

# Powermax mechanized applications

## Cutting and gouging



### Five automation-capable Powermax systems meet every need. Cut and mark metal with the Powermax45 XP.

Experience the unmatched ease of use of the Powermax SYNC<sup>®</sup> series with its one piece consumable design and automated setup. Or choose the Powermax125<sup>®</sup> for the continuous cutting that comes from 100% duty cycle.

#### **Cut with confidence**

- Spend less time on secondary operations with good cut quality and little dross.
- Increase productivity with advanced consumable technology that extends life and, with the Powermax SYNC series' revolutionary single piece consumable, simplifies cutting.
- Consumable end of life detection from 65 to 125 amps avoids damage to the torch and to the work piece
- CNC interfaces and available voltage dividers make Powermax systems easy to set up and operate.
- Optional FineCut<sup>®</sup> consumables produce less dross, narrower kerf and virtually no heat-affected zone on thinner plate.
- Easily switch to a handheld torch with FastConnect<sup>™</sup> quick disconnect torches.



## Using a Powermax plasma system in a mechanized application

The equipment required to run a Powermax® system in a mechanized application varies. For example:

- To automate long, straight cuts or gouges, a mechanized torch, a remote on/off pendant and a track cutter may be all that is needed.
- An entry-level X-Y table application requires a mechanized torch, control cable, and a computer numeric control (CNC) along with the table and lifter.
- For optimum performance on an X-Y table, a programmable torch height control and nesting software, such as Hypertherm's ProNest® LT, would also be used.

## Understanding duty cycle

The duty cycle is the amount of time that a plasma arc can remain on within a 10-minute period when operating at a specified temperature and amperage. Hypertherm uses an ambient temperature of 104° F.

Determining how long a cut can be made before exceeding the duty cycle is a function of duty cycle, amperage output, and cut speed.

For example, the Powermax85 SYNC™ has a 60% duty cycle at 85 amps. That increases to 80% (8 minutes out of 10) at 74 amps and to 100% at 66 amps. Cutting at full output at 30 ipm would equal 15' of continuous cutting.

In contrast, the Powermax125 has a 100% duty cycle at full output, so it can keep cutting without requiring time for cooling.

## Importance of height control

A key element in any thermal cutting application is the distance from the torch to the metal. This stand-off distance is critical to cut quality. Proper pierce height, along with the correct pierce delay timing, ensures that the consumables are not damaged during the pierce. Proper cut height improves cut angularity and cut speed while reducing dross.

Torch height controls (THC) can be:

- Manual – height set by the operator
- Automatic – THC senses the plate and maintains a set torch-to-work distance
- Programmable – CNC sets different stand-offs for piercing and cutting

## Mechanized communications

Mechanized Powermax systems include a standard machine interface through a CPC port, which provides access to start, transfer, and divided voltage signals.

For increased control of the power supply through a CNC, Powermax mechanized configurations can include an RS-485 serial interface port (ModBus ASCII protocol) to communicate with the CNC. The Powermax65/85/105 SYNC systems provide access to consumable data through the serial interface as well.



“We switched from oxyfuel to plasma cutting, and instantly realized the benefits of the faster cutting speed, cleaner cutting, and increased accuracy. Not only did our productivity nearly triple but we were able to offer a higher quality product to our customers.”

— Mr. Jun Miao  
Manufacturing Director,  
Liangshan Zhongji Dongyue Co., Ltd.



Track cutting and gouging

## Versatility

Powermax® systems offer a range of torches, consumables, and accessories to meet every automated cutting need.

- Robotic torches in straight, 45 degree, and 90 degree options can be integrated with light industrial robotic arms or other automated equipment, such as pipe cutters.
- In addition to compressed air, F5 or nitrogen gases can be used for improved cut quality on stainless steel or aluminum.
- FineCut® consumables offer nearly dross-free cutting on thin material.
- HyAccess™ consumables provide extra length to reach inside pipe.
- The standard mechanized torch can be used with a track or pipe cutter to bevel cut plate or pipe.



Pipe cutting and beveling



X-Y cutting

## Mechanized feature set

Model	CPC machine interface port	Serial interface port	Consumable end of life detection	Full-length machine torch	Mini machine torch	Optional robotic torches	Removable gear rack	Voltage divider*	Remote On/Off pendant	Marking capability
Powermax45® XP	●	●		●	●	●	●	●	●	●
Powermax65 SYNC®	●	●	●	●	●	●	●	●	●	
Powermax85 SYNC®	●	●	●	●	●	●	●	●	●	
Powermax105 SYNC®	●	●	●	●	●	●	●	●	●	
Powermax125®	●	●	●	●	●	●	●	●	●	

