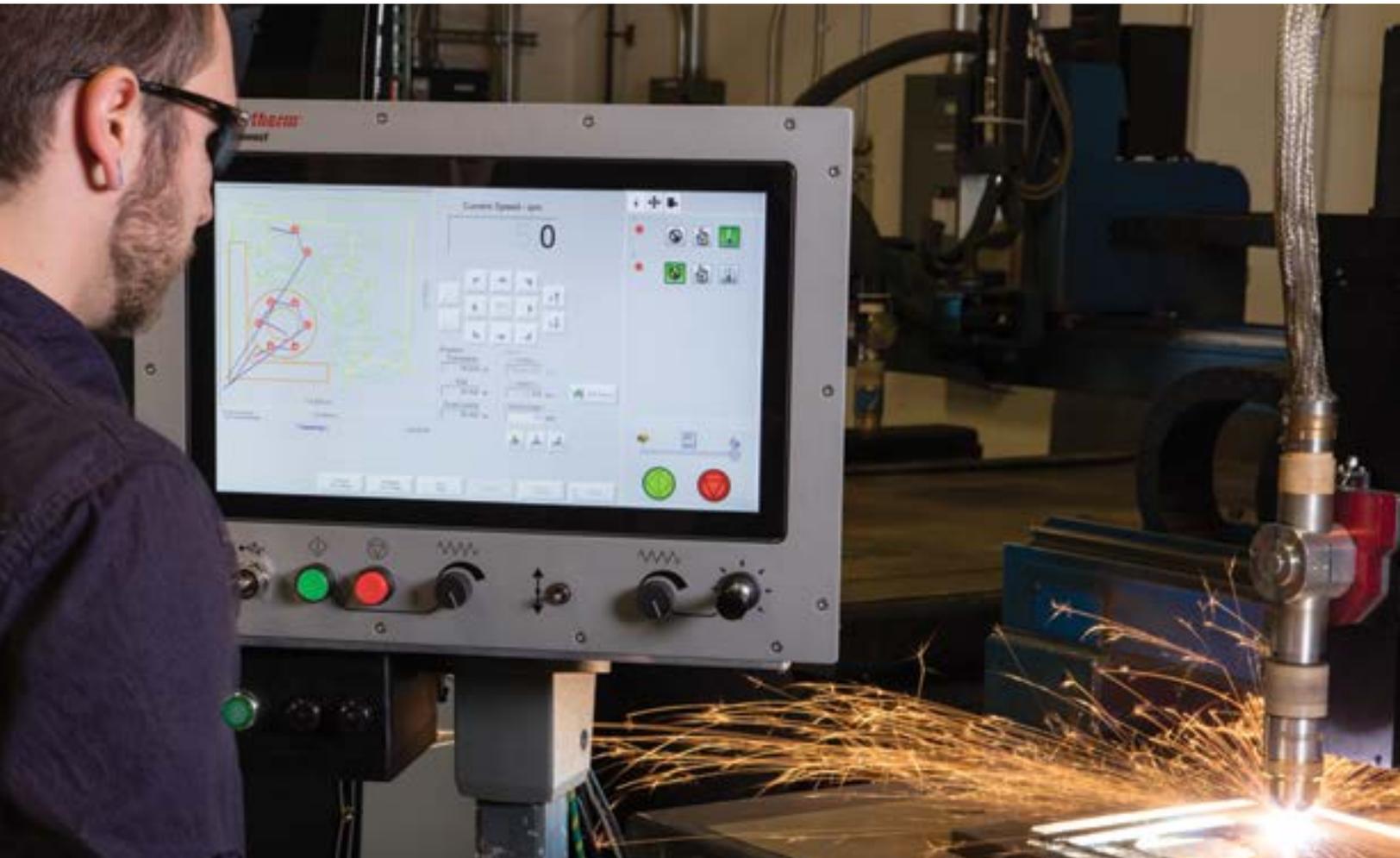




# Sensor™ THC

CNC Integrated Height Control



Optimize your cutting operation with automated torch height control

## Sensor height control

Sensor THC (Torch Height Control) is a CNC integrated torch positioning system that provides optimized plasma cut performance and reliability. Using Hypertherm's embedded process expertise, this is achieved with little or no operator input.

## Cut quality, operating cost, and productivity

In today's competitive market, everyone is looking for ways to get the job done faster, with higher quality, and at a lower cost. Although it is often overlooked, automated torch height control is a key component to achieving optimal plasma cutting quality and productivity leading to increased profitability.

