



Powermax mechanized applications

Cutting and gouging



The best-selling Powermax air plasma metal systems deliver high performance for mechanized applications.

Cut with confidence

- Spend less time on secondary operations with good cut quality and little dross.
- Increase productivity with fast cut speeds.
- Advanced consumable technology extends life and reduces operating cost.
- Consumable end of life detection avoids damage to the torch and to the work piece.
- Smart design and intense testing ensure industry-leading reliability.
- Keep cutting longer. Advanced electronics and Powercool™ technology enable high duty cycles.
- CNC interfaces and available voltage dividers make Powermax systems easy to set up and operate.
- Optional FineCut® consumables produce less dross, narrower kerf and virtually no heat-affected zone on thinner plate.
- Easily switch to a handheld torch with FastConnect™ 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 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 40° C (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 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 feet 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, Powermax65, 85, 105 and 125 configurations can include an RS-485 serial interface port (ModBus ASCII protocol) to communicate with the CNC.



“We switched from oxyfuel to plasma cutting, and instantly realized the benefits of the faster cutting speed, cleaner cutting, and increased accuracy with the Hypertherm Powermax1650 system. 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

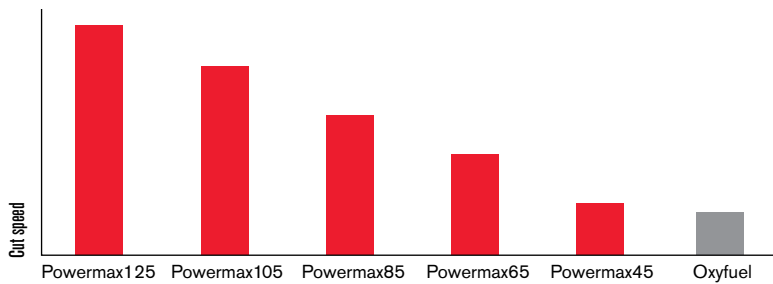
Plasma outperforms oxyfuel

- Plasma cuts have less dross, less warping, and a smaller heat-affected zone.
- Plasma can cut stainless steel, aluminum, and other metals.
- Plasma’s greater productivity on thicknesses up to 1-1/2" leads to a lower cost per part and higher profitability.



Pipe cutting and beveling

Relative cut performance on 1/2" mild steel



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
Powermax45	●			●			●	50:1	●
Powermax65	●	●		●	●	●	●	5-position selectable*	●
Powermax85	●	●		●	●	●	●	5-position selectable*	●
Powermax105	●	●	●	●	●	●	●	5-position selectable*	●
Powermax125	●	●	●	●	●	●	●	5-position selectable*	●

*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	20-45 A	1/2"	3/8"	50%, 230-600 V, 1-/3-PH 40%, 200-208 V, 1-/3-PH	32 A
Powermax65	20-65 A	5/8"	1/2"	50%, 230-600 V, 1-/3-PH 40%, 200-208 V, 1-/3-PH	46 A
Powermax85	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	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	Powermax65	Powermax85	Powermax105	Powermax125
Input voltage	200-240 V, 1-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	5.95 kW	9 kW	12.2 kW	16.8 kW	21.9 kW
Input current	200/230 V, 1-PH, 34/28 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	132 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)	16.75" x 6.75" x 13.7"	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 20.0"
Weight with torch	37 lbs	64 lbs	71 lbs	100 lbs	480 V: 105.7 lbs 600 V: 104.7 lbs
Recommended gas inlet flow rate/ pressure	Cutting: 170 l/min (360 scfh, 6 scfm) @ 5.5 bar (80 psi)	Cutting: 189 l/min (400 scfh, 6.7 scfm) @ 5.6 bar (85 psi)	Cutting: 189 l/min (400 scfh, 6.7 scfm) @ 5.6 bar (85 psi)	Cutting: 217 l/min (460 scfh, 7.7 scfm) @ 5.9 bar (85 psi)	Cutting: 260 l/min (550 scfh, 9.2 scfm) @ 5.9 bar (85 psi)

For location nearest you, visit:
www.hypertherm.com



**Engineered and
assembled in the USA**

ISO 9001:2008

Environmental stewardship is a core value of Hypertherm. Our Powermax products are engineered to meet and exceed global environmental regulations including the RoHS directive.



