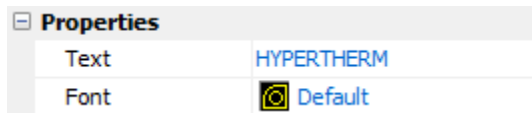
Smoothing on scribe text

An alternate option is available for getting better results with XPR marking in ProNest. In ProNest v12.1.1 and later, a smoothing option has been added for scribe text. This setting will convert a series of contiguous line segments into arcs.
The arc entities are typically handled better by the cutting machine, resulting in more fluid marked text.

Scribe text in ProNest, with "Smoothing" disabled. This consists solely of line segments.

Scribe text in ProNest, with "Smoothing" enabled. Note arc segments and fewer total number of entities.

The example part above is using the "Default" font in ProNest, which is a single-stoke simplex font that is installed with ProNest.

Smoothing works with any font you select in ProNest, whether it is a CAD font or Windows outline font (True Type, Open Type). Typically, the single stroke CAD fonts will offer the best results for plasma marking.

To use the Smoothing option on scribe text in ProNest:
1. Open ProNest v12.1.1 or later.
2. In **Settings**, click the **Importing Parts** page.
3. Select the **Smooth entities** box.
4. Enter an appropriate **Smooth tolerance** value, such as 0.01 in.
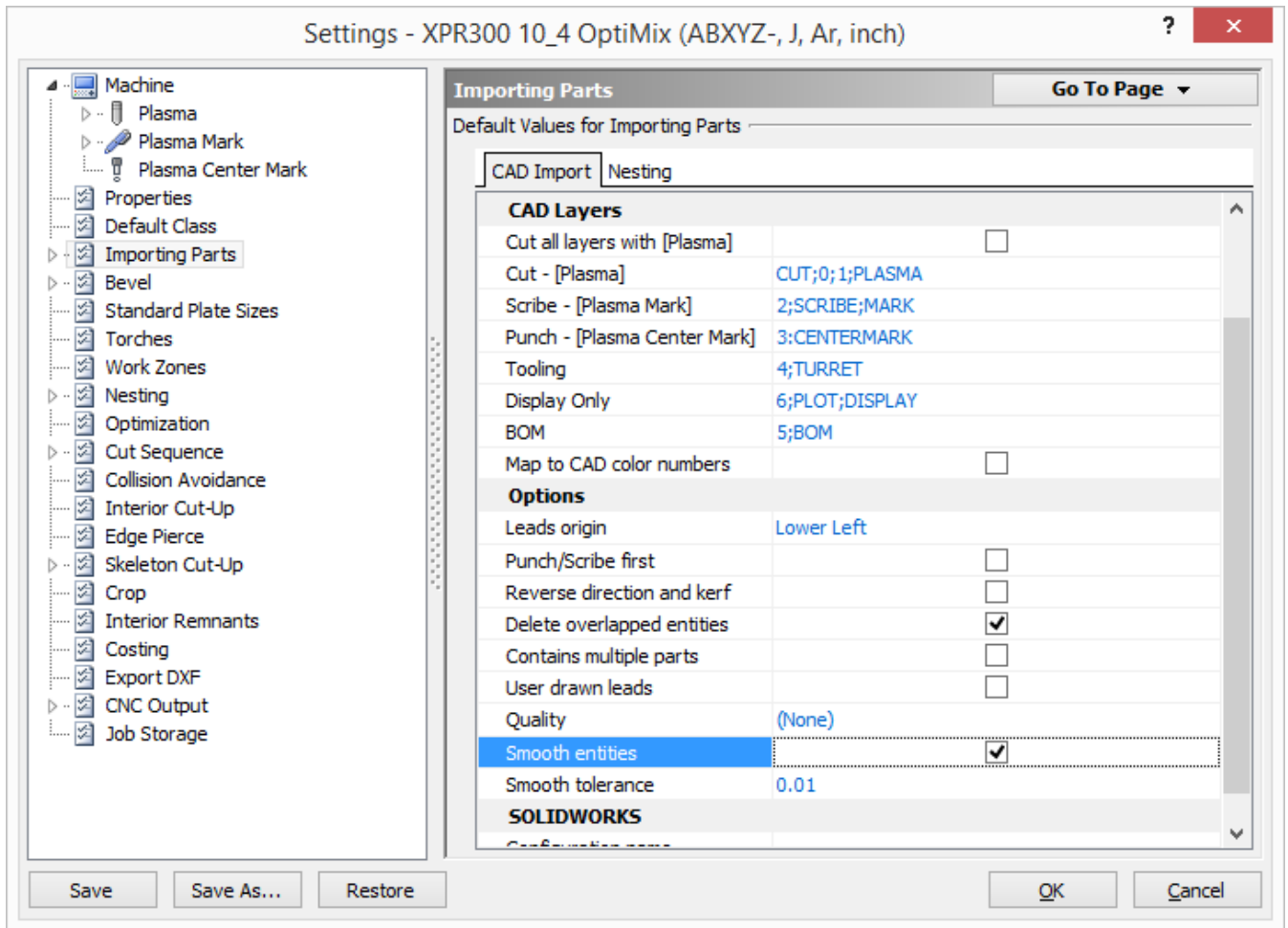
5. Click **Save** to permanently keep your changes.

