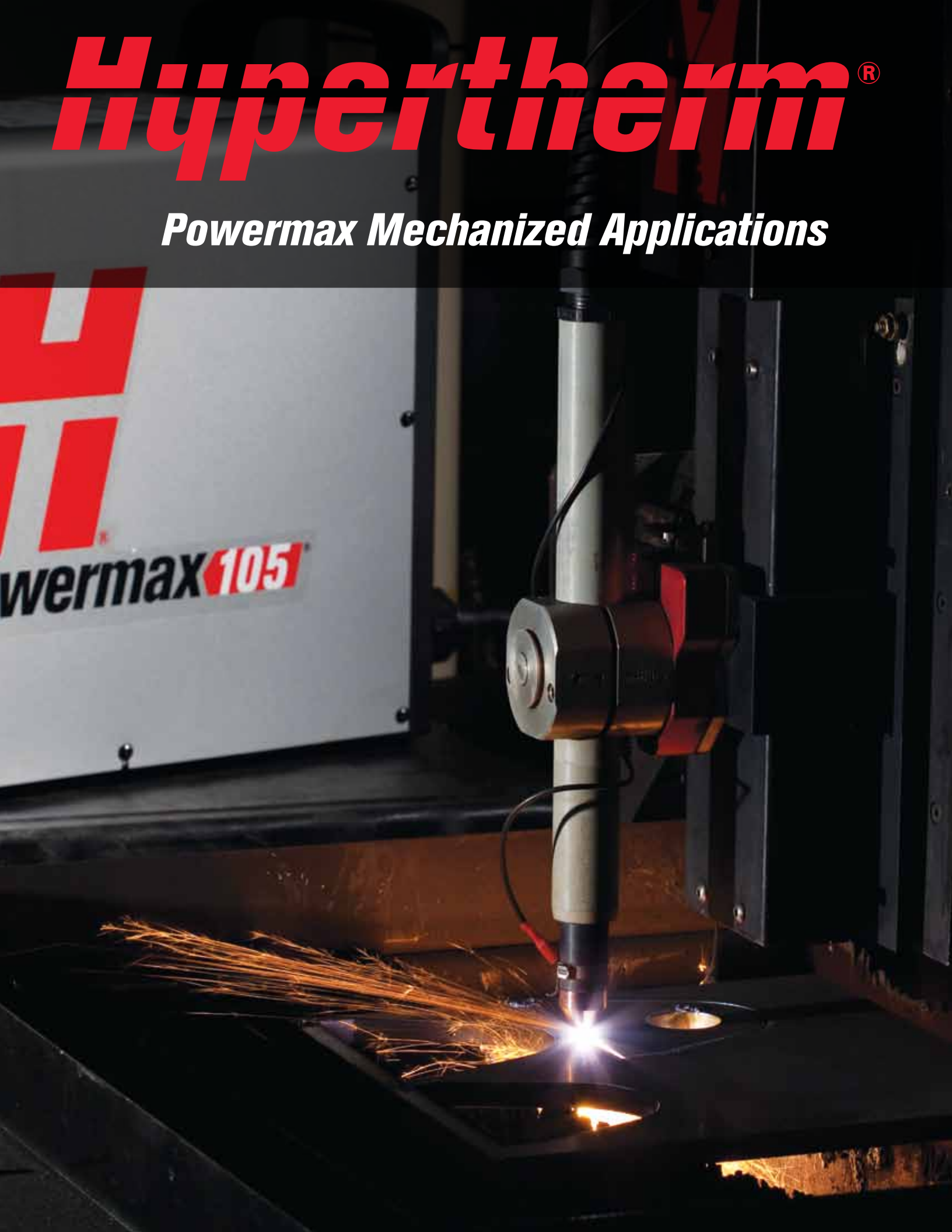
Hypertherm®

Powermax Mechanized Applications



powermax®

Mechanized cutting and gouging

Cut with confidence®

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

- **Good cut quality with less dross results in fewer secondary operations.**
- **Fast cutting speeds increase productivity.**
- **Advanced consumable technology extends life and reduces operating costs.**
- **Consumable end of life detection avoids damage to the torch and to the work piece.**
- **Smart design and intense testing ensure industry-leading reliability.**
- **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.**
- **Quick-disconnect torches allow for easy switching to a handheld torch.**

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, 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.

Importance of torch 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 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	●

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

Track cutting and gouging

Pipe cutting and beveling

X-Y cutting

Robotic 3-dimensional cutting

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 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 762 mm/min (30 ipm) would equal 4.5 m (15 feet) of continuous 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, Powermax85 and Powermax105 configurations can include an RS-485 serial interface port (ModBus ASCII protocol) to communicate with the CNC.

