



***True Hole™ technology  
frequently asked questions***

***Hypertherm®***

## What is True Hole technology?

- Hypertherm's patent pending True Hole cutting technology produces significantly better hole quality than what has been previously possible before using plasma.
- This technology was developed for mild steel from gauge to 1" (25 mm), and has been optimized from a 1:1 to a 2:1 diameter to thickness ratio.

## Can I use True Hole technology for metal types other than mild steel?

- True Hole technology has been optimized for mild steel only; therefore, it does not provide any benefits for stainless steel or aluminum.

## What are the benefits of True Hole technology?

- Delivers "bolt-ready" quality holes automatically and with minimal operator intervention
- Virtual elimination of hole taper that is typical of plasma cut holes
- Ding is reduced and biased to the outside of the hole providing bolt clearance
- Dross is still present, though it can be easily removed



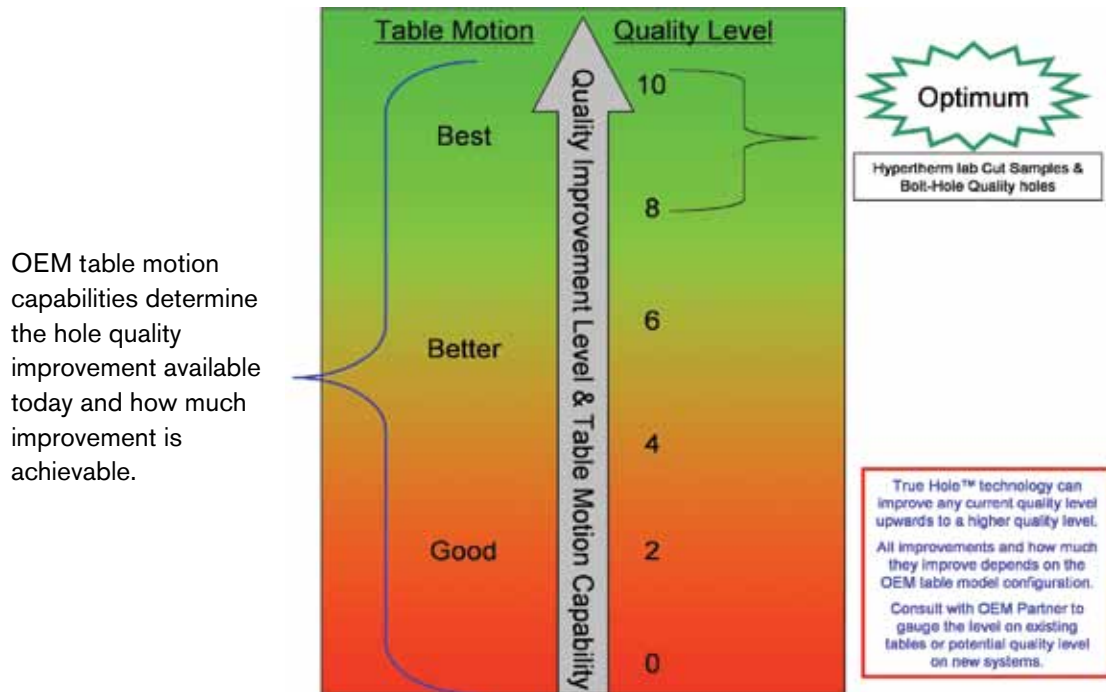
*Taper reduction*



*Ding/divot improvement*

## What can I expect for hole quality improvement?

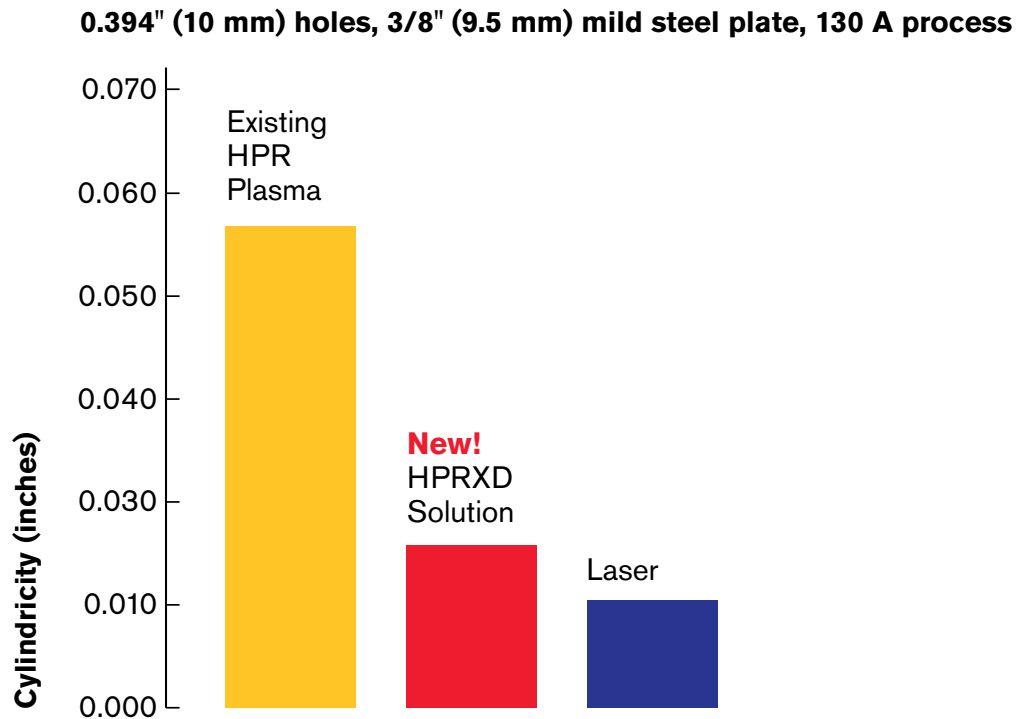
- The motion of the table is directly related to the quality of the hole. Improvements in hole quality can be seen on most cutting table systems; however, tables with superior, precise motion control will provide the best results.