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Hypertherm®
Cut with confidence®



Mechanized system configurations ordering information*

Torch lead length	25'		35'		50'	
	with remote	without remote	with remote	without remote	with remote	without remote
Remote on/off pendant						
Powermax45® with voltage divider and CPC	088022	088034	088023	088035	088024	088036
Powermax65® with voltage divider and CPC	083277	083294			083278	083302
Powermax65 with voltage divider, CPC, serial port and I/O cables (D-sub connectors)		083303				083305
Powermax65 with voltage divider, CPC, hand torch, and machine torch		083300				
Powermax85® with voltage divider and CPC	087115	087132			087116	087137
Powermax85 with voltage divider, CPC, serial port and I/O cables (D-sub connectors)		087138				087140
Powermax85 with voltage divider, CPC, hand torch, and machine torch		087135				
Powermax105® with voltage divider and CPC	059378	059380			059379	059381
Powermax105 with voltage divider, CPC, serial port and I/O cables (D-sub connectors)		059386				059387
Powermax105 with voltage divider, CPC, hand torch, and machine torch		059384				
Powermax125® with voltage divider and CPC						
480 V	059539				059540	
600 V	059552				059553	
Powermax125 with voltage divider, CPC, and serial port						
480 V		059542				059543
600 V		059550				059551
Powermax125 with voltage divider, CPC, serial port and I/O cables (D-sub connectors)						
480 V		059544				059545
600 V		059548				059549
Powermax125 with voltage divider, CPC, hand torch (25'), and machine torch						
480 V					059541	
600 V					059544	

*All include work lead

Power supply only ordering information

	Powermax45	Powermax65	Powermax85	Powermax105	Powermax125	
					480 V	600 V
With CPC port and voltage divider	088013*	083266	087104	059371	059488	059489
With CPC port, voltage divider, and serial interface port		083267	087105	059372	059509	059510

*Includes work lead

Mechanized torch ordering information

Cable length	Powermax45	Powermax65/85/105					Powermax125				
		Duramax™ machine torches		Duramax™ robotic torches			Duramax™ Hyamp machine torches		Duramax™ Hyamp robotic torches*		
		Full-length	Mini	45°	90°	180°	Full-length	Mini	45°	90°	180°
15'		059476	059481				059519	059514			
25'	088010	059477	059482	059464	059465	059466	059520	059515	059564	059565	059566
35'	088011	059478	059483				059521	059516			
50'	088012	059479	059484				059522	059517			
75'		059480					059523				

*Available Q1 2014.

Mechanized accessories and kits

I/O cables	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 comm, unterminated*	RS-485 serial comm, D-sub*
25'	128650	023206	228350	223048	223236	223239
50'	128651	023279	228351	123896	223237	223240
75'	128652					

*For Powermax65/85/105/125

Work leads	Powermax65	Powermax85	Powermax105	Powermax125
Ring terminal				
25'	223220	223209	223284	223295
50'	223201	223210	223285	223296
75'	223202	223211	223286	223297
C-clamp				
25'	223194	223203	223287	223298
50'	223195	223204	223288	223299
75'	223196	223205	223289	223300
Hand clamp				
25'	223125	223035	223254	223292
50'	223126	223034	223255	223293
75'	223127	223033	223256	223294

Kits

	Powermax45	Powermax65	Powermax85	Powermax105	Powermax125
Voltage divider upgrade kit		228697	228697	228884	
RS-485 Serial interface kit		228539	228539	228539	228539
Torch lifter adapter for Hypertherm THC's	228127	228127	228127	228127	020522
FineCut kit		850920	850920	850920	851400
Consumable starter kits					
Mechanized		228964	228967	228848	428100
Mechanized, ohmic cap		228965	228968	228969	428101



Hypertherm®