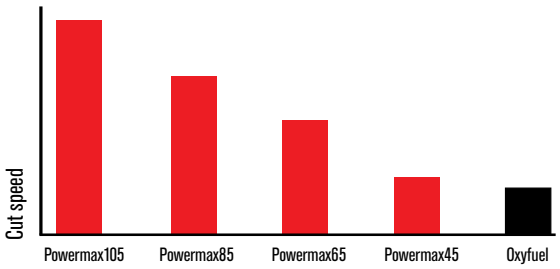
"We switched from oxyfuel to plasma cutting, and instantly realized the benefits of the faster cutting speed, cleaner cutting, and increased accuracy with the Hypertherm Powermax1650 system. Not only did our productivity nearly triple but we were able to offer a higher quality product to our customers."

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

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 under 25 mm (1") leads to a lower cost per part and higher profitability.

Relative cut performance on 12 mm (1/2") mild steel



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	12 mm (1/2")	10 mm (3/8")	50%, 200-240 V, 1-PH	32 A
Powermax65	20 – 65 A	16 mm (5/8")	12 mm (1/2")	50%, 230 – 600 V, 1-/3-PH 40%, 200 – 208 V, 1-/3-PH	46 A
Powermax85	25 – 85 A	20 mm (3/4")	16 mm (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	22 mm (7/8")	20 mm (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

*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. When torch height is set manually or in a fixed position, the lower capacity applies.

Power supply specifications

	Powermax45	Powermax65	Powermax85	Powermax105
Input voltage	CSA 200-240 V, 1-PH, 50-60 Hz CE 230 V, 1-PH, 50-60 Hz CE 400 V, 3-PH, 50-60 Hz	CSA 200-480 V, 1-PH, 50-60 Hz CSA 200-600 V, 3-PH, 50-60 Hz CE 400 V, 3-PH, 50-60 Hz	CSA 200-480 V, 1-PH, 50-60 Hz CSA 200-600 V, 3-PH, 50-60 Hz CE 400 V, 3-PH, 50-60 Hz	CSA 200-600 V, 3-PH, 50-60 Hz CE/CCC 230-400 V, 3-PH 50-60 Hz CE 400 V, 3-PH, 50/60 Hz CCC 380 V, 3-PH, 50/60 Hz
kW output	5.95 kW	9 kW	12.2 kW	16.8 kW
Input current	CSA 200/230 V, 1-PH 34/28 A CE 230 V, 1-PH, 30 A, 380/400 V, 3-PH, 10.5/10 A	CSA 200/208/240/480 V, 1-PH 52/50/44/22 A CSA 200/208/240/480/600 V, 3-PH 32/31/27/13/13 A CE 380/400 V, 3-PH, 10.5/10 A	CSA 200/208/240/480 V, 1-PH 70/68/58/29 A CSA 200/208/240/480/600 V, 3-PH 42/40/35/18/17 A CE 380/400 V, 3-PH, 20.5/19.5 A	CSA 200/208/240/ 480/600 V, 3-PH 58/56/49/25/22 A CE/CCC 230/400 V, 3-PH, 46/26/27/50/29 A CE 400 V, 3-PH, 28 A CCC 380 V, 3-PH, 30 A
Output voltage	132 VDC	139 VDC	143 VDC	160 VDC
Maximum open circuit voltage	CSA/CE 275 VDC	CSA 295 VDC CE 270 VDC	CSA 305 VDC CE 270 VDC	CSA 200-600 V 300 VDC CE/CCC 230-400 V 288 VDC CE 400 V 292 VDC CCC 380 V 280 VDC
Dimensions with handles depth x width x height	426 x 172 x 348 mm (16.75 x 6.75 x 13.7")	500 x 234 x 455 mm (19.7 x 9.2 x 17.9")	500 x 234 x 455 mm (19.7 x 9.2 x 17.9")	592 x 274 x 508 mm (23.3 x 10.8 x 20")
Weight with torch	CSA 17 kg (37 lbs) CE 16 kg (35 lbs)	CSA 29 kg (64 lbs) CE 26 kg (57 lbs)	CSA 32 kg (71 lbs) CE 28 kg (62 lbs)	CSA 200-600 V 45 kg (100 lbs) CE/CCC 230-400 V 45 kg (100 lbs) CE 400 V 41 kg (91 lbs) CCC 380 V 41 kg (91 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)

Hypertherm®

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www.hypertherm.com

860270

RoHS

These Powermax systems meet the RoHS directive restricting the use of lead, mercury, cadmium and other hazardous compounds.

For the authorized Hypertherm dealer nearest you, visit our website at www.hypertherm.com.

