

# ◆ THE EDM-ER ◆

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## Common Wire Problems & Troubleshooting

Nothing on the machine is more irritating or disrupting than wire problems. Many times they are the most difficult to troubleshoot as they have many causes and at times are related to something far from the cutting area.

The most common is **Wire Breaking**.

Wire breakage around the guide area can be caused by a dirty wire guide, holding force to the guide is too high (wire tension) or the positioning of the guide is inadequate.

Wire breakage at idle can be caused by poor wire hooking or a potentially cross wound / tangled spool.

Wire breakage at the start of the cut within the first 3/16" can be caused by air pockets in the dielectric or improper flushing pressures.

Wire breakage after cutting more than 3/16" can have the following causes; flushing pressure is too low, not enough volume of dielectric, foreign material or pin holes exist in the material to be cut, defective wire, defective or dirty polyurethane rollers, incorrect tension.

**Surface finish problems** resulting in:

*Rough surface* or "saw" marks can be caused by uneven discharge needing a faster wire speed rate.

*Wire marks* on the cutting surface requires a higher wire tension or an index of the power feeds.

*Instability* of the cutting speed require us to look at resin system and stabilize the conductivity. Check, clean and perform maintenance on the wire guide system. Check, clean and perform maintenance of the feed exhausting system. Check the poly rollers for cracks, dirt or a friction problem. And finally look for improper wire tension.

**Failure of the Automatic Threading System, (IE: Cutting Failure)**

Uneven cutting or the creation of

a burr requiring the adjustment of cutting pressures or replacement of the cutters.

Rolling up of the cut end of wire requires a replacement of the cutters.

Wire will not thread into the lower guide can be caused by wire with a large curl, look at the straightness of the wire.

*In annealing system type cutters:*

Review and adjust the input wire diameter to meet material and characteristics as determined by the edm manufacture.

In the case of poor cutting review the wire diameter input to match wire diameter being used.

If the cutting position varies review the wire type as it may be incorrect.

**Failure of the Automatic Threading System, (IE: Completion of the threading process)**

Review maintenance records and assure proper cleaning, this is the most common reason for wire threading failure.

Lower guide diameter (work side) is too small for the wire attempting to be threaded.

The pressure and volume of the water jet is insufficient or declines as the process continues.

Verify pressure setting as related

to wire diameter.

Improper positioning of the upper and lower heads. Check the program and perform central positioning or alignment function.

The wire has a large curl requiring replacement of the wire.

**Wire evacuation problems specifically in the scrap box (bird nesting)**

Uneven remnant stress of the wire can be resolved by increasing the TAP by 1 (higher cutting speed) or by slowing the feeding rate.

Uneven wear on the conveyor roller belt, replace when abrasion exceeds 1/3 of wire diameter.

Verify and check the positioning of the conveyor roller belt.

Improper pressure applied by the conveyor belt of roller system, adjust to fit wire diameter and characteristics.

Wire has a large curl requiring replacement of the wire.

We hope that this information provides a road map to address your wire problems.

## Wire EDM Resin. *Whats the real story?*

The purpose of edm mixed bed resin is to maintain a constant condition of conductivity based on the work material being cut. The process of edming has the inherent effect of raising conductivity. Therefore it is important to have good filtration and a properly operating resin system to insure good machine operation and stable cutting.

The focus of this article is to discuss the difference between virgin and regenerated resin. The information contained does NOT pertain to in tank regeneration or local residential resin programs, these are of much lower quality.

Water quality is tied directly to the ability to retain active ionic properties as a result of the chemical processing. It needs to be understood that the process to make virgin resin is almost the same as the regeneration process. In fact, a number of virgin resins have already been through the regeneration process once.

Ability to retain impregnated chemicals. In this case there is little to no difference.

Resin regeneration suppliers constantly introduce new resin beads to the mix, insuring a consistent product life.

The reality is that if you use a reputable resin regen supplier, the only difference between virgin and regenerated resin is the price.

For Diamond Guides, Flush Nozzles, Power Feeds, Driller Tubes, Cleaners, and Resin Systems at the best possible price. 1-800-270-2627



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