\*20:1, 21.1:1, 30:1, 40:1, and 50:1 ratios



Robotic 3-dimensional cutting

## Cutting specifications

System	Output current	Pierce with automatic THC*	Pierce without automatic THC	Duty cycle at full output	Amps @ 100% duty
Powermax45® XP	10-45 A	1/2"	1/2"	50%, 200-240 V, 1-PH 480 V, 3-PH	32 A
Powermax65 SYNC®	20-65 A	5/8"	1/2"	50%, 230-600 V, 1-/3-PH 40%, 200-208 V, 1-/3-PH	46 A
Powermax85 SYNC®	25-85 A	3/4"	5/8"	60%, 230-600 V, 3-PH 50%, 240 V, 1-PH 40%, 200-208 V, 1-PH	66 A
Powermax105 SYNC®	30-105 A	7/8"	3/4"	80%, 480-600 V, 3-PH 70%, 240 V, 3-PH 54%, 208 V, 3-PH 50%, 200 V, 3-PH	94 A, 480-600 V 88 A, 240 V 77 A, 208 V 74 A, 200 V
Powermax125®	30-125 A	1"	7/8"	100%, 480/600 V, 3-PH	125 A

\*Pierce capacity depends on the equipment being used. For Powermax systems, the higher capacity can be achieved when using an automatic torch height control to set independent pierce heights and cutting heights for the torch.

## Power supply specifications

	Powermax45 XP	Powermax65 SYNC	Powermax85 SYNC	Powermax105 SYNC	Powermax125
Input voltage	200-240 V, 1-PH, 50-60 Hz 480 V, 3-PH, 50-60 Hz	200-480 V, 1-PH, 50-60 Hz 200-600 V, 3-PH, 50-60 Hz	200-480 V, 1-PH, 50-60 Hz 200-600 V, 3-PH, 50-60 Hz	200-600 V, 3-PH, 50-60 Hz	480/600 V, 3-PH, 50/60 Hz
kW output	6.5 kW	9 kW	12.2 kW	16.8 kW	21.9 kW
Input current	200-240 V, 1-PH, 39/32 A 480 V, 3-PH, 9.4 A	200/208/240/480 V, 1-PH, 52/50/44/22 A 200/208/240/480/600 V, 3-PH, 32/31/27/13/13 A	200/208/240/480 V, 1-PH, 70/68/58/29 A 200/208/240/480/600 V, 3-PH, 42/40/35/18/17 A	200/208/240/480/600 V, 3-PH, 58/56/49/25/22 A	480/600 V, 31/24 A
Output voltage	145 VDC	139 VDC	143 VDC	160 VDC	175 VDC
Maximum open circuit voltage	275 VDC	295 VDC	305 VDC	300 VDC	320 VDC
Dimensions with handles (D x W x H)	17.4" x 6.8" x 14.1"	19.7" x 9.2" x 17.9"	19.7" x 9.2" x 17.9"	23.3" x 10.8" x 20"	23.3" x 10.8" x 20"
Weight with torch	33 lbs.	64 lbs.	71 lbs.	100 lbs.	480 V: 105.7 lbs. 600 V: 104.7 lbs.
Recommended gas inlet flow rate/ pressure	Cutting: 400 scfh, 6.7 scfm @ 85 psi Marking: 350 scfh, 5.8 scfm @ 55 psi	Cutting: 400 scfh, 6.7 scfm @ 85 psi	Cutting: 400 scfh, 6.7 scfm @ 85 psi	Cutting: 460 scfh, 7.7 scfm @ 85 psi	Cutting: 550 scfh, 9.2 scfm @ 85 psi

For the location nearest you, visit: [www.hypertherm.com](http://www.hypertherm.com)

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## Mechanized system configurations ordering information\*

Torch lead length	25'		35'	50'	
	with remote	without remote	with remote	with remote	without remote
<b>Remote on/off pendant</b>					
Powermax45® XP with voltage divider and CPC, 240 V	088116	088121	088117	088118	088122
Powermax45 XP with voltage divider, CPC, serial port, and I/O cables, 240 V		088119			088120
Powermax45 XP with voltage divider, CPC, hand torch, and machine torch, 240 V	088123				
Powermax65 SYNC® with voltage divider and CPC	083348	083349		083361	083350
Powermax65 SYNC with voltage divider, CPC, and serial port		083352			
Powermax65 SYNC with voltage divider, CPC, hand torch 25'			083351		
Powermax85 SYNC with voltage divider and CPC	087207	087189		087208	087190
Powermax85 SYNC with voltage divider, CPC, and serial port		087192			
Powermax85 SYNC with voltage divider, CPC, hand torch 25'			087191		
Powermax105 SYNC with voltage divider and CPC	059636	059637		059639	059638
Powermax105 SYNC with voltage divider, CPC, hand torch 25'			059687		
Powermax125® with voltage divider and CPC					
	480 V	059539		059540	
	600 V	059552		059553	
Powermax125 with voltage divider, CPC, serial port and I/O cables (D-sub connectors)					
	480 V		059542		059543
	600 V		059550		059551
Powermax125 with voltage divider, CPC, hand torch, and machine torch					
	480 V			059541	
	600 V			059544	