Engineered and assembled in the USA

Mechanized system configurations ordering information*

Torch lead length	7.6 m (25')		10.7 m (35')		15.2 m (50')	
Remote on/off pendant	**with remote**	**without remote**	**with remote**	**without remote**	**with remote**	**without remote**
Powermax45 with voltage divider and CPC						
CSA	088022	088034	088023	088035	088024	088036
CE 230 V	088025	088040	088026	088041	088027	088042
CE 400 V	088028	088046	088029	088047	088030	088048
Powermax65 with voltage divider and CPC						
CSA	083277	083294			083278	083302
CE	083286	083293			083287	
Powermax65 with voltage divider, CPC, serial port, and I/O cables (D-sub connectors)						
CSA		083303				083305
CE		083304				083306
Powermax85 with voltage divider and CPC						
CSA	087115	087132			087116	087137
CE	087124	087131			087125	
Powermax85 with voltage divider, CPC, serial port, and I/O cables (D-sub connectors)						
CSA		087138				087140
CE		087139				087141
Powermax105 with voltage divider and CPC						
CSA, 200 – 600 V	059378	059380			059379	059381
CE, 230-400 V	059398	059400			059399	059401
CE, 400 V	059418	059420			059419	059421
CCC, 380 V	059438	059440 or 059450**			059439	059441 or 059451**
Powermax105 with voltage divider, CPC, serial port, and I/O cables (D-sub connectors)						
CSA, 200-600 V		059386				059387
CE, 230-400 V		059406				059407
CE, 400 V		059426				059427
CCC, 380 V		059446 or 059448**				059447/059449**
Special configurations						
Powermax65 with voltage divider, CPC, H65 and M65						
CSA	083300					
CE	083301					
Powermax85 with voltage divider, CPC, H85 and M85						
CSA	087135					
CE	087136					
Powermax105 with voltage divider, CPC, H105 and M105						
CSA, 200-600 V	059384					
CE, 230-400 V	059404					
CE, 400 V	059424					
CCC, 380 V	059444					

* All include work lead
** No power cord

Power supply only ordering information

	CSA		CE, 230 V, 1-PH	CE, 400 V, 3-PH		CE, 230 – 400 V, 3-PH		CCC, 380 V, 3-PH		CCC, 230 – 400 V, 3-PH
	CPC port	**plus serial interface port**	**CPC port**	**CPC port**	**plus serial interface port**	**CPC port**	**plus serial interface port**	**CPC port**	**plus serial interface port**	**CPC and serial interface ports**
Powermax45*	088013		088015	088014						
Powermax65	083266	083267		083268	083269					
Powermax85	087104	087105		087106	087107					
Powermax105	059371	059732		059411	059412	059391	059392	059431	059432 or 059433**	059393**

* Includes work lead
** No power cord

Mechanized torch ordering information

Cable length	Powermax45	Powermax65/85/105				
	T45m	**Duramax full-length machine torch**	**Duramax mini machine torch**	**Duramax Robotic 45°**	**Duramax Robotic 90°**	**Duramax Robotic 180°**
4.5 m (15')		059476	059481			
7.6 m (25')	088010	059477	059482	059464	059465	059466
10.7 m (35')	088011	059478	059483			
15.2 m (50')	088012	059479	059484			
22.8 m (75')		059480				

Mechanized accessories and kits

	Powermax45	Powermax65	Powermax85	Powermax105
Remote on/off pendant				
7.6 m (25')	128650	128650	128650	128650
15.2 m (50')	128651	128651	128651	128651
22.8 m (75')	128652	128652	128652	128652
Control cables				
CPC, spade plug, no divided arc voltage				
7.6 m (25')	023206	023206	023206	023206
15.2 m (50')	023279	023279	023279	023279
CPC, spade plug, for divided arc voltage				
7.6 m (25')	228350	228350	228350	228350
15.2 m (50')	228351	228351	228351	228351
CPC, D-sub connector, for divided arc voltage				
7.6 m (25')	223048	223048	223048	223048
15.2 m (50')	123896	123896	123896	123896
Serial communication, unterminated				
7.6 m (25')		223236	223236	223236
15.2 m (50')		223237	223237	223237
Serial communication, 9-pin D-sub connector				
7.6 m (25')		223239	223239	223239
15.2 m (50')		223240	223240	223240
Work leads				
Ring-terminal				
7.6 m (25')		223200	223209	223284
15.2 m (50')		223201	223210	223285
22.8 m (75')		223202	223211	223286
C-clamp				
7.6 m (25')		223194	223203	223287
15.2 m (50')		223195	223204	223288
22.8 m (75')		223196	223205	223289
Hand clamp				
7.6 m (25')		223125	223035	223254
15.2 m (50')		223126	223034	223255
22.8 m (75')		223127	223033	223256
Voltage divider kits		228697	228697	228884
Serial interface kit		228539	228539	228539
Torch lifter adapter kit for Hypertherm THCs	228127	228127	228127	228127
FineCut kits		850920	850920	850920

All Powermax systems are backed by a full 3-year power supply warranty and a 1-year torch warranty. No parts excluded.

Consumable starter kits

	Powermax65	Powermax85	Powermax105
Mechanized	228964	228967	228848
Mechanized, ohmic	228965	228968	228969

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

CNC machine interface through an RS-485 serial interface port (Powermax65/85/105 only).

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