



# XPR™ True Hole Conversion on an EDGE® Connect CNC

Application Note

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# XPR™ True Hole Conversion on an EDGE® Connect CNC

XPR True Hole conversion for EDGE Connect allows CNC operators to quickly convert eligible holes into bolt-ready True Holes without the full version of ProNest®.



To add or remove this tool, contact your Hypertherm representative.

## Before you begin

Make sure that the following conditions are met before converting holes into True Holes:

- Phoenix 10.9 or later is installed on your EDGE Connect CNC.



To ensure optimal cut quality, keep the **True Hole Setups Verification** setting on the **Special Setups** screen in Phoenix **enabled**.

- Hole profiles have a diameter to mild steel thickness ratio of 1:1 to 2:1.
- Your part program is eligible for True Hole conversion. See *Table 1*.

## Part program code requirements

To be eligible for True Hole conversion, your part program must contain each of the required codes listed below. Each required code must appear in the proper sequence relative to the other required codes.

**Table 1** – Minimum sequence of code required in True Hole eligible part programs

Sequence	Required code	Purpose	Notes
<i>Once at start</i>	G59 V509 Fxxxx	Loads cut chart record on Plasma 1	Fxxxx must be a cut chart record ID for a True Hole process. Avoid V519 (Plasma 2).
First after G59 V509	G41 or G42	Enables left or right kerf	This command must be immediately above an M07 code for each hole profile. See <i>Figure 1</i> .
Second	M07	Enables cutting	M07 must be immediately below G41 or G42.
Third	G02 or G03	Circle or arc geometry	Do not use a series of line segments to represent a circle.
Fourth	M08	Disables cutting	
Fifth	G40	Disables kerf	G40 must be immediately below an M08 code for each hole profile. See <i>Figure 1</i> .
<i>Other circular and/or non-circular profiles may follow. Only hole profiles that meet the criteria listed above will be converted to True Hole.</i>			
<i>Last in part program</i>	M02 or M30	Ends part program	
* Relative to other required codes. Additional codes may be present before and after each required code, unless otherwise specified in the Notes column.			

Repeat "First" through "Fifth" for each hole profile.



A sample part program that is eligible for True Hole conversion is shown in *Figure 1* below.

**Figure 1** – Sample part program before True Hole conversion

```

two_hole_input_part - Notepad
File Edit Format View Help
G21
G91
G00X71.79Y45.14
G59 V509 F11715
G41
M07
G01X-2.83Y-2.83
G03I3.54J3.54
M08
G40
G00X-34.49Y44.41
G41
M07
G01X-2.83Y-2.83
G03I3.54J3.54
M08
G40
G00X-19.81Y-83.12
G41
M07
M50
G01Y10.00
M51
G01Y100.00
G01X100.00
G01Y-100.00
G01X-100.00
M50
G01X-10.00
M51
M08
G40
G00X-1.83Y-10.77
M02
    
```

**Code highlight color key**

- Required for True Hole conversion (Also listed in *Table 1* on page 3)
- Not required for True Hole conversion


For general information about part programs, refer to the *EDGE Connect Programmer Reference* (809550) in the [Hypertherm Documents Library](#).

## Cutting True Holes

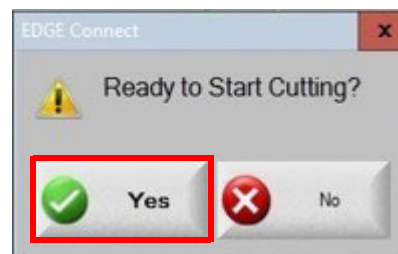
To convert and cut a True Hole eligible XPR part:

1. Load the part program in Phoenix.
2. Press **Start**.
3. On the dialog that asks “Apply True Hole technology to this part program?”, choose **Yes**.



 If this dialog does not appear, review the *Before You Begin* section.

4. When asked “Ready to Start Cutting?”, choose **Yes**.



Eligible holes are automatically converted into True Holes during cutting.

## Verifying success

If any holes were converted into True Holes during cutting, then “[with True Hole Technology](#)” appears in blue font below the part preview on the Phoenix Main screen. See *Figure 2* on page 6.

Figure 2 – Example of successful True Hole conversion