Learn more about EDGE® Connect:

[I am an end user.](#)

[I am a channel partner.](#) (please log in to Xnet)



### THC (Torch height control) performance

Torch height control is a critical component for cut quality, operating cost, and productivity. As the name implies, a torch height control is designed to hold the torch at the optimal height relative to the workpiece being cut to ensure proper cut quality. The cut height setting varies by workpiece thickness, cutting process, and workpieces are not perfectly flat. Torch position must be constantly varied to maintain the correct height while cutting and to protect the torch in between cuts. However, plasma cutting isn't a static process, and torch height cannot be set at a constant level and forgotten about. It requires continual adjustment to maintain the desired cut height regardless of changes in workpiece position or other process variables.

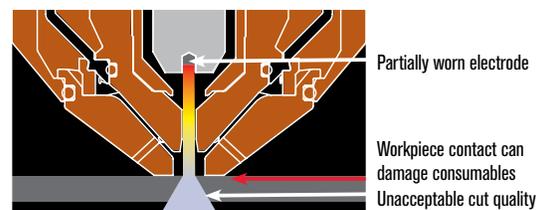
The most common error in the operation of a height control is failure to adjust for consumable wear while cutting. Without continuous monitoring and adjustment of the arc voltage set point, the torch will move closer to the workpiece resulting in poor cut quality and workpiece contact.

Rather than continuously adjust torch height through the arc voltage setting, many operators replace the consumables well before the effective life is achieved, leading to higher operating costs. Sensor™ THC automatically corrects for this using the arc voltage sampling feature.

### Optimized plasma consumable life and cut quality

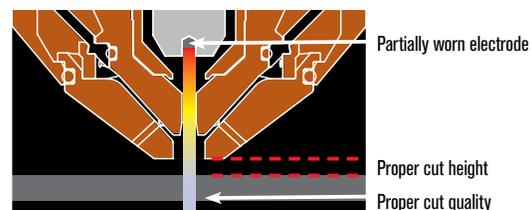
Using Hypertherm's proprietary techniques, the Sensor THC continuously samples arc voltage and automatically adjusts arc voltage for proper torch height over the life of the consumables without requiring operator input.

#### Improper cut height due to not adjusting arc voltage for electrode wear



Consumables discarded prematurely

#### Proper cut height automatically maintained by the THC



Consumable life and cut quality optimized

## Sensor THC

Sensor™ THC provides advantages over standard height controls systems due to the CNC integration which dramatically improves setup, performance and process outcomes.

As a software feature built into EDGE® Connect CNC, this allows for use of Hypertherm supplied lifter mechanics or custom lifter mechanics for special applications.

## Benefits

- Intuitive operator interface through the CNC touch screen simplifies setup
- Torch collision detection, rapid cut loss recovery tools, error tracking and diagnostics are available on the CNC
- High speed position control loop for accurate height control optimizing edge quality



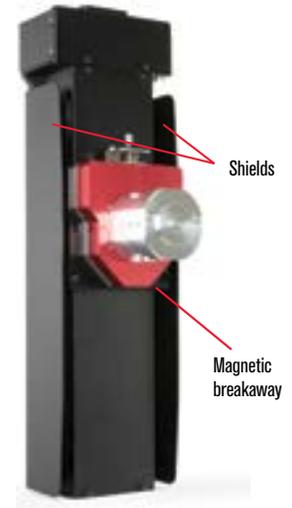
Sensor THC is also an important contributor in achieving SureCut outcomes including:

- [Optimal consumable life](#) and superior cut quality using Sample Arc Voltage to maintain the optimal height.
- [Remote Help™](#) diagnostic tools for quick troubleshooting and training.
- Increased productivity using [Rapid Part technology](#) by reducing cut-to-cut cycle time between parts.
- [True Hole® technology](#) for XPR™ X-Definition™ and HyPerformance® Plasma HPRXD® installations to automatically deliver bolt ready holes
- [True Bevel™ technology](#) to automatically apply the correct bevel angle



## Optional lifter mechanics

Hypertherm provides lifter mechanics and an optional magnetic breakaway to pair with the Sensor THC software on Hypertherm CNCs. This lifter mechanism, based on the proven ArcGlide® design, provides exceptional performance in the harsh plasma cutting environment. The slide pairs with both digital and analog drives and motors, which are supplied by the cutting machine manufacturer and connect to one of two motor coupling options.



