

Purpose

As you review this newsletter, I hope you can appreciate the time and effort it took to put this together.

Having been in this business for over 30 years, I find that over the last several there has been a huge increase in bad, incorrect information and half-truths provided to EDM users.

My salespeople and I experience this every day with clients that have been completely misinformed. My family has and is in manufacturing here in the USA. I believe you become competitive by having solid, documented information to make solid business and manufacturing decisions.

Whether you buy from my company or not, I hope you can use this information to grow your business and bring some manufacturing back to the USA.

Fred A. Wisen

President

North American EDM
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OEM / OES – What does it mean to me??

It is a common misconception that if you buy a part from the machine tool builder, in this case a part for an EDM such as a Guide, Nozzle, Power Feed, Filter or Wire; you are getting an OEM part.

WRONG.

It is believed by many that OES (Original Equipment Supplier) parts must be purchased directly from the dealer. OES parts are made on the same assembly line as OEM (Original Equipment Manufacturer) parts except it goes through a couple of added steps. They may be branded or stamped with a logo and wrapped / labeled in the EDM machine tool builders packaging; just increasing the cost.

To remove some confusion: Parts made by a factory are OEM, when they are sold, stamped or labeled – they become OES. Just about all EDM consumables are in fact OES.

These OES parts just become more expensive to the end user because of these added steps and inflated by numerous middlemen.

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Due to regulations of the ISO certification (International Organization for Standardization) there are quite a few OEM companies in the market because multiple OES brands are required. For auto manufactures to have a steady supply on the production line, they must have several supply sources that provide them with equal quality parts. This ensures if a manufacturer has any problems with a supplier it will not disable production and allows for direct substitution of other brands into the production, repair or warranty replacement.

This is true for auto, durable goods, CNC machines and Edm's.

An original equipment manufacturer (OEM) is a company that produces parts and equipment that may be marketed by another manufacturer. The largest OEM company in the world by both scale and revenue is FOXCONN, a Taiwanese based electronics company and supplier which manufactures parts and equipment for companies including Apple, Dell, Huawei and Nintendo.

Terminology:

Abrading: A process of electrode making. An abrasive-charged epoxy-type model or pattern is made and mounted. While reciprocating in a preset circular pattern, it is forced into a graphite blank, effectively "crush-forming" the patterns shape into the graphite forming a finished electrode.

Barrel Effect: The term given to the condition caused by the wire vibrating or resonating within the cut. This usually occurs in the middle of the wire's cutting length. This vibration, along with potential secondary cutting will create a "cavity" in the middle of the workpiece giving it a barrel appearance.

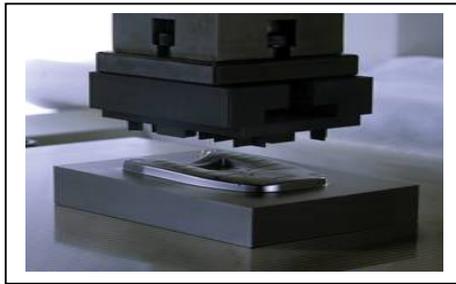
Cobalt Depletion: The leaching of the cobalt matrix material that holds the tungsten particles in place. Caused by electrolysis, this typically occurs while cutting carbides using water as a dielectric. Cutting parts in oil our with carbide generator circuitry can alleviate this condition.

Heat Affected Zone: The area immediately below the recast layer that has been influenced by the heat from the EDM process. Its depth depends on material and the edming conditions.

Ionization Voltage: The voltage at which current begins to flow across the gap. Typically, higher than working voltage.

Omnidirectional: Referring to a finish having no grain or lay as in the EDM finish. The EDM finish is a random array of millions of tiny craters having no linear or circular orientation.

Pulse: In EDM, a brief surge of electrical current. The current used in EDM is pulsed (turned On and Off) to provide time to allow the dielectric to re-ionize.



We have all heard this from dealer / factory service people. We sold EDM machines for over 15 years and my service people were trained at the factory as to how to make this statement correctly, leaving the customer with a perception that was untrue without actually saying it.

The actual statement as made by service is: 1) As a factory service person I cannot install a part the is not factory authorized. 2) Installing the part will void the warranty of the factory part. Makes perfect sense. Your car dealer will not install a part that you bought from the auto parts store down the street. And the replacement part cannot be warranted by the dealer since it is not their part, the warranty would be honored by the store where you bought the part. They still warranty the rest of the vehicle as is the case with the EDM machine. Service personnel sometimes tend to play the word game, especially if they are local service and not factory direct.

Let's get legal. Pursuant to the **Magnuson-Moss Warranty Act:** 1) It is unlawful for a warranty to be dishonored based off maintenance or repairs done by a third party, unless the warrantor will provide these services for free. 2) Warrantors cannot condition the terms of the warranty for limitations on the use of only "authorized" repair parts and / or service.

Analysis:

Warrantor's Decision Is Final

Section 700.8: A warrantor shall not indicate in any written warranty or service contract either directly or indirectly that the decision of the warrantor, service contractor, or any designated third party is final or binding in any dispute concerning warranty or service contract. Nor shall a

What's this about voiding my warranty if I don't use a dealer part??

warrantor or service contractor state it alone shall determine what is a defect under the agreement.

Prohibited Tying

Section 700.10: (a) Section 102(c), 15 U.S.C. 2302(c), Prohibits tying arrangements that condition coverage under a written warranty on the consumers use of an article or service identified by the brand, trade, or corporate name unless that article or service is provide without charge to the consumer.