- The graphic below illustrates how table motion matters. If the quality of the hole today is poor (around a quality level 2 as indicated on the right column), a table with better table motion may be able to deliver hole quality at a level 4. A table with the best motion may be able to deliver quality at a level 8 or 10. To some, any improvements made to the hole quality may be sufficient, while to others, having the best possible output is what matters.
- To best demonstrate the quality of the holes, cut samples should be obtained from the OEM table manufacturer to see the type of quality that is possible on their machine.



*Hole quality level and impact of motion on quality*

## How does the quality of holes compare with laser?

- The hole cylindricity gap as compared to laser has been narrowed, as indicated in the chart below. Note that variances in hole size will still be present just as it is with any plasma process.

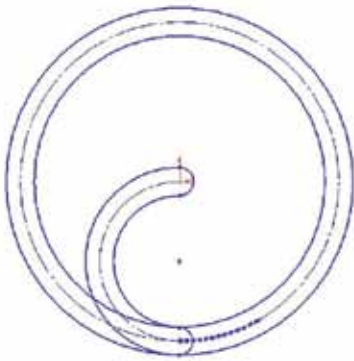


## What if my hole does not look like a perfectly round hole?

- True Hole virtually eliminates taper and reduces and biases the ding to the outside of the hole. As a result, the holes are bolt-ready, which is not necessarily a perfect-looking hole. When comparing holes from different systems and technologies, the most important aspect to check for is the functionality of the hole. To accomplish this, the best test is to use a gauge pin or a bolt to check for the absence of taper.
- It is also a good idea to check setups and motion of the table. A hole that does not look as round may be indicative of a problem beyond True Hole.