## Benefits

- Robust mechanics for plasma arc cutting
- Ability to be used on plasma systems up to 800 amps
- Side shields protect the slide from debris for multi-torch systems
- Magnetic breakaway protects the torch from collision damage, and allows for quick, repeatable recovery should a collision occur
- The integrated laser pointer allows for easy alignment

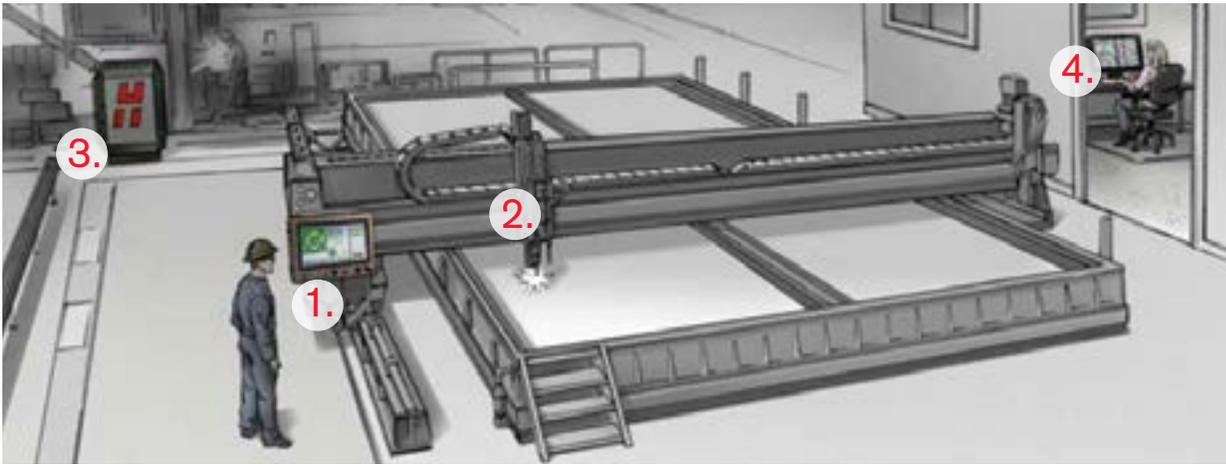
## Lifter specifications and accessories

Feature	
Cutting	Conventional and HyDefinition® plasma "I" cutting only
Maximum Z-axis stroke	239 mm (9.4")
Drive and motor	Integrator supplied (digital or analog)
Motor mount	60 mm (2.36") flange with a 70 mm (2.756") bolt circle diameter
Maximum Z-axis speed*	15,200 mm/min (600 in/min)**
Lifter capacity*	11.3 kg (25.0 lb.) **
Laser pointer	Standard
Optional torch block	35 mm (1-3/8"), 44 mm (1-3/4"), 51 mm (2"), 57 mm (2-1/4")
Optional magnetic torch breakaway	4.5 kg (10 lb.), 11 kg (25 lb.)
Plasma interface board	Digital EtherCAT or discrete w/analog
Warranty	1 year

\* Motor dependent

\*\* Recommended maximum

# Sensor height control system has 4 major elements.



## 1. CNC control

Sensor™ THC uses the CNC as the control device. This design:

- Provides a touch screen interface for quick and intuitive operation
- Reduces system hardware improving cost and reliability
- Allows use of factory and custom charts for quick setup
- Built-in CNC nesting software with embedded cut and THC parameters
- On screen cutting tips, manuals, help and change consumable information



## 2. THC lifter

The lifter motion (Z) is commanded from the CNC in the same way Transverse and Rail axis (X/Y) motion enabling coordinated motion of all axes.

The machine builder has design flexibility to select the lifter design for the best performance, cost, and application. Such as:

- HyDefinition® plasma
- Pipe/tube and plasma bevel
- Light industrial plasma



## 3. Plasma cutting tool

Plasma height controls rely on arc voltage feedback to determine position while cutting.

Direct communication from Hypertherm CNCs for process setup to the plasma system is also supported, providing tightly coupled communication for setup and diagnostics.

This simplifies operation and greatly reduces the opportunity for setup errors.



## 4. Office CAM

In addition to the CNC touch screen for job setup, the part program generated by CAM software can provide embedded cut process codes for the height control and plasma system resulting in optimal cut quality.

Features such as skip IHS and collision avoidance can be included in the part program increasing productivity.

Contact your authorized Hypertherm channel partner to learn how to upgrade your Hypertherm CNC with Sensor THC features.

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One of Hypertherm's long-standing core values is a focus on minimizing our impact on the environment. Doing so is critical to our, and our customers' success. We are always striving to become better environmental stewards; it is a process we care deeply about.

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