(b) Under a limited warranty that provides for replacement of defective parts and no portion of the labor charges, section 102(c) 15 U.S.C. 2302(c) prohibits a condition that the consumer use only service (labor) identified by the warrantor to install the replacement parts. A warrantor or his designated representative may not provide parts under the warranty in a manner which impedes or precludes the choice by the consumer of the person or business to perform the necessary labor to install such parts. (c) No warrantor may condition the continued validity of a warranty on the use of only authorized repair service and / or authorizes replacement parts (other than an article of service provided without charge under the warranty)

As an example: provisions such as "This warranty is void if service is performed by anyone other than and authorized "ABC" dealer and all replacement parts must be genuine "ABC" parts and the like are prohibited where the service or parts are not covered by the warranty. These provisions violate the Act in two ways. First, they violate the section 102 (c) ban against tying arrangements, Second they violate Section 110 such provisions are deceptive under the Act because a warrantor cannot, as a matter of law, avoid liability under a written warranty where a defect is unrelated to the use by a consumer of an "unauthorized" article or service.

End result, Find the highest quality part at the best value for your machine and tell the factory guy to leave his "authorized" high price parts at home.



Give me some Real World facts!

Tangled / Cross-Wound Wire Spools, It's not a bad wire issue!

The odds of receiving a cross wound spool from the wire manufacture is extremely low. How about 1 spool per 6727.3 spools manufactured.

So, you get a cross wound spool, immediately we find most will blame the wire as bad. That's unfortunate as they miss the fact that, in most cases the cross-wound spool is the result of another issue. It was not cross wound from the manufacture but something in your operation made it cross wound. Jumping to conclusions only makes solving the problem much more difficult. If you end up with several cross-wound spools and they are from different lot numbers, the problem is in your operation, guaranteed.

Cross winds (Overwraps) caused by the machine: **Supply Spool Brake Issues;** The spool arbor has some type of mechanism to provide drag on the spool. As the machine runs the spool develops momentum similar to a flywheel. If the drag is not sufficient, when the machine stops the wire will unspool slightly. When the machine is started back up, you have a cross wound spool. **Machine Design Problems:** Older machines mount the spool vertically; your opponent here is gravity. A loose spool will allow the wire to fall over itself creating a cross wound spool.

Most common issues are caused by the operator: **Failure to secure the loose end of the wire under tension.** When the spool is

removed from the machine it **MUST** be secured tightly to mitigate any loosening or unspooling of the wire while in storage. Failure to do this almost guarantees a bad spool on the next run. **Jarring / Dropping / Banging the spool:** EDM Wire is sensitive to impact along its axis. This impact can significantly move the coils so that they overlap. **Improper Wire Storage:** Wire should be stored **HORIZONTALLY** not standing up. Once you place the wire vertically, gravity take its opportunity at shifting the wire coils. This is something that takes a conscious effort to make sure it doesn't happen, it's so easy to set the spool on the flange and walk away.

Manufacturing Issues leading to cross wound spools: Most of issues are the result of incorrect setting of the winding machines traverse mechanism. The problem could be incorrect end of spool reversal setting or a traverse rate that is not consistent. This is easily determined by looking at the spool. In looking at how the wire approaches and lays at the flange end will provide the information needed. If the wire ramps up or ramps down at the flange, it is a bad spool. If the wire coils slide loosely when the spool is first opened, it is a bad spool. If you notice high spots on the wire coil surface, it is a bad spool.

Most wire is laser checked during winding which minimizes these issues. So that almost all wire issues are not caused by manufacturing defects.

Let's Get Technical

Diagnosing Spool Problems:

You have a spool problem. How can you determine what happened and fix it?

We need to look at and answer the following questions:

- 1) Did the tangle occur while the machine was running?
- 2) How long was it running when the tangle occurred?
 - a. If the machine was running in an uninterrupted cut for a while it is likely the wire is defective.
 - b. If the tangle occurred just after threading, it could be a supply brake tension issue.
 - c. If it occurred just after a partially used spool was remounted, it's probably improper storage to blame.
- 3) Has the supply brake been properly adjusted?
 - a. Changes in spool weight / wire speed often require readjustment.
- 4) What is your company's practice for securing the loose end and storing the spool?
- 5) Does the spool show signs of being dropped?
 - a. Impact mark on the flange
 - b. Broken flange reinforcements
 - c. Distorted flange
 - d. Concrete dust imbedded on the flange

Check spool tension by running your finger across the outer layer of the wire. The individual coils should stay in place. If they don't, it could mean the surface layer was loosened due to improper storage. This is the most common cause of bad spools.

CONCLUSION:

As I have been putting these newsletters together, I find it more and more difficult to believe we can bring manufacturing back to the USA. There is so much misinformation, truths that have no basis in fact, and facts that are pure fiction.

I am not talking about politics or economics but the miss perceptions that exist within our manufacturing community. Examples are everywhere. I buy the cheapest wire because that's how I save money. I use a higher micron filter to extend my filter life to save money. I buy cheap Chinese products since they are all the same, that's how I save money. I see it every day, companies saving themselves right out of business. They place the blame for why they are not competitive, why they can't keep work in house and why they can't make deliveries everywhere but where it belongs, with them.

We have moved away from where purchasing was to find, investigate, and determine where the best products could be purchased at the best value. This is when we were a manufacturing powerhouse. Now, its purchase the cheapest products we can find. I can provide examples of a part that the price ranges from \$ 350.00 to \$89.00, do you really believe the \$89 part is the same quality, same tolerance and will provide the same outcome? If the answer is yes, what machines will be at your closing auction?

Have a comment or question? Send it to me at Fredw@edmsupplies.com

Fred

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