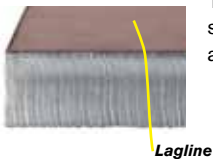


Troubleshooting for Powermax® cutting

Cut quality

Cut samples generated from a Powermax1650 with a machine torch (T100M). 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

Issue(s)

Excess bevel angle



Result of high speed

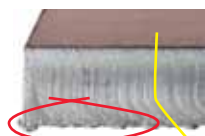
Possible cause(s)

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

Solution(s)

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



Result of torch-to-work distance too high

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

Easily removed dross



Result of slow speed

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

Top splatter



Result of slow speed and torch-to-work distance too high

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

Recommendations

Use high-quality consumables

You can not get a good cut without good 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

Different amperages require some different consumables. Check your Operator Manual to ensure you use the correct consumables for the job. Good cut quality starts with the right nozzle. For fastest speeds use the highest amperage and biggest nozzle possible for your system. For optimizing cut quality, try a smaller nozzle and lower amperage for a narrower kerf and finer cut.

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 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

Set the amperage to 95% of the nozzle's amperage rating. Nozzles are sized according to amperage. The higher the amperage, the bigger the nozzle orifice. 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

When cutting with unshielded consumables, or in mechanized applications, 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.

Troubleshooting for Powermax® cutting

Consumable wear

New electrode and nozzle



Top view of electrode

Partially used electrode and nozzle



Top view of electrode

Time to change electrode and nozzle



Top view of electrode

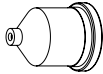


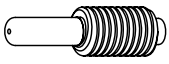
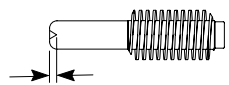
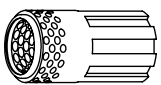
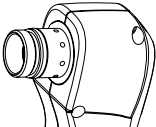
Pit depth of 1/32" (0.8 mm)

Overused electrode and nozzle



Top view of electrode

"Blowout"

Part	Check for	Action
 Nozzle Center hole	Roundness of through hole  Good  Worn	Examine through hole closely. If out of round, replace.
 Electrode Center surface	 Max. 1/32" (0.8 mm) Maximum pit depth 1/32" (0.8 mm)	Replace
 Swirl ring External surfaces Central bore (I.D.) Gas holes	Damage or debris Electrode does not slide easily Blocked holes	Replace Replace the swirl ring. Replace
 Torch o-ring External surfaces	Damage or wear Dry surface	Replace Apply a thin film of silicone grease. (Part number 027055)