Note: With this setting enabled, all part geometry will be smoothed during part import. This means that not only will scribe text be smoothed, but cut geometry and other non-text marking geometry will also be smoothed. Be sure that this is acceptable for your application before enabling this setting.

For scribe text added in Advanced Edit, the scribe text motions are smoothed when they're added to a part. If there is pre-existing scribe text that wasn't smoothed initially, it will not be smoothed when this setting is turned on.

Important: Make sure that the **Use Phoenix text marking** setting (Settings > CNC Output > Post Processor Settings) is *cleared* when using this text smoothing method.

The end result of using this smoothing setting is that marking text is still included in output code as separate motions. However, there are fewer intersection points, and thus fewer blemishes on that text.

When using Smoothing for scribe text in ProNest, please note:
- Asynchronous stop can be used. This reduces the puddling effect at the end of marking motions.
- Full Unicode support – all languages are supported as long as the font supports it*.
- Text can be in ALL CAPS or lowercase.
- Current overrides are available.
- Different font styles are fully supported.
- All part geometry (cutting and marking) will be smoothed during part import.

*For the "Default" ProNest font, most western languages are supported. This font provides reasonable results for plasma marking when smoothed.

Español, Français, Русский язык, Türkçe

Scribe text with "Default" ProNest font in use.

In limited testing, we've found that the "Default" font works well with the following languages:
- Spanish
- French
- Portuguese
- German
- Italian
- Hungarian
- Finnish
- Dutch
- Polish
- Russian
- Turkish (one outstanding issue with lowercase I)

Asian character sets (Chinese [Simplified and Traditional], Korean, and Japanese) would require use of a different font.

Requirements

The minimum requirements for the new XPR text marking capability described in this article are as follows:
- Phoenix 10.4 or later
- ProNest 2017 v12.1.1 or later (the feature is supported in all later versions of ProNest)
- ProNest setup (configuration archive) with a post processor (CFF or DLL) that supports the Text Marker feature.

Please contact your regional sales representative or our support department if you need an updated setup or if you have additional questions.

Which method should I use for plasma text marking with XPR?

Are you marking directly on the CNC or through ProNest?

ProNest →

Need to mark non-English text?

CNC →

Using ProNest CNC?

Yes → / No →

OK to smooth cut geometry?

No → Need asynchronous stop on marking?

Yes ↙ (to OK to smooth cut geometry?)

Yes ↓ / No ↓

ProNest CNC does not support marking

Use ProNest scribe text

Enable smoothing | Disable smoothing

No ↓

Phoenix text marker option in ProNest

Use Phoenix text marker

ProNest scribe text

ProNest scribe text included as individual marking motions in output code.
- Import CAD text or apply in Advanced Edit
- Asynchronous stop supported on marking motions
- Unicode support
- Upper or lowercase
- Current overrides available
- All part geometry (cutting and marking) will be smoothed during part import, if "Smooth entities" is enabled.
- Using this option without smoothing can result in cosmetically poor results.

Phoenix Text Marker in ProNest

ProNest converts all scribe text to the Phoenix text marker during output.
- No asynchronous stop
- ASCII text only
- ALL CAPS
- No current overrides

Use Phoenix text marker

Mark text is applied in Phoenix on the CNC.
- No asynchronous stop
- ASCII text only
- ALL CAPS
- No current overrides

For more information on these options, please refer to the EDGE Connect Programmer Reference (809550).

Search for "809550" at the following site:
https://www.hypertherm.com/en-US/support/documents-library/