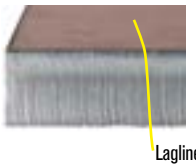
Hypertherm®

Troubleshooting for Powermax® cutting

Cut quality

No secondary work was performed on the cut edges shown. Operator Manual specifications were used to create the optimum cut.

Optimum cut



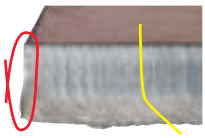
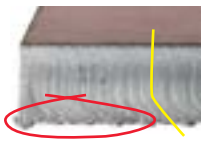
Operator Manual specifications

1/2" (12 mm) mild steel sample cut at 100 A.

What to look for

1. Well defined lag lines with an angle of 10–15 degrees
2. Minimal dross
3. Square edges
4. No top splatter
5. No discoloration

Potential issues

Excess bevel angle	Possible cause(s)	Solution(s)
 Result of high speed	1. Torch not square 2. Torch-to-work distance too high 3. Amperage too low 4. Speed too fast 5. Incorrect torch travel direction 6. Worn nozzle	1. Square torch to workpiece 2. Lower torch-to-work distance 3. Increase amperage 4. Decrease speed 5. Change direction 6. Replace nozzle
Hardened dross	1. Speed too fast 2. Amperage too low 3. Torch-to-work distance too high	1. Decrease speed 2. Increase amperage 3. Lower torch-to-work distance
 Result of torch-to-work distance too high		
Easily removed dross	1. Speed too slow 2. Amperage too high 3. Torch-to-work distance too low	1. Increase speed 2. Decrease amperage 3. Raise torch-to-work distance
 Result of slow speed		
Top spatter	1. Speed too slow 2. Torch-to-work distance too high 3. Worn nozzle	1. Increase speed 2. Lower torch-to-work distance 3. Replace nozzle
 Result of slow speed and torch-to-work distance too high		

Recommendations

Use high-quality genuine consumables

To insure you will achieve the best cut quality choose genuine Powermax consumables. Dimensions and tolerances of plasma consumables are critical to performance. Consumables must be precision manufactured from high quality materials. To optimize cut quality, always start with a new set of consumables.

Choose the right consumables for the job

Check your operator manual to ensure you have selected the correct consumables for your cutting application. Nozzle selection by amperage is important when optimizing cut quality and speed. The higher the amperage, the larger the nozzle orifice.

Assemble the torch correctly

Carefully assemble the torch, making sure the consumables align and fit together. This ensures good electrical contact and correct flow of air/gas through the torch. When changing consumables keep them on a clean towel to keep dirt and metal dust away. Use the proper amount of o-ring lube – just enough to put a shine on the o-ring.

Set the appropriate amperage

Align the amperage setting of the power supply to the amperage of the nozzle selected. An amperage setting that is too low for the nozzle causes a “soft arc” and a sloppy cut. An amperage setting that is too high for the nozzle will quickly wear out the nozzle.

Square the torch to the workpiece

A torch that is not perpendicular to the workpiece will cause a bevel angle in the cut. Ensure the torch is square from the front and side of the torch.

Verify the cut direction

The good side of a cut is always the right side of the kerf of forward torch motion. Validate appropriate travel direction with a test cut.

Adjust the torch-to-work distance

Adjust the torch-to-work distance of the torch tip to the workpiece according to torch-to-work distance guidelines in the Operator Manual.

Adjust the cutting speed

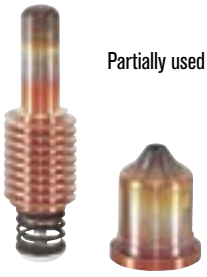
Select an initial speed based on the cut charts in your Operator Manual. Make a test cut and observe the angle of the cutting arc through a welding lens as it exits the workpiece. Adjust the speed to create an arc angle of 10–15 degrees.

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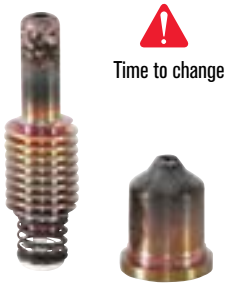
Consumable wear



New



Partially used



Time to change



Overused

Top view



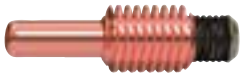




Pit depth of
1.6 mm



"Blowout"

Part	Condition	Action
Nozzle Check center hole 	Good 	No action required.
	Worn 	If out of round, replace
Electrode Examine center surface 	Maximum 1,6 mm 	Replace
Swirl ring Examine external surfaces 	Damage or debris	Replace
Examine gas holes	Blocked holes	Replace
Torch o-ring 	Damage or wear	Replace
Examine external surfaces	Dry surface	Apply thin film of silicone grease (027055)

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