\*All include work lead

## Power supply ordering information

	Powermax45 XP		Powermax65 SYNC	Powermax85 SYNC	Powermax105 SYNC	Powermax125	
	240 V	480 V				480 V	600 V
With CPC port and voltage divider	088104	088110	083372	087214	059705	059488	059509
With CPC port, voltage divider, and serial interface port	088105	088111	083373	087215	059706	059489	059510

## Torch ordering information

Powermax45 XP						
Cable length	Duramax® Lock machine torches	Duramax® machine torches		Duramax® robotic torches		
	Full-length	Full-length	Mini	45°	90°	180°
15'		059476	059481			
25'	088167	059477	059482	059464	059465	059466
35'	088168	059478	059483			
50'	088169	059479	059484	059585	059586	059587
75'		059480				

Powermax65/85/105 SYNC				
Cable length	SmartSYNC® machine torches	SmartSYNC® robotic torches		
	180° full-length	45°	90°	180°
15'				059733
25'	059719	059729	059731	059734
35'	059720			
50'	059721	059730	059732	059735
75'	059722			

Powermax125 Duramax® Hyamp™					
Cable length	Machine torches		Robotic torches		
	Full-length	Mini	45°	90°	180°
15'	059519	059514			
25'	059520	059515	059564	059565	059566
35'	059521	059516			
50'	059522	059517			
75'	059523				

## Mechanized I/O cables

Cable length	Remote on/off pendant	CPC connector, spade plug, no divided voltage	CPC connector, spade plug, for divided voltage	CPC connector, D-sub, for divided voltage	RS-485 serial communication, unterminated	RS-485 serial communication, D-sub
25'	128650	023206	228350	223048	223236	223239
50'	128651	023279	228351	123896	223237	223240
75'	128652					

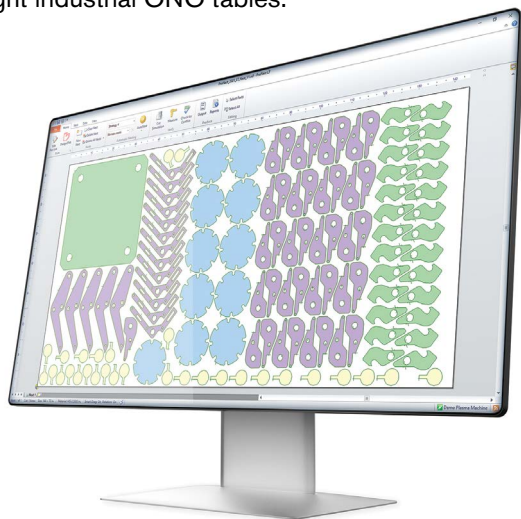
Work leads	Powermax45 XP	Powermax65 SYNC	Powermax85 SYNC	Powermax105 SYNC	Powermax125
<b>Ring terminal</b>					
25'		223200	223209	223284	223925
50'		223201	223210	223285	223926
75'		223202	223211	223286	223927
<b>C-clamp</b>					
25'		223194	223203	223287	223298
50'		223195	223204	223288	223299
75'		223196	223205	223289	223300
<b>Hand clamp</b>					
25'	223595	223125	223035	223254	223295
50'	223596	223126	223034	223255	223293
75'	223127		223033	223256	223294

## Kits

	Powermax45 XP	Powermax65 SYNC	Powermax85 SYNC	Powermax105 SYNC	Powermax125
Voltage divider upgrade kit	428653	228697	228697	228884	
RS-485 Serial interface kit	428654	228539	228539	228539	228539
Torch lifter adapter for Hypertherm THC's	228127	228127	228127	228127	228539
Hyamp™ torch holder adapter for portable automation					428495
Consumable starter kit, mechanized	428560				428100
Consumable starter kit, ohmic	428561				428101
Essentials kit, mechanized					851475
Essentials kit, ohmic					851476
Ohmic ring kit, set of three		428895	428895	428895	

## Hypertherm light industrial software

Hypertherm offers nesting software and sheet metal layout software appropriate for use with Powermax® systems and light industrial CNC tables.



- ProNest® LT is a powerful CAD/CAM nesting software developed for light industrial mechanized cutting. ProNest LT helps fabricators and manufacturers increase material savings, boost productivity, reduce operating costs and improve part quality by offering the right level of expertise for your needs.
- Design2Fab® sheet metal layout software is engineered to dramatically reduce the time it takes to develop and lay out flat patterns for HVAC duct, mechanical, kitchen, industrial, roofing, and other specialty fitting layouts.



Standard CNC machine interface through a circular plastic connector (CPC) port.

CNC machine interface through an RS-485 serial interface port

For subscription information or a free trial of either package, visit [www.hypertherm.com/CAM](http://www.hypertherm.com/CAM)