## How does True Hole technology work?

- True Hole technology is a specific combination of parameters that are optimized for mild steel hole quality, by specific amperage, material thickness, and hole size. One of the key advantages of True Hole, in addition to improved hole quality, is the automation of certain parameter settings: process gas selection, gas flow rates, pierce technique, lead in/out techniques, cut speeds and cut timing are all automatically applied by a True Hole enabled nesting software package and CNC.
- The process for how this works is as follows:
  - A part is created using a standard CAD drawing package.
  - When this part gets imported into True Hole enabled nesting software such as ProNest® 2010, the software automatically recognizes the presence of holes.
  - The machine code is then modified to optimize the parameters mentioned above, such as lead in / lead out. All other variables are also automatically set to optimize cut quality for a specific thickness, hole size, and processing power. One important parameter that is set is the automatic switching from O<sub>2</sub>/Air for the contour cut to O<sub>2</sub>/O<sub>2</sub> for the holes, and then back to O<sub>2</sub>/Air to continue finishing the cut.

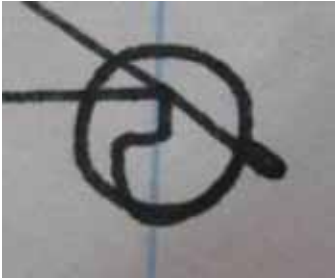


## What are the requirements for True Hole technology?

- HyPerformance® Plasma HPRXD® system with auto-gas console
- A True Hole-enabled CNC control
  - If using Hypertherm, the EDGE®Pro, MicroEDGE, Voyager, and Mariner™ have all been optimized for True Hole.
  - Some OEMs have licensed True Hole for use on their own CNC controls.
- A THC lifter system that is capable of locking out arc voltage and maintaining correct pierce and cut heights. All Hypertherm THC lifters have these capabilities.
- A True Hole-enabled nesting software package
  - Hypertherm ProNest 2010 software is True Hole enabled.
  - Some OEMs have licensed True Hole for use with their own nesting software packages.
- A cutting table with good motion control

## How can I tell if the motion of my cutting table is good enough for True Hole technology?

- True Hole technology has made great advancements to the quality of holes; however, it does not eliminate any roundness issues that may be related to cutting table motion. One good way to check the motion of the table is to use a “pen trace” test fixture that is available from Hypertherm. The drawing below on the left, shows the results from a pen trace test and you can see the resultant example of the “poor” hole on the right. This is a simple test to help determine the motion of the table.



*Pen trace test of table with poor motion*

## What are the cost implications for True Hole technology?

- The first step when considering True Hole technology is to discuss the objectives with a channel partner. Some things to consider:
  - Is this a new or existing cutting table?
  - Which products need to be upgraded or configured for use with True Hole?
    - Plasma cutting system
    - CNC control
    - THC lifter system
    - Nesting software package
    - Cutting table

## How do I get True Hole technology?

- New cutting table:
  - Make sure True Hole-enabled products are fully configured into the table design solution by the OEM table manufacturer.
- Existing cutting table / retrofits:
  - Determine if existing products are True Hole capable. If needed, work with the channel partner to upgrade any products as necessary.
  - Determine if the table motion control system can deliver the expected hole quality improvements. Upgrade table components where needed to deliver the proper table motion required for that quality level.
  - Work with partners who can verify and deliver the True Hole value proposition. True Hole implementation can be a very complex upgrade. It is very important that customers work with their OEM table manufacturer to verify existing table capability for True Hole improvements, what type of hole quality improvement can be expected, and to implement any True Hole product upgrades.

**I am interested in a retrofit, but I have a Burny® CNC control.  
Can I still get True Hole technology?**

- The Burny CNC control competes directly with the Hypertherm CNC controls; therefore, we have not licensed True Hole for use with Burny. If you retrofit this CNC to be a True Hole enabled CNC (as detailed above), you will have True Hole capabilities.

**I am interested in a retrofit, but I use SigmaNEST®.  
Can I still get True Hole technology?**

- SigmaNEST software directly competes with the Hypertherm nesting software, and therefore we have not licensed True Hole for use with Sigma-Tek®. If you change this software to a True Hole-enabled software (as detailed above), you will have True Hole capabilities.

***Hypertherm***<sup>®</sup>

***Cut with confidence***<sup>™</sup>

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